

CMQCC

California Maternal
Quality Care Collaborative

This collaborative project
was developed by CMQCC
with funding from California
Health Care Foundation.



Toolkit to Support Vaginal Birth and Reduce Primary Cesareans

A Quality Improvement Toolkit
Added 2022

Toolkit to Support Vaginal Birth and Reduce Primary Cesareans

Holly Smith, MPH, MSN, CNM; Nancy Peterson, MSN, PNNP,
RNC-OB; David Lagrew, MD; Elliott Main, MD, Editors

Suggested citation:

Smith H, Peterson N, Lagrew D, Main E. 2016. Toolkit to Support Vaginal Birth and Reduce Primary Cesareans: A Quality Improvement Toolkit. Stanford, CA: California Maternal Quality Care Collaborative.

Funding for the development of this toolkit was provided by:

California Health Care Foundation (CHCF) and Yellow Chair Foundation.

Copyright information:

© 2016 California Maternal Quality Care Collaborative. The material in this toolkit may be freely reproduced and disseminated for informational, educational and non-commercial purposes only.

This toolkit is considered a resource but does not define the standard of care in California. Readers are advised to adapt the guidelines and resources based on their local facility's level of care and patient populations served and are also advised to not rely solely on the guidelines presented here.

For correspondence:

Christa Sakowski, MSN, RN, C-ONQS, C-EFM, CLE

CLINICAL LEAD, CMQCC

Center for Academic Medicine, MC 5660

453 Quarry Road,

Palo Alto, CA 94303

Email: csakowski@cmqcc.org

Website: <http://www.cmqcc.org>

Acknowledgements

California Health Care Foundation and Yellow Chair Foundation provided funding for the development of this toolkit.

We thank the following organizations for offering their expertise and enthusiastic support for the creation of this toolkit:

- Alliance for Innovation on Maternal Health
- Childbirth Connection, a program of the National Partnership for Women and Families
- Hospital Quality Institute
- Pacific Business Group on Health
- The Maternal, Child, and Adolescent Health Division of the California Department of Public Health (CDPH-MCAH)

Many professional organizations are in support of this toolkit, including:

- American Congress of Obstetricians and Gynecologists (District IX)
- Association of Women's Health, Obstetric, and Neonatal Nurses (California Section)
- California Nurse-Midwives Association
- California Birth Center Association

We thank task force members who graciously facilitated the use of model tools and policies from the following organizations and hospitals:

- Community Memorial Health System, Ventura CA

- Miller Children's and Women's Hospital, Long Beach CA
- Hoag Hospital, Newport Beach CA
- Marin General Hospital, Greenbrae CA
- Kaiser Permanente Roseville Medical Center, Roseville CA
- Swedish Medical Center, Seattle WA
- Washington State Hospital Association
- Zuckerberg San Francisco General Hospital, San Francisco CA

We thank the three pilot hospitals for sharing the details of their quality improvement projects that informed the development of this toolkit:

- Hoag Hospital, Newport Beach CA
- Saddleback Memorial Medical Center, Laguna Hills CA
- Miller Children's and Women's Hospital, Long Beach CA

While there are numerous California hospitals with sustained low cesarean rates, we thank the following for in-depth interviews describing their journeys:

- John Muir Medical Center, Walnut Creek CA
- Kaiser Permanente Roseville Medical Center, Roseville CA

CMQCC Task Force to Support Vaginal Birth and Reduce Primary Cesareans: Writing Group

Cynthia Banks, MSN, CNM

Midwife & Director,
Community Birth Works (Oakland, CA)

Priya Batra, MD, MS, FACOG

Medical Director, Health Promotion Bureau,
Los Angeles County Department of Public Health
(Los Angeles, CA)

Darynée Blount, LM

Midwife & Owner, Birth Roots, Inc.
(San Diego, CA)

Maureen P. Corry, MPH

Senior Advisor for Childbirth Connection
Programs, National Partnership for Women &
Families (Washington, DC)

Theresa Cunningham, MA, PHR

Public Health Advocate
Community Advisory Board,
San Diego Perinatal Equity Initiative
(San Diego, CA)

**Sharon Dey-Layne, MSN, CNS, CNM,
RNC-HROB**

Perinatal Clinical Nurse Specialist, Riverside
University Health System Medical Center
(Moreno Valley, CA)

Laura Eichhorn, MSN, RNC-OB, C-EFM

Clinical Educator, Saddleback Memorial Medical
Center (Laguna Hills, CA)

Annette Fineberg, MD

Sutter Medical Group Yolo Division;
Sutter Davis Hospital (Davis, CA)

Martha Franco

Doula, Doulas Telar (San Francisco, CA)

Ann Fulcher, CLE, CD(DONA)

Volunteer Doula Program Manager,
UC San Diego Health (San Diego, CA)

Lisa Gartin, CNM, LCCE, CLC

Clinica Sierra Vista FQHC (Bakersfield, CA)

Brian Gilpin, MD, MPH

National Clinical Director of OB Hospitalists,
Obstetrix Medical Group (Newport Beach, CA)

Mashariki Kudumu, MPH

Advocate in Perinatal Health and Birth Equity
(Los Angeles, CA)

David Lagrew, MD

Task Force Co-Chair; Chief Integration and
Accountability Officer, MemorialCare Health
System; Professor of Clinical Medicine,
Division of Maternal Fetal Medicine, UC Irvine
(Laguna Hills, CA)

Elliott Main, MD

Medical Director, California Maternal Quality
Care Collaborative (CMQCC); Chair, California
Pregnancy-Associated Mortality Review
(CA-PAMR) (Stanford, CA)

Paris Maloof-Bury, MSN, CNM

Midwife, Sutter Health; President,
California Nurse-Midwives Association
(Davis, CA)

Natalie Martina, MSN, CNM

Lead Midwife, OB Hospitalist Group, Alta Bates
Medical Center (Oakland, CA)

**Emily McCormick, MPH, BSN, RNC-MNN,
C-ONQS, IBCLC**

Program Manager, Maternal Data Center, CMQCC
(Palo Alto, CA)

Ruth Mielke, PhD, CNM, WHNP, FACNM

Assistant Professor, Women's Health Concentration,
CSU Fullerton School of Nursing; Eisner Pediatric
& Family Medical Center (Los Angeles, CA)

Susan Melnikow, MS, CNM

Founder/Director, Tree of Life for Healthy Birthing
& Parenting; Connect the Docs OB Hospitalist
Program, Scripps Encinitas Hospital, (Encinitas CA)

Julianne Morath, MS, RN, CPPS

President/CEO, Hospital Quality Institute
(Sacramento, CA)

Samsarah Morgan, CD, DD, LC

Executive Director, Oakland Better Birth
Foundation (Oakland, CA)

Christine H. Morton, PhD

Research Sociologist, CMQCC (Stanford, CA)

**Michele Nizza, BA, CD(DONA), CMT, CLEC,
LCCE, FACCE**

Owner, Mum's the Word (Monterey, CA)

Nancy Peterson, MSN, PNNP, RNC, IBCLC

Task Force Co-Chair; Director of Perinatal
Outreach, Clinical Program Manager, CMQCC
(Stanford, CA)

Diana Ramos, MD, MPH

Director, Reproductive Health, L.A. County Public
Health Department; Adjunct Assistant Clinical
Professor, Keck University of Southern California
(Los Angeles, CA)

Eva Goodfriend-Reaño, CNM, WHNP, IBCLC

Midwifery Clinical Chief, Alameda Health System
(Oakland, CA)

Dale P. Reisner, MD

Medical Director, OBGyn Quality & Safety,
Swedish Health Services; Medical Director,
Gossman Center for Advanced Healthcare
Simulation (Seattle, WA)

**Christa Sakowski, MSN, RN, C-ONQS,
C-EFM, CLE**

Clinical Lead, CMQCC (Carlsbad, CA)

Michelle Sanders, CD, CLEC

CEO, Legacy Birth Pros; Executive Director,
Beauty for Ashes Maternal Wellness, Inc.
(Ontario, CA)

Holly Smith, MPH, CNM, FACNM

Lead Editor and Task Force Co-Chair,
CMQCC (Fort Collins, CO)

Blanche Skubic, CNM

Sutter Medical Group Yolo Division; Sutter
Davis Hospital (Davis, CA)

David Speiser, MD

Providence Little Company of Mary Medical
Center (San Pedro, CA)

**Beth Stephens-Hennessy,
MS, CNS, RNC**

Perinatal Clinical Nurse Specialist,
Sutter Memorial Hospital (Sacramento, CA)

Candy Timoney, MSN, RNC-OB

Regional Perinatal Programs Manager
Northeastern California Perinatal Outreach
Program (Sacramento CA)

Janet Trial Edd, MSN, CNM

Director, Perinatal Quality and Improvement
Programs, Miller Children's and Women's
Hospital (Long Beach CA)

Julie Vasher, DNP, CNS, RNC-OB, C-EFM

Clinical Implementation Lead, CMQCC
(Stanford, CA)

Kim Werkmeister, BA, RN, CPHQ

National Improvement Advisor, Cynosure
Health (Portola Hills, CA)

Madeleine Wisner, LM, CPM

Founder & Director, Welcome Home
Midwifery Services, Inc. (Sacramento, CA)

**Mayra Lizzette Yñiguez, MPH, MSN, CNM,
WHNP**

Midwife, Eisner Health; Chair, CNMA
Reproductive Justice and Antiracism
Committee (Los Angeles, CA)

CMQCC Task Force to Support Vaginal Birth and Reduce Primary Cesareans: Advisory Group

Shantay Davies-Balch, MBA, Doula, CLE

President and CEO, BLACK Wellness & Prosperity Center (Fresno, CA)

Kathleen Belzer, MSN, NP, CNM, FACNM

Midwife, Kaiser Permanente; Adjunct Faculty, Dominican University; Co-Chair & Founder, California Nurse-Midwives Foundation (Kentfield, CA)

Kelly Brandon MSN, CNS, RNC, IBCLC

Perinatal Clinical Nurse Specialist, Zuckerberg San Francisco General Hospital Birth Center (San Francisco, CA)

Brendan Carvalho, MBBCh, FRCA, MDCh

Chief, Division of Obstetric Anesthesia, Department of Anesthesiology, Stanford University Medical Center; Professor, Perioperative and Pain Medicine, Stanford University School of Medicine (Stanford, CA)

Aaron B. Caughey, MD, PhD

Professor and Chair, Department of Obstetrics & Gynecology; Associate Dean for Women's Health Research & Policy, Oregon Health & Science University (Portland, OR)

Jim Chapman, MD

Sutter Davis Hospital; Previous Chair, Department of Anesthesiology, Sutter Davis Hospital (Davis, CA)

Sharmaine Collier, RN, CHT

Staff Nurse 3, Marin General Hospital; Founder, Petaluma Hypnotherapy Center; Childbirth Educator; Women's Health/Medical Hypnotherapy Specialist (Greenbrae, CA)

Leslie Cragin, PhD, CNM, FACNM

Professor, UCSF School of Medicine, Department Obstetrics, Gynecology and Reproductive Sciences; Project Manager, Reducing Primary Cesareans, ACNM Healthy Birth Initiative (San Francisco, CA)

Rosanna Davis, BSEE, LM

President, California Association of Licensed Midwives (San Leandro, CA)

Dodi Gauthier, M.Ed., BSN, RNC-OB, C-EFM

Perinatal Educator, Santa Barbara Cottage Hospital; Past Chair, California Section, AWHONN (Santa Barbara, CA)

Rosanne Gephart, MSN, CNM, NP, IBCLC

President, Better Beginnings for Babies; Founder, Santa Rosa Birth Center; President, California Birth Center Association; Vice-President, American Association of Birth Centers (Santa Rosa, CA)

Heather Gocke, MS, RNC-OB, CPHRM, C-EFM

Vice President, Risk Management and Patient Safety, BETA Healthcare Group (Glendale, CA)

Jason Greenberg, MD

Vice Chair, Department of Anesthesiology; Chief, Division of Obstetric Anesthesiology, California Pacific Medical Center (San Francisco, CA)

Kim Gregory, MD, MPH

Vice Chair, Women's Healthcare Quality and Performance Improvement, Department of Obstetrics and Gynecology; Director, Division of Maternal-Fetal Medicine, Cedars Sinai Medical Center (Los Angeles, CA)

Nicette Jukelevics, MA, ICCE

Childbirth Educator, Speaker, Center For Family; previously Perinatal Educator at Torrance Memorial Medical Center; Founder, www.VBAC.com; Author, The VBAC Education Project; Past Chair, Coalition For Improving Maternity Services (CIMS) (Torrance, CA)

Parie Lambert, MSN, CNM, OB/GYN NP

Sutter Medical Group Yolo Division; Sutter Davis Hospital (Davis, CA)

Lawrence Lurvey, MD

Assistant Area Medical Director for Women & Children's Health; Physician Director of Quality, Risk and Regulatory Services, Kaiser Permanente West Los Angeles Medical Center (Los Angeles, CA)

Ana Paula Markel BDT(DONA), IAT(ICEA)

Director of International Development, DONA; Founder, BINI Birth (Los Angeles, CA)

Monica McLemore, PhD, MPH, RN

Assistant Professor, Family Health Care Nursing, UCSF; Research Scientist, Advancing New Standards in Reproductive Health (ANSIRH), Bixby Center for Global Reproductive Health (San Francisco, CA)

R. Kate Mitchell, RN, CNM, WHNP-BC, IBCLC

Midwife, LA+USC Medical Center Los Angeles, CA

Allana Moore

Mid-Coastal California Perinatal Outreach Program Administrator; Administrative Assistant, CMQCC (Stanford, CA)

Alicia Muñoz, MAS, CQA, CPHQ, FACHE

Vice President, Quality and Patient Safety, Hospital Association of San Diego & Imperial Counties (San Diego, CA)

Chinyere Oparah, PhD

Associate Provost, Mills College (Oakland, CA)

Ana Rapoport, MSN, CNM, WHNP

Midwife, Kaiser Permanente; Health Care Leadership Fellow, California Health Care Foundation (Walnut Creek, CA)

Nancy A. Rouse, DNP, CNM

Kaiser Permanente Orange County (Irvine, CA)

Tory Robinson

Senior Manager, Quality Improvement, Blue Shield of California (San Francisco, CA)

Karla Silverman, MS, RN, CNM

Associate Director of Complex Care Delivery, Center for Health Care Strategies (Hamilton, NJ)

Elizabeth Smith, MSN, CNM, IBCLC

Director, Santa Rosa Birth Center; Midwife, Providence Medical Group (Santa Rosa, CA)

BJ Snell, PhD, CNM, WHCNP, FACNM

Professor Emeritus, Women's Health Care Concentration, CSU Fullerton School of Nursing; Director/Owner, Beach Cities Midwifery & Women's Health Care (Laguna Hills, CA)

Susan Stone, CNM

Kaiser Permanente Roseville Medical Center; Previous Chief Nurse-Midwife, Kaiser Permanente Sacramento (Roseville, CA)

Sarah Shealy, MSN, CNM, IBCLC

Associate Professor of Nursing & Faculty Fellow, MSMU Center for the Advancement of Women; Mount Saint Mary's University (Los Angeles, CA)

Laura Todaro, MSN, CNM

Midwife, Kaiser Permanente

John S. Wachtel, MD, FACOG

Chair, ACOG District IX; Adjunct Clinical Professor, Department of Obstetrics and Gynecology, Stanford University School of Medicine (Stanford, CA)

Jill Wodnick, MA, LCCE, IMH(2)

Lamaze Childbirth Educator, Montclair State University Montclair, NJ

Mark Zakowski, MD

Chief, Obstetric Anesthesiology, Cedars-Sinai Medical Center; Associate Adjunct Professor of Anesthesiology, Charles Drew University of Medicine and Science (Los Angeles, CA)

Table of Contents

EXECUTIVE SUMMARY	10-20	PART II. RECOGNITION AND PREVENTION: SUPPORTING INTENDED VAGINAL BIRTH	41-44	PART III. RESPONSE: MANAGEMENT OF LABOR ABNORMALITIES	54-59
HOW TO USE THIS TOOLKIT	21	<ul style="list-style-type: none"> • THE NEW NORMAL: REDESIGNING MATERNITY CARE FOR LOW-RISK WOMEN • LACK OF INSTITUTIONAL SUPPORT FOR THE SAFE REDUCTION OF ROUTINE INTERVENTION • ADMISSION IN LATENT (EARLY) LABOR WITHOUT A MEDICAL INDICATION • INADEQUATE LABOR SUPPORT • LIMITED CHOICES TO MANAGE PAIN AND IMPROVE COPING DURING LABOR • OVERUSE OF CONTINUOUS FETAL MONITORING IN LOW-RISK PATIENTS • UNDERUTILIZATION OF CURRENT TREATMENT AND PREVENTION GUIDELINES FOR POTENTIALLY MODIFIABLE CONDITIONS 		<ul style="list-style-type: none"> • STANDARDIZATION MATTERS • POOR PROFESSIONAL COMMUNICATION AND LACK OF TEAMWORK • LACK OF STANDARD DIAGNOSTIC CRITERIA/STANDARD RESPONSES TO LABOR CHALLENGES AND FETAL HEART RATE ABNORMALITIES • FAILURE TO IDENTIFY AND INTERVENE FOR THE PERSISTENTLY OP/OT FETUS • PROFESSIONAL CHALLENGES IN WORK-LIFE BALANCE • LIABILITY-DRIVEN DECISION MAKING 	
THE CASE FOR IMPROVEMENT IN CESAREAN BIRTH RATES	22-27	KEY STRATEGIES FOR SUPPORTING INTENDED VAGINAL BIRTH	45-53	KEY STRATEGIES TO MANAGE LABOR ABNORMALITIES AND SAFELY REDUCE CESAREAN BIRTHS	60-71
<ul style="list-style-type: none"> • INTRODUCTION • CURRENT LANDSCAPE OF CESAREAN BIRTH IN CALIFORNIA AND THE UNITED STATES • QUALITY MATERNITY CARE IS AT STAKE • REDUCING THE COST OF CARE • DEFINING THE OPTIMAL RATE AND REVERSING THE TREND IN CESAREAN BIRTHS 		<ul style="list-style-type: none"> • IMPLEMENT INSTITUTIONAL POLICIES THAT SAFELY REDUCE ROUTINE OBSTETRIC INTERVENTIONS • IMPLEMENT EARLY LABOR SUPPORTIVE CARE POLICIES AND ACTIVE LABOR CRITERIA FOR ADMISSION • IMPROVE THE SUPPORT INFRASTRUCTURE AND SUPPORTIVE CARE DURING LABOR • ENCOURAGE USE OF DOULAS AND WORK COLLABORATIVELY TO PROVIDE LABOR SUPPORT • UTILIZE BEST PRACTICE RECOMMENDATIONS FOR LABORING WOMEN WITH REGIONAL ANESTHESIA • IMPLEMENT INTERMITTENT MONITORING POLICIES FOR LOW-RISK WOMEN • IMPLEMENT CURRENT PREVENTION AND TREATMENT GUIDELINES FOR POTENTIALLY MODIFIABLE CONDITIONS (HSV, BREECH) 		<ul style="list-style-type: none"> • CREATE HIGHLY RELIABLE TEAMS AND IMPROVE INTERDISCIPLINARY COMMUNICATION • IMPLEMENT STANDARD DIAGNOSTIC CRITERIA AND STANDARD RESPONSES TO LABOR CHALLENGES AND FETAL HEART RATE ABNORMALITIES • UTILIZE OPERATIVE VAGINAL DELIVERY FOR ELIGIBLE CASES • IDENTIFY MALPOSITION AND IMPLEMENT APPROPRIATE INTERVENTIONS • CONSIDER ALTERNATIVE COVERAGE PROGRAMS (LABORIST MODELS AND COLLABORATIVE PRACTICE MODELS) • DEVELOP SYSTEMS THAT FACILITATE TRANSFER OF CARE FROM THE OUT-OF-HOSPITAL BIRTH ENVIRONMENT TO THE HOSPITAL • AVOID DEFENSIVE MEDICINE: FOCUS ON QUALITY AND SAFETY 	
PART I. READINESS: IMPROVING THE CULTURE OF CARE, AWARENESS, AND EDUCATION	28-30			PART IV. REPORTING AND SYSTEMS LEARNING: USING DATA TO DRIVE IMPROVEMENT	72-73
<ul style="list-style-type: none"> • RECOGNIZING THE VALUE OF VAGINAL BIRTH • CASUAL ACCEPTANCE OF CESAREAN BIRTH • KNOWLEDGE DEFICIT REGARDING THE BENEFITS OF VAGINAL BIRTH • A MATERNITY CULTURE THAT UNDERAPPRECIATES WOMEN'S INFORMED CHOICES AND PREFERENCES • PAYMENT/REIMBURSEMENT MODELS THAT CONFLICT WITH HIGH-VALUE, HIGH-QUALITY MATERNITY CARE 				<ul style="list-style-type: none"> • UNDERLYING PRINCIPLES FOR REPORTING AND SYSTEMS LEARNING • IMPLEMENTATION BARRIERS FOR DATA-DRIVEN QI 	
KEY STRATEGIES FOR IMPROVING THE CULTURE OF CARE, AWARENESS, AND EDUCATION	31-40				
<ul style="list-style-type: none"> • IMPROVE QUALITY OF AND ACCESS TO CHILDBIRTH EDUCATION • IMPROVE COMMUNICATION THROUGH SHARED DECISION MAKING AT CRITICAL POINTS IN CARE • BRIDGE THE PROVIDER KNOWLEDGE AND SKILLS GAP • IMPROVE SUPPORT FROM SENIOR HOSPITAL LEADERSHIP AND HARNESS THE POWER OF CLINICAL CHAMPIONS • TRANSITION FROM PAYING FOR VOLUME TO PAYING FOR VALUE 					

Table of Contents (continued)

<p>KEY STRATEGIES FOR USING DATA TO DRIVE REDUCTION IN CESAREANS 74-79</p> <ul style="list-style-type: none"> • CREATE AWARENESS • PROMOTE TRANSPARENCY • IMPROVE DATA QUALITY • CREATE ACTIONABLE DATA • REDUCE DATA BURDEN • DESIGN NEW MEASURES TO DRIVE QI 	<p>APPENDICES 112-177</p> <p>APPENDIX A – SUMMARY OF THE OBSTETRIC CARE CONSENSUS ON SAFE PREVENTION OF THE PRIMARY CESAREAN DELIVERY (ACOG/SMFM 2014) 112</p> <p>APPENDIX B – SAFE REDUCTION OF THE PRIMARY CESAREAN BIRTHS BUNDLE (AIM, 2015) 113-114</p> <p>APPENDIX C – TOOLS ARRANGED BY SECTION 115-119</p> <p>APPENDIX D – TOOLS ARRANGED BY TOPIC 120-126</p> <p>APPENDIX E – CMQCC BIRTH PREFERENCES GUIDE 127-129</p> <p>APPENDIX F – COPING WITH LABOR ALGORITHM 130</p> <p>APPENDIX G – GUIDE TO SECOND STAGE MANAGEMENT OF MAL-POSITION 131-134</p> <p>APPENDIX H – CESAREAN BIRTH PERFORMANCE MEASURES 135-140</p> <p>APPENDIX I – MODEL INFORMED CONSENT FOR ELECTIVE (NON-MEDICALLY INDICATED) CESAREAN BIRTH 141</p> <p>APPENDIX J – PRE-CESAREAN CHECKLIST FOR LABOR DYSTOCIA OR FAILED INDUCTION 142</p> <p>APPENDIX K – LABOR DYSTOCIA CHECKLIST 143</p> <p>APPENDIX L – LABOR DURATION GUIDELINES 144</p> <p>APPENDIX M – SPONTANEOUS LABOR ALGORITHM 145</p>	<p>APPENDIX N – ALGORITHM FOR THE MANAGEMENT OF THE SECOND STAGE OF LABOR 146</p> <p>APPENDIX O – ACTIVE LABOR PARTOGRAM 147</p> <p>APPENDIX P – ALGORITHM FOR THE MANAGEMENT OF CATEGORY II FETAL HEART TRACINGS (DR. STEVEN CLARK AND COLLEAGUES) 148</p> <p>APPENDIX Q – ALGORITHM FOR THE MANAGEMENT OF INTRAPARTUM FETAL HEART RATE TRACINGS 149</p> <p>APPENDIX R – INDUCTION OF LABOR ALGORITHM 150</p> <p>APPENDIX S – ACOG KEY LABOR DEFINITIONS 151</p> <p>APPENDIX T – MODEL POLICIES 152-177</p> <ul style="list-style-type: none"> • FETAL SURVEILLANCE • FREEDOM OF MOVEMENT • INDUCTION OF LABOR • PAIN ASSESSMENT AND MANAGEMENT <p>REFERENCES 178-191</p>
<p>PART V. THE NEXT STEP: INTEGRATING MIDWIVES, DOULAS, AND COMMUNITY-BASED CARE 80-107</p> <ul style="list-style-type: none"> • INTRODUCTION • DISPARITIES IN BIRTH OUTCOMES • ROOT CAUSES OF DISPARITIES IN BIRTH OUTCOMES • DOCTORS, MIDWIVES, DOULAS, AND THE POTENTIAL OF TEAM-BASED CARE • MIDWIFERY CARE • KEY STRATEGIES FOR MIDWIFERY INTEGRATION • KEY STRATEGIES FOR INTEGRATION AND IMPROVED SAFETY ACROSS BIRTH SETTINGS • DOULA CARE • KEY STRATEGIES FOR INTEGRATING DOULAS INTO THE BIRTH CARE TEAM 		
<p>PART VI. SUCCESS STORIES: LESSONS LEARNED FROM CALIFORNIA HOSPITALS 108-111</p> <ul style="list-style-type: none"> • THE PACIFIC BUSINESS GROUP ON HEALTH / CMQCC PILOT PROJECT FOR CESAREAN REDUCTION • JOHN MUIR MEDICAL CENTER, WALNUT CREEK, CA • KAISER PERMANENTE ROSEVILLE MEDICAL CENTER, ROSEVILLE, CA 		

Figures

FIGURE 1. NATIONAL TREND IN OVERALL CESAREAN RATES	23	FIGURE 11. NTSV CESAREAN RATES IN THE UNITED STATES AND CALIFORNIA, 2014-2020	81
FIGURE 2. VARIATION IN NTSV CESAREAN RATES AMONG 251 CALIFORNIA HOSPITALS (2014)	24	FIGURE 12. CALIFORNIA NTSV CESAREAN RATES BY RACE ETHNICITY	81
FIGURE 3. SUMMARY OF MATERNAL RISKS ASSOCIATED WITH CESAREAN BIRTH	25	FIGURE 13. MATERNAL MORTALITY RATIO IN U.S. AND CALIFORNIA, 1999 – 2016	82
FIGURE 4. ESSENTIAL ELEMENTS OF SHARED DECISION MAKING. TWO EXAMPLES FOR CLINICAL PRACTICE	33-34	FIGURE 14. COMPONENTS OF TEAM-BASED CARE	86
FIGURE 5. QUALITIES OF SUCCESSFUL CLINICAL CHAMPIONS	36	FIGURE 15. THREE MAXIMS OF PATIENT-CENTEREDNESS	84
FIGURE 6A. LARGE VARIATION OF THE TOTAL CESAREAN RATE AMONG 251 CALIFORNIA HOSPITALS (2014)	75	FIGURE 16. MIDWIFERY AROUND THE WORLD: COMPARISON OF UNITED STATES TO OTHER COUNTRIES	84
FIGURE 6B. LARGE VARIATION OF THE NTSV CESAREAN RATE AMONG 251 CALIFORNIA HOSPITALS (2014)	75	FIGURE 17. BENEFITS OF MIDWIFERY CARE	86
FIGURE 7. EXAMPLE SCREENSHOT FROM MATERNAL DATA CENTER (DRIVERS OF NTSV CESAREAN RATE)	77	FIGURE 18. CORNERSTONES OF MIDWIFERY CARE IN TWO EXAMPLES – A GUIDE FOR ALL PROVIDER TYPES IN ALL SETTINGS	87
FIGURE 8. EXAMPLE SCREENSHOT FROM MATERNAL DATA CENTER (PROPORTION OF NTSV SPONTANEOUS LABOR POPULATION WITH CESAREAN)	77	FIGURE 19. MIDWIFERY INTEGRATION	97
FIGURE 9. DYSTOCIA CHECKLIST FOR DATA COLLECTION	78	FIGURE 20. THE ROLE OF DOULAS DURING LABOR AND BIRTH	102
FIGURE 10. EXAMPLE SCREENSHOT FROM MATERNAL DATA CENTER (CASE REVIEWS OF NTSV CESAREAN)	78	FIGURE 21. BENEFITS OF DOULA CARE	105

Tables

TABLE 1. SUMMARY OF NEONATAL RISKS ASSOCIATED WITH SCHEDULED CESAREAN BIRTH 23	TABLE 13. COMPONENTS OF SUCCESSFUL IMPLEMENTATION OF INTERMITTENT FETAL MONITORING 52	TABLE 24. GESTATIONAL AGE TERMINOLOGY AND ACOG CRITERIA FOR CONFIRMATION OF TERM GESTATION 65	TABLE 36. LACK OF ACTIONABLE DATA 77
TABLE 2. FACTORS INFLUENCING THE CULTURE OF CARE AND THE VALUE OF VAGINAL BIRTH 28	TABLE 14. BARRIERS TO APPROPRIATELY MANAGING LABOR ABNORMALITIES 55	TABLE 25. EXAMPLES OF ACCEPTED MEDICAL INDICATIONS FOR INDUCTION OF LABOR 65	TABLE 37. DATA BURDEN 78
TABLE 3. KEY STRATEGIES FOR IMPROVING THE CULTURE OF CARE, AWARENESS, AND EDUCATION FOR CESAREAN REDUCTION 31	TABLE 15. FEATURES OF EFFECTIVE TEAMWORK AND SKILLED COMMUNICATION 56	TABLE 26. KEY COMPONENTS FOR SUCCESSFULLY DECREASING NON-MEDICALLY INDICATED (ELECTIVE) INDUCTION OF LABOR 66	TABLE 38. NEED FOR NEW CESAREAN QI MEASURES 79
TABLE 4. PATIENT DECISION POINTS THAT IMPACT RISK OF CESAREAN 34	TABLE 16. GLOSSARY OF TERMS FOR INDUCTION OF LABOR 57	TABLE 27. SUMMARY OF RECOMMENDATIONS FOR INDUCTION OF LABOR (ACOG/SMFM OBSTETRIC CARE CONSENSUS, 2014) 66	TABLE 39. SPECIFIC INTERVENTIONS UTILIZED BY HOSPITALS DURING SUPPORTING VAGINAL BIRTH COLLABORATIVE 80
TABLE 5. LEADERSHIP ROLES AND ACTIVITIES FOR STAKEHOLDERS IN PERINATAL CARE 37	TABLE 17. MATERNAL AND INFANT OUTCOMES AFTER CHANGES IN ELECTIVE INDUCTION OF LABOR POLICIES 58	TABLE 28. COMMONLY CITED REASONS FOR INDUCTION OF LABOR THAT DO NOT MEET CRITERIA AS “MEDICAL INDICATIONS” 67	TABLE 40. RESOURCES FOR MIDWIFERY EDUCATIONAL REQUIREMENTS, CREDENTIAL TYPES, AND SCOPE OF PRACTICE 89
TABLE 6. EXAMPLES OF ALTERNATIVE PAYMENT MODELS AND THE POTENTIAL IMPACT ON CESAREAN BIRTH 38	TABLE 18. KEY STRATEGIES TO MANAGE LABOR ABNORMALITIES AND SAFELY REDUCE CESAREAN BIRTH 60	TABLE 29. IDENTIFICATION, PREVENTION, AND TREATMENT OF THE MALPOSITIONED FETUS 69	TABLE 41. FINDINGS OF THE STRONG START STUDY 93
TABLE 7. BARRIERS TO SUPPORTING INTENDED VAGINAL BIRTH 42	TABLE 19. SUMMARY OF RECOMMENDATIONS FOR THE FIRST STAGE OF LABOR (ACOG/SMFM OBSTETRIC CARE CONSENSUS, 2014) 62	TABLE 30. PUBLIC BENEFIT OF TRANSPARENCY AND PUBLIC REPORTING 73	TABLE 42. KEY STRATEGIES FOR MIDWIFERY INTEGRATION 98
TABLE 8. BENEFITS OF CONTINUOUS LABOR SUPPORT 42	TABLE 20. SUMMARY OF RECOMMENDATIONS FOR THE SECOND STAGE OF LABOR (ACOG/SMFM OBSTETRIC CARE CONSENSUS, 2014) 62	TABLE 31. BARRIERS TO USING DATA TO DRIVE REDUCTION IN CESAREANS 73	TABLE 43. KEY STRATEGIES FOR INTEGRATION AND IMPROVED SAFETY ACROSS BIRTH SETTINGS 99
TABLE 9. KEY STRATEGIES FOR SUPPORTING INTENDED VAGINAL BIRTH 45	TABLE 21. ESSENTIAL COMPONENTS OF SAFELY ADMINISTERING OXYTOCIN 63	TABLE 32. KEY STRATEGIES FOR USING DATA TO DRIVE REDUCTION IN CESAREANS 74	TABLE 44. RESOURCES FOR MIDWIFERY INTEGRATION, TEAM-BASED CARE, AND IMPROVED TRANSFER 100
TABLE 10. SUPPORT OF COPING AND LABOR PROGRESS 47	TABLE 22. NICHD FETAL HEART RATE CLASSIFICATION 64	TABLE 33. LACK OF AWARENESS 75	TABLE 45. KEY STRATEGIES FOR INTEGRATING DOULAS INTO THE BIRTH CARE TEAM 106
TABLE 11. KEY COMPONENTS OF A SUPPORTIVE UNIT INFRASTRUCTURE 48	TABLE 23. CONSERVATIVE CORRECTIVE MEASURES FOR CATEGORY II FETAL HEART RATE TRACINGS 64	TABLE 34. LACK OF TRANSPARENCY 75	TABLE 46. RESOURCES FOR DOULA INTEGRATION 107
TABLE 12. BEST PRACTICE RECOMMENDATIONS FOR REGIONAL ANESTHESIA 50		TABLE 35. POOR DATA QUALITY 76	TABLE 47. SUMMARY OF LESSONS LEARNED 108

Executive Summary

Fall 2022

Introduction

Cesarean birth is a lifesaving procedure, with obvious benefits to mother and baby when vaginal birth is no longer safe. Nonetheless, previous decades saw an extraordinary rise and remarkable variation in cesarean birth rates, creating concern for the quality and cost of maternity care.¹⁻⁴ In the ten years from 1998 to 2008, cesarean birth rates in the United States rose from 22% to 33% of all births,³ making it the nation's most common hospital surgery. Having the largest population and the largest number of births of any state, birth trends in California at that time mirrored the increased cesarean rates nationwide, with cesarean birth accounting for approximately one-third of all births.⁵

The Unintended Consequences of Cesarean Birth

Cesarean birth creates more risk for most low-risk birthing people, including the risk of hemorrhage, uterine rupture, abnormal placentation, and cardiac events.³ Because the rate of vaginal birth after cesarean (VBAC) remains below 15% in the United States,⁶ the biggest risk of the first cesarean may very well be the likelihood of subsequent cesareans. The risk of uterine rupture, uterine atony, placenta previa, placenta accreta, and surgical adhesions increase with each cesarean. By the third cesarean, the risk of placenta previa nearly triples, and roughly 40% of people with placenta previa will also have placenta accreta.⁷ Psychological stress, anxiety, and post-traumatic stress disorder (PTSD) have been identified as risks of cesarean.⁸ Patients also experience less acute but significant consequences: longer hospital stays, increased pain and fatigue, and slower return to normal activities and productivity.⁹⁻¹²

Risks of cesarean birth for neonates are equally concerning. Apart from fetuses in breech presentation, neonates have reaped few benefits from the rising cesarean birth rate.¹³ As cesarean rates increased in recent decades, cerebral palsy rates remained unchanged.¹⁴ Evidence also indicates that significant health consequences, including higher rates of serious respiratory complications and higher rates

of admission to the Neonatal Intensive Care Unit (NICU), are more likely to occur in babies born by cesarean.^{13,15-19} Furthermore, cesarean birth remains a barrier to early breastfeeding support, delays the first feeding, and may interfere with early skin-to-skin contact, all of which adversely affect the ability to breastfeed exclusively.^{3,10-12}

The Cost of Cesarean Birth

The financial burden of cesarean extends well beyond the surgery itself. The costs are significant for insurers, employers, taxpayers, the government, and ultimately the consumer. Studies of actual payments to hospitals and providers indicate that each cesarean costs \$5,000 to \$10,000 more than vaginal birth.² Most people with a previous cesarean will undergo a second or third cesarean birth, further increasing cost. An economic model created in collaboration with the Purchaser Business Group on Health conservatively estimates a potential annual savings in California of \$80 million to \$440 million, depending on the rate of cesarean reduction.¹³

California's Journey

The *Toolkit to Support Vaginal Birth and Reduce Primary Cesareans* was published in 2016. This toolkit represents a collaborative effort by a diverse task force of over fifty experts, including obstetricians, anesthesiologists, midwives, labor nurses, doulas, patient advocates, childbirth education professionals, public health professionals, policymakers, and health care purchasers. It is a comprehensive, evidence-based, how-to guide to reducing avoidable cesarean births in the Nulliparous Term Singleton Vertex (NTSV) population.

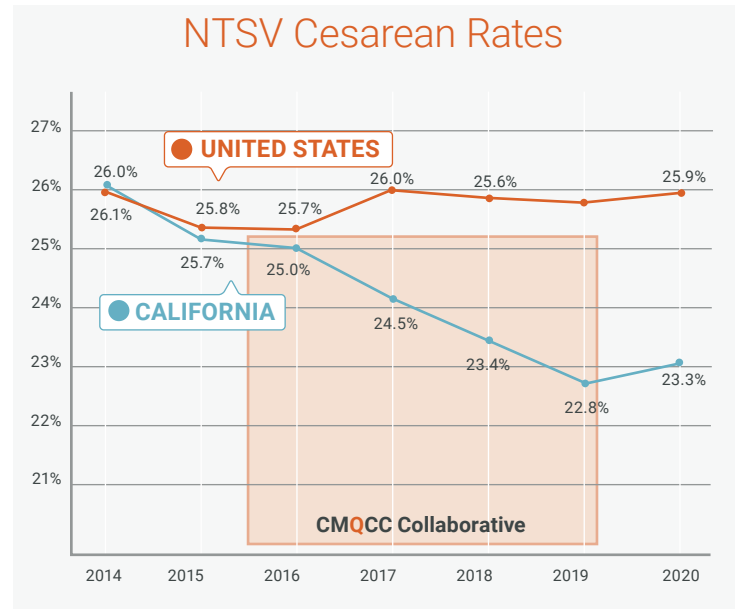
When the CMQCC Supporting Vaginal Birth Task Force began its work in 2015, a primary motivation for creating the toolkit was the significant variation in NTSV cesarean rates across California. For example, in 2013, the Los Angeles region had the highest average NTSV cesarean birth (PC-02) rate of 33.1%, with 49 percentage points separating the facilities with the highest and lowest cesarean rates.² However, people giving birth in the North Bay Region (Solano, Napa, and Sonoma counties), had a considerably lower average NTSV cesarean rate of 22.1% and experienced much less variation, with a difference of only 10 percentage points between facilities with the highest and lowest rates.² Large variation also existed between similar hospitals and even between providers within

single facilities. These variations indicated that the patient's risk level was not driving the high rates of NTSV cesarean within certain facilities, nor was patient request. Instead, various cultural and clinical components were at play, including variations in practice style and clinical decision making.²⁰

Between 2016 to 2018, CMQCC led a large, statewide collaborative of 91 birthing hospitals in California. Hospitals with NTSV cesarean rates above the Healthy People 2020 goal of 23.9% (along with two sister campuses of two selected hospitals) were invited to participate. At the same time, CMQCC coordinated a series of statewide activities with outside stakeholders that focused on transparency, public agenda setting, consumer outreach, and financial incentives by several payers. These activities had a dramatic effect. By the end of 2019, NTSV cesarean rates in California had dropped to 22.8%, down from 26% in 2014 (Figure 1). A subsequent safety study of the first two cohorts of the hospital collaborative analyzed rates of chorioamnionitis, blood transfusions, third- or fourth-degree lacerations, operative vaginal deliveries, severe unexpected newborn complications (UNC) (PC-06.1), and 5-minute Apgar scores. This safety study revealed that none of the six safety measures showed any statistically significant difference between 2015 to 2017. **No measure was statistically worse, and the rate of severe UNC declined.**²¹ This study was essential in showing that primary cesareans

could be safely reduced when strategies are specific to the needs of each hospital and aimed at improving outcomes through a patient-centered approach.

Figure 1. NTSV Cesarean Rates in the United States and California, 2014-2020

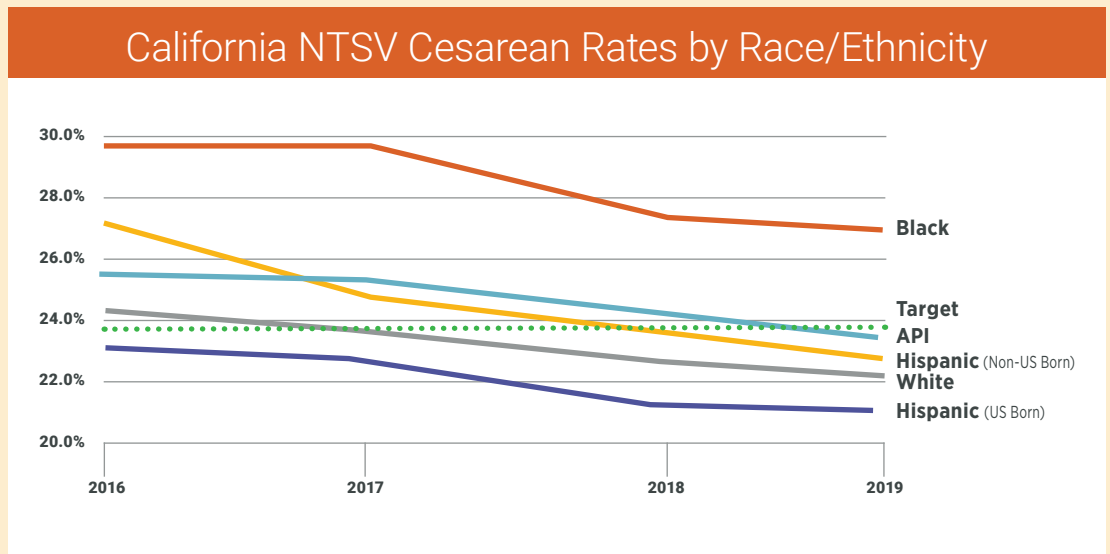


Source of US Data: National Vital Statistics System – Natality (NVSS-N), CDC/NCHS
Source of CA Data: CMQCC Maternal Data Center based on linked patient discharge and birth certificate data

Strategies that Consider the Complex Root Causes of Disparate Birth Outcomes

While the data showed a decrease in overall NTSV cesarean, it also revealed a disturbing trend of lingering racial inequity, particularly for Black birthing people in the state, whose NTSV cesarean rates declined overall but remain significantly higher than their white counterparts (Figure 2).

Figure 2. California NTSV Cesarean Rates by Race Ethnicity



Source: Department of Health Care Access and Information, 2019.

CMQCC is committed to our mission of ending preventable morbidity, mortality, and racial disparities in California maternity care. This mission will not be complete until the disparity gap is closed. During our recent pilot birth equity initiative, CMQCC adopted the definition of birth equity by Dr. Joia Crear-Perry, Founder and President of the National Birth Equity Collaborative. This definition explains that birth equity is “the assurance of the conditions of optimal births for all people with a willingness to address racial and social inequities in a sustained effort.”

Moving forward, it is clear that disparities in NTSV cesarean and other birth outcomes – especially racism-based disparities – can only be remedied by relationships that shift power and see the patient not only as a member of the team, but an expert in their own care.²² Until recently, there has been a reluctance to include a participatory role for patients and communities as content experts in deciding which strategies should be amplified to reduce disparities, potentially reproducing the racism-based disparities we aim to eliminate.²³ The first iteration of the *Toolkit to Support Vaginal Birth and Reduce Primary Cesareans* began a much-needed discussion about shared decision making. Six years after the toolkit’s first publication, community leaders are issuing a clarion call demanding strategies that consider the complexity of disparities and their root causes.^{24,25} A recent report by the National Partnership for Women and Families also showed that birthing people in California explicitly desire midwifery and doula care.²⁶

To support these continued efforts, we have added Section V to the *Toolkit to Support Vaginal Birth and Reduce Primary Cesareans*. This section focuses on team-based care with the integration of midwives and doulas as a standard complement within a highly functioning system. This new section will also consider – even in the absence of midwives and doulas – the benefit of using a universal physiologic approach with all essentially healthy birthing people to decrease unnecessary interventions and thus improve overall outcomes.^{27,28}

Together, Improvement Is Possible

Multiple strategies are necessary to reduce cesarean rates. Changes in clinical practice represent only one component. Other critical pressure points must come to bear, including (but not limited to) payment reform, consumer knowledge and expectations, transparency of hospital and provider-level data (all of which are discussed in the toolkit), and more. A national effort to reduce cesarean rates and disparities in birth outcomes is currently mounting from many collective, cohesive fronts. Together, improvement is possible.

Key Strategies for Improving the Culture of Care, Awareness, and Education for Cesarean Reduction

1 Improve Quality of and Access to Childbirth Education

- Align hospital practices and philosophies with evidence-based childbirth education
- Collaborate to assess and mitigate barriers to childbirth education (including cost, time of day), and include flexible educational formats such as high quality web content or interactive web-based learning
- Implement prenatal care models that efficiently integrate comprehensive pregnancy and childbirth education into routine visits, such as group prenatal care

2 Improve Communication through Shared Decision Making at Critical Points in Care

- Train providers, nurses, and staff on the essential elements of effective communication and shared decision making
- Design shared decision making discussions around the major decision points that impact the risk for cesarean, and effectively and routinely incorporate these discussions into regular prenatal visits
- Improve the shared decision making process through the utilization of high-quality, evidence-based decision aids in consumer-preferred formats specific to the patient's literacy level
- Adapt the clinical environment in order to integrate patient engagement and shared decision making into routine care (such as adjusting workflows to allow ample time for questions and educational opportunities)
- Respect and value differences in culture and religious beliefs

3 Bridge the Provider Knowledge and Skills Gap

- Improve the content of professional education and continuing education to support a "wellness approach" to obstetric care for the majority of people giving birth, including a redesign of standard curriculum to include principles of physiologic childbearing and a greater focus on the reduction of routine interventions for low-risk patients
- Incorporate interprofessional training and mentorship of nursing and medical students, nurse-midwifery graduates, and medical residents to foster a generational change in how routine obstetric care is delivered
- Ensure that all providers and nurses maintain the critical skills necessary to support vaginal birth
- Create a culture of transparency for hospital and provider-level data

4 Improve Support from Senior Hospital Leadership and Harness the Power of Clinical Champions

- Utilize the power of hospital leadership at all levels (e.g., executive and departmental) to promote an environment of continuous quality improvement
- Create, nurture, and sustain a core group of enthusiastic clinical champions

5 Transition from Paying for Volume to Paying for Value

- Implement alternative payment models (APMs) that reward quality, reduce incentives to perform cesarean deliveries, and focus on coordinated patient-centered care

Key Strategies for Supporting Intended Vaginal Birth

1 Implement Institutional Policies that Uphold Best Practices in Obstetrics, Safely Reduce Routine Interventions in Low-Risk People, and Consistently Support Vaginal Birth

- Perform a comprehensive review of existing unit policies and edit such policies to provide a consistent focus on supporting vaginal birth

2 Implement Early Labor Supportive Care Policies and Establish Criteria for Active Labor Admission

- Implement policies that support the physiologic onset of active labor, reduce stress and anxiety for the patient and family, and improve coping and pain management
- Implement written policies that establish criteria for active labor admission, versus continued observation of labor status and/or discharge home
- Give adequate anticipatory guidance during the prenatal period about early labor expectations and the safety of completing early labor at home
- Educate patients and families on supportive care practices and comfort measures to facilitate completion of early labor at home

3 Improve the Support Infrastructure and Supportive Care during Labor

- Improve nursing knowledge and skill in supportive care techniques that promote comfort and coping
- Improve unit infrastructure and availability of support tools
- Improve assessment of pain and coping
- Remove staffing and documentation barriers to supportive bedside care
- Educate and empower spouses, partners, and families to provide supportive care

4 Encourage Partnership with Doulas and Work Collaboratively to Provide Labor Support

- Integrate doulas into the birth care team (see Part V of this toolkit for more specific strategies)
- Improve teamwork, communication, and collegial rapport between nurses, providers, and doulas in order to promote safe, patient-centered care and continuous labor support

5 Utilize Best Practice Recommendations for Laboring Patients with Regional Anesthesia (Epidural, Spinal, and Combined Spinal Epidural)

- Do not avoid or delay placement of epidural anesthesia as a method of reducing risk for cesarean birth
- There is no arbitrary cervical dilation that must be met in order to administer epidural anesthesia
- The patient should be assisted in changing position at least every 20 minutes to assist necessary fetal rotation
- Allow for longer durations of the second stage of labor for patients with regional anesthesia (e.g., 4 hours in nulliparous people, 3 hours in multiparous people), as long as maternal and fetal statuses remain reassuring
- Allow for passive descent when there is no urge to push (delayed pushing until there is a stronger urge to push, generally 1-2 hours after complete dilation)
- Preserve as much motor function as possible by administering the lowest concentration of epidural local anesthetic necessary to provide adequate maternal pain relief
- Turning an epidural off during the second stage of labor likely has minimal beneficial effect on the length of the second stage
- Utilize patient-controlled epidural anesthesia (PCEA) with background maintenance infusion that is intermittent or continuous (for laboring patients, this is superior to PCEA alone and continuous infusion epidural)

6 Implement Intermittent Monitoring Policies for Low-Risk People

- Implement policies that include a risk assessment tool, or checklist with exclusion criteria, to assist in identifying patients for which intermittent auscultation or intermittent EFM is appropriate
- Modify standing admission orders to reflect the use of intermittent auscultation or EFM as the default mode of monitoring for people who do not meet exclusion criteria
- Implement initial and ongoing training and education of all nurses and providers on intermittent auscultation and/or intermittent EFM procedures
- Provide patient education for the use of intermittent methods of monitoring and engage in shared decision making in order to determine the most appropriate method for each patient
- Ensure appropriate nurse staffing to accommodate intermittent monitoring

7 Implement Current Treatment and Prevention Guidelines for Potentially Modifiable Conditions

- Assess fetal presentation by 36 weeks gestation and offer external cephalic version (ECV) to patients with a singleton breech fetus
- Ensure initial training and ongoing physician competency in ECV
- Offer oral suppressive therapy at 36 weeks gestation, or within 3-4 weeks of anticipated delivery, to all patients with a history of genital herpes, including those without active lesions during the current pregnancy
- A cesarean birth is not necessary for people with a history of genital herpes but no active genital lesions at the time of labor

Key Strategies to Manage Labor Abnormalities and Safely Reduce Cesarean Births

1 Create Highly Reliable Teams and Improve Interprofessional Communication at Critical Points in Care

- Develop protocols and institutional policies that promote and support teamwork and effective communication
- Create a culture of collegiality and mutual respect
- Implement formal programs for the development and ongoing evaluation of teamwork and communication (e.g., TeamSTEPPS®)
- Promote standardized communication techniques to improve efficiency and clarity of communication (e.g., SBAR)
- Promote situational awareness through impromptu huddles, team rounds, and debriefings
- Develop Rapid Response Teams

2 Implement Standard Diagnostic Criteria and Standard Responses to Labor Challenges and Fetal Heart Rate Abnormalities

- Utilize standard diagnostic criteria and algorithms to reduce and respond to labor dystocia
- Implement policies for the safe use of oxytocin
- Endorse NICHD categories and standardize responses to abnormal fetal heart rate patterns and uterine activity
- Standardize induction of labor (e.g., patient selection, scheduling, and induction process)

3 Utilize Operative Vaginal Delivery in Eligible Cases

- Ensure training and ongoing physician competency in forceps and vacuum extraction

4 Identify Malposition and Implement Appropriate Interventions

- Identify malposition early (ideally by early second stage of labor), and employ the use of ultrasound if unable to clearly define the position of the vertex with digital exam and Leopold's Maneuvers
- Promote rotation of the vertex from an OP position with maternal positioning including during second stage, and manual or instrumented rotation by an experienced, well-trained provider
- As long as incremental descent is being made, and fetal and maternal statuses permit, allow for longer durations of the second stage (e.g., at least 4 hours for nulliparous patients and at least 3 hours for multiparous patients)

5 Consider Alternative Coverage Programs (Laborist Models and Physician/Midwife Collaborative Practice Models)

- Laborist models of care promote on-site readiness, remove the time-based and economic incentives to perform cesareans, and lend to the retention of core knowledge and skills
- Midwifery care has been identified as an underused maternity service, with the potential to curb costs, improve overall outcomes, and reduce rates of cesarean
- See Part V for more specific strategies for midwifery integration

6 Develop Systems that Facilitate Safe, Patient-Centered Transfer of Care Between the Out-of-Hospital Birth Environment and the Hospital

- See Part V for specific strategies

7 Reduce Liability-Driven Decision Making by Focusing on Quality and Safety

- Educate providers on the benefits of a well-designed quality improvement program to reduce cesarean
- Specifically address the situations that contribute the most to obstetric liability claims
- Well-chosen cesareans are sometimes necessary to prevent avoidable maternal and fetal harm. The goal of a quality improvement program to reduce cesarean is not to prevent cesarean birth "at all costs"

Key Strategies for Using Data to Drive Reduction in Cesareans

1 Strategies to Make Data Compelling to Providers

- Provide timely data to providers in a persuasive manner using display tools, background information, benchmarks, historical data, and broader outcome data (such as infant outcomes and maternal morbidity measures)
- Present comparative data in a manner that demonstrates a sense of urgency
- Present identical measures across multiple levels – MD / practice group / hospital / medical group / health plan / purchaser / region / state
- When presenting the data, include a goal that is attainable/achievable by showing that similar providers have already reached the goal
- “Package” the data for the audience – data can be supplemented by patient stories, not just graphs and figures

2 Strategies to Assist Organizations to Understand Data Associated with their Hospital, and Identify Steps to Improve Care

- Create meaningful sub-measures that indicate the drivers for the cesarean rate and benchmark these against other facilities
- For internal hospital use, create provider-level rates to help utilize “peer pressure” and identify those who would benefit from specific educational programs including reviews of their processes of care
- Use rapid-cycle data (30-75 days old) to provide immediate feedback for QI projects including, but not limited to, peer comparisons (health system, geographic, level of facility)
- Expand use of balancing measures to document lack of harm from interventions
- Disaggregate data by race/ethnicity to identify where disparities exist (payor, language, and social vulnerability indices such as patient address/region are other useful data sets for identifying disparities but may not be readily available for clinician use at the department level)

3 Strategies to Assist Providers to Understand their Cesarean Rates and be Comfortable with the Quality of the Data

- Provider-level data is a very important tool for driving QI but opens new issues of attribution, especially in facilities that have midwives or family medicine physicians who perform vaginal births with covering obstetricians performing the cesarean deliveries
- Create data tools that allow practitioners to “roll-up” outcomes together (group statistics) or reassign attribution within the data set
- Create tools for sub-analysis of physician-level rates to help providers understand where improvement opportunities may exist

4 Strategies to Engage Patients, Employers, and the General Public in the Improvement Project

- Public release of selected hospital-level measures that have been well vetted
- Provide a lay explanation of the measures
- Widely distribute these measures through multiple media channels to capture the greatest attention

Key Strategies for Midwifery Integration

1 Administrative Strategies

- Hire or contract with midwives to establish a team-based model for all patients (*See resources in Table 44*)
- Prioritize a diverse midwifery workforce – one that reflects the community being served
- Develop interdisciplinary leadership opportunities for midwives in your department
- Consider ideas for future quality improvement projects from midwives in your department
- Encourage midwives who attend births at your facility to lead quality improvement efforts, especially those efforts that promote low intervention care to improve outcomes
- Midwives involved in quality improvement efforts should have access to the Maternal Data Center (MDC)
- Foster a departmental culture that values reduced intervention for low-risk birthing people
- Privilege community midwives (midwives who attend births in homes or birth centers) at your hospital to enhance continuity of care and seamless transfer when needed
- Collect and analyze quality metrics for all provider types

2 Clinical Strategies

- Intentionally cultivate a culture on the birthing unit that values reduced intervention and physiologic birth through the standardization of clinical practices such as intermittent auscultation, mobility in labor, continuous labor support, and preservation of the patient-baby dyad
 - *See expanded content on supporting vaginal birth in Section II of this toolkit*
 - *ACOG's Committee Opinion #766– Approaches to Limit Intervention During Labor and Birth*
 - *Appendix T: Model Policies for Intermittent Auscultation*
 - *Hands-On Understanding and Demonstration of Labor Support (HUDLS) is an e-learning tool available to CMQCC member hospitals at <https://accounts.cmqcc.org>*
- Utilize a “right care at the right time by the right provider” approach to all patients – in a team-based model, this means care is led by the clinician who is “closest to the patient and whose scope best matches the clinical situation”
- Review hospital bylaws and ensure that midwives privileged at your facility can practice to the highest level allowed by state law; remove requirements that diminish autonomy such as physician co-signature of basic orders and progress notes
- Establish explicit standards or expectations for team-based physician-midwife care that is collaborative, collegial, and utilizes ACOG's guidelines for collaborative care (*see Figure 14*)
- Create mutually agreed-upon clinical practice guidelines that can serve as the “language of collaboration.” Ensure that these policies and guidelines are not more restrictive than what is legally permissible in the state and that midwives retain the ability to practice according to the midwifery philosophy of care
- Improve systems that facilitate safe, patient-centered transfer of care between the community birth settings and the hospital (*see Table 43 for specific strategies*)

3 Educational Strategies

- Department-level educational opportunities should include a deeper dive into the components and strategies for successful team-based care
- “Shadowing” opportunities may be useful in facilities where team-based care is new, or in places where physiologic birth is historically rare. In this way, physicians and midwives can learn from each other and see how/where their practices complement each other
- Create expanded opportunities for department-wide interprofessional education and casual team-building opportunities to learn from all members of the care team and build better relationships across professions
- Debrief about – and learn from – normal, physiologic births
- Ensure that provider and nursing education not only addresses racism-based disparities in maternity care and implicit bias, but also an appreciation for the contribution of midwifery care to curbing this trend

Key Strategies for Integration and Improved Safety Across Birth Settings

- Create a standardized system of consultation between hospital-based and community birth providers upon transfer of care
- Promote timely access to consultation, continuous risk assessment, and seamless, respectful transfer of care from the community to the hospital setting throughout the entire care journey (antepartum, intrapartum, and postpartum)
- Create pathways and processes for ease of antenatal assessment or intervention, such as scheduling antenatal testing or induction of labor when needed
- Privilege community midwives (midwives who attend births in homes or birth centers) at your hospital to enhance continuity and seamless transfer when needed
- Promote timely and efficient transfer by directly admitting patients to the labor floor rather than through the Emergency Department
- Adhere to elements of “Just Culture” when responding to an emergency community birth transfer; regardless of emotions felt in the heat of the moment, all providers and staff should treat each other with respect and compassion
- Respect autonomy and destigmatize the choice to safely birth at home or in a birth center
 - Labeling a patient or situation as a “failed home birth” is depersonalizing and ignores that transfer to the hospital is a “right care at the right time” approach in an integrated system that utilizes differing levels of care
 - “Community birth” is preferable to the phrase “out-of-hospital birth” because it normalizes birth in all settings
 - Labeling midwives who are not nurses as “lay midwives” is inaccurate and devalues their training and role in an integrated system
- Understand that transferring to the hospital setting can be traumatic for patients and – without supportive systems in place – may negatively alter a person’s labor course and birth experience
- Treat community birth providers respectfully and as colleagues with shared goals
- Keep the patient and newborn together during transfer and after admission to the hospital; only separate the patient and newborn if there is a substantial concern for safety or well-being that requires separation
- Hold joint learning opportunities such as debriefs, grand rounds, and meet-and-greets for providers across birth settings to establish and deepen relationships, improve transfer and care coordination, and create shared expectations
- Establish a case review process that allows equal contribution and engagement from providers in all birth settings
- Obtain clinical information and report directly from the midwife
- Evaluate your current system for emergency community birth transfers with community birth input, create guidelines or standardized processes for emergency transfer
- Implement practice drills for emergency community birth transfer and include EMS and community birth midwives (see resources in *Table 44*)
- Consider the community midwife as part of the support team even after hospital transfer; hospital policies should reflect that the transferring midwife is not a “visitor” in the traditional sense (specifically, they should not bound by time limits or other visitor rules that would restrict their ability to remain with the patient)
- Coordinate postpartum care appointments and sending of relevant medical records with the community midwife

Key Strategies for Integrating Doulas Into the Birth Care Team

1 Administrative Strategies

- Foster a departmental culture that values physiologic birth and reduced intervention for normal, low-risk birthing people
- Work together with local doula organizations to provide consistent, accessible support and resources to families
- Connect with community-based doula programs and show interest in supporting and welcoming community-based doulas at your facility
- Explore the feasibility of establishing a hospital-based doula program at your facility that prioritizes a doula workforce that reflects the community being served
- Even if your hospital already has a doula program, do not prevent or restrict the ability of patients to bring their own doula
- All doulas – whether community-based or hospital volunteers – should be empowered to remain independent champions for patients
- Hospital policies should reflect that doulas are not “visitors” in the traditional sense (specifically, they should not bound by time limits or other visitor rules that would restrict their ability to remain with the patient)

2 Clinical Strategies

- Intentionally cultivate a culture on the birthing unit that values physiologic birth through the standardization of clinical practices such as intermittent auscultation, mobility in labor, continuous labor support, and preserving the patient-baby dyad. Resources include:
 - Section II of this toolkit
 - ACNM’s Pearls of Physiologic Birth
 - ACOG’s Approaches to Limit Intervention During Labor and Birth
- Understand and value the doula’s extensive knowledge of labor support techniques as a complement to technical and medical skill sets
- Establish expectations for how providers, nurses, and doulas interact and support each other, and consistently model collegial rapport and open communication
- Develop unit guidelines or educational materials that delineate a mutual understanding of roles and invite local doulas to help create these materials
 - Share these materials with nurses and providers and invite local community groups to share the materials widely with other doulas and patients
 - For facilities with hospital-based doula programs, posting this information at the bedside may help patients to understand the role of their doula
- Foster a culture of patient-centered care that values shared decision making and autonomy and the understanding that doulas are there to consistently advocate on behalf of the patient
- Engage in mutual learning at the time of clinical interaction. Doulas and nurses can learn an enormous amount from each other, and patients also benefit from this shared interaction
 - Some doulas desire to learn more about the medical and nursing aspects of labor
 - Doulas can teach evidence-based, culturally informed techniques that are not often taught in traditional medical and nursing training
- Update policies to include doulas as support people in the operating room if the patient desires

3 Educational Strategies

- Department educational opportunities should include a deeper dive into the components and strategies for successful team-based care that incorporate doulas as part of the team
- Create expanded opportunities for department-wide, interprofessional education that includes doulas from your community or a doula organization with whom you have a relationship
- Debrief about – and learn from – normal, physiologic birth where doula care was, or could have been, pivotal in the patient’s progress and outcome
- Ensure that provider and nursing education includes racism-based disparities in maternity care, implicit bias, and an understanding of the role of doula care in curbing this trend

1. Safe reduction of primary cesarean birth. Web page. Alliance for Innovation on Maternal Health. Accessed Aug 15, 2022, <https://saferbirth.org/psbs/safe-reduction-of-primary-cesarean-birth/>
2. Report: Variation in NTSV c-section rates among California hospitals. 2015. Accessed Aug 16, 2022. https://www.leapfrog-group.org/sites/default/files/Files/PBGH_NTSV-C-Section-Variation-Report.pdf
3. Main EK, Morton CH, Melsop K, Hopkins D, Giuliani G, Gould JB. Creating a public agenda for maternity safety and quality in cesarean delivery. *Obstet Gynecol.* Nov 2012;120(5):1194-8. doi:<http://10.1097/AOG.0b013e31826fc13d10.1097/aog.0b013e31826fc13d>
4. Obstetric care consensus no. 1: safe prevention of the primary cesarean delivery. *Obstet Gynecol.* Mar 2014;123(3):693-711. doi:[10.1097/01.AOG.0000444441.04111.1d](https://doi.org/10.1097/01.AOG.0000444441.04111.1d)
5. Hamilton BE, Martin JA, Osterman MJ, Curtain SC. Births: Preliminary Data for 2014. *Natl Vital Stat Rep.* Jun 2015;64(6):1-19.
6. Basile Ibrahim B, Knobf MT, Shorten A, et al. "I had to fight for my VBAC": A mixed methods exploration of women's experiences of pregnancy and vaginal birth after cesarean in the United States. *Birth.* Jun 2021;48(2):164-177. doi:[10.1111/birt.12513](https://doi.org/10.1111/birt.12513)
7. Silver RM, Landon MB, Rouse DJ, et al. Maternal morbidity associated with multiple repeat cesarean deliveries. *Obstet Gynecol.* Jun 2006;107(6):1226-32. doi:[10.1097/01.Aog.0000219750.79480.84](https://doi.org/10.1097/01.Aog.0000219750.79480.84)
8. Lobel M, DeLuca RS. Psychosocial sequelae of cesarean delivery: review and analysis of their causes and implications. *Soc Sci Med.* Jun 2007;64(11):2272-84. doi:[10.1016/j.socscimed.2007.02.028](https://doi.org/10.1016/j.socscimed.2007.02.028)
9. Declercq E, Barger M, Cabral HJ, et al. Maternal outcomes associated with planned primary cesarean births compared with planned vaginal births. *Obstet Gynecol.* Mar 2007;109(3):669-77. doi:[10.1097/01.Aog.0000255668.20639.40](https://doi.org/10.1097/01.Aog.0000255668.20639.40)
10. Chalmers B, Kaczorowski J, Darling E, et al. Cesarean and vaginal birth in Canadian women: a comparison of experiences. *Birth.* Mar 2010;37(1):44-9. doi:[10.1111/j.1523-536X.2009.00377.x](https://doi.org/10.1111/j.1523-536X.2009.00377.x)
11. Rowe-Murray HJ, Fisher JR. Baby friendly hospital practices: cesarean section is a persistent barrier to early initiation of breastfeeding. *Birth.* Jun 2002;29(2):124-31. doi:[10.1046/j.1523-536x.2002.00172.x](https://doi.org/10.1046/j.1523-536x.2002.00172.x)
12. Zanardo V, Svegliado G, Cavallin F, et al. Elective cesarean delivery: does it have a negative effect on breastfeeding? *Birth.* Dec 2010;37(4):275-9. doi:[10.1111/j.1523-536X.2010.00421.x](https://doi.org/10.1111/j.1523-536X.2010.00421.x)
13. Main E, Morton C, Hopkins D, Giuliani G, Melsop K, Gould J. Cesarean deliveries, outcomes, and opportunities for change in California: Toward a public agenda for maternity care safety and policy. 2011.
14. Birth prevalence of cerebral palsy. Web page. Centers for Disease Control (CDC). Accessed September 8, 2022, <https://www.cdc.gov/ncbddd/cp/features/birth-prevalence.html#:~:text=Main%20Findings&text=The%20birth%20prevalence%20of%20CP,555%20children%20born%20in%202002.>
15. Kamath BD, Todd JK, Glazner JE, Lezotte D, Lynch AM. Neonatal outcomes after elective cesarean delivery. *Obstet Gynecol.* Jun 2009;113(6):1231-1238. doi:[10.1097/AOG.0b013e3181a66d57](https://doi.org/10.1097/AOG.0b013e3181a66d57)
16. Villar J, Carroli G, Zavaleta N, et al. Maternal and neonatal individual risks and benefits associated with cesarean delivery: multicentre prospective study. *Bmj.* Nov 17 2007;335(7628):1025. doi:[10.1136/bmj.39363.706956.55](https://doi.org/10.1136/bmj.39363.706956.55)
17. Go MD, Emeis C, Guise JM, Schelonka RL. Fetal and neonatal morbidity and mortality following delivery after previous cesarean. *Clin Perinatol.* Jun 2011;38(2):311-9. doi:[10.1016/j.clp.2011.03.001](https://doi.org/10.1016/j.clp.2011.03.001)
18. Black M, Bhattacharya S, Philip S, Norman JE, McLernon DJ. Planned Cesarean Delivery at Term and Adverse Outcomes in Childhood Health. *Jama.* Dec 1 2015;314(21):2271-9. doi:[10.1001/jama.2015.16176](https://doi.org/10.1001/jama.2015.16176)
19. Sinha A, Bewley S, McIntosh T. Myth: babies would choose prelabour caesarean section. *Semin Fetal Neonatal Med.* Oct 2011;16(5):247-53. doi:[10.1016/j.siny.2011.03.003](https://doi.org/10.1016/j.siny.2011.03.003)
20. MacDorman MF, Menacker F, Declercq E. Cesarean birth in the United States: epidemiology, trends, and outcomes. *Clin Perinatol.* Jun 2008;35(2):293-307, v. doi:[10.1016/j.clp.2008.03.007](https://doi.org/10.1016/j.clp.2008.03.007)
21. Main E, Chang SC, Cape V, Sakowski C, Smith H, Vasher J. Safety Assessment of a Large-Scale Improvement Collaborative to Reduce Nulliparous Cesarean Delivery Rates. *Obstet Gynecol.* Apr 2019;133(4):613-623. doi:[10.1097/aog.00000000000003109](https://doi.org/10.1097/aog.00000000000003109)
22. Hardeman RR, Karbeah J, Kozhimannil KB. Applying a critical race lens to relationship-centered care in pregnancy and childbirth: An antidote to structural racism. *Birth.* Mar 2020;47(1):3-7. doi:[10.1111/birt.12462](https://doi.org/10.1111/birt.12462)
23. Scott K. Prioritizing patient narratives & community wisdom in quality improvement & implementation science. Webinar presentation. Accessed June 26, 2022, <https://tinyurl.com/3hxf3nk624>. Reversing the U.S. Maternal Mortality Crisis: A Report of the Aspen Health Strategy Group. 2021.
25. Crear-Perry J, Hernández-Cancio S. Saving the lives of moms and babies: Addressing racism and socioeconomic influencers. 2021. <https://www.nationalpartnership.org/our-work/resources/health-care/saving-the-lives-of-moms-and.pdf>
26. Sakala C, Declercq E, Turon JM, Corry MP. Listening to mothers in California: A population-based study of women's childbearing experiences. 2018. <https://www.chcf.org/wp-content/uploads/2018/09/ListeningMothersCAFullSurveyReport2018.pdf>
27. Committee Opinion No. 687: Approaches to Limit Intervention During Labor and Birth. *Obstet Gynecol.* Feb 2017;129(2):e20-e28. doi:[10.1097/aog.0000000000001905](https://doi.org/10.1097/aog.0000000000001905)
28. Pearls of physiologic birth. American College of Nurse-Midwives 2019. Accessed July 12, 2022. <https://www.midwife.org/pearls>

How To Use This Toolkit

This toolkit offers a menu of various evidence-based strategies for the reduction of primary cesarean birth that can be adapted to fit the circumstances and resources of each individual hospital. The toolkit includes a comprehensive discussion of strategies to reduce cesareans, corresponding tools that can be implemented within facilities, slide decks for professional education, and lessons learned from California hospitals that have achieved and sustained a low NTSV cesarean birth rate. While the majority of the toolkit is meant to guide individual hospital and provider-level change, it also includes guidance to inform state, county and hospital system-level change.

For purposes of this toolkit, the term “nurse” is used to refer to labor and delivery nurses while the collective term “providers” includes obstetricians, family medicine physicians, nurse-midwives, and other advanced practice obstetric clinicians.

Getting Started

Quality improvement programs for cesarean reduction will differ between facilities. The expectation is not that each facility will implement every tool or concept introduced in this toolkit. Rather, each facility should implement and/or adapt the tools and concepts that will best improve NTSV cesarean rates according to the unique needs of the organization.

For ease of navigation, each section of the toolkit includes a road map to guide the user through the content of that particular section and the available tools. Furthermore, all tools are arranged in order of toolkit section in Appendix C, and arranged by topic in Appendix D. For further guidance on implementation, visit the implementation guide located alongside this toolkit on the CMQCC website.

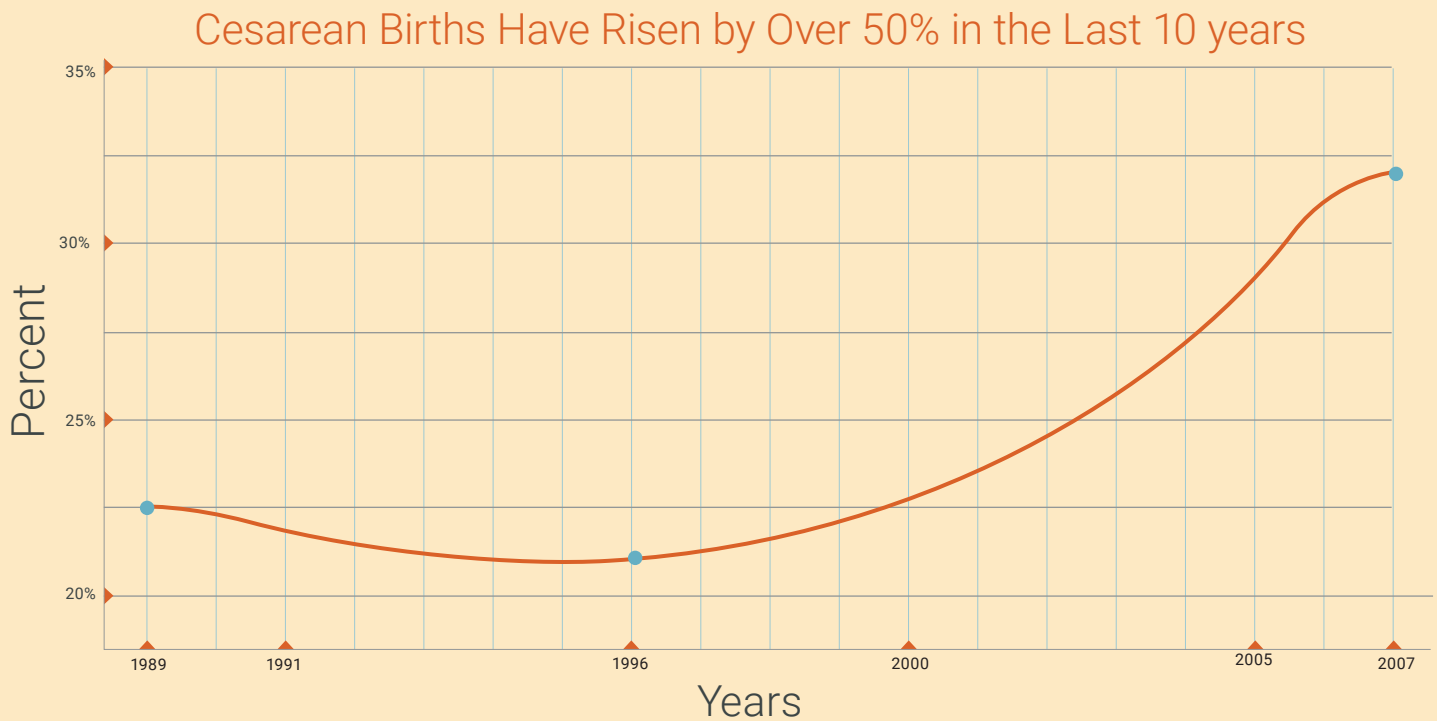
The Case for Improvement in Cesarean Birth Rates

Introduction

No one disputes that cesarean birth can be a lifesaving procedure, with obvious benefits to mother and baby when vaginal birth is no longer safe. Nonetheless, the extraordinary rise and remarkable variation in rates of cesarean birth create concern for both the quality and cost of maternity care.¹⁻⁴ In addition, the Joint Commission (TJC) called the rise in cesarean an “epidemic” and noted “there are no data that higher rates improve any outcomes, yet the C-section rates continue to rise.”⁵ It is well-recognized that variation in care represents an opportunity for improvement in practice. Setting aside multiple gestations, breech presentations, and pregnancies complicated by prematurity, this toolkit will focus on the area with greatest variation and hence the greatest opportunity for impact—labor management of first births.



Figure 1. National Trend in Overall Cesarean Rates



NOTE: The total cesarean delivery rate is the percentage of all live births by cesarean delivery.
SOURCE: CDC/NCHS, National Vital Statistics System.

Landscape of Cesarean Birth in California and the United States (2016)

In the ten-year period from 1998 to 2008, cesarean birth rates in the United States rose 50%, from 22% to 33% of all births,⁴ making it the nation’s most common hospital surgery (*Figure 1*). Having the largest population and the largest number of births of any state, birth trends in California mirror the increased cesarean rates nationwide, with cesarean birth accounting for approximately one-third of all births.⁶

The most important group to focus on for both cesarean reduction and labor support is a population known as Nulliparous Term Singleton Vertex (NTSV). It is a standard population that presents the most favorable set of conditions for vaginal birth – women with a full-term, single baby in the head-down position (vertex), but is also the group that has the most labor complications—women having a first birth (nulliparous). It is also a population that can be compared between states, hospitals and even providers. Importantly, the NTSV population has been the largest contributor to the rise in cesarean rates, and exhibits the greatest variation for all sub-populations of cesarean births for both hospitals and providers.^{2,7}

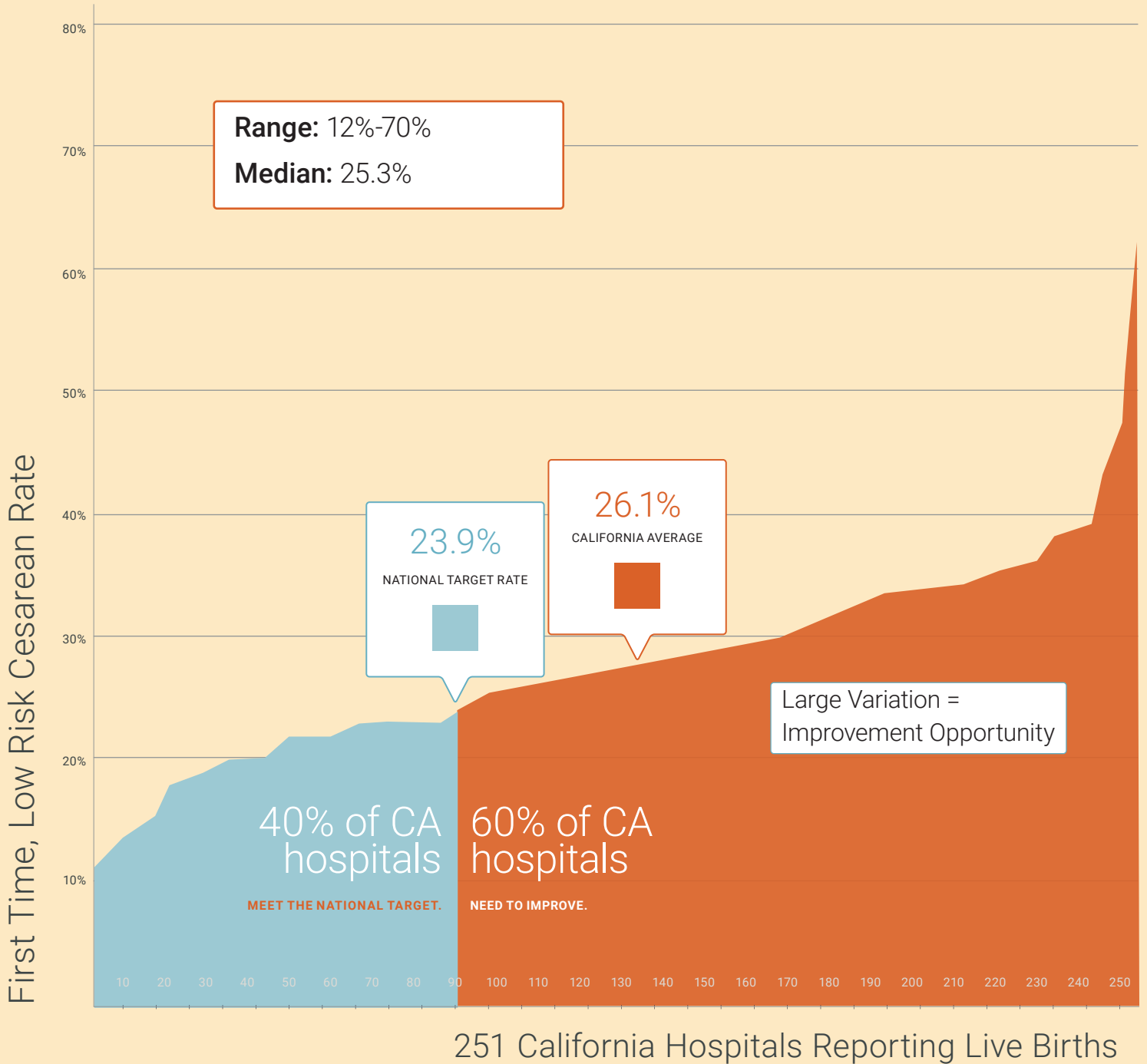
There is considerable variation in cesarean rates across California hospitals. For example, in 2013, the Los Angeles region had the highest average NTSV cesarean rate of 33.1%, with a range of 49 percentage points separating the facilities with the highest and lowest cesarean rates.² Women giving birth in the North Bay Region (Solano, Napa, and Sonoma counties), however, had a considerably lower average NTSV cesarean rate of 22.1% and experienced much less variation, with a difference of only 10 percentage points between facilities with the highest and lowest rates. Another way to conceptualize this variation is to say that women who gave birth in the Los Angeles region during that period were 50% more likely to deliver by cesarean than women in the North Bay region.²

Variation in NTSV cesarean rates is not only regional. Large variation also exists between hospitals with similar mixes of private and public insurances, and between same “type” facilities, such as similar teaching hospitals, public hospitals and so forth. These within-group variations indicate that the risk level or “type” of patient is not driving the high rates of NTSV cesarean within certain facilities, nor is maternal request. Rather, various cultural and clinical components are at play, including variations in practice style and clinical decision making.⁷

The most recent data from the CMQCC Maternal Data Center show an average NTSV cesarean rate of 26.1% in California. Additionally, 60% of California hospitals have an NTSV cesarean rate above the national target of 23.9% (*Figure 2*).

Figure 2. Variation in NTSV Cesarean Rates among 251 California Hospitals

Variation of NTSV Cesarean Rate Among 251 California Hospitals: 2014



SOURCE: CMQCC Maternal Data Center, 2014

Quality Maternity Care is at Stake

For most low-risk NTSV women, cesarean birth creates more risk – more hemorrhage, uterine rupture, abnormal placentation, and cardiac events (*Figure 3*). The biggest risk of the first cesarean may very well be the next and subsequent cesareans. The risk of uterine rupture, uterine atony, placenta previa, placenta accreta, and surgical adhesions all increase with each cesarean. By the third cesarean, the risk of placenta previa nearly triples, and roughly 40% of women with placenta previa will also have placenta accreta.⁸ Studies are currently underway

to further examine the psychological risks of cesarean. To date, psychological stress, anxiety, and post-traumatic stress disorder (PTSD) have been identified as potential risks of cesarean.⁹ Women also suffer from less acute but nonetheless significant other consequences: longer hospital stays, increased pain and fatigue, slower return to normal activities and productivity, and delayed and difficult breastfeeding.¹⁰⁻¹³

Risks of cesarean birth for neonates are equally

Figure 3. Summary of Maternal Risks Associated with Cesarean Birth^{4,8-30}

Maternal Risks of Cesarean Birth

Physiologic

LONG TERM & SUBSEQUENT

- Subsequent cesarean births
- Abnormal placentation (placenta previa and placenta accreta) resulting in increased risk of severe morbidity, life-threatening hemorrhage, and hysterectomy
- Uterine rupture
- Surgical adhesions
- Bowel injury
- Bowel obstruction
- Delayed interval from incision to birth (neonatal risk)

ACUTE

- Longer hospital stay
- Increased pain and fatigue
- Slower return to normal activities and productivity
- Delayed and difficult breastfeeding
- Anesthesia complications
- Postpartum hemorrhage
- Wound infection
- Deep vein thrombosis
- Maternal death

Psychological

ACUTE

- Delayed and/or ineffective bonding with neonate
- Maternal anxiety

LONG TERM & SUBSEQUENT PREGNANCIES

- Postpartum anxiety and depression
- Post Traumatic Stress Disorder (PTSD)

concerning (Table 1). With the exception of fetuses in breech presentation, neonates have reaped few benefits with the rising rate of cesarean birth.³¹ Cerebral palsy rates have remained unchanged in the past 15 years, and recent evidence indicates that significant health consequences, including higher rates of serious respiratory complications, higher rates of admission to the Neonatal Intensive Care Unit (NICU), and development of childhood asthma requiring hospitalization and inhaler use are more likely in babies born by cesarean.³¹⁻³⁶ Furthermore, cesarean birth remains a barrier to early breastfeeding support, delays the first feeding, delays or completely interferes with early skin-to-skin contact, all of which, adversely affect the ability to exclusively breastfeed.^{4,11-13}

Table 1. Summary of Neonatal Risks Associated with Scheduled Cesarean Birth^{11-13,32-36}

Neonatal Risks of Scheduled Cesarean Birth
Higher risk of respiratory morbidity (respiratory distress syndrome, transient tachypnea of the newborn, and infections)
Higher NICU admission rates
Prolonged length of stay in NICU
Increased risk of asthma requiring hospitalization and inhaler use in childhood
Difficulty with breastfeeding

In 2009, a paper entitled *2020 Vision for a High-Quality, High-Value Maternity Care System* was produced by Childbirth Connection in collaboration with a multidisciplinary, expert team of maternity care providers, payers, consumer advocates, and policymakers. This paper defined high-value, high-quality maternity care as “the consistent provision of woman-centered care grounded in the best available evidence of effectiveness with least risk of harm, and the best use of resources.”³⁷

Reducing the Cost of Care

In addition to the extensive health consequences noted above, the financial burden of cesarean extends well beyond the surgery itself. Moreover, the costs are significant for insurers, employers, taxpayers, the government, and ultimately

The overuse of cesarean birth as currently employed by the majority of hospitals across the nation could quite possibly be the single, largest barrier to consistently providing high-value, high-quality maternity care.

the consumer who shoulders the burden through deductibles and other out-of-pocket costs.³⁸ Private insurance, mostly employer-based group plans, finances approximately 50% of all births. California taxpayers, in addition to paying a portion of their own insurance, also shoulder a significant burden of costs through public health care assistance programs, with roughly 48% of births financed by Medicaid.^{31,39}

Cesarean birth is costly for many reasons. First, the procedure itself is expensive. Studies of actual payments to hospitals and providers indicate that each cesarean costs \$5,000 to \$10,000 more than a vaginal birth.² Secondly, most women will have more than one child. The vast majority of women with a previous cesarean will undergo a second or third surgery, so the actual cost of a primary cesarean should be doubled or even tripled to reflect the true direct cost per patient over time. The California Maternal Quality Care Collaborative (CMQCC), in collaboration with the Pacific Business Group on Health (PBGH), developed a high-level economic model of the financial burden of cesarean birth. Using this model, conservative estimates show a potential annual savings in California of \$80 million to \$440 million, depending on the rate of cesarean reduction.³¹ The 2009 cesarean rates used for these calculations are considerably lower than current rates and the costs do not include those for hospital readmissions from complications directly resulting from surgery, nor the cost of NICU admissions directly related to cesarean birth. Even a modest reduction in the overall rate of cesareans will yield a significant annual savings in health care spending, while simultaneously reducing unnecessary risk to women and babies.

Defining the Optimal Rate and Reversing the Trend in Cesarean Births

In response to the increasing rate of cesarean births and the resulting risks to mothers and babies, various stakeholders have mounted concerted efforts to reduce that rate and thereby to improve quality of care. In 1985, the World Health Organization proposed a target of 15% for the Total Cesarean Rate, noting that there was no evidence that a higher rate benefited mothers and babies. In 2000, the ACOG published a report on the trend in cesarean births, including a discussion on measurement that focused on the NTSV rate, with a proposed national goal of 15.5%. Healthy People 2010, the federal Health and Human Services project that defines health goals for the entire country every 10 years, followed ACOG's lead and focused on low-risk women (defined as term gestation, singleton fetus, vertex presentation), devising separate cesarean targets for low-risk women giving birth for the first time and low-risk women with a prior cesarean.³¹ The Healthy People 2010 cesarean target for low-risk women giving birth for the first time (NTSV) was set at 15%, but was not met nationally. With this in mind, 10 years later, the Healthy People 2020 NTSV target rate of 23.9% was created to reflect a more modest, attainable rate.^{4,40}

In 2011, CMQCC published a white paper, *Cesarean Deliveries, Outcomes, and Opportunities for Change in California: Toward a Public Agenda for Maternity Care Safety and Quality*.³¹ This paper outlined the use of the NTSV metric as the best measure for quality improvement. A focus on the NTSV population controls for risk factors and addresses the population that accounts for the most

variation between hospitals. The National Quality Forum (NQF) endorsed the NTSV metric in 2008, followed by The Joint Commission (TJC) in 2010. The metric has since been widely adopted, including by the Leapfrog Group, Centers for Medicare and Medicaid Services, and several states as part of their Medicaid quality initiatives.⁴¹ In January 2016, TJC required all hospitals with 300 or more births per year to report the perinatal care (PC) core measure set including PC-02, NTSV cesareans. Nationally, this means that more than 80% of hospitals are now required to report on NTSV cesareans.⁴²

In 2014, ACOG and the SMFM published the *Obstetric Care Consensus on Safe Prevention of the Primary Cesarean Delivery* that outlined 18 clinical strategies to reduce unnecessary cesareans.³ In 2015, the Alliance for Innovation on Maternal Health (AIM), a national, multi-stakeholder program, released the *Safe Reduction of Primary Cesarean Births Bundle*.¹ This bundle is meant to be a widely implemented, easily adopted set of strategies for the safe, evidence-based reduction of primary cesareans. Similarly, the ACNM is spearheading the Reducing Primary Cesareans project with associated bundles for reduction of cesarean births.⁴³ Clearly, a national agenda for the reduction of cesarean is mounting from many collective, cohesive fronts.

In This Section



KEY STRATEGIES

for Improving the Culture of Care, Awareness, and Education for Cesarean Reduction **31**



TOOLS

Appendices C & D – Various Web-based Tools and Model Policies **115-126**

Appendix E – CMQCC Birth Preferences Guide **127-129**

Appendix I – Model Informed Consent for Elective Cesarean Birth **141**



TABLES

Table 1. Summary of Neonatal Risks Associated with Scheduled Cesarean Birth **26**

Table 2. Factors Influencing the Culture of Care and the Value of Vaginal Birth **28**

Table 3. Key Strategies for Improving the Culture of Care, Awareness, and Education for Cesarean Reduction **31**

Table 4. Patient Decision Points that Impact Risk of Cesarean **34**

Table 5. Leadership Roles and Activities for Stakeholders in Perinatal Care **37**

Table 6. Examples of Alternative Payment Models and the Potential Impact on Cesarean Birth **38**



FIGURES

Figure 1. National Trend in Overall Cesarean Rates **23**

Figure 2. Variation in NTSV Cesarean Rates among 251 California Hospitals (2014) **24**

Figure 3. Summary of Maternal Risks Associated with Cesarean Birth **25**

Figure 4. Essential Elements of Shared Decision Making. Two Examples for Clinical Practice **33-34**

Figure 5. Qualities of Successful Clinical Champions **36**

Part I. Readiness: Improving the Culture of Care, Awareness, and Education

Recognizing the Value of Vaginal Birth

Unless the undeniable value of vaginal birth is recognized by all sectors of the health care delivery system and the public, any attempt to reduce current cesarean rates will likely be unsuccessful. The high rate of cesareans among low-risk nulliparous women means that more healthy women and newborns than necessary are exposed to potential harms with little or no benefit.^{2,44} Nonetheless, in recent years, convincing hospitals, health care providers, and the public of the value of vaginal birth has been difficult. The Task Force identified four major factors that contribute to this difficulty (*Table 2*).

Table 2. Readiness: Major Factors Influencing the Culture of Care and the Value of Vaginal Birth

Readiness: Major Factors Influencing the Culture of Care and the Value of Vaginal Birth
1. Casual acceptance of cesarean birth (no public or institutional agenda for change)
2. Knowledge deficit among women, families, and providers of benefits of vaginal birth
3. A provider-centered maternity care culture that underappreciates women's informed choices, values, and preferences
4. Payment/reimbursement models that conflict with high-value, high-quality maternity care

Casual Acceptance of Cesarean Birth

Cultural influences on attitudes toward birth are powerful, and vary across time and place. Today's childbearing women are more technology-driven than ever before. Moreover, providers and nurses newly entering the workforce are similarly familiar with, accepting of, and dependent on technology.⁴⁵ It is therefore no surprise that both consumers and providers exhibit a pervasive tolerance for increasingly technological childbirth, including the casual acceptance of cesarean birth as a safe and easy way to give birth.⁴⁶

Knowledge Deficit Regarding Benefits of Vaginal Birth

Fewer women are utilizing established models of prenatal education such as childbirth education classes. The recent Listening to Mothers III survey indicates that only about half of all mothers participated in established, in-person childbirth

education classes.³⁸ Instead, most women now rely on childbirth information from multiple – primarily electronic and digital – media sources, including the Internet, videos, reality TV, and social media, to educate themselves and support decision making.³⁸ Research exploring electronic and digital media representations note that they are the dominant means of creating and sharing culture among women of childbearing age. This raises concerns about women’s exposure to poor quality and conflicting information, and about the negative impact of the prevailing media representations of childbirth, which emphasize the “pain, fear, and risks, associated with childbirth, coupled with a strong emphasis on medical technology and interventions for childbirth.”⁴⁷ This perspective contributes to deficient, erroneous and fraught beliefs surrounding pregnancy and birth, and limits awareness of other ways of understanding birth.⁴⁷⁻⁴⁹

Furthermore, the fear of childbirth that is deeply embedded in American birthing culture has a significant impact on the perceived value of vaginal birth and is a critical determinant of women’s birth choices and experiences.⁵⁰⁻⁵² Research demonstrates that women with high levels of fear view birth as inherently risky and express preference for obstetric interventions.⁵² Cultural narratives perpetuated in the media portray pregnancy and labor in conflicting and polarizing ways. Labor pain is alternately characterized as excruciating or empowering. Childbirth is variously depicted as transformative or debilitating, which serves to confuse women and to increase their fears.^{53,54}

The current model of prenatal care may lead to missed opportunities for educating women about labor and birth.⁵⁵ For example, most standard prenatal care visits are generally less than 10 minutes in length. Prenatal care providers are often challenged by the dual expectation to provide high quality care and simultaneous patient education. This puts significant restrictions on talking, teaching, and answering questions. The result is that many women will not think about certain care decisions until they are actually in labor, when they are so much more vulnerable to constraints of time, pain, and stress.⁵⁵

Many providers and nurses also exhibit a knowledge deficit about the benefits of vaginal birth. Whether nurses or providers view the current cesarean trend as a significant quality improvement issue depends on a convergence of factors, including training, experience, and current role.³¹ Data from California hospitals suggest that many providers may not find the current rate of cesarean birth to be problematic. Because a first cesarean is quite safe by today’s standards, the future risks of multiple repeat cesareans, such as the considerable step-wise increase in life-threatening hemorrhage, may not be fully appreciated or considered by all practicing obstetricians.³¹

A Maternity Culture that Underappreciates Women’s Informed Choices and Preferences

In general, today’s maternity care system is moving along with the rest of the health care system toward patient-centered care. A patient-centered maternity care culture:

- **Respects individual values, choices, preferences, and cultural backgrounds of all women and their families**³⁷
- **Ensures women are treated with dignity, respect, kindness, and cultural sensitivity throughout the course of pregnancy, labor and birth, and the postpartum period**^{37,56}
- **Promotes optimal health outcomes for women and newborns through “effective communication, shared decision making, teamwork, and data-driven quality improvement initiatives”**⁵⁶

Despite this overall trend, however, and the importance of educating and involving women as partners in care, decisions about pregnancy and birth are often made by providers rather than by women.^{48,49} Institutional practices and caregiver workflows, even as far as timing of birth, may take precedence over women’s informed choices.^{49,57} The Listening to Mothers II and Listening to Mothers III surveys, both with nationally representative samples, found that providers made decisions regarding cesarean birth more than twice as often as women did, under all conditions.^{27,38} Listening to Mothers III found that 13% of women felt pressure to have a cesarean; this rose to 28% among women with a primary cesarean. While a very small portion of women may desire a pre-labor cesarean, data from this survey do not support the suggestion that maternal requests for cesareans contribute significantly to the high cesarean rate. To the contrary, the evidence indicates that women prefer vaginal birth — less than 1% of women reported choosing a non-medically indicated cesarean for their first birth. The same survey revealed that women overwhelmingly perceive care providers to be “very trustworthy” or “completely trustworthy.” This puts providers in a unique position to promote vaginal birth as the optimal mode of delivery, and to create positive messaging surrounding its benefits.



Payment/Reimbursement Models that Conflict with High-value, High-quality Maternity Care

Maternity care is fertile ground for payment reform. Maternity and newborn care together represent the most costly category of hospital expenditures for all payers, including Medicaid.⁵⁸ Payment reform is essential to delivering higher value care and improving the health of women,^{37,55,59} but within a multi-strategy approach to reducing primary cesareans, payment reform may be one of the most difficult elements to influence. Understanding the complexity of maternity care reimbursement is integral for change in this landscape,³¹ and ultimately for the success of overall health care reform.^{60,61}

Though payment schemes differ between Medicaid and private payers, under the current system both entities reimburse hospitals at a higher rate for cesarean than for vaginal birth.^{55,58} In California, the average cost of maternal care for women with commercial insurance, according to a 2010 analysis, was 40% higher for cesarean births than for vaginal births.⁵⁸ Other analyses show average maternal care costs for cesarean births to be 50% higher than vaginal births.⁶² Facility (hospital) costs form the greatest part (upwards of 50%) of these costs, with provider fees making up about 20-25% of payments by private insurers and Medicaid.⁵⁸ Higher reimbursement for cesarean births may lead to lack of incentive for a hospital to support change, specifically to invest in quality improvement projects to lower cesarean rates.

Though hospital reimbursement remains higher for cesarean births, many payers have attempted to curb provider incentives to perform cesarean by fixing rates of reimbursement regardless of mode of birth. For that reason, many providers nowadays bill under a “global obstetric fee” that bundles the reimbursement for routine prenatal care, labor and delivery, and postpartum care,⁶³ a large

portion of which is delivery-based.⁴ Unfortunately, having a payment method that is delivery-based but that offers no financial incentive for vaginal birth may indirectly result in a time-based incentive to prematurely end long labors with cesarean, or to induce labor while on-call in order to ensure one’s presence at the birth.^{4,55} This is especially true in the current environment, in which more than ever before providers must balance clinic obligations, personal life, and on-call time in the hospital.⁴⁶

Another important issue for consideration is that major payers do not routinely reimburse for high-value services that may directly affect rates of cesarean. These services include such things as the kind of time-consuming health education needed to promote shared decision making, childbirth education classes, and expanded preventive services for women with chronic conditions, all of which may increase the number of successful vaginal births. The current system also does not incentivize innovative methods of labor support (e.g. doula care), requiring that patients incur these costs or rely on the hospital or community programs to provide it as a free service. In a similar fashion, payers’ current method of bundling postpartum visits and not routinely paying for preconception care fails to give providers any incentive to educate women on the important choices which may influence outcomes and costs in the subsequent pregnancy.⁶⁴ This includes important aspects of contraception, medical management of chronic diseases/obstetric complications, and planning for pregnancy after prior cesarean birth. For many providers it is simply not financially feasible to provide these high-value services without adequate reimbursement.

Improvement Strategies

Table 3. Key Strategies for Improving the Culture of Care, Awareness, and Education for Cesarean Reduction

1 Improve Quality of and Access to Childbirth Education

- Align hospital practices and philosophies with evidence-based childbirth education
- Collaborate to assess and mitigate barriers to childbirth education (including cost, time of day), and include flexible educational formats such as high quality web content or interactive web-based learning
- Implement prenatal care models that efficiently integrate comprehensive pregnancy and childbirth education into routine visits, such as group prenatal care

2 Improve Communication through Shared Decision Making at Critical Points in Care

- Train providers, nurses, and staff on the essential elements of effective communication and shared decision making
- Design shared decision making discussions around the major decision points that impact the risk for cesarean, and effectively and routinely incorporate these discussions into regular prenatal visits
- Improve the shared decision making process through the utilization of high-quality, evidence-based decision aids in consumer-preferred formats specific to the patient's literacy level
- Adapt the clinical environment in order to integrate patient engagement and shared decision making into routine care (such as adjusting workflows to allow ample time for questions and educational opportunities)
- Respect and value differences in culture and religious beliefs

3 Bridge the Provider Knowledge and Skills Gap

- Improve the content of professional education and continuing education to support a “wellness approach” to obstetric care for the majority of people giving birth, including a redesign of standard curriculum to include principles of physiologic childbearing and a greater focus on the reduction of routine interventions for low-risk patients
- Incorporate interprofessional training and mentorship of nursing and medical students, nurse-midwifery graduates, and medical residents to foster a generational change in how routine obstetric care is delivered
- Ensure that all providers and nurses maintain the critical skills necessary to support vaginal birth
- Create a culture of transparency for hospital and provider-level data

4 Improve Support from Senior Hospital Leadership and Harness the Power of Clinical Champions

- Utilize the power of hospital leadership at all levels (e.g., executive and departmental) to promote an environment of continuous quality improvement
- Create, nurture, and sustain a core group of enthusiastic interprofessional clinical champions

5 Transition from Paying for Volume to Paying for Value

- Implement alternative payment models (APMs) that reward quality, reduce incentives to perform cesarean deliveries, and focus on coordinated patient-centered care

1. Improve Quality of and Access to Childbirth Education

Improving Quality

One of the Healthy People 2020 goals is to “increase the proportion of women who attend prepared childbirth classes.”⁴⁰ Women who are well-prepared for labor and birth are better situated to engage with providers in conversations about care, create realistic and informed plans, and to share in decision making at points in time when the greatest impact on maternal and infant outcomes is most likely.^{55,65}

Unfortunately, hospital philosophies and policies are not always congruent with evidence-based childbirth education. This disconnect often makes the information disseminated through formal classes irrelevant once the woman enters the birthing facility.⁶⁶ Hospital providers and nurses may find themselves in a conflicted position where the patient believes a certain type of care will or should be given (e.g. less routine intervention) and feels confused as to why, for example, they are not allowed to walk, must have continuous monitoring, or are encouraged to use pitocin. Later sections of this toolkit will address the safe reduction of routine obstetric interventions, but suffice to say here that for most low-risk, nulliparous women, few interventions are needed for labor to progress safely and normally.⁵⁶ It is thus incumbent upon hospitals, providers, and nurses to collaborate with childbirth educators to disseminate curriculum that is evidence-based, and that remains relevant to the patient upon entry to the labor and delivery unit.

Lamaze International, Childbirth Connection, and the Coalition for

Changing certain hospital policies, such as instituting a freedom of movement policy, intermittent monitoring for low-risk women, or offering a full array of nonpharmacologic methods to promote comfort and coping may be necessary in order to practice high-quality maternity care in alignment with evidence-based childbirth education.

Improving Maternity Services are reputable sources that can guide facilities in the design of childbirth education material. The Lamaze website offers downloadable handouts, videos, and inexpensive online classes for parents, which promotes Lamaze’s vision of “knowledgeable parents making informed decisions.”⁶⁷ Lamaze has passed high standards set forth by the National Commission for Certifying Agencies and holds professional status as an American Nurses Credentialing Center accredited provider. Lamaze also offers an App for smartphones that provides much of the information from the website.

Childbirth Connection is a program of the National Partnership for Women and Families that promotes evidence-based maternity care, improvement of maternity care policy and quality, and consumer engagement.

It offers women, families, and health professionals evidence-based information and resources to guide research, education, policy, and practice.

The Coalition for Improving Maternity Services has done extensive work “encouraging and promoting evidence-based, Mother-and-Baby-Friendly maternity care”⁶⁸ and is a valuable resource for designing and implementing mother-friendly policies that are in alignment with evidence-based childbirth education.

The ACNM, the professional association representing certified nurse-midwives and certified midwives in the United States, offers the *Share With Women* series. This series of consumer-oriented health care articles from the Journal of Midwifery & Women’s Health covers a variety of topics for prenatal care, labor, and birth that can be copied and distributed without permission.

As discussed previously, many providers are faced with limited time to provide both comprehensive prenatal care and patient education. Creating standardized, pre-packaged patient education materials (such as “new patient packets” or packets distributed by trimester), or agreeing to distribute certain reputable web-based prenatal and childbirth education resources (such as from the organizations listed above) are an easy and efficient way for providers to engage in effective prenatal education.

Improving Access

Improving access to childbirth education may require removing or decreasing barriers to attendance (such as cost), providing education in non-traditional formats that meet the needs and time-constraints of the patient (such as high quality web content or interactive web-based learning)^{49,55} and by providing incentives for attending classes.⁶⁹

Also, group prenatal care, such as that offered through the CenteringPregnancy® model, provides an extraordinary opportunity to improve the quality of childbirth education, increase efficiency of care, and improve overall outcomes.^{65,70} Education, patient engagement, and increased time with the provider are built into this care model. This type of group care has been shown to improve patient satisfaction and knowledge, and is associated with lower rates of cesarean birth as compared to the traditional, provider-centric prenatal care model.^{65,71}

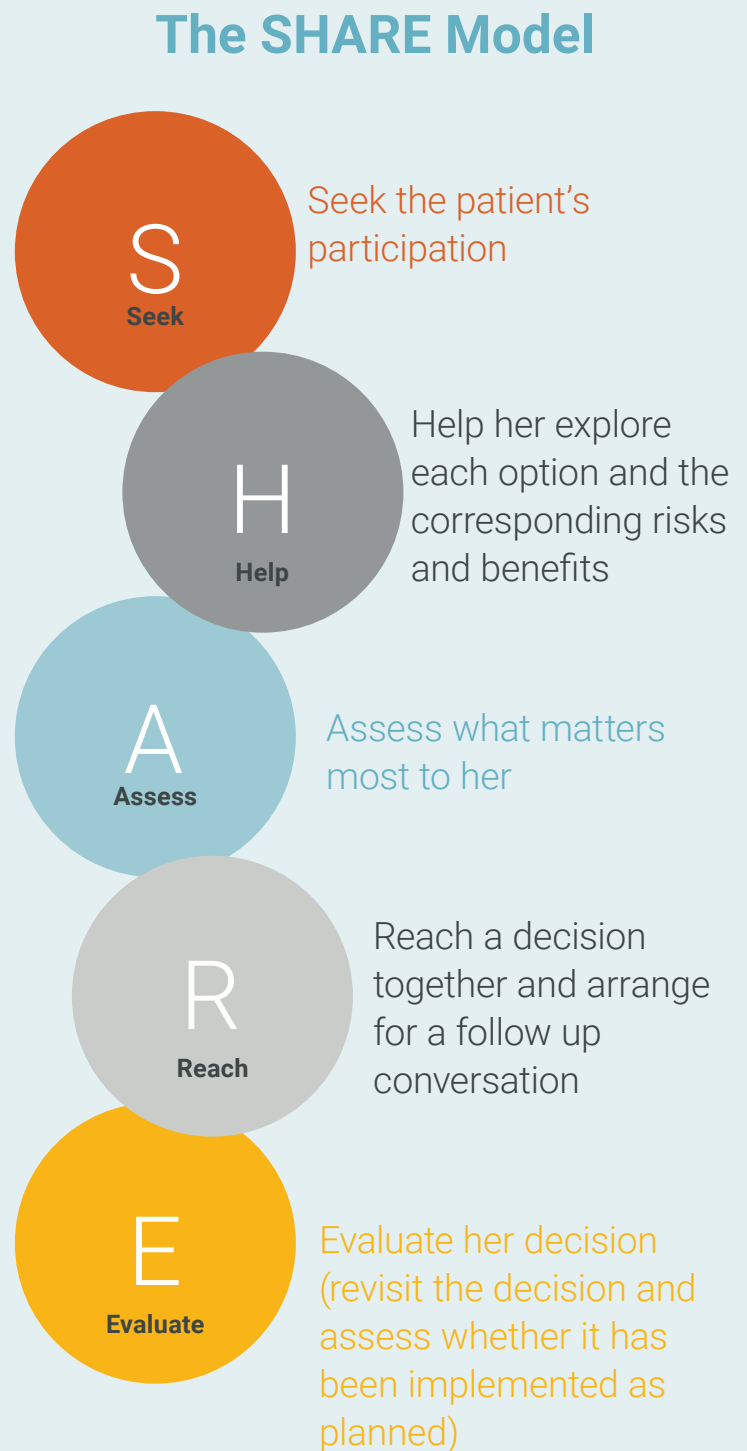
2. Improve Communication through Shared Decision Making at Critical Points in Care

Informed consent has become a fundamental principle of health care, and requires that health professionals engage patients in a process to provide information on benefits, risks, and alternatives of a proposed treatment before the patient makes an informed decision to accept or refuse treatment.⁷² Providers must ensure that informed consent is “more than just signing the consent form.”⁷³ Protection of patient autonomy, which is the primary purpose of informed consent, requires “open communication between provider and patient, and sharing of relevant information and adequate disclosure, to enable the patient to exercise personal choice.”⁷⁴

In recent years, out of concern for inadequacies of current legal concepts of informed consent, a growing number of health care leaders, policymakers and other stakeholders have called for revision of current methods in favor of shared decision making⁷⁵ (Figure 4). Shared decision making is a collaborative process between the provider and patient that “takes into account the best available scientific evidence, as well as the individual’s values and preferences, to determine the right course of care.”⁷⁶ Shared decision making helps “protect patient self-determination and balance patient autonomy with provider expertise and beneficence.”⁷⁵ The ACOG Committee Opinion 492 *Effective Patient-Physician Communication* states that shared decision making promotes patient engagement, treatment adherence, and improved outcomes while reducing risk.⁷⁴

More specifically, by identifying the major decision points that most impact the risk for cesarean birth, providers can markedly improve the patient’s knowledge deficit and decision making (Table 4). Given that prenatal visits are often short and that nearly half of pregnant women do not participate in formal childbirth education classes,³⁸ informed decision making at critical decision points should

Figure 4. Essential Elements of Shared Decision Making. Two Examples for Clinical Practice



The SHARE approach. Agency for Healthcare Research and Quality Website. <http://www.ahrq.gov/professionals/education/curriculum-tools/shareddecisionmaking/index.html>. Accessed December 1, 2015.

Figure 4. Essential Elements of Shared Decision Making. Two Examples for Clinical Practice (Continued)

1 Choice Talk

- Let the patient know she has a choice
- Let the patient know her preferences matter
- Reiterate that the risks and benefits of various reasonable options will need to be weighed

2 Options Talk

- Review all options, including the option of doing nothing, and the risks and benefits of each

3 Decision Talk

- Incorporate the patient's personal values and preferences
- Arrive at a decision grounded in best evidence available

This process could be accomplished during one encounter or may require a multi-step process during separate conversations (may not need to be entirely face-to-face). Certain portions of the discussion may require decision aids.

Romano, A. Activation, engagement, and shared decision making in maternity care. <http://maternityneighborhood.com/whitepapers/activation-engagement-shared-decision-making>. Maternity Neighborhood. Published September 2015. Accessed February 7, 2016. Used with permission from the author.

utilize high-quality decision aids.⁴⁹ Evidence-based decision aids improve the shared decision-making process by presenting various treatment options in an unbiased way, which facilitates an informed decision that aligns with the patient's values and preferences. A systematic review of decision aids specific to maternity care has shown that they can improve knowledge and satisfaction while reducing anxiety and decisional conflict.⁷⁸ For maximum effect, such decision aids should be available in consumer-preferred formats, including multi-media and print resources and should be appropriate for the patient's literacy level.^{2,49} Interactive mobile tools, smart tools that incorporate patient health data, and social networks/social media tools are other promising innovations for shared decision making.^{48,79}

Table 4. Patient Decision Points that Impact Risk of Cesarean⁸⁰⁻⁸⁶

PATIENT DECISION POINTS THAT IMPACT RISK OF CESAREAN
Choice of provider and/or facility for prenatal care and care at time of birth
Timing of admission to hospital (admission to labor and delivery while still in the latent/early phase is associated with an increased risk of cesarean)
Choice of fetal monitoring method (continuous monitoring is associated with an increased risk of cesarean)
Whether to have continuous labor support by a trained caregiver like a doula (continuous labor support improves chances of having a vaginal birth)
Induction of labor without medical indication (depending on the provider and facility, induced labor may be associated with higher rates of cesarean)

Given that many of these major decision points will arise before labor begins and will be of concern throughout the period of care, women must be provided with regular opportunities for education and discussion. These opportunities may range from conversations with providers during prenatal visits, to the development of a collaborative birth plan, involvement in childbirth education classes, or enhanced prenatal care grounded in collaborative education and decision making,⁷⁹ such as the CenteringPregnancy® model.⁷⁰ To incorporate patient engagement into routine care, the clinical environment may need to be adapted. For example, providers and staff should be trained on the essential elements of effective communication and shared decision making;⁷⁴ workflows should be adjusted to provide ample time during prenatal visits for questions to be answered and preferences to be heard;^{48,74} and barriers to participation in childbirth education classes (such as time of day and cost) should be considered and mitigated. Also, cultural differences, belief systems, and literacy levels must be respected and valued.^{87,88}

“Both research and practice show that engagement leads to safer patient care by improving the outcomes of care, improving the experience of care for individual patients, improving the work experience of caregivers, and — by helping the organization change its processes—improving the outcomes for all patients”

— from Safety is Personal,

a publication of the National Patient Safety Foundation’s Lucian Leape Institute.⁷⁷

It is not uncommon to hear how a woman’s Birth Plan is a sure “ticket to the operating room.”⁸⁹ On the contrary, Birth Plans offer a unique opportunity for providers to engage women in shared decision making early in the prenatal period and to discuss expectations, fears, gaps in knowledge, and specific decision points that may impact a woman’s risk of cesarean.

Consult Appendix E for the CMQCC Birth Preferences Guide, an adaptation of many well-written birth plans from various facilities.

3. Bridge the Provider Knowledge and Skills Gap

Providers, hospitals, and policymakers have a responsibility to engage in practices that ultimately “reduce the burden of illness, injury, and disability, and to improve the health status and function of the people of the United States.”⁹⁰ However, if providers and nurses perceive cesarean birth to be just as safe for low-risk women and/or do not have the skills necessary to support and protect the first vaginal birth, then reducing the burden of unnecessary interventions among this population will not be achieved. Strategies that serve to bridge the knowledge gap within the microsystems that provide direct care (nurses and providers) through the macrosystems that support this care (hospital systems, health care organizations, and national and/or regional organizations that support professional development) include:

- **Improving the content of professional education and continuing education**
- **Incorporating interprofessional training and mentorship of nursing and medical students, nurse-midwifery graduates, and medical residents**
- **Ensuring that all providers and nurses maintain the critical skills necessary to support vaginal birth**
- **Creating a culture of transparency for hospital and provider level data**

Professional education and continuing education programs can significantly influence the culture of care through widespread dissemination of the current cesarean trend as a major barrier to quality maternity care.³⁷ Furthermore, improving the content of professional education for all maternity providers and nurses should include a redesign of curriculum to foster a greater focus on the “wellness model of care” for low-risk women and on principles of physiologic childbearing.^{91,92} Medical and nursing boards should contain questions relevant to these goals. Incorporating interprofessional training and mentorship of nursing students, medical students, new nurse-midwifery graduates, and medical residents is integral to fostering a generational change in how modern hospital-based maternity care is delivered.^{55,93,94}

It is critical to ensure that all providers and nurses maintain the critical skills (the components of which are further explicated in this toolkit) necessary to support first and subsequent vaginal births and create awareness of the significance of provider decisions and nursing support in determining the outcome of vaginal birth.^{37,91}

Additionally, provider knowledge is enhanced through a culture of transparency of hospital and provider level data. Transparency clarifies a provider’s own cesarean rates, and potentially improves a provider’s valuation of vaginal birth. Furthermore, public reporting of this data improves

consumer knowledge of quality providers,⁹⁵ thus harnessing the power of consumer decision making to create a positive feedback cycle where quality is both created through transparency and sought out as a result of transparency (section IV will further outline public reporting).

4. Improve Support from Senior Hospital Leadership and Harness the Power of Clinical Champions

Improving perceptions about the value of vaginal birth from the institutional perspective is a major aim of this toolkit. First, the full support of senior leadership at the departmental and executive levels is a critical component of change in perinatal care.⁹⁶⁻⁹⁹ Executive and departmental leaders are positioned to positively frame the message for cesarean reduction, have various communication tools at their disposal, and have the financial resources to support quality improvement. The leadership also sets the mission and goals for the institution and has the ability to empower clinical champions to take action. Strong leadership, or the lack thereof, often determines the success or failure of a healthcare organization’s efforts to improve patient care.¹⁰⁰

Clinical champions are frontline physicians, midwives, nurses, and other integral staff who are familiar with the specific climate of care within their institution and who understand the specific message that must be tailored to the institution’s unique needs (*Figure 5*). This group, in the best of cases, should be interprofessional, highly visible, enthusiastically supportive of the project, consummate communicators, and well respected by colleagues. Harnessing the power of clinical champions who are empowered by senior leadership may be the single

most effective organizational tool for mounting an institutional agenda for change.⁹⁸ Many organizations that engage in patient-centered care or have an overall strong “culture of safety,” have successfully engaged clinical

champions over multiple improvement projects.⁹⁶ Additionally, these types of facilities utilize patient advisors, particularly, their own former patients, as effective champions for change.⁹⁶

Figure 5. Qualities of Successful Clinical Champions



Indeed, garnering support for cesarean reduction requires leaders both inside and outside of the hospital walls. Clear delineation of each entity’s role is necessary to gain traction for change. To that end, the leadership roles for all stakeholders are outlined in *Table 5*. It is important to note

the hierarchical model in this table, with the first level being that of the woman and her family. Patient experiences and expectations create a foundation for the redesign of care processes to support what is valued.¹⁰¹

Table 5. Leadership Roles and Activities for Stakeholders in Perinatal Care

STAKEHOLDER GROUP	LEADERSHIP ROLES/ACTIVITIES
PATIENTS, FAMILIES, AND THE PUBLIC	Active participation in advisory councils to help providers redesign care which meets patients’ experience expectations; review publicly reported data and use to have meaningful discussions with providers about available choices in care; participate in the necessary childbirth education and other efforts to improve knowledge of the birth process; actively engage in shared decision making
PROVIDERS AND NURSES	Endorse the culture of “valuing vaginal birth”; develop clinical change and quality improvement leadership skills; actively participate in improving clinical skills and knowledge needed to achieve safe vaginal birth; understand how to utilize metrics to improve care; participate in necessary care model development
MEDICAL GROUPS/HOSPITALS/ HOSPITAL ADMINISTRATION	Provide necessary financial and administrative support to help caregivers obtain the necessary skills and resources; hold managers and medical directors accountable for achieving success; endorsement and commitment from “top” leaders of the organization to the value of vaginal birth; develop/maintain the infrastructure to provide meaningful metrics; ensure involvement of patients and families in solutions to ensure improved experiences and outcomes
PAYERS AND EMPLOYERS	Careful redesign of payment models which reward providers and enrollees for making the best long and short term decisions regarding birth; ensure the reimbursement models involve and reward team management; develop expert medical directors and staff which understand the process and metrics of providing obstetric care
NATIONAL AND REGIONAL PROFESSIONAL ORGANIZATIONS, REGULATORY AGENCIES, AND GOVERNMENT OFFICIALS	Review current regulations and standards to ensure that they are in alignment with goals to “value vaginal birth”; work with providers to choose meaningful metrics which can be used to evaluate public health; support providers to ensure that privacy/security and medical legal concerns are addressed

5. Transition from Paying for Volume to Paying for Value

With the development of the Patient Protection and Affordable Care Act, many health plans are moving to pay-for-performance programs (P4P). These programs create incentives to providers to reach performance and quality targets, thereby increasing quality of care and potentially reducing overall costs. In maternity care, specific quality measures could be easily linked to increased payments to providers, such as achieving target rates of NTSV cesarean, reducing elective births at less than 39 weeks, and improving rates of Vaginal Birth After Cesarean (VBAC).³¹

Nonetheless, there are currently only a few quality measures in maternity care that directly impact cesarean rates. New quality measures take time to be validated and established as national standards. Additionally, if P4P programs do not address or cannot solve the inherent problems in the underlying system, they will not fundamentally change how providers deliver care or incentivize providers to organize care more efficiently.⁶³ To make a sustained impact on rates of cesarean, innovative payment models are needed, such as those often described as “transitional payment reforms,”

including physician-focused alternative payment models (APMs).¹⁰² These reforms are changes in reimbursement that allow providers to be accountable for aspects of spending, quality, and outcomes that they can actually control without requiring them to incur significant financial risk or accountability for outcomes and expenses they clearly cannot control.⁶³

There is no one-size-fits all APM, but many promising routes exist.^{31,102,103} The process of choosing a payment reform model should include consideration of the needs of all stakeholders⁶³:

- **Providers will desire a model that moderates significant financial risks**
- **Payers and purchasers will desire minimal changes in claims administration and will need to see rapid reductions in cost, or stabilization of costs**
- **Patients will require improvement in quality and/or affordability, such as expanded access to programs**

Innovative changes in payment require a certain amount of knowledge and sophistication on the part of both providers

and payers.⁶⁰ Converting to these innovative methods of reimbursement will require well-integrated teams.³⁷ Appropriate oversight entities familiar with obstetric care will need to design and administrate the proper care, oversee cost and quality performance, and contract with payers. The digital tools required for quality and value reporting will demand related proficiencies. Data quality and governance will be critical in providing reliable feedback and fair payment. Transparency of data that is shared and trusted will be critical for consumer participation and the willingness of providers and payers to continue participation in new models of reimbursement¹⁰⁴ (see Part IV for more on transparency and public reporting). In fact, innovative payment design is inherently connected to the future of patient-centered maternity care. When patients actively engage in decision making, are encouraged to seek out high-value care through publicly reported data and financial incentives, and demand more person-focused approaches to care delivery, the system will be required to coordinate care, focus on quality, and share risk.¹⁰³ At present, it is unclear which particular payment model would contribute most to lowering cesarean birth and improving maternity care as a whole. Value-based care is currently evolving, and providers and payers must be willing to revise payment methods as necessary if, for example, cost and outcomes do not proceed as expected.¹⁰⁴

Table 6. Examples of Alternative Payment Models and the Potential Impact on Cesarean Birth Rates^{31,62,63,69,102}

Examples of Alternative Payment Models and the Potential Impact on Cesarean Birth Rates		
Type of Alternative Payment Model	Description	Potential Impact on Cesarean Rates
Blended Facility Payments	A blended payment creates a single rate regardless of mode of birth, and is essentially a “blend” of the proportion of vaginal to cesarean births	Removes the significant reimbursement differential between cesarean births and vaginal births, potentially incentivizing a facility to engage in cesarean reduction efforts (helps to align provider and facility quality improvement efforts)
Bundled Payments (various types)	A hospital birth payment and the professional (provider) fee bundled into one prospectively set amount means one fee for labor and birth services is paid to cover hospital fees and all fees to providers	Encourages a coordinated team effort to improve quality and reduce overall cost (such as through a cesarean reduction program) while still giving providers full responsibility for how to best manage care in alignment with shared outcome goals
	A hospital birth payment bundled for both mother and infant means maternity expenses and NICU care of a normal term infant without preexisting conditions are bundled into one prospectively determined payment (NICU care for prematurity, intrauterine growth restriction, known congenital conditions, and other selected exclusions would be paid separately from the bundle)	Potentially reduces maternity care practices that increase the chances of a normal newborn needing NICU services (such as early elective delivery and other practices that may impact cesarean rates)
	Comprehensive bundling of the entirety of the “Maternity Care Episode” means a single, risk-adjusted payment is made for all prenatal care, lab work and ultrasounds, and labor and delivery fees	Theoretically leads to creative ways of controlling outpatient costs and more incentive to engage in quality improvement activities in order to reduce avoidable complications and cesarean birth
Warrantied Payments	A warrantied payment refers to a single payment to cover the cost of labor and birth, plus the cost of potentially avoidable complications or adverse events. Because a certain minimal number of complications are expected to occur, the increased cost of treating adverse events is built into the amount of the warrantied payment	The upfront payment of an amount that is greater than the payment for labor and birth services alone incentivizes providers to control costs and engage in cesarean reduction efforts and other quality improvement programs to reduce adverse events

Example 1. Blended Facility Payments for Birth

Instead of paying a facility different rates based on type of care delivery, a blended payment creates a single rate regardless of mode of birth, and is essentially a “blend” of the proportion of vaginal to cesarean births.⁶² For example, if an uncomplicated vaginal birth costs \$8,000 and a cesarean costs \$11,000, and the facility’s rate of cesarean is 32%, then one way to calculate a blended rate would be as follows:

$$\$11,000 \times 0.32 + \$8,000 \times 0.68 = \$8,960 \text{ blended facility payment}$$

There are various ways to create blended payments. Another example is to set the blend rate at what the proportion of vaginal to cesarean births ought to be,³¹ as determined by the institution. For example, the blend rate could be set at a reasonable target of 25% for cesarean births, potentially lower than the facilities’ current rate, but one that provides a reachable target and reasonable payment and that acts to create incentive to lower the facility’s rate.

Adjusting for risk level of the patient population could further refine blended payments. One example, implemented by the Washington State Medicaid program, includes blending the rates for vaginal birth with complications, vaginal birth without complications, and cesarean birth without complications into a single payment rate while leaving cesarean birth with complications as a separate fee.³¹

Blended payments can be quite flexible. They can be applied to the current model of reimbursement or used in conjunction with other alternative models noted below.⁶² However, challenges do exist. Defining the optimal payment amount is critical. The point of blended payments is to remove the significant price differential between cesarean births and vaginal births. If set too low or too high, there may be no incentive for the facility and associated providers to engage in cesarean quality improvement efforts. This will likely require further demonstration projects, such as the recent CMQCC and PBGH pilot project to reduce NTSV cesareans in three Southern California hospitals (see Part VI). This project, funded by the Robert Wood Johnson Foundation, involved specific cesarean reduction efforts within each hospital, data measurement and analysis, and the creation of a blended, flat case rate implemented by several selected health plan partners.¹⁰⁵ While this project was time-intensive (especially the negotiations with health plan partners to design the blended case rate), and “growing pains” were inevitable to such a fundamental change in payment structure, the project proved that successful payment reform between major payers, hospitals, and providers is possible and replicable. Furthermore, the project demonstrated that while payment reform serves as only one

of many incentives to improve NTSV cesarean rates, it is a strategy that may serve as a critical motivator when further alignment of hospital goals with target NTSV cesarean rates is necessary.

Example 2. Bundled Payments

Many options exist for the bundling of payments for maternity care, with each option having its own advantages and disadvantages. Bundling payments essentially creates a type of “accountable care” that returns care management decisions back to providers³¹ and incentivizes quality rather than reimbursing for individual units of service.⁶² Challenges to bundled payment methods include calculating fair payment rates, identifying standard exclusions to the bundles (e.g. certain conditions that would require supplemental payments), creating risk-adjusted bundles in certain circumstances, and implementing changes to the reimbursement structure in order to accommodate a new way of billing and dividing payment.

1. Hospital Birth Payment and the Professional (Provider) Fee Bundled into One Prospectively Set Amount

In this particular model, one fee would be paid to cover hospital fees and all fees to providers for labor and birth services. This type of payment structure encourages a coordinated team effort to improve quality and reduce overall cost while still giving providers full responsibility for how to best manage care in alignment with shared outcome goals.^{62,102}

2. Hospital Birth Payment Bundled for Both Mother and Infant

In this model, maternity expenses and infant care immediately after birth are bundled into one payment. NICU care of a normal, term infant without preexisting conditions is included in this bundle, potentially reducing maternity care practices (such as early elective delivery) that increase the chances of a normal newborn needing NICU services.^{31,69} NICU care for prematurity, intrauterine growth restriction (IUGR), known congenital conditions, and other selected exclusions would be paid separately from the bundle.

3. Entirety of the “Maternity Care Episode” Bundled into a Single Payment

This sort of bundling is the most comprehensive model and includes a risk-adjusted bundled payment for all prenatal care, lab work and ultrasounds, and labor and delivery fees.⁶² Execution of this “total cost of pregnancy” model theoretically leads to creative ways of controlling

outpatient costs and more incentive to provide stronger patient education and shared decision making during prenatal care, particularly at critical decision points that influence risk of cesarean birth. One example of this method currently being tested in sites around the nation is the PROMETHEUS Payment® approach. Developed by the Health Care Incentives Improvement Institute (HCII), this payment method establishes a “Pregnancy and Delivery Evidence-Informed Case Rate,” which is a patient-specific budget that is adjusted for the complexity of any given patient. Because the rate is paid for an entire episode of care (comprehensive bundling of pregnancy and birth), providers and hospitals are incentivized toward creative ways to reduce avoidable complications,⁶² which potentially includes engagement in cesarean birth quality improvement activities.

Example 3. Warrantied Payments

Warrantied payments are single payments that cover the normal cost of provider services, such as the cost of labor and birth, plus the cost of potentially avoidable complications or adverse events. Because a certain minimal number of complications are expected to occur, the increased cost of treating adverse events is built into the amount of the warrantied payment. The upfront payment of an amount that is greater than the payment for labor and birth services alone allows providers to flexibly redesign care in a way that

reduces adverse events while simultaneously being rewarded with a built-in bonus if complications are significantly reduced.¹⁰² If the patient faces complications that arise from the initial service, the provider does not receive additional reimbursement. This model incentivizes providers toward quality improvement in all aspects of maternity care in order to reduce unexpected adverse events. Cesarean birth carries more risk of complications than vaginal birth, including readmission to the hospital. Thus, warrantied payments may provide an effective option to safely reduce cesareans.^{63,69}

Though the term “warranty” is generally thought of as a consumer protection, warrantied payments should not be confused with “outcome guarantee.”¹⁰⁶ Rather, under warrantied payment methods, payers and providers merely agree on the situations that qualify as potentially avoidable complications.¹⁰² Standardized national quality measures should be used to set the warrantied payments, when possible. For patients to fully understand the warranty and thereby enhance consumer decision making, rates of avoidable complications should be publicly reported and easily accessed by the consumer.⁶⁹

Part II. Recognition and Prevention: Supporting Intended Vaginal Birth

The New Normal: Redesigning Maternity Care for Low-Risk Women

Greater clinical patience is the main focus of many of the recommendations in the ACOG/SMFM Obstetric Care Consensus on Safe Prevention of Primary Cesarean Delivery.

In 1954, Dr. Emanuel Friedman and colleagues published the first in a series of reports on normal labor. His initial work looked at 100 term primigravidas who presented in labor early enough to allow for study of the full length of labor. Following this initial investigation, a larger study was conducted with 4,175 women.¹⁰⁷ Cervical dilation over time was plotted and the resulting shape became universally known as Friedman's Curve — the “normal” parameters of which are ubiquitous in modern obstetric care.

More than 60 years and 200 million laboring women later,¹⁰⁸ a new labor curve has emerged. Zhang et al. and the Consortium for Safe Labor published an influential document in 2010 that included 62,415 labors. This nationally representative, multi-center study of term patients with a singleton fetus in vertex presentation included women who underwent spontaneous onset of labor resulting in vaginal birth with normal perinatal outcomes.¹⁰⁹ Whereas a cervical dilation of 4 centimeters (cm) was previously used to diagnose the onset of active labor, Zhang's work overwhelmingly reflected that the steepest part of the labor curve – in other words, when the fastest rate of cervical dilation begins – occurs at 6 cm.

Furthermore, nulliparous and multiparous women had similar rates of cervical change until 6 cm, at which time multiparous labors progressed much more rapidly. Also, the length of time needed to progress from 4 cm to 6 cm was slower than earlier reported, with the Zhang study noting that it may take “more than 6 hours to progress from 4 to 5 cm and more than 3 hours to progress from 5 to 6 cm of dilation.”¹⁰⁹ Data from other studies indicate that even more patience is necessary for certain patient populations shown to have longer labors, including women older than 35, induced labors, and obese women.¹⁰⁸ Despite this convincing evidence that parameters for length of labor in previous decades were far too stringent, universal acceptance of these new standards for identifying the onset of active labor has not occurred. For that reason, clinical patience is the focus of many of the recommendations in the ACOG/SMFM *Obstetric Care Consensus on Safe Prevention of the Primary Cesarean Delivery*.³

Understanding what is “normal” is fundamental to the judicious use of interventions during labor and birth. The recent information, from the studies described above, creates the backdrop that should inform how providers and nurses define what is normal in day-to-day clinical decision making. Nonetheless, current obstetric care in the United States remains distinctly different from the rest of the world, applying a high-risk model to all women and overusing costly procedures that increase risk. At the same time, current care underutilizes beneficial, low-cost interventions that are readily available, easy to implement, and well suited for low-risk women.^{55,91}

The Task Force identified six barriers to

In This Section



KEY STRATEGIES

for Supporting Vaginal Birth 45



TOOLS

Appendices C & D – Various Web-based Tools and Model Policies 115-126

Appendix F – Coping with Labor Algorithm 130

Appendix T – Model Policies 152-177



TABLES

Table 7. Barriers to Supporting Intended Vaginal Birth 42

Table 8. Benefits of Continuous Labor Support 42

Table 9. Key Strategies for Supporting Intended Vaginal Birth 45

Table 10. Support of Coping and Labor Progress 47

Table 11. Key Components of a Supportive Unit Infrastructure 48

Table 12. Best Practice Recommendations for Regional Anesthesia 50

Table 13. Components of Successful Implementation of Intermittent Fetal Monitoring 52

supporting intended vaginal birth (Table 7).

Table 7. Barriers to Supporting Intended Vaginal Birth

Recognition and Prevention: Barriers to Supporting Intended Vaginal Birth
1. Lack of institutional support for the safe reduction of routine obstetric interventions
2. Admission in latent (early) labor without a medical indication
3. Inadequate labor support
4. Few choices to manage pain and improve coping during labor
5. Overuse of continuous fetal monitoring in low-risk women
6. Underutilization of the current treatment and prevention guidelines for potentially modifiable conditions (e.g. breech presentation and recurrent genital herpes simplex virus)

Lack of Institutional Support for the Safe Reduction of Routine Obstetric Interventions

A joint statement from ACOG, AWHONN, ACNM, AAFP, SMFM and others titled *Quality Patient Care in Labor and Delivery: A Call to Action* succinctly states, “pregnancy and birth are physiologic processes, unique for each woman, that usually proceed normally. Most women have normal conception, fetal growth, labor, and birth and require minimal-to-no intervention in the process.”⁵⁶ Despite the fact that most women are at low-risk for complications, the vast majority of women who deliver in hospitals are faced with liberal use of common obstetric interventions and procedures. These include routine use of pitocin, continuous fetal monitoring, and induction of labor. This suggests that many providers may not fully appreciate their role in the prevention of iatrogenesis through more judicious use of interventions.⁵⁵

Current obstetric care in the United States remains distinctly different from the rest of the world, applying a high-risk model to all women and overusing costly procedures that increase risk. At the same time, current care underutilizes beneficial, low-cost interventions that are readily available, easy to implement, and well suited for low-risk women.^{55,91}

Admission In Latent (Early) Labor Without a Medical Indication

The work by Zhang and colleagues in 2002 showed that half of patients entered the active phase of labor by 4 cm, three-quarters entered active phase by 5 cm, and nearly all by 6 cm.¹¹⁰ Zhang’s criteria reinforce something providers fully understand — that there is more to diagnosing active phase of labor than cervical dilation alone and that often it is a diagnosis that can only be made retrospectively.¹¹¹ The decision to admit is further complicated by the patient’s level of discomfort and the expectation by some patients to be admitted upon arrival.¹¹²

Despite these difficulties, thoughtful management at the point of admission is likely the first decision a provider will make in supporting vaginal birth.¹⁰⁷ The evidence is clear: latent phase admission is associated with higher rates of cesarean birth^{86,113,114} and more interventions throughout the course of birth,¹¹³⁻¹¹⁵ including a “two-fold increased use of oxytocin.”¹⁰⁷ In a recent study of 20 hospital systems, NTSV cesarean rates were strongly correlated to specific modifiable hospital practices, including early labor admission rates.⁸⁶ Nonetheless, many patients are admitted to the labor and delivery suite while still in latent labor¹¹¹ and, in many cases, with only a presumptive diagnosis of active labor based solely on a cervical dilation of 3.5 to 4 cm.

Inadequate Labor Support

Historically, before the rise of hospital birth, labor and birth took place in a family’s home, with the laboring woman supported and cared for by her midwife, other experienced women, and her family. Though much has changed with modern birth, women’s need for such physiological and psychological support has not. This support includes providing information, emotional support, and physical comfort to a laboring woman, as well as advocating for her wants and needs.⁸² Labor support reduces the need for analgesia, operative vaginal delivery, potentially shortens labor, and is associated with a significant reduction in cesarean birth.^{82,116-118} Additionally, women report that emotional support during labor is more meaningful to them than pain medication and physical support.¹¹⁹

Table 8. Benefits of Continuous Labor Support⁸²

Benefits of Continuous Labor Support
Less likely to have a cesarean birth
Slightly shorter labor
More likely to report satisfaction with birth experience
Less likely to need the assistance of vacuum or forceps
Less likely to need pain medications
Babies less likely to have low 5-minute Apgar scores

Supportive Care from Spouses, Partners, and Family Members

Labor support is not only the purview of the labor and delivery nurse. Nearly three-quarters of women rely on their partner as a source of supportive care, and one-third rely on another family member or friend at some point during labor.^{38,126}

Nonetheless, partners and family members may be minimally prepared in how to support a woman in labor.¹²⁷ This is especially true if the patient chooses non-pharmacologic or minimal pharmacologic methods of pain relief, and therefore is in greater need of assistance with physical comfort.

Supportive Care from Doulas

A birth doula is a trained professional who continuously supports the physical and emotional needs of the patient during labor.^{128,129} Continuous labor support is associated with a significant reduction in cesarean birth, operative vaginal birth, and use of oxytocin.^{82,126,129,130} As the ACOG/SMFM consensus statement succinctly states: “Published data indicate that one of the most effective tools to improve labor and delivery outcomes is the continuous presence of support personnel, such as a doula... Given that there are no associated measurable harms, this resource is probably underutilized.”³

“Published data indicate that one of the most effective tools to improve labor and delivery outcomes is the continuous presence of support personnel, such as a doula... Given that there are no associated measurable harms, this resource is probably underutilized.”

– ACOG/SMFM Obstetric Care Consensus on Safe Prevention of the Primary Cesarean Delivery (2014).³

Reasons for underutilization are varied but include knowledge deficit about what a doula is/does, objections from partners, geographic lack of access to a doula, and cost.¹³⁰ Also, while some nurses and providers fully understand a doula’s multi-faceted role and see them as an experienced and valuable team member, others see doulas as an obstacle to care and may have an antagonistic or adversarial view of them.¹³¹

Supportive Care from Nurses

Labor and delivery nurses report increased feelings of job satisfaction when able to provide support to laboring women, rather than solely tending to the technical aspects of a birth.¹²⁰ AWHONN identifies labor support as fundamental

and intrinsic to the role of the labor and delivery nurse.¹²¹ Despite this, there are many barriers to nurses providing adequate labor support to patients. These include burdensome and time-consuming nursing documentation and other time constraints, a deficiency in knowledge of hands-on labor support techniques, and a hospital unit culture that does not value labor support as a primary responsibility of the nurse.^{45,122-124} The demands of busy labor and delivery units often leave nurses to care for more than one patient at a time in active labor. High rates of epidural use by laboring women may contribute to a perceived need for less support,¹²³ and consequently to an erosion of labor support skills. The advent of centralized monitoring has further facilitated moving the nurse away from the bedside where hands-on labor support could be provided.⁴⁵

Limited Choices to Manage Pain and Improve Coping During Labor

Pain is more than simply the response of sensory neurons to injury or pain stimuli, but also depends in large part on psychological, emotional, social, cultural, and environmental factors.¹³² Labor pain is equally multifactorial but is unique in that, unlike the pain of injury, labor pain is “normal” and non-pathologic.¹³³ Furthermore, women’s experiences of labor pain are highly individual, which creates difficulty in describing, assessing, and/or categorizing according to discrete definitions of pain.¹³⁴ Despite these differences from pathologic pain, and the fact that TJC does not mandate the use of a Numeric Pain Scale (NRS) for all patient populations, most hospitals continue to use this standard numeric scale for women in labor, in order to meet TJC’s standards for pain assessment.¹³⁴ Often, a variety of pain management methods, both pharmacologic and non-pharmacologic, are necessary to meet the unique needs of each laboring woman. But reliance on the numeric pain scale, added to the human desire to eliminate pain in patients and loved ones, has contributed to a singular focus on pharmacologic methods of pain relief in most maternity care centers and an underutilization of non-pharmacologic methods that promote coping. These non-pharmacologic methods, such as breathing and relaxation techniques, hydrotherapy, and touch techniques, are usually but inaccurately associated only with patients who desire a “natural” labor.

Studies of physiologic labor indicate that when fear and anxiety are reduced, normal hormonal processes (e.g. natural oxytocin release) are protected. When this happens, beta-endorphin levels increase natural pain relief and reduce overall stress. However, excessive pain and suffering may inhibit oxytocin production and labor progress.⁹¹

The ability to improve comfort and decrease anxiety according to each woman's distinct preference is fundamental to promoting labor progress and preventing dysfunctional labor.

Overuse of Continuous Fetal Monitoring in Low-Risk Women

The development of electronic fetal monitoring (EFM) and continuous monitoring of the fetus during labor was intended to improve neonatal outcomes.⁸⁵ The reality of continuous monitoring, however, has turned out to be quite different than expected. A recent systematic review revealed that the use of continuous EFM has reduced the rates of neonatal seizures, but has not reduced the rate of cerebral palsy, infant mortality, or the rate of admission to the neonatal intensive care unit (NICU).⁸¹ This same review further outlined that routine use of continuous monitoring, as compared to intermittent auscultation, increases the likelihood of cesarean birth.⁸¹ Simply put, continuous monitoring of the low-risk patient offers almost no benefit to the fetus while simultaneously increasing the risk of cesarean birth.^{135,136} Moreover, unless continuous fetal monitoring by telemetry unit is utilized, continuous monitoring adversely affects patient mobility and limits choice of alternative pain relief methods, such as walking, showering or change of position.^{55,135,136} Additionally, continuous EFM via centralized monitoring may decrease face-to-face time with the nurse, thereby reducing overall supportive care.^{45,136} Intermittent auscultation for low-risk women is supported by the ACOG and noted by the ACNM to be the preferred method of monitoring for low-risk women.^{137,138} Nonetheless, continuous EFM is still the standard of practice for low-risk women in most settings.

Underutilization of Current Treatment and Prevention Guidelines for Potentially Modifiable Conditions

Breech Presentation and Use of External Cephalic Version (ECV)

Current data suggests that breech presentation at 37 weeks of gestation complicates up to 4% of pregnancies.¹³⁹ The vast majority (over 85%) of these cases are delivered by cesarean.¹⁴⁰ Despite the ACOG/SMFM consensus statement that “obstetricians should offer and perform external cephalic version (ECV) whenever possible,”⁷³ and the fact that most patients who undergo ECV will have a successful vaginal birth,¹³⁹ this intervention remains underutilized.^{3,55}

Prevention of Recurrent Genital Herpes Simplex Virus (HSV) during Pregnancy

Genital HSV continues to be a major medical concern requiring ongoing surveillance and prevention during pregnancy. Recent assessments of the disease show that nearly 50 million people are infected nationwide. Between 5% and 10% of pregnant women will have a clinical recurrence of the disease during pregnancy, and up to a quarter of these women will have an outbreak in the last month.¹⁴¹ Neonatal herpes simplex virus, the major complication of genital herpes, is a serious disease of the newborn. The vast majority of these infections are a result of vertical transmission during birth.¹⁴² More than half of newborns with disseminated disease will die, and a large portion of survivors will suffer significant neurologic impairment.¹⁴² Thus, in order to prevent neonatal herpes, cesarean birth remains the recommended route of delivery for women who present with active genital lesions during labor. Prevention of recurrence during pregnancy, especially at time of labor, is important to cesarean reduction efforts.

Improvement Strategies

1. Implement Institutional Policies that Uphold Best Practices in Obstetrics, Safely Reduce Routine Interventions in Low-Risk Patients, and Consistently Support Intended Vaginal Birth

A key component of consistently providing safe, high quality care is the consistent use of evidence-based practice to inform care decisions.^{37,55,143} Ample evidence exists to identify maternal care practices that reduce risk and improve outcomes, and policies that incorporate these practices are easily obtainable. The first step is to perform a comprehensive review of existing

unit policies and edit such policies to provide a consistent focus on supporting vaginal birth. A robust set of institutional infrastructure documents that support vaginal birth and safely reduce primary cesareans are included in this toolkit and include model policies and procedures, standardized algorithms, and best practice guidelines (see Appendices).

Table 9. Key Strategies for Supporting Intended Vaginal Birth

1 Implement Institutional Policies that Uphold Best Practices in Obstetrics, Safely Reduce Routine Interventions in Low-risk Patients, and Consistently Support Vaginal Birth

- Perform a comprehensive review of existing unit policies and edit such policies to provide a consistent focus on supporting vaginal birth

2 Implement Early Labor Supportive Care Policies and Establish Criteria for Active Labor Admission

- Implement policies that support the physiologic onset of active labor, reduce stress and anxiety for the patient and family, and improve coping and pain management
- Implement written policies that establish criteria for active labor admission, versus continued observation of labor status and/or discharge home
- Give adequate anticipatory guidance during the prenatal period about early labor expectations and the safety of completing early labor at home
- Educate patients and families on supportive care practices and comfort measures to facilitate completion of early labor at home

3 Improve the Support Infrastructure and Supportive Care during Labor

- Improve nursing knowledge and skill in supportive care techniques that promote comfort and coping
- Improve unit infrastructure and availability of support tools
- Improve assessment of pain and coping
- Remove staffing and documentation barriers to supportive bedside care
- Educate and empower spouses, partners, and families to provide supportive care

4 Encourage Partnership with Doula and Work Collaboratively to Provide Labor Support

- Integrate doulas into the birth care team (see Part V of this toolkit for more specific strategies)
- Improve teamwork, communication, and collegial rapport between nurses, providers, and doulas in order to promote safe, patient-centered care and continuous labor support

5 Utilize Best Practice Recommendations for Laboring Patients with Regional Anesthesia (Epidural, Spinal, and Combined Spinal Epidural)

- Do not avoid or delay placement of epidural anesthesia as a method of reducing risk for cesarean birth
- There is no arbitrary cervical dilation that must be met in order to administer epidural anesthesia
- The patient should be assisted in changing position at least every 20 minutes to assist necessary fetal rotation
- Allow for longer durations of the second stage of labor for patients with regional anesthesia (e.g., 4 hours in nulliparous people, 3 hours in multiparous people), as long as maternal and fetal statuses remain reassuring
- Allow for passive descent when there is no urge to push (delayed pushing until there is a stronger urge to push, generally 1-2 hours after complete dilation)
- Preserve as much motor function as possible by administering the lowest concentration of epidural local anesthetic necessary to provide adequate maternal pain relief
- Turning an epidural off during the second stage of labor likely has minimal beneficial effect on the length of the second stage
- Utilize patient-controlled epidural anesthesia (PCEA) with background maintenance infusion that is intermittent or continuous (for laboring patients, this is superior to PCEA alone and continuous infusion epidural)

6 Implement Intermittent Monitoring Policies for Low-Risk People

- Implement policies that include a risk assessment tool, or checklist with exclusion criteria, to assist in identifying patients for which intermittent auscultation or intermittent EFM is appropriate
- Modify standing admission orders to reflect the use of intermittent auscultation or EFM as the default mode of monitoring for people who do not meet exclusion criteria
- Implement initial and ongoing training and education of all nurses and providers on intermittent auscultation and/or intermittent EFM procedures
- Provide patient education for the use of intermittent methods of monitoring and engage in shared decision making in order to determine the most appropriate method for each patient
- Ensure appropriate nurse staffing to accommodate intermittent monitoring

7 Implement Current Treatment and Prevention Guidelines for Potentially Modifiable Conditions

- Assess fetal presentation by 36 weeks gestation and offer external cephalic version (ECV) to patients with a singleton breech fetus
- Ensure initial training and ongoing physician competency in ECV
- Offer oral suppressive therapy at 36 weeks gestation, or within 3-4 weeks of anticipated delivery, to all patients with a history of genital herpes, including those without active lesions during the current pregnancy
- A cesarean birth is not necessary for people with a history of genital herpes but no active genital lesions at the time of labor

2. Implement Latent (Early) Labor Supportive Care Policies and Establish Criteria for Active Labor Admission

Nothing may be as important in determining the course of labor and mode of delivery as the admission decision.^{107,111} Strategies to avoid admission during the latent phase of labor include implementing policies that reduce stress and anxiety for the woman, improve coping and manage pain, promote supportive care in the home environment, and support the physiologic onset of active labor. Supportive policies and related documents include:

- **Admission policy or checklist for spontaneous labor**¹⁴⁴
- **Latent labor support and therapeutic rest policies**
- **Patient education material to explain rationale for delayed admission, to reduce anxiety, and provide guidance on when to return to the labor and delivery unit**¹¹²
- **Material with specific guidance for partners and family members as to how to best support the woman in early labor**

While each situation must be managed individually, and decisions about intervention must consider all neonatal and maternal factors, current consensus on contemporary labor patterns suggests it is reasonable to admit the low-risk nulliparous woman when all of the following are present^{111,112,144}:

- **Regular, painful contractions**
- **Significant effacement (greater than or equal to 80%)**
- **4 or 5 cm dilation with documented cervical change over time determined by comparative cervical examination within the immediate few hours**

Assuming the fetus remains reassuring, in situations where active labor cannot be confidently diagnosed, a period of observation and/or discharge from the triage suite is warranted.^{111,144} Other situations that may warrant a period of observation or admission include inadequate pain control and extreme fatigue. In many cases, therapeutic rest through administration of medication is a safe alternative to admission in these instances. For cases where the latent phase is prolonged (ACOG/SMFM consensus statement defines as greater than 20 hours in nulliparous women and greater than 14 hours in multiparous women⁹) admission and

augmentation may be indicated, especially in the setting of severe fatigue (see Part III for further discussion of labor management).

For discharge from the triage suite during latent labor to be effective and safe, latent labor support policies are recommended. Providers and nurses need to be adequately educated on the benefits of the physiologic onset of labor, and on methods to promote patient comfort and labor progress. Moreover, the nursing interaction in the triage suite is a critical component of a woman's ability to successfully manage latent labor in the home setting. Fear and anxiety will be reduced only if the woman feels supported and cared for. Hodnett's systematic review of women's satisfaction with childbirth revealed that "the influences of pain, pain relief, and intrapartum medical interventions on subsequent satisfaction are neither as obvious, as direct, nor as powerful as the influences of the attitudes and behaviors of caregivers."¹⁴⁵ In some cases, it may take some time of walking or observation before the woman is ready to return home.

The nursing interaction in the triage suite is a critical component of a woman's ability to successfully manage latent labor in the home setting. Fear and anxiety will be reduced only if the woman feels supported and cared for. "The influences of pain, pain relief, and intrapartum medical interventions on subsequent satisfaction are neither as obvious, as direct, nor as powerful as the influences of the attitudes and behaviors of caregivers."¹⁴⁵

Equally important is the anticipatory guidance given to women during the prenatal period about what to expect during latent labor and how to adequately promote comfort and coping during this time. Having prenatal discussions about preferences and coping mechanisms that match the woman's individual strengths, and making specific shared decisions for her birth plan, will make it more likely that she will be able to manage early labor at home. Anticipatory guidance and continued reiteration during the latent labor period will serve to align expectations and decrease fear and anxiety.¹¹²

3. Improve the Support Infrastructure and Supportive Care during Labor

Improve Knowledge and Skill in Supportive Care Techniques

Nurses can have a significant influence on women’s mode of delivery,¹⁴⁶ and a nurse’s awareness of this can be a factor in their efforts to prevent cesarean birth. Neither nurses nor providers are routinely trained in birth support techniques as part of their formal education, nor in the reduction of cesarean birth through the support of physiologic processes. Because of this lack of training, knowledge of specific non-pharmacologic coping methods is inconsistent among clinicians and is not the cultural norm in many hospital settings.¹³⁵ Education on non-pharmacologic comfort measures should include^{147,148}:

- **Continuous labor support**
- **Breathing and relaxation techniques**
- **Touch techniques and massage**
- **Positions to promote comfort**
- **Heat and cold therapy**
- **Hydrotherapy**
- **Sterile water injections¹⁴⁹**
- **Transcutaneous electrical nerve stimulation (TENS)¹⁵⁰**

Education on methods to support labor progress and prevent dysfunctional labor should include:

- **Freedom of movement in labor¹⁵¹**
- **Upright and ambulatory positioning^{152,153}**
- **Techniques and tools (such as the peanut ball¹⁵⁴) that facilitate fetal rotation, flexion, and descent for women with epidural anesthesia¹²⁵**
- **Maternal exercises and positioning that facilitate fetal rotation in women with and without epidural anesthesia¹⁵⁷**

While nonpharmacologic methods have been traditionally associated only with women who desire a “natural” labor, such methods can improve coping for all women, especially those with regional analgesia (epidural) or narcotics who are unable to reach an effective level of relief, women who desire to avoid pharmacologic methods until well into active labor, and women in facilities where 24-hour in-house anesthesia coverage is not available. Nonpharmacologic approaches are therefore “relevant to virtually every childbearing woman.”¹⁵⁵

Nonpharmacologic approaches are “relevant to virtually every childbearing woman.”¹⁵⁵

Changing the culture of supportive care within a facility, to increase the use of non-pharmacological coping methods, may take several combined approaches. Nonetheless, feasible strategies can be implemented even in busy environments when patient census is high¹⁵⁶ (Table 10). The tools provided in this toolkit can assist in developing these skills and in providing care that supports intended vaginal birth, safely reduces routine intervention, and provides a satisfying patient experience.

Table 10. Support of Coping and Labor Progress^{125,147-154}

Support of Coping and Labor Progress	
Support coping and comfort through:	Support progress through:
Breathing and relaxation techniques	Freedom of movement in labor
Touch techniques and massage	Upright and ambulatory positioning
Positions to promote comfort	Techniques and tools (such as the peanut ball) that facilitate fetal rotation, flexion, and descent for women with epidural anesthesia
Heat and cold therapy	Maternal exercises and positioning that facilitate fetal rotation in women with and without epidural anesthesia
Hydrotherapy (shower, tub)	
Sterile water injections for back labor	
Use of Transcutaneous Electrical Nerve Stimulation	

Improve Infrastructure and Availability of Support Tools

The physiologic process of labor and birth is mediated by hormones, and the hormonal responses can be easily disrupted. Natural increases in epinephrine, norepinephrine, cortisol, and oxytocin occur in labor, some of which is mediated by the physical environment, stress, and fear. Efforts should be made to provide a safe, calm physical environment that engages a parasympathetic response and thereby promotes normal physiologic processes during labor and birth.^{91,135}

The design of existing labor and delivery units should be assessed to identify barriers to supporting intended vaginal birth, and practical changes should be implemented as needed. The infrastructure of these units also includes department policies and procedures that support intended vaginal birth. In particular, freedom of movement in labor is a significant factor in a woman's ability to cope,¹⁵¹ and position changes for the immobilized patient are important to facilitate flexion, rotation and descent.¹⁵⁷ Ambulatory positions and freedom of movement have not been shown to increase risk to either the mother or fetus.^{152,153} *Table 11* outlines the necessary components of a supportive infrastructure.

Table 11. Key Components of a Supportive Unit Infrastructure^{91,151-154,157}

Key Components of a Supportive Unit Infrastructure	
Physical Environment should allow:	Policies should:
Low lighting and privacy	Encourage movement, standing, walking, and frequent position changes at one's own discretion (for women without an epidural)
Comfortable space with adequate room for movement and walking	Support upright positioning, frequent position changes, and tools/techniques that promote optimal fetal positioning (such as peanut balls) for women with epidurals
Adequate availability of non-pharmacologic coping tools such as tubs or showers, rocking chairs, birthing balls, squat bars, and peanut balls	Encourage intermittent monitoring for eligible patients, or use of telemetry for women who must be continuously monitored and desire to be mobile
Freely available snacks with high nutritional value	

The Early Labor Lounge (ELL)

Admission in early labor has been identified as a risk factor for cesarean birth. However, delaying admission in early labor remains challenging for providers and nurses. People giving birth also have a multitude of reasons why laboring at home is difficult or impossible – including anxiety, distance from the hospital facility, and not having sufficient labor support.

The purpose of the ELL is to provide a strategy for delayed admission through labor-promoting activities in a hospital space where the person remains an outpatient and is attended to only by their support team, but can easily access the nursing staff if needed. Labor lounges are appropriate for people in early labor who are essentially low-risk and thus do not require continued monitoring in the early phase.

Labor lounges consist of a room with private spaces where the birthing person and their support person(s) can move from area to area for guided meditation, nutrition and hydration, partner massage, aromatherapy, labor-promoting positions and yoga, acupuncture, and even hydrotherapy in adjacent shower rooms.

Labor lounges, in addition to the obvious requirement of available hospital space in a convenient location near the triage area, also require a change in admission and triage policies (with inclusion and exclusion criteria) and, importantly, buy-in from providers and patients alike. Additionally, further research is needed to prove the efficacy of this intervention in reducing early labor admissions. Despite these issues, the Early Labor Lounge may provide a tangible intervention to improve patient experience in early labor, promote self-efficacy, and is especially useful when birthing people cannot or will not go home (due to distance, such as in rural areas), or where providers are reluctant to discharge to home in early labor.

1. Breman RB, Low LK, Paul J, Johantgen M. Promoting active labor admission: Early labor lounge implementation barriers and facilitators from the clinician perspective. *Nurs Forum.* Apr 2020;55(2):182-189. doi:10.1111/nuf.12414

2. Paul JA, Yount SM, Breman RB, et al. Use of an Early Labor Lounge to Promote Admission in Active Labor. *J Midwifery Womens Health.* Mar 2017;62(2):204-209. doi:10.1111/jmwh.12591

Improve Assessment of Pain and Coping

The use of a standard numeric pain scale, used by most labor and delivery units, may actually inhibit coping and disrupt labor progress by emphasizing the need to eliminate pain completely.¹³⁴ The Coping with Labor Algorithm (Appendix F) offers a simple alternative better attuned to women in labor. This algorithm is a validated tool that meets TJC's requirements for pain assessment and is recommended by the Task Force as a replacement for the standard numeric pain scale. Furthermore, the Coping with Labor Algorithm is easy to use, specifically defines how to assess "coping" and "not coping," gives nursing guidance on various methods that may promote comfort, and allows for a choice of pharmacologic and non-pharmacologic options of pain relief.

Remove Staffing and Documentation Barriers to Supportive Bedside Care

Unit processes and expectations, such as those related to charting and staffing, can either inhibit or streamline a nurse's ability to support vaginal birth in a meaningful way. Documentation demands, too, can become a barrier to providing care. Despite the known benefits of electronic health records (EHR), evidence suggests that the amount of time that nurses spend charting has increased in the last decade.¹²⁴ The use of EHR should be designed to support nurses, minimize cumbersome and redundant documentation, and streamline data collection.

Documentation of electronic fetal monitoring (EFM) is another area where improvement is necessary. The frequency of EFM documentation is individually determined by institutions and should differ in frequency from the ACOG-recommended EFM assessments. However, some institutions' EFM policies require documentation at every assessment interval, which causes an unnecessary documentation burden on the nurse.¹⁵⁸ Changes in these areas may increase nurse availability for bedside care and labor support.¹⁵⁹

Noting that labor support is integral to nursing care of the laboring women, AWHONN's 2010 nurse staffing guidelines recommend 1:1 care for women "choosing to labor with minimal to no pharmacologic pain relief or medical interventions."¹⁶⁰ Staffing in accordance with this recommendation should theoretically allow for optimal labor support while simultaneously preventing nurse burnout.¹²² Interestingly, some studies have demonstrated that even when nursing ratios allowed for 1:1 care, the amount of labor support did not increase.¹⁶¹ This may be due to the fact that the strongest predictor of a nurse's intention to provide labor support is the expectation of others.¹¹⁹ Thus, the expectation to provide excellent supportive care as the cultural norm, paired with 1:1 staffing ratios, may be the most effective solution to increasing the amount and quality of nursing labor support.

Educate and Empower Spouses, Partners, and Families to Provide Supportive Care

Recognizing that the busy nurse may not always be available to provide continuous labor support, nurses should be encouraged to provide intrapartum education on labor support techniques to the woman's support person, to role-model kindness and support, and to provide reassurance and information about labor progress and the birth process.¹⁵⁶ Nurses can empower families and partners to support the laboring woman in simple yet powerful ways, such as protecting her privacy, assisting with getting her comfortable in her room, and "creating a cocoon that helps her feel safe and protected."¹³⁵

4. Encourage Partnership With Doulas and Work Collaboratively to Provide Labor Support

Data consistently show that continuous labor support reduces the risk of cesarean birth.⁸² Recent studies have replicated this finding specific to continuous labor support by doulas.^{130,162} Despite wanting to give more robust labor support, many nurses realize that continuous labor support is unrealistic given the many nursing obligations of a busy

labor and delivery unit.¹⁶³ Doulas offer a unique skill and can play a key role in the woman's satisfaction of her birth experience.^{117,126} When doulas are utilized in a way that allows them to function appropriately in their unique and integral role, they can simultaneously advocate for women and act as helpful allies to nurses and providers.¹⁶³ Although doula care is rising in the United States, it has not been fully accepted in the hospital setting. There are still many misconceptions about doula care and often there is a stigma

surrounding the “type” of woman who has a doula.

Doulas should be considered an integral part of the birth team.¹²⁷ The following are recommendations to improve teamwork between nurses and doulas and promote safe, patient-centered care¹⁶³:

- **Open communication between the doula and the nurse and a “mutual understanding of roles.”**
- **Collegial rapport and joint understanding that the doula’s professional knowledge of labor support techniques complements the nurse’s extensive technical and medical skillset**
- **Two-way teaching. Doulas appreciate thoughtful and respectful guidance and feedback, especially those training for future medical or nursing professions. Likewise, nurses and nursing students can learn extensive labor support skills from doulas if willing to do so**

Hospitals can benefit by incorporating innovative strategies to support the use of doulas within the facility, such as:

- **Working with a local doula organization to provide information, support, and resources to families**
- **Connecting with community-based doula programs**
- **Considering the implementation of a hospital-based program**
- **See Part V for more strategies for integrating doulas into the birth care team**

5. Utilize Best Practice Recommendations for Laboring Women with Regional Anesthesia (Epidural, Spinal, and Combined Spinal Epidural)

There continues to be significant debate within the birth community about the correct timing for placement of epidural anesthesia in laboring women, the effect epidural anesthesia may have on the length of labor, and the risk of operative vaginal birth and cesarean birth for women who choose to have epidural anesthesia during labor. Hospitals and anesthesiologists often have differing opinions on the best type, modality, and dosing for regional anesthesia. Examples include “walking epidural,” combined spinal

epidural (CSE), patient controlled epidural anesthesia (PCEA), continuous infusion epidural (CIE), and programmed intermittent epidural boluses (PIEB). The following recommendations by the Task Force (*Table 12*) are based upon the best available evidence, and in accordance with the ACOG/SMFM *Obstetric Care Consensus on Safe Prevention of the Primary Cesarean Delivery*.³

Table 12. Best Practice Recommendations for Regional Anesthesia^{3,157,167-175}

Best Practice Recommendations for Regional Anesthesia
Do not avoid or delay epidural anesthesia as a method of reducing risk for cesarean birth
In the absence of a medical contraindication, if a woman specifically requests pain relief by epidural anesthesia, there is no need to wait for a minimum or arbitrary cervical dilation before administering (maternal request is a sufficient indication to provide pain relief through regional anesthesia)
The woman should be assisted in changing position at least every 20 minutes to assist necessary fetal rotation
Allow for longer durations of the second stage for women with regional anesthesia (e.g. at least 4 hours in nulliparous women, at least 3 hours in multiparous women), as long as maternal and fetal statuses remain reassuring
Allow for passive descent when there is no urge to push (delayed pushing until there is a stronger urge to push, generally 1-2 hours after complete dilation). Passive descent is correlated with shorter overall pushing time and greater chance of spontaneous vaginal birth
Preserve as much motor function as possible by administering the lowest concentration of epidural local anesthetic necessary to provide adequate maternal pain relief. Epidural solutions containing opioids allow less local anesthetic use without compromising labor analgesia
Turning an epidural off during the second stage of labor to improve pushing efforts is rarely necessary and likely has minimal beneficial effect on the length of the second stage
Utilize patient-controlled epidural anesthesia (PCEA) with background maintenance infusion that is intermittent or continuous (for laboring women, this is superior to PCEA alone and continuous infusion epidural)

Relationship of Epidural Anesthesia to Risk of Cesarean Birth

Although some studies show epidural anesthesia to be associated with an increased risk of operative vaginal delivery,¹⁷⁶ numerous other studies show no significant causal relationship between epidural anesthesia and the rate of cesarean birth.^{175,177}

Timing of Epidural Placement

The evidence indicates there is no difference in rate of cesarean birth based upon “early” placement of epidural (e.g. less than 4 cm dilation) versus placement in active labor.^{175,178} Similarly, Wong and colleagues¹⁷⁹ demonstrated no significant difference in cesarean birth for women undergoing induction of labor and randomized to receive either early or late epidural placement.

A joint statement by the American Congress of Obstetricians and Gynecologists and the American Society of Anesthesiologists states, “There is no other circumstance where it is considered acceptable for an individual to experience untreated severe pain amenable to safe intervention, while under a physician’s care. In the absence of a medical contraindication, maternal request is a sufficient medical indication for pain relief during labor. Pain management should be provided whenever medically indicated.”¹⁸³

Regarding the timing of epidural and malposition of the fetus, it is not clear if epidural anesthesia predisposes to persistent malposition, or if an already malpositioned fetus increases the need for pain relief. While there is no evidence to suggest that epidurals cause malposition of the fetus, the preponderance of evidence suggests that those women who request and receive epidurals are up to four times as likely to have an occiput posterior fetus than women without epidurals.^{180,181} Evidence also suggests that placing an epidural later in labor (greater than or equal to 5 cm dilation, or greater than or equal to 0 station) is associated with fewer persistent malpositions.^{181,182}

Relationship of Epidural to Overall Length of Labor and Duration of the Second Stage

The vast majority of studies indicate that labor is lengthened in women with epidural anesthesia.¹⁷⁷ Also, a recent retrospective analysis of 42,000 women demonstrated that epidural use is associated with a larger effect on the second stage of labor than previously suspected.¹⁸⁴

The amount of anesthetic administered may also play a role. A 2011 meta-analysis of epidural anesthetic concentrations revealed that low concentrations (less than or equal to 0.1% epidural bupivacaine or less than or equal to 0.17% ropivacaine) were associated with fewer operative vaginal deliveries and a shorter second stage.¹⁷¹

A joint statement by the American Congress of Obstetricians and Gynecologists and the American Society of Anesthesiologists states, “There is no other circumstance where it is considered acceptable for an individual to experience untreated severe pain amenable to safe intervention, while under a physician’s care. In the absence of a medical contraindication, maternal request is a sufficient medical indication for pain relief during labor. Pain management should be provided whenever medically indicated.”¹⁸³

Innovations in Obstetric Anesthesia

In recent years, there have been many innovations in obstetric anesthesia including drug combinations, dosing, and delivery systems. At the forefront of these advances is the goal of improving patient satisfaction while simultaneously reducing the overall consumption of local anesthetic and subsequent need for anesthetic intervention. For laboring women, studies have shown that patient-controlled epidural anesthesia (PCEA) is superior to fixed dose continuous infusion epidural (CIE).¹⁷⁰ In comparison to CIE, PCEA offers less analgesic consumption and need for anesthetic intervention. PCEA with background maintenance infusion improves overall pain control and decreases the need for unscheduled rescue boluses as compared to PCEA alone.¹⁷³ Recent studies comparing programmed intermittent epidural bolus (PIEB) to CIE show that PIEB improves satisfaction, results in less anesthetic consumption while maintaining analgesia,¹⁸⁵ and may decrease motor block, an essential goal for obstetric anesthesia.¹⁷⁴

6. Implement Intermittent Fetal Monitoring Policies for Low-Risk Women

The type of fetal monitoring, like other interventions, should be based upon the risk profile and needs of the woman. The vast majority of the low-risk NTSV population are candidates for intermittent auscultation or intermittent EFM, and the use of intermittent methods is supported by the AWHONN^{160,186} and the ACOG.¹³⁷ The ACNM endorses intermittent auscultation as the preferred method for low-risk women.¹³⁸ *Table 13* outlines the requirements for intermittent EFM or intermittent auscultation as the default method of monitoring.

Table 13. Components of Successful Implementation of Intermittent Fetal Monitoring

Components of Successful Implementation of Intermittent Fetal Monitoring
Policies should include a risk assessment tool or checklist with exclusion criteria to assist in identifying women for which intermittent auscultation or intermittent EFM is appropriate ⁸⁵
Provide patient education for the use of intermittent methods of monitoring, including the risks and benefits of intermittent versus continuous methods, and engage in shared decision making in order to determine most appropriate method for each woman
Provide on-going assessments of women to determine appropriateness of continued intermittent methods versus conversion to continuous EFM ⁸⁵
Engage in initial and ongoing training and education of all nurses and providers on intermittent auscultation or intermittent EFM procedures
Provide appropriate staffing, e.g. 1:1 nursing care as recommended by AWHONN for intermittent auscultation in low-risk women ¹⁶⁰
Work with necessary committees and Information Technology (IT) to modify admission orders to reflect the use of intermittent EFM or auscultation as the default mode of monitoring for women who do not meet the exclusion criteria
Ensure that the appropriate equipment, such as Dopplers, are readily available in sufficient numbers
Develop a competency tool for evaluating knowledge of procedures and use of equipment

Many providers and nurses currently have no experience with intermittent methods of monitoring. Implementing intermittent monitoring as the default method for low-risk women will require “tapping into” a unit culture that prioritizes supportive, appropriate, evidence-based care. Intermittent monitoring should not be undertaken until providers and nurses have been adequately trained. Furthermore, women must be made aware of the risks and benefits of intermittent versus continuous methods. Shared decision making is critical.



7. Implement Current Treatment and Prevention Guidelines for Potentially Modifiable Conditions

Assessment of Fetal Presentation and External Cephalic Version (ECV)

Fetal presentation should be assessed by 36 weeks gestation and external cephalic version should be offered to women with a singleton breech fetus.³ It is incumbent upon physicians to engage in initial training for ECV and maintain competency. Regional anesthesia can be utilized to increase likelihood of successful ECV.¹⁸⁷ If ECV is unsuccessful, cesarean birth is the preferred mode of delivery.¹⁸⁸ Alternatively, vaginal breech delivery is an option with a skilled provider who has significant experience in such cases, but should be undertaken with an abundance of caution. The woman should be informed that higher risk to the neonate may exist for vaginal breech deliveries than for planned cesarean of the breech fetus.³

HSV Prophylaxis

Administration of acyclovir for viral suppression and prevention of outbreaks during pregnancy has been shown to be highly effective¹⁸⁹ and remains the most important strategy to reduce active genital lesions at the time of labor.³ All women with a history of genital herpes, including those without active lesions during the current pregnancy, should be offered oral suppressive therapy at 36 weeks gestation, or within 3-4 weeks of anticipated delivery. A cesarean need not be performed on women with a history of genital herpes but no active genital lesions at the time of labor.

Part III. Response: Management of Labor Abnormalities

Standardization Matters

The past decade has seen many publications that address why and how medicine should focus on reducing variation in health care practices to improve outcomes across all specialties.¹⁹⁰⁻¹⁹⁴ Among the responses was the Surgical Safety Checklist, developed by Atul Gawande and colleagues.¹⁹⁵ For nearly 4,000 patients from both high- and low-resource countries, the rate of surgical complications (including death, infection, and reoperation) was reduced from 11% pre-checklist to 7% after instituting the checklist. Furthermore, the Institute of Medicine's publication *Crossing the Quality Chasm: A New Health System for the 21st Century* pleads for health care leaders and consumer representatives to support the development of best practices in order to achieve the highest quality of care.⁹⁰

Maternity care is no exception to this broad transformation in care. The ACOG published *Quality and Safety in Women's Health Care*¹⁹⁶ in 2010, and a Committee Opinion in 2012, updated in 2015, titled *Clinical Guidelines and Standardization of Practice to Improve Outcomes*.¹⁹⁷ The latter document highlights a reduction in obstetric anesthetic complications, medication errors, and neonatal group B strep infections because of collaboratively created protocols and checklists which are now standardized approaches to care. The surgical safety checklist is another tool that has become embedded in the operating room processes of many obstetric units across the United States.

Many examples of interprofessional collaborative work to improve quality and safety in maternity care now exist. The Institute for Healthcare Improvement's Perinatal Improvement Community has worked on a variety of obstetric topics over the past decade.¹⁹⁸ Individual hospitals and hospital systems have contributed perinatal work processes to the literature showing how improving obstetric outcomes takes concerted teamwork and standardization.¹⁹⁹ Reduction of early elective deliveries has been very successful in states where this work has been done. CMQCC and other state and national perinatal collaboratives, such as the Council on Patient Safety in Women's Health Care, are examples of how health care providers and other experts can collaboratively provide education, process suggestions, and implement tools to improve outcomes. Previous

In This Section

KEY STRATEGIES

to Manage Labor Abnormalities and Safely Reduce Cesarean Birth 60

TOOLS

Appendix C & D – Various Web-based Tools and Model Policies 115-126

Appendix G – Guide to Second Stage Management of Malposition 131-134

Appendix J – Pre-cesarean Checklist for Labor Dystocia or Failed Induction 142

Appendix K – Labor Dystocia Checklist 143

Appendix L – Labor Duration Guidelines 144

Appendix M – Spontaneous Labor Algorithm 145

Appendix N – Algorithm for Management of the Second Stage of Labor 146

Appendix O – Active Labor Partogram 147

Appendix P – Algorithm for the Management of Category II Fetal Heart Tracings (Dr. Steven Clark and colleagues) 148

Appendix Q – Algorithm for the Management of Intrapartum Fetal Heart Tracings 149

Appendix R – Induction of Labor Algorithm 150

Appendix S – ACOG Key Labor Definitions 151

Appendix T – Model Policies 152-177

TABLES

Table 14. Barriers to Appropriately Managing Labor Abnormalities 55

Table 15. Features of Effective Teamwork and Skilled Communication 56

Table 16. Glossary of Terms for Induction of Labor 57

Table 17. Maternal and Infant Outcomes After Changes in Elective Induction of Labor Policies 58

Table 18. Key Strategies to Manage Labor Abnormalities and Safely Reduce Cesarean Birth 60

Table 19. Summary of Recommendations for the First Stage of Labor (ACOG/SMFM Obstetric Care Consensus, 2014) 62

Table 20. Summary of Recommendations for the Second Stage of Labor (ACOG/SMFM Obstetric Care Consensus, 2014) 62

Table 21. Essential Components of Safely Administering Oxytocin 63

Table 22. NICHD Fetal Heart Rate Classification 64

Table 23. Conservative Corrective Measures for Category II Fetal Heart Rate Tracings 64

Table 24. Gestational Age Terminology and ACOG Criteria for Confirmation of Term Gestation 65

Table 25. Examples of Accepted Medical Indications for Induction of Labor 65

Table 26. Key Components for Successfully Decreasing Non-medically Indicated (Elective) Induction of Labor 66

Table 27. Summary of Recommendations for Induction of Labor (ACOG/SMFM Obstetric Care Consensus, 2014) 66

Table 28. Commonly Cited Reasons for Induction of Labor That Do Not Meet Criteria As “Medical Indications” 67

Table 29. Identification, Prevention, and Treatment of the Malpositioned Fetus 69

toolkits by CMQCC, such as *Response to OB Hemorrhage* and *Response to Preeclampsia*,²⁰⁰ were initially meant to improve outcomes in California, but with open-sharing have had a significant impact nationally. The toolkit method, with its step-by-step approach, holds great potential to improve maternal and neonatal outcomes associated with all modes of birth.

Recent studies reveal that indicators that rely on provider discretion (such as failure to progress and fetal intolerance of labor) are contributing to the overall increase in primary cesareans more than objective indications such as breech or other obstetric conditions.³¹ From 2003 to 2009, a study at Yale University analyzed data from over 32,000 live births.²⁰¹ Of these births, 50% of the overall increase in cesareans was attributable to an increase in primary cesareans. Half of the increase in primary cesareans was attributable to nonreassuring fetal heart rate (32%) and arrest of labor (18%). The data showed that primary cesareans for arrest of descent remained stable, revealing that “arrest of labor” diagnoses were really arrest of dilation. Similarly, Kaiser Permanente Southern California examined the rise in cesarean births among primary singleton births from 1991 to 2008, which included roughly 48,000 births per year.²⁰² Of the primary singleton cesarean births, fetal intolerance of labor accounted for 24% of the increase, and other provider-dependent indicators such as failure to progress, cephalopelvic disproportion (CPD), and macrosomia accounted for 38% of the increase.

Given this information, the Task Force supports the standardization of definitions to guide care during labor and birth, thereby improving response to labor abnormalities and safely reducing primary cesarean births. Care during labor and birth requires simultaneous personalization of care for both the

woman and the fetus under conditions that are often unpredictable. For this reason, perfect standardization of response is not realistic, nor acceptable. However, standardizing certain definitions within labor and birth (e.g. the NICHD categories for electronic fetal monitoring and the ACOG/SMFM criteria for labor dystocia) will serve to improve decision making, while still leaving room for compassionate, individualized care.

Care during labor and birth requires simultaneous personalization of care for both the woman and the fetus under conditions that are often unpredictable. For this reason, perfect standardization of response is not realistic, nor acceptable. However, standardizing certain definitions within labor and birth will serve to improve decision making, while still leaving room for compassionate, individualized care.

Although a lack of standard definitions has been identified as a key barrier to reducing cesarean births, it is not the only major barrier. Efficient teamwork and effective communication, for example, form the foundation for quality improvement efforts.

Based on the findings discussed above, the Task Force has identified five core barriers to responding quickly and

appropriately to labor abnormalities (*Table 14*).

Table 14. Barriers to Appropriately Managing Labor Abnormalities

Response: Barriers to Appropriately Managing Labor Abnormalities
1. Poor professional communication and lack of teamwork
2. Lack of standard diagnostic criteria and/or standard response to labor challenges and fetal heart rate abnormalities
3. Failure to identify and intervene for the persistently OP/OT fetus
4. Professional challenges in work-life balance (e.g. clinic, surgical, and family obligations) that create limited availability of the provider on the labor and delivery unit
5. Liability-driven decision making

Poor Professional Communication and Lack of Teamwork

Teamwork and effective communication form the foundation of safe response to obstetric emergencies and labor abnormalities. Breakdown in communication is consistently identified as a leading factor contributing to failures in the delivery of safe patient care.²⁰³⁻²⁰⁶ It is widely accepted that having a high-functioning, reliable team on the perinatal unit is essential for promoting safe, patient-centered care with quality outcomes.^{56,194,207-213}

TJC makes the following strong recommendation: “Since the majority of perinatal death and injury cases reported root causes related to problems with organizational culture and with communication among caregivers, it is recommended that organizations conduct team training in perinatal areas to teach staff to work together and communicate

“Since the majority of perinatal death and injury cases reported root causes related to problems with organizational culture and with communication among caregivers, it is recommended that organizations conduct team training in perinatal areas to teach staff to work together and communicate more effectively.”²⁰⁵

- The Joint Commission

more effectively.”²⁰⁵ Shared recognition by a perinatal care team that performing a potentially unnecessary cesarean can result in injury to both mother and baby is the underpinning for preventing this potential adverse event. But the labor process is dynamic, and changes in maternal and fetal status can occur rapidly. Management of labor requires continuous assessment and evaluation of both the mother and the fetus. Labor abnormalities as a whole (fetal intolerance of labor, arrest of labor, failure to progress) comprise the largest indicator for primary cesarean birth.^{31,201} While decision making is fairly straightforward when the fetus or labor process declares a significant abnormality, the decision to perform a cesarean under typical circumstances is often less certain. It is a decision based upon multiple factors occurring over time, and one that may be hampered by the stress of the moment, lack of information, irrelevant external factors, and poor situational awareness.²¹⁴ Therefore, for both “normal” labors and “abnormal” labors, it is essential that the entire perinatal care team have the ability to work effectively and fluidly, and continuously communicate with skill. Many labor and delivery units already function with highly efficient and effective teams, while others may need to concentrate on this issue more closely before moving on to any of the other quality improvement activities noted in this section. Features of effective teamwork and skilled communication are listed in *Table 15*.

Table 15. Features of Effective Teamwork and Skilled Communication^{56,207,211-213,215-218}

Features of Effective Teamwork and Skilled Communication
Respect for all members of the team
Trust in one another
Ability to rely on the information and actions of one another
Ability to resolve conflict
Ability to manage disruptive behavior

Lack of Standard Diagnostic Criteria and/or Standard Responses to Labor Challenges and Fetal Heart Rate Abnormalities

The Task Force identified four specific areas where standardization could significantly improve safety and quality, guide decision making for appropriate use of cesarean birth, and promote patience and vigilance when indications for cesarean are not present:

- **Diagnosis of labor dystocia**
- **Use of oxytocin**
- **Response to abnormal fetal heart rate patterns**
- **Induction of labor**

Diagnosis of Labor Dystocia

As previously noted in Part II of this toolkit, a contemporary labor pattern has emerged that is quite different than reported by Friedman in his groundbreaking early studies. Zhang and colleagues noted that the fastest rate of cervical dilation begins at 6 cm, and that women laboring at the slowest “normal” rate may take “more than 6 hours to progress from 4 to 5 cm and more than 3 hours to progress from 5 to 6 cm of dilation.”¹⁰⁹ Despite these findings and recommendations by the Consortium on Safe Labor, general institutional acceptance of this new labor curve has been slow. Many factors may contribute to this, including that the definition of prolonged latent phase by Friedman is still widely accepted,³ many women are admitted to the hospital before active labor has truly begun,¹¹¹ and many providers still adhere to a frequent cervical examination schedule of every two hours even before commencement of active labor. All of these things combined may lead to an overall culture of care that diagnoses labor dystocia far too early. Furthermore, appropriate diagnosis of labor dystocia is critical to the judicious and appropriate use of oxytocin (see next section).

Use of Oxytocin

Intravenous oxytocin is the main pharmacologic agent for induction and augmentation of labor. It is an effective medication but also a “high-alert” medication due to its association with adverse maternal and fetal outcomes.^{219,220}

Over the past 50 years, both clinical researchers and providers have struggled with identifying the ideal dosing and minimizing potential complications associated with intrapartum oxytocin administration. Pharmacokinetics for oxytocin in pregnant women were clarified in the mid-1980s, showing quick initial onset of one to five minutes, but a slowly achieved steady-state of approximately 40 minutes.²²¹ Since most complications are associated with uterine activity and are dose-related, recent quality improvement efforts to reduce adverse events related to oxytocin have focused on using lower initial dosing and increasing more slowly until the lowest effective dose has been achieved.²²²⁻²²⁵ Nonetheless, wide variation in oxytocin protocols and administration persists.

Response to Abnormal Fetal Heart Rate Patterns

Electronic fetal monitoring (EFM) was introduced in 1958 by Edward Hon at Yale University.²²⁶ It seemed to improve outcomes for preterm births and rapidly became the default method of intrapartum fetal surveillance. Unfortunately, EFM was brought into use before extensive testing and before basic understanding of the relationship between specific fetal heart rate (FHR) patterns and fetal metabolic acidemia.²²⁷ As the use of EFM increased, so did the rate of cesarean birth, but without a concomitant decrease in adverse fetal outcomes or mortality.⁸⁵ While the evidence regarding clinical benefit of EFM is often conflicting, the relationship of FHR patterns to the increase in cesarean birth is clear. Barber and colleagues noted that nonreassuring FHR tracings contributed the greatest proportion of the overall increase in cesarean births in a single institution between 2003 and 2009.²⁰¹

Induction of Labor

In the U.S., approximately 23% of births are induced.^{3,230} According to recent data from the Centers for Medicare & Medicaid Services (CMS), early elective delivery (birth before 39 weeks without a medical indication) ranges

from 2% to 22%, depending on the state.²³¹ From the 1990s until present day, an increase in induction of labor has mirrored the increase in cesarean birth, with slight decreases in induction of labor in recent years. This recent decrease is consistent with a widespread acknowledgment of increased morbidity and mortality of infants born before 39 weeks of pregnancy and subsequent changes in clinical practice during the same timeframe that resulted from local,²³²⁻²³⁴ state,²²⁸ and national^{235,236} efforts to reduce non-medically indicated induction of labor at less than 39 weeks. The success of these initiatives is a result of extensive outreach to childbearing women and providers in tandem with diligent monitoring locally and across hospital systems.

The decades-long concurrent increase in both cesareans and induction of labor, as well as studies comparing outcomes for induction compared to spontaneous onset of labor, has contributed to the prevailing thinking within obstetrics that induction of labor is highly associated with an increase in unplanned cesareans,²³⁷ and some studies have borne out that the likelihood of cesarean is higher for induced labor than for spontaneous labor,⁸⁵ especially for nulliparas who are induced with an unfavorable cervix.^{83,84,238} In recent years, however, this consensus has been challenged by several prospective trials and meta-analyses contrasting induction of labor to expectant management, a more relevant comparison than spontaneous-onset labor. When outcomes for women who are induced are compared to women who continue with pregnancy (expectant management), there appears to be either no difference in cesarean for the women with induced labors, or possibly even a slightly decreased likelihood of cesarean for this group.^{237,239-244} These conflicting reports may lead to variations in practice, confusion amongst providers about the benefits and risks of induction of labor at term (39+0 – 40+6 weeks), and difference in how providers counsel women regarding induction of labor between 39 and 41 weeks gestation.

Many factors affect the risk of cesarean after the decision for induction of labor has been made. These factors vary by provider and by facility. How induction is managed, therefore, may be the determining factor for whether the risk of cesarean is increased. For example, whether cervical ripening is used when the cervix is unfavorable, and whether adequate time is allowed for the woman to progress into the active phase of labor before diagnosing a “failed induction” will affect the likelihood of cesarean.³ The “physician effect,” meaning the impact of an individual physician, affected by the facility’s management style, has also been noted as an independent risk factor for cesareans.²³⁸ This is important to consider because, given the increased length of latent labor in induced women

Table 16. Glossary of Terms for Induction of Labor^{228,229}

Glossary of Terms for Induction of Labor	
Induction of labor	Defined by ACOG as attempting “to achieve a vaginal delivery by stimulating uterine contractions before the onset of spontaneous labor”
Non-medically indicated (elective) induction of labor	“Induction of labor without an accepted medical or obstetrical indication before the spontaneous onset of labor or rupture of membranes”
Medically indicated induction of labor	Induction of labor when there is clear medical benefit to either the mother or the baby to end the pregnancy

as compared to their spontaneously laboring counterparts,²⁴⁵ patience by the provider and the facility is critical to determining the outcome when labor is induced.²⁴⁶

Recent “before-after” studies have examined the effects of labor induction policies on cesarean rates. These studies, which evaluate the impact of specific quality improvement activities on rates of cesareans in specific practice settings, are perhaps the most relevant way of examining the effect of labor induction in community hospitals. Studies by Fisch et al., Oshiro et al., and Reisner et al.²³²⁻²³⁴ revealed that rates of cesareans dropped significantly after implementing policies to limit non-medically indicated induction of labor to 39 weeks and greater (*Table 17*).

Table 17. Maternal and Infant Outcomes After Changes in Elective Induction of Labor Policies²³²⁻²³⁴

Maternal and Infant Outcomes After Changes in Elective Induction of Labor (eIOL) Policies			
Study Citation	eIOL Policy Change	Maternal Outcomes	Infant Outcomes
Fisch et al., 2009 (Magee Womens Hospital, Pittsburgh, PA)	New guideline implemented in 2006 with eIOL allowed only after 39 weeks, and with a Bishop score of 8 or greater for nulliparas and 6 or greater for multiparas. No cervical ripening agents allowed.	Total eIOL rate declined from 9.1% to 6.4%. Cesarean rate for nulliparas undergoing eIOL decreased from 34.5% to 13.8% (risk of Cesarean was decreased by 70%) NNT (nulliparas) = 10.	Not reported
Oshiro et al., 2009 (9 urban Intermountain Healthcare hospitals in the western U.S.)	eIOL only after 39 weeks, and with Bishop score of 10 or greater for nulliparas and 8 or greater for multiparas. No cervical ripening agents allowed.	Rate of eIOL at less than 39 weeks declined from 28% in 1999 to 3.4% in 2007. Cesarean delivery for “fetal distress” decreased by 43% after implementation of guidelines (11% to 6%, NNT=20). The total Cesarean rate for women with Bishop score of 8 was 13.3% and for those with a Bishop score of 10 was 8.1%, compared to rates of 51.4% to 17.6% with Bishop scores of 1 to 5.	Rates of neonatal ventilator use, respiratory distress syndrome, and macrosomia were unchanged. Rate of meconium aspiration declined 43%. Stillbirth rates at 37, 38, 39, 40 and 41 weeks declined by 41% overall, with the weekly difference being statistically significant for the 37 and 38 week intervals and overall.
Reisner et al., 2009 (Swedish Medical Center, Seattle, WA)	eIOL restricted to 39 weeks or above, and Bishop score of greater than or equal to 6.	eIOL declined from 4.3% to 0.8% for nulliparas and from 12.5% to 9.3% for multiparas. Unplanned CS after eIOL for nulliparas declined from 26.9% to 17.9% and from 4.5% to 3.0% for multiparas. NNT (nulliparas) = 9 NNT (multiparas) = 48	Not reported

King, V., Slaughter-Mason, S., King, A., Frew, P., Thompson, J., Evans, R. & Donsbach, L. (2013). Improving Maternal & Neonatal Outcomes: Toolkit for Reducing Cesarean Deliveries. Portland, OR: Center for Evidence-based Policy, Oregon Health & Science University. Table reprinted with permission from the author.

Failure to Identify and Intervene for the Persistently OP/OT Fetus

Malpresentation occurs in 8% to 9% of term pregnancies, with most of these due to a malpositioned fetus in vertex presentation. In order of occurrence, vertex malpositions are: occiput posterior (OP) (5.2%), brow (0.14%), and face (0.1%).²⁴⁷ Together they account for 12% of all cesarean births performed due to dystocia.²⁴⁸ Women with an OP fetus face a likelihood of cesarean that is 2 to 6 times that of women with a fetus in the occiput anterior (OA) position.²⁴⁹ Another vertex variant, occiput transverse (OT), is also encountered but most often is a transitory position.²⁵⁰

At labor onset, 15% to 32% of vertex fetuses will be in an OP or OT position and by second stage most will rotate to the well-flexed OA position and deliver vaginally.^{180,181,251,252} However, 5% to 8% of these OP/OT fetuses will persist in malposition and are more likely to deliver by cesarean or operative vaginal delivery.^{181,248,253} When labor dystocia occurs in second stage, vaginal birth is optimized when clinicians determine that the woman has a malpositioned fetus and subsequently intervene to promote progress.

Professional Challenges in Work-Life Balance

Challenges in work-life balance exist for many medical professionals. Maternity providers face high birth volumes and busy clinic practices, and nurses are notorious for working long hours and performing multiple professional roles simultaneously. Physicians must also deal with demanding surgical schedules. Providers must somehow weave an intricate balance between these demands and those of personal life and family — a balance that is often disrupted by the unpredictability of labor and birth.²⁵⁴

The current payment structure for maternity care services may further complicate this situation (see Part I of toolkit) by creating a time-based incentive to prematurely end long labors with cesarean, or to induce labor while on-call in order to ensure the provider's presence at the birth while also helping to "normalize" his or her time when not on-call.^{31,55}

These challenges have forced hospitals to evaluate the systems, teams, and staffing structures needed to provide flexible responses to the various, and often rapidly-changing, needs of the laboring woman.²⁵⁵ Additionally, recent studies show that the mix of provider types available to respond to labor challenges, such as the availability of both physician and midwife "laborists," may have a significant impact on cesarean rates.²⁵⁴ It should be noted, however, that

the cesarean rate for laborist physicians within the same institution can vary greatly (a three-fold variation in a recent study²⁵⁶). This finding once again reinforces the impact of individual physician decision making.

Liability-Driven Decision Making

Discussion of response to labor abnormalities would not be complete without addressing the effect of potential liability on provider decision-making. Compared to other specialty areas, obstetrics carries increased risk of liability claims,²⁵⁷ and providers are well aware of the potential for litigation arising out of the timing and mode of birth.^{258,259} In particular, failing to act in a timely fashion and exercising improper judgment are often cited against the defendant in obstetric lawsuits.²⁶⁰ The fear created by such claims may explain the positive correlation between liability pressure and cesarean birth rates, and the negative correlation between litigation and offering trial of labor after cesarean (TOLAC).^{261,262}

Physicians who have previously been involved in a malpractice lawsuit show an increased tendency to recommend cesarean.²⁶³ A small increase in rates of cesarean in the short-term and/or a decrease in overall births, has also been noted for physicians involved in litigation.^{264,265} Whether real or perceived, the risk of and fear of litigation may present an obstacle to success for institutions or individuals attempting to curtail rates of cesarean birth.

Improvement Strategies

1. Create Highly Reliable Teams and Improve Interprofessional Communication at Critical Points in Care

Develop Protocols and Institutional Policies that Promote and Support Teamwork and Effective Communication

Implementing highly reliable interprofessional teamwork on a perinatal unit requires a commitment to creating a culture that values safety, collegial relationships, and respectful communication.²⁶⁶ A first step is recognizing that teams, rather than individuals, ensure safety for patients. Thus, organizational leadership must be engaged to develop policies that will strengthen the quality and performance of the team. Programs that have successfully implemented a team-based approach to patient safety in labor and delivery units can provide useful models for change, including the approaches by Wagner and colleagues²⁰⁸ and McFerran and colleagues.²⁶⁷

Table 18. Key Strategies to Manage Labor Abnormalities and Safely Reduce Cesarean Births

1 Create Highly Reliable Teams and Improve Interprofessional Communication at Critical Points in Care

- Develop protocols and institutional policies that promote and support teamwork and effective communication
- Create a culture of collegiality and mutual respect
- Implement formal programs for the development and ongoing evaluation of teamwork and communication (e.g., TeamSTEPS®)
- Promote standardized communication techniques to improve efficiency and clarity of communication (e.g., SBAR)
- Promote situational awareness through impromptu huddles, team rounds, and debriefings
- Develop Rapid Response Teams

2 Implement Standard Diagnostic Criteria and Standard Responses to Labor Challenges and Fetal Heart Rate Abnormalities

- Utilize standard diagnostic criteria and algorithms to reduce and respond to labor dystocia
- Implement policies for the safe use of oxytocin
- Endorse NICHD categories and standardize responses to abnormal fetal heart rate patterns and uterine activity
- Standardize induction of labor (e.g., patient selection, scheduling, and induction process)

3 Utilize Operative Vaginal Delivery in Eligible Cases

- Ensure training and ongoing physician competency in forceps and vacuum extraction

4 Identify Malposition and Implement Appropriate Interventions

- Identify malposition early (ideally by early second stage of labor), and employ the use of ultrasound if unable to clearly define the position of the vertex with digital exam and Leopold's Maneuvers
- Promote rotation of the vertex from an OP position with maternal positioning including during second stage, and manual or instrumented rotation by an experienced, well-trained provider
- As long as incremental descent is being made, and fetal and maternal statuses permit, allow for longer durations of the second stage (e.g., at least 4 hours for nulliparous patients and at least 3 hours for multiparous patients)

5 Consider Alternative Coverage Programs (Laborist Models and Physician/Midwife Collaborative Practice Models)

- Laborist models of care promote on-site readiness, remove the time-based and economic incentives to perform cesareans, and lend to the retention of core knowledge and skills
- Midwifery care has been identified as an underused maternity service, with the potential to curb costs, improve overall outcomes, and reduce rates of cesarean
- See Part V for more specific strategies for midwifery integration

6 Develop Systems that Facilitate Safe, Patient-Centered Transfer of Care Between the Out-of-Hospital Birth Environment and the Hospital

- See Part V for specific strategies

7 Reduce Liability-Driven Decision Making by Focusing on Quality and Safety

- Educate providers on the benefits of a well-designed quality improvement program to reduce cesarean
- Specifically address the situations that contribute the most to obstetric liability claims
- Well-chosen cesareans are sometimes necessary to prevent avoidable maternal and fetal harm. The goal of a quality improvement program to reduce cesarean is not to prevent cesarean birth "at all costs"

Create a Culture of Collegiality and Mutual Respect

An important feature of effective communication is the ability to speak assertively without fear of retribution. Empowering all members of the team to participate in communication with an equal voice increases the likelihood that all observations will be shared.²⁰⁹ Members of high-functioning teams hold themselves accountable to speak up and make their concerns known. Through this process, the team is able to reach a conclusion on the patient's status and the safest and best plan of care. Allowing all participants of the team, including the patient, to be heard and understood is critical to the communication process. Effective communication and respect also involves deep listening, which includes questioning to verify information

and gain insight. Effective communication is not complete until a course of action is both agreed upon and completed.

However, conflict arises frequently among providers, and at times even with the patient. In the context of labor management, two areas in particular that have been identified as frequent sources of conflict between providers are administration of oxytocin and interpretation of the fetal heart tracing.^{207,216} Therefore, it is important for the interprofessional team to practice skills for conflict resolution, which also functions as a team-building exercise. Formal programs, such as those described in the next section, can assist in learning valuable techniques for conflict resolution.

Implement Formal Programs for the Development and Ongoing Evaluation of Teamwork and Communication

Utilization of an evidence-based program can facilitate the implementation and evaluation of a team-based approach to obstetric safety. One example, developed by the Agency for Healthcare Research, is called TeamSTEPPS®.²⁶⁸ Another program, MedTeam®, was developed by Dynamic Research Corporation for Emergency Departments.²⁶⁹ Both programs encourage interprofessional training that allows diverse groups to come together during the skill development process. Working in interprofessional groups allows teams to break down hierarchies and learn from one another.²⁶⁶ Practicing communication skills in a safe and controlled environment allows team members to experience collegiality and develop respect for one another and their respective disciplines.

Promote Standardized Communication Techniques to Improve Efficiency and Clarity of Communication

When labor abnormalities arise in an otherwise normal labor, effective teamwork and communication are crucial to safe care and best outcomes for the patient and her baby. Team members must work together to determine the safest course of action: to continue the labor or to expedite the birth, which may include a cesarean. Standardized communication techniques that call attention to an abnormal situation requiring urgent attention are necessary to promote a culture of safety and inform appropriate decision making.²⁶⁸ For example, a checklist for labor dystocia can be used as a “hard stop” to reinforce guidelines for proper diagnosis. Another widely used structured communication is Situation-Background-Assessment-Recommendations (SBAR), a reporting format that provides a succinct and reproducible method for urgent communication. There is also CUS: an acronym for I’m concerned, I’m uncomfortable,

and I’m scared, developed by the airline industry that prompts the user to proceed through escalating levels of critical communication.²⁶⁸

Promote Situational Awareness through Core Meetings, Impromptu Huddles, Team Rounds, and Debriefings

High-functioning team performance depends on situational awareness. Allowing time for teams to meet either formally or informally to discuss patient care and develop plans is crucial to remaining vigilant. Some facilities call this type of meeting a “huddle” or “running the board,” and engage in these activities at critical times, such as when patient census or acuity is rapidly changing. During these times, several members of the team can act as a “fresh pair of eyes.”²¹⁴ Having many eyes on the same fetal tracing, for example, can reduce errors and allow team members to feel more confident in their assessments. A few studies have revealed that eliciting a “second opinion” from a consulting physician may safely avert an unnecessary cesarean.^{270,271} Teams should also utilize briefings and debriefings to determine safe practices and review outcomes.²⁰⁷

Develop Rapid Response Teams

There are occasions when promoting vaginal birth in the presence of labor abnormalities requires the ability to rapidly respond from time of decision to incision. This ability to respond rapidly and efficiently once the decision is made to perform an emergency cesarean allows the team to wait patiently when faced with labor abnormalities. When interprofessional teams train together under simulated conditions, they develop skilled, coordinated responses to critical obstetric events.²⁷² In this regard, the development of a Rapid Response Team on the maternity unit has been promoted by ACOG²⁷³ and by the Institute for Healthcare Improvement,²⁷⁴ as well as by many other stakeholders.

2. Implement Standard Diagnostic Criteria and Standard Responses to Labor Challenges and Fetal Heart Rate Abnormalities

Utilize Standard Diagnostic Criteria and Algorithms to Reduce and Respond to Labor Dystocia

The criteria for normal labor progress established in the 1950s by Friedman—1.2 cm/hour for nulliparous women and 1.5 cm/hour for multiparous women—should no longer be used as the parameters to define labor dystocia. Instead, in response

to the data on contemporary labor patterns, the ACOG/SMFM *Obstetric Care Consensus on Safe Prevention of the Primary Cesarean Delivery* has recommended specific guidelines that encourage a more patient approach to first and second stage labor management. Specifically, “slow but progressive labor” in the first stage is not an indication for cesarean, nor is a “prolonged latent phase” as defined by the previous Friedman parameters of greater than 20 hours for nulliparous women and 14 hours for multiparous women.³ It is important to remember that, under the recent guidelines, progress in labor is defined not only in terms of cervical dilation but also in reference to cervical effacement and fetal station. Likewise, progress in the second stage must consider rotation as well as descent.⁸⁵ Furthermore, as Zhang and colleagues point out, using an “average” as the parameter for guiding labor management decisions is not suitable for management of the individual patient. Rather, women should be compared to the longest normal duration (also known as 95th percentile values)

for the first and second stages of labor.^{107,109} Other maternal factors should also be considered before making the diagnosis of labor dystocia. For example, longer labors are more likely in older women;²⁷⁵ obese women (BMI equal to or greater than 30) are more likely to have an overall longer labor and progress more slowly through the interval between early and active labor (4-6 cm);²⁷⁶ and epidural anesthesia is associated with longer first and second stages of labor^{177,184} (see Part II for recommendations for women with epidural anesthesia).

Beyond the definitions and management guidelines set forth by the ACOG in *Tables 19 and 20*, some facilities may find it extremely useful to utilize dystocia checklists, labor algorithms, or labor duration guidelines to diagnose labor dystocia and arrest of labor. Also useful are “hard stop” checklists, used before proceeding with a cesarean for labor dystocia or failed induction (consult Appendix D, under “Labor Management,” for various examples of these types of tools).

Table 19. Summary of Recommendations for the First Stage of Labor (ACOG/SMFM Obstetric Care Consensus³)

Summary of Recommendations ACOG/SMFM Obstetric Care Consensus Statement Safe Prevention of the Primary Cesarean (2014)
In the First Stage of Labor
A prolonged latent phase of greater than 20 hours in nulliparas and 14 hours in multiparas is not an indication for cesarean birth
Slow but progressive labor is not an indication for cesarean birth
Before 6 cm dilation, standards of active labor progress should not be applied to nulliparous or multiparous patients
Patients who undergo cesarean birth for active phase arrest in the first stage of labor should be at or beyond 6 cm dilation WITH ruptured membranes AND: <ul style="list-style-type: none"> • 4 hours of adequate contractions without cervical change, OR • At least 6 hours of oxytocin with inadequate contractions and no cervical change

Table 20. Summary of Recommendations for the Second Stage of Labor (ACOG/SMFM Obstetric Care Consensus³)

Summary of Recommendations ACOG/SMFM Obstetric Care Consensus Statement Safe Prevention of the Primary Cesarean (2014)
In the Second Stage of Labor
An absolute maximum length of time for the 2nd stage has not been identified
As long as maternal and fetal condition permits, the diagnosis of arrest of labor in the 2nd stage should not be made prior to: <ul style="list-style-type: none"> • At least 2 hours of pushing for multiparous patients • At least 3 hours of pushing in nulliparous patients (Longer durations may be appropriate on an individualized basis, for example with epidural anesthesia or fetal malposition as long as progress is documented)
Operative vaginal delivery by an experienced, well-trained physician is a safe and reasonable alternative to cesarean birth
Manual rotation of the fetal occiput of the malpositioned fetus in the 2nd stage of labor is a reasonable intervention to consider before operative vaginal birth or cesarean birth. Furthermore, assessment of fetal position in the 2nd stage of labor is essential, especially when abnormal descent is noted

Implement Policies for the Safe Use of Oxytocin

In the past decade, quality improvement programs have provided guidelines for the safe use of oxytocin during labor by minimizing wide variations in dosing and timing. In 2007, Steve Clark and colleagues published an approach for using a conservative checklist-based protocol within the Hospital Corporation of America’s 125 obstetric facilities.²²³ After instituting this protocol, results showed utilization of lower maximum doses of oxytocin, lower cesarean rates, and improved neonatal outcomes. Many other individual hospitals, hospital systems, the ACOG, and some state perinatal collaboratives have since created similar guidelines for the safe use of oxytocin to decrease cesarean birth rates while improving outcomes. Essential components of these programs are included in *Table 21*.

Endorse NICHD Categories and Standardize Responses to Abnormal Fetal Heart Rate Patterns and Uterine Activity

There is wide variation among providers and hospitals as

Table 21. Essential Components of Safely Administering Oxytocin

Essential Components of Safely Administering Oxytocin
Standardized oxytocin administration protocols and order sets
Checklists for initiation and ongoing assessment of oxytocin
Documentation required (with indication) for induction or augmentation
Fetal status assessment (initial and ongoing)
Uterine activity assessment (initial and ongoing)
Availability of a physician capable of performing an emergency cesarean section if needed
Criteria for decreasing or discontinuing oxytocin
Resuscitative measures clearly defined and documented
Resumption of oxytocin parameters clearly defined
Consideration of other extenuating factors, such as pain medication effects, epidural, fetal demise, etc that might impact oxytocin use and appropriate dosing
Data collection and evaluation related to protocol adherence, cesarean delivery, operative vaginal birth rates, and maternal and neonatal complication rates

to what constitutes a FHR tracing indicative of acidemia requiring expedited birth. It is believed this variation is due to a longstanding lack of standardized terminology, interpretation, and management guidelines.²²⁷

In 2008, the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), the ACOG, and the SMFM sponsored a workshop to develop a uniform nomenclature for FHR tracings and uterine activity, to standardize interpretation, and to make recommendations for management of abnormal tracings.²⁷⁷ A three-tiered system of intrapartum FHR assessment was proposed.²⁷⁸ Category I is strongly predictive of normal fetal acid-base status. Category II, which accounts for the majority of FHR tracings in labor, contains all FHR patterns not in Category I or III; overall, Category II tracings are not predictive of abnormal fetal acid-base status, but acidemia in Category II cannot be excluded. Category III is predictive of abnormal fetal acid-base status and requires expedited birth.^{278,279} See *Table 22* for further review of these categories.

In 2013, Clark and colleagues published an important article²²⁷ addressing the need for standardizing assessment of Category II FHR tracings, which account for more than 80% of intrapartum FHR patterns. Category II tracings are challenging to interpret. Over-concern for variable decelerations despite normal baseline variability have contributed to higher cesarean rates. However, under-appreciation of a fetus’s deteriorating status can result in morbidity and occasionally mortality. Although the ACOG Practice Bulletin Number 116 outlines general recommendations for management of various Category II patterns,²⁷⁸ many labor and delivery units are moving toward implementation of specific algorithms in order to simplify management of complex tracings. Clark and colleagues created such an algorithm and an accompanying table of specific clarifications. The goal of the algorithm is to assist in delivering the fetus before significant acidemia occurs, while avoiding an unnecessary cesarean in cases where the Category II tracing indicates continued fetal well-being. It should be noted that Clark’s algorithm does not include modification of management for fetal tachycardia or presence of meconium. The impact of meconium in conjunction with a Category II tracing was evaluated by Frey and colleagues in 2014.²⁸⁰ They noted that 21% of Category II tracings had meconium and that this combination was accompanied by an increased risk of neonatal morbidity.

Other facilities and perinatal collaboratives have since designed useful algorithms based on the concepts of the

Table 22. NICHD Fetal Heart Rate Classification²⁷⁷

NICHD Fetal Heart Rate Classification			
	Category I (includes all of the following criteria)	Category II (includes any of the following criteria)	Category III
Baseline rate	110-160 BPM	Bradycardia without absent baseline variability Tachycardia	Absent variability WITH any of the following: • bradycardia • recurrent late decelerations • recurrent variable decelerations Or Sinusoidal pattern
Baseline FHR variability	Moderate	Minimal Absent, without recurrent decelerations Marked	
Late or variable decelerations	Absent	Recurrent variable decelerations with minimal or moderate variability Prolonged deceleration >2min but <10 min Recurrent late decelerations with moderate variability Variable decelerations with other characteristics such as slow return to baseline, overshoots, or “shoulders”	
Early decelerations	Present or absent		
Accelerations	Present or absent	Absence of induced accelerations after fetal stimulation	

Clark model, some with even greater detail. The common thread shared by these algorithms is the initiation of clinical decision making based on the presence or absence of moderate variability and/or accelerations. Both are highly predictive of normal acid-base status, allowing the provider to immediately identify FHR patterns that may require birth to be expedited.^{227,278}

One standard approach used by many facilities to assess Category II tracings is to reassess the tracing every 30 minutes once the Category II pattern is identified. Appropriate conservative corrective intervention(s) would be immediately implemented (*Table 23*), and the

algorithm would be reapplied at least every 30 minutes, or at a different interval as indicated by the algorithm. Within this approach, providers respond to the bedside if there is a persistent Category II tracing. Additionally, team members seek out a second opinion when a Category II tracing is identified. Assessment of parity, labor progress, and contributing medical conditions are critical to evaluating the true severity of the tracing and making a management or delivery plan.

Repeating EFM interpretation, assessment, or certification programs at least every two years may improve bedside interpretation by both nurses and providers. Regular

Table 23. Conservative Corrective Measures for Category II Fetal Heart Rate Tracings^{227,278}

Conservative Corrective Measures for Category II Fetal Heart Rate Tracings	
Change the patient’s position	Administer amnio-infusion if repetitive or deep variable decelerations are present
Give an intravenous bolus of 500–1,000 mL of Lactated Ringer’s solution	Discontinue any cervical ripening agents
Administer oxygen	Consider a tocolytic such as terbutaline if tachysystole is present or if uterine contractions are prolonged or coupled
Stop or decrease oxytocin infusion	Intermittent pushing efforts may help avoid progression to fetal acidemia if deep variables occur in the second stage of labor

FHR tracing reviews can reinforce accurate assessment of worrisome patterns. Inclusion of all providers and nurses in these review sessions is ideal and fosters interprofessional communication, assessment, and management of the fetal heart rate.

Standardize Induction of Labor: Patient Selection, Scheduling, and Induction Process

The ACOG/SMFM *Consensus Statement on Safe Prevention of the Primary Cesarean Delivery*³ gives clear guidance for the selection of appropriate candidates for induction of labor.

While previous efforts have focused on prevention of induction of labor before 39 weeks, the new consensus guidelines urge induction of labor before 41 weeks only if medical indications are present. An increasing body of research supports that the greatest benefit to the mother and fetus is to facilitate birth somewhere between 41 and 42 weeks of gestation. Induction during this period is associated with fewer perinatal deaths (although the absolute risk is small), decreased neonatal morbidity (e.g. meconium aspiration), and decreased risk of cesarean.^{3,243,281}

In 2010, the CMQCC, along with the California Department of Public Health and the March of Dimes, developed a toolkit for reduction of non-medically indicated deliveries before 39 weeks gestation.²²⁸ The toolkit outlines case studies of hospitals and hospital systems that successfully implemented programs to reduce non-medically indicated inductions. Although each facility took a slightly different programmatic approach, they all share basic foundational components that proved to be critical to success (Table 26).

At minimum, the summary of the joint NICHD, SMFM, and ACOG workshop to prevent the first cesarean birth (2012) recommends that facilities should

have “a clear policy regarding labor induction, including a list of acceptable indications, and should specify the definitions of a favorable cervix, options for cervical ripening in the presence of an unripe cervix, oxytocin infusion protocols, and criteria for the diagnosis of failed induction. Labor induction with an unfavorable cervix should not be undertaken unless delivery is indicated for clear maternal or fetal benefit.”⁸⁵

Once it is determined that the woman is at least 41 weeks gestation, or that a medical indication exists for induction at an earlier gestational age, the determination of whether the cervix is “favorable” should guide the induction process. The Bishop score, a tool originally used to identify multiparous women at term who were likely to enter spontaneous labor, is now more often used to determine cervical ripeness.⁸⁵

Table 24. Gestational Age Terminology and ACOG Criteria for Confirmation of Term Gestation^{228,231}

Gestational Age Terminology	
Late preterm	34 0/7 – 36 6/7 weeks
Early term	37 0/7 – 38 6/7 weeks
Full term	39 0/7 – 40 6/7 weeks
Late term	41 0/7 – 41 6/7 weeks
Post term	42 0/7 weeks or more
ACOG Criteria for Confirmation of Term Gestation ²²⁹	
Ultrasound performed at less than 20 weeks gestation confirms a gestational age of 39 weeks or greater	
Documentation shows fetal heart tones by Doppler have been present for 30 weeks	
36 weeks have passed since a positive urine or serum pregnancy test	

The literature generally defines “unfavorable cervix” as a Bishop score of less than 6, while a Bishop score of 8 indicates a likelihood of vaginal birth after labor induction that is similar to spontaneous labor.²²⁹

Women undergoing induction of labor without a favorable cervix (Bishop score less than 6 for multiparous women, less than 8 for nulliparous women) should receive cervical ripening prior to starting oxytocin. The use of cervical ripeners such as misoprostol, prostaglandin E2 preparations, and mechanical methods such as Foley bulbs and laminaria tents, are associated with lower rates of cesarean birth than the use of oxytocin alone when the cervix is unfavorable.^{282,283} Evidence supports use of these methods in combination, such as a Foley bulb with misoprostol.²⁸⁴

Table 25. Examples of Accepted Medical Indications for Induction of Labor^{229,235}

Examples of Accepted Medical Indications for Induction of Labor
Placental abruption
Fetal demise or fetal demise in prior pregnancy
Premature rupture of membranes
Gestation at or greater than 41 weeks
Maternal medical conditions such as pre-existing diabetes, gestational diabetes, renal disease, chronic pulmonary disease, cholestasis of pregnancy, maternal coagulation defects including antiphospholipid syndrome, cardiovascular diseases (congenital and other), HIV infection
Fetal conditions such as IUGR, oligohydramnios, polyhydramnios, fetal distress, isoimmunization (Rh and other), fetal-maternal hemorrhage, fetal malformation, chromosomal abnormality, or suspected fetal injury

Mechanical methods of cervical ripening achieve similar rates of vaginal birth within 24 hours as prostaglandins and prostaglandin analogues do, and are associated with overall fewer maternal and neonatal side effects such as tachysystole and umbilical cord pH less than 7.10.^{282,285,286}

The exact method of induction of labor should be individualized to the woman based on her Bishop score, parity, signs of pre-labor, fetal status, and patient preference. It is important to remember, and to counsel women, that latent labor is longer when labor is induced as compared to spontaneous labor.²⁴⁵ For this reason, the ACOG/SMFM guidelines recommend nonintervention and patience as long as maternal and fetal statuses remain reassuring.³ Experts strongly advise reserving the diagnosis of “failed induction” for women who, after the period of cervical ripening is complete, have not achieved regular contractions and cervical change after 24 hours of oxytocin and rupture of membranes (if rupture is possible).⁸⁵ The ACOG/SMFM guidelines advise the following for diagnosis of failed induction: “If the maternal and fetal status allow, cesarean deliveries for failed induction of labor in the latent phase can be avoided by allowing longer durations of the latent phase (up to 24 hours or longer) and requiring that oxytocin be administered for at least 12–18 hours after membrane rupture before deeming the induction a failure.”³

Finally, there are specific cases in which women may be safely discharged from the labor and delivery unit if, for

example, after 24 hours the cervix shows minimal or no change, contraction strength is minimal, membranes remain intact, and maternal and fetal statuses are reassuring. This is especially true in cases of non-medically indicated induction of labor. However, this concept can also be applied to women with certain medical indications, such as chronic hypertension that is well-controlled. In these cases, the previous 24 hours of cervical ripening and/or oxytocin serve as a negative contraction stress test. Upon discharge, a plan should be made for the woman to return in 24 to 48 hours to restart the induction.

Even when induction of labor is medically indicated, shared decision making is critical. Informed consent prior to induction should include discussion of the normal processes of labor as well as potential harms/benefits and optimal approach to induction of labor.²⁸⁷ Providers are encouraged to use high-quality decision aids to assist the woman in understanding the risks/benefits of induction.²⁸⁸ These decision aids also help the woman engage in discussion with the provider,²⁸⁹ and may prompt her to ask relevant questions that she may not have previously considered.

Providers often report pressure from women to induce labor for reasons related to convenience or alleviation of discomfort. In these situations, it is incumbent on the provider to be proactive in supporting the natural course of the pregnancy. Key messages include describing the risk to the baby (e.g. interrupted brain and lung development), risk to the woman (e.g. possibility of cesarean and its attendant risks, as well as the future risk of a first cesarean).²²⁸ It may be helpful to engage the woman early in the pregnancy about the importance of

Table 26. Key components for Successfully Decreasing Non-medically indicated (Elective) Induction of Labor²²⁸

Key Components for Successfully Decreasing Non-medically Indicated (Elective) Induction of Labor
Clinician/staff education regarding maternal and neonatal complications of non-medically indicated inductions
Patient education that defines “full term,” describes the maternal and neonatal complications of non-medically indicated inductions, and includes a detailed informed consent discussion with appropriate documentation (may also include public awareness campaigns through social media and other channels)
Department policies that establish standards set by ACOG and national quality criteria
Standardization of the scheduling process for all inductions of labor. Standardized forms may need to identify “hard stops” such as the need for the scheduler to get approval from the department chair or appropriate designee if the patient does not meet criteria for medical indications for induction
Physician leadership/clinical champions
QI data collection and feedback

Table 27. Summary of Recommendations for Induction of Labor (ACOG/SMFM Obstetric Care Consensus³)

ACOG/SMFM Consensus Guidelines for Induction of Labor
Induction of labor before 41+0 weeks should be reserved for women with a maternal or fetal medical indication
Induction of labor at or after 41+0 weeks gestation is advised in order to reduce the risk of cesarean birth and perinatal morbidity and mortality
Women undergoing induction of labor without a favorable cervix should receive cervical ripening
As long as the maternal and fetal status allow, longer durations of the latent phase (24 hours or longer) should be allowed, and oxytocin should be administered for at least 12-18 hours after rupture of membranes before declaring a “failed induction”

due date, but at the same time to point out the normalcy of going beyond 40 weeks. There are various reasonable, psychosocial reasons a provider may decide to induce a woman at her request (e.g. partner leaving on a long military deployment, or patient lives far away and has a history of precipitous labor). However, the potential benefits of this decision should be carefully weighed against the potential for harm.

Just as providers feel pressure from women to induce labor, women often report feeling similar pressure from providers. For example, a recent study revealed that nearly one-third of the women who participated in the Listening to Mothers III national survey³⁸ were told by their care providers that their baby might be getting “quite large.” Women with a suspected large baby were more likely to be induced, and were more likely to ask for and have a planned, pre-labor cesarean.²⁹¹ Yet only 19% of those with a suspected large baby went on to deliver a baby over 4000g. The conclusion drawn from the data is that suspected macrosomia is not an indication for induction, and only in rare cases (greater than 5000 grams, or greater than 4500 grams for women with diabetes) is cesarean recommended to prevent potential birth trauma.^{3,188}

Other reasons providers may be more commonly inclined to

suggest induction of labor include provider convenience and financial incentives (see Part I, “Payment/Reimbursement Models that Conflict with High-Value, High-Quality Maternity Care”). In summary, if induction of labor is not medically indicated, suggestion by the provider to do so is in direct conflict with the provision of high-quality, high-value maternity care.

3. Utilize Operative Vaginal Delivery for Eligible Cases

When performed by a well-trained, experienced physician, and on a fetus not believed to be macrosomic, judicious use of operative vaginal delivery offers a safe alternative to cesarean birth for the management of second stage abnormalities such as fetal intolerance or dystocia due to maternal exhaustion.³ Caution should be exercised with mid-pelvic procedures or those where rotation of the occiput transverse or occiput posterior fetus is necessary, as this requires a high level of skill and experience to safely perform. Such procedures are less likely to be successful than low or outlet procedures, which may safely prevent a cesarean birth in most eligible cases. In fact, less than 3% of attempted operative vaginal deliveries proceed to a cesarean.²⁹²

Unfortunately, training in operative vaginal delivery in many residency programs is decreasing, especially training in the use of forceps.²⁹³ For operative vaginal delivery to be a safe alternative to cesarean, residency programs must encourage and incorporate training, and the skill must be maintained throughout an attending physician’s tenure.

4. Identify Malposition and Implement Appropriate Interventions

Refer to Appendix G for detailed instructions and recommendations for malposition.

Identification

Identification of malposition during labor, particularly by the early part of the second stage, is an important aspect of preventing cesarean. There are various ways to identify the OP or OT fetus. Ultrasound is the most accurate approach. Studies in second stage have reported digital examination error rates of 26% to 39% compared to the “gold standard” of abdominal ultrasound.^{251,294,295}

Table 28. Commonly Cited Reasons for Induction of Labor that Do Not Meet Criteria as “Medical Indications”²⁹⁰

Commonly Cited Reasons for Induction of Labor that Do Not Meet Criteria as “Medical Indications”
Suspected macrosomia*
History of fast labors
Advanced cervical dilation
Previous maternal pelvic floor injury (e.g. previous 4th degree laceration)
Partner leaving town
Family in town
Maternal exhaustion
Lives far away

*Suspected macrosomia is commonly cited as medical indication for induction of labor. Given that fetal estimates of weight late in gestation are imprecise, suspected macrosomia is not a medical indication for induction of labor. Cases where cesarean delivery is offered in order to avoid birth trauma should be limited to an ultrasound estimation of fetal weight of 5,000 grams, or 4,500 grams for diabetic women.

Prevention

Avoid routine early amniotomy

Amniotomy prior to 5 cm eliminates the cushion of the fore waters which allow for fetal repositioning, and may result in more non-reassuring FHR patterns.²⁹⁶

Employ preventive measures for women with epidural anesthesia

While there is no definitive evidence establishing a causal relationship, a preponderance of evidence suggests that mothers with epidurals are up to four times as likely to have an OP fetus than women without epidurals.^{180,181} Caregivers should change the patient's position at least every 20 minutes to maximize fetal accommodation to a more favorable position.¹⁵⁷

Promote rotation

Intrapartum Maternal/Fetal Positioning

Promote rotation to the more favorable OA position through maternal /fetal positioning during the intrapartum period. If it is unclear whether the fetus is OP or OT during a prolonged second stage, maternal position changes every five to six contractions may facilitate rotation to OA.¹⁵⁷ Supportive care techniques from nurses to help expand and change the shape of the pelvis, such as the pelvic press and lunges, may be useful in this regard.

Consider Pushing Positions

For the persistently OP fetus, the doula, nurse, and provider should consider the most effective positions for pushing and the “drive angle” of the occiput relative to the maternal bony pelvis.¹⁵⁷ Forward-leaning, non-dorsal pushing positions are recommended for persistent malposition. These include various squatting positions (e.g. with a squat bar or with support from the woman's partner or doula), and forward-leaning positions while sitting (e.g. on the toilet), kneeling, or standing.¹⁵⁷ For the OP fetus, when the most common modern-day pushing position is employed (the lithotomy position with “chin-to-chest”), the anterior sinciput is obstructed, gravity is not utilized, and significantly longer pushing times often result. If or when lithotomy position is used, exaggerated lithotomy (also known as the back-lying squat, or the McRobert's position used for shoulder dystocia), with the woman's head flat on the bed, and buttocks slightly lifted, can expand the fore pelvis sufficiently that the anterior sinciput of the OP fetus can more easily swing under the symphysis pubis.^{157,297}

Support the Maternal Psyche and Body

Physical and psychological support measures are critical for the woman who is fatigued and doubts her ability to give birth vaginally. If the fetus demonstrates health, a sip of liquid with some glucose (e.g. juice, Gatorade) or a light carbohydrate snack might give her a burst of energy to continue to run the “final lap.”²⁹⁸

Manual rotation

Manual rotation attempts are advocated in early to mid-second stage of labor.^{157,299,300} Digital/manual rotation of the fetus from the OP position to the OA position is associated with significantly lower rates of cesarean birth^{180,301,302} and other complications associated with persistent OP position e.g. severe perineal lacerations, hemorrhage, and chorioamnionitis.²⁴⁹ A recent retrospective cohort study of over 700 women who underwent manual rotation from the OP or OT position demonstrated a high rate of success for this procedure: 74% delivered vaginally in the OA position.³⁰¹ Instrumental rotation is a safe alternative to manual rotation for appropriate candidates when performed by a skilled, experienced physician.^{250,303,304}

Patience, patience, patience

The “tincture of time” approach is likely the best strategy when incremental descent is observed in the second stage, if the fetus and mother remain resilient.¹⁰⁸ Longer pushing durations may be necessary in the circumstance of malposition.³ Evidence of progress (or lack thereof) is best ascertained when the same clinician monitors fetal descent throughout the second stage.^{303,305}

Table 29. Identification, Prevention, and Treatment of the Malpositioned Fetus ^{108,157,180,250,251,294-305}

Identification, Prevention, and Treatment of the Malpositioned Fetus	
What	How
Early identification	Manually, or by ultrasound (gold standard) if manual appraisal is uncertain
Prevention	Avoid early amniotomy
	For women with epidural, assist in changing position every 5-6 contractions, or about every 20 minutes
Promote rotation	Maternal position changes every 5-6 contractions or about every 20 minutes
	Consider the most effective pushing positions, such as various squatting positions and forward-leaning positions while sitting (e.g. on the toilet), while squatting with squat bar, or while standing. In lithotomy position, the woman’s head should remain flat on the bed with buttocks slightly lifted (opposite of the “curl around the baby” approach)
Support maternal psyche and body	Family and professional support and encouragement is critical at this time
	Offer sips of carbohydrate liquid or light carbohydrate snack
Attempt to rotate the baby	Early to mid-second stage of labor; manually or by instrument if indicated
Tincture of time	Be patient! In instances of malposition, longer pushing durations for the healthy fetus are often necessary

5. Consider Alternative Coverage Programs (Laborist Models and Collaborative Practice Models)

Physicians and Midwives as Hospitalist Providers (Laborists)

Though OB hospitalists or laborists were originally engaged to care for a population of unassigned patients, and to be a safety net for emergencies, other beneficial effects have emerged. Recent studies that focused on the relationship between cesarean rate and laborist coverage have shown a statistically significant reduction in cesarean births with “around-the-clock care.”^{254,306,307} The definition of around-the-clock care differs from facility to facility, with models ranging from physicians available only as safety-net providers in case of significant events, on one end of the spectrum, to true laborists attending to and delivering all patients. The recent analysis by Iriye

and colleagues³⁰⁷ showed that it was not simply a matter of having around-the-clock coverage alone, but of having an independent group (a laborist “staff model”) whose only function is to care for inpatients, without outside responsibilities, that makes a difference in the number of cesareans. It is unclear whether this is due to being on-site and ready to respond, or due to the removal of economic and/or time-based incentives to perform a cesarean. Whatever the precise dynamics, laborist models have clear, unique advantages, including “retention of core knowledge, high intrapartum competence,”³⁰⁸ and quick response times.

Marin General Hospital, a California community hospital that implemented an innovative, collaborative midwife-physician laborist model, reported its significant comparison of cesarean birth rates in two recent studies.^{254,255} One study evaluated over 9,000 singleton live births through a retrospective comparison

of a traditional private practice model and a midwife-physician laborists model. The NTSV cesarean rate for the traditional model was 29.8%, compared to 15.9% for the collaborative laborist model.²⁵⁵ The second study involved the evaluation of a prospective cohort of privately insured women between 2005 and 2014, and compared the NTSV cesarean and VBAC rates before and after a change from a private practice model to a collaborative midwife-physician laborist model. The primary cesarean rate fell from 31.7% to 25.0%, with a 7% drop in the very first year after implementation of the new model.²⁵⁴

Collaborative Practice between Physicians and Midwives

Collaborative practice between midwives and physicians is the inter-professional provision of care toward a common goal that utilizes and respects the separate expertise of both provider types.^{309,310} Collaborative practice between physicians and midwives is

evidence-based, efficient, and results in high-quality care for patients.³¹¹ Collaborative practice models may or may not include the laborist component described in the previous section.

Midwifery care has been identified as an underused maternity service in the United States, with the potential to curb costs, improve overall outcomes, and reduce rates of cesarean.^{55,312} Of particular note are the international landmark studies provided in the 2014 *Lancet Series on Midwifery*.³¹³ This series noted that “midwifery is a vital solution to the challenges of providing high-quality maternal and newborn care for all women and newborn infants, in all countries.”³¹² Within the *Lancet Midwifery Series*, Renfrew and colleagues identified over 50 outcomes that are impacted positively by midwifery care, including reduced rates of cesarean. Similar results documenting lower cesarean rates with midwifery care have been noted in the United States,³¹⁴ and the “style” of care and interventions employed by midwives have been identified as practices that can lower primary cesarean rates³¹⁵ (many of which have already been noted in Part II of this toolkit). Furthermore, women who give birth in states where regulations support the autonomous practice of Certified Nurse-Midwives have lower odds of cesarean birth.³¹⁶ In order to maximize utilization of the nurse-midwifery workforce, hospitals and clinic settings should update policies and procedures to ensure that they are not more restrictive than what is legally allowed in the state. Frequently, outdated policies can be found that limit the nurse-midwifery scope of practice without evidence-base. Granting nurse-midwives privileges consistent with their legal scope can expand the clinical care capacity of the facility, improve clinical outcomes, and further facilitate cesarean reduction efforts. (See Part V for more specific strategies for midwifery integration.)

6. Develop Systems that Facilitate Safe, Patient-Centered Transfer of Care between the Out-of-Hospital Birth Environment and the Hospital

In February 2015, the ACOG in conjunction with the SMFM published the *Obstetric Care Consensus on Levels of Maternal Care*³¹⁷ that was endorsed by the ACNM, AWHONN, the American Association of Birth Centers (AABC), and many other professional organizations. This statement recommends a tiered system of care based on maternal level of risk, starting with out-of-hospital birth centers staffed by midwives and progressing through a hierarchy from Level I Hospital (Basic) to Level IV (Perinatal Regional Care Center). In alignment with the *Lancet Midwifery Series*, the consensus statement

suggests modifying care to suit individual need based on risk. Shifting to a “wellness model of care” that safely reduces routine intervention and matches the magnitude of response and intervention to the needs and risk level of the patient is a key part of transforming maternity care, lowering overall costs, and in particular lowering the cesarean birth rate^{55,69,102,318} (refer to Part II for more on this topic). While full discussion of this consensus statement is beyond the scope of this toolkit, the future of care delivery in obstetrics will almost certainly involve increased care by midwives and family physicians, expansion of collaborative care and laborist models, and increased utilization of out-of-hospital birth. To accommodate this change, hospitals must design systems of care that safely and efficiently allow for the seamless transfer of care from the out-of-hospital environment to the hospital environment. This will require “effective interdisciplinary teamwork and integration across facility and community settings.”³¹² An integrated system of care embraces the understanding that some women will choose to birth safely in an out-of-hospital environment and that a minority of these women will require transport and transfer to medical care within the hospital. Interprofessional dialogue between out-of-hospital and in-hospital providers should remain respectful and cooperative. The safety of mothers and babies, and the future of a fully integrated system, will be at risk if women and out-of-hospital providers perceive they will be received with judgment and disrespect for timely, necessary, and medically-sound transfers of care. (See Part V for more strategies to improve transfer from the community birth setting.)

7. Avoid Defensive Medicine: Focus on Quality and Safety

Providers are affected by the risk of litigation, whether that risk is real or only perceived. A landmark report in 2013, *Maternity Care and Liability: Pressing Problems, Substantive Solutions*, the first of its kind in recent decades, takes a comprehensive look at the current environment of liability in maternity care and at solutions that hold great potential.³¹⁷ Studies noted in this report revealed that only 0.6% of women and 0.2% of newborns receiving care in U.S. hospitals experienced “negligent injury.” Furthermore, while providers often worry about non-meritorious claims, the reality is that 75% of paid claims involve “injury due to substandard care.”^{319,320}

Despite this data, providers continue to practice defensively in certain situations.^{258,261,319,321} One defensive practice involves “assurance” behaviors,³¹⁹ meaning the overuse of tests, procedures, or referral to other providers. Many studies have attempted to describe the link between cesarean births

and assurance behaviors by providers (the maternity liability report noted above outlines a full, comprehensive list of 13 recent studies³¹⁹). Collectively, these studies reveal that liability pressure is positively correlated to cesarean rates, though it likely accounts for only a small increase in those rates. As described previously, the decision to do a cesarean involves many factors, and while liability seems to play some role, it is likely a limited one.

From a clinical perspective, this information points to a real, tangible solution for providers and hospitals: focus on quality and safety. A real impact can be made on the 75% of claims filed for serious negligent behavior by focusing on care improvement strategies for providers and the systems that deliver care.³²⁰ Quality improvement efforts have the potential to significantly decrease overall litigation, premium costs, and payouts.³¹⁹ Examples of these efforts range from maternity centers implementing electronic “real time” alerts for deviation from standards of care,³²² to focusing on specific quality improvement tasks, to implementing comprehensive safety programs.³²³⁻³²⁶ These programs resulted in improved outcomes and lowered cesarean rates, while significantly reducing malpractice claims and decreasing birth trauma.

Easing distress and reducing fear of litigation can be accomplished by carefully educating providers on the benefits of a well-designed program to reduce cesarean, acknowledging providers’ concerns, and specifically addressing the situations that contribute the most to obstetric liability claims. A recent evaluation of 882 obstetric claims revealed that delayed or inappropriate treatment for fetal distress and response to or prevention of shoulder dystocia remain the top reasons for liability claims.³²⁷ Failure to properly consent patients with a prior cesarean birth regarding the very unlikely, but real risk, of fetal injury associated with uterine rupture after previous cesarean has also been noted to be a top reason for medical litigation.²⁶² Therefore, cesarean reduction programs should focus on these key elements of liability, ensuring that providers understand how programmatic approaches can actually reduce malpractice risks and increase vaginal birth rates.

Protocols and workflows that focus on labor techniques (e.g. induction with ripe cervix or admission after onset of active labor) can reduce risk by avoiding a cascade of interventions and reducing oxytocin usage. Standardized oxytocin guidelines have been shown to help reduce claims while also reducing rates of cesarean.^{223,262} Common language for FHR interpretation can avoid errors of miscommunication, and standardized intervention protocols improve timely intervention for fetal distress.²²⁷ These methods also enhance communication and lead to less conflict, a frequently cited component in many malpractice claims. Standardized protocols for presumed macrosomia and shoulder dystocia management have been shown to reduce the risk of permanent injury. To reduce the likelihood of litigation from a trial of labor after cesarean,

institutions should have standardized consents, and patient education and protocols for prompt intervention with suspected uterine rupture.

As previously discussed, one of the most critical elements of a well-designed quality improvement program is the involvement of the patient in determining the plan of care prior to labor. Shared decision making affords the patient part of the responsibility for the plan and reduces feelings of powerlessness and anger in the event of a poor outcome. Shared decision making serves as a sort of contractual relationship between the provider and the patient.³¹⁹ Providers who document these discussions with patients and who have developed caring relationships either before the event in question, or after performing an operative delivery, often avoid litigation.³²⁸

Institutional programs and alternative coverage programs, like the laborist approach described in the previous section, offer a promising strategy to reduce malpractice risk.³⁰⁸ Hospitalist programs, with the availability of prompt response, allow for more trials of labor, systematic labor intervention, and support for the timely interpretation of FHR patterns. Expansion of on-site labor support from midwives and doulas enhances the patient experience and involvement in the labor process and decision making, potentially lowering risk of malpractice claims.

Some experts have raised the fear of litigation if cesarean reduction programs result in unintended consequences or poor neonatal outcomes. It is important to point out that previous programs to reduce cesarean rates have not shown an increase in poor outcomes for women and babies,³²⁹⁻³³¹ nor did the three pilot hospitals in California that implemented key portions of this toolkit in 2014.¹⁰⁵ Finally, the cornerstone of a quality improvement project to reduce cesarean must realize that the goal is not to prevent cesarean birth “at all costs.”¹⁰⁸ First and foremost, it should be understood that a cesarean reduction program seeks to reduce unnecessary cesarean births. The program’s charter must clearly recognize that timely and well-chosen cesareans are sometimes necessary to prevent avoidable fetal and maternal harm.

First and foremost, it should be understood that a cesarean reduction program seeks to reduce unnecessary cesarean births. The program’s charter must clearly recognize that timely and well-chosen cesareans are sometimes necessary to prevent avoidable fetal and maternal harm.

Part IV. Reporting and Systems Learning: Using Data to Drive Improvement

Underlying Principles for Reporting and Systems Learning

A key strategy for successful quality improvement (QI) projects is the use of rapid-cycle data to help drive change. Achieving the goal of reducing avoidable cesarean births will depend on accurate and timely measures provided to clinicians and organizations about the care provided to patients. Both process and outcome measures help clinicians and organizations assess the quality of care but must be chosen carefully. The measures must accurately depict how care is provided, as well as identify which provider is responsible for which care decisions. Both provider level and organizational level assessments are critical to guide improvement efforts.

The first step is to create the ability to track and report labor and cesarean measures in sufficient detail to:

- **Compare to similar institutions**
- **Conduct case review and system analysis to drive care improvement**
- **Assess individual provider performance**

This section will review the barriers and strategies to accomplish these goals. Please refer to Appendix H for a description of current measures, with advantages and limitations of each, that are currently in use or have been proposed for labor and delivery.

In any quality improvement program, it is important to be vigilant for unintended consequences whereby unexpected harm might appear as a result of the project. Therefore, to ensure safety (and reassure all participants), all programs should track measures that assess maternal and newborn outcomes that could be affected by changes in labor management strategies. These are called balancing measures. Typical balancing measures used for projects to support vaginal birth and reduce cesareans would include term neonatal outcomes such as the NQF metric for Term Unexpected Newborn Complications (major and moderate neonatal complications among infants without any preexisting complications, such as poor intrauterine growth, birth defects, or multiple gestations). The rate of third and fourth degree lacerations is commonly used to illustrate that more vaginal births are not creating more maternal morbidity.

Transparency of hospital-level data is absolutely critical to QI for cesarean reduction. Public reporting improves consumer knowledge of quality providers,⁹⁵ thus harnessing the power of consumer decision making to create a positive feedback cycle where quality is both created through

In This Section

KEY STRATEGIES

for Using Data to Drive Reduction in Cesareans 74

TOOLS

Appendix H –

Cesarean Birth Performance Measures 135-140

TABLES

Table 30. Public Benefit of Transparency and Public Reporting 73

Table 31. Barriers to Using Data to Drive Reduction in Cesareans 73

Table 32. Key Strategies for Using Data to Drive Reduction in Cesareans 74

Table 33. Lack of Awareness of the Need for Cesarean Reduction 75

Table 34. Lack of Transparency of Cesarean Data 75

Table 35. Poor Data Quality 76

Table 36. Lack of Actionable Data for Cesarean Births 77

Table 37. Data Burden 78

Table 38. Need for New Cesarean QI Measures 79

FIGURES

Figure 6a. Large Variation of the Total Cesarean Rate Among 251 California Hospitals 75

Figure 6b. Large Variation of the NTSV Cesarean Rate Among 251 California Hospitals 75

Figure 7. Example Screenshot from Maternal Data Center (Drivers of NTSV Cesarean Rate) 77

Figure 8. Example Screenshot from Maternal Data Center (Proportion of NTSV Spontaneous Labor Population with Cesarean) 77

Figure 9. Dystocia Checklist for Data Collection 78

Figure 10. Example Screenshot from Maternal Data Center (Case Reviews of NTSV Cesarean) 78

transparency and sought out as a result of transparency. *Table 30* outlines the public benefit of transparency and public reporting.

Table 30. Public Benefit of Transparency and Public Reporting³³²

PUBLIC BENEFIT OF TRANSPARENCY AND PUBLIC REPORTING
Gives consumers the ability to compare providers and organizations and make selections that truly consider cost, quality, and safety
Gives consumers the ability to make informed decisions about care
Improves trust between the public and providers/organizations
Incentivizes providers to focus on quality improvement

Only a few measures are appropriate for public release. They should be carefully vetted measures of the highest quality and easy to understand. It is important to identify the best way to reach the public with this information. Simply releasing results on a website may not result in much impact or public awareness. Placing the same measures in many communication channels at once and linking the data with partner organization websites and other marketing entities will result in greater awareness. An additional step is to provide prenatal clinics and offices with current data that they can share with women.

Implementation Barriers for Data-driven QI

The Task Force identified six main implementation barriers to using data to drive cesarean reduction. These represent common and repetitive issues faced in all QI projects but will be discussed in the specific context of cesarean reduction projects.

Table 31. Barriers to Using Data to Drive Reduction in Cesareans

BARRIERS TO USING DATA TO DRIVE REDUCTION IN CESAREANS
Lack of awareness of the scope of the issue by providers and the public
Lack of transparency
Poor data quality
Lack of actionable data related to cesarean births
Data burden
Need for new measures to drive quality improvement

For data and information to work effectively as a driver of improvement, it must not only be clear and accurate, but also delivered in a manner that can be used to create action.^{333,334} Historically, however, there has been a lack of such actionable information (data) related to avoidable cesarean births for hospitals and providers. For example, the traditional Primary Cesarean Delivery Rate measured by hospitals may inform the

organization that its rate is elevated but does not pinpoint why and, in turn, fails to identify strategies for improvement based upon that data. Furthermore, the data are usually not risk adjusted, and are therefore open to the response: “My practice (or hospital) takes care of more high risk patients and that accounts for our higher rate.” This often-heard sentiment has undermined many QI efforts in the past.

Measures used in QI are commonly divided into three categories:

- **Outcome (generally, measures of death, injury, complications or disabilities)**
- **Process (adherence of healthcare activities to guidelines, such as preoperative use of antibiotics or prophylaxis for venous thromboembolism)**
- **Structure (whether the facility or medical staff has appropriate resources, equipment and staffing)**

Cesarean rates do not fall neatly into any of these categories. But nationally, as issues of overuse and underuse are being examined, another quality category has been identified: “utilization rate.” This focuses on whether a facility (or provider) performs a procedure or activity too frequently or infrequently, and is the most appropriate category for cesarean birth measures.

In addition to the problem of the timeliness of actionable data, there have been a number of barriers to obtaining good data to help drive QI projects for cesarean birth. Risk adjustment and risk stratification did not have a national consensus until recently, and was not widely available. In addition, provider-level data for cesarean birth is difficult to ascertain for many organizations and clinicians. The physician of record for the cesarean may not have been the provider of care for the woman’s prenatal care or for the labor leading up to the decision to proceed with a cesarean. This makes it difficult to focus on the key decisions affecting labor outcome. Thus, organizations must ensure that the data resulting from measurement activities is attributed to the appropriate clinician.³³⁵ Accurate measurement strategies will help organizational and clinical leadership identify changes needed to make improvements, as well as understand progress towards the goal of reducing avoidable cesarean births.³³⁶

Implementation Strategies for Data-driven QI

The key strategies for data-driven QI for cesarean reduction are shown in *Table 32*. Once again, these principles apply to most data driven QI projects, but will be discussed within the specific context of cesarean reduction efforts.

Table 32. Key Strategies for Using Data to Drive Reduction in Cesareans

1 Strategies to Make Data Compelling to Providers

- Provide timely data to providers in a persuasive manner using display tools, background information, benchmarks, historical data, and broader outcome data (such as infant outcomes and maternal morbidity measures)
- Present comparative data in a manner that demonstrates a sense of urgency
- Present identical measures across multiple levels – MD / practice group / hospital / medical group / health plan / purchaser / region / state
- When presenting the data, include a goal that is attainable/achievable by showing that similar providers have already reached the goal
- “Package” the data for the audience – data can be supplemented by patient stories, not just graphs and figures

2 Strategies to Assist Organizations to Understand Data Associated with their Hospital, and Identify Steps to Improve Care

- Create meaningful sub-measures that indicate the drivers for the cesarean rate and benchmark these against other facilities
- For internal hospital use, create provider-level rates to help utilize “peer pressure” and identify those who would benefit from specific educational programs including reviews of their processes of care
- Use rapid-cycle data (30-75 days old) to provide immediate feedback for QI projects including, but not limited to, peer comparisons (health system, geographic, level of facility)
- Expand use of balancing measures to document lack of harm from interventions
- Disaggregate data by race/ethnicity to identify where disparities exist (payor, language, and social vulnerability indices such as patient address/region are other useful data sets for identifying disparities but may not be readily available for clinician use at the department level)

3 Strategies to Assist Providers to Understand their Cesarean Rates and be Comfortable with the Quality of the Data

- Provider-level data is a very important tool for driving QI but opens new issues of attribution, especially in facilities that have midwives or family medicine physicians who perform vaginal births with covering obstetricians performing the cesarean deliveries
- Create data tools that allow practitioners to “roll-up” outcomes together (group statistics) or reassign attribution within the data set
- Create tools for sub-analysis of physician-level rates to help providers understand where improvement opportunities may exist

4 Strategies to Engage Patients, Employers, and the General Public in the Improvement Project

- Public release of selected hospital-level measures that have been well vetted
- Provide a lay explanation of the measures
- Widely distribute these measures through multiple media channels to capture the greatest attention

1. Create Awareness

Before QI projects can approach success, the reason for change has to be articulated and widely communicated. In change literature, this is known as creating the “burning bridge” whereby the current “status quo” can no longer be sustained and movement is required. The drivers for lack of awareness that such change is necessary are shown in *Table 33*.

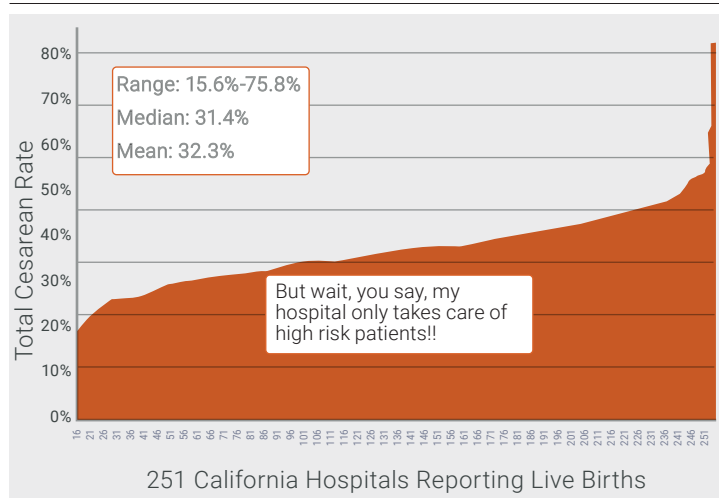
For this project on reducing avoidable cesarean births, there are two main strategies. First, the extraordinary variation in cesarean rates among hospitals and providers raises the obvious question: Why should such high rates in some

Table 33. Lack of Awareness of the Need for Cesarean Reduction

Lack of Awareness of the Need for Cesarean Reduction	
Drivers include:	
Not compelling/Not an important issue	Poor public understanding of the issue / appropriate cesarean rates (including purchasers, health plans, hospitals, and providers)
Not easy to gain access to the data/Not publicly available	Data is not timely (several years old)

institutions be supported when the outcomes are just as good if not better in locations with lower rates? Here, it is important to have the discussion as broadly as possible with all stakeholders: the media, consumer groups, employers, health plans and professional groups. The variation in cesarean rates among California hospitals is shown in *Figure 6a* for Total Cesarean Delivery Rate and in *Figure 6b* for Risk-stratified Cesarean Delivery Rate, using the Nulliparous, Term, Singleton, Vertex (NTSV) rate that addresses the risk

Figure 6a. Large Variation of the Total Cesarean Rate Among 251 California Hospitals: 2014



adjustment question posed in *Figure 6a*. The large variation among California hospitals, even after risk adjustment, is obvious and has opened a dialog for reexamination of the drivers for cesarean birth throughout California.

The second major strategy for this project is to create a network of concerned organizations that can support the creation and maintenance of pressure for change. This involves multiple meetings for outreach and education,

Figure 6b. Large Variation of the NTSV Cesarean Rate Among 251 California Hospitals: 2014

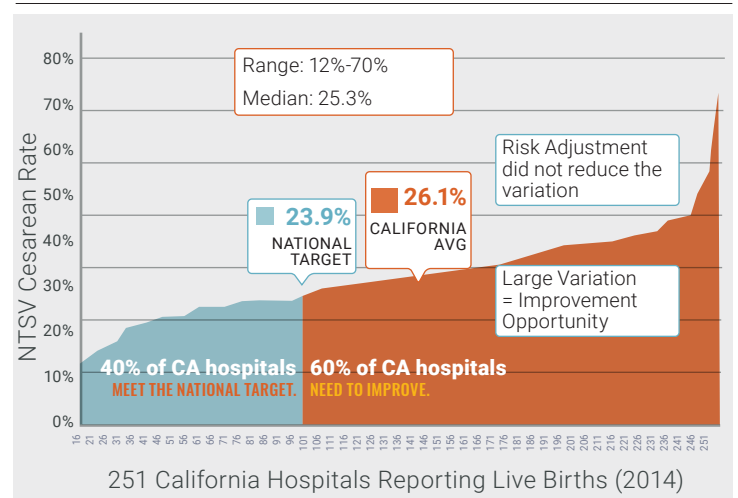


Table 34. Lack of Transparency of Cesarean Data

Lack of Transparency of Cesarean Data
Drivers include:
Not publicly available / not easy to find on the Web or easy to navigate the site on which it is reported
Data is not timely (old data)
No publicity to drive people to the data when first released
No continuing publicity for continued attention

with organizations at all levels of the health system as well as consumer organizations. The press is also an important partner in this endeavor. Explaining the figures above, and that variation between hospitals did not change even after risk adjustment, has proved to be an effective strategy for engagement.

2. Promote Transparency

Many hospital-level statistics are difficult to find, and in some states they are not released at all. In the past, such statistics frequently ended up on relatively obscure websites that escape the attention of most pregnant women. Patients must frequently rely on the provider's self-descriptions — "I never do unnecessary cesareans" or "My rate is below others in

this facility”— without having access to evidence that could confirm or contradict those assertions. The drivers for lack of transparency are shown in *Table 34*.

Strategies for overcoming these obstacles are underway in California. After two years of low-key release of hospital-level cesarean data with little website traffic and little publicity, a broader approach was undertaken in January 2016. The risk-adjusted NTSV cesarean rate, with background commentary, for every hospital in California was released to the press in multiple cities. That data is now available on several websites, including CalQualityCare.org (a collaboration between California Hospitals Assessment and Reporting Taskforce and California Health Care Foundation) and CaHealthcareCompare.org (from the California Department of Insurance and Consumer Reports). Both of these websites use measures created by CMQCC, which in turn were derived from statewide data sets from the Office of Statewide Health Planning and Development (OSHPD) and from vital records.

3. Improve Data Quality

Providers rightfully want to ensure that performance measures are based on the highest quality data. The first response from providers with high rates of cesarean is to attack the quality of the data. As mentioned earlier, another often-heard concern from providers is that their high rate is not truly reflective of their care because they have higher-risk patients. These concerns underscore the need to address the issue of risk stratification or risk adjustment in ways that both providers and patients can understand. Lastly, it is discouraging for leaders and staff to have different results on the same measure reported by different agencies. This often results when staff from different departments release different data sets. These issues, and other drivers for poor data quality of cesarean birth measures, are shown in *Table 35*.

Table 35. Poor Data Quality

Poor Data Quality
Drivers include:
Difficulties with attribution to the correct provider
Need for risk adjustment
Variation in hospital coding for cesarean birth
Variation in birth certificate coding
Lack of institutional documentation and data governance standards

Strategies for overcoming these obstacles start with identifying the best sources for each of the key data elements and concentrating on data elements that are rarely the source of error. Gestational age and parity are well recorded on the birth certificate; fetal presentation and multiple gestation are accurately recorded in either the birth certificate or hospital discharge diagnosis files (ICD-9/10) and the provider who performed the cesarean is best found on the birth certificate. ICD-9/10 codes can provide additional data for further adjustment but are of lower quality than the previously-described data elements. Similarly, the birth certificate provides other data useful for risk adjustment, such as maternal age (excellent quality) and maternal body mass index (BMI) (good quality).

The CMQCC Maternal Data Center (MDC) receives and links together birth certificate and ICD-9/10 data sets. The MDC takes the best quality data fields from each set to create performance measures. In addition, many hospitals send other clinical data from their Electronic Health Record as process measures that are then linked to the existing data. Data quality is monitored using a comparison between the data sets, which allows for comparison of overlapping data elements such as presentation and plurality. The nationally recognized risk stratified cesarean measure — Nulliparous, Term, Singleton, and Vertex (NTSV) — can be calculated only using high quality data elements (parity, gestational age, plurality, and presentation) available in these administrative data.^{86,337} The need to further risk adjust the NTSV measure is under active investigation. Current findings indicate that major individual risk factors such as advanced maternal age and large BMI tend to cancel each other out at the hospital level. For example, California hospitals with a large number of nulliparous women of advanced maternal age also tend to have patients with lower or average BMI, and vice versa (CMQCC internal analysis of California data). Similar findings have been noted in Massachusetts.³³⁸

The MDC has access to data identifying the provider at the birth, and can calculate provider specific rates with good accuracy. However, in facilities that have midwives and family medicine doctors attending births, special data-collection accommodations must be made to account for the cesareans performed by covering obstetricians. The MDC has developed several strategies to mitigate this issue: (1) the ability to combine all the midwives, family medicine doctors, and covering obstetricians into an NTSV rate for the entire group; and (2) the ability to reassign attribution for births, recognizing the midwife or family medicine

doctor as the delivering provider even for cesareans. This is an internal facility activity specific to hospitals that have more sophisticated attribution needs, the accuracy of which depends on the clerk or staff assigned to data entry. The MDC is able to display lists of patients, making this process easier for those tasked with this duty. These issues make provider-level statistics a work in progress. They are very practical for internal use and, indeed, one of the most effective tools for driving physician change.³³⁰ However, provider-level data are not yet ready for public release until further experience is gathered.

4. Create Actionable Data

The mere availability of hospital performance measures is often not enough to drive QI projects. The measures must get into the right hands and appropriate comparisons to other facilities or providers must be presented with a sense of urgency and with action steps. There is growing recognition of the value of reporting the same measures at multiple levels of the health care system. This allows for better alignment of incentives and activities throughout the system. The barriers to actionable data are shown in *Table 36*.

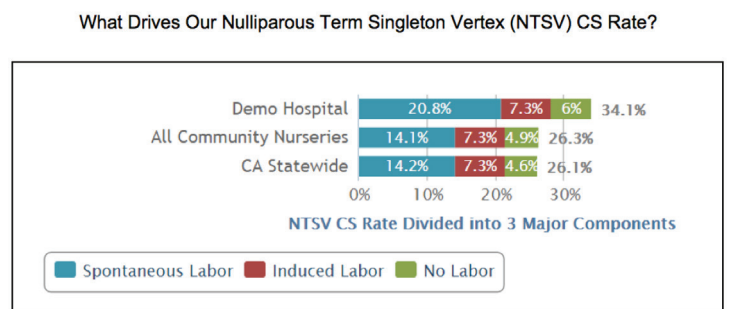
Table 36. Lack of Actionable Data for Cesarean Births

Lack of Actionable Data for Cesarean Births
Drivers include:
Not compelling / No sense of urgency
Data fatigue
Lack of appropriate comparison groups
Challenge of multiple levels (MD/ Practice Group/ Hospital/ Medical Group/ Health Plan/ Purchaser/ State)
Difficulties with attribution to the correct provider
Lack of packaging of "How to's" for departments to use for QI

Strategies for overcoming these barriers have led the MDC to expand its data reporting platform to include multiple comparison groups, such as like-level hospitals, like-size hospitals, and same-system hospitals. The very user-friendly interface easily walks users through the comparisons and analyses and provides attractive graphics that are useful for department meetings. These fresh ways of examining measures help to overcome data fatigue. There are also strategies to keep attention focused within a department. For most QI projects, it is important to share progress monthly but that can lead some providers

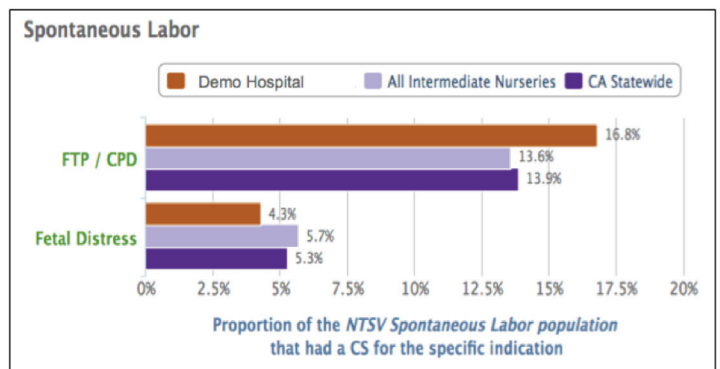
to become "numb to the data." A compromise is to share overall and process data monthly but make it a larger focus quarterly, with an emphasis on provider metrics as well. Provision of utilization metrics like NTSV cesarean rate may not be effective unless there are some directions as to how to use them to improve. To that end, the MDC provides analyses that indicate where a particular hospital (or provider) should concentrate in order to reduce cesarean rates. An example screen shot in *Figure 7* shows a hospital's NTSV Cesarean rate broken down into spontaneous labor, induced labor, or no labor (with comparison groups):

Figure 7. Example Screenshot from Maternal Data Center



For this hospital, this analysis allows the QI efforts to focus on spontaneous labor as the main area for improvement. This is further broken down in *Figure 8* to identify whether failure to progress/cephalopelvic disproportion (FTP/CPD) or FHR concerns are the major driver.

Figure 8. Example Screenshot from Maternal Data Center



Here, the analysis clearly points to FTP/CPD as the area that needs QI attention, an area directly related to labor support and management (see Part II and Part III of the toolkit for more specifics on improvement in these areas). The MDC also has the ability to track process measures to mark progress in these areas during the improvement

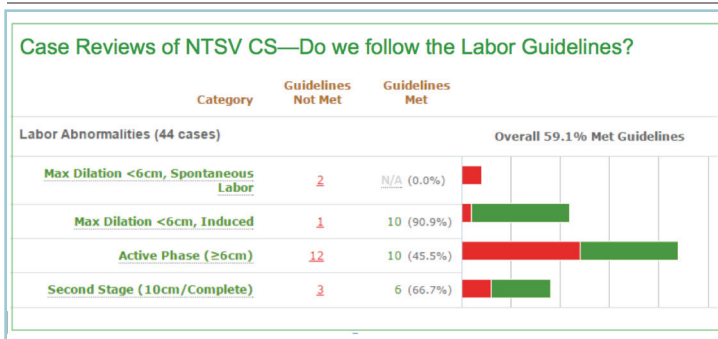
process. The MDC creates a case list appropriate for the improvement topic (e.g. cesarean for labor dystocia or cesarean for fetal concern). After simple chart reviews, using a checklist directly taken from the ACOG/SMFM guidelines,³ outlier cases can be identified (Figure 9).

Figure 9. Dystocia Checklist for Data Collection

CMQCC Dystocia Checklist for Data Collection (ACOG/SMFM Criteria)	
4. Diagnosis of Dystocia/Arrest Disorder (all 3 should be present)	
<input type="checkbox"/>	Cervix 6 cm or greater
<input type="checkbox"/>	Membranes ruptured, then
<input type="checkbox"/>	No cervical change after at least 4 hours of adequate uterine activity (e.g. MVUs > 200), or at least 6 hours of oxytocin administration with inadequate uterine activity
5. Diagnosis of failed induction before 6 cm dilation (both should be present)	
<input type="checkbox"/>	Bishop score >6 when undergoing elective induction
<input type="checkbox"/>	Oxytocin administered for a minimum of 12 hours after membrane rupture

The MDC calculates, presents, and tracks over time the proportion of cases that meet the process measures. Results of this analysis on a sample of charts of women with FTP/CPD for a single time period are shown in Figure 10.

Figure 10. Example Screen Shot from Maternal Data Center



These kinds of analysis and visual presentation have been very productive in the pilot sites (see Part VI for success stories at these pilot hospitals).

5. Reduce Data Burden

In this era of tight hospital operational budgets and competing requests for data support for required Medicare metrics, it is important to have systems in place to minimize the costs and duplication of efforts for data collection and data analysis for maternity QI projects. The drivers of data

burden are shown in Table 37.

Table 37. Data Burden

Data Burden
Drivers include:
Data collection burden on staff, especially chart reviews
Many organizations asking for data (sometimes the same, sometimes slightly different)

Strategies for overcoming these barriers focus on the reuse of existing data sets wherever possible. This can be accomplished by combining ICD-9/10 data with birth certificate data, as the MDC does. Using MDC sub-analyses focuses the topics for review to those that will have the largest “bang for the buck.” Furthermore, the administrative data within the MDC are used as a first screen to efficiently identify cases that need chart review. The process metrics that are based on these reviews have simple criteria (e.g. 6 cm, 4 hours with ruptured membranes) and can be quickly processed by a nurse reviewer. The use of administrative data also allows easier continued surveillance, a critical step for QI sustainability.

Great effort has been made in California to have the same set of metrics used by all parties. Nationally, TJC, CMS, and Leapfrog Group (LFG) now use the NTSV cesarean measure as the metric for cesarean births. CMQCC uses the same measure in the public release data file for all California hospitals (not every hospital reports to TJC, LFG, and CMS) and as the main cesarean metric for the MDC. Some hospitals that use only internally generated metrics employ older measures, such as the Primary Cesarean Rate. Unfortunately, that measure distorts hospital level comparisons because of lack of risk adjustment and the inclusion of both nulliparous and multiparous patients in the same measure. Multiparous women have cesarean rates 4 to 6 times lower than nulliparous women, and hence markedly lower the overall Primary Cesarean Rate when mixed together with data from nulliparous women. This matters because the proportion of nulliparous to multiparous women varies greatly between hospitals (from 22% nulliparous to 60% nulliparous). Indeed, nulliparity is the single most important risk adjuster. Not adjusting for nulliparity can easily create inaccurate and confusing comparisons. In the end, it is very important for all public release organizations to use the same metrics and to coordinate so that the released numbers are as accurate as possible. The MDC can coordinate the release of identical data to multiple agencies to reduce the chance of “measure confusion.”

6. Design New Measures to Drive QI

Most QI efforts use process measures to drive change. As noted previously, cesarean rates do not represent either a true outcome or process measure but are more aptly categorized as a utilization metric. Therefore, optimally several process measures should be identified for use in cesarean QI projects. In addition, most of the focus has been on the provider despite the fact that nursing support clearly has significant impact on labor outcomes. Therefore, methods should be developed to monitor and support nursing QI as well. The issues for new QI measures are shown in *Table 38*.

Table 38. Need for New Cesarean QI Measures

Need for New Cesarean QI Measures
Drivers include:
Process measures needed to support QI
Lack of full team assessment, especially nursing support during labor
The question of further risk adjustment of the NTSV measure

CMQCC and the MDC have piloted cesarean process measures using the recent ACOG/SMFM *Obstetric Care Consensus on the Safe Prevention of the Primary Cesarean Delivery*.³ Thus far, the process measures have worked well as tools for driving change in the pilot hospitals. The process measures most widely used are the criteria for FTP/CPD and criteria for failed induction. Preliminary work suggests that using criteria for fetal distress, such as those outlined by Clark and colleagues,²²⁷ is also useful. The important principle in designing these process measures is to use a standard guideline, such as the guidelines for

labor management, induction of labor, and active labor admission proposed in the *Safe Deliveries Roadmap Labor Management Bundle* used by the Washington State Hospital Association.¹⁴⁴

Measures that assess nursing engagement are quite important but still in the formative stage. Appendix H reports on several proposed measures from AWHONN, such as freedom of movement in labor, labor support, and non-directed pushing. Though evidence exists to support these concepts, their formulation into specific clinical measures has not yet been tested. CMQCC and MDC welcome research in this area and look forward to incorporating new process measures in the future.

The MDC represents a major advance for supporting maternity QI projects. Most of the barriers to data-driven QI identified in this analysis have already been addressed by the MDC. To date, MDC methods and tools have been tested in QI projects in three states: California, Washington, and Oregon. Successful data-driven pilot projects in California hospitals that reduced NTSV cesarean rates by using MDC tools and other strategies outlined in this toolkit are described in Part VI.

For further information about the Maternal Data Center, please contact datacenter@cmqcc.org

Part V. The Next Step: Integrating Midwives, Doulas, and Community-Based Care

Introduction

Following the first publication of this toolkit, the California Maternal Quality Care Collaborative (CMQCC) recruited 91 California hospitals to take part in a statewide initiative called the CMQCC Supporting Vaginal Birth Collaborative. Between 2016-2018, CMQCC invited hospitals with NTSV Cesarean Birth (PC-02) rates above the Healthy People 2020 goal of 23.9% (along with two sister campuses of two selected hospitals), to participate in a quality improvement (QI) initiative with the aim of increasing supportive care and decreasing NTSV cesarean births. Utilizing a “mentor model” approach, physician and nurse mentors were paired with QI champions at each participating hospital. Mentors and participants identified and implemented strategies from the toolkit that aligned with the specific needs of each facility. To ensure a data-driven approach to QI activities, participant hospitals received direct one-on-one support from CMQCC clinical leads and the California Maternal Data Center (MDC). Member hospitals continue to receive direct support on this quality improvement initiative.

Table 39. Specific Interventions Utilized by Hospitals During the Supporting Vaginal Birth Collaborative (in order of most utilized to least utilized)

Specific Intervention	Percentage of Hospitals (n=91)
Staff Education on Normal Labor	98%
Sharing Unblinded Provider NTSV Rate	85%
Labor Dystocia Checklist	65%
Peanut Balls for Positional Support in Labor	53%
Active Phase Huddle	45%
Changes in Latent Labor Management	45%
Patient Education During Labor	45%
Induction Scheduling Form	34%
Doula Program	33%
Patient Support after Traumatic Birth Experience	26%
Electronic Medical Record Order Sets	24%
Induction of Labor Algorithm	22%
Cervical Ripening in Outpatient Setting	19%
Changes in 2nd Stage Management	18%
Coping with Labor Algorithm	10%
Introduction of Laborists	8%
Childbirth Education in Prenatal Period	8%
Introduction of Midwives	4%
Use of Nitrous Oxide	4%

Adapted from: Rosenstein MG, Chang SC, Sakowski C, et al. Hospital Quality Improvement Interventions, Statewide Policy Initiatives, and Rates of Cesarean Delivery for Nulliparous, Term, Singleton, Vertex Births in California. *JAMA*. Apr 27 2021;325(16):1631-1639.

The toolkit, the subsequent collaborative, and the collective statewide activities, in partnership with outside stakeholder groups committed to reducing cesarean rates in California, had a dramatic impact. By the end of 2019, NTSV cesarean rates in California had dropped to 22.8%, down from 26% in 2014 (*Figure 11*). A safety study of the first two

In This Section



KEY STRATEGIES

for Midwifery Integration	98
for Integration and Improved Safety Across Birth Settings	99
for Integrating Doulas Into the Birth Care Team	106



TABLES

Table 39. Specific Interventions Utilized by Hospitals During the Supporting Vaginal Birth Collaborative	80
Table 40. Resources for Midwifery Educational Requirements, Credential Types, and Scope of Practice	89
Table 41. Findings of the Strong Start Study	93
Table 42. Key Strategies for Midwifery Integration	98
Table 43. Key Strategies for Integration and Improved Safety Across Birth Settings	99
Table 44. Resources for Midwifery Integration, Team-Based Care, and Improved Transfer	100
Table 45. Key Strategies for Integrating Doulas Into the Birth Care Team	106
Table 46. Resources for Doula Integration	107

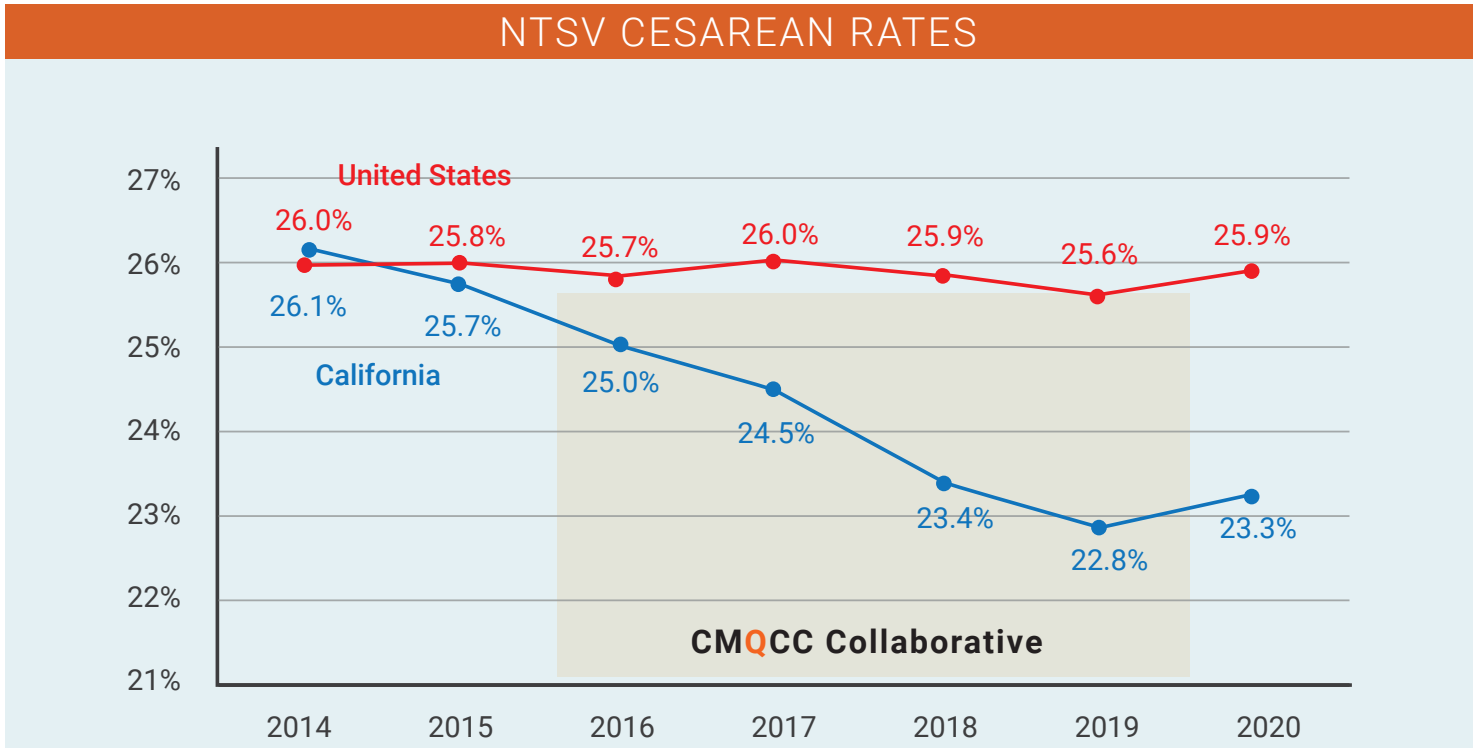


FIGURES

Figure 11. NTSV Cesarean Rates in the United States and California, 2014-2020	81
Figure 12. California NTSV Cesarean Rates by Race & Ethnicity	81
Figure 13. Maternal Mortality Ratio in the U.S. and California, 1999-2016	82
Figure 14. Components of Team-Based Care	84
Figure 15. Three Maxims of Patient-Centeredness	84
Figure 16. Midwifery Around the World: Comparison of the United States to Other Countries	86
Figure 17. Benefits of Midwifery Care	86
Figure 18. Cornerstones of Midwifery Care in Two Examples – A Guide For All Provider Types in All Settings	87
Figure 19. Midwifery Integration	97
Figure 20. The Role of Doulas During Labor and Birth	102
Figure 21. Benefits of Doula Care	105

cohorts of the hospital collaborative analyzed rates of chorioamnionitis, blood transfusions, third- or fourth-degree lacerations, operative vaginal deliveries, severe unexpected newborn complications (UNC), and 5-minute Apgar scores. Compared to the pre-collaborative period, the study revealed that no quality measure was statistically significantly worse, and the rate of severe unexpected newborn complications declined.³³⁹ This study was important as it demonstrated that hospitals could safely reduce unnecessary cesareans through hospital-specific, patient-centered strategies.

Figure 11. NTSV Cesarean Rates in the United States and California, 2014-2020

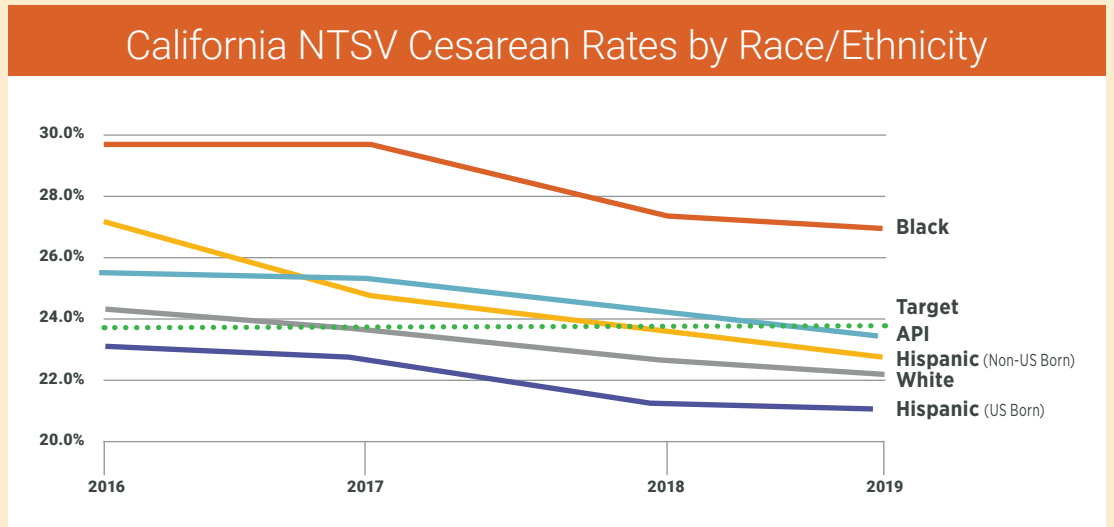


Source of US Data: National Vital Statistics System – Natality (NVSS-N), CDC/NCHS
 Source of CA Data: CMQCC Maternal Data Center based on linked patient discharge and birth certificate data

Disparities in Birth Outcomes

As the data showed a decrease in overall NTSV cesarean rates, it also revealed the disturbing trend of continued racial inequity, particularly for Black birthing people in the state. NTSV cesarean rates in this population declined overall but remained significantly higher than their white counterparts (Figure 12).

Figure 12. California NTSV Cesarean Rates by Race Ethnicity



Source: Department of Health Care Access and Information, 2019.

The NTSV cesarean rate is not the only disparate health outcome for Black patients and people of color. The rate of severe maternal morbidity – also known as “life-threatening pregnancy-related complications” or “near-misses” – continues to rise in the United States.³⁴⁰ Moreover, according to recent reports, people of color, low-income individuals, and those with Medicaid insurance are disproportionately affected by severe maternal morbidities.³⁴⁰ Black individuals are twice as likely to experience severe maternal morbidities – such as blood clots and infection – than their white counterparts.³⁴¹

Improvements in California’s maternal mortality rate (MMR) are in contrast to the trends seen in national rates. From 2006-2016, California’s MMR decreased by 65% (Figure 13), while the national MMR increased by approximately 31%. The United States now holds the undesirable distinction of having the most maternal deaths of any high-income country.³⁴² During this timeframe, while NTSV cesarean birth rates declined for every racial group, Black and Indigenous people in California experienced 3-to-4 times the rate of maternal mortality compared to their white counterparts.³⁴³ The California Maternal Data Center continues to observe substantial variation in maternal outcomes between racial and ethnic groups.

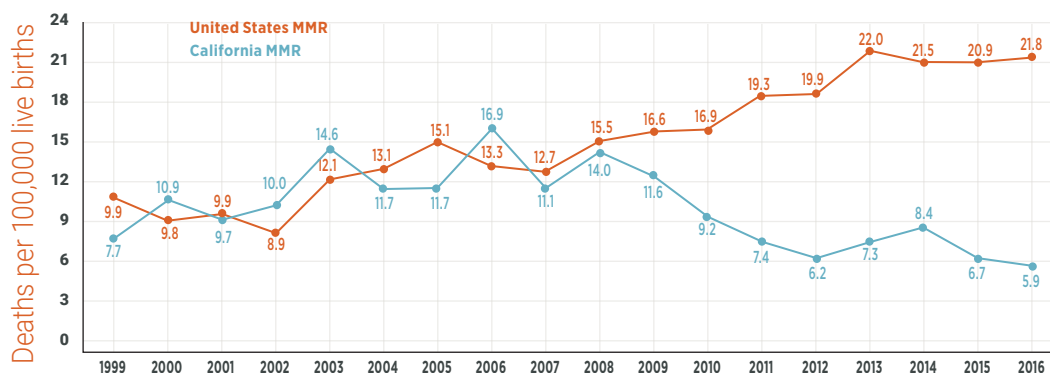
In 2021, the California Department of Public Health issued a report on an enhanced surveillance methodology – the California Pregnancy Mortality Surveillance System (CA-PMSS) – which showed that disparities in maternal mortality between 2008-2016 by race and ethnicity, and between advantaged and disadvantaged communities, were even higher than initially thought. The maternal mortality rate for Black birthing people is roughly 4-to-6 times higher than the rate for white birthing people.³⁴³

Root Causes of Disparities in Birth Outcomes

Racial, Ethnic, and Socioeconomic Disparities in Birth Outcomes

People in California have unequal outcomes and experiences in maternity care and birth based on race, ethnicity, and socioeconomic status. Access to care, patient experience, and – ultimately – morbidity and mortality, are deeply connected to systems of inequity pervasive in American culture.³⁴⁴ For decades, mounting evidence has shown that health risk, health care choices, and outcomes can only be viewed within the systems and conditions into which people are born and exist daily.³⁴⁵ Multiple intersecting layers

Figure 13. Maternal Mortality Ratio U.S. and California, 1999 – 2016



Maternal mortality ratio (MMR) = Number of maternal deaths per 100,000 live births, up to 42 days after the end of pregnancy. Maternal deaths in California were identified using ICD-10 cause of death classification for obstetric deaths (codes A34, 000-095, 098-099) from the California death certificate data (1999-2013) and the California pregnancy status errata file (2014-2016). Data on U.S. maternal deaths are published by the National Center for Health Statistics and found in the CDC WONDER Database for years 2008 or later (accessed at <http://wonder.cdc.gov> on February 25, 2020).

Source: CA-MPSS Surveillance Report: Pregnancy-Related Deaths in California 2008-2016. Sacramento: California Department of Public Health, Maternal, Child and Adolescent Health Division, 2021.

of disadvantage experienced by individuals can impact their health status for generations.³⁴¹ Communities of color bear the brunt of historical, economic, and environmental discrimination and have fewer resources available to them to mitigate those risks.^{346,347} Thus, the disparate

outcomes for Black patients, Indigenous patients, and people of color (BIPOC) have been incorrectly termed “race-based disparities in birth outcomes” when they are, in fact, “racism-based disparities” that are deeply rooted in social, economic, and political systems.³⁴⁸ BIPOC patients have limited

access to care, opportunities, goods, and services compared to their white counterparts.^{344,345}

Racism is, in and of itself, a singular, complex threat to one’s health. Access to respectful care from a provider or the health care system is not a guarantee for

Black birthing people. Racism limits one’s agency to make healthful decisions. Chronic and generational stressors from inequities at the structural and institutional levels – such as limited access to housing, education, and health care – impact the health of birthing people. Additionally, interpersonal racism and implicit bias may be experienced in the exam room or clinic.³⁴⁹ Implicit bias includes the stereotypes or attitudes toward marginalized populations without one’s conscious knowledge – which nonetheless affect one’s perception and decision-making.³⁴⁴ The cumulative, toxic stress that results from a lifetime of such experiences is described in the literature as “allostatic load.” The human survival response to severe stress – known commonly as “fight, flight, or freeze” – involves flooding the body with cortisol and adrenaline which subsides over time after the initial stress is removed. With chronic stress – such as with long-term exposure to systemic and interpersonal racism – the stress response does not subside and results in significant “weathering effects” of the immune, endocrine, and cardiovascular systems.^{346,350} Higher allostatic

load is associated with adverse birth outcomes such as preeclampsia, eclampsia, preterm birth, low birthweight, and more.³⁵¹

In addition to implicit bias and systems that perpetuate inequities, Black birthing people report overt mistreatment and obstetric racism by medical providers, including disregard for their concerns, neglect, loss of autonomy, use of disrespectful or demeaning terminology toward them, lack of consent, verbal beratement, microaggressions, unnecessary interventions, coercion, and more.^{344,352-354} Such mistreatment – occurring directly within the birth setting – adds to the cumulative effect of toxic racism and allostatic load.³⁴¹ A large statewide report by the National Partnership for Women and Families, showed that birthing people in California want a more dignified and respectful birth experience. The report also noted that patients are explicitly seeking out midwifery and doula care.³⁵⁴

In January 2020, the California Dignity in Pregnancy and Childbirth Act (Senate Bill 464) went into effect. This law requires implicit bias training for perinatal care providers at hospitals and alternative birth centers in California, with specific requirements for the training. A list of free courses that ensure easy access to training that meets all requirements of the law can be found at <https://www.cmqcc.org/content/birth-equity>

Access to Care

Mirroring the United States, California has a health care workforce crisis.³⁵⁵ Providers of all types are limited and unequally distributed around the state. Additionally, nonphysician providers cannot adequately fill access gaps due to various unnecessary restrictions on their scopes of practice, fewer education programs, and limited training opportunities and preceptorship sites.³⁵⁶ Multiple counties in California do not have an obstetrician.³⁵⁷ The March of Dimes classified at least 15 counties as “Maternity Deserts” or “Limited Access Areas” based on the availability of providers, availability of birthing hospitals, and health insurance

coverage.³⁵⁸ Reduced access – and the associated poor outcomes – disproportionately affect people of color, people in low-income communities, and people in rural areas. Limited access to care has an additive effect on outcomes when combined with the unequal social conditions that exist in these communities, such as food insecurity, dangerous environmental exposures, and housing deficiencies.³⁴¹ As Taylor et al. so aptly states in their policy blueprint, “ensuring access to comprehensive, affordable, high-quality health care is vital in the effort to eliminate racial disparities in maternal and infant mortality.”³⁴¹

Doctors, Midwives, Doulas, and the Potential of Team-Based Care

Together, improvement is possible. This sentence notes an essential underpinning of quality improvement: **there is no singular intervention that will eliminate or significantly reduce cesarean rates and improve other disparate birth outcomes.** Complex public health and social problems require multiple, innovative, evidence-based strategies to produce effective and sustainable change over time. Team-based care, which combines strong interprofessional collaboration and effective communication, is a key tool in the QI toolbox.

Defining Team-Based Care

In Section III of the Toolkit to Support Vaginal Birth and Reduce Primary Cesareans (Response and Management of Labor Abnormalities), interprofessional teamwork was presented as a key strategy to reduce cesareans and improve outcomes for response to any labor abnormality (and has been described in depth in other CMQCC toolkits as well). A perinatal unit that values a culture of teamwork is one that values safety and healthy patient outcomes. Authentic team-based care goes beyond the philosophical and requires a true commitment to change. As the American College of Obstetricians and Gynecologists (ACOG) explains, the team-based approach may take some by surprise because it upends the traditional care model. As with any quality improvement process or updates in clinical practice, this process needs champions to lead the work, and time to integrate the culture shift.

ACOG states: “team-based care is the provision of health services to individuals, families, and/or their communities by at least two health care providers – to the extent preferred by each patient – to accomplish shared goals within and across settings to achieve coordinated, high-quality care.”³⁵⁹ Team-based care improves quality and safety, enhances the patient experience, and allows for diverse patient needs to be met by a diverse care team with varied strengths and specialties.^{210,266,310,359} There are seven components of team-based care and many deserve expanded attention beyond the didactic content of this toolkit (*Figure 14*). ACOG’s document titled *Collaboration in Practice: Implementing Team-Based Care* explains each component in more detail, especially in the context of integrated physician and midwifery care, and should be required reading for any department wanting to advance efforts in this area.³⁵⁹

Figure 14. Components of Team-Based Care^{359,360}

ACOG’s Components of Team-Based Care	
<ul style="list-style-type: none"> • Putting patients and families at center of the team • Having a shared vision • Role clarity • Accountability for one’s own practice 	<ul style="list-style-type: none"> • Accountability to the team • Effective communication • The understanding that team leadership is situational and dynamic

Putting patients and families at center of the team

The first – and probably most important – tenet of team-based care is that the patient and family are at the center of the care team.^{359,361} The care team must have a common commitment to patient-centered care. The maxim “nothing about me without me” provides an easy mental model to remember that ultimately the patient has a choice in all matters, without exception.³⁶² This has come to be known commonly as “shared decision making,” though some clinicians assume that this approach is limited to decision making between the interdisciplinary care team, excluding patients from the process. Ultimately, the true locus of control is with the patient. This patient-centered approach has created a necessary, disruptive shift in the control of health care decision making, but studies have repeatedly shown that patient-centered care improves outcomes.³⁶² More on this can be found in Section I of this toolkit (Readiness: Improving the Culture of Care, Awareness, and Education).

Figure 15. Three Maxims of Patient-Centeredness³⁶²

Three Maxims of Patient-Centeredness

1. “The needs of the patient come first.”
2. “Nothing about me without me.”
3. “Every patient is the only patient.”

Having a shared vision

Secondly, team-based care can only succeed if the team has a shared vision. To do this, the team must identify shared goals. High-quality, high-value care can be delivered in a variety of ways, so the team must create a collaborative, mutually acceptable roadmap to guide expectations of how things will be done. A shared vision will also require unity. Teams are ultimately an “integrated body of knowledge and skills working together toward a common goal,” not simply individuals practicing in parallel.³⁵⁹

Role clarity

Role clarity is essential to successful team functioning. This means that each member is respected for their distinct expertise and their unique contributions are valued. Furthermore, each team member’s scope and role are understood by all other members of the team and this role is maximized to the full extent of their education and training (to the degree allowed by state laws and regulations). Role clarity creates a common understanding that great minds do not in fact always think alike.³⁶³ In fact, assimilation by midwives to a medical model of care is antithetical to role clarity. Clinical practice guidelines, if mutually created and agreed upon, can be an invaluable part of facilitating expectations and role clarity. In outlining the parameters for consultation, co-management, and transfer of care, clinical practice guidelines in essence can serve as the “language of collaboration.”

Accountability for one’s own practice and accountability to the team

Beyond role clarity, team-based care only works if all team members are accountable for their own practice and to the team. This means that everyone must be committed to consistently practicing within their scope, training, experience, and professional competence. Every team member must also be committed to continuous learning outside of the clinical situation, and situational learning within each encounter. Teams should respectfully hold each other accountable (this is also known as “situational monitoring”). As with role clarity, evidence-based clinical practice guidelines that are mutually agreed upon may help support professional responsibility and establish agreed-upon criteria for consultation, co-management, and transfer of care. Accountability to one’s own practice and to the team requires honesty, discipline, reliability, and – the hardest of all – humility.

Effective communication

Effective communication is key to team-based care. This requires “trust, honesty, transparency, and timeliness.”³⁵⁹ Effective communication also requires that each team member is aware of their own assumptions and assumes the best about each person’s motives and goals. Respectful, active listening is required. Team members should be encouraged to share concerns without fear of retribution, anger, or impatience from other members of the team. Team communication also requires a robust understanding of patient-centered communication, specifically shared decision making. Care teams can further improve safety and functioning by utilizing standard frameworks for how patient status is communicated. For more on effective communication within highly reliable teams, visit Section III of this toolkit.

Situational and dynamic team leadership

Finally, in team-based care, team leadership is situational and dynamic. This is likely the most difficult concept to learn in a culture where medical care is typically physician-led. For integrated physician-midwife care to be successful, collaborative practice must develop beyond a hierarchical structure. ACOG notes that it is best when the clinician who is “closest to the patient and whose scope best matches the clinical situation is recognized as the leader for that event.”³⁵⁹ This requires an understanding of shared power, flexibility, and fluidity during the care episode because oftentimes team leadership will change between physician and midwife over the course of the care. Ultimately, situational leadership is built on a shared understanding that no provider type or type of training is superior to another. This requires “experiential learning, building respectful relationships, and time.”³⁵⁹

Systemwide Integration of Midwifery and Doula Care

Midwifery Care

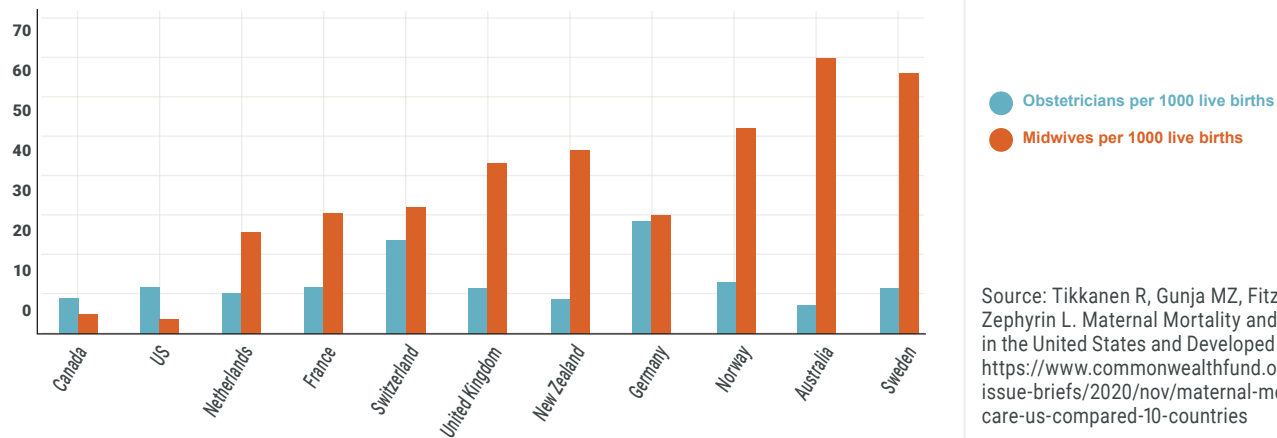
The Listening to Mothers in California study (2018) revealed that over half of participants said they would “definitely want” or “would consider” a midwife for a future pregnancy.³⁵⁴

What is midwifery?

Section III of this toolkit gives a brief introduction to midwifery care. This section continues this discourse in more detail on what midwives do, what “integration” into care looks like, and how integrated midwifery care can benefit all patients – especially those from historically marginalized communities.

Midwives provide the kind of patient-centered care that has the potential to reduce unnecessary procedures and improve outcomes while curbing costs.⁵⁵ However, in the United States, midwives are undervalued and underutilized within the

Figure 16. Midwifery around the world: Comparison of United States to other Countries



Source: Tikkanen R, Gunja MZ, FitzGerald M, Zephyrin L. Maternal Mortality and Maternity Care in the United States and Developed Countries. 2020 <https://www.commonwealthfund.org/publications/issue-briefs/2020/nov/maternal-mortality-maternity-care-us-compared-10-countries>

Figure 17. Benefits of Midwifery Care^{318,364-372}

More likely with midwifery care...	Less likely with midwifery care...
<ul style="list-style-type: none"> Spontaneous vaginal birth Trial of labor after cesarean (TOLAC) Vaginal birth after cesarean (VBAC) Breastfeeding Patient confidence and control Patient-centered care Lower cost 	<ul style="list-style-type: none"> Cesarean birth Operative vaginal birth Induction of labor Episiotomy Epidural anesthesia Perineal lacerations Continuous fetal monitoring Use of pain medication NICU admission

maternity care system, in stark contrast to global utilization of midwifery services (Figure 16).

According to Renfrew et al., “midwifery is a vital solution to the challenges of providing high-quality maternal and newborn care for all women and newborn infants, in all countries.”³¹² Within the landmark Lancet Midwifery Series,³⁶⁴ Renfrew and colleagues identified over 50 outcomes that are impacted positively by midwifery care, including reduced rates of unnecessary cesareans and other costly interventions.

The midwifery model of care is standard in all countries that have better birth outcomes. Patient empowerment is a central theme of midwifery care.³⁷¹ Midwives are described as providers of “whole-person” care to pregnant and birthing people within a holistic, individualized care model that considers all the patient’s needs from physical and emotional, to their social determinants of health, personal values, and cultural needs.^{373,374} Midwifery philosophy has long preserved three immutable elements³⁷⁴: (1) patient-centered care, (2) “the therapeutic use of the human

presence,”³⁶⁰ and (3) nonintervention unless necessary for the health and wellbeing of the pregnant person and/or fetus.

Despite this potential, the profession of midwifery is not well understood by the public or within the modern model of health care in the United States. A lack of visibility of midwives and other birth workers in the medical system, multiple midwifery licensure pathways, and a historical effort in the United States to eliminate the midwifery profession – especially for midwives of color – contribute to this lack of understanding and acceptance.^{375,376}

Figure 18. Cornerstones of Midwifery Care in Two Examples – A Guide for All Provider Types in All Settings

ACNM’s Pearls of Physiologic Birth ³⁷⁴	ACOG’s Approaches to Limit Intervention During Labor and Birth ³⁷⁷
<ul style="list-style-type: none"> • Oral nutrition and hydration during labor and birth is safe and standard of care for essentially healthy, low-risk people • Save routine intravenous fluids for when it is medically necessary and for people who cannot tolerate oral fluids • Intermittent auscultation is standard for all essentially healthy, low-risk people • Ambulation and freedom of movement • Continuous labor support • No routine rupture of membranes • 2nd stage passive descent for 1-2 hours (if no urge to push) • Support self-directed pushing in the 2nd stage • Avoid aggressive perineal massage • Always avoid routine episiotomy • Immediate skin-to-skin and breastfeeding • Nonpharmacologic pain options (e.g., hydrotherapy) as first-line options for pain relief • Labor progress is an individualized experience; “tincture of time” • Delay cord clamping • Evidence-based care is the best care • Trust the body’s innate capacity to give birth • Team-based collaboration optimizes outcomes • Trial of labor (TOLAC) is safe for almost all people 	<ul style="list-style-type: none"> • Individualize care for essentially healthy, low-risk people, to include intermittent auscultation and nonpharmacologic methods of pain relief • Intermittent auscultation is safe for essentially healthy low-risk people when performed by trained staff • For healthy people with a reassuring fetus, admission to labor and delivery may be delayed in the latent phase of labor; offer frequent check-ins, ensure support, and offer nonpharmacologic pain relief measures • Offer physical and emotional support, oral hydration, positions of comfort, and nonpharmacologic pain relief such as hydrotherapy to people who are admitted for pain or fatigue in latent labor • For people with premature rupture of membranes (PROM), expectant management for a limited time may be considered for appropriate candidates, and if the patient is counseled on potential risks and benefits • Continuous labor and emotional support provided by a trained support person, such as a doula, is associated with improved outcomes • Routine amniotomy can be avoided in people with a normally progressing labor and no evidence of fetal compromise • Use the “coping scale” in lieu of the standard pain scale when deciding on pain relief options • Frequent position changes during labor enhance comfort and promote optimal fetal positioning, and should be offered unless otherwise contraindicated by medical conditions or risk factors • Encourage each person to use their preferred pushing technique • Offer a family-centered approach to birth care regardless of mode of delivery

What is HUDLS?

HUDLS is your tool to providing supportive emotional and physical care – for every birthing person – that centers the patient’s support needs. This tool is informed by the midwifery model and the Quality Maternal and Newborn Care Framework. HUDLS means Hands-On Understanding and Demonstration of Labor Support and is an online learning tool available to CMQCC member hospitals. HUDLS is designed to be completed utilizing both didactic online training modules and trainer-led bedside lessons to reinforce learning. HUDLS covers topics such as latent labor management, promoting spontaneous labor, coping with active labor, shared decision making, and more. Recent updates include workforce considerations for racial inequities, midwifery integration and team-based care, benefits of doula care, and data review of NTSV cesarean births for quality improvement.

This online learning tool provides:

- *Content provided is in short lessons (less than 15-minutes) to accommodate the demands on hospital education time*
- *5 Contact Hours with an easy access PDF transcript that is accepted by the California Board of Registered Nursing*
- *Gradebook for hospital trainers to track staff progress and scores*

Learn more at

<https://www.cmqcc.org/news/updated-hudls-labor-support-education-platform-released-cmqcc-member-hospitals>

In the United States, there are currently three nationally recognized midwifery credentials, all of which have education programs recognized by the U.S. Department of Education³⁷⁸:

- Certified Midwives (CMs)
- Certified Nurse-Midwives (CNMs)
- Certified Professional Midwives (CPMs)

CNMs and CMs are nationally certified by the American Midwifery Certification Board (AMCB) and have almost identical midwifery education requirements, with the exception that CMs are not nurses. CNMs are authorized

to practice and prescribe in all 50 states and the District of Columbia. The majority practice in clinics and hospitals, and others attend births in homes and freestanding birth centers. At the time of this writing, CMs are authorized to practice in 9 states and the District of Columbia.³⁷⁹ CPMs are nationally certified by the North American Registry of Midwives (NARM) and, at the time of this writing, CPMs are authorized to practice in 37 states.³⁸⁰ Midwives of all credential types are trained to consult and collaborate as needed depending on the needs of the patient and, importantly, are trained to identify when deviations from normal occur, and thus when the patient may require transfer to physician care.³⁷⁸

Midwifery scope of practice differs by state. In general, insofar as allowed by state law, midwives provide primary care, gynecologic and family planning care, preconception, prenatal, intrapartum, and postpartum care, care of the newborn for the first 28 days of life, and treatment for sexually

transmitted infections (STIs). Midwives order and interpret laboratory and diagnostic tests, prescribe and administer drugs and devices, and consult with physicians as needed based on the patient’s condition.^{381,382}

Table 40. Resources for Midwifery Educational Requirements, Credential Types, and Scope of Practice

Source	Title	Description
American College of Nurse-Midwives	Comparison of CNMs, CMs, CPMs. Clarifying the Distinctions Among Professional Midwifery Credentials in the U.S. ³⁸¹	Compares the three US midwifery credential types in terms of education, scope of practice, certification, and licensure
California Health Care Foundation	California’s Midwives: How Scope of Practice Laws Impact Care ³⁵⁶	Tables 4 and 5 review California-specific information on education, licensing, certification, regulation, and scope of practice for licensed midwives and nurse-midwives
International Confederation of Midwives	ICM Resources: Global standards, Competencies, and Tools ³⁸³	Includes global standards for policy, practice, education, and regulation of midwives

Midwives in California

In California, at the time of this writing, two categories of midwifery practice exist: Licensed Midwives and Nurse-Midwives. In both cases, these midwives have taken the national certification exam for their respective credential types (see previous section on CPM and CNM national certifications) or have met equivalent training and education as defined by their regulatory board. Licensed Midwives in California are direct-entry midwives, meaning their midwifery program of study is distinct from nursing. Licensed Midwives are licensed and regulated by the Medical Board of California (MBC). Licensed Midwives are authorized to practice in all birth settings, but they typically use their expertise to attend births in homes and in freestanding birth centers, for approximately 3500 births per year in the state.³⁸⁴ The educational

and training requirements for Licensed Midwives in California are rigorous, meeting or exceeding the competency standards of the International Confederation of Midwives. All new licensees in California must pass the licensing examination administered by the North American Registry of Midwives (NARM)³⁸⁵ which, as described in the previous section, is the testing mechanism by which a midwife receives the national CPM certification. The California Legislature removed the requirement for physician supervision of Licensed Midwives in 2013.³⁸⁶ Nurse-Midwives in California are licensed and regulated by the Board of Registered Nursing (BRN). These midwives are licensed as Registered Nurses and are certified as Nurse-Midwives by the BRN. They are authorized to practice in all settings,

but the vast majority practice in the hospital or clinic setting, and a small percentage attend births in homes and freestanding birth centers.³⁵⁶ Nurse-Midwives in California attend about 10% of births in the state, or roughly 48,000 births per year in the hospital and 1,100 births per year in the community setting (homes and birth centers).³⁵⁶ Nurse-Midwives meet or exceed the competency standards by the International Confederation of Midwives and complete demanding training programs, culminating in a graduate degree. The California Legislature repealed physician supervision of Nurse-Midwives in 2021.³⁸⁷

Community Birth

Community birth refers to birth occurring outside of the hospital setting, such as in a freestanding birth center

or at home. In recent years, the number of birthing people seeking community birth has steadily increased.^{388,389} From 2019 to 2020, community birth as a whole increased by 20% (planned home birth by 23.3% and births in freestanding birth centers by 13.2%).³⁹⁰ There are many reasons why such a significant increase occurred during the COVID-19 pandemic. These reasons include fear of exposure to the virus in the hospital setting, limited access to maternity services and prenatal appointments, the inability to have a doula or even partner present during the birth, and the separation of parents and babies based on constantly changing isolation and separation guidelines, with the most extreme cases separating families for at least 14 days in the early months of the pandemic.^{391,392} Midwives in California reported a similar increase in public interest for community birth.³⁹³ On average, the demand for community birth services tripled in the first months of the COVID-19 pandemic.³⁹⁴ Even before the pandemic, the reasons birthing people choose community birth included a lower risk of cesarean, use of a “low tech/high touch” approach, availability of midwifery and doula care, a personal history of a traumatic event in the hospital, and the search for a more empowering and individualized experience. Even after the initial pandemic-related spike in community births subsided, interest in community birth remains elevated above pre-pandemic levels.³⁹¹

The safety of community birth is well-documented.^{318,368,395-409} There are risks for the birthing person in all settings, whether that setting is a home, a birth center, or a hospital.⁴¹⁰ Nonetheless, the absolute risk of perinatal death in all settings is very low.⁴⁰⁶ For many reasons, home birth in the United States remains controversial and is often seen as a fringe endeavor, not the least of which is due to various studies indicating mixed results – some showing a significant increase in perinatal and neonatal mortality for home birth while others show no difference.⁴¹¹ It has long been discussed that many of the studies in the United States have significant limitations, including being out of date, the inability to distinguish between the training and skill of various birth attendants, rare outcome measures (e.g., perinatal death), the inability to easily distinguish between planned home birth and unplanned home birth, and data ascertainment challenges that occur when relying solely on birth certificate data.⁴¹¹ It should be noted that this is not the case with international studies where community birth is well-integrated into the health care system. Those studies – mostly in the Netherlands, Canada, and the UK – by and large are well-designed and show no significant difference in perinatal outcomes between home and hospital birth for essentially healthy birthing people.^{398,402,403,405,407,411} However, they do show significantly fewer interventions such as cesarean, and much lower associated costs.

Theresa's Story

Theresa is a 35 year old G3P3 who had two previous, uncomplicated births at home. She describes her births at home as comforting and safe. She was attended by her midwife, doula, and partner. She describes her births as amazing, empowering experiences. Theresa's doula provided around-the-clock comfort care and taught her partner how to provide similar support.

For her third birth, Theresa gave birth in the hospital after being transferred for a protracted active phase and ruptured membranes for 24 hours. She reports the difference between what she experienced at home and in the hospital as stark. During labor at the hospital, there were times when she didn't understand what was happening or what would happen next. Theresa reports that the nurses didn't explain everything and assumed she knew what was happening, or they appeared annoyed or defensive when she asked for more information. During her home births, everything was explained, and no decisions were made without her. According to Theresa, this new reality “created a lot of anxiety, fear, and stress for me.”

One of Theresa's primary reasons for having a home birth was because she wanted to have the most family-centered experience possible, with uninterrupted time with her baby in those first hours and days after the birth. She knew her midwife and doula and felt safe with them. In the hospital, she didn't know anyone, and an unfamiliar person was in her room almost every hour, even waking her up frequently at night. There were doctor visits, nurses taking vitals, the pediatrician to see the baby, the baby nurse, a social security person, people asking about food preferences, and more. She wondered why these visits couldn't be better coordinated so she could have more rest and fewer distractions from her newborn. She left the hospital discouraged by how arbitrary hospital processes took priority over her needs. For example, she was told that if she couldn't be discharged by 6 pm, she would have to wait for the incoming morning shift to be

discharged. She had already spent two days away from her other children and now faced the possibility of staying longer simply because the processes and personnel didn't accommodate a night discharge. She was also allowed only two visitors during the postpartum period. Her midwife, to whom Theresa had bonded and counted on for care and postpartum support, was considered a third visitor rather than part of her care team, and that meant her midwife couldn't be there at all. It bothered Theresa that the kind of care she received at home couldn't be replicated in the hospital – at least to the extent that her health could be safeguarded, while simultaneously nurturing what she and her baby needed most in those delicate hours and days after birth.

After returning home and reading her online medical record, she realized that her provider had written “failed home birth.” She was confused by this because it meant her provider thought her decision to come to the hospital was part of a failed experiment rather than the next level of appropriate care to meet her needs in that moment.

Theresa's experience is instructive in many ways.

- 1. People choose to safely give birth at home for a variety of reasons. In this case, Theresa felt safer and more supported at home.*
- 2. The medical jargon in her medical record made Theresa feel alienated and misunderstood. “Failed home birth” is an inaccurate phrase that may convey judgement and stigma. Especially if used when the patient is present, such negative descriptions of the patient's experience may break down communication and trust. A home birth transfer is not a failed home birth, just as a necessary cesarean is not a “failed vaginal birth;” rather, it is the utilization of the appropriate level of care based upon the patient's needs.*
- 3. The high-quality care provided by the knowledgeable and hardworking nurses and providers at her hospital was overshadowed by the dearth of information given to Theresa during clinical interactions and by a process that didn't put her and her family first.*
- 4. Finally, it reveals how important it is for midwives and doulas to prepare patients for what to expect before they transfer to the hospital setting, no matter what the provider thinks the patient may already know. The first concept of team-based care – all clinicians putting the patient and family at the center of care – is the key teachable moment at the core of each of Theresa's experiences.*

More patient-centered strategies for the integration of community birth can be found in Table 43, and in-depth information on shared decision making can be found in Part I of this toolkit.

In 2011, ACOG published Committee Opinion No. 476 on Planned Home Birth, which stated: “Although the Committee on Obstetric Practice believes that hospitals and birth centers are the safest setting for birth, it respects the right of a woman to make a medically informed decision about delivery.”⁴¹² The evidentiary basis of this opinion in 2011 was largely founded upon a meta-analysis that showed a two- to threefold increase in the risk of neonatal death for planned home birth.⁴¹² Subsequent reports showed that the statistical analysis of this study was flawed.^{407,414} In fact, authors of the studies included in the meta-analysis determined that it contained “many numerical errors, improper inclusion and exclusion of studies, mischaracterization of cited works, and logical impossibilities.”⁴¹⁴ The most recent committee opinion on planned home birth no longer references a two- to threefold increase in the risk of neonatal death for planned home birth.^{411,413} Unfortunately, the American Academy of Pediatrics (AAP) still cites the same meta-analysis and the earlier ACOG opinion in their statement on Planned Home Birth.⁴¹⁵ This has resulted in an unintentional but serious impact on the American obstetrical and pediatric community’s acceptance of home birth. This sentiment has extended even to births in freestanding birth centers, with many providers – physicians and nurse-midwives alike – believing in an inherent and immutable risk associated with community birth. Notably, ACOG and AAP’s positions on home birth are in contrast to the position shared by the ACNM,⁴¹⁶ the Midwives Association of North America (MANA),⁴¹⁷ the Society of Obstetricians & Gynaecologists of Canada (SOGC),⁴¹⁸ the Canadian Association of Midwives (CAM),⁴¹⁹ the Royal College of Obstetricians and Gynaecologists (RCOG),⁴²⁰ the Royal College of Midwives (RCM),⁴²⁰ and the International Confederation of Midwives (ICM).⁴²¹ Importantly, the first sentence of ACOG’s most recent opinion on planned home birth directs providers to give birthing

people the most up-to-date information on this topic: “women inquiring about planned home birth should be informed of its risks and benefits based on *recent* evidence” (emphasis added).⁴¹¹ More recent, high-quality meta-analyses and systematic reviews show evidence of a similar safety profile for essentially healthy birthing people regardless of birth setting.^{401,411} A study published in 2021 of over 10,000 planned home and birth center births in the Washington – where midwives are the most integrated into the health care system of any state³⁶⁵ – showed what could be in a well-established system of community birth: adverse outcomes were low, birth outcomes were similar for births planned at home or at state-licensed freestanding birth centers, and perinatal mortality rates were identical to the rates of perinatal mortality cited by ACOG as the benchmark rate in hospital settings.^{411,422}

Additionally, in 2018, the landmark Strong Start study was published.³⁶⁸ This study was a joint initiative between the Centers for Medicare & Medicaid Services (CMS), the Health Resources and Services Administration (HRSA), and the Administration on Children and Families (ACF). This study tested three evidence-based, enhanced models of maternity care that address medical, behavioral, and psychosocial contributors to poor birth outcomes. The enhanced models included birth centers, centering/group visits, and maternity care homes. People who received prenatal care in the enrolled birth centers far and away had better birth outcomes and lower costs relative to similar Medicaid beneficiaries not enrolled in the study, and better outcomes relative to the other two enhanced prenatal models tested in the study. Specifically, the rates of preterm birth, low birthweight, and cesarean birth were lower in the birth center group, and the costs were more than \$2000 lower for these participants compared to similar Medicaid beneficiaries not enrolled in the Strong Start study. (*Table 41*).

Table 41. Findings of the Strong Start Study^{368,423}

	Birth Centers	Group Prenatal Care	Maternity Care Homes
Definition of Enhanced Care	"Midwifery model of care enhanced with peer counseling for additional support and referrals" ⁴²³	"Prenatal care provided in a group, enhanced with health education and facilitated discussion" ⁴²³	"Care coordination, sometimes with other enhanced services, in addition to clinical prenatal care" ⁴²³
Number of Participants Enrolled	8,806	10,508	26,007
RESULTS OF EACH MODEL COMPARED TO SIMILAR MEDICAID RECIPIENTS NOT ENROLLED IN THE STUDY			
Quality	Lower rate of cesarean birth; higher vaginal birth after cesarean (VBAC) rate; lower preterm birth rate; lower rate of low birthweight infants; more weekend deliveries	Higher VBAC rate; more weekend deliveries; lower rate of very low birthweight infants	More weekend deliveries, higher rate of low birthweight infants
Utilization	Fewer infant emergency visits and hospitalizations	Fewer emergency visits and hospitalizations for both the patient and infant	Fewer prenatal hospitalizations; more infant emergency visits and hospitalizations
Cost	Approximately \$2100 less for birth and the postpartum year per patient/infant pair	Approximately \$500 less for prenatal costs	Higher costs for birth and the postpartum year
RESULTS OF EACH MODEL COMPARED TO SIMILAR MEDICAID RECIPIENTS NOT ENROLLED IN THE STUDY			
Preterm Birth Rate	4.5%	12%	13%
Low Birthweight Rate	3.6%	10%	10.5%
NTSV Cesarean Birth Rate	16.7%	27.1%	25.3%
Total Cesarean Birth Rate	12.9%	29.9%	30.5%
Vaginal Birth After Cesarean (VBAC) Rate	29.4%	21.7%	17.5%

In the final analysis of the multi-year study, birth center participants had better outcomes relative to maternity care home participants after controlling for risk factors. Conversely, there were no statistically significant differences in outcomes between those in the maternity care home model and the group prenatal care model in the final evaluation of all years and all participants. Further detail on final outcomes, statistical analysis, population data, impact, and more can be found in the Year 5 Project Synthesis:
<https://downloads.cms.gov/files/cmml/strongstart-prenatal-finalevalrpt-v1.pdf>

This study (and others) give insight into what could be accomplished by any provider in any setting if they desire to mimic certain necessary aspects of the midwifery model of care, such as adhering to a low-intervention, high-touch approach for every patient unless expanded intervention is necessary for the well-being of the patient or fetus, and delivering patient-centered care that considers the various unique life challenges that the patient faces.³⁶⁸ Section II of this toolkit includes more in-depth information on supporting vaginal birth through low-intervention

approaches. CMQCC also offers an online training tool called Hands-On Understanding and Demonstration of Labor Support (HUDLS) which is informed by the midwifery model of care and the Quality Maternal Newborn Care Framework, allowing any provider in any location to learn the basics of supporting vaginal birth.⁴²⁴ However, this does not diminish the need to authentically integrate midwives into health care to expand the workforce and fill gaps, especially culturally-competent, culturally-congruent BIPOC providers who are experts in the care of their communities.⁴²⁵

These recent observational studies also clearly show remarkable consistency in what is necessary to achieve safe perinatal outcomes in community settings, including^{368,392,410,411}:

- Appropriate risk assessment and selection for community birth
- A well-integrated system of maternity care between birth settings and birth professionals
- Easy access to collegial consultation and collaboration with physicians when a higher level of care is needed or when medical opinion is sought
- Transfer that is seamless, efficient, and respectful across settings
- Providers who meet the competency and training standards of the International Confederation of Midwives and can manage first-line complications

While the safety of community birth has been established when the above conditions are met, community birth is not

yet well-integrated into most American communities, and this means that fundamental components of safety and quality across settings – such as easy access to consultation and the seamless transfer of care – do not exist to the degree they should. Birth outcomes in an environment where services are disarticulated are predictable: “unreliable collaboration across birth settings and maternity care providers are associated with poor birth outcomes for women and infants in the United States.”⁴¹⁰ The overarching goal of perinatal quality improvement should be to improve quality and safety in all settings where birth occurs. We recognize that birthing people have the inherent right to make their own decisions about where they will give birth, according to their values, beliefs, and priorities. They also have the right to safety and dignity regardless of birth setting. Thus – at the nursing, provider, and systems levels – we must make collective efforts moving forward to ensure respectful, safe, and timely transfer when necessary, and to ensure that physician consultation is accessible to community providers. For their part, midwives must provide ongoing risk assessment and inform patients on the appropriate selection for community birth and the risk factors that would necessitate a higher level of care. The responsibility for improvement and integration is a shared one.

“Despite tremendous variation in the care of childbearing women, the literature suggests that it is who cares for a woman that is the single most powerful determinant of the patient’s experience, particularly whether she will deliver by cesarean. This results not from differences in technical skill or access to the latest advancements, but how the balance is struck—culturally, operationally, and technically—between averting poor outcomes and encouraging normalcy. Although there have been marked historical shifts in whether obstetricians or midwives “own” the endeavor of childbirth, mothers and neonates in this country will be best served by making room at the table for both perspectives.”

*– Making Room at the Table for Obstetrics, Midwifery, and a Culture of Normalcy Within Maternity Care.*³⁶⁰

Midwifery Integration

Since the publication of the first edition of this toolkit in 2016, efforts in California to improve midwifery integration within the hospital and between birth settings have increased. These efforts are due in part to the proliferation of research in recent years on the value of integrated midwifery care, particularly as an antidote to the distinctly American problem of simultaneous “medical overuse” and disparate outcomes in care. For example, the pivotal study by Vedam et al. in 2018 studied the level of midwifery integration in all 50 states and revealed that higher midwifery integration scores were associated with significantly higher rates of physiologic birth, breastfeeding, and vaginal birth after cesarean (VBAC), and lower rates of obstetric intervention, cesarean birth, preterm birth, low birthweight, and neonatal mortality.³⁶⁵ Interestingly—but not surprisingly—higher integration was associated with lower rates of neonatal mortality even after accounting for the influence of race and ethnicity in each state. This study—also known as the Access and Integration Maternity Care Mapping (AIMM) study—is the first of its kind to show the relationship between the level of integration, density of midwives, access to midwives in the United States, and better outcomes for birthing people and babies. California’s integration score can be viewed via the mapping tool provided in *Table 44*.

Santa Rosa Birth Center

The Santa Rosa Birth Center (SRBC) was established in 1993 with the intent to provide community-based midwifery care to all families regardless of ability to pay. The payer mix at SRBC is roughly 85% Medi-Cal, 15% commercial insurance, and less than 1% private pay. In 2021, SRBC had a 9% hospital transfer rate and an NTSV cesarean rate of 11%. Patients who seek care with the four midwives at SRBC may choose to give birth at the birth center if they are essentially healthy and low-risk, or may choose to birth at the hospital. The midwives at SRBC have privileges at two of the three birthing hospitals in Santa Rosa. This arrangement promotes safety for transferred patients, supports physiologic birth across birth settings, and maintains continuity of care even after transfer. The majority of SRBC patients who transfer to the hospital do so for reasons that are not emergent and that remain within the scope of nurse-midwifery care, such as the need for pain management, prolonged rupture membranes, labor augmentation, or for postdates induction. Because of this integrated model grounded in respectful, collaborative relationships with physicians at these facilities, and because the midwives first-assist, approximately 99% of SRBC patients continue to have midwifery care regardless of risk level. In fact, 86% of SRBC patients transferred to the hospital give birth with their midwife. This time-tested model allows the midwife to continue holistic labor and birth care according to the patient’s needs and desires, while the physician closely manages the patient’s medical condition.

The motto of SRBC is “what makes community birth safe is knowing when it’s no longer safe.” The hospitals where the midwives of SRBC deliver care understand

that transfer is an extension of the “right care at the right time” philosophy. Within the SRBC integrated model where midwives have hospital privileges, transfers are streamlined and efficient. When midwives are able to transfer patients easily and remain an active part of the care team, they function as a bridge between providers and sites of care. This leads to earlier transfers, patients who are more at ease, and outcomes that are not compromised (even in the most emergent transfers). In the SRBC model, the hospital and birth center staff alike have moved away from an “us versus them” philosophy, allowing the nurses and providers at the hospital to become an extension of the birth center where the midwives are considered part of an integrated team that functions across settings. To make this work, key tenets of team-based care must come to bear, including centering the patient, having a shared vision, role clarity, respectful communication, and situational team leadership.

The SRBC care model was deliberate and established over time. The midwives at SRBC and the physicians with whom they consult created a culture of antepartum consultation early in their professional relationship that functions more as an “open door policy” for conversation about patient care, creating trust and acceptance between the two care models. This strong consultative relationship has also led to a system of ongoing risk assessment where the vast majority of patients who “risk out” of giving birth at the birth center do so during the antepartum period, leading to superb outcomes for the patients who give birth with SRBC midwives regardless of site, and an “emergency transfer” rate of less than 1%.⁴²⁶ Find out more at <https://santarosabirthcenter.com/>

Of note, the AIMM Study defined “integration” through an advanced combination of factors including scope and autonomy of practice, ability to prescribe medications, insurance coverage for midwifery care, regulatory governance consistent with international standards, access to different birth settings, smooth transfer to advanced care when needed, and more.³⁶⁵ Integration of midwifery care does not currently have an agreed-upon standard definition, and often is misunderstood to simply mean increased utilization of midwives in the hospital setting, which may serve only to dilute the benefit of midwifery care, if not completely erase it. This study by Vedam et al.³⁶⁵ offers a window into what may be the best definition of integration to date, leading to the logical conclusion that patients receive the greatest benefit when midwives are able to consistently practice at the top of their education, training, and

scope, and in a way that is consistent with midwifery philosophy and values. It stands to reason then that when this definition is applied in the clinical setting, the benefit to patients may not be fully realized – if at all – when midwives practice within the traditional maternity care model only as an extension of physicians.⁴²⁷ Improved midwifery integration and team-based care should never mean the assimilation of midwives into traditional obstetrics. Integration works best when these two specialized fields, with differing philosophical perspectives and distinct expertise respectfully exist together to the maximum benefit of the patient.³⁶³ Physicians are trained to provide the highest level of care, often to very complicated patients with multiple risk factors. Midwives are trained in low-intervention, high-touch modalities in a way that perfectly complements the needs of most essentially healthy birthing people.

Kindred Space L.A.

Birth Center and Home Birth Practice in South Los Angeles

Kindred Space LA is a Black-owned birth center and home birth practice in South Los Angeles, one of only a handful of Black-owned birth centers in the entire nation and is owned by two Licensed Midwives. The vision of Kindred Space LA is to create a healing space for all who come. They provide holistic, affordable, Black-centered maternity care. Patient-centered prenatal visits include everything the birthing person needs – physical care, emotional support, prenatal education, nutritional counseling, and connections to other supports as needed. Families are invited to participate in each of these visits to learn their own role in supporting the birthing person and the new baby. The client can choose to birth at home or at the Kindred Space LA birth center. In both spaces, the client has a blend of holistic and traditional labor practices that include continuous labor support, nonpharmacologic comfort care such as hydrotherapy and freedom of mobility, and ready access to any emergency medications and first-line support for complications as needed. If the birthing person or baby needs to be transferred to a hospital, Martin Luther King Community Hospital is just a short drive away and provides a similar community-centered approach with a team of midwives and physicians. This hospital proudly carries the distinction of having one of the lowest NTSV cesarean birth rates in the state, and intentionally created a collaborative hospitalist model of midwives and physicians to meet to the needs of the surrounding community. The relationship with the providers on the hospital side, team-based communication, respect, role clarity, and a commitment to patient-centered care are essential components of providing safe care to clients at Kindred Space LA. After clients of Kindred Space LA give birth, they have multiple postpartum visits at 1 to 2 days, 1 week, 3 weeks, and 6 weeks postpartum. The goal of these early visits is to ensure the birthing person and baby are transitioning as planned, to give enhanced social support, assess breastfeeding, and to check for any signs of postpartum complications. Kindred Space LA has been profiled by local and national news and is a model practice for patient-centered care that specifically aims to reduce racism-based and socioeconomic disparities in birth outcomes. More information can be found here:

<https://tinyurl.com/KindredSpace>

Figure 19. Midwifery Integration

<p>Midwifery integration is a combination of ... (list is not exhaustive)</p>	<p>Midwifery integration has not been achieved if ... (list is not exhaustive)</p>
<ul style="list-style-type: none"> • A culture of interprofessional partnership, such as easy access to physician consultation and collaboration as needed depending on the patient’s condition • Valuing midwifery care and physician care as equal components of high-quality, high-value maternity and reproductive health care • Midwives of all credential types are licensed to practice and are regulated according to the standards of the International Confederation of Midwives • Guidelines for safe, efficient hospital transfer exist and are created through a collaborative process with hospital and community providers • Birth centers are licensed or accredited, or meet equivalent safety standards • Professional midwifery associations are well-established, respected, and interact with medical associations to address joint goals • Community and hospital midwives are both represented in the state perinatal quality collaborative • Midwives can prescribe according to their education and training • State scope of practice laws allow for midwives to practice to highest level of education and training • Midwives have admission and discharge privileges, and are not prohibited from medical staff membership in maternity care hospitals • All midwives are trained to the standards of the International Confederation of Midwives • Equal reimbursement for equal work regardless of provider type • Equitable coverage for midwives and birth centers by all payers 	<ul style="list-style-type: none"> • State agencies fail to assess whether the licensing and regulatory standards of the International Confederation of Midwives have been met • Midwives are restricted in their scope and cannot practice to the extent of their education and training • Midwives are privileged at your facility but function as an extension of physicians • Hospitals refuse to take community birth transfers • Certified Nurse-Midwives (CNMs) are licensed to practice in your state, but not Certified Professional Midwives (CPMs) or Certified Midwives (CMs); see <i>Table 40</i> for resources on credential type • Valuing or elevating one midwifery licensure type over others • Valuing in-hospital midwifery but not community midwifery • A practice philosophy founded on supervision rather than collaboration among colleagues • Privileging midwives at your facility but requiring notes and orders to be co-signed • The culture of care in your region or facility values or elevates hospital-based care over community birth for low-risk people and/or does not respect the patient’s right to determine the safest place to birth • There is no motivation to change the status quo for maternity care delivery in your region • There is a refusal to believe that diverse care models are critical to addressing the root causes of health care disparities

Table 42. Key Strategies for Midwifery Integration

1 Administrative Strategies

- Hire or contract with midwives to establish a team-based model for all patients (*See resources in Table 44*)
- Prioritize a diverse midwifery workforce – one that reflects the community being served
- Develop interdisciplinary leadership opportunities for midwives in your department
- Consider ideas for future quality improvement projects from midwives in your department
- Encourage midwives who attend births at your facility to lead quality improvement efforts, especially those efforts that promote low intervention care to improve outcomes
- Midwives involved in quality improvement efforts should have access to the Maternal Data Center (MDC)
- Foster a departmental culture that values reduced intervention for low-risk birthing people
- Privilege community midwives (midwives who attend births in homes or birth centers) at your hospital to enhance continuity of care and seamless transfer when needed
- Collect and analyze quality metrics for all provider types

2 Clinical Strategies

- Intentionally cultivate a culture on the birthing unit that values reduced intervention and physiologic birth through the standardization of clinical practices such as intermittent auscultation, mobility in labor, continuous labor support, and preservation of the patient-baby dyad
 - *See expanded content on supporting vaginal birth in Section II of this toolkit*
 - *ACOG's Committee Opinion #766– Approaches to Limit Intervention During Labor and Birth*³⁷⁷
 - *Appendix T: Model Policies for Intermittent Auscultation*
 - *Hands-On Understanding and Demonstration of Labor Support (HUDLS) is an e-learning tool available to CMQCC member hospitals at <https://accounts.cmqcc.org>*
- Utilize a “right care at the right time by the right provider” approach to all patients – in a team-based model, this means care is led by the clinician who is “closest to the patient and whose scope best matches the clinical situation”³⁵⁹
- Review hospital bylaws and ensure that midwives privileged at your facility can practice to the highest level allowed by state law; remove requirements that diminish autonomy such as physician co-signature of basic orders and progress notes
- Establish explicit standards or expectations for team-based physician-midwife care that is collaborative, collegial, and utilizes ACOG's guidelines for collaborative care (*see Figure 14*)
- Create mutually agreed-upon clinical practice guidelines that can serve as the “language of collaboration.” Ensure that these policies and guidelines are not more restrictive than what is legally permissible in the state and that midwives retain the ability to practice according to the midwifery philosophy of care
- Improve systems that facilitate safe, patient-centered transfer of care between the community birth settings and the hospital (*see Table 43 for specific strategies*)

3 Educational Strategies

- Department-level educational opportunities should include a deeper dive into the components and strategies for successful team-based care
- “Shadowing” opportunities may be useful in facilities where team-based care is new, or in places where physiologic birth is historically rare. In this way, physicians and midwives can learn from each other and see how/where their practices complement each other
- Create expanded opportunities for department-wide interprofessional education and casual team-building opportunities to learn from all members of the care team and build better relationships across professions
- Debrief about – and learn from – normal, physiologic births
- Ensure that provider and nursing education not only addresses racism-based disparities in maternity care and implicit bias, but also an appreciation for the contribution of midwifery care to curbing this trend

Table 43. Key Strategies for Integration and Improved Safety Across Birth Settings

- Create a standardized system of consultation between hospital-based and community birth providers upon transfer of care
- Promote timely access to consultation, continuous risk assessment, and seamless, respectful transfer of care from the community to the hospital setting throughout the entire care journey (antepartum, intrapartum, and postpartum)
- Create pathways and processes for ease of antenatal assessment or intervention, such as scheduling antenatal testing or induction of labor when needed
- Privilege community midwives (midwives who attend births in homes or birth centers) at your hospital to enhance continuity and seamless transfer when needed
- Promote timely and efficient transfer by directly admitting patients to the labor floor rather than through the Emergency Department
- Adhere to elements of “Just Culture” when responding to an emergency community birth transfer; regardless of emotions felt in the heat of the moment, all providers and staff should treat each other with respect and compassion⁴²⁹
- Respect autonomy and destigmatize the choice to safely birth at home or in a birth center
 - Labeling a patient or situation as a “failed home birth” is depersonalizing and ignores that transfer to the hospital is a “right care at the right time” approach in an integrated system that utilizes differing levels of care.
 - “Community birth” is preferable to the phrase “out-of-hospital birth” because it normalizes birth in all settings.
 - Labeling midwives who are not nurses as “lay midwives” is inaccurate and devalues their training and role in an integrated system
- Understand that transferring to the hospital setting can be traumatic for patients and – without supportive systems in place – may negatively alter a person’s labor course and birth experience
- Treat community birth providers respectfully and as colleagues with shared goals
- Keep the patient and newborn together during transfer and after admission to the hospital; only separate the patient and newborn if there is a substantial concern for safety or well-being that requires separation
- Hold joint learning opportunities such as debriefs, grand rounds, and meet-and-greets for providers across birth settings to establish and deepen relationships, improve transfer and care coordination, and create shared expectations
- Establish a case review process that allows equal contribution and engagement from providers in all birth settings
- Obtain clinical information and report directly from the midwife
- Evaluate your current system for emergency community birth transfers with community birth input, create guidelines or standardized processes for emergency transfer
- Implement practice drills for emergency community birth transfer and include EMS and community birth midwives (see resources in *Table 44*)
- Consider the community midwife as part of the support team even after hospital transfer; hospital policies should reflect that the transferring midwife is not a “visitor” in the traditional sense (specifically, they should not bound by time limits or other visitor rules that would restrict their ability to remain with the patient)
- Coordinate postpartum care appointments and sending of relevant medical records with the community midwife

Forging a Path for Integrated Case Review in Alameda Health System

One bay area hospital is attempting to improve care, continuity, and safe transfer for patients across birth settings after community midwives proposed the need for supporting birth system integration.

The first step by the leadership of this hospital was to endorse a community-specific birth statement titled the “Birth Bridges Patient Autonomy Statement” and the consensus recommendations from the Home Birth Summit,⁴²⁸ which advocates for all cases of transport to be reviewed in a protected forum with hospital and community providers (and EMS if possible). This requires a legally protected space for providers to discuss cases. Unfortunately, hospital bylaws often do not permit community midwives who are not part of the organized medical staff to integrate into existing, legally protected meetings such as the hospital’s Quality Review Committee. Furthermore, state and federal laws are particular about what can be shared between entities that are not part of the same medical staff within the same institution. This makes quality improvement for a consortium of providers across birth settings more difficult – although not impossible. To forge ahead, the department and the highest levels of leadership had to embrace a paradigm shift from “can we do this” to “how can we do this.” A growth mindset is necessary to sustain movement toward any quality improvement goal but is exponentially more important when the barriers, legal and otherwise, appear from the outset to be insurmountable.

Because of the commitment to this endeavor over a few years, the hospital’s legal department was able to propose three possibilities that would provide the necessary legal protections in accordance with state and federal laws. Before deciding between the possible strategies, the department sought input from community midwives (especially BIPOC providers who share care for those at highest risk in their community). In keeping with the principles of collaboration, this step was critical in breaking down the inherent power dynamics between hospital and community providers. While no decisions have yet been made, the hospital and community midwives are now in an exploratory phase together, giving feedback on the three proposals and eventually making a joint decision on the best path forward.

For other facilities to do the same, it will take a concerted effort by the hospital’s general counsel, risk management, and senior leadership to transparently evaluate the possibilities within their local system and state and invite their community providers to participate. For example, hospitals in Washington have created an equally innovative method that negates the need for a one-off approach by each facility. The Smooth Transitions™ Coordinated Quality Improvement Program is specifically convened by the Foundation for Health Care Quality (FHCQ), which provides the program – made up of multiple hospitals and community providers – with the necessary support through the Washington State Department of Health for protected case review.⁴⁴⁸ The key takeaway is that a solution exists for those willing to pursue it.

Table 44. Resources for Midwifery Integration, Team-Based Care, and Improved Transfer

AABC – Coordination + Collaboration with EMS for Safe, Timely Transfers	https://www.birthcenters.org/page/emstoolkit
ACNM – Pearls of Physiologic Birth	https://www.midwife.org/pearls
ACOG – Approaches to Limit Intervention During Labor and Birth	https://tinyurl.com/ACOGIntervention
Birth Place Lab – The Access and Integration Maternity Care Mapping Project	https://www.birthplacelab.org/mapping-collaboration-across-birth-settings/
Birth Place Lab Tools, including Birth Place Research Quality (ResQu) Index	https://www.birthplacelab.org/tools/
Homebirth Summit – Best Practice Guidelines: Transfer from Planned Home Birth to Hospital	https://www.homebirthsummit.org/best-practice-transfer-guidelines/
HiveCE – Transfer Tools for Midwives, EMS, and Hospital Providers (4-hour CE)	https://www.hivece.com/pages/transfer-tools
March of Dimes – Position Statement on Midwifery Care and Birth Outcomes in the United States	https://tinyurl.com/MODMidwives
National Partnership for Women & Families – Four Care Models Decisionmakers Must Implement for Healthier Moms and Babies (see Midwifery Care, page 22; Community Birth, page 32)	https://tinyurl.com/NationalPartnership
Purchaser Business Group on Health (PBGH) – How to Successfully Integrate Midwives into Your Practice	https://www.pbgh.org/program/transform-maternity-care/
Purchaser Business Group on Health (PBGH) – Midwifery Appendices	https://www.pbgh.org/program/transform-maternity-care/
The Lancet – Framework for Quality Maternal and Newborn Care	https://tinyurl.com/QMNCFramework

Transform Maternity Care

A Statewide Endeavor to Improve Hospital-Birth Center Collaboration

In 2021, the Purchaser Business Group on Health (PBGH) convened a multifaceted initiative to improve hospital-birth center collaboration in California. As a leading nonprofit coalition of nearly 40 large, self-insured employers, PBGH works to scale innovative models of health care that promote the highest quality care at the best value. To that end, the PBGH Transform Maternity Care Project has three main goals:

- 1. To decrease preventable maternal morbidity and mortality*
- 2. To promote patient-centered maternity care and address health care inequities*
- 3. To align payment with targeted outcomes*

With these goals in mind, PBGH embarked on multiple community-focused, patient-centered, and provider-informed initiatives to integrate the varied perspectives of multiple stakeholders in community birth. These initiatives included:

- A “Technical Expert Panel” of physicians and midwives*
- Birth worker focus groups and patient focus groups*
- Individual stakeholder interviews (EMS, providers, and more)*
- Surveys of birth center providers and surveys of hospital/health plan leaders*

These initiatives resulted in a large compendium of new and tested resources to improve safe, efficient and respectful community birth transfers and overall improved collaboration between sites of care.

The new resources created through this process include:

- A hospital guide to integrating the birth center model of care*
- A transfer planning template*

A large collection of existing tools and resources include:

- Best practice guidelines for transfer from a planned home birth*
- Best practice guidelines for collaboration between community birth and hospital providers*
- Guides for improving emergency drills across birth settings*
- American Association of Birth Centers (AABC) toolkit to improve coordination and collaboration with EMS*
- Extensive transfer guides and resources from other states, such as Washington’s Smooth Transitions Program, Oregon’s Community Birth Transfer Improvement Toolkit, and Utah’s Best Practice Guidelines for Transfer*

To access these resources and more, visit <https://www.pbgh.org/program/transform-maternity-care/>

Doula Care

Section II of this toolkit gave a brief introduction to doulas and the care they provide. This section serves as a continuation and offers much more detail on what doulas do and how they benefit all patients, especially those from historically marginalized communities.

What Are Doulas?

Doulas have existed throughout history. A doula is a trained, non-medical professional who continuously supports the patient’s physical, emotional, and informational needs during labor.^{129,130,425,430,431} Many doulas are trained to provide more than labor and birth support. For example, a “full-spectrum” doula will provide emotional, physical, informational, and resource support during the prenatal and postpartum periods, during breastfeeding, for abortion care, and during miscarriage or stillbirth.^{425,430} Some doulas even provide end-of-life support for families and patients.⁴³² For underrepresented and historically marginalized groups, the role of the doula as patient advocate is especially critical – particularly in the hospital setting where historical mistrust of the medical establishment persists after generational harm encountered in this setting through medical negligence, undertreatment, nonconsensual sterilization,

and experimentation on Black and Brown bodies.⁴³³ Indeed, studies confirm the positive impact of doula care is especially great for low-income people, the socially marginalized, and those with cultural barriers or language difficulties.^{117,434}

Doulas provide support in various ways. In their labor and birth support role, they offer physical comfort care to promote pain relief and labor progress. Doulas also facilitate labor support by the patient’s partner, family members, or friends. After the birth, they support and assist with breastfeeding and bonding.^{129,130,425,430} Doulas help the patient articulate goals, preferences, needs, and fears.^{130,430} Additionally, doulas help the patient understand and interpret what is happening to them and around them during labor and birth. When labor and birth occur in the hospital environment, the informational role of the doula may include interpretation of medical jargon and medical processes in real-time. In their role as patient advocate, the doula empowers the birthing person to make the best personal decisions for themselves, their labor, their own body, and their baby.¹²⁸ In this role, the doula acts, in a way, as a buffer for the patient against potential exclusion, discrimination, and loss of autonomy that is often reported by historically marginalized communities when they enter the medical system.⁴²⁵

Figure 20. The Role of Doulas During Labor and Birth⁴³⁵

What Doulas Do:	What Doulas Do Not Do:
<ul style="list-style-type: none"> • Prenatal teaching and childbirth education • Comfort care and physical support during labor • Culturally congruent advocacy and informational assistance (such as explaining medical jargon) during labor and birth • Preserve and support respectful care, dignity, and privacy for the patient • Support during epidural placement; comfort care and support if breakthrough pain occurs after epidural • Assistance with positioning the patient to assist fetal descent and rotation • Support for family members • Provide invaluable support for individuals who are alone or otherwise have limited support in labor • Support for bonding and lactation during the “Golden Hour” • Postpartum support for infant feeding, breastfeeding, daily infant care, and connecting the patient to local resources • Typically remain with the patient for the entirety of the labor and into the “Golden Hour” except for unusual cases where the labor is exceptionally long or where doula groups share patient care during labor 	<ul style="list-style-type: none"> • Clinical care such as physical assessments or “catching” the baby • Nursing care such as fetal monitoring or medication administration • Diagnose conditions or give medical advice • Make decisions for the patient or pressure the patient into certain decisions

Doula Care Models

There are various models of doula care in the United States. These models include hospital-based programs, community-based programs, and private practice.¹⁶⁴ Hospital-based programs, such as those at UC San Diego Medical Center and Zuckerberg San Francisco General Hospital are generally grant-funded and volunteer-based. Hospital-based programs typically exist to bring doula care to those who would otherwise not have that opportunity. As the interest in providing doulas for marginalized communities increases, many community groups cannot yet meet the need. Hospital-based programs help to fill that gap while simultaneously normalizing the presence of doulas in the hospital setting.

Community-based programs, such as those provided through social service agencies, Federally Qualified Health Centers (FQHCs), or community-based nonprofit organizations, provide doulas who work in a similar capacity as community health workers and are typically from the communities they serve.⁴³⁰ In this way, community doulas are intimately familiar with the culture, language, customs, and needs of their clients. This is particularly important for people of color in low-income areas where culturally congruent, culturally sensitive, and language-appropriate doula care will have the maximum benefit by ensuring that those who face the highest risk in pregnancy, birth, and postpartum receive the enhanced support they need.^{131,166,430,436} Because of the potential to reduce birth disparities, community doula

programs are rapidly growing, with many grantee project sites across the United States funded by the Health Resources and Services Administration (HRSA), state Medicaid programs, and private foundations.^{166-168,437-440} Many community-based doula organizations structure their group to work together as a collective. In this model, doulas help each other, learn from each other, share care of the patient during labor, relieve each other for breaks and rest, or even “change shift” when a person’s labor is exceptionally long.

Doulas also exist in private practice and can be independently hired by birthing people to assist during labor and postpartum. Given the hardship of paying for private practice doulas out-of-pocket, states are implementing innovative Medicaid coverage options. Such programs exist in Florida, Maryland, Minnesota, New Jersey, Oregon, Rhode Island, and – most recently – California.^{168,430,436,439-441} Since 2019, California has also hosted the largest number of doula pilot projects. At the time of this writing, there are at least ten doula pilot projects focusing on the role of doulas in improving disparities for BIPOC patients and/or Medicaid recipients. These projects span multiple counties, and three are sponsored by Medicaid health plans.⁴⁴⁰ The work of many community doula groups, birth advocates, and health care providers across California ultimately led to an expansion of Medicaid benefits. The California Department of Health Care Services will add doula services as a covered Medi-Cal benefit starting January 1, 2023.⁴⁴²



Two Support Models Serving California Communities to Improve Birth Outcomes

The AAIMM Doula Program Los Angeles County

The Los Angeles County African American Infant and Maternal Mortality (AAIMM) Prevention Initiative is a large coalition of stakeholders including the Department of Public Health, First 5 LA, and a large partnership of community-based organizations, all working with one aim – to reduce the high rates of Black infant and maternal deaths in Los Angeles by addressing the root causes of racism-based disparities. The Initiative launched in 2018 and includes many distinct but coordinated projects that run the gamut of family-centered approaches to disparity reduction, including but not limited to the Perinatal Equity Initiative, group prenatal care, a fatherhood initiative, the Black Infant Health program, and the AAIMM Doula Program. The AAIMM Initiative has engaged a three-pronged strategy that focuses on (1) early intervention, (2) reducing social and environmental exposures that lead to poor health outcomes, and (3) using evidence-based approaches to block the physiologic pathway that converts social and environmental stress to actual physiologic stress.

Since its inception in 2019, the AAIMM Doula Program has provided free doula support to over 500 Black families. In 2020, with a financial award from the California Department of Public Health, the AAIMM Doula Program continues its work with a priority focus on the Antelope Valley, South Los Angeles, and South Bay. Approximately ten doulas work as a collective to assist patients with their informational, emotional, and physical support needs during pregnancy, birth, and postpartum. They provide crucial prenatal education, continuous labor support, breastfeeding support, and infant care and teaching during the first critical days and weeks postpartum. The AAIMM Doulas are often the first line of access to other social support needs the patient may have, such as referrals for mental health assessments. The program supports people who labor and birth in any setting, but often find their support services most vital for people birthing in the hospital setting to act as a communication bridge between patients and providers.

More information can be found here: <https://tinyurl.com/AAIMMDoulas>

Inquiries and referrals should be directed to AAIMMDoulas@ph.lacounty.gov or call (213) 639-6448

Hearts and Hands Volunteer Doula Program UC San Diego Medical Center

The UCSD Hearts & Hands Volunteer Doula Program at UC San Diego Medical Center is a long-established program that began in late 1999. Anyone who births at UC San Diego may request a volunteer doula. Volunteer doulas work with both low-risk and high-risk patients, even those who birth by scheduled cesarean. Doulas work mainly “on call” and can be requested at any time, day or night. The doulas commit to remaining with the birthing person for the duration of the labor, no matter how long.

A smaller number of families are served through the client referral component of the program, which aims to provide support during pregnancies with special circumstances due to high medical or psychosocial stressors. Providers, social workers, or nursing staff may request a doula who will meet a pregnant person in advance and then attend the birth.

The doulas who participate in this program are highly trained and boast diverse backgrounds and experiences. Many doulas in the Hearts and Hands Program have additional training in childbirth education, breastfeeding, and other related areas. They are comfortable working to give non-clinical care alongside medical staff while functioning primarily as independent advocates for the families they serve.

Some doulas who volunteer at UCSD have been with the program for over 10 years and have achieved a next-level mastery in their field. Because of these committed volunteers, and a supportive hospital system, the Hearts and Hands Program has provided expert doula care at no charge to over 6,900 families who would not otherwise have had a doula. They serve an important role in filling the support gap that many patients have – either because they cannot afford a doula, do not know about doulas, or could not find a low-cost community-based doula in their area. The program was primarily funded through grants for the first five years until UC San Diego Health took over its financial support, creating sustainability for 17 more years and counting.

More information can be found here: <https://tinyurl.com/UCHeartsHands>

Inquiries should be directed to Ann Fulcher, Program Manager, at afulcher@health.ucsd.edu

Benefits of Doula Care

Continuous labor support is associated with a significant reduction in cesarean deliveries, operative vaginal deliveries, and use of intrapartum oxytocin.^{127,130,131,443} Studies continually replicate the finding of reduced cesareans specific to continuous labor support by doulas.^{131,163,443} The ACOG/SMFM consensus statement states: “Published data indicate that one of the most effective tools to improve labor and delivery outcomes is the continuous presence of support personnel, such as a doula...Given that there are no associated measurable harms, this resource is probably underutilized.”³ Additionally, when doulas are utilized in a way that allows them to function appropriately in their unique and integral role, they can simultaneously advocate for birthing people while acting as helpful allies to nurses and providers.¹⁶⁴

“In comparison with women receiving no continuous labor support, women with doula support were an impressive 39 percent less likely to have a cesarean birth”⁴⁴⁴

Figure 21. Benefits of Doula Care^{131,443,445-447}

Less likely with a doula...	More likely with a doula...
<ul style="list-style-type: none"> • Cesarean birth • Operative vaginal birth • Need for oxytocin • Epidural anesthesia • Use of pain medication 	<ul style="list-style-type: none"> • Spontaneous vaginal birth • Shorter labor • Higher APGAR scores • Breastfeeding initiation • Patient-centered care • Positive birth experience • Lower cost

Reasons for underutilization of doulas are varied but include knowledge deficit about what a doula is and does, objections from partners, geographic lack of access to a doula, and cost.¹³¹ Also, while some nurses and providers fully understand a doula’s multi-faceted role and see them as an experienced and valuable team member, others see doulas as an obstacle to care and may take an antagonistic or adversarial view of doulas.¹³

Table 45. Key Strategies for Integrating Doulas Into the Birth Care Team

1 Administrative Strategies

- Foster a departmental culture that values physiologic birth and reduced intervention for normal, low-risk birthing people
- Work together with local doula organizations to provide consistent, accessible support and resources to families
- Connect with community-based doula programs and show interest in supporting and welcoming community-based doulas at your facility
- Explore the feasibility of establishing a hospital-based doula program at your facility that prioritizes a doula workforce that reflects the community being served
- Even if your hospital already has a doula program, do not prevent or restrict the ability of patients to bring their own doula
- All doulas – whether community-based or hospital volunteers – should be empowered to remain independent champions for patients
- Hospital policies should reflect that doulas are not “visitors” in the traditional sense (specifically, they should not be bound by time limits or other visitor rules that would restrict their ability to remain with the patient)

2 Clinical Strategies

- Intentionally cultivate a culture on the birthing unit that values physiologic birth through the standardization of clinical practices such as intermittent auscultation, mobility in labor, continuous labor support, and preserving the patient-baby dyad. Resources include:
 - Section II of this toolkit
 - ACNM’s Pearls of Physiologic Birth³⁷⁴
 - ACOG’s Approaches to Limit Intervention During Labor and Birth³⁷⁷
- Understand and value the doula’s extensive knowledge of labor support techniques as a complement to technical and medical skill sets
- Establish expectations for how providers, nurses, and doulas interact and support each other, and consistently model collegial rapport and open communication
- Develop unit guidelines or educational materials that delineate a mutual understanding of roles and invite local doulas to help create these materials
 - Share these materials with nurses and providers and invite local community groups to share the materials widely with other doulas and patients
 - For facilities with hospital-based doula programs, posting this information at the bedside may help patients to understand the role of their doula
- Foster a culture of patient-centered care that values shared decision making and autonomy and the understanding that doulas are there to consistently advocate on behalf of the patient
- Engage in mutual learning at the time of clinical interaction. Doulas and nurses can learn an enormous amount from each other, and patients also benefit from this shared interaction
 - Some doulas desire to learn more about the medical and nursing aspects of labor
 - Doulas can teach evidence-based, culturally informed techniques that are not often taught in traditional medical and nursing training
- Update policies to include doulas as support people in the operating room if the patient desires

3 Educational Strategies

- Department educational opportunities should include a deeper dive into the components and strategies for successful team-based care that incorporate doulas as part of the team
- Create expanded opportunities for department-wide, interprofessional education that includes doulas from your community or a doula organization with whom you have a relationship
- Debrief about – and learn from – normal, physiologic birth where doula care was, or could have been, pivotal in the patient’s progress and outcome
- Ensure that provider and nursing education includes racism-based disparities in maternity care, implicit bias, and an understanding of the role of doula care in curbing this trend

Beyond Labor and Birth: The Role of the Postpartum Doula

The postpartum period is an incredibly vulnerable time. For many, it is a beautiful and exciting experience, but for others, it is fraught with extreme fatigue, breastfeeding difficulties, feelings of anxiety and depression, other competing family responsibilities, and returning to work. The person must navigate all these issues while their body is simultaneously healing from labor, and – for some people – healing from major surgery. Postpartum depression is common, affecting about 15-20% of people during the perinatal period, and studies show that postpartum depression is more common in people of color and people with lower incomes. Postpartum doulas are an essential part of the postpartum team. Most people will not see their provider until at least 3 weeks postpartum, if not 6 weeks. For people experiencing postpartum depression, this time period is critical, and feelings of isolation are common, leading to worsening symptoms. During this time, doulas can provide emotional support, assistance with breastfeeding, meal preparation, light house cleaning, caring for the baby so the parent(s) can nap or shower, and providing resources for other postpartum services as needed. Importantly, they are trained to notice when a person may need an assessment by a trained health care provider for worsening symptoms of depression and anxiety. For many, access to this first-line support is vital in the initial postpartum period.

Table 46. Resources for Doula Integration

AAIMM Doula Project	https://tinyurl.com/AAIMMPresentation
March of Dimes – Position Statement on Doulas and Birth Outcomes	https://tinyurl.com/MODDoula
National Health Law Program (NHLP) – California Doula Pilots –Lessons Learned	https://healthlaw.org/cadoulapilots/
UC Berkeley– Partnering with Community Doulas to Improve Maternal and Infant Health Equity in California	https://www.share.berkeley.edu/communitydoulas
National Partnership for Women & Families – Improving Our Maternity Care Now: Four Care Models Decisionmakers Must Implement for Healthier Moms and Babies (see Doula Care; page 43)	https://tinyurl.com/NationalPartnership

Part VI. Success Stories: Lessons Learned from California Hospitals

Table 47. Summary of Lessons Learned

External experts are helpful to initiate the project
Internal interprofessional champions (doctors, midwives, nurses) are critical to achieve improvement
Administrative support is important to establish institutional backing
Change may take time, but improvement can be rapid once a critical mass of early adopters “buys in.” Late adopters do not prevent success. Stay the course!
Use feedback from end-users to reliably hard wire unit-level changes, such as with checklists and hard-stop policies
OB hospitalists retain core knowledge and skills, respond promptly, act as key consultants when cesarean birth is in question, and remove the time incentives for patients to give birth on any particular shift schedule
Collaborative practice between midwives and physicians creates an overall culture of care that values and accepts normal variations in labor, and the judicious use of interventions
Provider-level feedback about individual NTSV cesarean rates that is unblinded and shared for all to see, can have a significant and rapid effect on clinical practice—doctors don’t like being outliers!
How the message is packaged (e.g. how the data is delivered) is critical!

The Pacific Business Group on Health / CMQCC Pilot Project for Cesarean Reduction

In 2014, the Pacific Business Group on Health (PBGH), working with the California Maternal Quality Care Collaborative, and funded by the Robert Wood Johnson Foundation, instituted a pilot program to reduce cesarean births at three hospitals in Southern California (Hoag Hospital in Newport Beach and two MemorialCare hospitals, Miller Children’s and Women’s Hospital in Long Beach and Saddleback Memorial Medical Center in Laguna Hills). These hospitals were selected because they exhibited the optimal conditions to initiate cesarean reduction programs, including high birth rates, higher than state average NTSV rates, strong leadership, readiness to engage in the project, and employer concerns about potentially unnecessary cesareans for the large number of employees receiving care at those particular facilities.¹⁰⁵ According to Allyson Brooks MD, Executive Medical Director at Hoag Women’s Health Institute, the cesarean rate at Hoag had reached the point

where major employers in the area, and individual patients, were voicing concern over the inordinate risk of cesarean at their institution. At MemorialCare, the rates had also reached a level that seemed unacceptable. According to David Lagrew MD, Chief Integration and Accountability Officer: “We had a long emphasis on keeping rates low but had seen a gradual rise to the point where we were seeing the negative outcomes in subsequent pregnancies, such as placenta accreta and massive maternal hemorrhage.”

PBGH was successful in identifying major local employers and health plan partners who were interested in taking part in the project. The three institutions and their associated medical groups were matched with a major health plan partner and agreed to work together in a pilot payment reform program characterized by a “blended rate” for birth, for both providers and facilities respectively. As described in Part I of this toolkit, this method involves setting a benchmark cesarean rate and then reimbursing all births at a single rate regardless of mode of birth, essentially creating a “blend” of the proportion of vaginal to cesarean births. The resulting reimbursement rate was above the typical reimbursement rate for vaginal birth, but below typical reimbursement for cesarean. This change in payment signaled to the hospital systems that major payers

were actively reducing any financial incentives for cesareans, and also prompted senior administrative support at each facility. There were significant delays in renegotiating the contracts for the blended payment program and the actual change in payments did not occur until after 9 months into the project. Nonetheless, the three institutions and their respective providers were motivated by these proposed payment changes, employer concerns, and a commitment to improve quality of care.

All three institutions showed impressive improvement. Hoag Hospital started with a mean quarterly baseline NTSV cesarean rate of 32.6%. QI was initiated in January of 2014 and the NTSV cesarean rate dropped to 24.7% by the end of the first quarter of 2015 (a 24.2% reduction). Miller Children's and Women's Hospital showed a similar drop – from a mean baseline NTSV cesarean rate of 31.2%, to a rate of 24.3% during the initial QI period (a 22% reduction). Likewise, Saddleback Memorial decreased from a mean baseline NTSV rate of 27.2% to 21.9% in under a year (a 19.5% reduction). All three institutions started above the state average and dropped below the state average following the QI implementation, with an average decrease of over 20%, a remarkable accomplishment.

CMQCC assisted with implementation of the individual QI programs at each facility, providing mentorship and provider-level feedback data through the Maternal Data Center (MDC). According to Jennifer McNulty MD, the external expertise from Dr. Elliott Main and the CMQCC team helped to validate and legitimize the internal efforts. The hospital hosted Dr. Main for a system-wide kickoff lecture and many providers were motivated by the common sense approach and thoughtful data feedback presented. According to Dr. Marlin Mills from Hoag, the department-wide conversations facilitated by CMQCC demonstrated to bedside providers the importance of their work. Dr. Mills also felt that the individual provider-level cesarean rates, initially confidential but eventually unblinded and openly shared among all providers, strongly incentivized a good number of their staff. In addition, Dr. Brooks credits the hard stop policies for induction scheduling and staff education as key components. These views are echoed by Kim Mikes, Executive Nursing and Operations Director at Hoag Women's Health Institute, who encouraged strong staff support and education in an interprofessional fashion, and spearheaded a focus on the nurse's critical support role in supporting labor and preventing unnecessary cesarean. Similarly, Terri Deeds, Director of Women's and Children's Services at Saddleback Memorial, noted the success of these same improvement strategies, along with feedback from providers, and prioritizing such discussions at department

meetings. At Miller Children's and Women's Hospital, Dr. Kenneth Chan and Janet Trial, EdD, CNM are expanding the QI efforts to include a clinical checklist utilizing the newer definitions for arrest of labor and second stage management. The checklist, which is completed by the health care team prior to proceeding with cesarean birth in cases of failure to progress, thus far seems to be the single most effective intervention in decreasing the NTSV cesarean birth rate. According to Dr. McNulty, the MemorialCare Women's Best Practice Team is spearheading efforts to automate the electronic record system to provide detailed clinical feedback to MemorialCare providers. Finally, OB hospitalists were utilized. Two of the hospitals (Hoag and Saddleback) already had active full-time OB hospitalist (laborist) services at the time. Of the two, the Saddleback program sought out more direct engagement of the hospitalist by allowing nursing staff to routinely seek their involvement in all labors. The hospitalist presence allowed on-call physicians to more easily meet professional and personal off-site duties while their patients labored, gave more immediate attention to all laboring women and decreased potential time or financial incentives to prematurely end labors.

According to these leaders, while the majority of doctors and nurses have supported these efforts and the hospitals are continuing to work on lowering rates, change is still not universal and not all providers are fully committed to the program. The combination of payment reform, unit policy changes, overall cultural change on the labor and delivery unit, and continued provider-level feedback should continue the trend in cesarean reduction. Nonetheless, persistence and commitment will be essential to sustained success.

John Muir Medical Center

In 2014, John Muir Medical Center had approximately 2800 births, and an NTSV cesarean rate of 17.4%. Approximately 25 private obstetricians, 2 perinatologists, and 4 midwives (making up a total of 15 practice groups) have delivery privileges at this facility. While most delivering patients experience a traditional private practice model, where the prenatal provider (or someone from that particular provider group) attends to their own patients at the time of birth, John Muir has also created a 24/7 quasi-hospitalist approach, where a rotating schedule determines the physician who is assigned to cover emergencies, precipitous births, and other events not otherwise covered by the private practice groups.

According to Jamie Vincent, Clinical Nurse Specialist with John Muir for 26 years, a turning point came with one of the first quality improvement initiatives related directly to cesarean, that of improving VBAC rates and offering TOLAC

to more eligible women. John Muir now boasts a VBAC success rate above 80%. While not intentional, it seems this philosophy of care, or one that Jamie Vincent describes as “a culture that says vaginal birth is important” now informs the care practices and overall attitude of supporting intended vaginal birth for every patient.

The practices now embedded in the culture of care at John Muir include patience with the length of labor as long as the fetus and mother are doing well, external cephalic version for women with a singleton breech fetus, skilled providers who attend to vaginal breech deliveries in the rare cases that present, a safe use of oxytocin policy, a push toward eliminating non-medically indicated induction of labor, encouragement of ambulation during labor, intermittent monitoring for low-risk patients (and telemetry units available for women who need to be continuously monitored but who desire freedom of movement), delayed pushing (passive descent) in the second stage, and a commitment to providing a “low intervention birth experience” for women who desire a hospital birth but wish to have a birth experience where interventions are based upon need rather than convenience and routine use. Furthermore, a philosophy of patience permeates the culture at John Muir. For example, when patients are brought to the operating room, it is not a forgone conclusion that a cesarean will occur. The providers and nurses are willing to assess the situation further while there and, in many cases, return to the patient’s room to continue labor when fetal and maternal statuses permit. This host of policies, practices, and beliefs – along with nurses and providers who care deeply about quality of care – has led to an embedded philosophy of support for intended vaginal birth.

Feedback is important. Cesarean rates and quality measures from other improvement projects are openly shared. Nurses and providers are curious and informed. They request timely data and are not shy in questioning the data to ensure accuracy. The members of the inter-professional Perinatal Quality and Safety Committee form the foundation of a stable leadership team that researches and implements most improvement activities. Like many high performing organizations, teamwork and interdisciplinary communication is a work in progress. Understanding the relationship between teamwork and the ability to consistently perform well in both emergencies and day to day operations, John Muir continues to make this a priority, engaging in High Reliability Organization trainings and consistently prioritizing teamwork and better communication.

Kaiser Permanente Roseville Medical Center

The Kaiser Permanente Roseville Medical Center opened in 2009 with a Level III NICU and high-risk expertise in maternity care. Kaiser Roseville’s 2014 NTSV cesarean rate was 16.9%, despite its many high-risk patients and a total birth rate of approximately 5,000 per year.

While there has always been a “quasi-hospitalist” model at Kaiser (in the sense that providers worked shifts on the labor and delivery unit as opposed to being called in for births), Kaiser Roseville recently created a specific OB hospitalist position. Now, in addition to the other physicians who work in shifts on the labor and delivery unit but who may also attend to multiple other clinical obligations, the unit is staffed 24/7 by an OB hospitalist whose main priority is the management of laboring patients. According to Dr. Belinda Perez, OB hospitalist, this creates a sense of continuity and smooth transition between providers, and an understanding that patients are not on a timeline based upon any particular shift. Furthermore, according to Dr. Carolyn Odell, Maternity Subchief, the OB hospitalist is a resource to the other physicians when complicated cases arise. The hospitalists are expected to develop and retain skills in operative vaginal delivery, manual rotation, external cephalic version, and breech extraction of the second twin. Even if another physician is managing a patient, the hospitalist is available as a “second pair of eyes” for consultation, or to help as needed.

Kaiser Roseville also has 15 midwives. Just as there is always an OB hospitalist, there is also a midwife on the unit around-the-clock. The midwife attends low-risk births and, as appropriate, co-manages higher risk patients who need physician oversight but prefer a midwifery approach to labor management. The midwifery group has positively influenced both physician and nursing practice in terms of how normal labor is managed. These influences include accepting that there are normal variations in the length of labor, encouraging ambulation, using alternative methods of pain relief, and judiciously using interventions such as oxytocin and continuous monitoring. For women meeting low-risk criteria, intermittent monitoring is the standard of practice. Holly Champagne, Clinical Nurse Specialist, notes that Kaiser Roseville, like many Kaiser facilities, maintains a culture of quality improvement, adherence to evidence based practice, and a strong interprofessional leadership team that enforces a constant culture of safety and

attention to quality. For example, when Spong and colleagues published *Preventing the First Cesarean Delivery* in 2012,⁸⁵ the Perinatal Patient Safety Committee quickly took the lead in reframing for providers and nurses the parameters for normal labor duration and, ultimately, succeeded in letting go of the Friedman curve. Dr. Perez notes that doing so reduced the overall number of cesareans for failure to progress. Furthermore, chart reviews indicate that there are now rarely cases of “failure to progress” that do not meet the new definitions. While it did take some time for all providers to “digest” and accept this new information, leadership by the OB hospitalists and expertise of the midwives in normal birth helped to further solidify this new concept into the culture of care. Dr. Perez and Susan Stone, CNM (previous Chief Nurse-Midwife) agree that gatekeeping, or hard-stop policies, are also an important component of keeping cesarean rates low. For example, Kaiser Roseville has a policy of no inductions without medical indication before 40 weeks, and providers are strongly encouraged to schedule postdates inductions at or after 41 weeks. This is enforced through a method of online scheduling that requires a medical indication. When there is no medical indication for induction, review by the OB hospitalist and nurse manager is required. Other ongoing quality improvement activities and patient safety initiatives at Kaiser Roseville may also directly impact cesarean rates, including the recent institution of a safe usage of oxytocin policy and checklist, interdisciplinary team trainings for critical events, and instituting algorithms and decision making tools for Category II fetal tracings.

Holly Champagne notes that the labor and delivery nurses at Kaiser Roseville are absolutely integral to the quality improvement process, and are exceptional in both support to the patient and technical aptitude. Nonetheless, she states there is an expectation of constant improvement, noting the recent midwife-led trainings for labor support and recent emphasis on alternative coping methods, such as use of TENS and the upcoming integration of nitrous oxide into the labor and delivery suites.

Finally, data is important. Dr. Odell notes that cesarean rates are routinely discussed and remain a priority topic at monthly Perinatal Patient Safety Committee meetings. Also, providers and nurses are given feedback and provided with timely data to show the success of each quality improvement effort. Holly Champagne agrees wholeheartedly that interdisciplinary leadership and buy-in is critical to this process, but also notes that the stable leadership team at Kaiser Roseville is adept at packaging the information appropriately for each member of the labor and delivery team. She states that while the nurses, doctors, and midwives all care deeply about patients and quality, each discipline benefits from unique, tailored “messaging” that aligns data feedback and policy change. Although subtle, these differences in messaging are critical to the acceptance of change and identifying potential points of resistance.

Appendices

Summary of Recommendations for the Safe Prevention of Primary Cesarean Delivery

Adapted from ACOG/SMFM Obstetric Care Consensus Statement (2014)

1 In the First Stage of Labor

- A prolonged latent phase of greater than 20 hours in nulliparas and 14 hours in multiparas is not an indication for cesarean delivery
- Slow but progressive labor is not an indication for cesarean delivery
- Before 6 cm dilation, standards of active labor progress should not be applied to nulliparous or multiparous patients
- Patients who undergo cesarean delivery for active phase arrest in the first stage of labor should be at or beyond 6 cm dilation WITH ruptured membranes AND:
 - » 4 hours of adequate contractions without cervical change, OR
 - » At least 6 hours of oxytocin with inadequate contractions and no cervical change

2 In the Second Stage of Labor

5. An absolute maximum length of time for the 2nd stage has not been identified
6. As long as maternal and fetal condition permits, the diagnosis of arrest of the labor in the 2nd stage should not be made prior to:
 - » At least 2 hours of pushing for multiparous patients
 - » At least 3 hours of pushing in nulliparous patients (Longer durations may be appropriate on an individualized basis, for example with epidural anesthesia or fetal malposition as long as progress is documented)
7. Operative vaginal delivery by an experienced, well-trained physician is a safe and reasonable alternative to cesarean delivery

8. Manual rotation of the fetal occiput of the malpositioned fetus in the 2nd stage of labor is a reasonable intervention to consider before operative vaginal delivery or cesarean delivery. Furthermore, assessment of fetal position in the 2nd stage of labor is essential, especially when abnormal descent is noted

3 Fetal Surveillance

9. Amnioinfusion is recommended as a safe intervention for repetitive variable decelerations and may reduce the rate of cesarean
10. Scalp stimulation can be used to assess fetal acid-base status in the presence of an abnormal or indeterminate fetal tracing e.g. minimal variability

4 Induction of Labor

11. Induction of labor before 41 0/7 weeks of pregnancy should be performed if medical indications for the patient or fetus are present. Inductions at 41 0/7 weeks and beyond should be performed to reduce the risk of cesarean delivery
12. When a woman with an unfavorable cervix must be induced, cervical ripening methods should be used
13. If maternal and fetal status permit, a longer latent phase should be allowed in patients undergoing induction of labor (24 hours or longer) and oxytocin should be administered for at least 12-18 hours after rupture of membranes before a failed induction is diagnosed

5 Fetal Malpresentation

14. Fetal presentation should be assessed and documented at 36 0/7 weeks. External cephalic version should be offered to patients with a noncephalic-presenting fetus.

6 Suspected Macrosomia

15. Patients should be counseled that estimates of fetal weight at term gestation are imprecise. Cesarean delivery for suspected macrosomia should be limited to estimated fetal weights of:
 - » At least 5000g in non-diabetic women
 - » At least 4500g in diabetic women

7 Excessive Maternal Weight Gain

16. Women should be counseled on the IOM maternal weight guidelines in order to avoid excessive weight gain

8 Twin Gestations

17. Women with cephalic/cephalic-presenting twins or cephalic/noncephalic-presenting twins should be counseled to attempt vaginal delivery

9 Other

18. Stakeholders (individuals, providers, policy makers) should work together to ensure research is conducted to further guide decisions regarding cesarean delivery and encourage policies that safely reduce the rate of primary cesarean delivery



SAFE REDUCTION OF PRIMARY CESAREAN BIRTHS: SUPPORTING INTENDED VAGINAL BIRTHS

READINESS

Every Patient, Provider and Facility

- Build a provider and maternity unit culture that values, promotes, and supports spontaneous onset and progress of labor and vaginal birth and understands the risks for current and future pregnancies of cesarean birth without medical indication.
- Optimize patient and family engagement in education, informed consent, and shared decision making about normal healthy labor and birth throughout the maternity care cycle.
- Adopt provider education and training techniques that develop knowledge and skills on approaches which maximize the likelihood of vaginal birth, including assessment of labor, methods to promote labor progress, labor support, pain management (both pharmacologic and non-pharmacologic), and shared decision making.

RECOGNITION AND PREVENTION

Every patient

- Implement standardized admission criteria, triage management, education, and support for women presenting in spontaneous labor.
- Offer standardized techniques of pain management and comfort measures that promote labor progress and prevent dysfunctional labor.
- Use standardized methods in the assessment of the fetal heart rate status, including interpretation, documentation using NICHD terminology, and encourage methods that promote freedom of movement.
- Adopt protocols for timely identification of specific problems, such as herpes and breech presentation, for patients who can benefit from proactive intervention before labor to reduce the risk for cesarean birth.

PATIENT
SAFETY
BUNDLE

Safe Reduction of
Primary Cesarean Births



RESPONSE

To Every Labor Challenge

- Have available an in-house maternity care provider or alternative coverage which guarantees timely and effective responses to labor problems.
- Uphold standardized induction scheduling to ensure proper selection and preparation of women undergoing induction.
- Utilize standardized evidence-based labor algorithms, policies, and techniques, which allow for prompt recognition and treatment of dystocia.
- Adopt policies that outline standard responses to abnormal fetal heart rate patterns and uterine activity.
- Make available special expertise and techniques to lessen the need for abdominal delivery, such as breech version, instrumented delivery, and twin delivery protocols.

REPORTING/SYSTEMS LEARNING

Every birth facility

- Track and report labor and cesarean measures in sufficient detail to: 1) compare to similar institutions, 2) conduct case review and system analysis to drive care improvement, and 3) assess individual provider performance.
- Track appropriate metrics and balancing measures, which assess maternal and newborn outcomes resulting from changes in labor management strategies to ensure safety.

PATIENT SAFETY BUNDLE

Safe Reduction of Primary Cesarean Births

Appendix C

Tools by Section

TOOLS FOR PART I OF TOOLKIT - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
1	Lamaze International Policy Brief - Evidence-Based Childbirth Education: A Key Strategy to Improve U.S. Childbirth Outcomes		•	http://www.lamazeinternational.org/d/do/1787
1	The Centering Healthcare Institute - Centering Pregnancy® Model		•	https://www.centeringhealthcare.org/what-we-do/centering-pregnancy
2	AHRQ SHARE Approach for Shared Decision Making		•	http://www.ahrq.gov/professionals/education/curriculum-tools/shareddecisionmaking/index.html
2	AHRQ SHARE Approach Quick Reference Poster		•	http://www.ahrq.gov/sites/default/files/wysiwyg/professionals/education/curriculum-tools/shareddecisionmaking/tools/shareposter/shareposter.pdf
2	Maternity Neighborhood White Paper -Activation, Engagement, and Shared Decision Making		•	http://maternityneighborhood.com/whitepapers/activation-engagement-shared-decision-making
2	CMQCC Birth Preferences Guide (Birth Plan)	•		Appendix E
2	Informed Consent for Elective Cesarean (adapted with permission from Hoag Hospital)	•		Appendix I
5	Health Care Incentives Improvement Institute – Prometheus Payment Implementation Toolkit		•	http://www.hci3.org/prometheus_implementation_toolkit
5	Health Care Incentives Improvement Institute - Prometheus Payment Fact Sheet		•	http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2009/rwjf41603
5	Center for Healthcare Quality and Payment Reform - Guide to Physician-focused Alternative Payment Methods		•	http://www.chqpr.org/downloads/Physician-FocusedAlternativePaymentModels.pdf
5	Center for Healthcare Quality and Payment Reform - A Better Way to Pay for Maternity Care Fact Sheet		•	http://www.nationalpartnership.org/research-library/maternal-health/nac/nac_resource_miller_2015.pdf
5	Center for Healthcare Quality and Payment Reform Slide Deck - How Payment Reform Can Lower Costs and Improve Quality (slide deck)		•	http://www.chqpr.org/downloads/MaternityCarePaymentReform2012.pdf
5	Center for Healthcare Quality and Payment Reform Slide Deck - How Payment Reform Can Lower Costs and Improve Quality (slide deck)		•	http://www.chqpr.org/downloads/MaternityCarePaymentReform2012.pdf
5	Center for Healthcare Quality and Payment Reform - Win –Win –Win Approaches to Maternity Care (slide deck)		•	http://www.chqpr.org/downloads/HaroldMiller_MaternityCarePayment_03-25-15.pdf

TOOLS FOR PART I OF TOOLKIT - FOR WOMEN

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
1	Childbirth Connection - Index of Pregnancy Resources		•	http://childbirthconnection.org
1	Childbirth Connection – What Every Pregnant Woman Needs to Know about Cesarean Section		•	http://www.nationalpartnership.org/research-library/maternal-health/what-every-pregnant-woman-needs-to-know-about-cesarean-section.pdf
1	Lamaze International - Online Parent Education Courses		•	http://www.lamaze.org/ParentOnlineEducation
1	Lamaze International – Healthy Birth Practices		•	http://www.lamazeinternational.org/d/do/653
1	ACNM - Share With Women (printable consumer education series from the Journal of Midwifery and Women's Health)		•	http://www.midwife.org/Share-With-Women
2	CMQCC Birth Preferences Guide (Birth Plan)	•		Appendix E
2	AHRQ Know Your Questions Infographic		•	http://www.ahrq.gov/sites/default/files/publications/files/optionsposter.pdf

TOOLS FOR PART II OF TOOLKIT - FOR PROVIDERS AND HOSPITALS				
Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
2	ACNM Healthy Birth Initiative – Reducing Primary Cesareans – Promoting Spontaneous Progress in Labor Bundle		•	http://birthtools.org/birthtools/files/BirthToolFiles/FILENAME/000000000091/BundlePromotingLaborProgress-Final-091515.pdf
2	Calgary Health Region – Latent Phase of Labour Policy (includes home management of latent phase of labor and therapeutic rest policy)		•	http://birthtools.org/birthtools/files/BirthToolFiles/FILENAME/000000000036/MOC-TBS-LatentPhaseOfLaborPolicy.pdf
2	Washington State Hospital Association Safe Deliveries Roadmap - Best Practice Bundles (Labor Management Bundle includes criteria for delayed admission, algorithm and checklist for spontaneous labor, and many more labor tools)		•	http://www.wsha.org/quality-safety/projects/safe-deliveries/
3	AWHONN High Tough Nursing Care during Labor series		•	http://injoyvideos.com/high-touch-nursing-care-during-labor.html
3	ACNM Healthy Birth Initiative – Reducing Primary Cesareans – Promoting Comfort in Labor Bundle		•	http://birthtools.org/birthtools/files/BirthToolFiles/FILENAME/000000000090/Bundle-Promoting-Comfort-v2.pdf
3	Lamaze International - Labor Support Workshop for Nurses		•	http://www.lamazinternational.org/Evidence-BasedNursing
3	40 Ways to Help a Laboring Woman (You Tube)		•	https://www.youtube.com/watch?v=SlIZkEyLBeU
3	Labor Positions (You Tube)		•	https://www.youtube.com/watch?v=heswj-Hw5TU
3	Birth Positions for Natural Birth (You Tube)		•	https://www.youtube.com/watch?v=r2al2WtHJ_0
3	Birth Positions Pushing with Epidural (You Tube)		•	https://www.youtube.com/watch?v=tn8H5JV3lec
3	Journal of Obstetric, Gynecologic, and Neonatal Nursing - A Practical Approach to Labor Support		•	http://www.jognn.org/article/S0884-2175(15)33715-1/pdf (login required)
3	InJoy Productions - Positions For Labor Reference Guide		•	http://injoyvideos.com/media/wysiwyg/pdfs/guidesandhandouts/PositionsForLabor-FacilitatorsGuide.pdf
3	Childbirth Connection - Hormonal Physiology of Childbirth Fact Sheet Bundle		•	http://www.nationalpartnership.org/research-library/maternal-health/hormonal-physiology-of-childbearing-all-fact-sheets.pdf
3	Freedom of Movement Policy		•	Model Policies – Appendix T
3	How to Become Mother-Friendly: Policies and Procedures for Hospitals, Birth Centers and Home Birth Services		•	http://www.springerpub.com/how-to-become-mother-friendly.html
3	University of Utah - Coping with Labor Algorithm		•	Appendix F
3	Model Policy for Pain Assessment and Management – Marin General Hospital		•	Model Policies –Appendix T
4	International Childbirth Education Association (ICEA) Position Statement - Role and Scope of the Doula		•	http://www.icea.org/wp-content/uploads/2016/01/Role_Scope_Doula_PP.pdf
4	Childbirth Connection Executive Summary - Medicaid and Private Insurance Coverage of Doula Care to Strengthen Maternal and Infant Health		•	http://transform.childbirthconnection.org/wp-content/uploads/2016/01/Insurance-Coverage-of-Doula-Care-Brief.pdf
4	Childbirth Connection – Insurance Coverage of Doula Care Infographic		•	http://transform.childbirthconnection.org/wp-content/uploads/2016/01/FINAL_Doula-Brief-Infographic.pdf
4	University of California San Diego - Hearts & Hands Volunteer Doula Program Website		•	http://sandiegodoulas.org
4	Zuckerberg San Francisco General Hospital - Volunteer Doula Program Website		•	http://www.sfghdoulas.org

Appendix C

Tools by Section

4	HealthConnect One – Model for Community Based Doula Program		•	http://www.healthconnectone.org/pages/community_based_doula_program/66.php
6	Model Policy for Fetal Surveillance – Northern New England Perinatal Quality Collaborative (includes exclusion criteria for intermittent monitoring, procedures for intermittent methods, and FHR management algorithm)		•	http://www.nnepqin.org/documentUpload/20_NNEPQIN_Fetal_Monitoring_Practice_Guidelines_FINAL_12.12.12_POSTED_ON_THE_WEBSITE.pdf
6	Model Policy for Fetal Surveillance - Zuckerberg San Francisco General Hospital (includes procedures and exclusion criteria for intermittent auscultation)		•	Model Policies – Appendix T
6	ACNM Healthy Birth Initiative – Reducing Primary Cesareans – Intermittent Auscultation Bundle		•	http://birthtools.org/birthtools/files/BirthToolFiles/FILE-NAME/000000000089/Bundle-Intermittent-Auscultation-v2.pdf
6	Denver Health Slide Deck – Intermittent Auscultation (includes identifying appropriate patients for intermittent auscultation, procedures, clinical decision making, and criteria for discontinuing intermittent auscultation and implementing EFM)		•	http://birthtools.org/birthtools/files/BirthToolFiles/FILE-NAME/000000000024/MOC-FWB-IntermittentAuscultation-DenverHealth.pptx

TOOLS FOR PART II OF TOOLKIT - FOR WOMEN

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
2	Lamaze International - Keep Calm and Labor On. Know what to Expect in Early Labor (infographic)		•	http://www.lamaze.org/p/cm/ld/fid=254
2	AWHONN Go the Full 40 Campaign (toolkit, grand rounds slide deck, and multiple patient downloads and infographics)		•	http://www.health4mom.org/nurses-resources
2	ACNM – Share With Women – Am I in Labor? (includes decision tree to assist women with deciding whether they are in labor and when to go to hospital)		•	http://onlinelibrary.wiley.com/doi/10.1016/S1526-9523(03)00147-8/epdf
3	Queensland Centre for Mothers and Babies - Choosing Your Positions During Labour and Birth: A Decision Aid for Women Having a Vaginal Birth		•	http://www.birthtools.org/birthtools/files/BirthToolFiles/FILE-NAME/000000000095/ChoosingPositions-LaborAndBirth.pdf
3	InJoy Productions - Positions For Labor Reference Guide		•	http://injoyvideos.com/media/wysiwyg/pdfs/guidesandhandouts/PositionsForLabor-FacilitatorsGuide.pdf
3	Childbirth Connection and Penny Simkin – Comfort in Labor: How You Can Help Yourself to a Normal Satisfying Childbirth		•	http://www.nationalpartnership.org/research-library/maternal-health/comfort-in-labor-simkin.pdf
3	Childbirth Connection – Resources for Labor Support		•	http://www.childbirthconnection.org/giving-birth/labor-support/
3	ACNM – Share with Women –Pushing Your Baby Out		•	http://onlinelibrary.wiley.com/doi/10.1111/j.1542-2011.2011.00145.x/pdf
4	Lamaze International and Mother’s Advocate - Finding A Doula		•	http://www.mothersadvocate.org/pdf/hbyw-FindingDoula.pdf
4	Lamaze International Labor Support and Doula Infographic “Who Says Three’s a Crowd? Bring the Labor Support You’ll Need”		•	www.lamazeinternational.org/d/do/1533
4	Lamaze International and Mother’s Advocate - Creating a Labor Support Team		•	http://www.mothersadvocate.org/pdf/hbyw-CreatingYourSupport-Team.pdf
6	Choosing Wisely® – Monitoring Your Baby’s Heart-beat During Labor		•	http://consumerhealthchoices.org/wp-content/uploads/2015/06/ChoosingWiselyFetalMonitoringAAN-ER.pdf
6	ACNM – Share With Women – Fetal Heart Rate Monitoring in Labor		•	http://onlinelibrary.wiley.com/doi/10.1111/jmwh.12270/pdf

TOOLS FOR PART III OF TOOLKIT - FOR PROVIDERS AND HOSPITALS				
Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
1	AHRQ TeamSTEPS® (strategies and tools to enhance team performance and patient safety)		•	http://www.ahrq.gov/professionals/education/curriculum-tools/teamsteps/index.html
1	Institute for Health Care Improvement - How-to Guide Deploy Rapid Response Teams		•	http://www.ihc.org/resources/Pages/Tools/HowtoGuideDeployRapidResponseTeams.aspx
2	Pre-cesarean Checklist for Labor Dystocia or Failed Induction (adapted with permission from Miller Children’s and Women’s Hospital)	•		Appendix J
2	Labor Dystocia Checklist	•		Appendix K
2	Labor Duration Guidelines (adapted with permission from Zuckerberg San Francisco General Hospital)	•		Appendix L
2	Spontaneous Labor Algorithm (adapted with permission from Washington State Hospital Association)	•		Appendix M
2	Algorithm for Management of the Second Stage of Labor	•		Appendix N
2	Northern New England Perinatal Quality Improvement Network – Second Stage Management Guideline		•	http://www.nnepqin.org/Guidelines.asp#tabs-14
2	Active Labor Partogram (adapted with permission from Swedish Medical Center)	•		Appendix O
2	ACOG- Optimizing Protocols in Obstetrics: Oxytocin for Induction of Labor (includes model policies for safe use of oxytocin and the Hospital Corporation of America’s pre-oxytocin and in-use checklists)		•	http://mail.ny.acog.org/website/OxytocinForInduction.pdf
2	NNEPQIN Model Policy for Use of Oxytocin		•	http://www.nnepqin.org/documentUpload/22_Guideline_for_the_Use_of_Oxytocin_FINAL_2012.12.12.pdf
2	ACOG Practice Bulletin 116 - Management of Intrapartum FHR Tracings (found in ACOG Optimizing Protocols in Obstetrics: Oxytocin for Induction)		•	http://mail.ny.acog.org/website/OxytocinForInduction.pdf
2	Steven Clark MD - Algorithm for the Management of Category II Fetal Heart Rate Tracings		•	Appendix P
2	Northern New England Perinatal Quality Improvement Network - Algorithm for Electronic Fetal Heart Rate Assessment and Initial Intervention (found in Appendix 4 of Guideline for Fetal Monitoring in Labor and Delivery)		•	http://www.nnepqin.org/documentUpload/20_NNEPQIN_Fetal_Monitoring_Practice_Guidelines_FINAL_12.12.12_POSTED_ON_THE_WEBSITE.pdf
2	Algorithm for Management of of Intrapartum Tracings	•		Appendix Q
2	Induction of Labor Algorithm (adapted with permission from Washington State Hospital Association)	•		Appendix R
2	Toolkit for the Elimination of Non-Medically Indicated (Elective) Deliveries Before 39 Weeks	•		https://www.cmqcc.org/resources-tool-kits/toolkits/early-elective-deliveries-toolkit
2	National Quality Forum – Playbook for the Elimination of Early Elective Delivery		•	https://www.qualityforum.org/Publications/2014/08/Early_Elective_Delivery_Playbook_-_Maternity_Action_Team.aspx
2	Model Policy for Induction of Labor Scheduling Process – Tallahassee Memorial Hospital		•	https://www.cmqcc.org/resource/appendix-a4-scheduling-process
2	Tallahassee Memorial Hospital - Induction of Labor Consent Form		•	https://www.cmqcc.org/resource/appendix-a5-consent-form

2	Model Policy for Induction of Labor Scheduling Process and Scheduling Form - Hoag Hospital		•	Model Policies – Appendix T
2	ACOG Patient Safety Checklist #2 - Inpatient Induction of Labor		•	http://www.acog.org/Resources-And-Publications/Patient-Safety-Checklists/Inpatient-Induction-of-Labor
2	Northern New England Perinatal Quality Improvement Network – Guideline for Non-Medically Indicated Delivery		•	http://www.nnepqin.org/Guidelines.asp#tabs-1
4	Second Stage Management of Malposition	•		Appendix G
4	Spinning Babies: Easier Birth with Fetal Positioning (educational website for the prevention and treatment of malposition through maternal positioning; also includes workshops and events)		•	http://spinningbabies.com
6	Homebirthsummit.org - Best Practice Guidelines -Transfer from Planned Home Birth to Hospital		•	http://www.homebirthsummit.org/wp-content/uploads/2014/03/HomeBirthSummit_BestPracticeTransferGuidelines.pdf
7	Childbirth Connection - Maternity Care and Liability Fact Sheets		•	http://transform.childbirthconnection.org/wp-content/uploads/2013/01/Liability-Fact-Sheets.pdf

TOOLS FOR PART III OF TOOLKIT - FOR WOMEN

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
2	AWHONN Go the Full 40 Campaign (toolkit, grand rounds slide deck, and multiple patient downloads and infographics)		•	http://www.health4mom.org/nurses-resources
2	Childbirth Connection Resources for Induction of Labor		•	http://www.childbirthconnection.org/giving-birth/labor-induction/
2	AHRQ - Thinking about Having Your Labor Induced? A Guide for Pregnant Women		•	http://www.effectivehealthcare.ahrq.gov/ehc/products/135/353/induction%20of%20labor%20consumer%20guide.pdf

TOOLS FOR PART IV OF TOOLKIT - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
	Performance Measures Used to Assess Cesarean Birth	•		Appendix H

CHILDBIRTH EDUCATION - FOR PATIENTS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 1 ~ Strategy 1	Childbirth Connection - Index of Best Pregnancy Resources		•	http://childbirthconnection.org
Part 1 ~ Strategy 1	Childbirth Connection – What Every Pregnant Woman Needs to Know about Cesarean Section		•	http://www.nationalpartnership.org/research-library/maternal-health/what-every-pregnant-woman-needs-to-know-about-cesarean-section.pdf
Part 1 ~ Strategy 1	Lamaze International - Online Parent Education Courses		•	http://www.lamaze.org/ParentOnlineEducation
Part 1 ~ Strategy 1	Lamaze International – Healthy Birth Practices		•	http://www.lamazeinternational.org/d/do/653
Part 1 ~ Strategy 1	ACNM - Share With Women (printable consumer education series from the Journal of Midwifery and Women's Health)		•	http://www.midwife.org/Share-With-Women

DELAY OF LATENT (EARLY) LABOR ADMISSION - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 2 ~ Strategy 2	ACNM Healthy Birth Initiative – Reducing Primary Cesareans – Promoting Spontaneous Progress in Labor Bundle		•	http://birthtools.org/birthtools/files/BirthToolFiles/FILE-NAME/000000000091/BundlePromotingLaborProgress-Final-091515.pdf
Part 2 ~ Strategy 2	Calgary Health Region - Latent Phase of Labour Policy (includes home management of latent phase of labor and therapeutic rest policy)		•	http://birthtools.org/birthtools/files/BirthToolFiles/FILE-NAME/000000000036/MOC-TBS-LatentPhaseOfLaborPolicy.pdf
Part 2 ~ Strategy 2	Washington State Hospital Association Safe Deliveries Roadmap - Best Practice Bundles (Labor Management Bundle includes criteria for delayed admission, algorithm and checklist for spontaneous labor, and many more labor tools)		•	http://www.wsha.org/quality-safety/projects/safe-deliveries/

DELAY OF LATENT (EARLY) LABOR ADMISSION - FOR PATIENTS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 2 ~ Strategy 2	Lamaze International - Keep Calm and Labor On. Know what to Expect in Early Labor (infographic)		•	http://www.lamaze.org/p/cm/ld/fid=254
Part 2 ~ Strategy 2	AWHONN Go the Full 40 Campaign (toolkit, grand rounds slide deck, and multiple patient downloads and infographics)		•	http://www.health4mom.org/nurses-resources
Part 2 ~ Strategy 2	ACNM – Share With Women – Am I in Labor? (includes decision tree to assist women with deciding whether they are in labor and when to go to hospital)		•	http://onlinelibrary.wiley.com/doi/10.1016/S1526-9523(03)00147-8/epdf

DOULA CARE AND LABOR SUPPORT - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 2 ~ Strategy 4	International Childbirth Education Association (ICEA) Position Statement - Role and Scope of the Doula		•	http://www.icea.org/wp-content/uploads/2016/01/Role_Scope_Doula_PP.pdf
Part 2 ~ Strategy 4	Childbirth Connection Executive Summary - Medicaid and Private Insurance Coverage of Doula Care to Strengthen Maternal and Infant Health		•	http://transform.childbirthconnection.org/wp-content/uploads/2016/01/Insurance-Coverage-of-Doula-Care-Brief.pdf
Part 2 ~ Strategy 4	Childbirth Connection – Insurance Coverage of Doula Care Infographic		•	http://transform.childbirthconnection.org/wp-content/uploads/2016/01/FINAL_Doula-Brief-Infographic.pdf
Part 2 ~ Strategy 4	University of California San Diego - Hearts & Hands Volunteer Doula Program Website		•	http://sandiegodoulas.org
Part 2 ~ Strategy 4	Zuckerberg San Francisco General Hospital - Volunteer Doula Program Website		•	http://www.sfghdoulas.org
Part 2 ~ Strategy 4	HealthConnect One – Model for Community Based Doula Program		•	http://www.healthconnectone.org/pages/community_based_doula_program/66.php

Appendix D

Tools by Topic

DOULA CARE AND LABOR SUPPORT – FOR WOMEN

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 2 ~ Strategy 4	Lamaze International and Mother’s Advocate - Finding A Doula		•	http://www.mothersadvocate.org/pdf/hbyw-FindingDoula.pdf
Part 2 ~ Strategy 4	Lamaze International Labor Support and Doula Infographic “What Says Three’s a Crowd? Bring the Labor Support You’ll Need”		•	www.lamazeinternational.org/d/do/1533
Part 2 ~ Strategy 4	Lamaze International and Mother’s Advocate - Creating a Labor Support Team		•	http://www.mothersadvocate.org/pdf/hbyw-CreatingYourSupportTeam.pdf

FETAL SURVEILLANCE – FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 2 ~ Strategy 6	ACNM Healthy Birth Initiative – Reducing Primary Cesareans – Intermittent Auscultation Bundle		•	http://birthtools.org/birthtools/files/BirthToolFiles/FILE-NAME/000000000089/Bundle-Intermittent-Auscultation-v2.pdf
Part 2 ~ Strategy 6	Denver Health Slide Deck – Intermittent Auscultation (includes identifying appropriate patients for intermittent auscultation, procedures, clinical decision making, and criteria for discontinuing intermittent auscultation and implementing EFM)		•	http://birthtools.org/birthtools/files/BirthToolFiles/FILE-NAME/000000000024/MOC-FWB-IntermittentAuscultation-DenverHealth.pptx
Part 2 ~ Strategy 6	Model Policy for Fetal Surveillance - Northern New England Perinatal Quality Collaborative (includes exclusion criteria for intermittent monitoring, procedures for intermittent methods, and FHR management algorithm)		•	http://www.nnepqin.org/documentUpload/20._NNEPQIN_Fetal_Monitoring_Practice_Guidelines_FINAL_12.12.12._POSTED_ON_THE_WEBSITE.pdf
Part 2 ~ Strategy 6	Model Policy for Fetal Surveillance – Zuckerberg San Francisco General Hospital (includes procedures and exclusion criteria for intermittent auscultation)		•	Model Policies - Appendix T
Part 3 ~ Strategy 2	Northern New England Perinatal Quality Improvement Network - Algorithm for Electronic Fetal Heart Rate Assessment and Initial Intervention (found in Appendix 4 of Guideline for Fetal Monitoring in Labor and Delivery)		•	http://www.nnepqin.org/documentUpload/20._NNEPQIN_Fetal_Monitoring_Practice_Guidelines_FINAL_12.12.12._POSTED_ON_THE_WEBSITE.pdf
Part 3 ~ Strategy 2	Algorithm for Management of Intrapartum Tracings	•		Appendix Q
Part 3 ~ Strategy 2	ACOG Practice Bulletin 116 - Management of Intrapartum FHR Tracings (found in ACOG Optimizing Protocols in Obstetrics: Oxytocin for Induction)		•	http://mail.ny.acog.org/website/OxytocinForInduction.pdf
Part 3 ~ Strategy 2	Steven Clark MD - Algorithm for the Management of Category II Fetal Heart Rate Tracings		•	Appendix P

FETAL SURVEILLANCE – FOR PATIENTS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 2 ~ Strategy 6	Choosing Wisely® – Monitoring Your Baby’s Heart-beat During Labor		•	http://consumerhealthchoices.org/wp-content/uploads/2015/06/ChoosingWiselyFetalMonitoringAAN-ER.pdf
Part 2 ~ Strategy 6	ACNM – Share With Women – Fetal Heart Rate Monitoring in Labor		•	http://onlinelibrary.wiley.com/doi/10.1111/jmwh.12270/pdf

INDUCTION OF LABOR – FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 3 ~ Strategy 2	Induction of Labor Algorithm (adapted with permission from Washington State Hospital Association)	•		Appendix R
Part 3 ~ Strategy 2	Toolkit for the Elimination of Non-Medically Indicated (Elective) Deliveries Before 39 Weeks	•		https://www.cmqcc.org/resources-tool-kits/toolkits/early-elective-deliveries-toolkit
Part 3 ~ Strategy 2	National Quality Forum – Playbook for the Elimination of Early Elective Delivery		•	https://www.qualityforum.org/Publications/2014/08/Early_Elective_Delivery_Playbook_-_Maternity_Action_Team.aspx
Part 3 ~ Strategy 2	Model Policy for Induction of Labor Scheduling Process – Tallahassee Memorial Hospital		•	https://www.cmqcc.org/resource/appendix-a4-scheduling-process
Part 3 ~ Strategy 2	Tallahassee Memorial Hospital - Induction of Labor Consent Form		•	https://www.cmqcc.org/resource/appendix-a5-consent-form
Part 3 ~ Strategy 2	Model Policy for Induction of Labor Scheduling Process and Scheduling Form - Hoag Hospital		•	Model Policies - Appendix T
Part 3 ~ Strategy 2	ACOG Patient Safety Checklist #2 - Inpatient Induction of Labor		•	http://www.acog.org/Resources-And-Publications/Patient-Safety-Checklists/Inpatient-Induction-of-Labor
Part 3 ~ Strategy 2	Northern New England Perinatal Quality Improvement Network – Guideline for Non-Medically Indicated Delivery		•	http://www.nnepqin.org/Guidelines.asp#tabs-1

INDUCTION OF LABOR – FOR PATIENTS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 3 ~ Strategy 2	AWHONN Go the Full 40 Campaign (toolkit, grand rounds slide deck, and multiple patient downloads and infographics)		•	http://www.health4mom.org/nurses-resources
Part 3 ~ Strategy 2	Childbirth Connection Resources for Induction of Labor		•	http://www.childbirthconnection.org/giving-birth/labor-induction/
Part 3 ~ Strategy 2	AHRQ - Thinking about Having Your Labor Induced? A Guide for Pregnant Women		•	http://www.effectivehealthcare.ahrq.gov/ehc/products/135/353/induction%20of%20labor%20consumer%20guide.pdf

LABOR MANAGEMENT – FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 3 ~ Strategy 2	Pre-cesarean Checklist for Labor Dystocia or Failed Induction (adapted with permission from Miller Children’s and Women’s Hospital)	•		Appendix J
Part 3 ~ Strategy 2	Labor Dystocia Checklist	•		Appendix K
Part 3 ~ Strategy 2	Labor Duration Guidelines (adapted with permission from Zuckerberg San Francisco General Hospital)	•		Appendix L
Part 3 ~ Strategy 2	Spontaneous Labor Algorithm (adapted with permission from Washington State Hospital Association)	•		Appendix M
Part 3 ~ Strategy 2	Algorithm for Management of the Second Stage Labor	•		Appendix N
Part 3 ~ Strategy 2	Northern New England Perinatal Quality Improvement Network – Second Stage Management Guideline		•	http://www.nnepqin.org/Guidelines.asp#tabs-14

Appendix D

Tools by Topic

Part 3 ~ Strategy 2	Active Labor Partogram (adapted with permission from Swedish Medical Center)	•		Appendix O
Part 3 ~ Strategy 2	Washington State Hospital Association Safe Deliveries Roadmap - Best Practice Bundles (Labor Management Bundle includes criteria for delayed admission, algorithm and checklist for spontaneous labor, and many more labor tools)		•	http://www.wsha.org/quality-safety/projects/safe-deliveries/

LABOR SUPPORT AND SUPPORT INFRASTRUCTURE - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 2 ~ Strategy 3	AWHONN - High Touch Nursing Care During Labor Series		•	http://injoyvideos.com/high-touch-nursing-care-during-labor.html
Part 2 ~ Strategy 3	ACNM Healthy Birth Initiative – Reducing Primary Cesareans – Promoting Comfort in Labor Bundle		•	http://birthtools.org/birthtools/files/BirthToolFiles/FILE-NAME/00000000090/Bundle-Promoting-Comfort-v2.pdf
Part 2 ~ Strategy 3	Lamaze International - Labor Support Workshop for Nurses		•	http://www.lamazeinternational.org/Evidence-BasedNursing
Part 2 ~ Strategy 3	40 Ways to Help a Laboring Woman (You Tube)		•	https://www.youtube.com/watch?v=SIIZkEyLBeU
Part 2 ~ Strategy 3	Labor Positions (You Tube)		•	https://www.youtube.com/watch?v=heswj-Hw5TU
Part 2 ~ Strategy 3	Birth Positions for Natural Birth (You Tube)		•	https://www.youtube.com/watch?v=r2al2WtHJ_0
Part 2 ~ Strategy 3	Birth Positions Pushing with Epidural (You Tube)		•	https://www.youtube.com/watch?v=tn8H5JV3lec
Part 2 ~ Strategy 3	Journal of Obstetric, Gynecologic, and Neonatal Nursing - A Practical Approach to Labor Support		•	http://www.jognn.org/article/S0884-2175(15)33715-1/pdf (login required)
Part 2 ~ Strategy 3	InJoy Productions - Positions For Labor Reference Guide		•	http://injoyvideos.com/media/wysiwyg/pdfs/guidesandhandouts/PositionsForLabor-FacilitatorsGuide.pdf
Part 2 ~ Strategy 3	Childbirth Connection - Hormonal Physiology of Childbirth Fact Sheet Bundle		•	http://www.nationalpartnership.org/research-library/maternal-health/hormonal-physiology-of-childbearing-all-fact-sheets.pdf
Part 2 ~ Strategy 3	Freedom of Movement Policy		•	Model Policies - Appendix T
Part 2 ~ Strategy 3	How to Become Mother-Friendly: Policies and Procedures for Hospitals, Birth Centers and Home Birth Services		•	http://www.springerpub.com/how-to-become-mother-friendly.html

LABOR SUPPORT - FOR PATIENTS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 2 ~ Strategy 3	Queensland Centre for Mothers and Babies - Choosing Your Positions During Labour and Birth: A Decision Aid for Women Having a Vaginal Birth			http://www.birthtools.org/birthtools/files/BirthToolFiles/FILENAME/000000000095/ChoosingPositions-LaborAndBirth.pdf
Part 2 ~ Strategy 3	InJoy Productions - Positions For Labor Reference Guide		•	http://injoyvideos.com/media/wysiwyg/pdfs/guidesandhandouts/PositionsForLabor-FacilitatorsGuide.pdf
Part 2 ~ Strategy 3	Childbirth Connection and Penny Simkin – Comfort in Labor: How You Can Help Yourself to a Normal Satisfying Childbirth		•	http://www.nationalpartnership.org/research-library/maternal-health/comfort-in-labor-simkin.pdf
Part 2 ~ Strategy 3	Childbirth Connection – Resources for Labor Support		•	http://www.childbirthconnection.org/giving-birth/labor-support/
Part 2 ~ Strategy 3	ACNM– Share With Women -Pushing Your Baby Out		•	http://onlinelibrary.wiley.com/doi/10.1111/j.1542-2011.2011.00145.x/pdf

MALPOSITION - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 3 ~ Strategy 4	Second Stage Management of Malposition	•		Appendix G
Part 3 ~ Strategy 4	Spinning Babies: Easier Birth with Fetal Positioning (educational website for the prevention and treatment of malposition through maternal positioning; also includes workshops and events)		•	http://spinningbabies.com

LIABILITY - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 3 ~ Strategy 7	Childbirth Connection - Maternity Care and Liability Fact Sheets		•	http://transform.childbirthconnection.org/wp-content/uploads/2013/01/Liability-Fact-Sheets.pdf

NON-MEDICALLY INDICATED (ELECTIVE) CESAREAN - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
	Informed Consent for Elective Cesarean (adapted with permission from Hoag Hospital)	•		Appendix I

OXYTOCIN - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 3 ~ Strategy 2	ACOG- Optimizing Protocols in Obstetrics: Oxytocin for Induction of Labor (includes model policies for safe use of oxytocin and the Hospital Corporation of America's pre-oxytocin and in-use checklists)		•	http://mail.ny.acog.org/website/OxytocinForInduction.pdf
Part 3 ~ Strategy 2	NNEPQIN Model Policy for Use of Oxytocin		•	http://www.nnepqin.org/documentUpload/22._Guideline_for_the_Use_of_Oxytocin_FINAL_2012.12.12.pdf

Appendix D

Tools by Topic

PAIN ASSESSMENT AND MANAGEMENT - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 2 ~ Strategy 3	University of Utah - Coping with Labor Algorithm		•	Appendix F
Part 2 ~ Strategy 3	Model Policy for Pain Assessment and Management – Marin General Hospital		•	Model Policies – Appendix T

PAIN MANAGEMENT - FOR PATIENTS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 2 ~ Strategy 3	Childbirth Connection – Options: Labor Pain		•	http://www.childbirthconnection.org/giving-birth/labor-pain/
Part 2 ~ Strategy 3	ACNM - Share With Women – Pain During Labor		•	http://onlinelibrary.wiley.com/doi/10.1016/j.jmwh.2004.08.027/pdf

PAYMENT REFORM - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 1 ~ Strategy 5	Health Care Incentives Improvement Institute – Prometheus Payment Implementation Toolkit		•	http://www.hci3.org/prometheus_implementation_toolkit
Part 1 ~ Strategy 5	Health Care Incentives Improvement Institute - Prometheus Payment Fact Sheet		•	http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2009/rwjf41603
Part 1 ~ Strategy 5	Center for Healthcare Quality and Payment Reform - Guide to Physician-focused Alternative Payment Methods		•	http://www.chqpr.org/downloads/Physician-FocusedAlternativePaymentModels.pdf
Part 1 ~ Strategy 5	Center for Healthcare Quality and Payment Reform - A Better Way to Pay for Maternity Care Fact Sheet		•	http://www.nationalpartnership.org/research-library/maternal-health/nac/nac_resource_miller_2015.pdf
Part 1 ~ Strategy 5	Center for Healthcare Quality and Payment Reform Slide Deck - How Payment Reform Can Lower Costs and Improve Quality (slide deck)		•	http://www.chqpr.org/downloads/MaternityCarePaymentReform2012.pdf
Part 1 ~ Strategy 5	Center for Healthcare Quality and Payment Reform - Win –Win –Win Approaches to Maternity Care (slide deck)		•	http://www.chqpr.org/downloads/HaroldMiller_MaternityCarePayment_03-25-15.pdf

PERFORMANCE MEASURES - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 4	Performance Measures Used to Assess Cesarean Birth	•		Appendix H

PRENATAL CARE - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 1 ~ Strategy 1	The Centering Healthcare Institute - Centering Pregnancy® Model		•	www.centeringhealthcare.org/what-we-do/centering-pregnancy

TEAMWORK AND COMMUNICATION - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 3 ~ Strategy 1	AHRQ TeamSTEPPS® (strategies and tools to enhance team performance and patient safety)		•	http://www.ahrq.gov/professionals/education/curriculum-tools/teamstepps/index.html
Part 3 ~ Strategy 1	Institute for Health Care Improvement - How-to Guide Deploy Rapid Response Teams		•	http://www.ihc.org/resources/Pages/Tools/HowtoGuideDeployRapidResponseTeams.aspx

TRANSFER OF CARE FROM OUT-OF-HOSPITAL BIRTH ENVIRONMENT - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 3 ~ Strategy 6	Homebirthsummit.org - Best Practice Guidelines -Transfer from Planned Home Birth to Hospital		•	http://www.homebirthsummit.org/wp-content/uploads/2014/03/HomeBirthSummit_BestPracticeTransferGuidelines.pdf

SHARED DECISION MAKING - FOR PROVIDERS AND HOSPITALS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 1 ~ Strategy 2	AHRQ SHARE Approach for Shared Decision Making		•	http://www.ahrq.gov/professionals/education/curriculum-tools/shareddecisionmaking/index.html
Part 1 ~ Strategy 2	AHRQ SHARE Approach Quick Reference Poster		•	http://www.ahrq.gov/sites/default/files/wysiwyg/professionals/education/curriculum-tools/shareddecisionmaking/tools/shareposter/shareposter.pdf
Part 1 ~ Strategy 2	Maternity Neighborhood White Paper -Activation, Engagement, and Shared Decision Making		•	http://maternityneighborhood.com/whitepapers/activation-engagement-shared-decision-making
Part 1 ~ Strategy 2	CMQCC Birth Preferences Guide (Birth Plan)	•		Appendix E

SHARED DECISION MAKING - FOR PATIENTS

Strategy#	Name of Tool	CMQCC Tool	External Tool	Location
Part 1 ~ Strategy 2	CMQCC Birth Preferences Guide (Birth Plan)	•		Appendix E
Part 1 ~ Strategy 2	AHRQ Know Your Questions Infographic		•	http://www.ahrq.gov/sites/default/files/publications/files/optionsposter.pdf

My Preferences for Labor and Birth: A Plan to Guide Decision Making and Inform My Care Team

Your Name and Date of Birth:

Your Due date:

Physician/Midwife:

Pediatrician/Family Doctor:

Your Labor Support Team (please include partner, doula, friends, relatives, or children who will be present):

Some of your decisions before and during childbirth may affect your risk of cesarean. These decisions are best made in collaboration with your provider during prenatal care visits, well in advance of the time of birth. Here are some common decision points:

- whether to wait for labor to begin on its own (induction of labor may increase your risk of cesarean)
- whether to be admitted to the hospital in early labor or to wait until active labor (being admitted in active labor improves your chances of having a vaginal birth)
- how to monitor your baby's fetal heart rate (low-risk women who are continuously monitored may be more likely to have a cesarean)
- whether to have continuous labor support by a trained caregiver like a doula (continuous labor support improves your chances of having a vaginal birth)
- how to help manage labor pain and labor progress
- how to stay hydrated and maintain stamina (strength) during labor
- whether to remain mobile and upright during labor
- how to push around the time of birth
- what practices to engage in shortly after your baby is born and before you go home

While low-risk women will need very little intervention, women with certain medical conditions may need procedures, such as continuous monitoring or induction of labor, to improve safety and ensure a healthy delivery. Your provider can tell you about the benefits, risks and alternatives of the decisions you may face during labor and birth. This is an opportunity to share your values and preferences and make informed decisions together, based on your specific needs. This form should go with you to the hospital to be shared with your care team and reviewed as labor progresses.

Environment:

Which options will make you most comfortable?

- _____ I would like to limit the number of guests in my room while I am in labor by having a sign posted on the door to my labor and delivery room
- _____ I would like to have the lights dimmed during labor
- _____ I plan to bring in music from home (my own MP3 player, CD player, etc.)
- _____ I plan to bring in essential oils/aromatherapy (no flames, please).
- _____ I plan to bring in a "focal point" from home

Preferences for Food and Fluids

- _____ I prefer to keep myself hydrated by drinking fluids. I would like to avoid intravenous fluids unless it is medically necessary
- _____ I do not mind receiving intravenous hydration during labor
- _____ If it is safe for me to do so, I would like to eat lightly during labor

Labor Preferences

- _____ If safe to do so, I prefer to labor at home during the early phase of labor, and be admitted to the hospital when I am in active labor
- _____ I would like to have freedom of movement while I am in labor (walking, standing, sitting, kneeling, using the birth ball, etc.), if safe and possible
- _____ I prefer to move around or change positions to improve my labor progress before trying Pitocin to increase my labor progress
- _____ If labor is progressing normally, I prefer to be patient and let it proceed on its own without Pitocin to speed it up
- _____ I would prefer to wait for the amniotic membrane (bag of waters) to rupture spontaneously. If the need to have my water broken arises, please discuss this with me before breaking my water
- _____ I would like to have my IV capped off (saline locked) so that I am free to move around during labor

Preferences for Managing Pain

- I would like to have the option to use hydrotherapy (shower, or tub if available) for pain relief
- I prefer natural childbirth (no pain medications or epidural)
- Please do not offer me any sort of pain medications. If I decide to use pain medication or an epidural, I will ask for them
- I plan to use intravenous pain medication (pain medication through my IV) to cope with the pain of labor and birth
- I plan to use an epidural in active labor to cope with the pain of labor and birth
- I am considering using IV pain medication and/or or having an epidural, but will decide when I am actually in labor

Preferences for Monitoring the Baby:

- I prefer to have my baby monitored intermittently (not continuous monitoring)
- I prefer to monitor my baby continuously (I understand this may limit my movement and may keep me in bed during labor)
- If my baby needs to be continuously monitored, I prefer a portable monitor (if available, and if my condition permits me to move freely)

Preferences for Cervical Examination:

- I prefer as few cervical exams as possible
- If safe to do so, and my bag of water is not broken, I prefer to check dilation regularly so I know how labor is progressing

Birth Preferences

- I would like to push in a position of my choosing (squatting, kneeling, side lying, lithotomy, etc.)
- I want to avoid an episiotomy if possible
- I would like to use a mirror to view the birth of my baby
- I would like _____ to cut the umbilical cord
- I would like my baby placed directly on my chest right after birth
- If safe and possible, I would like to have delayed clamping and cutting of the umbilical cord
- I am planning to bank my baby's cord blood
- I would like to take my placenta home with me

Cesarean Birth Preferences

Our goal for every woman is to have a healthy vaginal birth. If a cesarean birth is necessary, we will continue to consider your preferences as much as possible throughout your stay. Sometimes, emergency situations necessitate a rapid conversation about risks and benefits of cesarean birth. We encourage your participation in the decision for cesarean birth.

- I would like my partner to stay with me at all times
- If possible, I would like to bring another support person with me into the operating room in addition to my partner. My other support person is _____
- I would like to ask my anesthesiologist if the screen could be lowered so that I can watch the birth of my baby
- If my anesthesiologist determines that it is safe and possible, I would like to have an arm left free so that I can touch my baby
- I would like to have my partner or support person cut (shorten) the umbilical cord
- I would like my baby placed skin-to-skin with me in the operating room if we are both doing well
- I would like to hold my baby skin-to-skin during the recovery period

Newborn Care Preferences

- I would like all newborn procedures and medications explained to me before they are carried out or administered by the staff
- If my baby needs to leave my side for any reason, I would like _____ to accompany my baby, and to remain present for all procedures
- I would like to be present for my baby's first bath
- I plan to exclusively breastfeed my baby
- I may have questions about breastfeeding or need help getting off to a good start
- If my baby needs formula for a medical reason, I would like to be informed first
- If my baby requires ongoing supplementation, I would like help from a lactation nurse in learning how to hand express or pump my own milk for my baby
- If I have a boy, I plan to have him circumcised

Appendix E

Birth Preferences Guide

What is most important to you during labor and birth (your biggest goals or priorities)?

Please let us know if you have any religious or cultural practices/traditions that are important to you during childbirth, and what we can do to accommodate these needs.

Please describe any additional preferences, concerns about labor and birth, specific fears, or other information that will help us provide the best possible care to meet your individual needs.

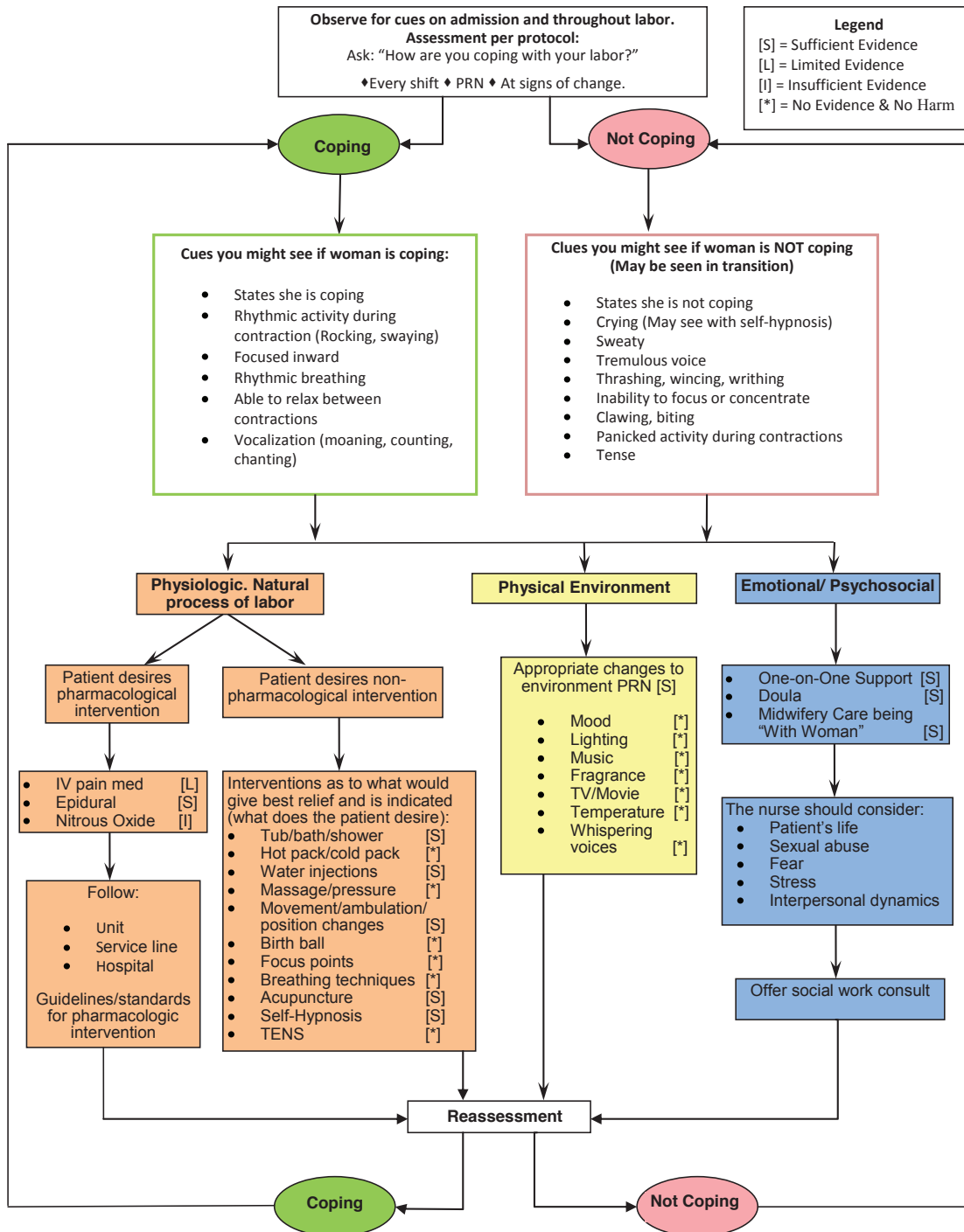
Signatures

I have talked about and shared my labor and birth preferences with my provider during prenatal care visits, and both of us understand it. I recognize that my preferences and wishes may not be followed just as written and may need to change if medical needs arise in order to ensure a safe and healthy birth for my baby and me.

Health care provider's signature: _____ Date: _____

My signature: _____ Date: _____

Coping with Labor Algorithm v2 ©



Copyright © University of Utah College of Nursing and University of Utah Hospital & Clinics
 leissa.roberts@nurs.utah.edu. Used with Permission.

Second Stage Management of Malposition

I. Identification of malposition during labor is an important aspect of preventing cesarean:

Although the mother's report of back pain or "back labor" is thought to be a reliable indicator of occiput posterior position, this is not supported by the literature.¹ When any woman experiences a prolonged second stage of labor, even in the absence of back pain, malposition must be considered.²

First, assess fetal lie/position/presentation with Leopold's and visual examination. Leopold's maneuvers are a four-step approach which, when performed by an experienced examiner, may assist in identification of the malpositioned fetus. In particular with the second maneuver, when fetal small parts are palpated more easily anteriorly than the more firm fetal back (which in OA position will be on either right or left maternal side) OP presentation can be suspected.^{3,4} The maternal abdomen that is scaphoid in the lower part may also indicate OP position, as the fetal back is more proximal to the mother's back and the small parts in the anterior abdomen result in the appearance of a "dip." Limitations of Leopold's maneuvers and abdominal examination to assess for possible malposition are provider experience and the maternal habitus.

Auscultation of the fetal heart with placement of the electronic fetal monitor transducer at either the extreme maternal lower left or right side rather than in the right or left lower quadrant may also indicate OP or OT position e.g. if placed on the extreme maternal right side, then fetus may be ROP or ROT.

When OP or OT is suspected, findings of the digital examination may reveal:

- For OP, the larger diamond [anterior] fontanelle in the right or left upper pelvic quadrants and/or the smaller triangle [posterior] fontanelle in the right or left lower pelvic quadrants. In OT presentation the sagittal suture is palpated horizontally. If the posterior fontanelle is on the mother's right, the position is either ROP or ROT, and if the posterior fontanelle is on the mother's left, then the fetus is LOP or LOT.
- Caput related to sub-optimal fit of the malpositioned fetus, which may obscure suture and fontanelle landmarks. Adding to the difficulty is that the OP fetus is not as well-flexed as the OA fetus. Sub-optimal flexion of the OP fetus may result in the anterior fontanelle being more easily identified than the posterior one and may result in an incorrect assessment that the fetus is in OA position instead of OP.^{5,6}

- A persistent anterior cervical lip suggesting that the narrower anterior sinicuput of the OP fetus is unable to keep the cervix retracted in the fore pelvis. Note: this finding may also be present when the fetal position is asynclitic.⁷
- Palpation of the helix of the fetal ear.⁸ As the examiner usually must insert much of the hand to find the ear, this examination is very uncomfortable for the mother who does not have regional anesthesia.

Intrapartum ultrasound is the most accurate approach to identify the malpositioned fetus. Although accuracy of digital examination is greater in second stage than in first stage of labor, studies in second stage have reported digital examination error rates of 26% to 39% compared to the "gold standard" of abdominal ultrasound.^{9,11} It is highly recommended to utilize ultrasound to confirm malposition if malposition is suspected.

II. When malposition is identified, strategies should consider the five Ps: "powers," "passenger," "passage" (pelvis and soft tissues), "position" (maternal), and "psyche"

Powers – By second stage, nursing and provider interventions must ensure that labor contractions and maternal efforts are adequate to facilitate the fetus' pelvic descent and cardinal movements (rotations).^{3,5}

Passenger – The prolongation of the second stage of labor associated with OP/OT positions is due to increased fetal diameters associated with the less well-flexed head. Cardinal movements associated with OP/OT are: a) the fetus rotates to the OA position at some point during labor and delivers readily by flexion and extension; b) if rotation to OA does not occur, the suboptimal flexion associated with OP position prolongs the descent until the vertex finally flexes anteriorly on the perineum after which fetal head extends to effect the birth; or c) if the OT fetus does not rotate to an OP or OA position there will be a deep transverse arrest and the fetus will not likely deliver vaginally without operative assistance.^{3,5}

Second Stage Management of Malposition

Passage – Maternal risk factors for malposition include primiparity and pelvic shape.

- Primiparity- The tauter, untested pelvic passage in women having their first vaginal birth may diminish the fetus' ability to rotate to the more favorable OA position. Compared to multigravidas, primiparas are not only more likely to have a malpositioned fetus at the onset of labor but are also less likely to achieve spontaneous vaginal delivery with persistent OP position.¹²
- Pelvis – The wider posterior aspects of the anthropoid (oval) and android (heart-shaped) pelvic types are more likely to hold the fetus in OP position.⁵ It is beneficial to ask the woman if her mother or if she has ever had a baby that was born “sunny side up” or “looking at the ceiling”. If so, this may add to your suspicion that she has an anthropoid or android pelvis that is more likely to hold the fetus in an OP position.

Position and Psyche – noted in “strategies” below.

III. Strategies:

- Prevent malposition by avoiding routine early amniotomy
 - Amniotomy prior to 5 cm eliminates the cushion of the fore waters which allow for fetal repositioning and results in more non-reassuring fetal heart rate patterns.¹³
- Promote rotation to the more favorable OA position through maternal /fetal positioning
 - When the mother is positioned in the lateral Sims position on the same side as the fetal back e.g. right Sims with ROP fetus, rotation to OA is theoretically more likely. Conversely, when the fetus is on its back with its head towards the mother's side (lateral) or towards the mother's back (posterior), the labor may be longer and more painful.^{14,17} If it is unclear whether the fetus is malpositioned during a prolonged second stage, maternal position changes every five to six contractions may facilitate rotation to OA.¹⁴
 - Hands and knees position during pregnancy cannot be recommended as an intervention to rotate the occiput posterior/occiput transverse fetus.¹⁸ However, it should be considered if the mother finds it comfortable as the use of hand/knees position in labor is associated with reduced backache.¹⁹
 - Utilize techniques to expand and change the shape of the pelvis e.g. pelvic press, lunges. Refer to Simkin P, Ancheta R “The labor progress toolkit: Part 1. Maternal positions and movements” for detailed instructions, figures, and indications.¹⁴

- Digital/manual rotation of the fetus from the OP position to the OA position decreases cesarean delivery and other complications associated with persistent OP position: severe perineal lacerations, hemorrhage, and chorioamnionitis.²⁰ Rotation attempts are advocated in early to mid-second stage of labor.^{6,21,22} Shaffer and colleagues reported that four attempted rotations were necessary to avert one cesarean and that women with unsuccessful rotations were at greater risk for cervical laceration.²⁰ Refer to Barth “Persistent occiput posterior” for an excellent resource with detailed instructions and figures.⁶ Alternatively, an accessible online quick guide to manual rotation exists in Table 3 of Cargill Y, MacKinnon C “SOGC: clinical practice guidelines.”²³

- Instrumental rotation is a safe alternative to manual rotation for appropriate candidates when performed by a skilled, experienced physician.^{5,8,24}

- Promote progress when malposition persists

- Epidural anesthesia and timing of epidural - It is not completely clear if epidural anesthesia predisposes to persistent malposition or if the prolonged labor/increased discomfort associated with the malpositioned fetus increases the need for regional anesthesia. While there is no evidence to suggest that regional anesthesia causes malposition, the preponderance of the evidence suggests that mothers with epidurals are up to four times as likely to have an OP fetus than women without epidurals.^{25,26} Evidence also suggests that delaying epidural placement to later in labor (> 5 cm dilatation or > 0 station)^{26,27} results in fewer persistent malpositions. The current recommendation for timing of regional anesthesia during labor does not require that women reach an arbitrary cervical dilation before placing an epidural. As such, since women with epidural anesthesia do not change their positions in response to their sensations of discomfort as do women without regional anesthesia, caregivers should change the patient's position at least every 20 minutes to maximize fetal accommodation to a more favorable position.⁷

- Psyche - Support measures for the mother who is fatigued and doubts her ability to birth vaginally are critical at this juncture. Family or professional support persons (doula, montrices) are as important as medical personnel to stave off an unnecessary cesarean.²⁸ If the fetus demonstrates health, a sip of liquid with some glucose (juice, Gatorade) will give her a burst of energy to continue to run the “bell lap.”²⁹ Support persons should be apprised of the mother's progress so that they can continue to cheer her on.

–Pushing positions - For the persistently OP fetus, the doula, nurse, and provider should consider the most effective positions for pushing and the “drive angle” of the occiput relative to the maternal bony pelvis.⁷ Forward-leaning, non-dorsal pushing positions are recommended for persistent malposition. These include various squatting positions (e.g. with a squat bar or with support from the woman’s partner or doula), and forward-leaning positions while sitting (e.g. on the toilet), kneeling, or standing.⁷ For the OP fetus, when the most common modern-day pushing position is employed (the lithotomy position with “chin-to-chest”), the anterior sinciput is obstructed, gravity is not utilized, and significantly longer pushing times often result. If or when lithotomy position is used, exaggerated lithotomy (also known the back-lying squat, or the McRoberts Position used for shoulder dystocia), with the woman’s head flat on the bed, and buttocks slightly lifted, can expand the fore pelvis sufficiently that the anterior sinciput of the OP fetus can more easily swing under the symphysis pubis.^{14,30}

• “Tincture of time” is important when incremental descent is observed in second stage.³¹ Patience is of the essence when fetus and mother demonstrate resilience. Optimal evidence of progress (or lack thereof) is best ascertained when the same clinician monitors the fetal descent in second stage.^{3,24}

IV. References

- Lieberman E, Davidson K, Lee-Parritz A, Shearer E. Changes in fetal position during labor and their association with epidural analgesia. *Obstet Gynecol.* 2005;105(5 Pt 1):974-982.
- Simkin P. The fetal occiput posterior position: state of the science and a new perspective. *Birth.* 2010;37(1):61-71.
- King T, Brucker M, Kriebs J, Fahey J, Gegor C, Varney H. *Varney’s Midwifery.* 5th ed. Sudbury, MA: Jones and Bartlett; 2013.
- Simkin P, Ancheta R. Assessing progress in labor. In: Simkin P, Ancheta R, eds. *The Labor Progress Handbook.* 3rd ed. West Sussex: United Kingdom: Wiley - Blackwell; 2011:51-100.
- Posner GD, Dy J, Black AY, Jones GD. *Oxorn-Foote: Human Labor & Birth* 6th ed. China: McGraw Hill Companies Inc.; 2013.
- Barth WH. Persistent occiput posterior. *Obstet Gynecol.* 2015;125(3):695-709.
- Simkin P, Ancheta R. Prolonged second stage of labor. In: Simkin P, Ancheta R, eds. *The Labor Progress Handbook.* 3rd ed. West Sussex: United Kingdom: Wiley - Blackwell; 2011:173-273.
- Stitely ML, Gherman RB. Labor with abnormal presentation and position. *Obstet Gynecol Clin N Am.* 2005;32 (165- 179).
- Akmal S, Kametas N, Tsoi E, Hargreaves C, Nicolaides KH. Comparison of transvaginal digital examination with intrapartum sonography to determine fetal head position before instrumental delivery. *Ultrasound Obstet Gynecol.* 2003;21:437-440.
- Sherer DM, Miodovnik M, Bradley K, Langer O. Intrapartum fetal head position II: comparison between transvaginal digital examination and transabdominal ultrasound assessment during the second stage of labor. *Ultrasound Obstet Gynecol.* 2002;19:264-268.
- Dupuis O, Ruimark S, Corinne D, Simone T, André D, René-Charles R. Fetal head position during the second stage of labor: comparison of digital vaginal examination and transabdominal ultrasonographic examination. *Eur J Obstet Gynecol Reprod Biol.* 2005;123(2):193-197.
- Gardberg M, Leonova Y, Laakkonen E. Malpresentations – impact on mode of delivery. *Acta Obstetrica et Gynecologica Scandinavica.* 2011;90(5):540-542.
- Smyth RM, Alldred SK, Markham C. *Amniotomy for shortening spontaneous labour (Review).* Vol 1: Wiley & Sons, Ltd.; 2013.
- Simkin P, Ancheta R. The labor progress toolkit: Part 1. Maternal positions and movements. In: Simkin P, Ancheta R, eds. *The Labor Progress Handbook.* 3rd ed. West Sussex: United Kingdom: Wiley - Blackwell; 2011:277-325.
- Ridley RT. Diagnosis and intervention for occiput posterior malposition. *J Obstet Gynecol Neonatal Nurs.* 2007;36:135-143.
- Wu J, Fan L, Wang Q. Correction of occipito-posterior by maternal postures during the process of labour. *Chinese Journal of Obstetrics and Gynecology.* 2001;36:468-469.
- Ou X, Chen X, Su J. Correction of occipito-posterior position by maternal posture during the process of labor. *Chinese Journal of Obstetrics and Gynecology.* 1997;32:329-332.
- American College of Obstetrics and Gynecology, Society for Maternal-Fetal Medicine. *Obstetric care consensus no. 1: safe prevention of the primary cesarean delivery.* *Obstet Gynecol.* 2014;123(3):693-711.

Second Stage Management of Malposition

19. Hunter S, Hofmeyr G, Kulier R. Hands and knees posture in late pregnancy or labour for fetal malposition (lateral or posterior) (Review). Vol 4: JohnWiley & Sons, Ltd.; 2009.
20. Shaffer BL, Cheng YW, Vargas JE, Caughey AB. Manual rotation to reduce caesarean delivery in persistent occiput posterior or transverse position. *J Matern Fetal Neonatal Med.* 2011;24(1):65-72.
21. Simkin P, Ancheta R. Low technology clinical interventions. In: Simkin P, Ancheta R, eds. *The Labor Progress Handbook*. 3rd ed. West Sussex: United Kingdom: Wiley - Blackwell; 2011:242-276.
22. Carseldine WJ, Phipps H, Zawada SF, et al. Does occiput posterior position in the second stage of labour increase the operative delivery rate? *Aust N Z J Obstet Gynaecol.* 2013; 53:265-270.
23. Cargill Y, MacKinnon C. SOGC clinical practice guidelines: guidelines for operative vaginal birth. <http://sogc.org/wp-content/uploads/2013/01/148E-CPG-August2004.pdf>. Published August 2004. Accessed January 20, 2016.
24. Cunningham F, Leveno K, Bloom S, Hauth J, Spong C, Dashe J. *Williams Obstetrics* 24th ed. New York: McGraw-Hill Professional Publishing 2014.
25. Cheng YW, Shaffer BL, Caughey AB. Associated factors and outcomes of persistent occiput posterior position: A retrospective cohort study from 1976 to 2001. *J Matern Fetal Neonatal Med.* 2006;19(9):563-568.
26. Lieberman E, Davidson K, Lee-Parritz A, et al. Changes in fetal position in labor and their association with epidural anesthesia. *Obstet Gynecol.* 2005;105(5 Pt 1):974-982.
27. Robinson CA, Macones GA, Roth NW, et al. Does station of the fetal head at epidural placement affect the position of the fetal vertex at delivery? *Am J Obstet Gynecol.* 1996;175(4 Pt 1):991-994.
28. Hodnett ED, Lowe NK, Hannah ME, et al. Effectiveness of nurses as providers of birth labor support in North American hospitals: A randomized controlled trial. *JAMA.* 2002;288(11):1373-1381.
29. Rahmani R, Khakbazan Z, Yavari P, Granmayeh M, Yavari L. Effect of oral carbohydrate intake on labor progress: Randomized controlled trial. *Iran J Public Health.* 2012;41(11):59-66.
30. Gherman RB, Tramount J, Muffley P, Goodwin T. Analysis of McRoberts maneuver by x-ray pelvimetry. *Obstet Gynecol.* 2000;95(1):43-47.
31. Caughey AB. Can we safely reduce primary cesareans with greater patience? *Birth.* 2014;41(3):217-219.

Appendix H

Performance Measures Used To Assess Cesarean Births (Jan 2016)

Recommended Measures in Yellow

Measure	Source/ Supporting Organization(s)	Specifications for Denominator (Numerator for each is: "Among the denominator, those with a cesarean delivery")	Strengths	Limitations (including data quality issues)	Utility
Total Cesarean Rate	•Traditional	All mothers giving birth ≥ 20 weeks gestation	Easy to collect using either Discharge Diagnosis or Birth Certificate Files	Includes repeat CS and mixes CS rates for nulliparous with multiparous women (all of which occur at significantly different rates among hospitals)	Used for general population surveillance, but distorts hospital level comparisons because of lack of risk adjustment
Primary Cesarean Rate	•Traditional	All mothers giving birth ≥ 20 weeks gestation without a prior cesarean birth	Easy to collect using either Discharge Diagnosis or Birth Certificate Files	Mixes CS rates for nulliparous with multiparous women (which occur at significantly different frequencies among hospitals and have very different CS rates) and includes CS for breeches and twin gestations. Some hospitals don't code prior CS well so that repeat CS can end up in the primary rate	Used for general population surveillance, but distorts hospital level comparisons because of lack of risk adjustment and as it includes both nullips and multiples is very dependent on the proportion of nullips at the hospitals
Repeat Cesarean Rate	•Traditional	All mothers giving birth ≥ 20 weeks gestation who had at least one prior cesarean birth	Focused on women with prior cesareans	Some hospitals don't code prior CS well so that repeat CS can end up in the primary rate	Reverse of VBAC (Vaginal birth after Cesarean) rate, either one is useful. The rate of VBAC or repeat CS is often driven by medical-liability concerns
Standard Nullip aka, Low-risk First-birth (NTSV or Nulliparous, Term, Singleton, Vertex) Cesarean Rate	•NQF: #0471 •TJC: PC-02 •Leap Frog Group •CMS/CHPRA •ACOG •HP2010/2020 •NCHS	All mothers giving birth ≥ 20 weeks gestation who were Para=0 (nulliparous), At term (≥37 wks), singleton and presenting with a vertex (cephalic) presentation	Creates a standardized nullip population rate that can better compare hospitals. Excludes common conditions with very high CS rates such as breech, twins and prior CS. Concentrating on first births allows focus on labor management, the major issue for QI. NCHS also reports this measure for every state	Requires either Birth Certificate file or a hospital database that records parity (hospital discharge data does not capture parity). This excludes the possibility for calculation using claims data unless linked to the Birth Certificate. The name of "Low-risk" raises questions as the specifications clearly do not exclude all high risk conditions—"Standard nullip" is a much better descriptor	Important for other organizations to adopt to promote harmonization as every hospital that belongs to the Joint Commission with >300 annual births will be reporting this measure. Allows QI efforts to better focus on labor issues
Cesarean Delivery Rate (Term, Singleton, Vertex)	•AHRQ: IQI 21	All mothers giving birth ≥ 20 weeks gestation who were ANY parity, at term (≥37 wks), singleton and presenting with a vertex (cephalic) presentation (using ICD9 codes)	Easy to collect using Discharge Diagnosis Files	Mixes CS rates for nulliparous with multiparous women who have 5-8x lower CS rates than nulliparous women and nulliparous women have wide variation in frequency among hospitals (20-55%). Very high correlation with Total CS rate	Can give widely different results than NTSV CS because multip CS rates are so much lower than nullips'. Therefore the TSV rate is heavily dependent on the proportion of multiples to nullips at the hospital
Primary Cesarean Delivery Rate (Term, Singleton, Vertex, no prior cesarean births)	•AHRQ: IQI 33	All mothers giving birth ≥ 20 weeks gestation who were ANY parity, at term (≥37 wks), singleton and presenting with a vertex (cephalic) presentation (using ICD9 codes) and no code for a prior Cesarean birth	Easy to collect using Discharge Diagnosis Files	Mixes CS rates for nulliparous with multiparous women who have 5-8x lower CS rates than nulliparous women and nulliparous women have wide variation in their frequency among hospitals (20-55%). Very high correlation with Primary CS rates. It is also dependent on coding for the prior CS (which can easily be missed) and therefore at risk for falsely including mothers having a repeat CS	Can give widely different results than NTSV CS because multip CS rates are so much lower than nullips'. Therefore the TSV rate is heavily dependent on the proportion of multiples to nullips at the hospital

General Comments for Cesarean Birth Measures

1. Note that the denominators are always mother-based and not baby-based. This prevents double or triple counting (or more) for multiple gestations. If using Birth Certificates (a baby-based data system), a common short cut is to restrict the population to the first birth of a multiple gestation. This will miss a tiny number of cases where the first baby in a multiple gestation was a vaginal birth and a subsequent baby was a cesarean delivery). By design, this is not an issue for NTSV CS as multiple gestations are excluded.

2. Additional factors that can affect the risk for CS for individuals include: maternal age, BMI, weight gain during pregnancy, fetal weight, race, maternal

diabetes and HTN. Two large studies have suggested that these factors are less important for hospital-level rates for two reasons: (1) Age and weight appear to occur in inverse frequencies in hospital populations (high maternal age first mothers are generally thinner), thus often cancelling out their effects; (2) the frequency of pre-gestational diabetes and severe HTN are low and not particularly mal-distributed. Furthermore, most major pregnancy-related indications for primary CS such as placenta previa or severe preeclampsia are much more likely to occur before 37 weeks or in multiples (and hence be excluded). Correspondingly, the studies noted that fuller risk-adjustment models did not add appreciably to NTSV.

Performance Measures Used To Assess Vaginal Births (Jan 2016)

Recommended Measures in Yellow

Measure	Source/ Supporting Organization(s)	Specifications for Denominator and Numerator	Strengths	Limitations (including data quality issues)	Utility
Episiotomy Rate	•NQF: #0470 •Leapfrog Group	Denominator: All vaginal delivery discharges Numerator: Among the denominator, cases with an episiotomy ICD-9 procedure code	Easy to collect using Discharge Diagnosis File (ICD-9 Codes)	Not as linked to an outcome (serious injury to the perineum) as we would want	Can be used for general population. More commonly used in nulliparous women but should be low in all groups so that risk adjustment is not needed
3rd/4th Degree Laceration Rate	•Traditional (Note: NQF has withdrawn support for all 3rd/4th laceration metrics)	Denominator: All vaginal delivery discharges Numerator: Among the denominator, cases of 3rd or 4th degree lacerations	Easy to collect using Discharge Diagnosis File (ICD-9/10 Codes)	Ignores major risk factors such as baby size, malposition, maternal race, instrument delivery and most importantly, nulliparity. Also, there is poor consensus on the definition of a partial 3rd degree creating concern over consistency and comparability between facilities	Promoted for use in general population surveillance, but distorts hospital level comparisons because of lack of risk adjustment. Also has been used to promote and increase in CS rates!
3rd/4th Degree Laceration Rate: Obstetric Trauma-- Vaginal Delivery with instrument	•AHRQ: PSI 18	Denominator: All vaginal delivery discharges with any procedure code for instrument-assisted delivery. Numerator: Among the denominator, cases of 3rd or 4th degree lacerations	Easy to collect using Discharge Diagnosis File (ICD-9/10 Codes). Lacerations are much higher with operative vaginal delivery so this addresses one risk factor (but not others)	Ignores major risk factors such as baby size, malposition, maternal race, and most importantly, nulliparity. Also, there is poor consensus on the definition of a partial 3rd degree creating concern over consistency and comparability between facilities	Promoted for use in general population surveillance, but distorts hospital level comparisons because of lack of risk adjustment. Also has been used to promote and increase in CS rates!
3rd/4th Degree Laceration Rate: Obstetric Trauma--Vag- inal Delivery without instrument	•AHRQ: IQI 33	Denominator: All vaginal delivery discharges without any procedure code for instrument- assisted delivery. Numerator: Among the denominator, cases of 3rd or 4th degree lacerations	Easy to collect using Discharge Diagnosis File (ICD-9/10 Codes). Lacerations are much higher with operative vaginal delivery so this addresses one risk factor (but not others)	Ignores major risk factors such as baby size, malposition, maternal race, and most importantly, nulliparity. Also, there is poor consensus on the definition of a partial 3rd degree creating concern over consistency and comparability between facilities	Promoted for use in general population surveillance, but distorts hospital level comparisons because of lack of risk adjustment. Also has been used to promote and increase in CS rates!

Appendix H

Performance Measures Used To Assess Term Neonatal Outcomes (Jan 2016)

Recommended Measures in Yellow

Measure	Source/ Supporting Organization(s)	Specifications for Denominator and Numerator	Strengths	Limitations (including data quality issues)	Utility
Birth Trauma –Injury to Neonate	•AHRQ: PSI 17	Denominator: Live births excluding cases (using ICD-9/10 codes) with birth weight <2,000g, or brachial plexus injury or osteogenesis imperfecta Numerator: Among the denominator, those with ICD9/10 codes for birth trauma (the ICD-9 series of 767.x but not including Erb’s palsy or clavicle fracture)	Easy to collect using Discharge Diagnosis File (ICD-9/10 Codes)	The coding for birth weight can be incomplete. The selection of diagnosis codes for birth injuries has raised many questions: why exclude brachial plexus and Erb’s palsy? Most important however is the fact that 2/3 of the identified cases are because of the code: 767.8 “Other Specified Birth Trauma” which can refer to a wide range of mild to moderate issues that are very dependent on the coder	The limitations have led to a lack of endorsement by NQF but it is still used by some because of its ease of collection. It generally runs at 0.2%
Healthy Term Newborn, aka Unexpected Neonatal Complications	•NQF: #0716 •CMQCC	Denominator: Live births at term without preexisting conditions (excludes IUGR, all fetal anomalies and conditions, maternal drug use) Numerator: Among the denominator, cases with very low Apgars, neonatal transfer, death, major or moderate complications by ICD-9/10 codes some with LOS parameters to guard against over-coding	Collected using administrative data only (no chart review). Serves an important role as a balancing measure to ensure that neonatal outcomes are preserved when working to lower the CS rate	Requires a Neonatal Discharge Diagnosis file linked to a Birth Certificate file to generate all the potential complications and exclusions. It is a complicated set of algorithms to generate the measure	Used wisely in California and by NPIC

Performance Measures Used To Assess Vaginal Birth After Cesarean (Jan 2016)

Recommended Measures in Yellow

Measure	Source/	Specifications for Denominator and Numerator	Strengths	Limitations (including data quality issues)	Utility
Vaginal Birth After Cesarean (VBAC) Rate	•Traditional •AHRQ: IQI 34	Denominator: All women delivering with a prior cesarean birth Numerator: Among the denominator, those with a vaginal birth	Easy to collect using Discharge Diagnosis File (ICD-9/10 Codes or Birth Certificate Codes). Vaginal birth is much better coded than a trial of labor	While vaginal birth is much better coded than a trial of labor, Some hospitals don't code prior CS well so that some repeat CS cases can end up in the primary rate	Given the current low availability of VBAC this metric now serves as an important access measure rather than a quality measure
VBAC Attempt Rate	•Traditional	Denominator: All women delivering with a prior cesarean birth Numerator: Among the denominator, those with a trial of labor (successful or not)	Easy to collect using Discharge Diagnosis File (ICD-9/10 Codes or Birth Certificate Codes) but has accuracy issues noted in limitations	Often difficult to identify those women who had a trial of labor. While there are ICD9/10 codes and Birth Certificate codes there is room for improvement. It is much simpler to just identify those who had a vaginal birth (VBAC rate)	This measure is a component of the VBAC rate and identifies the most common issue with a low VBAC rate—that of poor attempt rate
VBAC Success Rate	•Traditional	Denominator: All women with a prior Cesarean birth who are having a trial of labor Numerator: Among the denominator, those with a vaginal birth	Easy to collect using Discharge Diagnosis File (ICD-9/10 Codes or Birth Certificate Codes) but has accuracy issues noted in limitations	Often difficult to identify those women who had a trial of labor. While there are ICD9/10 codes and Birth Certificate codes there is room for improvement. It is much simpler to just identify those who had a vaginal birth (VBAC rate)	This measure is a component of the VBAC rate and identifies the portion of the VBAC rate that has the least variation, it is nearly always 70% +/-10%
Vaginal Birth After Cesarean (VBAC) Rate, Uncomplicated	•AHRQ: IQI 22	Denominator: All women delivering with a prior cesarean birth, excluding cases with breech presentations, preterm or multiple gestations, and fetal deaths Numerator: Among the denominator, those with a vaginal birth	This attempts to address concerns over including women with prior CS who had other contraindications for VBAC in an attempt to increase the Face Validity of the measure. Easy to collect using Discharge Diagnosis File (ICD-9/10 Codes or Birth Certificate Codes)	The extra codes don't add much burden but as noted above, Some hospitals don't code prior CS well so that some repeat CS cases can end up in the primary rate. There is not a good reason to exclude all births before 37 weeks of gestation	Highly correlated (r2=0.99) with IQI 34 (overall VBAC rate) that is much better known so does not really add value

Labor/Birth Performance Measures Proposed But Not Yet Tested (Jan 2016)

It should be noted that the development of new performance measures is actually a very difficult task and requires significant effort for validation.

Measure	Source/	Specifications for Denominator and Numerator	Strengths	Limitations (including data quality issues)	Utility
Spontaneous Labor and Birth	•Proposed by AMA-PCPI Taskforce (2010)	Denominator: All mothers with nulliparous singleton, term, vertex pregnancies Numerator: Among the denominator, those with a spontaneous labor onset (no induction) and a spontaneous vaginal delivery without an episiotomy	Can be collected using Discharge Diagnosis File (ICD-9/10 Codes) but requires the addition of parity. Provides an easy to understand metric for consumers	Requires a linked data set. Unsure if this measure adds value beyond the NTSV Cesarean rate and the episiotomy rate	No testing yet performed. Unknown if adds more than current measures. Judgment is withheld until testing has been reported
Second Stage of Labor: Mother-Initiated, Spontaneous Pushing	•Proposed by AWHONN (#02) (2014)	Denominator: All women in Second Stage labor (and not having a scheduled cesarean) Numerator: those from the denominator with documentation in the medical record providing evidence of mother-initiated, spontaneous pushing	Likely to be used to drive practice change rather than public reporting	Requires chart review of 30 randomly selected retrospective cases. Frequency is not yet determined. This also represents a challenging charting requirement for the nurse. Unclear if requirement is mother-initiated, spontaneous pushing for the entire second stage or a partial period. The evidence base for this measure is not as strong as usually desired	No testing yet performed. Unclear whether it will lead to any changes in outcomes. Judgment is withheld until testing has been reported
Labor Support	•Proposed by AWHONN (#10a) (2014)	Denominator: All women in labor (spontaneous or induced excluding medical reasons for admission) Numerator: those from the denominator with documentation in the medical record of continuous labor support	Likely to be used to drive practice change rather than public reporting	Requires chart review of 30 randomly selected retrospective cases. Frequency is not yet determined. This also represents a challenging charting requirement for the nurse. Continuous labor support is defined as being “in the room continuously” and providing a series of non-pharmacologic interventions. Apparently can be provided by an RN or Doula, but is vague for other individuals (family or friends)	No testing yet performed. Continuous support for the entire labor is very difficult to support currently on most L&D’s. Hard to justify for early labor and induction patients (such as cervical ripening). Judgment is withheld until testing has been reported
Partial Labor Support	•Proposed by AWHONN (#10b) (2014)	Denominator: All women in labor (spontaneous or induced excluding medical reasons for admission) Numerator: those from the denominator with documentation in the medical record indicating that the woman received at least one non-pharmacologic nursing intervention to support labor every hour for the duration of the First stage of labor	Likely to be used to drive practice change rather than public reporting	Requires chart review of 30 randomly selected retrospective cases. Frequency is not yet determined. Will require extensive charting. While there is data to support continuous labor support and fewer Cesarean births, this measure of partial labor support has no underlying studies to support it. The non-pharmacologic interventions are poorly defined and poorly validated	No testing yet performed. Hard to justify for early labor and induction patients (such as cervical ripening). Judgment is withheld until testing has been reported

It should be noted that the development of new performance measures is actually a very difficult task and requires significant effort for validation.

<p>Freedom of Movement during Labor</p>	<p>•Proposed by AWHONN (#11) (2014)</p>	<p>Part A sample: Denominator: All women ≥37 weeks of gestation in the first stage of labor without epidural analgesia and without scheduled cesarean Numerator: at a randomly selected observation point, those among the denominator who are laboring in a location other than a bed</p> <p>Part B sample: Denominator: All women ≥37 weeks of gestation in the First stage of labor with epidural analgesia and without scheduled cesarean Numerator: at a randomly selected observation point, those among the denominator who are laboring in a position other than supine</p>	<p>Likely to be used to drive practice change rather than public reporting</p>	<p>At least 30 randomly selected observations for each of the two samples, including cases from all shifts. Frequency is not yet determined. Appears to involve organized observations of practice rather than chart reviews. Either way there is significant data collection burden and ability to skew results (“The observer is now on the floor”). Does not take into account a women’s desire to be in bed for part of her labor or be supine after epidural. No normative data available</p>	<p>Interesting process measure but no testing yet performed. Unclear that intervention will lead to outcome improvements</p>
---	---	---	--	--	--

Understanding the Risks of Elective (Non-medically Indicated) Cesarean Birth with your First Pregnancy

Birth is a normal, natural process. The vast majority of women can have safe, normal vaginal births. There are health conditions where a cesarean birth is necessary for the wellbeing of the mother and/or the baby. Recently however, more mothers are giving birth by cesarean for non-medical reasons. A cesarean poses risks as well as benefits for mother and baby, and should not be undertaken lightly.

Expectant Mothers Name:

Obstetrician (OB Physician):

A cesarean delivery is an operation where a baby is delivered by making a cut in the mother's lower abdominal wall (abdominal incision) and a cut in her uterus (uterine incision). A cesarean operation is a major surgical procedure with additional risks beyond those of a vaginal delivery.

RISKS ASSOCIATED WITH A CESAREAN AS COMPARED TO A VAGINAL BIRTH:

- | | |
|--|--|
| 1. I am more likely to have more blood loss and a longer recovery time. | 7. I am more likely to develop blood clots that can travel to my lungs (pulmonary embolism) or my brain (stroke). |
| 2. I am more likely to have accidental surgical cuts to my bladder, bowel, or gastrointestinal tract. | 8. I am more likely to be admitted to intensive care. |
| 3. I am more likely to have a serious infection in my incision, uterus, or bladder. | 9. I am more likely to need to return to the hospital for complications from the cesarean operation. |
| 4. I am more likely to have thick scarring (adhesions) inside my abdomen that may cause chronic pain for years after my cesarean. This scarring can make any future abdominal operation I may need more difficult. | 10. I am more likely to feel pain and/or numbness at the surgical site for several months after my surgery. |
| 5. I may have uncontrolled bleeding and need an emergency hysterectomy (removal of the uterus) if the bleeding cannot be stopped. | 11. I am more likely to have a repeat cesarean delivery if I choose to undergo a cesarean for my first delivery. |
| 6. I am more likely to have complications from anesthesia. | 12. I am more likely to experience "high risk" conditions in subsequent pregnancies, such as ectopic pregnancy, infertility, and abnormal attachments of the placenta to the uterine wall. |

I have read and understand the risks associated with a cesarean delivery vs. a vaginal delivery.

PATIENT SIGNATURE:

PATIENT NAME:

DATE:

This form was adapted with permission from Hoag Hospital; original educational content is from the Coalition for Improving Maternity Services (CIMS)

Pre-Cesarean Communication Tool for Labor Dystocia or Failed Induction

Patient Name: _____ MR#: _____

Gestational Age: _____ Date of C-section: _____;

Time: _____

Obstetrician: _____ ; Initial: _____

Bedside Nurse: _____ ; Initial: _____

Indication for Primary Cesarean Delivery:

___ **Failed Induction (must have both criteria if cervix unfavorable, Bishop Score < 8 for nullips and <6 for multips)**

___ Cervical Ripening used (when starting with unfavorable Bishop scores as noted above). Ripening agent used: _____
Reason ripening not used if cervix unfavorable: _____

AND

___ Unable to generate regular contractions (every 3 minutes) and cervical change after oxytocin administered for at least 12-18 hours after membrane rupture." *Note: at least 24 hours of oxytocin administration after membrane rupture is preferable if maternal and fetal statuses permit

___ **Latent Phase Arrest <6 cm dilation (must fulfill one of the two criteria)**

___ Moderate or strong contractions palpated for > 12 hours without cervical change

OR

___ IUPC > 200 MVU for > 12 hours without cervical change

*As long as cervical progress is being made, a slow but progressive latent phase e.g. greater than 20 hours in nulliparous women and greater than 14 hours in multiparous women is not an indication for cesarean delivery as long as fetal and maternal statuses remain reassuring. Please exercise caution when diagnosing latent phase arrest and allow for sufficient time to enter the active phase.

___ **Active Phase Arrest ≥ 6 cm Dilation (must fulfill one of the two criteria)**

Membranes ruptured (if possible), then:

___ Adequate uterine contractions (e.g. moderate or strong to palpation, or ≥ 200 MVU, for ≥ 4 hours) without improvement in dilation, effacement, station or position

OR

___ Inadequate uterine contractions (e.g. < 200 MVU) for ≥ 6 hours of oxytocin administration without improvement in dilation, effacement, station or position

___ **Second Stage Arrest (must fulfill any one of four criteria)**

___ Nullipara with epidural pushing for at least 4 hours

OR

___ Nullipara without epidural pushing for at least 3 hours

OR

___ Multipara with epidural pushing for at least 3 hours

OR

___ Multipara without epidural pushing for at least 2 hours

___ **Although not fulfilling contemporary criteria for labor dystocia as described above, my clinical judgment deems this cesarean delivery indicated**

___ Failed Induction: Duration in hours: _____

Latent-Phase Arrest: Duration in hours: _____

Active-Phase Arrest: Duration in hours: _____

Second-Stage Arrest: Duration in hours: _____

Comments:

CMQCC Labor Dystocia Checklist (ACOG/SMFM Criteria)
1. Diagnosis of Dystocia/Arrest Disorder (all 3 should be present)

- Cervix 6 cm or greater
- Membranes ruptured, then
- No cervical change after at least 4 hours of adequate uterine activity (e.g. strong to palpation or MVUs > 200), or at least 6 hours of oxytocin administration with inadequate uterine activity

2. Diagnosis of Second Stage Arrest (only one needed)
No descent or rotation for:

- At least 4 hours of pushing in nulliparous woman with epidural
- At least 3 hours of pushing in nulliparous woman without epidural
- At least 3 hours of pushing in multiparous woman with epidural
- At least 2 hour of pushing in multiparous woman without epidural

3. Diagnosis of Failed Induction

- Bishop score ≥ 6 for multiparous women and ≥ 8 for nulliparous women, before the start of induction (for non-medically indicated/elective induction of labor only)
- Oxytocin administered for at least 12-18 hours after membrane rupture, without achieving cervical change and regular contractions. *Note: At least 24 hours of oxytocin administration after membrane rupture is preferable if maternal and fetal statuses permit

American College of Obstetrics and Gynecology, Society for Maternal-Fetal Medicine. Obstetric care consensus no. 1: safe prevention of the primary cesarean delivery. *Obstet Gynecol.* 2014;123(3):693-711.

Spong CY, Berghella V, Wenstrom KD, Mercer BM, Saade GR. Preventing the first cesarean delivery: summary of a joint Eunice Kennedy Shriver National Institute of Child Health and Human Development, Society for Maternal-Fetal Medicine, and American College of Obstetricians and Gynecologists Workshop. *Obstet Gynecol.* 2012;120(5):1181-1193.

FIRST STAGE LATENT LABOR: Cervical dilation of 0-6 cm

NORMAL	<ul style="list-style-type: none"> Difficult to define due to challenge of determining the onset of labor No range exists for the new latent labor definition of 0-6 cm per Zhang <ul style="list-style-type: none"> Nulliparas (data exists only for 3-6cm): Median duration of 3.9 hours; 95th percentile 17.7 hours Multiparas (data exists only for 4-6cm): Median duration of 2.2 hours; 95th percentile 10.7 hours Per Friedman: <20 hours in the nullipara, and <14 hours in the multipara from 0-3cm
PROLONGED	<ul style="list-style-type: none"> No range exists for the new latent labor definition of 0-6 cm <ul style="list-style-type: none"> Nulliparas: >18 hours from 3-6cm Multiparas: >10.7 hours from 4-6cm Per Friedman: >20 hours in the nullipara, >14 hours in the multipara from 0-3 cm

FIRST STAGE ACTIVE LABOR: Cervical dilation of 6-10 cm

NORMAL	<ul style="list-style-type: none"> Nulliparas: Median duration of 2.1 hours; 95th percentile 7 hours Multiparas: Median duration of 1.5 hours; 95th percentile 5.1 hours
PROLONGED/ SLOW SLOPE	<ul style="list-style-type: none"> Slow progress from 6-10cm: Presence of labor progress, but duration outside the 95th percentile range of normal (> 7 hours in a nullipara, or > 5 hours in a multipara)
ARREST	<ul style="list-style-type: none"> Dilation of 6 cm or more, with membrane rupture and absence of cervical change for: <ul style="list-style-type: none"> 4 hours OR MORE of adequate UCs (MVUs >200) OR 6 hours OR MORE with Pitocin if UCs inadequate

SECOND STAGE LABOR: Complete dilation to birth of the neonate

NORMAL	<ul style="list-style-type: none"> Nulliparas: <3 hours WITHOUT epidural, <4 hours WITH epidural Multiparas: <2 hours WITHOUT epidural, <3 hours WITH epidural
PROLONGED	<ul style="list-style-type: none"> Presence of descent, but duration outside normal range. Nulliparas: >3 hours without epidural, >4 hours with epidural Multiparas: >2 hours without epidural, >3 hours with epidural
ARREST	<ul style="list-style-type: none"> No (or minimal) descent after good pushing efforts for: <ul style="list-style-type: none"> Nulliparas: >3 hours without epidural, >4 hours with epidural Multiparas: >2 hours without epidural, >3 hours with epidural *NOTE: According to a 2014 retrospective cohort study by Cheng and colleagues, of 42,268 women who delivered vaginally and had normal neonatal outcomes, the 95th percentile duration of second stage labor with epidural anesthesia is more than two hours greater for both nullips and multips (as opposed to one hour) when compared to women in second stage labor without epidural use. Additionally, according to the ACOG/SMFM guidelines, a specific absolute maximum amount of time for the second stage of labor has not been identified.

American College of Obstetrics and Gynecology, Society for Maternal-Fetal Medicine. Obstetric care consensus no. 1: safe prevention of the primary cesarean delivery. *Obstet Gynecol.* 2014;123(3):693-711.

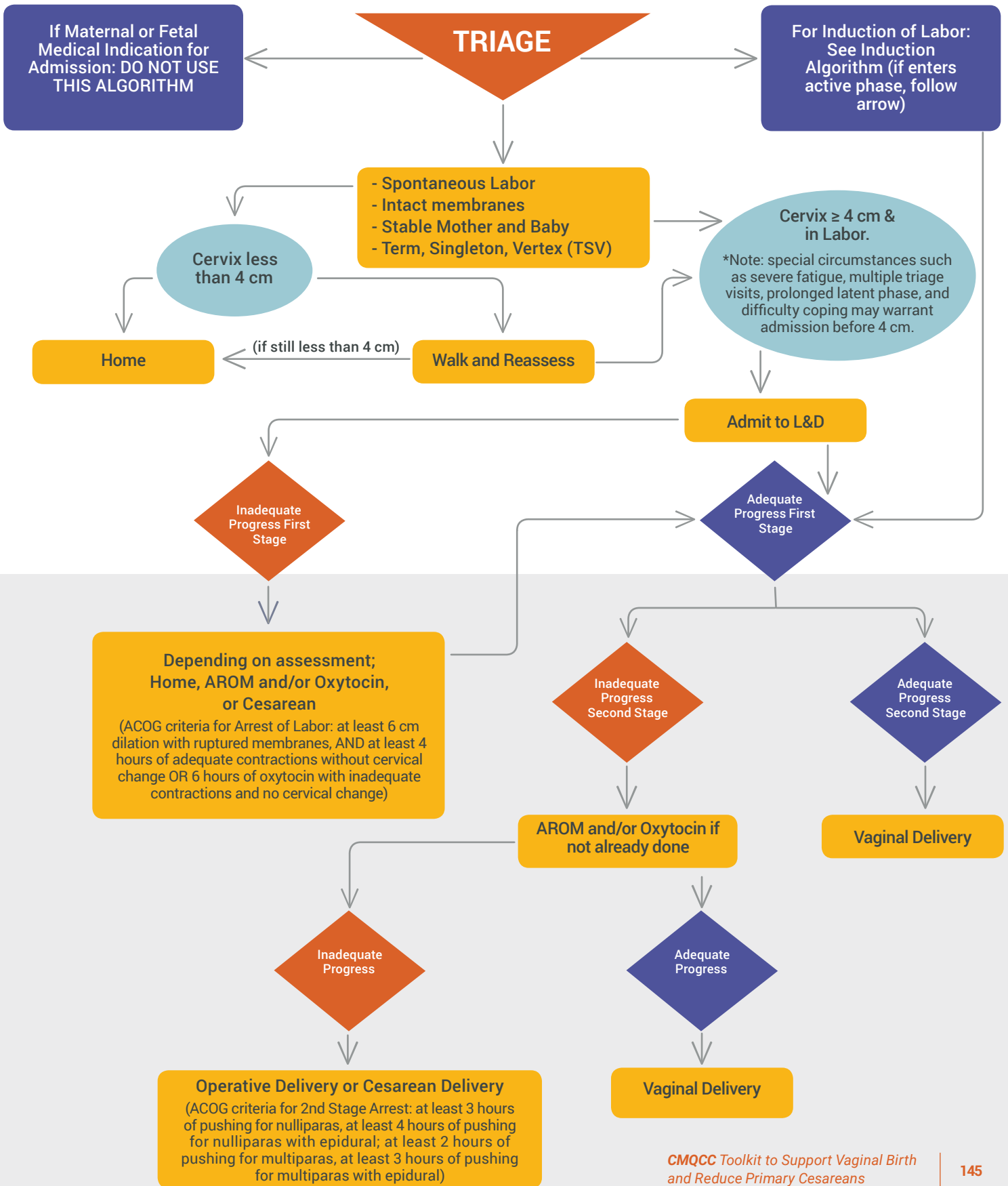
Cheng YW, Shaffer BL, Nicholson JM, Caughey AB. Second stage of labor and epidural use: a larger effect than previously suggested. *Obstet Gynecol.* 2014;123(3):527-535.

Friedman EA. Primigravid labor; a graphicostatistical analysis. *Obstet Gynecol.* 1955;6(6):567-589.

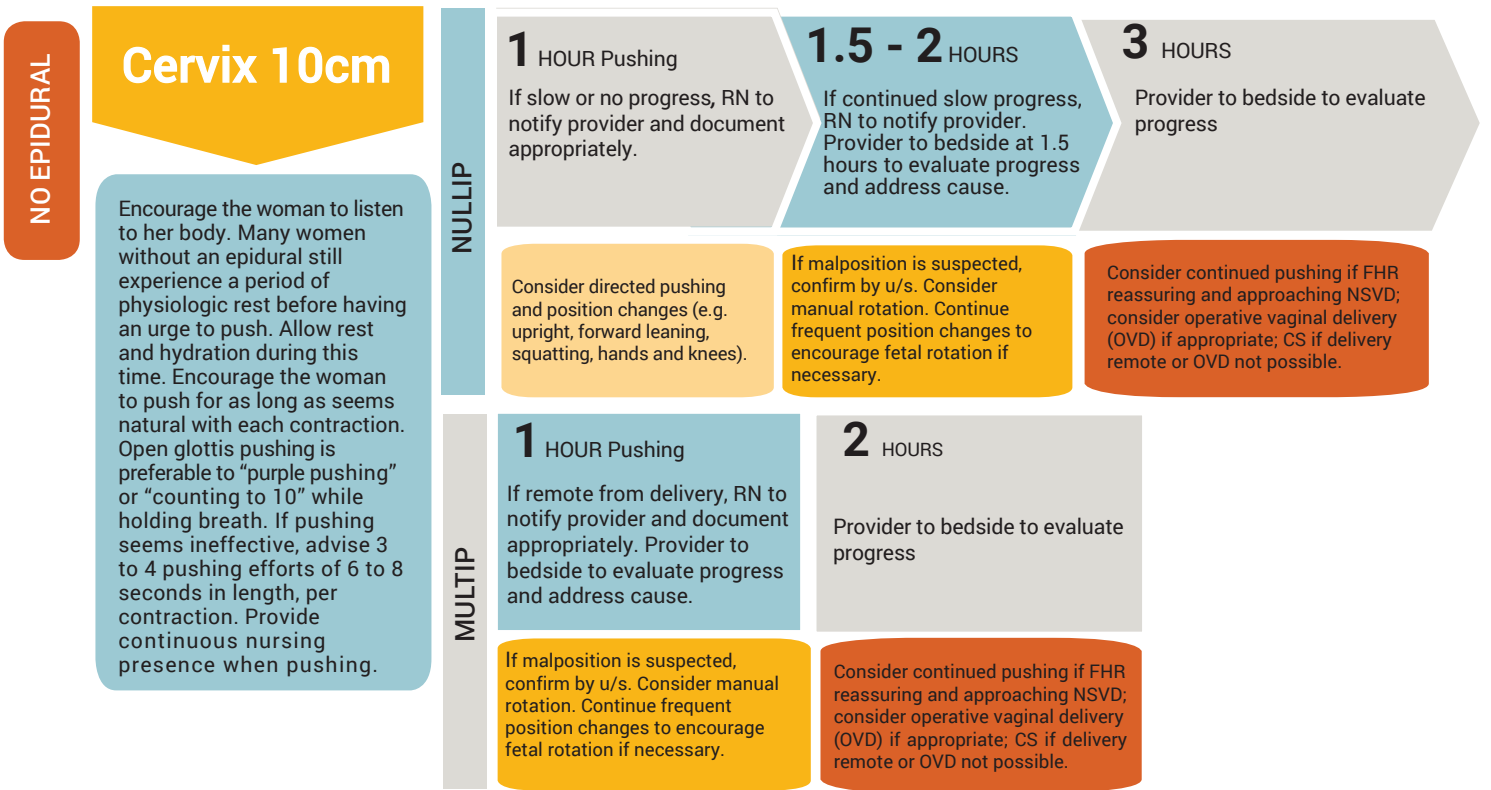
Spong CY, Berghella V, Wenstrom KD, Mercer BM, Saade GR. Preventing the first cesarean delivery: summary of a joint Eunice Kennedy Shriver National Institute of Child Health and Human Development, Society for Maternal-Fetal Medicine, and American College of Obstetricians and Gynecologists Workshop. *Obstet Gynecol.* 2012;120(5):1181-1193

Zhang J, Landy HJ, Branch DW, et al. Contemporary patterns of spontaneous labor with normal neonatal outcomes. *Obstet Gynecol.* 2010;116(6):1281-1287.

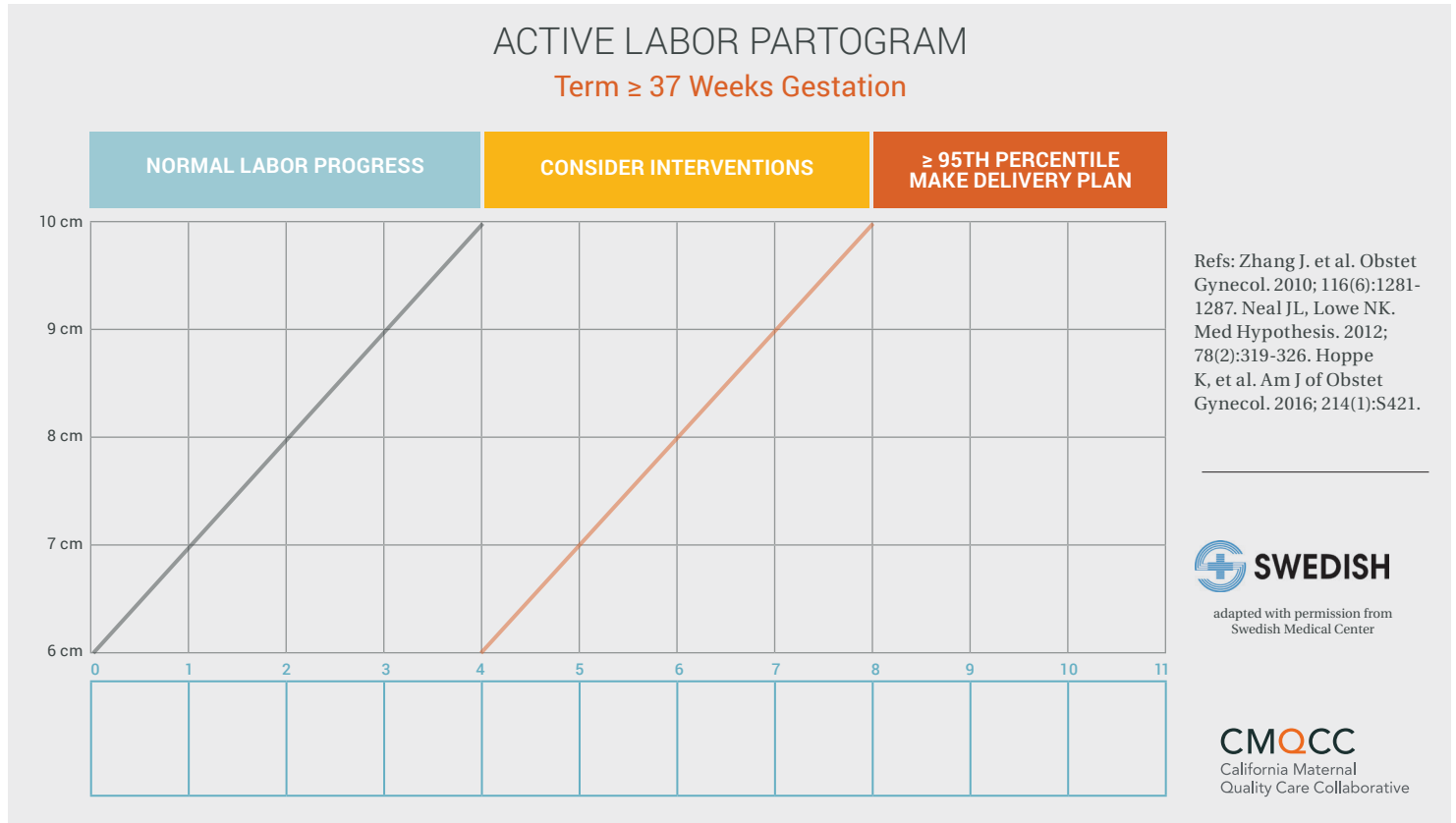
Adapted with permission from the authors Ana Delgado CNM, Jyeshtha Wren Serbin, CNM, and Anna Yen Tran, CNM, Zuckerberg San Francisco General Hospital



Algorithm for the Management of Second Stage of Labor



This partogram is meant to guide labor management and indicate when interventions may be necessary to promote labor progress and/or to assist with diagnosis of failure to progress. It can be useful for both multiparous and nulliparous labors, but is not meant to cover all clinical situations.



Instructions:

- For time “0,” enter the time of the exam when it was first noted that the patient’s cervix met the definition of active labor (6cm dilation or greater). Progress should NOT be plotted on this partogram prior to 6cm dilation.
- At each subsequent cervical evaluation, note the time and how many hours have passed since the patient was first determined to be in active labor. Plot a point on the graph at the intersection between the number of hours since active labor was first noted (x-axis) and the woman’s cervical dilation at that exam (y-axis).

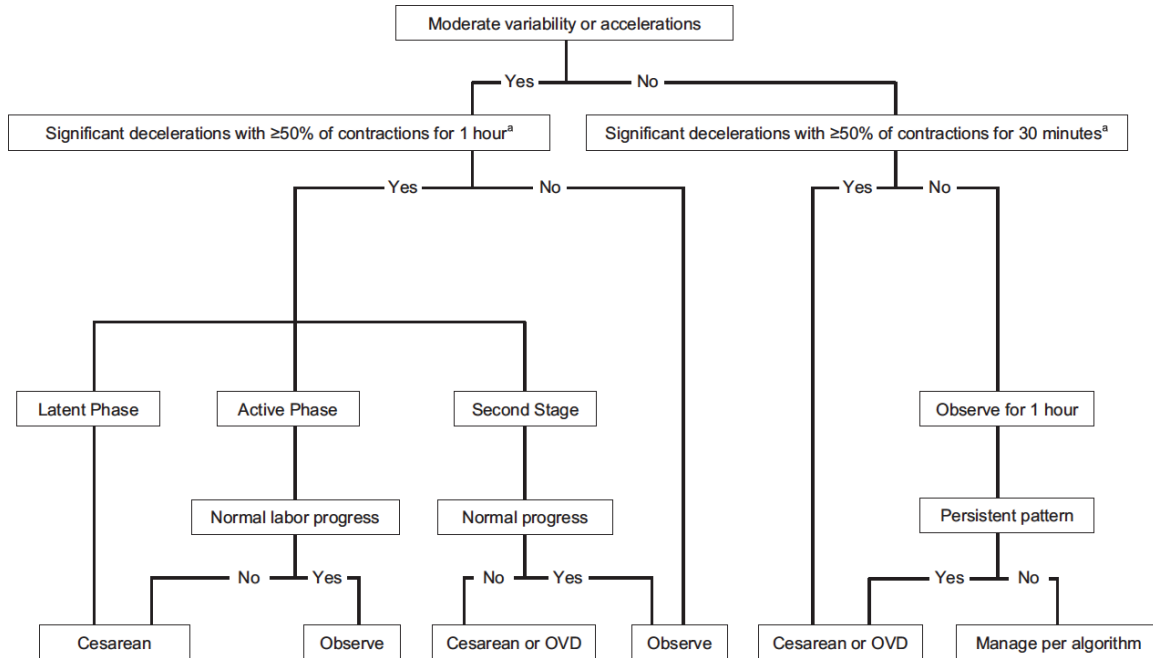
*Note that each box on the x-axis represents one additional hour in active labor, and the corresponding time of day should be entered into these boxes.

Example: the patient was first noted to be in active labor at 1300 hours, with a cervical dilation of 7 cm. At time “0,” 1300hrs was written in the box, and a dot was plotted at the (x-coordinate,y-coordinate) pair corresponding to (0,7). At 1600 hours, or 3 hours after the first exam, the patient was noted to be 9 cm. At time “3,” 1600hrs was written in the box, and a dot was plotted at the (x-coordinate,y-coordinate) pair corresponding to (3,9).

NOTE: Patients with “plotted lines” that cross over into the “Consider Interventions” zone are laboring at a rate that is slower than the 50th %tile duration for nulliparous labor. **Patients whose lines cross over the half-way point of the “Consider Interventions” zone are laboring at a rate slower than the 95th %tile duration for nulliparous labor.** Adverse maternal and neonatal events increase for labor durations in this zone. Furthermore, at 6 cms or more, 4 hours without cervical change is >95th %tile. Successful vaginal delivery is less likely and maternal and neonatal complications increase. Therefore, interventions should be considered well before the “Make Delivery Plan” zone. Interventions may include ambulation or position changes, AROM if not already done, and oxytocin administration.

Algorithm for Management of Category II Fetal Heart Rate Tracings

FIGURE 1
Algorithm for management of category II fetal heart rate tracings



OVD, operative vaginal delivery.

^aThat have not resolved with appropriate conservative corrective measures, which may include supplemental oxygen, maternal position changes, intravenous fluid administration, correction of hypotension, reduction or discontinuation of uterine stimulation, administration of uterine relaxant, amnioinfusion, and/or changes in second stage breathing and pushing techniques.

TABLE
Management of category II fetal heart rate patterns: clarifications for use in algorithm

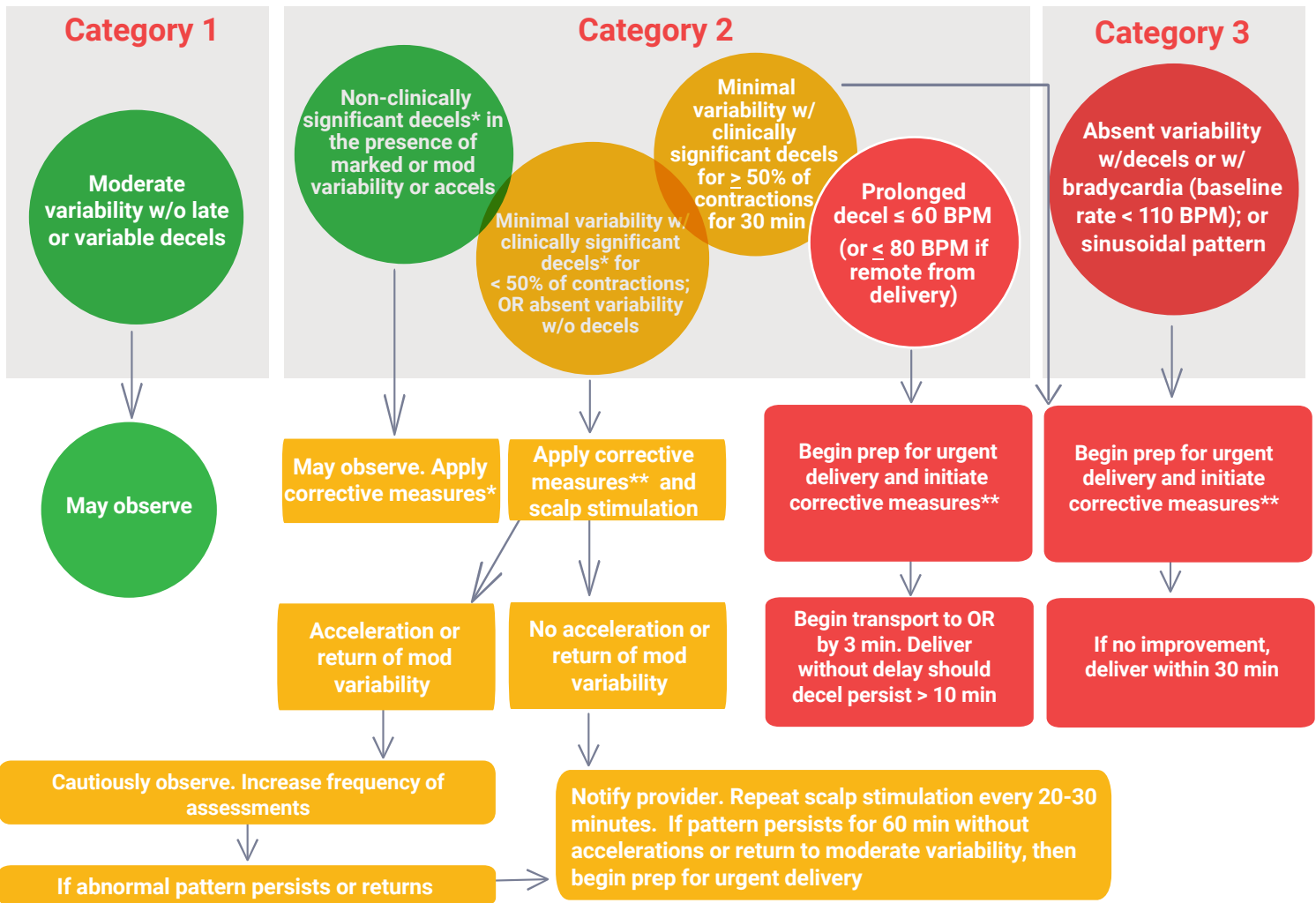
- Variability refers to predominant baseline FHR pattern (marked, moderate, minimal, absent) during a 30-minute evaluation period, as defined by NICHD.
- Marked variability is considered same as moderate variability for purposes of this algorithm.
- Significant decelerations are defined as any of the following:
 - Variable decelerations lasting longer than 60 seconds and reaching a nadir more than 60 bpm below baseline.
 - Variable decelerations lasting longer than 60 seconds and reaching a nadir less than 60 bpm regardless of the baseline.
 - Any late decelerations of any depth.
 - Any prolonged deceleration, as defined by the NICHD. Due to the broad heterogeneity inherent in this definition, identification of a prolonged deceleration should prompt discontinuation of the algorithm until the deceleration is resolved.
- Application of algorithm may be initially delayed for up to 30 minutes while attempts are made to alleviate category II pattern with conservative therapeutic interventions (eg, correction of hypotension, position change, amnioinfusion, tocolysis, reduction or discontinuation of oxytocin).
- Once a category II FHR pattern is identified, FHR is evaluated and algorithm applied every 30 minutes.
- Any significant change in FHR parameters should result in reapplication of algorithm.
- For category II FHR patterns in which algorithm suggests delivery is indicated, such delivery should ideally be initiated within 30 minutes of decision for cesarean.
- If at any time tracing reverts to category I status, or deteriorates for even a short time to category III status, the algorithm no longer applies. However, algorithm should be reinstated if category I pattern again reverts to category II.
- In fetus with extreme prematurity, neither significance of certain FHR patterns of concern in more mature fetus (eg, minimal variability) or ability of such fetuses to tolerate intrapartum events leading to certain types of category II patterns are well defined. This algorithm is not intended as guide to management of fetus with extreme prematurity.
- Algorithm may be overridden at any time if, after evaluation of patient, physician believes it is in best interest of the fetus to intervene sooner.

FHR, fetal heart rate; NICHD, Eunice Kennedy Shriver National Institute of Child Health and Human Development.

Clark. Category II FHRT. *Am J Obstet Gynecol* 2013.

Appendix Q

Example Algorithm for the Management of Intrapartum Fetal Heart Rate Tracings



*Clinically significant decelerations include:

- Variable decels lasting > 60 sec with a nadir > 60 BPM below baseline
- Variable decels > 60 sec with a nadir < 60 BPM regardless of baseline
- Late decels of any depth
- Any prolonged decel as defined by NICHD

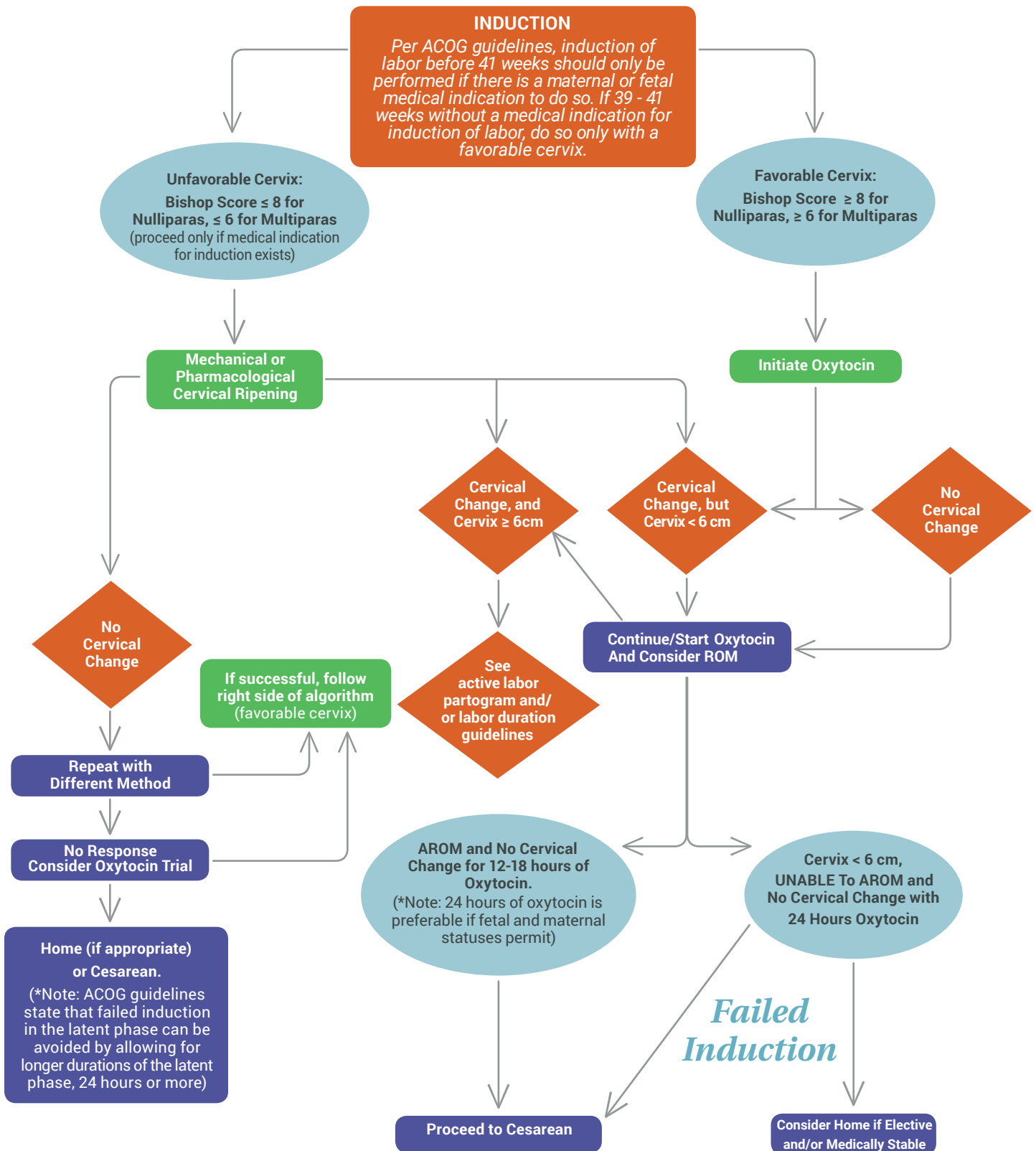
(Clark et al. *Am J Obstet Gynecol.* 2013;209(2):89-97)

**Corrective measures include:

- Oxygen administration
- Maternal position change
- Fluid bolus
- Reduction or discontinuation of pitocin
- Administration of terbutaline for tetanic contraction or tachysystole
- Administration of pressors, if hypotension present
- Amnioinfusion for deep, repetitive variable decelerations

(Miller LA, Miller DA. *J Perinat Neonatal Nurs.* 2013;27(2):126-133.)

This is an example of one possible algorithm to assist the nurse and provider in the management of intrapartum fetal heart rate patterns. It does not cover all possible clinical situations. The algorithm assumes that the abnormal fetal heart rate pattern has been recently recognized, and that the preceding tracing is not already associated with the potential for significant acidemia. The algorithm also assumes the presence of active labor with normal labor progress. If the preceding tracing is already associated with the potential for significant acidemia, or if vaginal delivery is unlikely before significant acidemia occurs (e.g. as with a protraction disorder of the active phase or if the patient is still in the latent phase of labor), then sound clinical judgment dictates that the algorithm should be abandoned and delivery should be expedited.



ACOG Key Labor Definitions

Measure	Source/	Specifications for Denominator and Numerator
Labor	Uterine contractions resulting in cervical change (dilation and/or effacement) Phases: Latent phase – from the onset of labor to the onset of the active phase Active phase – accelerated cervical dilation typically beginning at 6 cm	Avoid the term ‘prodromal labor’. Can be spontaneous in onset, spontaneous in onset and subsequently augmented, or induced
Spontaneous Onset of Labor	Labor without the use of pharmacologic and/or mechanical interventions to initiate labor Does not apply if AROM is performed before the onset of labor	May occur at any gestational age
Induction of Labor	The use of pharmacologic and/or mechanical methods to initiate labor. Examples of methods include but are not limited to: Artificial rupture of membranes, balloons, oxytocin, prostaglandin, laminaria, or other cervical ripening agents	Still applies even if any of the following are performed: Unsuccessful attempts at initiating labor The use of pharmacologic and/or mechanical methods to initiate labor following spontaneous ruptured membranes without contractions
Augmentation of Labor	The stimulation of uterine contractions using pharmacologic methods or artificial rupture of membranes to increase their frequency and/or strength following the onset of spontaneous labor or contractions following spontaneous rupture of membranes.	Does not apply if Induction of Labor is performed

Menard MK, Main EK, Currihan SM. Executive summary of the reVITALize Initiative: standardizing obstetric data definitions. *Obstet Gynecol* 2014;124:150-153.

(appendix 3: http://download.lww.com/wolterskluwer_vitalstream_com/PermaLink/AOG/A/AOG_124_1_2014_05_28_MENARD_14-107_SDC3.pdf)

Discussion to help clarify Induction versus Augmentation:

- In the setting of SROM: if any contractions+oxytocin = augmentation; if absolutely no contractions+oxytocin=induction (rare).
- Otherwise in the setting of contractions/labor without ROM we go with the definition of labor as: Uterine contractions resulting in cervical change (dilation and/or

effacement). No labor+oxytocin=induction, otherwise it is augmentation.

- For protracted latent phase: if there is no change of dilation or effacement and oxytocin is used then it is induction; if there is slow changing but protracted rate of change then addition of oxytocin is augmentation (labor is cervical dilation or effacement with contractions).
- For the above examples, for oxytocin, one can substitute “misoprostol” or “vaginal prostaglandin” or “foley catheter placed in cervix” or other methods for cervical ripening or stimulation of contractions including AROM. (N.B. cervical ripening=induction)

AIM/CMQCC, April 2016

Zuckerberg San Francisco General Hospital. Fetal Monitoring Policy. Includes procedure for intermittent auscultation and exclusion criteria. Used with permission.

TITLE: FETAL MONITORING/UTERINE CONTRACTION ASSESSMENT AND DOCUMENTATION

PURPOSE: The purpose of the policy is to provide guidelines for fetal monitoring and uterine contraction assessment and documentation in the Birth Center.

STATEMENT OF POLICY: To provide guidelines for the trained registered nurse to initiate, assess and document the appropriate monitoring of the fetal heart rate (FHR) and uterine contraction (UC) patterns.

To provide standardized interpretation and communication regarding FHR and UC data based on criteria set forth by the National Institute of Child Health and Human Development (NICHD). (See Appendix C.)

To utilize informed consent and clinical judgment to provide a level of monitoring customized to the patient's clinical condition and personal preferences, with the goal of achieving a delivery without significant acidemia or unnecessary iatrogenic interventions. It is the policy of SFGH Birth Center that women with low risk pregnancies have the choice to be intermittently auscultated or continuously monitored.

To provide guidelines for the registered nurse to utilize FHR and UC monitoring and assessment to support the overall goals of supporting maternal coping and labor progress, maximizing uterine and umbilical blood flow, maximizing oxygenation, and maintaining appropriate uterine activity.

Indications

(See Appendix A.)

1. Admission / Triage monitoring:

Upon admission or presentation to triage in the Birth Center, generally all patients greater than 24 weeks gestation are monitored for a minimum of 20 minutes. The tracing should be continuous until Category I (if greater than 28 weeks). Notify provider if not Category I after 40 minutes and/or variant FHR patterns are noted. If the patient has been ambulating for a period of time (2 hours or more), another 20 minute tracing of the fetal heart rate and uterine activity should be completed prior to discharge from triage. If patient is laboring, accelerations may not be required to determine Category I tracing.

See Antenatal Testing Center policy for antenatal testing patients in triage.

Patients less than 24 weeks may have a Doppler check for presence and rate of fetal heart tones.
Patient's refusal to be monitored must be documented.

2. **Antepartum monitoring (patient not in labor):**
Antepartum fetal monitoring should be individualized for each patient dependent on condition and risk factors
3. **Labor monitoring: Intermittent Auscultation (IA vs. Continuous EFM (CEFM))**
The two methods of fetal heart rate monitoring accepted by the American College of Obstetrician Gynecologists (ACOG) and the American College of Nurse Midwives (ACNM) are: intermittent auscultation (IA) and continuous electronic fetal monitoring (CEFM).

There is widespread support for the use of continuous EFM for high-risk women, while IA is the preferred method of monitoring for low-risk laboring women. There have been many studies comparing IA with EFM among low-risk pregnant women. There are advantages and disadvantages with the use of either method. Some of the differences include:

- 1 Women who were monitored by CEFM had a 1.66 times increased risk of Caesarean birth.
- 2 Women who were monitored by CEFM had a 1.2 times increased risk of operative vaginal birth
- 3 Women who were monitored by CEFM had a 50% decrease in neonatal seizures as compared with those monitored with IA.
- 4 Case-control studies have shown correlation of EFM abnormalities with umbilical artery base excess. Our institution now transfers these infants to UCSF as part of the "head cooling" protocol.
- 5 Meta-analysis of the randomized controlled trials comparing EFM with IA have found no effect on the incidence of cerebral palsy or perinatal death.

Advantages and Disadvantages of CEFM and IA

Intermittent Auscultation

1. IA helps to normalize the birth process by allowing freedom of movement and reducing the use of technology
2. IA has been shown to reduce Cesarean and operative vaginal birth rates
3. IA increases the amount of time that women receive hands-on bedside care and support
For nurses not accustomed to IA, IA can seem like more work or may seem more intrusive. Some nurses may not feel comfortable performing IA if they have more than one patient
4. The literature shows an increase in neonatal seizures for babies monitored with IA and a higher incidence of umbilical artery base excess.

Continuous External Fetal Monitoring

1. CEFM is more appropriate for women at risk for complications because fetal conditions can deteriorate more rapidly in those cases
2. CEFM may be easier to monitor if RN staffing is a concern

FHR Characteristic	Doppler without Paper Printout	Electronic FHR Monitor
Variability	No	Yes
Baseline rate	Yes	Yes
Accelerations	Detects increases	Yes
Decelerations	Detects decreases	Differentiates types of decelerations

Deciding on the Appropriate Method of Monitoring (See Appendix A)

1. The Patient’s Role

All low-risk patients should be offered IA. Ideally this conversation should take place in the antenatal period and be documented in the patient’s chart. In the absence of clinical risk factors or staffing problems, the patient can decide whether IA is right for her labor

2. The Nurse’s Role

The ability to use IA will be part of the standard skill set of all nurses taking care of laboring patients at the Birth Center. The nurse has the responsibility to decline to use IA if he or she feels that staffing does not permit IA. In these cases the nurse should let the provider know in a timely fashion that the nurse is unable to provide IA. The nurse can advocate for IA in a patient that he or she feels qualifies for IA or advocate for EFM in the patient who he or she feels needs to have EFM.

3. The Provider’s Role

On admission the provider will evaluate the initial fetal monitoring tracing and the patient’s risk factors and decide whether the patient is appropriate for IA. All low risk women should be offered IA and counseled regarding the advantages and disadvantages.

PROCEDURE:

(See Appendix D for the Procedure of Fetal Monitoring)

FREQUENCY OF ASSESSMENT AND DOCUMENTATION

Documentation of the FHR in the medical record may occur at intervals that are different from assessment. When assessment and documentation are done at different intervals, this should be specified in the notes section of WatchChild. For example, “assessing FHR q 5” can be written in the notes, while a complete “Fetal Assessment” screen is done every 15 minutes. (See Appendix B for further documentation instructions.)

	Assessment	Documentation
Antepartum, not in labor	Individualized per orders.	Individualized per orders.
Latent phase labor	If on continuous monitoring, assess hourly, unless clinical condition indicates increased frequency of assessment/documentation.	If on continuous monitoring, document hourly, unless clinical condition indicates increased frequency of assessment/documentation.
Active phase labor: Intermittent Auscultation	Assess every 30 minutes Note: There is no need to get a continuous EFM strip at the change of shift	Document every 30 minutes
Active phase labor: Continuous EFM	Assess every 15 minutes	Document every 30 minutes
Second stage labor, if actively pushing: Intermittent Auscultation	Assess every 5 minutes	Document every 15 minutes
Second stage labor, if actively pushing: Continuous EFM	Assess every 5 minutes	Document every 15 minutes

APPENDICES:

- Appendix A: FETAL HEART RATE CHARACTERISTICS
- Appendix B: Examples for Considering Continuous EFM
- Appendix C: The Procedure of Fetal Monitoring
- Appendix D: Documentation of Fetal Monitoring

CROSS REFERENCES:

- Nursing Dept. Policy 6.5/Notification of Physician for Change in Patient Condition
- Birth Center Policy – Documentation: WatchChild

REFERENCES:

1. Alfrevic Z, Devane D, Gyte GML. Continuous cardiotocography (CTG) as a form of

- electronic fetal monitoring (EFM) for fetal assessment during labour. *Cochrane Database of Systematic Reviews* 2006, Issue 3. Art. No.: CD006066. DOI: 10.1002/14651858.CD006066.
2. Feinstein, NF, Sprague, A, and Trepanier, MJ. 2008. Fetal Heart Rate Auscultation. Washington, DC: AWHONN.
 3. Macones, G et al. The 2008 National Institute of Child Health and Human Development Workshop Report on Electronic Fetal Monitoring. *Obstetrics and Gynecology* 2008;112:661-6.
 4. Simpson, K.R. and Knox, G.E. Common areas of litigation related to care during labor and birth. Recommendations to promote patient safety and decrease risk exposure. *Journal of Perinatal and Neonatal Nursing* 2003;17:110-125.
 5. [Intrapartum electronic fetal heart rate monitoring and the prevention of perinatal brain injury](#). Graham EM, Petersen SM, Christo DK, Fox HE. *Obstet Gynecol.* 2006 Sep;108(3 Pt 1):656-66.
 6. Suggested citation: American College of Nurse-Midwives. Intermittent Auscultation for Intrapartum Fetal Heart Rate Surveillance NUMBER 13. *J Midwifery Womens Health.* 60(5):626–632.

SUPERSEDES:

- L&D Policy 5.1/Electronic Fetal/Toco Monitoring-External (2/94)
- OB-Policy/Electronic/Toco Monitoring (10/89)
- L&D Policy 1.6/Assisting with the Insertion of Intrauterine Pressure Catheter (IUPC)

APPENDIX A: FETAL HEART RATE CHARACTERISTICS

1. **Baseline rate:** mean (average) FHR rounded to increments of 5 bpm during a 10 minute segment **excluding:**

- a. Periodic or episodic changes
- b. Periods of marked FHR variability
- c. Segments of the baseline that differ by > 25 bpm

***Baseline rate is determined over a 10-minute window. Minimum baseline duration must be at least 2 minutes of the baseline, or the baseline for that period is indeterminate.

You may refer to the previous 10-minute segment to determine the baseline.

Normal baseline rate is 110-160

Tachycardia = FHR > 160 bpm for ≥ 10 minutes in duration

Bradycardia = FHR < 110 bpm for ≥ 10 minutes in duration

2. **Baseline variability:** Fluctuations in the baseline FHR of 2 cycles per minute or greater. Fluctuations are irregular in amplitude and frequency (overall irregularity of the heart rate) and are visually quantified by the amplitude from peak to trough (high to low) in bpm and are labeled as follows:

- a. **Absent** = amplitude range is undetectable
- b. **Minimal** = amplitude range is between $2 \leq 5$ bpm
- c. **Moderate** = amplitude range is 6-25 bpm
- d. **Marked** = > 25 bpm

Sinusoidal pattern is a smooth sine wave-like pattern of regular frequency and amplitude and is excluded in the definition of FHR variability.

3. **Acceleration:** a visually apparent abrupt increase (defined as onset of acceleration to peak in < 30 seconds) in FHR above the baseline. The increase is identified from the most recently determined portion of the baseline. The acme (peak) of the acceleration is ≥ 15 bpm above the baseline and lasts ≥ 15 seconds and is < 2 minutes in duration from onset to return to the baseline. Prior to 32 weeks gestation, acceleration = an acme (peak) of ≥ 10 bpm above the baseline and a duration of ≥ 10 seconds.

Prolonged acceleration is ≥ 2 minutes and < 10 minutes in duration. An acceleration of ≥ 10 minutes is a baseline change.

4. **Late deceleration:** A visually apparent **gradual** (onset of deceleration to nadir is ≥ 30 seconds) decrease and return to baseline FHR and is associated with a uterine contraction. Decrease is calculated from the most recently determined portion of the baseline. The nadir of the deceleration occurs after the peak of the contraction. Usually, the onset, nadir and recovery of the deceleration occur after the beginning peak and ending of the contraction.
5. **Early deceleration:** A visually apparent **gradual** (onset of deceleration to nadir ≥ 30 seconds) and return to baseline FHR and is associated with a uterine contraction. The decrease is calculated from the most recently determined portion of the baseline. The nadir of the deceleration occurs simultaneously to the peak of the contraction. Usually the onset, nadir

and recovery of the deceleration occur simultaneously to the peak of the contraction.

6. **Variable deceleration:** A visually apparent **abrupt decrease** (onset of deceleration to the beginning of the nadir < 30 seconds) in FHR below baseline. The decrease is calculated from the most recently determined portion of the baseline. The decrease in FHR below the baseline is ≥ 15 bpm, lasting ≥ 15 seconds, and < 2 minutes from onset to return to baseline FHR. When associated with uterine contractions, their onset, depth and duration commonly vary with successive uterine contractions.
7. **Prolonged deceleration:** A visually apparent decrease in FHR below the baseline. The decrease is calculated from the most recently determined portion of the baseline. The decrease from the baseline is ≥ 15 bpm, lasting ≥ 2 minutes but < 10 minutes from onset to return of FHR baseline. A prolonged deceleration of ≥ 10 minutes is a baseline change.
8. **Reactive FHR tracing:** A tracing is identified as “reactive” when the tracing exhibits 2 accelerations / 20 minutes, ≥ 15 bpm above baseline lasting ≥ 15 seconds in association with moderate variability and a baseline between 110-160 bpm. If before **32 weeks gestation** = 2 accelerations / 20 minutes with accelerations ≥ 10 bpm above baseline lasting for ≥ 10 seconds.

Quantification:

1. Any **deceleration** is quantified by the depth of the nadir in bpm below FHR baseline and excludes any transient spikes or electronic artifact. The duration is described in minutes and seconds beginning to the end of the deceleration. They are defined as **recurrent** if they occur with $\geq 50\%$ of uterine contractions in a 20 minute period.
2. Any **acceleration** is quantified by the height of the peak in bpm above FHR baseline and excludes any transient spikes or electronic artifact. The duration is described in minutes and seconds from beginning to the end of the acceleration.
3. **Bradycardia** and **tachycardia** are quantified by the actual FHR in bpm or the visually determined range if the FHR does not remain at one rate.

Category I Normal	Category II Indeterminate	Category III Abnormal
<ul style="list-style-type: none"> • Baseline rate: 110–160 beats per minute (bpm) • Baseline FHR variability: moderate • Late or variable decelerations: absent • Early decelerations: present or absent • Accelerations: present or absent 	<p>Baseline rate</p> <ul style="list-style-type: none"> • Bradycardia not accompanied by absent baseline variability • Tachycardia <p>Baseline FHR variability</p> <ul style="list-style-type: none"> • Minimal baseline variability • Absent baseline variability not 	<ul style="list-style-type: none"> • Absent baseline FHR variability and any of the following: <ul style="list-style-type: none"> - Recurrent late decelerations - Recurrent variable decelerations - Bradycardia • Sinusoidal pattern

	accompanied by recurrent decelerations <ul style="list-style-type: none"> • Marked baseline variability Accelerations <ul style="list-style-type: none"> • Absence of induced accelerations after fetal stimulation Periodic or episodic decelerations <ul style="list-style-type: none"> • Recurrent variable decelerations accompanied by minimal or moderate baseline variability • Prolonged deceleration ≥ 2 minutes but < 10 minutes • Recurrent late decelerations with moderate baseline variability • Variable decelerations with other characteristics, such as slow return to baseline, "overshoots," or "shoulders" 	
--	---	--

Interpretation of Auscultation Findings⁶

Category I	Category II
<ul style="list-style-type: none"> • Normal FHR baseline between 110 and 160 bpm 	<ul style="list-style-type: none"> • Irregular rhythm
<ul style="list-style-type: none"> • Regular heart rhythm 	<ul style="list-style-type: none"> • Presence of FHR decreases or decelerations from the baseline <ul style="list-style-type: none"> ○ Note: When recurrent decelerations are detected, a transfer to EFM is indicated. EFM will be able to determine if the decreases from baseline are early, late, or variable decelerations and a diagnostic category I, II, or III will then be assigned using NICHD criteria for EFM generated FHR tracings.

<ul style="list-style-type: none"> Absence of FHR decreases or decelerations from the baseline 	<ul style="list-style-type: none"> Tachycardia (baseline >160 bpm >10 minutes in duration)
<ul style="list-style-type: none"> Note: Presence of FHR increases of accelerations from the baseline may or may not be present in a FHR auscultated and determined to be Category I. Accelerations should be assessed for and documented if present. If present, FHR accelerations signify fetal well-being at the time they are noted. 	<ul style="list-style-type: none"> Bradycardia (baseline <110 bpm >10 minutes in duration)

Appendix B: Below, find examples for considering continuous EFM, optimal monitoring will be determined by CNM / MD order

Maternal Conditions

Chronic Disorders

- 1 Active drug use that may affect neonatal morbidity
- 2 Chronic HTN
- 3 SLE or antiphospholipid syndrome
- 4 Thyroid disease, if uncontrolled

Diabetes requiring insulin or uncontrolled gestational diabetes Obstetric history

- 1 History of IUFD
- 2 Previous cesarean birth

Current pregnancy

- 1 No prenatal care
- 2 Cholestasis
- 3 Diabetes that requires insulin or uncontrolled gestational diabetes
- 4 Gestational hypertension
- 5 Increased maternal serum AFP or HCG
- 6 Malpresentation
- 7 Twins
- 8 Oligohyramnios
- 9 Prolonged pregnancy >41 weeks
- 10 Pre-eclampsia
- 11 Prematurity (less than 36 weeks)
- 12 Preterm premature ROM (<36 weeks)

Labor

- 1 Chorioamnionitis
- 2 Epidural anesthesia
- 3 Meconium
- 4 Pitocin administration
- 5 Vaginal bleeding greater than bloody show
- 6 Misoprostol administration within two hours

Fetal Conditions

- 1 IUGR
- 2 Known congenital anomaly
- 3 Polyhydramnios
- 4 Red cell alloimmunization in the presence of erythroblastosis

NOTE: The following ARE NOT exclusions to IA:

- 1 Fentanyl administration
- 2 ROM at term with clear fluid, regardless of duration

APPENDIX C: The Procedure of Fetal Monitoring

1. **Intermittent Auscultation**
 - a. Auscultation: When using auscultation as a mode of intermittent monitoring, a Doppler used. FHR baseline should be established between contractions. Auscultation should be performed before, during and continued for one minute after the completion of a contraction. Maternal pulse to be determined immediately prior to and during auscultation. If maternal pulse and FHR cannot be distinguished from one another consider electronic monitoring and/or use of maternal pulse oxymetry.
 - b. Utilizing abdominal palpation, contraction frequency, duration and intensity will be assessed and documented with the same frequency as FHR.

2. **External Fetal Monitoring (EFM/Doppler):**
 - a. Precautions / Contraindication: unknown. Although some patients may exhibit sensitivity to aquasonic gel, KY lubricating gel may be used instead.
 - b. Assess the need for fetal heart rate monitoring
 - c. Operate and set up monitoring equipment appropriately
 - d. Explain to the patient the need for FHR monitoring and what data the monitoring will provide
 - e. Assess the monitor is functioning properly
 - f. Observe the FHR tracing for consistency to verify clarity of input
 - g. When monitoring is in progress observe area of abdomen under EFM monitor piece for redness, adjust as needed
 - h. Reapply gel as needed
 - i. Whenever in doubt, auscultate FHR and check maternal heart rate by applying the pulse ox (or manually).

3. **External Uterine Monitoring/Tocotransducer:**
 - a. Precautions / Contraindication: unknown. Although some patients could experience skin breakdown // irritation. Frequently reposition the monitor
 - b. Position the woman comfortably. Ensure uterine displacement to reduce compression of the inferior vena cava and position toco transducer on abdomen where fundus is most easily palpable and least maternal tissue is present. Avoid placing toco over umbilicus.
 - c. Adjust the control button between contractions to record an artificial baseline tonus of approximately 10 mmHg to prevent the tracing from failing to record
 - d. When monitoring is in progress check under the toco for redness and reposition every few hours

4. **Internal uterine pressure catheter monitoring (IUPC):**
 - a. The Registered Nurse knowledgeable in this procedure is responsible for assisting the physician and or CNM with the insertion of an intrauterine pressure catheter.
 - b. Physicians, Certified Nurse Midwives (CNMs), and medical and midwifery students

- under appropriate direction may insert an intrauterine pressure catheter.
- c. Amniotic membranes must be ruptured and cervix adequately dilated prior to insertion.
 - d. An intrauterine pressure catheter should not be used if placenta previa is present or suspected.
 - e. Indications: A direct means of detecting frequency, duration, and intensity and resting tone of contractions.
 - f. An IUPC may be used to determine Montevideo units. Montevideo units (MVUs) are a unit of measure of the intensity or force of a contraction. MVUs are determined by taking the sum of the peak of the contractions in a 10 minute period. Charting frequency remains, if charting every 30 minutes either average the MVU's or chart a range in the comments section of the uterine activity box. Adequate MVUs are considered to be in the range of:
 - 200-280 mmHg if the baseline uterine tone is subtracted from the total.
 - 240-300 mmHg if the baseline tone is included in the total.
 - Maximal uterine activity is considered to be 280-300 MVUs.
 - g. Adequacy of uterine activity with an IUPC may also be established by following criteria:
 - A contraction pattern with contractions > 2 minutes and ≤ 3 minutes apart.
 - Uterine contractions that are ≥ 50 mmHg above the baseline resting tone.
 - h. Average uterine resting tone is considered to be 5-25 mmHg. A higher resting tone may be noted for Pitocin induction, multiple fetuses, and amnionitis. An elevated baseline resting tone > 25 mmHg may warrant further evaluation to determine etiology.
 - i. An intrauterine pressure catheter (IUPC) has been associated with rare complications such as uterine perforation, abruption placenta and possibly amniotic fluid embolus. Use of IUPC in labor has not resulted in a decrease in Cesarean birth; hence its routine use is not recommended.

5. Procedure for IUPC set-up

- a. Explain procedure and indication to patient and family to decrease anxiety and increase cooperation
- b. Position patient in dorsal lithotomy position.
- c. Prepare equipment as follows:
 - Gather supplies: catheter, cable and sterile gloves.
 - Turn on the fetal monitor and plug in IUPC cable
 - Open sterile catheter package.
 - Connect the cable to the IUPC connection site.
 - Maintain zero slide in the “closed” position and zero the monitor. This establishes a zero baseline for the catheter.
 - Assist care provider with the insertion of the IUPC.
 - Secure catheter to patient's thigh.
- d. Documentation in WatchChild computer system:
 - Fetal Assess screen: Change monitor type. Chart initial baseline reading and uterine resting tone in both lateral positions and while patient is supine.
 - MVU's after 10 minutes

6. Internal Fetal Monitoring/Fetal Scalp Electrode (FSE):

- a. Fetal presentation should be documented prior to insertion via exam or ultrasound.
- b. Assist provider with FSE insertion by obtaining FSE packet and positioning patient
- c. Attach cable to FSE leg plate
- d. Attach FSE device to leg plate
- e. Secure leg plate to patient's anterior thigh
- f. Observe tracing for clarity and functioning. If unclear or erratic, check leg plate contact and check cable attachment. If tracing does not improve, notify provider to replace FSE.
- g. To remove electrode, turn 1 ½ times counter clockwise and pull gently.
- h. The fetal scalp electrode (FSE) may rarely cause infection at the site of insertion
- i. The use of a FSE is relatively contraindicated in instances of potential vertical transmission of infection, such as HIV, hepatitis B, and hepatitis C. Risk / benefit analysis must be individualized in these circumstances. Contraindications: face presentation.
- j. With known fetal coagulopathies, the FSE may cause excessive bleeding. Consultation with a High Risk specialist is advisable, as risk/benefit analysis must be individualized in these circumstances.

APPENDIX D: Documentation of Fetal Monitoring

Documentation with Intermittent Auscultation

- 2) Fetal assessment includes the following:
 - a. mode
 - b. Fetal heart rate
 - c. Rhythm: regular or irregular
 - d. Increases (accelerations), presence or absence
 - e. Decreases, depth, timing and duration (Type of deceleration per EFM definitions cannot be accurately described with IA)

Note: FHT variability is not assessed with IA

- 3) Uterine activity includes the following:
 - a. Mode
 - b. Frequency: from the beginning of one contraction to the beginning of the next contraction
 - c. Duration
 - d. Intensity

Documentation with the External Fetal Monitor

- 1) Fetal assessment includes the following:
 - a. Baseline FHR
 - b. FHR variability
 - c. Presence of accelerations.
 - d. Periodic or episodic decelerations.
 - e. Changes or trends of FHR patterns over time

Note: FHR patterns have been given descriptive names. Nurses should use these terms in both written and verbal communication. The terms used at the Birth Center are established by the National Institute of Child Health and Human Development (NICHD) and the National Institutes of Health as universal nomenclature for EFM interpretation. See Appendix C for description of fetal heart rate characteristics.

- 2) Uterine activity includes the following:
 - a. Mode
 - b. Frequency: from the beginning of one to beginning of next one
 - c. Duration
 - d. Intensity

Use narrative notes, flow sheets, and summary.

Policy Title: Freedom of Movement. Copyright © 2014 Springer Publishing Company, LLC. Reprinted with permission.

Policy: Provide the laboring woman freedom to walk, move about, and assume the position of her choice during labor and birth unless restriction or a specific position is needed because of an underlying maternal-fetal condition.

Purpose: Freedom of movement in labor reduces maternal and neonatal morbidity, facilitates uterine contractility and labor progression, and enhances maternal satisfaction of the childbirth process. Restricting a laboring woman's movement may adversely affect physiologic and psychologic elements during labor and childbirth, resulting in increased utilization of obstetrical interventions, oxytocin augmentation, and operative delivery.

- There has been no evidence of increased maternal or neonatal morbidity or increased obstetrical interventions in allowing a birthing mother the freedom to ambulate (move about) or change position during labor and birth.
- When a laboring woman is restricted to supine positioning, compression of the inferior vena cava by the weight of the fetus results in maternal hypotension and decreased uteroplacental perfusion. Higher pH and higher values of PO₂ and lower values of PCO₂ are in the cord blood of women who labor and birth in nonsupine positions.
- Ambulation, movement, and upright maternal positioning are likely to reduce the length of the first stage of labor by facilitating fetal descent. Restriction of movement decreases the fetal ability to descend, flex, rotate, and engage into the pelvis.
- Women who ambulate during the first stage of labor are less likely to have an operative delivery, defined as cesarean section, forceps, or vacuum extraction.
- When given the freedom to ambulate, move, and change position during labor and birth, most women find this to be an effective form of pain relief and are less likely to receive regional anesthesia.

Procedure:

1. The laboring woman will have freedom to change position to obtain a position of comfort, including, but not limited to, walking, standing, kneeling, squatting, and the use of chair, stool or birthing ball, unless a restriction on movement is required due to treatment or assessment of an underlying medical condition.
2. Utilization of nonevidence-based practices restrictive to a laboring woman's freedom of movement (including continuous pulse-oximetry or continuous electronic fetal monitoring for low-risk obstetric clients) should be discouraged and dictated only by the underlying maternal-fetal condition versus institutional protocol.
3. Utilization of technology that affords a laboring woman freedom of movement during labor and childbirth including fetal telemetry and Doppler for intermittent fetal heart rate auscultation should be readily available to all intrapartum nursing and obstetrical staff.
4. The laboring woman whose labor is progressing slowly should be encouraged by the health care team to assume upright positions such as walking, kneeling forward, or rocking on a birthing ball, as ambulation and/or movement may encourage the progression of labor.

Munch L. Freedom of Movement. In: Hotelling B, Gordon H, eds. *How to Become Mother-Friendly. Policies and Procedures for Hospitals, Birth Centers, and Home Birth Services* New York, NY: Springer Publishing Company, LLC; 2014.

Hoag Hospital. Induction of Labor Scheduling Policy. Includes Induction of Labor Scheduling Request and patient education materials. Used with permission.

Category: Patient Care Services	Effective Date: See footer
Owner: Labor and Delivery OR Manager	
Title: Cesarean Delivery / Induction of Labor Scheduling	

PURPOSE: To eliminate non-medically indicated (elective) deliveries prior to 39 weeks. Non-medically indicated cesarean delivery or induction of labor prior to 39 completed weeks gestation requires approval of the Hoag Physician Leader or designee.

SCOPE: Labor and Delivery

AUTHORIZED PERSONNEL: Labor and Delivery Director, Charge Nurses, OR Manager, Clerical Coordinators


Description		Responsible Person
1.0 SCHEDULING DEFINITIONS:		LDR Director, LDR OR Manager, Charge RN, Scheduler
1.1	Clock In Time: Patient in the room and anesthesia ready to be administered ,surgeon has presented to the department	
1.2	Procedure Start Time: When Anesthesiologist releases patient to Surgical Team. Pre-incision verification (time out) will occur: correct patient, correct site, correct surgery, and correct position.	
1.3	Incision Time: When surgeon makes the Incision / starts the surgery.	
1.4	Procedure End Time: Surgeon has finished the procedure.	
1.5	Out of Room Time: Patient exits the O.R. suite.	
1.6	Late Start	
1.6.1	If the patient enters the OR by or before the scheduled start time, the case is considered "on time" and "no delay" is recorded on the Intraoperative Record. If the patient enters the OR past the scheduled time, the case is considered a "late start" and a delay code must be recorded on the Intraoperative Record.	
1.7	Urgent/Emergent	
1.7.1	Emergency Cases: Life threatening conditions requiring immediate attention that takes precedence over other cases. Emergencies will be performed in an available operating room during regular hours or may bump scheduled cases if all existing rooms are in use.	
1.7.2	Urgent Cases: In house referrals or patients admitted to the hospital that requires surgical intervention within 24 hours.	
1.7.3	Turnover Time: The time from when the current patient leaves the room until the next patient enters the room. Turn over time reports are generated for to-follow cases by the same surgeon.	
1.7.4	Clean Up Time: Scheduling will allow adequate time between scheduled cases for cleaning and prepping. The OR clean up time is 30 minutes.	
2.0 SURGERY CASE / INDUCTION SCHEDULING:		
2.1	All cases are scheduled through the Labor and Delivery Scheduling Line.	
2.1.1	OB Physician Office will fax the Hoag Scheduling Request/Order to LDR Scheduling	
2.1.2	Forms will not be accepted and requested date will not be granted if:	
2.1.2.1	The form has been faxed before 0900	
2.1.2.2	The form has been received 8 weeks prior to the requested surgery	

1 of 4

The most current version of all Policies and Procedures is located on the Hoag Employee intranet. Please verify effective dates.

HOAG2013-0000002769
Version : 2

Effective Date: 04/07/15

	PROCEDURE
---	------------------

Category: Patient Care Services	Effective Date: See footer
Owner: Labor and Delivery OR Manager	
Title: Cesarean Delivery / Induction of Labor Scheduling	

Description	Responsible Person
<p style="padding-left: 40px;">date for cesareans/ 1 week prior to the requested induction date for vaginal delivery</p> <p style="padding-left: 40px;">2.1.2.3 Orders are not present in SCM at the time of scheduling.</p> <p>2.1.3 Women who have medical indications for delivery have priority over women having elective cesarean deliveries and inductions of labor. These decisions are at the discretion of the LDR charge nurse in consultation with the designated physician leader.</p> <p>2.2 All scheduled deliveries must have the appropriate form completed and signed by physician to begin the scheduling process.</p> <p>2.2.1 <i>Cesarean Deliveries:</i> Cesarean Delivery Scheduling Request/Order form (PS 7598).</p> <p style="padding-left: 40px;">2.2.1.1 For primary, elective cesarean deliveries, a complete/signed "Understanding the Risks" patient education checklist must also be received in order for the case to be scheduled.</p> <p>2.2.2 <i>Inductions of labor:</i> Induction of Labor Scheduling Request form (PS 5529).</p> <p style="padding-left: 40px;">2.2.2.1 For elective inductions, a completed/signed "Induction Education" patient education must also be received in order for the case to be scheduled.</p> <p>2.3 Cases will be entered into Surgical Information System (SIS) by the LDR Scheduling Clerical Coordinator as tentative.</p> <p>2.4 A Hoag Physician Leader (Chief of Maternal Fetal Medicine, Laborist, Department Head, etc.) will review the Scheduling Request/Order form within 24 hours.</p> <p>2.4.1 Approval from the Hoag Physician Leader:</p> <p style="padding-left: 40px;">2.4.1.1 The case will proceed as scheduled. No further action taken.</p> <p>2.4.2 Further information needed:</p> <p style="padding-left: 40px;">2.4.2.1 The Hoag Physician Leader will complete a request for further information to be faxed to physician office.</p> <p>2.4.3 Declines scheduling request:</p> <p style="padding-left: 40px;">2.4.3.1 The Hoag Physician Leader will communicate the cancellation with Clerical Coordinators for removal of schedule.</p> <p style="padding-left: 40px;">2.4.3.2 LDR Scheduling will call the OB Physician's office to inform them of the cancellation of the case.</p> <p>2.5 Computerized Elective Scheduling (captured in SIS)</p> <p>2.5.1 In order to ensure correct patient identification the following information is needed in order to schedule surgery:</p> <p style="padding-left: 40px;">2.5.1.1 Social Security Number or Medical Record Number</p> <p style="padding-left: 40px;">2.5.1.2 Patient Name (Last, First, Middle Initial)</p> <p style="padding-left: 40px;">2.5.1.3 Date of Birth</p> <p style="padding-left: 40px;">2.5.1.4 Patient Gender</p> <p>2.5.2 If patient is in Affinity, download the above information and continue with the following information.</p> <p style="padding-left: 40px;">2.5.2.1 Patient Home and/or Work Phone Number</p> <p style="padding-left: 40px;">2.5.2.2 Patient In-House Room Number</p> <p style="padding-left: 40px;">2.5.2.3 Surgeon Name</p> <p style="padding-left: 40px;">2.5.2.4 Assistant Surgeon</p>	<p>Scheduler, LDR OR Manager</p>

2 of 4

The most current version of all Policies and Procedures is located on the Hoag Employee intranet.
Please verify effective dates.

HOAG2013-000002769
Version : 2

Effective Date: 04/07/15

	PROCEDURE
---	------------------

Category: Patient Care Services	Effective Date: See footer
Owner: Labor and Delivery OR Manager	
Title: Cesarean Delivery / Induction of Labor Scheduling	

Description	Responsible Person																
<p>2.5.2.5 Surgical Procedure 2.5.2.6 Pre-Op Diagnosis 2.5.2.7 Special Needs / Equipment needed 2.5.2.8 Anesthesia Type 2.5.2.9 Admit Type</p> <p>2.6 Time Availability :</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Day</th> <th style="width: 25%;">Team A</th> <th style="width: 25%;">Team B</th> <th style="width: 25%;">Induction</th> </tr> </thead> <tbody> <tr> <td>Monday, Tuesday, Thursday, & Friday</td> <td>0715 0900 1030 1200 1330</td> <td>0730</td> <td></td> </tr> <tr> <td>Wednesday</td> <td>0830 1000 1130 1300 1430</td> <td>0900</td> <td>0030 – 2 slots 0400 – 2 slots 0900 – 2 slots</td> </tr> <tr> <td>Weekends and Holidays</td> <td>No scheduled time available</td> <td>0830 1130</td> <td></td> </tr> </tbody> </table>	Day	Team A	Team B	Induction	Monday, Tuesday, Thursday, & Friday	0715 0900 1030 1200 1330	0730		Wednesday	0830 1000 1130 1300 1430	0900	0030 – 2 slots 0400 – 2 slots 0900 – 2 slots	Weekends and Holidays	No scheduled time available	0830 1130		<p>LDR OR Manager, Physician Leader</p>
Day	Team A	Team B	Induction														
Monday, Tuesday, Thursday, & Friday	0715 0900 1030 1200 1330	0730															
Wednesday	0830 1000 1130 1300 1430	0900	0030 – 2 slots 0400 – 2 slots 0900 – 2 slots														
Weekends and Holidays	No scheduled time available	0830 1130															
<p>2.7 Add on Cases</p> <p>2.7.1 Surgeons or their offices call Labor and Delivery to schedule add-on cases. (After the schedule closes for the next day and scheduling for the day of surgery), all non-urgent/emergent add-on cases are considered first call/ first serve but will be triaged by the LDR Charge Nurse for time assignment and or available space.</p> <p>2.7.2 Add-on cases are logged on the Add-on list with specific information requested: Patient and surgeon name, procedure. Appropriate ancillary departments are notified as needed. Add-on cases are entered in SIS system by Clerical Coordinator.</p> <p>2.7.3 Anesthesia department will assign an Anesthesiologist to add-on cases 2.7.3.1 If case has no Anesthesiologist assigned it will automatically be assigned the LDR Unit Anesthesiologist</p> <p>2.7.4 All Urgent –emergent add-on cases are coordinated by charge nurse 2.7.4.1 Any special requests, such as anesthesia support, or other special equipment need to be communicated to the charge nurse immediately so the items can be obtained</p>	<p>LDR OR Manager, Charge RN Scheduler</p>																
<p>2.8 Bumping:</p> <p>2.8.1 If the surgeon determines the surgery cannot wait until there is availability of OR-room, the surgeon will contact the OR Manager or the LDR Charge Nurse and discuss the need to bump another case. 2.8.1.1 It is the responsibility of the surgeon to contact the surgeon whose</p>	<p>LDR OR Manager, Charge RN</p>																

3 of 4

The most current version of all Policies and Procedures is located on the Hoag Employee intranet. Please verify effective dates.

HOAG2013-0000002769

Effective Date: 04/07/15

Version : 2

	PROCEDURE
---	------------------

Category: Patient Care Services	Effective Date: See footer
Owner: Labor and Delivery OR Manager	
Title: Cesarean Delivery / Induction of Labor Scheduling	

Description	Responsible Person
procedure he/she will bump and discuss the situation with the surgeon.	
<p>Reference: Main, E., Oshiro, B., Cagolla, B., Bingham, D., Dang-Kilduff, L., & Kowalewski, L. (2010). Elimination of Non-medically indicated (elective) deliveries before 39 weeks gestational age. <i>California Maternal Quality Care Collaborative Toolkit to Transform Maternity Care</i>. Developed under contract #08-85012 with the California Department of Public Health; Maternal, Child and Adolescent Health Division; First edition published by March of Dimes.</p> <p>Review and/or input for this procedure was given by the following: WHI ACO Pilot Committee WHI Leadership WHI OB Core 12/2014</p> <p>Revision Designation: B – significant revisions</p>	

4 of 4

The most current version of all Policies and Procedures is located on the Hoag Employee intranet.
Please verify effective dates.

HOAG2013-000002769
Version : 2

Effective Date: 04/07/15

**INDUCTION OF LABOR (IOL) SCHEDULING REQUEST
HOAG MEMORIAL HOSPITAL PRESBYTERIAN**

The Prenatal Record MUST be on file in Labor and Delivery or Faxed with this completed form.

<input type="checkbox"/> Check if this is an update to a currently scheduled case			
<input type="checkbox"/> Elective <input type="checkbox"/> Non-Elective		Date Submitted:	
Requested Induction Date:			
Requesting OB:		Alternate time availabilities:	
Pediatrician:			
Dating: EDC (month/day/year):		Gestational age at desired date of IOL: weeks days	
IOL Diagnosis:			Latex Allergy: <input type="checkbox"/> Yes <input type="checkbox"/> No
PATIENT DEMOGRAPHIC INFORMATION:			
Patient Name:			
DOB:		SSN:	MR#:
Address:		Home #:	Work #:
		Cell #:	Other #:
Office contact:		Phone #:	Fax #:
<input type="checkbox"/> Induction Order in CPOE (Sign & Hold)			
Special instructions:			
_____ [Date]		_____ [Time] A.M./P.M.	_____ [Physician Signature – Required]
ID# _____			
To Be Completed by Physician Office Staff			
INSURANCE CARD INFORMATION		Primary Subscriber's Name: _____	
ID#: _____		Group#: _____	
To Be Completed By Hoag Hospital LDR Scheduling			
Confirmation Code:		IOL Date:	IOL Time:

FAX FORM TO LDR

Page 1 of 2

INDUCTION OF LABOR SCHEDULING REQUEST
PS 5529 Rev 09/14/15

Name Label:



[2201]

Induction of Labor: _____

Gravity: _____ Parity: _____

Indication: (check all appropriate indications below)

Level 1

- Chorioamnionitis
- Diabetes Uncontrolled
- Fetal Anomaly
- Fetal hydrops/isoimmunization
- Gestational/Chronic hypertension
- IUGR less than 5%
- Maternal medical conditions (specify): _____
- Multiple gestation:
 - twins di/di mo/di
- Non-reassuring fetal testing
- Oligohydramnios
- Preeclampsia/HELLP
- PROM

Level 2

- ≥ 41 weeks gestation / Post-term pregnancy
- Gestational diabetes
- IUGR – reassuring testing
- Fetal demise

Level 3

- Distance from hospital
- History of rapid labor
- Maternal request
- Prior C/S
 - Patient desires VBAC
- Psychological factors (specify): _____
- > 39 weeks with a favorable cervix
- Other indication: _____

Confirmation of gestational age:

LMP: _____

EDC: _____ determined by: (check all that apply)

- Ultrasound obtained at < 20 weeks on (date): _____ @ (gestational age): _____ weeks confirms gestational age
- Known date of conception on (date): _____ associated with infertility treatment

If EDC was not determined by above methods, then identify documentation of fetal maturity:

Amniocentesis performed on: _____ Results: _____

*Provide explanation if scheduling at < 39 weeks : _____

Bishop Score

	0	1	2	3	Score
Dilation (cm)	closed	1-2	3-4	≥ 5	
Effacement (%)	0-30	40-50	60-70	≥ 80	
Station (cm)	-3	-2	-1	≥ 0	
Cervical Consistency	Firm	Medium	Soft	-----	
Cervical Position	Posterior	Midline	Anterior	-----	
				Total:	

A Bishop Score ≥ 6 is required for elective induction of multiparous patients.

Physician Signature: _____ Date/Time: _____

To be completed by Chief of Maternal Fetal Medicine or OB Hospitalist

Procedure Scheduling Determination:

- Schedule: Medically indicated and necessitates delivery < 39 weeks gestation
- Schedule: Gestation age ≥ 39 weeks on scheduled date

Completed by: _____ Date/Time: _____
[Chief of Maternal Fetal Medicine/OB Hospitalist]

Bishop Score on Admission

	0	1	2	3	Score	Repeat Score
Dilation (cm)	closed	1-2	3-4	≥ 5		
Effacement (%)	0-30	40-50	60-70	≥ 80		
Station (cm)	-3	-2	-1	≥ 0		
Cervical Consistency	Firm	Medium	Soft	-----		
Cervical Position	Posterior	Midline	Anterior	-----		
				Total:		

Exam done By: _____

- Difference in Bishop score greater than or equal to 4
- Cervical ripening ordered
- Patient discharged and rescheduled

FAX FORM TO LDR

INDUCTION OF LABOR SCHEDULING REQUEST
PS 5529 Rev 09/14/15

Name Label: _____



[2201]



Induction Education for Patients

Induction of labor is the use of medication or other interventions to get labor started. There are a number of medical reasons for which labor induction is indicated. An *elective* induction is done when a patient and her clinician decide to induce for non-medical reasons. In a first delivery, elective induction is not scheduled before 41 weeks of pregnancy. For women who have already delivered a baby, elective induction is not performed prior to 39 completed weeks of pregnancy. The most common ways of starting contractions are by breaking your bag of water and use of medications.

There are a number of physical and social reasons that a patient and her clinician may choose elective induction. Patients should have a clear understanding of the pros and cons of inducing labor before considering labor induction.

ELECTIVE INDUCTION OF LABOR MAY:

- Increase the duration of labor and hospital stay
- Increase the need for pain medication and/or epidural
- Decrease the patient's ability to move about the labor room
- Increase the chance of cesarean delivery

For more information about induction please go to:
<http://www.bit.ly/inductioninformation>

Please understand that your scheduled time is a request. You may not be able to come in on the day and time that you are scheduled if we have high patient volume and room is not available.

Call Labor and Delivery at 949/764-5789 before coming to the hospital to determine availability for induction. If there is no availability at that time, the charge nurse will provide you follow up instructions. You will be contacted by our Labor and Delivery staff regarding your delivery plans.

Continue your normal routine while waiting to be admitted to the hospital, to include eating and drinking as usual.

I have read and understand the above information and have had the opportunity to ask questions.

PATIENT SIGNATURE

PATIENT NAME

DATE

Marin General Hospital. Pain Management Policy. Used with permission.

**MARIN GENERAL HOSPITAL
DEPARTMENT OF NURSING
WOMEN'S, INFANTS' AND CHILDREN'S CARE SERVICES**

**POLICY FOR THE PAIN MANAGEMENT OF THE OB PATIENT DURING
THE INTRAPARTUM PERIOD**

I. POLICY

It is the policy of Marin General Hospital (MGH) to assure that an obstetric patient be given accurate and current information regarding nonpharmacologic and pharmacologic interventions that are available to them when they are in labor.

II. PURPOSE

The purpose of this policy is to ensure that patients are supported in their pain management decisions by the Obstetric (OB) Registered Nurses (RN) caring for them in labor. Health care providers including nurses are crucial resources for childbearing families. In order to assist women in the decision for relief of labor discomforts, Obstetric Registered Nurses must be knowledgeable regarding the risks and benefits of all medications used in labor and also be able to support them in non pharmacological methods.

III. GENERAL INFORMATION

Labor pain differs from acute or chronic pain in that it is an expectation of the process. Increasing intensity and frequency often heralds progress and is interpreted as a positive sign, rather than a sign that something is wrong. Labor pain has many psychological associations that cause women to actually choose to experience pain rather than control it. The preparation for the labor process as well as the emotional support received during labor aid in decreasing maternal anxiety thereby decreasing or altering her perception of pain.

The laboring patient's description of the pain intensity of her contractions is whatever she says it is, regardless of the intensity of uterine contractions (UC's) as palpated by the nurse.

Pain relief needs to be addressed with use of non-pharmacological interventions any time during labor that pharmacological interventions are contraindicated. Nonpharmacological interventions are an effective alternative to pharmacological interventions and can be used anytime per patient preference.

Policy & Procedure #3050.34
 Policy for the Pain Management of the OB Patient During the Intrapartum Period
 Page 2 of 5

<p>ASSESSMENT</p>	<ol style="list-style-type: none"> 1. Assess each patient upon arrival to the unit for the following: <ol style="list-style-type: none"> a. Onset, frequency, and duration of UCs. b. A Labor Pain and Coping Assessment shall be performed initially on admission using the Labor Pain and Coping Scale (LPCS): <ol style="list-style-type: none"> 1. Unaware, talking, sleeping 2. Aware of Contractions, discomfort using breathing and relaxation techniques, comfort relaxation techniques, comfort measures and minimal coaching 3. Requires coaching, pain medication and pain management interventions 4. Intense coaching, inadequate pain relief c. Description of pain (to rule out pain from other causes than labor, i.e. abruption, uterine rupture, etc.). d. Interventions for pain management used by patient at home. e. Effectiveness of interventions will be assessed 30 minutes after intervention is given. f. If patient has had any childbirth preparation classes. g. Patient's plan for pain management during labor. 2. Pain assessment in Labor is ongoing because it is not expected to diminish or go away. Following the LPCS assessment on admission, a pain/coping assessment shall be performed with complete set of vital signs (every 2-4 hours) before and after medication/intervention is requested and received or as patient conditions warrants. Frequency of assessment may be modified by agreement between the patient and the nurse.
--------------------------	--

<p>PLANNED STEPS</p>	<ol style="list-style-type: none"> 1. Assess patient's level of pain and need for intervention. 2. Use any of the following support measures as non-pharmacological methods of pain management. <ol style="list-style-type: none"> a. Dim lights in room b. Quiet atmosphere c. Support people in room as desired by patient d. Instruction/coaching in slow, relaxed breathing or effective breathing pattern of patient's choice. e. Instructions/support of relaxation techniques such as <ol style="list-style-type: none"> 1. Massage 2. Visualization 3. Meditation 4. Music 5. Distraction Strategies 6. Cutaneous stimulations (transcutaneous electrical nerve stimulation [TENS], acupuncture, accupressure) 7. Hypnosis/self-hypnosis f. Hydrotherapy-shower or tub, it not contraindicated (Refer to Hydrotherapy Policy #3050.41). g. K-pad for heat per MD order or cold pack. h. Counter pressure i. Sterile water injections as counter irritant for back labor. (Refer to Intradermal Sacral Sterile Water Injections Policy & Procedure # 3050.22). 3. Notify MD/Certified Nurse Midwife (CNM) if non-pharmacological methods ineffective or patient requesting additional pain relief. 4. Provide pharmacological interventions per MD/CNM orders with explanation to patient/support person.
<p>PATIENT EDUCATION</p>	<ol style="list-style-type: none"> 1. Give appropriate age specific explanation of LPCS assessment. 2. Explain process of labor as needed to decrease patient's anxiety, taking into consideration the following: <ol style="list-style-type: none"> a. Patient's questions b. Patient's previous knowledge of labor process c. Patient's age d. Multiparity e. Stage and progress of labor 3. If patient has had no childbirth preparation, <ol style="list-style-type: none"> a. Instruct patient and support person in simple breathing and relaxation techniques. b. Provide coaching/support until patient is able to use techniques effectively. 4. If patient has had previous childbirth preparation, <ol style="list-style-type: none"> a. Provide support/encouragement for effective breathing and relaxation techniques by patient. b. Provide coaching/support until patient is able to use techniques effectively.

PATIENT EDUCATION (Continued)	<ol style="list-style-type: none"> 5. Assess pain intensity of UC's as described by patient (using LPCS coping scale) with vital signs every 2-4 hours or more often if progress of labor changes and/or the patient's condition changes. After epidural anesthesia, assess pain level every 1 hour. 6. Assess effectiveness of each intervention. (Non-pharmacological or pharmacological) by reassessing the patient's pain intensity per pain scale.
REASSESSMENT	<p>Pain level is reassessed with vital signs and before and within 30 minutes after pain medication intervention is administered for effectiveness. Notify MD if:</p> <ol style="list-style-type: none"> 1. Respiratory rate <10 or Blood Pressure (BP) < 90/50 2. Inadequate analgesia 3. Side effects (i.e. nausea, itching, hypotension)
DOCUMENTATION	<ol style="list-style-type: none"> 1. On Labor and Delivery (L&D) Flowsheet, OB Interdisciplinary Plan of Care (IPOC), document: <ol style="list-style-type: none"> a. Baseline UC's/pain assessment/Patient's acceptable level of pain b. Patient's description of intensity of pain using Labor Pain Coping Scale, (LPCS) And mild, moderate or severe per patient's perception in regards to "uterine contraction assessment". c. Patient's plan for pain management during labor. d. Interventions for pain management used by patient at home. e. Effectiveness of interventions (per pain scale- assessed 30 minutes after intervention). f. If patient has had any childbirth preparation classes. g. Any additional cultural/psychosocial information effecting pain. h. Patient's pain /coping assessment using LPCS scale. Document in the pain assessment section underneath the Vital Signs at least every 4 hrs and 30 minutes after intervention. i. Interventions utilized. j. Effectiveness of interventions. k. Education given to patient and/or support person. l. Document any medication given on L&D flowsheet.

IV. AGE SPECIFIC CONSIDERATIONS

N/A

V. EQUIPMENT

Medication as prescribed by MD/CNM
 Syringe/needle
 Intravenous (IV) Solution
 IV Tubing
 Angio Catheter

1. Safe reduction of primary cesarean birth. Web page. Alliance for Innovation on Maternal Health. Accessed Aug 15, 2022, <https://saferbirth.org/psbs/safe-reduction-of-primary-cesarean-birth/>
2. Report: Variation in NTSV c-section rates among California hospitals. 2015. Accessed Aug 16, 2022. https://www.leapfroggroup.org/sites/default/files/Files/PBGH_NTSV-C-Section-Variation-Report.pdf
3. Obstetric care consensus no. 1: safe prevention of the primary cesarean delivery. *Obstet Gynecol.* Mar 2014;123(3):693-711. doi:10.1097/01.AOG.0000444441.04111.1d
4. Main EK, Morton CH, Melsop K, Hopkins D, Giuliani G, Gould JB. Creating a public agenda for maternity safety and quality in cesarean delivery. *Obstet Gynecol.* Nov 2012;120(5):1194-8. doi:<http://10.1097/AOG.0b013e31826fc13d>
10.1097/aog.0b013e31826fc13d
5. Specifications manual for Joint Commission national quality core measures (v2015A): PC- 02 NTSV cesarean section. 2015. Accessed February 7, 2016. <https://manual.jointcommission.org/releases/TJC2015A/MIF0167.html>
6. Hamilton BE, Martin JA, Osterman MJ, Curtin SC. Births: Preliminary Data for 2014. *Natl Vital Stat Rep.* Jun 2015;64(6):1-19.
7. MacDorman MF, Menacker F, Declercq E. Cesarean birth in the United States: epidemiology, trends, and outcomes. *Clin Perinatol.* Jun 2008;35(2):293-307. v. doi:10.1016/j.clp.2008.03.007
8. Silver RM, Landon MB, Rouse DJ, et al. Maternal morbidity associated with multiple repeat cesarean deliveries. *Obstet Gynecol.* Jun 2006;107(6):1226-32. doi:10.1097/01.Aog.0000219750.79480.84
9. Lobel M, DeLuca RS. Psychosocial sequelae of cesarean delivery: review and analysis of their causes and implications. *Soc Sci Med.* Jun 2007;64(11):2272-84. doi:10.1016/j.socscimed.2007.02.028
10. Declercq E, Barger M, Cabral HJ, et al. Maternal outcomes associated with planned primary cesarean births compared with planned vaginal births. *Obstet Gynecol.* Mar 2007;109(3):669-77. doi:10.1097/01.Aog.0000255668.20639.40
11. Chalmers B, Kaczorowski J, Darling E, et al. Cesarean and vaginal birth in canadian women: a comparison of experiences. *Birth.* Mar 2010;37(1):44-9. doi:10.1111/j.1523-536X.2009.00377.x
12. Rowe-Murray HJ, Fisher JR. Baby friendly hospital practices: cesarean section is a persistent barrier to early initiation of breastfeeding. *Birth.* Jun 2002;29(2):124-31. doi:10.1046/j.1523-536x.2002.00172.x
13. Zanardo V, Svegliado G, Cavallin F, et al. Elective cesarean delivery: does it have a negative effect on breastfeeding? *Birth.* Dec 2010;37(4):275-9. doi:10.1111/j.1523-536X.2010.00421.x
14. Rortveit G, Daltveit AK, Hannestad YS, Hunskaar S. Urinary incontinence after vaginal delivery or cesarean section. *N Engl J Med.* Mar 6 2003;348(10):900-7. doi:10.1056/NEJMoa021788
15. Buchsbaum GM, Duecy EE, Kerr LA, Huang LS, Guzik DS. Urinary incontinence in nulliparous women and their parous sisters. *Obstet Gynecol.* Dec 2005;106(6):1253-8. doi:10.1097/01.AOG.0000187309.46650.b2
16. Kuklina EV, Meikle SF, Jamieson DJ, et al. Severe obstetric morbidity in the United States: 1998-2005. *Obstet Gynecol.* Feb 2009;113(2 Pt 1):293-9. doi:10.1097/AOG.0b013e3181954e5b
17. Knight M, Callaghan WM, Berg C, et al. Trends in postpartum hemorrhage in high resource countries: a review and recommendations from the International Postpartum Hemorrhage Collaborative Group. *BMC Pregnancy Childbirth.* Nov 27 2009;9:55. doi:10.1186/1471-2393-9-55
18. Callaghan WM, Kuklina EV, Berg CJ. Trends in postpartum hemorrhage: United States, 1994-2006. *Am J Obstet Gynecol.* Apr 2010;202(4):353.e1-6. doi:10.1016/j.ajog.2010.01.011
19. Waterstone M, Wolfe C, Hooper R, Bewley S. Postnatal morbidity after childbirth and severe obstetric morbidity. *Bjog.* Feb 2003;110(2):128-33.
20. Burrows LJ, Meyn LA, Weber AM. Maternal morbidity associated with vaginal versus cesarean delivery. *Obstet Gynecol.* May 2004;103(5 Pt 1):907-12. doi:10.1097/01.AOG.0000124568.71597.ce
21. Wen SW, Rusen ID, Walker M, et al. Comparison of maternal mortality and morbidity between trial of labor and elective cesarean section among women with previous cesarean delivery. *Am J Obstet Gynecol.* Oct 2004;191(4):1263-9. doi:10.1016/j.ajog.2004.03.022
22. Schutte JM, Steegers EA, Santema JG, Schuitemaker NW, van Roosmalen J. Maternal deaths after elective cesarean section for breech presentation in the Netherlands. *Acta Obstet Gynecol Scand.* 2007;86(2):240-3. doi:10.1080/00016340601104054
23. Spong CY, Landon MB, Gilbert S, et al. Risk of uterine rupture and adverse perinatal outcome at term after cesarean delivery. *Obstet Gynecol.* Oct 2007;110(4):801-7. doi:10.1097/01.AOG.0000284622.71222.b2
24. Liu S, Heaman M, Joseph KS, et al. Risk of maternal postpartum readmission associated with mode of delivery. *Obstet Gynecol.* Apr 2005;105(4):836-42. doi:10.1097/01.AOG.0000154153.31193.2c
25. Ophir E, Strulov A, Solt I, Michlin R, Buryanov I, Bornstein J. Delivery mode and maternal rehospitalization. *Arch Gynecol Obstet.* May 2008;277(5):401-4. doi:10.1007/s00404-007-0476-4
26. Silver RM. Delivery after previous cesarean: long-term maternal outcomes. *Semin Perinatol.* Aug 2010;34(4):258-66. doi:10.1053/j.semperi.2010.03.006
27. Declercq E, Sakala C, Corry M, Applebaum S. Listening to mothers II. Report of the second national U.S. survey on women's child-bearing experiences. 2006.
28. Bhattacharya S, Porter M, Harrild K, et al. Absence of conception after caesarean section: voluntary or involuntary? *Bjog.* Mar 2006;113(3):268-75. doi:10.1111/j.1471-0528.2006.00853.x
29. Bahl R, Strachan B, Murphy DJ. Outcome of subsequent pregnancy three years after previous operative delivery in the second stage of labour: cohort study. *Bmj.* Feb 7 2004;328(7435):311. doi:10.1136/bmj.37942.546076.44
30. Tollånes MC, Melve KK, Irgens LM, Skjaerven R. Reduced fertility after cesarean delivery: a maternal choice. *Obstet Gynecol.* Dec 2007;110(6):1256-63. doi:10.1097/01.AOG.0000292089.18717.9f
31. Main E, Morton C, Hopkins D, Giuliani G, Melsop K, Gould J. Cesarean deliveries, outcomes, and opportunities for change in California: Toward a public agenda for maternity care safety and policy. 2011.
32. Kamath BD, Todd JK, Glazner JE, Lezotte D, Lynch AM. Neonatal outcomes after elective cesarean delivery. *Obstet Gynecol.* Jun 2009;113(6):1231-1238. doi:10.1097/AOG.0b013e3181a66d57
33. Villar J, Carroli G, Zavaleta N, et al. Maternal and neonatal individual risks and benefits associated with cesarean delivery: multicentre prospective study. *Bmj.* Nov 17 2007;335(7628):1025. doi:10.1136/bmj.39363.706956.55
34. Go MD, Emeis C, Guise JM, Schelonka RL. Fetal and neonatal morbidity and mortality following delivery after previous cesarean. *Clin Perinatol.* Jun 2011;38(2):311-9. doi:10.1016/j.clp.2011.03.001
35. Sinha A, Bewley S, McIntosh T. Myth: babies would choose prelabour caesarean section. *Semin Fetal Neonatal Med.* Oct

- 2011;16(5):247-53. doi:10.1016/j.siny.2011.03.003
36. Black M, Bhattacharya S, Philip S, Norman JE, McLernon DJ. Planned Cesarean Delivery at Term and Adverse Outcomes in Childhood Health. *Jama*. Dec 1 2015;314(21):2271-9. doi:10.1001/jama.2015.16176
 37. Carter MC, Corry M, Delbanco S, et al. 2020 vision for a high-quality, high-value maternity care system. *Womens Health Issues*. Jan-Feb 2010;20(1 Suppl):S7-17. doi:10.1016/j.whi.2009.11.006
 38. Declercq E, Sakala C, Corry M, Applebaum S, Herrlich A. Listening to mothers III: Pregnancy and birth. Report of the third national survey of women's childbearing experiences. 2013.
 39. Births financed by Medicaid. Web page. Kaiser Family Foundation. Accessed November 9, 2015, <http://kff.org/medicaid/state-indicator/birth-financed-by-medicaid>
 40. Maternal, child, and infant health. Web page. HealthyPeople 2020. Accessed December 12, 2015, <https://www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health/objectives>
 41. NTSV cesarean birth overview. Web page. California Maternal Quality Care Collaborative. Accessed February 7, 2016, <https://www.cmqcc.org/focus-areas/quality-improvement/ntsv-c-sections>
 42. Joint commission online: a complimentary publication of The Joint Commission. Web page. Accessed January 24, 2016, http://www.jointcommission.org/assets/1/23/jconline_June_24_2015.pdf
 43. Reducing primary cesareans. BirthTOOLS. Web page. American College of Nurse-Midwives. Accessed February 7, 2016, <http://birthtools.org/HBI-Reducing-Primary-Cesareans>
 44. Goer H, Romano A, Sakala C. Vaginal or cesarean birth: What is at stake for women and babies? 2012.
 45. Zwelling E. The emergence of high-tech birthing. *J Obstet Gynecol Neonatal Nurs*. Jan-Feb 2008;37(1):85-93. doi:10.1111/j.1552-6909.2007.00211.x
 46. Why is the U.S. cesarean section rate so high? 2016. Accessed February 7, 2016, <http://www.childbirthconnection.org/pdfs/why-cesarean-rate-is-so-high.pdf>
 47. Angood PB, Armstrong EM, Ashton D, et al. Blueprint for action: steps toward a high-quality, high-value maternity care system. *Womens Health Issues*. Jan-Feb 2010;20(1 Suppl):S18-49. doi:10.1016/j.whi.2009.11.007
 48. Romano A. Activation, engagement, and shared decision making in maternity care. Web page. Maternity Neighborhood. Accessed February 7, 2016, <http://maternityneighborhood.com/whitepapers/activation-engagement-shared-decision-making>
 49. Gee RE, Corry MP. Patient engagement and shared decision making in maternity care. *Obstet Gynecol*. Nov 2012;120(5):995-7. doi:10.1097/aog.0b013e31827046ac
 50. Stoll K, Edmonds JK, Hall WA. Fear of Childbirth and Preference for Cesarean Delivery Among Young American Women Before Childbirth: A Survey Study. *Birth*. Sep 2015;42(3):270-6. doi:10.1111/birt.12178
 51. Stoll K, Hall W, Janssen P, Carty E. Why are young Canadians afraid of birth? A survey study of childbirth fear and birth preferences among Canadian University students. *Midwifery*. Feb 2014;30(2):220-6. doi:10.1016/j.midw.2013.07.017
 52. Stoll K, Hall WA. Attitudes and preferences of young women with low and high fear of childbirth. *Qual Health Res*. Nov 2013;23(11):1495-505. doi:10.1177/1049732313507501
 53. Pincus J. Laboring under an illusion: mass media childbirth vs. the real thing. *Birth*. 2010;37(1):82-83.
 54. Kennedy HP, Nardini K, McLeod-Waldo R, Ennis L. Top-selling childbirth advice books: a discourse analysis. *Birth*. Dec 2009;36(4):318-24. doi:10.1111/j.1523-536X.2009.00359.x
 55. Sakala C, Corry M. Evidence-based maternity care: What it is and what it can achieve. 2008.
 56. Lawrence HC, 3rd, Copel JA, O'Keeffe DF, et al. Quality patient care in labor and delivery: a call to action. *Am J Obstet Gynecol*. Sep 2012;207(3):147-8. doi:10.1016/j.ajog.2012.07.018
 57. Mathews TJ, Curtin S. When are babies born: morning, noon, or night? Birth certificate data for 2013. *NCHS Data Brief*. May 2015;(200):200.
 58. The cost of having a baby in the United States. 2013. Accessed February 7, 2016, <http://transform.childbirthconnection.org/reports/cost/>
 59. Miller H. The building blocks of successful payment reform: designing payment systems that support higher-value health care. 2015. Accessed December 15, 2015, http://www.nrhi.org/uploads/nrhi_pymntrfrm_3_r9-2.pdf
 60. Lagrew DC, Jr., Jenkins TR. The future of obstetrics/gynecology in 2020: a clearer vision: finding true north and the forces of change. *Am J Obstet Gynecol*. Dec 2014;211(6):617-22.e1. doi:10.1016/j.ajog.2014.08.021
 61. Lagrew DC, Jr., Jenkins TR. The future of obstetrics/gynecology in 2020: a clearer vision. Why is change needed? *Am J Obstet Gynecol*. Nov 2014;211(5):470-474.e1. doi:10.1016/j.ajog.2014.08.020
 62. Maternity care payment. Accessed February 7, 2016, http://www.pbgh.org/storage/documents/Issue_Brief.pdf.
 63. Miller H. Transitioning to accountable care: incremental payment reforms to support higher quality, more affordable health care. Accessed December 15, 2015, <http://www.chqpr.org/downloads/TransitioningtoAccountableCare.pdf>
 64. Miller H. Making the business case for payment and delivery reform. Accessed December 15, 2015, http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2014/rwjf411117
 65. Neerland C. A supportive approach to prenatal care. In: Avery M, ed. *Supporting a Physiologic Approach to Labor and Birth: A Practical Guide*. John Wiley & Sons, Inc.; 2013:29-47.
 66. Hotelling BA. Toward more evidence-based practice. *J Perinat Educ*. Winter 2005;14(1):46-9. doi:10.1624/105812405X23676
 67. Lamaze international for parents. Web page. Lamaze International. Accessed January 5, 2016, <http://www.lamaze.org/p/cm/ld/fid=1>
 68. Mother-friendly childbirth initiative. Web page. Improving Birth Coalition. Accessed February 7, 2015, <http://www.motherfriendly.org/mfci>
 69. A better way to pay for maternity care. Accessed December 15, 2015, http://www.nationalpartnership.org/research-library/maternal-health/nac/nac_resource_miller_2015.pdf
 70. DeCesare JZ, Jackson JR. Centering Pregnancy: practical tips for your practice. *Arch Gynecol Obstet*. Mar 2015;291(3):499-507. doi:10.1007/s00404-014-3467-2
 71. McDonald SD, Sword W, Eryuzlu LE, Biringer AB. A qualita-

- tive descriptive study of the group prenatal care experience: perceptions of women with low-risk pregnancies and their midwives. *BMC Pregnancy Childbirth*. Sep 26 2014;14:334. doi:10.1186/1471-2393-14-334
72. Cordasco K. Obtaining informed consent from patients: Brief update review. 2013. Making Health Care Safer II: An Updated Critical Analysis of the Evidence for Patient Safety Practices.
 73. ACOG Committee Opinion No. 390, December 2007. Ethical decision making in obstetrics and gynecology. *Obstet Gynecol*. Dec 2007;110(6):1479-87. doi:10.1097/01.Aog.0000291573.09193.36
 74. Committee Opinion No. 492: Effective Patient-Physician Communication. *Obstet Gynecol*. May 2011;117(5):1254-1257. doi:10.1097/AOG.0b013e31821d7d98
 75. King JS, Moulton BW. Rethinking informed consent: the case for shared medical decision-making. *Am J Law Med*. 2006;32(4):429-501. doi:10.1177/009885880603200401
 76. Coulter A, Collins A. Making shared decision making a reality: no decision about me without me. 2011. Accessed January 8, 2016. http://www.kingsfund.org.uk/sites/files/kf/Making-shared-decision-making-a-reality-paper-Angela-Coulter-Alf-Collins-July-2011_0.pdf
 77. Safety is personal: partnering with patients and families for the safest care. 2014. Accessed January 8, 2016. http://c.ymcdn.com/sites/www.npsf.org/resource/resmgr/LLI/Safety_Is_Personal.pdf?hhSearchTerms=%22safety+and+is+and+personal%22.
 78. Dugas M, Shorten A, Dubé E, Wassef M, Bujold E, Chaillet N. Decision aid tools to support women's decision making in pregnancy and birth: a systematic review and meta-analysis. *Soc Sci Med*. Jun 2012;74(12):1968-78. doi:10.1016/j.socscimed.2012.01.041
 79. Member guide: selecting and implementing a maternity-focused patient engagement tool. 2014. Accessed January 8, 2016. http://pbgh.org/storage/documents_Patient_Engagement_Guide_Maternity.pdf.
 80. Kozhimannil KB, Law MR, Virnig BA. Cesarean delivery rates vary tenfold among US hospitals; reducing variation may address quality and cost issues. *Health Aff (Millwood)*. Mar 2013;32(3):527-35. doi:10.1377/hlthaff.2012.1030
 81. Alfirevic Z, Devane D, Gyte GM. Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. *Cochrane Database Syst Rev*. May 31 2013;(5):CD006066. doi:10.1002/14651858.CD006066.pub2
 82. Hodnett ED, Gates S, Hofmeyr GJ, Sakala C, Weston J. Continuous support for women during childbirth. *Cochrane Database Syst Rev*. Feb 16 2011;(2):Cd003766. doi:10.1002/14651858.CD003766.pub3
 83. Moore LE, Rayburn WF. Elective induction of labor. *Clin Obstet Gynecol*. Sep 2006;49(3):698-704. doi:10.1097/00003081-200609000-00026
 84. Vrouwenraets FP, Roumen FJ, Dehing CJ, van den Akker ES, Aarts MJ, Scheve EJ. Bishop score and risk of cesarean delivery after induction of labor in nulliparous women. *Obstet Gynecol*. Apr 2005;105(4):690-7. doi:10.1097/01.Aog.0000152338.76759.38
 85. Spong CY, Berghella V, Wenstrom KD, Mercer BM, Saade GR. Preventing the first cesarean delivery: summary of a joint Eunice Kennedy Shriver National Institute of Child Health and Human Development, Society for Maternal-Fetal Medicine, and American College of Obstetricians and Gynecologists Workshop. *Obstet Gynecol*. Nov 2012;120(5):1181-93. doi:10.1097/aog.0b013e3182704880
 86. Main EK, Moore D, Farrell B, et al. Is there a useful cesarean birth measure? Assessment of the nulliparous term singleton vertex cesarean birth rate as a tool for obstetric quality improvement. *Am J Obstet Gynecol*. Jun 2006;194(6):1644-51; discussion 1651-2. doi:10.1016/j.ajog.2006.03.013
 87. Singleton K, Krause EM. Understanding cultural and linguistic barriers to health literacy. *Ky Nurse*. Oct-Dec 2010;58(4):4, 6-9.
 88. Committee Opinion No. 493: Cultural Sensitivity and Awareness in the Delivery of Health Care. *Obstet Gynecol*. May 2011;117(5):1258-1261. doi:10.1097/AOG.0b013e31821d7db0
 89. White-Corey S. Birth plans: tickets to the OR? *MCN Am J Matern Child Nurs*. Sep-Oct 2013;38(5):268-73; quiz 274-5. doi:10.1097/NMC.0b013e31829a399d
 90. Crossing the Quality Chasm: A New Health System for the 21st Century. 2001.
 91. Buckley SJ. Physiology of childbearing: Evidence and implications for women, babies, and maternity Care. 2015. Accessed July 12, 2022. <https://www.nationalpartnership.org/our-work/resources/health-care/maternity/hormonal-physiology-of-childbearing.pdf>
 92. Birkhead AC, Callister LC, Fletcher N, Holt A, Curtis S. Teaching physiologic birth in maternal-newborn courses in undergraduate nursing programs: current challenges. *J Perinat Educ*. Summer 2012;21(3):169-77. doi:10.1891/1058-1243.21.3.169
 93. Radoff K, Natch A, McConaughy E, Salstrom J, Schelling K, Seger S. Midwives in medical student and resident education and the development of the medical education caucus toolkit. *J Midwifery Womens Health*. May-Jun 2015;60(3):304-312. doi:10.1111/jmwh.12329
 94. Kipnis G. Baccalaureate nursing students learn labor support through customized childbirth education. *International Journal of Childbirth Education*. 2011;26(4):56-59.
 95. Berwick DM, James B, Coye MJ. Connections between quality measurement and improvement. *Med Care*. Jan 2003;41(1 Suppl):I30-8. doi:10.1097/00005650-200301001-00004
 96. Lyndon A, Johnson MC, Bingham D, et al. Transforming communication and safety culture in intrapartum care: a multi-organization blueprint. *Obstet Gynecol*. May 2015;125(5):1049-1055. doi:10.1097/aog.0000000000000793
 97. Bisognano M, Cherouny PH, Gullo S. Applying a science-based method to improve perinatal care: the institute for healthcare improvement perinatal improvement community. *Obstet Gynecol*. Oct 2014;124(4):810-814. doi:10.1097/aog.0000000000000474
 98. Bingham D, Main EK. Effective implementation strategies and tactics for leading change on maternity units. *J Perinat Neonatal Nurs*. Jan-Mar 2010;24(1):32-42. doi:10.1097/JPN.0b013e3181c94a24
 99. Goodridge D, Westhorp G, Rotter T, Dobson R, Bath B. Lean and leadership practices: development of an initial realist program theory. *BMC Health Serv Res*. Sep 7 2015;15:362. doi:10.1186/s12913-015-1030-x
 100. Schyve P. Leadership in healthcare organizations: a guide to Joint commission leadership standards. 2009. Accessed October 15, 2015. http://www.jointcommission.org/assets/1/18/WP_Leadership_Standards.pdf
 101. Berwick DM. A user's manual for the IOM's 'Quality Chasm' report. *Health Aff (Millwood)*. May-Jun 2002;21(3):80-90. doi:10.1377/hlthaff.21.3.80
 102. A guide to physician-focused alternative payment models. Accessed December 15, 2015. <http://www.chqpr.org/downloads/>

- Physician-FocusedAlternativePaymentModels.pdf
103. Alternative payment model (APM) framework: final white paper. 2016. Accessed January 24, 2016. <https://hcp-lan.org/workproducts/apm-whitepaper.pdf>
 104. Miller H. Win-win-win approaches to maternity care: how payment reform can enable better care for mothers and babies and lower Medicaid spending. Accessed December 15, 2015. http://www.chqpr.org/downloads/HaroldMiller_MaternityCarePayment_03-25-15.pdf
 105. Case study: maternity payment and care redesign pilot. 2015. Accessed January 12, 2016. http://pbgh.org/storage/documents/TMC_Case_Study_Oct_2015.pdf
 106. Miller H. Transforming maternity care: how payment reform can lower costs and improve quality. 2012. Accessed December 15, 2015. <http://www.chqpr.org/downloads/MaternityCarePaymentReform2012.pdf>
 107. Jackson S, Gregory KD. Management of the first stage of labor: potential strategies to lower the cesarean delivery rate. *Clin Obstet Gynecol*. Jun 2015;58(2):217-26. doi:10.1097/grf.0000000000000102
 108. Caughey AB. Can we safely reduce primary cesareans with greater patience? *Birth*. Sep 2014;41(3):217-9. doi:10.1111/birt.12125
 109. Zhang J, Landy HJ, Ware Branch D, et al. Contemporary patterns of spontaneous labor with normal neonatal outcomes. *Obstet Gynecol*. Dec 2010;116(6):1281-1287. doi:10.1097/AOG.0b013e3181fdef6e
 110. Zhang J, Troendle JF, Yancey MK. Reassessing the labor curve in nulliparous women. *Am J Obstet Gynecol*. Oct 2002;187(4):824-8. doi:10.1067/mob.2002.127142
 111. Neal JL, Lamp JM, Buck JS, Lowe NK, Gillespie SL, Ryan SL. Outcomes of nulliparous women with spontaneous labor onset admitted to hospitals in preactive versus active labor. *J Midwifery Womens Health*. Jan-Feb 2014;59(1):28-34. doi:10.1111/jmwh.12160
 112. Marowitz A. Caring for women in early labor: can we delay admission and meet women's needs? *J Midwifery Womens Health*. Nov-Dec 2014;59(6):645-650. doi:10.1111/jmwh.12252
 113. Bailit JL, Dierker L, Blanchard MH, Mercer BM. Outcomes of women presenting in active versus latent phase of spontaneous labor. *Obstet Gynecol*. Jan 2005;105(1):77-9. doi:10.1097/01.Aog.0000147843.12196.00
 114. Rahnama P, Ziaei S, Faghihzadeh S. Impact of early admission in labor on method of delivery. *Int J Gynaecol Obstet*. Mar 2006;92(3):217-20. doi:10.1016/j.ijgo.2005.12.016
 115. Holmes P, Oppenheimer LW, Wen SW. The relationship between cervical dilatation at initial presentation in labour and subsequent intervention. *Bjog*. Nov 2001;108(11):1120-4. doi:10.1111/j.1471-0528.2003.00265.x
 116. McGrath SK, Kennell JH. A randomized controlled trial of continuous labor support for middle-class couples: effect on cesarean delivery rates. *Birth*. Jun 2008;35(2):92-7. doi:10.1111/j.1523-536X.2008.00221.x
 117. Gruber KJ, Cupito SH, Dobson CF. Impact of doulas on healthy birth outcomes. *J Perinat Educ*. Winter 2013;22(1):49-58. doi:10.1891/1058-1243.22.1.49
 118. Kennell J, Klaus M, McGrath S, Robertson S, Hinkley C. Continuous emotional support during labor in a US hospital. A randomized controlled trial. *Jama*. May 1 1991;265(17):2197-201.
 119. Payant L, Davies B, Graham ID, Peterson WE, Clinch J. Nurses' intentions to provide continuous labor support to women. *J Obstet Gynecol Neonatal Nurs*. Jul-Aug 2008;37(4):405-14. doi:10.1111/j.1552-6909.2008.00257.x
 120. Sleutel M, Schultz S, Wyble K. Nurses' views of factors that help and hinder their intrapartum care. *J Obstet Gynecol Neonatal Nurs*. May-Jun 2007;36(3):203-11. doi:10.1111/j.1552-6909.2007.00146.x
 121. ACOG Committee Opinion No. 508: disruptive behavior. *Obstet Gynecol*. Oct 2011;118(4):970-2. doi:10.1097/AOG.0b013e3182358acc
 122. Nursing support of laboring women. An official position statement of the Association of Women's Health, Obstetric & Neonatal Nursing. *J Obstet Gynecol Neonatal Nurs*. Sep-Oct 2011;40(5):665-6. doi:10.1111/j.1552-6909.2011.01288.x
 123. Simpson KR, Lyndon A, Wilson J, Ruhl C. Nurses' perceptions of critical issues requiring consideration in the development of guidelines for professional registered nurse staffing for perinatal units. *J Obstet Gynecol Neonatal Nurs*. Jul-Aug 2012;41(4):474-82. doi:10.1111/j.1552-6909.2012.01383.x
 124. Barrett SJ, Stark MA. Factors associated with labor support behaviors of nurses. *J Perinat Educ*. Winter 2010;19(1):12-8. doi:10.1624/105812410x481528
 125. Furukawa MF, Raghu TS, Shao BB. Electronic medical records, nurse staffing, and nurse-sensitive patient outcomes: evidence from California hospitals, 1998-2007. *Health Serv Res*. Aug 2010;45(4):941-62. doi:10.1111/j.1475-6773.2010.01110.x
 126. Bianchi AL, Adams ED. Labor support during second stage labor for women with epidurals: birth in this era is technology driven. Many women giving birth in hospital settings have epidurals for pain management. Yet laboring women need more than technology--they have basic needs that can't be addressed by technology alone. *Nurs Womens Health*. Feb 2009;13(1):38-47. doi:10.1111/j.1751-486X.2009.01372.x
 127. Green J, Hotelling BA. Healthy birth practice #3: bring a loved one, friend, or doula for continuous support. *J Perinat Educ*. Fall 2014;23(4):194-7. doi:10.1891/1058-1243.23.4.194
 128. Dekker R. Evidence on doulas. Web page. Evidence Based Birth. Accessed July 18, 2022, <https://evidencebasedbirth.com/the-evidence-for-doulas/>
 129. What is a doula? Web page. DONA International. Accessed July 18, 2022, <https://www.dona.org/what-is-a-doula/>
 130. The role and scope of birth doula practice. Web page. International Childbirth Education Association (ICEA). Accessed July 18, 2022, <https://icea.org/wp-content/uploads/2018/02/The-Role-and-Scope-of-Birth-Doula-Practice.pdf>
 131. Kozhimannil KB, Attanasio LB, Jou J, Joarnt LK, Johnson PJ, Gjerdingen DK. Potential benefits of increased access to doula support during childbirth. *Am J Manag Care*. Aug 1 2014;20(8):e340-52.
 132. Papagni K, Buckner E. Doula Support and Attitudes of Intrapartum Nurses: A Qualitative Study from the Patient's Perspective. *J Perinat Educ*. Winter 2006;15(1):11-8. doi:10.1624/105812406x92949
 133. Zwelling E, Johnson K, Allen J. How to implement complementary therapies for laboring women. *MCN Am J Matern Child Nurs*. Nov-Dec 2006;31(6):364-70; quiz 371-2. doi:10.1097/00005721-200611000-00006
 134. Lowe NK. The nature of labor pain. *Am J Obstet Gynecol*. May 2002;186(5 Suppl Nature):S16-24. doi:10.1067/mob.2002.121427

135. Roberts L, Gulliver B, Fisher J, Cloyes KG. The coping with labor algorithm: an alternate pain assessment tool for the laboring woman. *J Midwifery Womens Health*. Mar-Apr 2010;55(2):107-16. doi:10.1016/j.jmwh.2009.11.002
136. Lothian JA. Safe, healthy birth: what every pregnant woman needs to know. *J Perinat Educ*. Summer 2009;18(3):48-54. doi:10.1624/105812409x461225
137. Goer H, Sagady Leslie M, Romano A. Step 6: does not routinely employ practices, procedures unsupported by scientific evidence: the coalition for improving maternity services. *J Perinat Educ*. Winter 2007;16 Suppl 1(Suppl 1):32s-64s. doi:10.1624/105812407x173182
138. ACOG Practice Bulletin No. 106: Intrapartum fetal heart rate monitoring: nomenclature, interpretation, and general management principles. *Obstet Gynecol*. Jul 2009;114(1):192-202. doi:10.1097/AOG.0b013e3181aef106
139. American College of N-M. Intermittent Auscultation for Intrapartum Fetal Heart Rate Surveillance (replaces ACNM Clinical Bulletin #9, March 2007). *J Midwifery Womens Health*. Jul-Aug 2010;55(4):397-403. doi:10.1016/j.jmwh.2010.05.007
140. Clock C, Kurtzman J, White J, Chung JH. Cesarean risk after successful external cephalic version: a matched, retrospective analysis. *J Perinatol*. Feb 2009;29(2):96-100. doi:10.1038/jp.2008.227
141. Lee HC, El-Sayed YY, Gould JB. Population trends in cesarean delivery for breech presentation in the United States, 1997-2003. *Am J Obstet Gynecol*. Jul 2008;199(1):59 e1-8. doi:10.1016/j.ajog.2007.11.059
142. Sheffield JS, Hill JB, Hollier LM, et al. Valacyclovir prophylaxis to prevent recurrent herpes at delivery: a randomized clinical trial. *Obstet Gynecol*. Jul 2006;108(1):141-7. doi:10.1097/01.Aog.0000219749.96274.15
143. Little SE, Caughey AB. Acyclovir prophylaxis for pregnant women with a known history of herpes simplex virus: a cost-effectiveness analysis. *Am J Obstet Gynecol*. Sep 2005;193(3 Pt 2):1274-9. doi:10.1016/j.ajog.2005.05.042
144. Melnyk BM. Achieving a high-reliability organization through implementation of the ARCC model for systemwide sustainability of evidence-based practice. *Nurs Adm Q*. Apr-Jun 2012;36(2):127-35. doi:10.1097/NAQ.0b013e318249fb6a
145. Safe deliveries. Washington State Hospital Association Safe Deliveries Roadmap. Web page. Washington State Hospital Association. Accessed December 12, 2015, <http://www.wsha.org/quality-safety/projects/safe-deliveries>
146. Hodnett ED. Pain and women's satisfaction with the experience of childbirth: a systematic review. *Am J Obstet Gynecol*. May 2002;186(5 Suppl Nature):S160-72. doi:10.1067/mob.2002.121141
147. Edmonds JK, Jones EJ. Intrapartum nurses' perceived influence on delivery mode decisions and outcomes. *J Obstet Gynecol Neonatal Nurs*. Jan-Feb 2013;42(1):3-11. doi:10.1111/j.1552-6909.2012.01422.x
148. Benfield RD, Hortobágyi T, Tanner CJ, Swanson M, Heitkemper MM, Newton ER. The effects of hydrotherapy on anxiety, pain, neuroendocrine responses, and contraction dynamics during labor. *Biol Res Nurs*. Jul 2010;12(1):28-36. doi:10.1177/1099800410361535
149. Cluett ER, Pickering RM, Getliffe K, St George Saunders NJ. Randomised controlled trial of labouring in water compared with standard of augmentation for management of dystocia in first stage of labour. *Bmj*. Feb 7 2004;328(7435):314. doi:10.1136/bmj.37963.606412.EE
150. Rooks JP. Labor pain management other than neuraxial: what do we know and where do we go next? *Birth*. Dec 2012;39(4):318-22. doi:10.1111/birt.12009
151. Dowswell T, Bedwell C, Lavender T, Neilson JP. Transcutaneous electrical nerve stimulation (TENS) for pain relief in labour. *Cochrane Database Syst Rev*. Apr 15 2009;(2):CD007214. doi:10.1002/14651858.CD007214.pub2
152. Ondeck M. Healthy birth practice #2: walk, move around, and change positions throughout labor. *J Perinat Educ*. Fall 2014;23(4):188-93. doi:10.1891/1058-1243.23.4.188
153. Priddis H, Dahlen H, Schmied V. What are the facilitators, inhibitors, and implications of birth positioning? A review of the literature. *Women Birth*. Sep 2012;25(3):100-6. doi:10.1016/j.wombi.2011.05.001
154. Storton S. Step 4: provides the birthing woman with freedom of movement to walk, move, assume positions of her choice: the coalition for improving maternity services. *J Perinat Educ*. Winter 2007;16 Suppl 1(Suppl 1):25s-7s. doi:10.1624/105812407x173164
155. Tussey CM, Botsios E, Gerkin RD, Kelly LA, Gamez J, Mensik J. Reducing Length of Labor and Cesarean Surgery Rate Using a Peanut Ball for Women Laboring With an Epidural. *J Perinat Educ*. 2015;24(1):16-24. doi:10.1891/1058-1243.24.1.16
156. Caton D. The Nature and Management of Labor Pain: Executive summary. *American Journal of Obstetrics and Gynecology*. 2002;186(5):S1-S15. doi:10.1067/mob.2002.123102
157. Simkin P. Supportive Care During Labor: A Guide for Busy Nurses. *Journal of Obstetric, Gynecologic & Neonatal Nursing*. 2002;31(6):721-732. doi:10.1177/0884217502239208
158. Simkin P, Ancheta R. *The Labor Progress Handbook: Early Interventions to Prevent and Treat Dystocia 3rd ed.* West Sussex, UK: Wiley-Blackwell; 2011.
159. Miller L. Intrapartum fetal monitoring: liability and documentation. *Clin Obstet Gynecol*. Mar 2011;54(1):50-5. doi:10.1097/GRF.0b013e31820a0e27
160. Ivory CH. The role of health care technology in support of perinatal nurse staffing. *J Obstet Gynecol Neonatal Nurs*. Mar-Apr 2015;44(2):309-16. doi:10.1111/1552-6909.12546
161. Guidelines for professional Registered Nurse staffing for perinatal units. 2010.
162. Burgess A. An evolutionary concept analysis of labor support. *International Journal of Childbirth Education*. 2014;29(2):64-72.
163. Kozhimannil KB, Hardeman RR, Attanasio LB, Blauer-Peterson C, O'Brien M. Doula care, birth outcomes, and costs among Medicaid beneficiaries. *Am J Public Health*. Apr 2013;103(4):e113-21. doi:10.2105/ajph.2012.301201
164. Ballen LE, Fulcher AJ. Nurses and doulas: complementary roles to provide optimal maternity care. *J Obstet Gynecol Neonatal Nurs*. Mar-Apr 2006;35(2):304-11. doi:10.1111/j.1552-6909.2006.00041.x
165. Oshiro BT, Henry E, Wilson J, Branch DW, Varner MW. Decreasing elective deliveries before 39 weeks of gestation in an integrated health care system. *Obstet Gynecol*. Apr 2009;113(4):804-811. doi:10.1097/AOG.0b013e31819b5c8c
166. The perinatal revolution. Web page. HealthConnect One. Accessed December 30, 2015, http://www.healthconnectone.org/pages/new_study_the_perinatal_revolution/362.php

167. Annual report 2010. Web page. HealthConnect One. Accessed December 1, 2015, http://www.healthconnectone.org/filebin/images/annual_pdfs/HC1_Annual_2010.pdf
168. Kozhimannil K, Hardeman R. How Medicaid coverage for doula care could improve birth outcomes, reduce costs, and improve equity. December 1, 2015, 2015 <http://healthaffairs.org/blog/2015/07/01/how-medicaid-coverage-for-doula-care-could-improve-birth-outcomes-reduce-costs-and-improve-equity>
169. Brancato RM, Church S, Stone PW. A meta-analysis of passive descent versus immediate pushing in nulliparous women with epidural analgesia in the second stage of labor. *J Obstet Gynecol Neonatal Nurs.* Jan-Feb 2008;37(1):4-12. doi:10.1111/j.1552-6909.2007.00205.x
170. Tuuli MG, Frey HA, Odibo AO, Macones GA, Cahill AG. Immediate compared with delayed pushing in the second stage of labor: a systematic review and meta-analysis. *Obstet Gynecol.* Sep 2012;120(3):660-8. doi:10.1097/AOG.0b013e3182639fae
171. Torvaldsen S, Roberts CL, Bell JC, Raynes-Greenow CH. Discontinuation of epidural analgesia late in labour for reducing the adverse delivery outcomes associated with epidural analgesia. *Cochrane Database Syst Rev.* Oct 18 2004;(4):CD004457. doi:10.1002/14651858.CD004457.pub2
172. Practice guidelines for obstetric anesthesia: an updated report by the American Society of Anesthesiologists Task Force on Obstetric Anesthesia. *Anesthesiology.* Apr 2007;106(4):843-63. doi:10.1097/01.anes.0000264744.63275.10
173. Sultan P, Murphy C, Halpern S, Carvalho B. The effect of low concentrations versus high concentrations of local anesthetics for labour analgesia on obstetric and anesthetic outcomes: a meta-analysis. *Can J Anaesth.* Sep 2013;60(9):840-54. doi:10.1007/s12630-013-9981-z
174. Polley LS, Columb MO, Wagner DS, Naughton NN. Dose-dependent reduction of the minimum local analgesic concentration of bupivacaine by sufentanil for epidural analgesia in labor. *Anesthesiology.* Sep 1998;89(3):626-32. doi:10.1097/0000542-199809000-00011
175. Halpern SH, Carvalho B. Patient-controlled epidural analgesia for labor. *Anesth Analg.* Mar 2009;108(3):921-8. doi:10.1213/ane.0b013e3181951a7f
176. Capogna G, Camorcia M, Stirparo S, Farcomeni A. Programmed intermittent epidural bolus versus continuous epidural infusion for labor analgesia: the effects on maternal motor function and labor outcome. A randomized double-blind study in nulliparous women. *Anesth Analg.* Oct 2011;113(4):826-31. doi:10.1213/ANE.0b013e31822827b8
177. Wong CA, Scavone BM, Peaceman AM, et al. The risk of cesarean delivery with neuraxial analgesia given early versus late in labor. *N Engl J Med.* Feb 17 2005;352(7):655-65. doi:10.1056/NEJMoa042573
178. Anim-Somuah M, Smyth RM, Jones L. Epidural versus non-epidural or no analgesia in labour. *Cochrane Database Syst Rev.* Dec 7 2011;(12):CD000331. doi:10.1002/14651858.CD000331.pub3
179. Leighton BL, Halpern SH. Epidural analgesia: effects on labor progress and maternal and neonatal outcome. *Semin Perinatol.* Apr 2002;26(2):122-35. doi:10.1053/sper.2002.32201
180. Wang F, Shen X, Guo X, Peng Y, Gu X. Epidural analgesia in the latent phase of labor and the risk of cesarean delivery: a five-year randomized controlled trial. *Anesthesiology.* Oct 2009;111(4):871-80. doi:10.1097/ALN.0b013e3181b55e65
181. Wong CA, McCarthy RJ, Sullivan JT, Scavone BM, Gerber SE, Yaghmour EA. Early compared with late neuraxial analgesia in nulliparous labor induction: a randomized controlled trial. *Obstet Gynecol.* May 2009;113(5):1066-1074. doi:10.1097/AOG.0b013e3181a1a9a8
182. Cheng YW, Shaffer BL, Caughey AB. Associated factors and outcomes of persistent occiput posterior position: A retrospective cohort study from 1976 to 2001. *J Matern Fetal Neonatal Med.* Sep 2006;19(9):563-8. doi:10.1080/14767050600682487
183. Lieberman E, Davidson K, Lee-Parriz A, Shearer E. Changes in fetal position during labor and their association with epidural analgesia. *Obstet Gynecol.* May 2005;105(5 Pt 1):974-82. doi:10.1097/01.Aog.0000158861.43593.49
184. Robinson CA, Macones GA, Roth NW, Morgan MA. Does station of the fetal head at epidural placement affect the position of the fetal vertex at delivery? *Am J Obstet Gynecol.* Oct 1996;175(4 Pt 1):991-4. doi:10.1016/s0002-9378(96)80039-1
185. ACOG Committee Opinion #295: pain relief during labor. *Obstet Gynecol.* Jul 2004;104(1):213.
186. Cheng YW, Shaffer BL, Nicholson JM, Caughey AB. Second stage of labor and epidural use: a larger effect than previously suggested. *Obstet Gynecol.* Mar 2014;123(3):527-535. doi:10.1097/AOG.0000000000000134
187. Wong CA, Ratliff JT, Sullivan JT, Scavone BM, Toledo P, McCarthy RJ. A randomized comparison of programmed intermittent epidural bolus with continuous epidural infusion for labor analgesia. *Anesth Analg.* Mar 2006;102(3):904-9. doi:10.1213/01.anes.0000197778.57615.1a
188. Fetal Heart Monitoring. *J Obstet Gynecol Neonatal Nurs.* Sep-Oct 2015;44(5):683-6. doi:10.1111/1552-6909.12743
189. Yoshida M, Matsuda H, Kawakami Y, et al. Effectiveness of epidural anesthesia for external cephalic version (ECV). *J Perinatol.* Sep 2010;30(9):580-3. doi:10.1038/jp.2010.61
190. ACOG Committee Opinion No. 340. Mode of term singleton breech delivery. *Obstet Gynecol.* Jul 2006;108(1):235-7. doi:10.1097/00006250-200607000-00058
191. Watts DH, Brown ZA, Money D, et al. A double-blind, randomized, placebo-controlled trial of acyclovir in late pregnancy for the reduction of herpes simplex virus shedding and cesarean delivery. *Am J Obstet Gynecol.* Mar 2003;188(3):836-43. doi:10.1067/mob.2003.185
192. Gawande A. *The Checklist Manifesto: How to Get Things Right.* Metropolitan Books; 2009.
193. Kirkpatrick DH, Burkman RT. Does standardization of care through clinical guidelines improve outcomes and reduce medical liability? *Obstet Gynecol.* Nov 2010;116(5):1022-6. doi:10.1097/AOG.0b013e3181f97c62
194. Pizzi L, Goldbarb N, Nash D. Crew resource management and its applications in medicine. 2001:505-513. Making health care safer: A critical analysis of patient safety practices Evidence Report/Technology Assessment No 43.
195. Ransom S, Pinsky W, Tropman J. *Enhancing physician performance: Advanced principles of medical management.* 2000.
196. ACOG Committee Opinion No. 447: Patient safety in obstetrics and gynecology. *Obstet Gynecol.* Dec 2009;114(6):1424-1427. doi:10.1097/AOG.0b013e3181c6f90e
197. Haynes AB, Weiser TG, Berry WR, et al. A surgical safety checklist to reduce morbidity and mortality in a global population. *N Engl J*

- Med. Jan 29 2009;360(5):491-9. doi:10.1056/NEJMsa0810119
198. Quality and safety in women's health care. 2010.
 199. Committee Opinion No. 629: Clinical guidelines and standardization of practice to improve outcomes. *Obstet Gynecol.* Apr 2015;125(4):1027-1029. doi:10.1097/01.AOG.0000462932.18418.7a
 200. Institute for Health Care Improvement. Web page. Accessed February 9, 2016, <http://www.ihc.org/Pages/default.aspx>
 201. Reisner DP, Landers S. Collaboration between obstetricians and neonatologists: perinatal safety programs and improved clinical outcomes. *Clin Perinatol.* Mar 2010;37(1):179-88. doi:10.1016/j.clp.2010.01.009
 202. Resources and toolkits. Web page. California Maternal Quality Care Collaborative. Accessed February 9, 2016, <https://www.cmqcc.org/resources-tool-kits>
 203. Barber EL, Lundsberg LS, Belanger K, Pettker CM, Funai EF, Illuzzi JL. Indications contributing to the increasing cesarean delivery rate. *Obstet Gynecol.* Jul 2011;118(1):29-38. doi:10.1097/AOG.0b013e31821e5f65
 204. Getahun D, Strickland D, Lawrence JM, Fassett MJ, Koebnick C, Jacobsen SJ. Racial and ethnic disparities in the trends in primary cesarean delivery based on indications. *Am J Obstet Gynecol.* Oct 2009;201(4):422.e1-7. doi:10.1016/j.ajog.2009.07.062
 205. To err is human: Building a safer health system. 1999.
 206. Keeping patients safe: Transforming the work environment of nurses. 2004.
 207. Preventing infant death and injury during delivery. Web page. The Joint Commission. Accessed December 20, 2015, http://www.jointcommission.org/assets/1/18/sea_30.pdf
 208. Horwitz LI, Moin T, Krumholz HM, Wang L, Bradley EH. Consequences of inadequate sign-out for patient care. *Arch Intern Med.* Sep 8 2008;168(16):1755-60. doi:10.1001/archinte.168.16.1755
 209. Pettker CM, Grobman WA. Obstetric Safety and Quality. *Obstet Gynecol.* Jul 2015;126(1):196-206. doi:10.1097/AOG.0000000000000918
 210. Wagner B, Meirowitz N, Shah J, et al. Comprehensive perinatal safety initiative to reduce adverse obstetric events. *J Healthc Qual.* Jan-Feb 2012;34(1):6-15. doi:10.1111/j.1945-1474.2011.00134.x
 211. Leonard M, Graham S, Bonacum D. The human factor: the critical importance of effective teamwork and communication in providing safe care. *Qual Saf Health Care.* Oct 2004;13 Suppl 1(Suppl 1):i85-90. doi:10.1136/qhc.13.suppl_1.i85
 212. Miller LA. Patient safety and teamwork in perinatal care: resources for clinicians. *J Perinat Neonatal Nurs.* Jan-Mar 2005;19(1):46-51. doi:10.1097/00005237-200501000-00011
 213. Lyndon A, Kennedy HP. Perinatal safety: from concept to nursing practice. *J Perinat Neonatal Nurs.* Jan-Mar 2010;24(1):22-31. doi:10.1097/JPN.0b013e3181cb9351
 214. Core competencies for interprofessional collaborative practice: report of an expert panel. Accessed December 26, 2015. <http://www.aacn.nche.edu/education-resources/ipcreport.pdf>
 215. Lyndon A, Zlatnik MG, Wachter RM. Effective physician-nurse communication: a patient safety essential for labor and delivery. *Am J Obstet Gynecol.* Aug 2011;205(2):91-6. doi:10.1016/j.ajog.2011.04.021
 216. Edozien LC. Situational awareness and its application in the delivery suite. *Obstet Gynecol.* Jan 2015;125(1):65-69. doi:10.1097/AOG.0000000000000597
 217. Mitchell P, Wynia M, Golden R. Core principles & values of effective team-based health care. Accessed January 20, 2016. <https://www.nationalahaec.org/pdfs/VSR-Team-Based-Care-Principles-Values.pdf>
 218. Simpson KR, Lyndon A. Clinical disagreements during labor and birth: how does real life compare to best practice? *MCN Am J Matern Child Nurs.* Jan-Feb 2009;34(1):31-9. doi:10.1097/01.NMC.0000343863.72237.2b
 219. Behaviors that undermine a culture of safety. 2008. Accessed January 30, 2016. http://www.jointcommission.org/assets/1/18/sea_40.pdf
 220. Clark SL, Simpson KR, Knox GE, Garite TJ. Oxytocin: new perspectives on an old drug. *Am J Obstet Gynecol.* Jan 2009;200(1):35.e1-6. doi:10.1016/j.ajog.2008.06.010
 221. List of high-alert medications in acute care settings. 2014. Accessed January 31, 2016. <https://www.ismp.org/tools/highalert-medications.pdf>
 222. Seitchik J, Amico J, Robinson AG, Castillo M. Oxytocin augmentation of dysfunctional labor. IV. Oxytocin pharmacokinetics. *Am J Obstet Gynecol.* Oct 1 1984;150(3):225-8. doi:10.1016/s0002-9378(84)90355-7
 223. Freeman RK, Nageotte M. A protocol for use of oxytocin. *Am J Obstet Gynecol.* Nov 2007;197(5):445-6. doi:10.1016/j.ajog.2007.08.025
 224. Clark S, Belfort M, Saade G, et al. Implementation of a conservative checklist-based protocol for oxytocin administration: maternal and newborn outcomes. *Am J Obstet Gynecol.* Nov 2007;197(5):480.e1-5. doi:10.1016/j.ajog.2007.08.026
 225. Bakker PC, Kurver PH, Kuik DJ, Van Geijn HP. Elevated uterine activity increases the risk of fetal acidosis at birth. *Am J Obstet Gynecol.* Apr 2007;196(4):313.e1-6. doi:10.1016/j.ajog.2006.11.035
 226. Simpson KR, James DC. Effects of oxytocin-induced uterine hyperstimulation during labor on fetal oxygen status and fetal heart rate patterns. *Am J Obstet Gynecol.* Jul 2008;199(1):34.e1-5. doi:10.1016/j.ajog.2007.12.015
 227. Hon EH. The electronic evaluation of the fetal heart rate; preliminary report. *Am J Obstet Gynecol.* Jun 1958;75(6):1215-30. doi:10.1016/0002-9378(58)90707-5
 228. Clark SL, Nageotte MP, Garite TJ, et al. Intrapartum management of category II fetal heart rate tracings: towards standardization of care. *Am J Obstet Gynecol.* Aug 2013;209(2):89-97. doi:10.1016/j.ajog.2013.04.030
 229. Main E, Oshiro B, Chagolla B, Bingham D, Dang-Kilduff L, Kowalewski L. Elimination of non-medically indicated (elective) deliveries before 39 weeks gestational age. 2010. Accessed January 30, 2016. <https://www.cmqcc.org/resources-tool-kits/toolkits/early-elective-deliveries-toolkit>
 230. ACOG Practice Bulletin No. 107: Induction of labor. *Obstet Gynecol.* Aug 2009;114(2 Pt 1):386-397. doi:10.1097/AOG.0b013e3181b48ef5
 231. Osterman MJ, Martin JA. Recent declines in induction of labor by gestational age. *NCHS Data Brief.* Jun 2014;(155):1-8.
 232. Playbook for the successful elimination of early elective deliveries. 2014. Accessed December 1, 2015. http://www.qualityforum.org/Publications/2014/08/Early_Elective_Delivery_Playbook-Maternity_Action_Team.aspx
 233. Fisch JM, English D, Pedaline S, Brooks K, Simhan HN. Labor

- induction process improvement: a patient quality-of-care initiative. *Obstet Gynecol.* Apr 2009;113(4):797-803. doi:10.1097/AOG.0b013e31819c9e3d
234. Reischer DP, Wallin TK, Zingheim RW, Luthy DA. Reduction of elective inductions in a large community hospital. *Am J Obstet Gynecol.* Jun 2009;200(6):674.e1-7. doi:10.1016/j.ajog.2009.02.021
235. Perinatal care measure set. Web page. The Joint Commission. Accessed February 9, 2016, <https://manual.jointcommission.org/releases/TJC2015B2/MIF0166.html>
236. Bingham D, Ruhl C, Cockey CD. Don't Rush Me . . . Go the Full 40: AWHONN's Public Health Campaign Promotes Spontaneous Labor and Normal Birth to Reduce Overuse of Inductions and Cesareans. *J Perinat Educ.* Fall 2013;22(4):189-93. doi:10.1891/1058-1243.22.4.189
237. Cheng YW, Kaimal AJ, Snowden JM, Nicholson JM, Caughey AB. Induction of labor compared to expectant management in low-risk women and associated perinatal outcomes. *Am J Obstet Gynecol.* Dec 2012;207(6):502.e1-8. doi:10.1016/j.ajog.2012.09.019
238. Luthy DA, Malmgren JA, Zingheim RW. Cesarean delivery after elective induction in nulliparous women: the physician effect. *Am J Obstet Gynecol.* Nov 2004;191(5):1511-5. doi:10.1016/j.ajog.2004.07.001
239. Stock SJ, Ferguson E, Duffy A, Ford I, Chalmers J, Norman JE. Outcomes of elective induction of labour compared with expectant management: population based study. *Bmj.* May 10 2012;344:e2838. doi:10.1136/bmj.e2838
240. Osmundson SS, Ou-Yang RJ, Grobman WA. Elective induction compared with expectant management in nulliparous women with a favorable cervix. *Obstet Gynecol.* Sep 2010;116(3):601-605. doi:10.1097/AOG.0b013e3181eb6e9b
241. Osmundson S, Ou-Yang RJ, Grobman WA. Elective induction compared with expectant management in nulliparous women with an unfavorable cervix. *Obstet Gynecol.* Mar 2011;117(3):583-587. doi:10.1097/AOG.0b013e31820caf12
242. Darney BG, Snowden JM, Cheng YW, et al. Elective induction of labor at term compared with expectant management: maternal and neonatal outcomes. *Obstet Gynecol.* Oct 2013;122(4):761-769. doi:10.1097/AOG.0b013e3182a6a4d0
243. Caughey AB, Sundaram V, Kaimal AJ, et al. Systematic review: elective induction of labor versus expectant management of pregnancy. *Ann Intern Med.* Aug 18 2009;151(4):252-63, w53-63. doi:10.7326/0003-4819-151-4-200908180-00007
244. Gibson KS, Waters TP, Bailit JL. Maternal and neonatal outcomes in electively induced low-risk term pregnancies. *Am J Obstet Gynecol.* Sep 2014;211(3):249.e1-249.e16. doi:10.1016/j.ajog.2014.03.016
245. Harper LM, Caughey AB, Odibo AO, Roehl KA, Zhao Q, Cahill AG. Normal progress of induced labor. *Obstet Gynecol.* Jun 2012;119(6):1113-8. doi:10.1097/AOG.0b013e318253d7aa
246. Caughey A, Sundaram V. Maternal and neonatal outcomes of elective induction of labor. Evidence Report/Technology Assessment No. 176. 2009.
247. Gardberg M, Leonova Y, Laakkonen E. Malpresentations-impact on mode of delivery. *Acta Obstet Gynecol Scand.* May 2011;90(5):540-2. doi:10.1111/j.1600-0412.2011.01105.x
248. Fitzpatrick M, McQuillan K, O'Herlihy C. Influence of persistent occiput posterior position on delivery outcome. *Obstet Gynecol.* Dec 2001;98(6):1027-31. doi:10.1016/s0029-7844(01)01600-3
249. Shaffer BL, Cheng YW, Vargas JE, Caughey AB. Manual rotation to reduce caesarean delivery in persistent occiput posterior or transverse position. *J Matern Fetal Neonatal Med.* Jan 2011;24(1):65-72. doi:10.3109/14767051003710276
250. Stitely ML, Gherman RB. Labor with abnormal presentation and position. *Obstet Gynecol Clin North Am.* Jun 2005;32(2):165-79. doi:10.1016/j.ogc.2004.12.005
251. Sherer DM, Miodovnik M, Bradley KS, Langer O. Intrapartum fetal head position I: comparison between transvaginal digital examination and transabdominal ultrasound assessment during the active stage of labor. *Ultrasound Obstet Gynecol.* Mar 2002;19(3):258-63. doi:10.1046/j.1469-0705.2002.00641.x
252. Sizer AR, Nirmal DM. Occipitoposterior position: associated factors and obstetric outcome in nulliparas. *Obstet Gynecol.* Nov 2000;96(5 Pt 1):749-52. doi:10.1016/s0029-7844(00)01030-9
253. Ponkey S. Persistent fetal occiput posterior position: obstetric outcomes. *Obstetrics & Gynecology.* 2003;101(5):915-920. doi:10.1016/s0029-7844(03)00068-1
254. Rosenstein MG, Nijagal M, Nakagawa S, Gregorich SE, Kuppermann M. The association of expanded access to a collaborative midwifery and laborist model with cesarean delivery rates. *Obstet Gynecol.* Oct 2015;126(4):716-723. doi:10.1097/AOG.0000000000001032
255. Nijagal MA, Kuppermann M, Nakagawa S, Cheng Y. Two practice models in one labor and delivery unit: association with cesarean delivery rates. *Am J Obstet Gynecol.* Apr 2015;212(4):491 e1-8. doi:10.1016/j.ajog.2014.11.014
256. Metz T, Allshouse AA, Babcock S, Doyle R, Tong A, Carey JC. 28: Variation in primary cesarean delivery rates by individual physicians within a single hospital laborist model. *American Journal of Obstetrics and Gynecology.* 2016;214(1):S19-S20. doi:10.1016/j.ajog.2015.10.051
257. Sakala C, Yang YT, Corry MP. Maternity care and liability: least promising policy strategies for improvement. *Womens Health Issues.* Jan 2013;23(1):e15-23. doi:10.1016/j.whi.2012.11.002
258. Minkoff H. Fear of litigation and cesarean section rates. *Semin Perinatol.* Oct 2012;36(5):390-4. doi:10.1053/j.semperi.2012.04.025
259. Cohen WR, Schifrin BS. Medical negligence lawsuits relating to labor and delivery. *Clin Perinatol.* Jun 2007;34(2):345-60, vii-viii. doi:10.1016/j.clp.2007.03.011
260. Schifrin BS, Cohen WR. Medical legal issues in fetal monitoring. *Clin Perinatol.* Jun 2007;34(2):329-43, vii. doi:10.1016/j.clp.2007.03.010
261. Yang YT, Mello MM, Subramanian SV, Studdert DM. Relationship between malpractice litigation pressure and rates of cesarean section and vaginal birth after cesarean section. *Med Care.* Feb 2009;47(2):234-42. doi:10.1097/MLR.0b013e31818475de
262. Mavroforou A, Koumantakis E, Michalodimitrakis E. Physicians' liability in obstetric and gynecology practice. *Med Law.* Mar 2005;24(1):1-9.
263. Cheng YW, Snowden JM, Handler SJ, Tager IB, Hubbard AE, Caughey AB. Litigation in obstetrics: does defensive medicine contribute to increases in cesarean delivery? *J Matern Fetal Neonatal Med.* Nov 2014;27(16):1668-75. doi:10.3109/14767058.2013.879115
264. Shurtz I. The impact of medical errors on physician behavior: evidence from malpractice litigation. *J Health Econ.* Mar 2013;32(2):331-40. doi:10.1016/j.jhealeco.2012.11.011
265. Gimm GW. The impact of malpractice liability claims on obstetri-

- cal practice patterns. *Health Serv Res.* Feb 2010;45(1):195-211. doi:10.1111/j.1475-6773.2009.01062.x
266. Knox GE, Simpson KR. Perinatal high reliability. *Am J Obstet Gynecol.* May 2011;204(5):373-7. doi:10.1016/j.ajog.2010.10.900
267. McFerran S, Nunes J, Pucci D, Zuniga A. Perinatal Patient Safety Project: a multicenter approach to improve performance reliability at Kaiser Permanente. *J Perinat Neonatal Nurs.* Jan-Mar 2005;19(1):37-45. doi:10.1097/00005237-200501000-00010
268. TeamSTEPPS strategies and tools to enhance and performance and patient safety. Web page. TeamSTEPPS. Accessed December 1, 2015, <http://www.ahrq.gov/professionals/education/curriculum-tools/teamstepps/index.html>
269. Simon R, Langford V, Locke A. A successful transfer of lessons learned in aviation psychology and flight safety to health care: the MedTeams system. *Proceedings of Patient Safety Initiative 2000: Spotlighting Strategies, Sharing Solutions.* National Patient Safety Foundation; 2000:45-49.
270. Althabe F, Belizán JM, Villar J, et al. Mandatory second opinion to reduce rates of unnecessary caesarean sections in Latin America: a cluster randomised controlled trial. *Lancet.* Jun 12 2004;363(9425):1934-40. doi:10.1016/s0140-6736(04)16406-4
271. Oláh KS. Reversal of the decision for caesarean section in the second stage of labour on the basis of consultant vaginal assessment. *J Obstet Gynaecol.* Feb 2005;25(2):115-6. doi:10.1080/01443610500040547
272. Miller KK, Riley W, Davis S, Hansen HE. In situ simulation: a method of experiential learning to promote safety and team behavior. *J Perinat Neonatal Nurs.* Apr-Jun 2008;22(2):105-13. doi:10.1097/01.JPN.0000319096.97790.f7
273. Committee opinion no. 590: preparing for clinical emergencies in obstetrics and gynecology. *Obstet Gynecol.* Mar 2014;123(3):722-725. doi:10.1097/01.AOG.0000444442.04111.c6
274. How-to guide: deploy rapid response teams. Web page. Institute for Health Care Improvement. Accessed December 15, 2015, <http://www.ihc.org/resources/Pages/Tools/HowtoGuideDeployRapidResponseTeams.aspx>.
275. Greenberg MB, Cheng YW, Sullivan M, Norton ME, Hopkins LM, Caughey AB. Does length of labor vary by maternal age? *Am J Obstet Gynecol.* Oct 2007;197(4):428.e1-7. doi:10.1016/j.ajog.2007.06.058
276. Norman SM, Tuuli MG, Odibo AO, Caughey AB, Roehl KA, Cahill AG. The effects of obesity on the first stage of labor. *Obstet Gynecol.* Jul 2012;120(1):130-5. doi:10.1097/AOG.0b013e318259589c
277. Macones GA, Hankins GD, Spong CY, Hauth J, Moore T. The 2008 National Institute of Child Health and Human Development workshop report on electronic fetal monitoring: update on definitions, interpretation, and research guidelines. *J Obstet Gynecol Neonatal Nurs.* Sep-Oct 2008;37(5):510-5. doi:10.1111/j.1552-6909.2008.00284.x
278. Practice bulletin no. 116: Management of intrapartum fetal heart rate tracings. *Obstet Gynecol.* Nov 2010;116(5):1232-40. doi:10.1097/AOG.0b013e3182004fa9
279. Timmins AE, Clark SL. How to Approach Intrapartum Category II Tracings. *Obstet Gynecol Clin North Am.* Jun 2015;42(2):363-75. doi:10.1016/j.ogc.2015.01.013
280. Frey HA, Tuuli MG, Shanks AL, Macones GA, Cahill AG. Interpreting category II fetal heart rate tracings: does meconium matter? *Am J Obstet Gynecol.* Dec 2014;211(6):644 e1-8. doi:10.1016/j.ajog.2014.06.033
281. Gülmezoglu AM, Crowther CA, Middleton P, Heatley E. Induction of labour for improving birth outcomes for women at or beyond term. *Cochrane Database Syst Rev.* Jun 13 2012;6(6):Cd004945. doi:10.1002/14651858.CD004945.pub3
282. Jozwiak M, Bloemenkamp KW, Kelly AJ, Mol BW, Irion O, Bouvliand M. Mechanical methods for induction of labour. *Cochrane Database Syst Rev.* Mar 14 2012;(3):Cd001233. doi:10.1002/14651858.CD001233.pub2
283. Hofmeyr GJ, Gülmezoglu AM, Pileggi C. Vaginal misoprostol for cervical ripening and induction of labour. *Cochrane Database Syst Rev.* Oct 6 2010;2010(10):Cd000941. doi:10.1002/14651858.CD000941.pub2
284. Carbone JF, Tuuli MG, Fogertey PJ, Roehl KA, Macones GA. Combination of Foley bulb and vaginal misoprostol compared with vaginal misoprostol alone for cervical ripening and labor induction: a randomized controlled trial. *Obstet Gynecol.* Feb 2013;121(2 Pt 1):247-252. doi:10.1097/AOG.0b013e31827e5dca
285. Jozwiak M, Oude Rengerink K, Benthem M, et al. Foley catheter versus vaginal prostaglandin E2 gel for induction of labour at term (PROBAAT trial): an open-label, randomised controlled trial. *Lancet.* Dec 17 2011;378(9809):2095-103. doi:10.1016/s0140-6736(11)61484-0
286. Ten Eikelder ML, Oude Rengerink K, Jozwiak M, et al. Induction of labour at term with oral misoprostol versus a Foley catheter (PROBAAT-II): a multicentre randomised controlled non-inferiority trial. *Lancet.* Apr 16 2016;387(10028):1619-28. doi:10.1016/s0140-6736(16)00084-2
287. Position statement: Induction of labor. Accessed February 9, 2016, <http://www.midwife.org/ACNM/files/ACNMLibraryData/UPLOADFILENAME/000000000235/Induction-of-Labor-10.10.pdf>
288. Bonsack CF, Lathrop A, Blackburn M. Induction of labor: update and review. *J Midwifery Womens Health.* Nov-Dec 2014;59(6):606-615. doi:10.1111/jmwh.12255
289. Simpson KR, Newman G, Chirino OR. Patient education to reduce elective labor inductions. *MCN Am J Matern Child Nurs.* Jul-Aug 2010;35(4):188-94; quiz 195-6. doi:10.1097/NMC.0b013e3181d9c6d6
290. Guidelines. Web page. Northern New England Perinatal Quality Improvement Network. Accessed January 30, 2016, <http://www.nnepqn.org/Guidelines.asp>
291. Cheng ER, Declercq ER, Belanoff C, Stotland NE, Iverson RE. Labor and delivery experiences of mothers with suspected large babies. *Matern Child Health J.* Dec 2015;19(12):2578-86. doi:10.1007/s10995-015-1776-0
292. O'Mahony F, Hofmeyr GJ, Menon V. Choice of instruments for assisted vaginal delivery. *Cochrane Database Syst Rev.* Nov 10 2010;(11):Cd005455. doi:10.1002/14651858.CD005455.pub2
293. Powell J, Gilo N, Foote M, Gil K, Lavin JP. Vacuum and forceps training in residency: experience and self-reported competency. *J Perinatol.* Jun 2007;27(6):343-6. doi:10.1038/sj.jp.7211734
294. Akmal S, Kametas N, Tsoi E, Hargreaves C, Nicolaides KH. Comparison of transvaginal digital examination with intrapartum sonography to determine fetal head position before instrumental delivery. *Ultrasound Obstet Gynecol.* May 2003;21(5):437-40. doi:10.1002/uog.103
295. Dupuis O, Ruimark S, Corinne D, Simone T, Andre D, Rene-Charles R. Fetal head position during the second stage of labor: comparison of digital vaginal examination and transabdominal

- ultrasonographic examination. *Eur J Obstet Gynecol Reprod Biol.* Dec 1 2005;123(2):193-7. doi:10.1016/j.ejogrb.2005.04.009
296. Smyth RM, Alldred SK, Markham C. Amniotomy for shortening spontaneous labour. *Cochrane Database Syst Rev.* Jan 31 2013;(1):Cd006167. doi:10.1002/14651858.CD006167.pub3
 297. Gherman RB, Tramont J, Muffley P, Goodwin TM. Analysis of McRoberts' maneuver by x-ray pelvimetry. *Obstet Gynecol.* Jan 2000;95(1):43-7. doi:10.1016/s0029-7844(99)00445-7
 298. Rahmani R, Khakbazan Z, Yavari P, Granmayeh M, Yavari L. Effect of oral carbohydrate intake on labor progress: randomized controlled trial. *Iran J Public Health.* 2012;41(11):59-66.
 299. Carseldine WJ, Phipps H, Zawada SF, et al. Does occiput posterior position in the second stage of labour increase the operative delivery rate? *Aust N Z J Obstet Gynaecol.* Jun 2013;53(3):265-70. doi:10.1111/ajo.12041
 300. Barth WH, Jr. Persistent occiput posterior. *Obstet Gynecol.* Mar 2015;125(3):695-709. doi:10.1097/AOG.0000000000000647
 301. Shaffer BL, Cheng YW, Vargas JE, Laros RK, Jr., Caughey AB. Manual rotation of the fetal occiput: predictors of success and delivery. *Am J Obstet Gynecol.* May 2006;194(5):e7-9. doi:10.1016/j.ajog.2006.01.029
 302. Caughey AB, Sharshiner R, Cheng YW. Fetal malposition: impact and management. *Clin Obstet Gynecol.* Jun 2015;58(2):241-5. doi:10.1097/grf.0000000000000106
 303. Cunningham F, Leveno K, Bloom S, Hauth J, Spong C, Dashe J. *Williams Obstetrics.* 24th ed. McGraw-Hill Professional Publishing; 2014.
 304. Posner GD, Dy J, Black AY, Jones GD. *Oxorne-Foote Human Labor & Birth.* 6th ed. McGraw Hill Companies Inc.
 305. King T, Brucker M, Kriebs J, Fahey J, Geger C, Varney H. *Varney's Midwifery.* 6th ed. Jones and Bartlett; 2013.
 306. Oral Concurrent Session 8. *Am J Obstet Gynecol.* 214(1):S66.
 307. Iriye BK, Huang WH, Condon J, et al. Implementation of a laborist program and evaluation of the effect upon cesarean delivery. *Am J Obstet Gynecol.* Sep 2013;209(3):251 e1-6. doi:10.1016/j.ajog.2013.06.040
 308. Sakala C, Yang YT, Corry MP. Maternity care and liability: most promising policy strategies for improvement. *Womens Health Issues.* Jan 2013;23(1):e25-37. doi:10.1016/j.whi.2012.11.003
 309. Waldman RN, Kennedy HP. Collaborative practice between obstetricians and midwives. *Obstet Gynecol.* Sep 2011;118(3):503-504. doi:10.1097/AOG.0b013e31822c6543
 310. Joint statement of practice relations between obstetrician-gynecologists and certified nurse-midwives/certified midwives. 2018. Accessed July 12, 2022. <https://www.acog.org/clinical-information/policy-and-position-statements/statements-of-policy/2018/joint-statement-of-practice-relations-between-ob-gyns-and-cnms>
 311. Shaw-Battista J, Fineberg A, Boehler B, Skubic B, Woolley D, Tilton Z. Obstetrician and nurse-midwife collaboration: successful public health and private practice partnership. *Obstet Gynecol.* Sep 2011;118(3):663-672. doi:10.1097/AOG.0b013e31822ac86f
 312. Renfrew MJ. Midwifery: an executive summary for the Lancet's series. *The Lancet.* 2014;384(9948)
 313. Midwifery. Web page. *The Lancet.* Accessed January 20, 2016, <http://www.thelancet.com/series/midwifery>
 314. Davis LG, Riedmann GL, Sapiro M, Minogue JP, Kazer RR. Cesarean section rates in low-risk private patients managed by certified nurse-midwives and obstetricians. *J Nurse-Midwifery.* Mar-Apr 1994;39(2):91-7. doi:10.1016/0091-2182(94)90016-7
 315. Cox KJ, King TL. Preventing primary cesarean births: midwifery care. *Clin Obstet Gynecol.* Jun 2015;58(2):282-93. doi:10.1097/grf.0000000000000108
 316. Yang YT, Attanasio LB, Kozhimannil KB. State Scope of Practice Laws, Nurse-Midwifery Workforce, and Childbirth Procedures and Outcomes. *Womens Health Issues.* May-Jun 2016;26(3):262-7. doi:10.1016/j.whi.2016.02.003
 317. Obstetric Care Consensus No. 2: Levels of maternal care. *Obstet Gynecol.* Feb 2015;125(2):502-515. doi:10.1097/01.AOG.0000460770.99574.9f
 318. Stapleton SR, Osborne C, Illuzzi J. Outcomes of care in birth centers: demonstration of a durable model. *J Midwifery Womens Health.* Jan-Feb 2013;58(1):3-14. doi:10.1111/jmwh.12003
 319. Sakala C, Yang YT, Corry MP. Maternity care and liability: pressing problems, substantive solutions. *Womens Health Issues.* Jan 2013;23(1):e7-13. doi:10.1016/j.whi.2012.11.001
 320. Clark S. Patient safety and litigation reduction — 2 sides of the same coin. *Female Patient.* 2009;34(10):20-24.
 321. Murthy K, Grobman WA, Lee TA, Holl JL. Association between rising professional liability insurance premiums and primary cesarean delivery rates. *Obstet Gynecol.* Dec 2007;110(6):1264-9. doi:10.1097/01.Aog.00000287294.89148.23
 322. Smith LL, Berry D. Partnering with technology to reduce OB losses. *J Healthc Risk Manag.* 2007;27(4):25-30. doi:10.1002/jhrm.5600270406
 323. Simpson KR, Kortz CC, Knox GE. A comprehensive perinatal patient safety program to reduce preventable adverse outcomes and costs of liability claims. *Jt Comm J Qual Patient Saf.* Nov 2009;35(11):565-74. doi:10.1016/s1553-7250(09)35077-1
 324. Grunebaum A, Chervenak F, Skupski D. Effect of a comprehensive obstetric patient safety program on compensation payments and sentinel events. *Am J Obstet Gynecol.* Feb 2011;204(2):97-105. doi:10.1016/j.ajog.2010.11.009
 325. Clark SL, Meyers JA, Frye DK, Perlin JA. Patient safety in obstetrics—the Hospital Corporation of America experience. *Am J Obstet Gynecol.* Apr 2011;204(4):283-7. doi:10.1016/j.ajog.2010.12.034
 326. Clark SL, Belfort MA, Byrum SL, Meyers JA, Perlin JB. Improved outcomes, fewer cesarean deliveries, and reduced litigation: results of a new paradigm in patient safety. *Am J Obstet Gynecol.* Aug 2008;199(2):105.e1-7. doi:10.1016/j.ajog.2008.02.031
 327. Ranum D, Troxel DB. Obstetrics closed claims study. Accessed December 20, 2015. http://www.thedoctors.com/ecm/groups/public/@tdc/@web/@kc/@patientsafety/documents/article/con_id_004775.pdf.
 328. Graham WJ, Hundley V, McCheyne AL, Hall MH, Gurney E, Milne J. An investigation of women's involvement in the decision to deliver by caesarean section. *Br J Obstet Gynaecol.* Mar 1999;106(3):213-20. doi:10.1111/j.1471-0528.1999.tb08233.x
 329. Lagrew DC, Jr., Morgan MA. Decreasing the cesarean section rate in a private hospital: success without mandated clinical changes. *Am J Obstet Gynecol.* Jan 1996;174(1 Pt 1):184-91. doi:10.1016/s0002-9378(96)70392-7
 330. Main EK. Reducing cesarean birth rates with data-driven quality improvement activities. *Pediatrics.* Jan 1999;103(1 Suppl E):374-83.

331. Flamm BL, Berwick DM, Kabacnel A. Reducing cesarean section rates safely: lessons from a “breakthrough series” collaborative. *Birth*. Jun 1998;25(2):117-24. doi:10.1046/j.1523-536x.1998.00117.x
332. Shining a light: safer health care through transparency. Accessed January 30, 2016. <http://www.npsf.org/?shiningalight>
333. Randolph G, Esporas M, Provost L, Massie S, Bundy DG. Model for improvement - Part Two: Measurement and feedback for quality improvement efforts. *Pediatr Clin North Am*. Aug 2009;56(4):779-98. doi:10.1016/j.pcl.2009.05.012
334. Bradley EH, Holmboe ES, Mattera JA, Roumanis SA, Radford MJ, Krumholz HM. Data feedback efforts in quality improvement: lessons learned from US hospitals. *Qual Saf Health Care*. Feb 2004;13(1):26-31. doi:10.1136/qhc.13.1.26
335. Pronovost PJ, Nolan T, Zeger S, Miller M, Rubin H. How can clinicians measure safety and quality in acute care? *Lancet*. Mar 27 2004;363(9414):1061-7. doi:10.1016/s0140-6736(04)15843-1
336. Langley G, Moen R, Nolan K, Nolan T, Norman C, Provost L. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. 2nd ed. Jossey-Bass; 2009.
337. Janakiraman V, Ecker J. Quality in obstetric care: measuring what matters. *Obstet Gynecol*. Sep 2010;116(3):728-732. doi:10.1097/AOG.0b013e3181ea4d4f
338. Cáceres IA, Arcaya M, Declercq E, et al. Hospital differences in cesarean deliveries in Massachusetts (US) 2004-2006: the case against case-mix artifact. *PLoS One*. 2013;8(3):e57817. doi:10.1371/journal.pone.0057817
339. Main E, Chang SC, Cape V, Sakowski C, Smith H, Vasher J. Safety Assessment of a Large-Scale Improvement Collaborative to Reduce Nulliparous Cesarean Delivery Rates. *Obstet Gynecol*. Apr 2019;133(4):613-623. doi:10.1097/aog.0000000000003109
340. Fingar KR, Hambrick MM, Heslin KC, Moore JE. Statistical Brief #243: Trends and disparities in delivery hospitalizations involving severe maternal morbidity, 2006–2015. 2018. https://www.medic-aidinnovation.org/_images/content/2018-IMI-AHRQ-Maternal-Morbidity-Report.pdf
341. Taylor J, Novoa C, Hamm K, Phadke S. Eliminating racial disparities in maternal and infant mortality. A comprehensive policy blueprint. 2018. <https://www.americanprogress.org/article/eliminating-racial-disparities-maternal-infant-mortality/>
342. Tikkanen R, Gunja MZ, FitzGerald M, Zephyrin L. Maternal mortality and maternity care in the United States compared to 10 other developed countries. 2020. <https://www.commonwealth-fund.org/publications/issue-briefs/2020/nov/maternal-mortality-maternity-care-us-compared-10-countries>
343. CA-PMSS surveillance report: Pregnancy related deaths, 2008-2016. 2021. <https://tinyurl.com/4jt7b5j>
344. Crear-Perry J, Mahdi I, Green C. Roots of inequity in maternal mortality 2021. Reversing the US maternal mortality crisis: A report of the Aspen Health Strategy Group. <https://www.aspen-institute.org/wp-content/uploads/2021/04/Maternal-Mortality-Report.pdf>
345. Prather C, Fuller TR, Marshall KJ, Jeffries W. The Impact of Racism on the Sexual and Reproductive Health of African American Women. *J Womens Health (Larchmt)*. Jul 2016;25(7):664-71. doi:10.1089/jwh.2015.5637
346. Hernández-Cancio S, Gray V. Racism hurts moms and babies. 2021. <https://www.nationalpartnership.org/our-work/resources/health-care/racism-hurts-moms-and-babies.pdf>
347. Hardeman RR, Karbeah J, Kozhimannil KB. Applying a critical race lens to relationship-centered care in pregnancy and childbirth: An antidote to structural racism. *Birth*. Mar 2020;47(1):3-7. doi:10.1111/birt.12462
348. McLemore M, D’Efilippo V. To Prevent Women from Dying in Childbirth, First Stop Blaming Them. *Scientific American*. 2019.
349. Chambers BD, Arabia SE, Arega HA, et al. Exposures to structural racism and racial discrimination among pregnant and early postpartum Black women living in Oakland, California. *Stress Health*. Apr 2020;36(2):213-219. doi:10.1002/smi.2922
350. Geronimus AT. The weathering hypothesis and the health of African-American women and infants: evidence and speculations. *Ethn Dis*. Summer 1992;2(3):207-21.
351. Alhusen JL, Bower KM, Epstein E, Sharps P. Racial Discrimination and Adverse Birth Outcomes: An Integrative Review. *J Midwifery Womens Health*. Nov 2016;61(6):707-720. doi:10.1111/jmwh.12490
352. Vedam S, Stoll K, Taiwo TK, et al. The Giving Voice to Mothers study: inequity and mistreatment during pregnancy and childbirth in the United States. *Reprod Health*. Jun 11 2019;16(1):77. doi:10.1186/s12978-019-0729-2
353. White VanGompel E, Lai JS, Davis DA, et al. Psychometric validation of a patient-reported experience measure of obstetric racism© (The PREM-OB Scale™ suite). *Birth*. Mar 17 2022;doi:10.1111/birt.12622
354. Sakala C, Declercq E, Turon JM, Corry MP. Listening to mothers in California: A population-based study of women’s childbearing experiences. 2018. <https://www.chcf.org/wp-content/uploads/2018/09/ListeningMothersCAFullSurveyReport2018.pdf>
355. The big shortage: The future of California’s health workforce. Web page. California Health Care Foundation. Accessed July 21, 2022. <https://www.chcf.org/collection/big-shortage-californias-health-workforce/>
356. Kwong C, Brooks M, Dau KQ, Spetz J. California’s midwives: How scope of practice laws impact care. 2019. Accessed July 12, 2022. <https://www.chcf.org/publication/californias-midwives/>
357. 2014 ACOG workforce fact sheet: California. 2014. <https://drive.google.com/file/d/1OHFI2OSiTsYmKX5SSCViQOx4x2UK8tRdQ/view?usp=sharing>
358. Nowhere to go: Maternity care deserts in California. 2018. <https://drive.google.com/file/d/1aeuwCo87huSbC5gDS4OGW1Ivh5sgRGNnA/view?usp=sharing>
359. Collaboration in practice: Implementing team-based care. 2016. <https://www.acog.org/-/media/project/acog/acogorg/clinical/files/task-force-report/articles/2016/collaboration-in-practice-implementing-team-based-care.pdf>
360. Akileswaran CP, Hutchison MS. Making Room at the Table for Obstetrics, Midwifery, and a Culture of Normalcy Within Maternity Care. *Obstet Gynecol*. Jul 2016;128(1):176-80. doi:10.1097/aog.0000000000001493
361. King TL, Laros RK, Jr., Parer JT. Interprofessional collaborative practice in obstetrics and midwifery. *Obstet Gynecol Clin North Am*. Sep 2012;39(3):411-22. doi:10.1016/j.ogc.2012.05.009
362. Berwick DM. What ‘patient-centered’ should mean: confessions of an extremist. *Health Aff (Millwood)*. Jul-Aug 2009;28(4):w555-65. doi:10.1377/hlthaff.28.4.w555
363. Hutchison MS, Ennis L, Shaw-Battista J, et al. Great minds don’t

- think alike: collaborative maternity care at San Francisco General Hospital. *Obstet Gynecol*. Sep 2011;118(3):678-682. doi:10.1097/AOG.0b013e3182297d2d
364. Renfrew MJ, McFadden A, Bastos MH, et al. Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. *Lancet*. Sep 20 2014;384(9948):1129-45. doi:10.1016/s0140-6736(14)60789-3
365. Vedam S, Stoll K, MacDorman M, et al. Mapping integration of midwives across the United States: Impact on access, equity, and outcomes. *PLoS One*. 2018;13(2):e0192523. doi:10.1371/journal.pone.0192523
366. Souter V, Nethery E, Kopas ML, Wurz H, Sitcov K, Caughey AB. Comparison of Midwifery and Obstetric Care in Low-Risk Hospital Births. *Obstet Gynecol*. Nov 2019;134(5):1056-1065. doi:10.1097/aog.0000000000003521
367. Sandall J, Soltani H, Gates S, Shennan A, Devane D. Midwife-led continuity models versus other models of care for childbearing women. *Cochrane Database Syst Rev*. Apr 28 2016;4(4):Cd004667. doi:10.1002/14651858.CD004667.pub5
368. Hill I, Dubay L, Courtot B, et al. Strong start for mothers and newborns evaluation: Year 5 project synthesis. 2018. <https://downloads.cms.gov/files/cmmti/strongstart-prenatal-final-evalrpt-v1.pdf>
369. Attanasio LB, Alarid-Escudero F, Kozhimannil KB. Midwife-led care and obstetrician-led care for low-risk pregnancies: A cost comparison. *Birth*. Mar 2020;47(1):57-66. doi:10.1111/birt.12464
370. Strauss N. Maximizing midwifery to achieve high-value maternity care in New York. 2018. https://everymothercounts.org/wp-content/uploads/2018/10/MaxiMiNY_Final_5_3_18.pdf
371. Declercq ER, Belanoff C, Sakala C. Intrapartum care and experiences of women with midwives versus obstetricians in the Listening to Mothers in California Survey. *J Midwifery Womens Health*. Jan 2020;65(1):45-55. doi:10.1111/jmwh.13027
372. McLachlan HL, Forster DA, Davey MA, et al. Effects of continuity of care by a primary midwife (caseload midwifery) on caesarean section rates in women of low obstetric risk: the COSMOS randomised controlled trial. *Bjog*. Nov 2012;119(12):1483-92. doi:10.1111/j.1471-0528.2012.03446.x
373. What is a midwife? Web page. Midwives Alliance of North America (MANA). Accessed July 12, 2022, <https://mana.org/about-midwives/what-is-a-midwife>
374. Pearls of physiologic birth. American College of Nurse-Midwives 2019. Accessed July 12, 2022. <https://www.midwife.org/pearls>
375. The culture war between doctors and midwives, explained. YouTube. Vox.com. Accessed September 10, 2022, <https://www.youtube.com/watch?v=SE34K88LUek>
376. How midwifery racially evolved. YouTube. Flatlandkc.org. Accessed September 10, 2022, <https://youtu.be/7Dg70dEnxO4>
377. Committee Opinion No. 687: Approaches to Limit Intervention During Labor and Birth. *Obstet Gynecol*. Feb 2017;129(2):e20-e28. doi:10.1097/aog.0000000000001905
378. Improving our maternity care now through midwifery. 2021. <https://www.nationalpartnership.org/our-work/resources/health-care/maternity/improving-maternity-midwifery.pdf>
379. Certified midwife credential. Web page. American College of Nurse-Midwives. Accessed July 12, 2022, <https://www.midwife.org/certified-midwife-credential>
380. What Are We Pushing For? The Big Push for Midwives Campaign. Accessed July 12, 2022, <https://www.pushformidwives.org>
381. Comparison of certified nurse-midwives, certified midwives, certified professional midwives. Clarifying the distinctions among professional midwifery credentials in the U.S. Web page. American College of Nurse-Midwives. Accessed July 12, 2022, <https://www.midwife.org/acnm/files/cclibraryfiles/FILENAME/000000006807/FINAL-ComparisonChart-Oct2017.pdf>
382. Avery MD, Rauk P. Midwife and Ob-gyn Role Clarity for Team-based Practice. 2021. Accessed July 12, 2022. https://acnm-acog-ipe.org/wp-content/uploads/2021/03/2_26_21_Role-Clarification_RD.pdf
383. Resources: ICM global standards, competencies, and tools. Web page. International Confederation of Midwives. Accessed July 12, 2022, <https://www.internationalmidwives.org/our-work/>
384. California licensed midwife annual report summary. 2019. Accessed July 12, 2022. <https://www.mbc.ca.gov/Download/Reports/lmar-2019.pdf>
385. Midwives. Web page. Medical Board of California. Accessed July 12, 2022, <https://www.mbc.ca.gov/Licensing/Licensed-Midwives/Practice-Information/>
386. Bonilla S. Assembly Bill 1308. 2013. https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201320140AB1308.
387. Dodd B. SB 1237 Nurse-Midwives Scope of Practice. 2020. https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB1237.
388. MacDorman MF, Declercq E. Trends and state variations in out-of-hospital births in the United States, 2004-2017. *Birth*. Jun 2019;46(2):279-288. doi:10.1111/birt.12411
389. MacDorman MF, Declercq E, Mathews TJ. Recent Trends in Out-of-Hospital Births in the United States. *J Midwifery Womens Health*. Sep-Oct 2013;58(5):494-501. doi:10.1111/jmwh.12092
390. MacDorman MF, Barnard-Mayers R, Declercq E. United States community births increased by 20% from 2019 to 2020. *Birth*. Feb 25 2022;doi:10.1111/birt.12627
391. Cheng RJ, Fisher AC, Nicholson SC. Interest in Home Birth During the COVID-19 Pandemic: Analysis of Google Trends Data. *J Midwifery Womens Health*. Mar 10 2022;doi:10.1111/jmwh.13341
392. Leeman L, Goldstein JT. Promoting Safety in Community-Based Birth Settings. *Am Fam Physician*. Jun 1 2021;103(11):650-652.
393. Grigoryants O. Pregnant During Pandemic: Programs, Midwives Step Up To Support Black Mothers. *LA Daily News*. Accessed July 20, 2022. <https://www.dailynews.com/2021/08/13/pregnant-during-pandemic-specialized-programs-midwives-step-up-many-women-choose-home-births/>
394. Personal communication with the California Nurse-Midwives Association regarding statewide survey of 43 CNMs and LMs during the early months of the COVID-19 Pandemic. 2020.
395. Cheyney M, Bovbjerg M, Everson C, Gordon W, Hannibal D, Vedam S. Outcomes of care for 16,924 planned home births in the United States: the Midwives Alliance of North America Statistics Project, 2004 to 2009. *J Midwifery Womens Health*. Jan-Feb 2014;59(1):17-27. doi:10.1111/jmwh.12172
396. Cheng YW, Snowden JM, King TL, Caughey AB. Selected perinatal outcomes associated with planned home births in the United States. *Am J Obstet Gynecol*. Oct 2013;209(4):325.e1-8. doi:10.1016/j.ajog.2013.06.022

397. Brocklehurst P, Hardy P, Hollowell J, et al. Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies: the Birthplace in England national prospective cohort study. *Bmj*. Nov 23 2011;343:d7400. doi:10.1136/bmj.d7400
398. de Jonge A, van der Goes BY, Ravelli AC, et al. Perinatal mortality and morbidity in a nationwide cohort of 529,688 low-risk planned home and hospital births. *Bjog*. Aug 2009;116(9):1177-84. doi:10.1111/j.1471-0528.2009.02175.x
399. Leslie MS, Romano A. Appendix: birth can safely take place at home and in birthing centers: the coalition for improving maternity services. *J Perinat Educ*. Winter 2007;16 Suppl 1(Suppl 1):81s-8s. doi:10.1624/105812407x173236
400. Olsen O. Meta-analysis of the safety of home birth. *Birth*. Mar 1997;24(1):4-13; discussion 14-6. doi:10.1111/j.1523-536x.1997.tb00330.x
401. Olsen O, Clausen JA. Planned hospital birth versus planned home birth. *Cochrane Database Syst Rev*. Sep 12 2012;9(9):Cd000352. doi:10.1002/14651858.CD000352.pub2
402. Janssen PA, Saxell L, Page LA, Klein MC, Liston RM, Lee SK. Outcomes of planned home birth with registered midwife versus planned hospital birth with midwife or physician. *Cmaj*. Sep 15 2009;181(6-7):377-83. doi:10.1503/cmaj.081869
403. Hutton EK, Reitsma AH, Kaufman K. Outcomes associated with planned home and planned hospital births in low-risk women attended by midwives in Ontario, Canada, 2003-2006: a retrospective cohort study. *Birth*. Sep 2009;36(3):180-9. doi:10.1111/j.1523-536x.2009.00322.x
404. Nove A, Berrington A, Matthews Z. Comparing the odds of postpartum haemorrhage in planned home birth against planned hospital birth: results of an observational study of over 500,000 maternities in the UK. *BMC Pregnancy Childbirth*. Nov 19 2012;12:130. doi:10.1186/1471-2393-12-130
405. van der Kooy J, Poeran J, de Graaf JP, et al. Planned home compared with planned hospital births in the Netherlands: intrapartum and early neonatal death in low-risk pregnancies. *Obstet Gynecol*. Nov 2011;118(5):1037-1046. doi:10.1097/AOG.0b013e3182319737
406. Snowden JM, Tilden EL, Snyder J, Quigley B, Caughey AB, Cheng YW. Planned Out-of-Hospital Birth and Birth Outcomes. *N Engl J Med*. Dec 31 2015;373(27):2642-53. doi:10.1056/NEJMsa1501738
407. Zielinski R, Ackerson K, Kane Low L. Planned home birth: benefits, risks, and opportunities. *Int J Womens Health*. 2015;7:361-77. doi:10.2147/ijwh.S55561
408. Fullerton JT, Navarro AM, Young SH. Outcomes of planned home birth: an integrative review. *J Midwifery Womens Health*. Jul-Aug 2007;52(4):323-33. doi:10.1016/j.jmwh.2007.02.016
409. Stoll K, Kornelsen J. Midwifery care in rural and remote British Columbia: a retrospective cohort study of perinatal outcomes of rural parturient women with a midwife involved in their care, 2003 to 2008. *J Midwifery Womens Health*. Jan-Feb 2014;59(1):60-6. doi:10.1111/jmwh.12137
410. Birth settings in America: Outcomes, quality, access, and choice. A consensus study of the National Academies of Sciences, Engineering, and Medicine. 2020. Accessed July 20, 2022. <https://nationalacademies.org/catalog/25636/birth-settings-in-america-outcomes-quality-access-and-choice>
411. Committee Opinion No 697 Summary: Planned Home Birth. *Obstet Gynecol*. Apr 2017;129(4):779-780. doi:10.1097/aog.0000000000002015
412. American College of Obstetricians and Gynecologists committee opinion no. 476: Planned home birth. Web page. Maryland Department of Health. Accessed July 20, 2022, <https://health.maryland.gov/midwives/Documents/ACOG%20Committee%20Opinion%20476.pdf>
413. Committee Opinion No. 669: Planned Home Birth. *Obstet Gynecol*. Aug 2016;128(2):e26-31. doi:10.1097/aog.0000000000001586
414. Michal CA, Janssen PA, Vedam S, Hutton EK, Jonge Ad. Planned home vs hospital birth: A meta-analysis gone wrong. Web page. *Medscape Ob/Gyn*. Accessed July 20, 2022, https://www.medscape.com/viewarticle/739987_1
415. Policy Statement: Planned Home Birth Pediatrics 2013;131(5):1016-1020. doi:10.1542/peds.2013-0575
416. Planned home birth. 2016. Accessed July 20, 2022. <https://www.midwife.org/acnm/files/ACNMLibraryData/UPLOADFILE-NAME/000000000251/Planned-Home-Birth-Dec-2016.pdf>
417. Homebirth position paper. 2012. Accessed July 21, 2022. <https://mana.org/advocacy/homebirth-position-paper>
418. Campbell K, Carson G, Azzam H, Hutton E. No. 372-Statement on Planned Homebirth. *J Obstet Gynaecol Can*. Feb 2019;41(2):223-227. doi:10.1016/j.jogc.2018.08.008
419. Position statement on homebirth. 2013. Accessed July 21, 2022. <https://canadianmidwives.org/wp-content/uploads/2016/06/CAMACSF-HomeBirthPS-FINAL-2013ENG.pdf>
420. Home births. Accessed July 21, 2022. https://birthguidechicago.com/wp-content/uploads/2018/07/home_births_rcog_rcm0607.pdf
421. Position statement: Home birth. 2017. Accessed July 20, 2022. <https://www.internationalmidwives.org/assets/files/statement-files/2019/06/eng-home-birth14-converted-new-letterhead.pdf>
422. Nethery E, Schummers L, Levine A, Caughey AB, Souter V, Gordon W. Birth Outcomes for Planned Home and Licensed Freestanding Birth Center Births in Washington State. *Obstet Gynecol*. Nov 1 2021;138(5):693-702. doi:10.1097/aog.0000000000004578
423. Findings at a glance: Strong start for mothers and newborns. Evaluation of full performance period. 2018. Accessed July 25, 2022. <https://innovation.cms.gov/files/reports/strongstart-prenatal-fg-finalevalrpt.pdf>
424. Updated HUDLS labor support education platform released for CMQCC member hospitals. Web page. California Maternal Quality Care Collaborative. Accessed September 8, 2022, <https://www.cmqcc.org/news/updated-hudls-labor-support-education-platform-released-cmqcc-member-hospitals>
425. Ellman N. Community-based doulas and midwives: Key to addressing the U.S. maternal health crisis. 2020. Accessed July 18, 2022. <https://www.americanprogress.org/article/community-based-doulas-midwives/>
426. Personal communication with Elizabeth Smith, CNM, owner of Santa Rosa Birth Center. August 24, 2022.
427. Kristienne McFarland A, Jones J, Luchsinger J, Kissler K, Smith DC. The experiences of midwives in integrated maternity care: A qualitative metasynthesis. *Midwifery*. Jan 2020;80:102544. doi:10.1016/j.midw.2019.102544
428. Transfer from planned home birth to hospital. 2013. https://www.homebirthsummit.org/wp-content/uploads/2014/03/HomeBirth-Summit_BestPracticeTransferGuidelines.pdf
429. Marx D. Patient Safety and the Just Culture. *Obstet Gynecol Clin*

- North Am. Jun 2019;46(2):239-245. doi:10.1016/j.ogc.2019.01.003
430. Bey A, Brill A, Porchia-Albert C, Gradilla M, Strauss N. Advancing birth justice: Community-based doula models as a standard of care for ending racial disparities. 2019. Accessed July 18, 2022. <https://blackmamasmatter.org/wp-content/uploads/2019/03/Advancing-Birth-Justice-CBD-Models-as-Std-of-Care-3-25-19.pdf>
 431. Marshall C, Nguyen A, Arteaga S, et al. Partnering with community doulas to improve maternal and infant health equity in California. 2022. https://www.share.berkeley.edu/_files/ugd/7ee60a_f6be1b984d0c4b44a2758e96587a6195.pdf
 432. Chang V. How End-of-Life Doulas Help Ease the Final Transition. *Scientific American* 2021.
 433. Owens DC, Fett SM. Black Maternal and Infant Health: Historical Legacies of Slavery. *Am J Public Health*. Oct 2019;109(10):1342-1345. doi:10.2105/ajph.2019.305243
 434. Vonderheid S, Kishi R, Noor KF, Klima C. Group Prenatal Care and Doula Care for Pregnant Women In: Handler A, Kennelly J, Peacock N, eds. *Reducing Racial/Ethnic Disparities in Reproductive and Perinatal Outcomes*. Springer Science+Business Media; 2011.
 435. Robinson N. African American infant and maternal mortality (AAIMM) prevention initiative: Doula pilot project webinar. Webinar presentation. Accessed July 23, 2022, <http://welcmebaby.labestbabies.org/wp-content/uploads/2020/02/AAIMM-Doula-Presentation.pdf>
 436. Hart S. It takes a village: Pathways for achieving access to doula services for Medicaid enrollees. 2022. Accessed July 18, 2022. <https://healthlaw.org/wp-content/uploads/2022/06/Sarah-Hart-Poverty-Law-Paper-PDF.pdf>
 437. Overdue: Medicaid and private coverage of doula care to strengthen maternal and infant health. Executive summary. 2016. Accessed July 18, 2022. <https://www.nationalpartnership.org/our-work/resources/health-care/maternity/overdue-medicaid-and-private-insurance-coverage-of-doula-care-to-strengthen-maternal-and-infant-health-issue-brief.pdf>
 438. California doula pilots: Lessons learned project. Web page. National Health Law Program. Accessed July 18, 2022, <https://healthlaw.org/cadoulapilots/>
 439. Doula Medicaid project. Web page. National Health Law Program. Accessed July 18, 2022, <https://healthlaw.org/doulamedicaidproject/>
 440. Doulas Know Best: Lessons Learned from California's Doula Pilot Programs Panel Discussion. Accessed July 18, 2022. <https://www.youtube.com/watch?v=JJRzEWSHoYY>.
 441. Lesser A, Nogales R, Weiss A. Bringing Community-Based Doula Care To New Jersey. 2020. Accessed July 18, 2022. <https://www.healthaffairs.org/doi/10.1377/forefront.20200826.348190/full/>
 442. Doula services as a Medi-Cal benefit. Web page. Department of Health Care Services. Accessed July 18, 2022, <https://www.dhcs.ca.gov/provgovpart/Pages/Doula-Services.aspx>
 443. Bohren MA, Hofmeyr GJ, Sakala C, Fukuzawa RK, Cuthbert A. Continuous support for women during childbirth. *Cochrane Database Syst Rev*. Jul 6 2017;7:CD003766. doi:10.1002/14651858.CD003766.pub6
 444. Continuous Support for Women During Childbirth: 2017 Cochrane Review Update Key Takeaways. *J Perinat Educ*. Oct 2018;27(4):193-197. doi:10.1891/1058-1243.27.4.193
 445. Kozhimannil KB, Attanasio LB, Hardeman RR, O'Brien M. Doula care supports near-universal breastfeeding initiation among diverse, low-income women. *J Midwifery Womens Health*. Jul-Aug 2013;58(4):378-82. doi:10.1111/jmwh.12065
 446. Bakst C, Moore JE, George KE, Shea K. Community-based maternal support services: The role of doulas and community health workers in Medicaid. 2020. Accessed July 18, 2022. https://www.medicaidinnovation.org/_images/content/2020-IMI-Community-Based-Maternal-Support-Services-Report.pdf
 447. Kozhimannil KB, Hardeman RR, Alarid-Escudero F, Vogel-sang CA, Blauer-Peterson C, Howell EA. Modeling the Cost-Effectiveness of Doula Care Associated with Reductions in Preterm Birth and Cesarean Delivery. *Birth*. Mar 2016;43(1):20-7. doi:10.1111/birt.12218
 448. Smooth Transitions. History and Program Steps. Web page. Foundation for Health Care Quality. Accessed October 10, 2022, <https://www.qualityhealth.org/smoothtransitions/about-smooth-transitions/history-and-program-steps/>