

Welcome to today's Webinar

- Racial Disparities in Maternal Mortality: Spotlight on Cardiovascular Disease

- Announcements:
 - All participants are muted – please use the Zoom Q&A feature to ask questions any time throughout the presentation; they will be addressed at the end
 - Today's webinar will be recorded and archived (within 72 hours) on CMQCC's YouTube Channel: www.youtube.com/CMQCC
 - Email cmorton@stanford.edu with follow up questions or comments
- While you wait, please answer the poll questions.
- Thank you for joining us!

WEBINAR

Racial Disparities in Maternal
Mortality: Spotlight on
Cardiovascular Disease

*Findings from the California Pregnancy-Associated Mortality Review
(CA-PAMR)*

November 7, 2018

- **Host:** Christine Morton, PhD, Research Sociologist, CMQCC
- **Introductory Remarks:** Connie Mitchell, MD, MPH, Deputy Director, Center for Family Health at California Department of Public Health
- **Moderator:** Elliott Main, MD, Medical Director, CMQCC



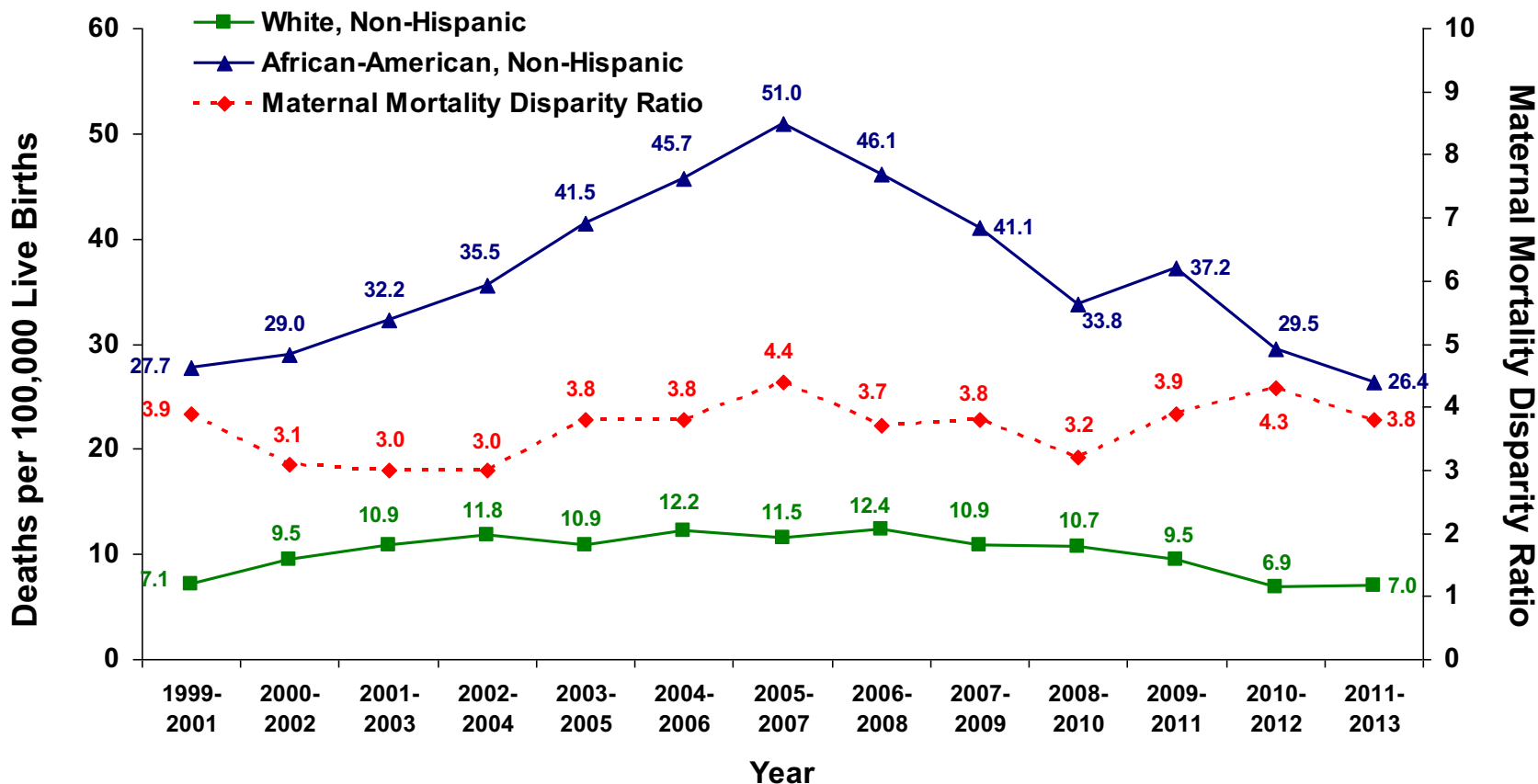
Welcome, thank you and
why we are here

Connie Mitchell, MD, MPH

Deputy Director, Center for Family Health



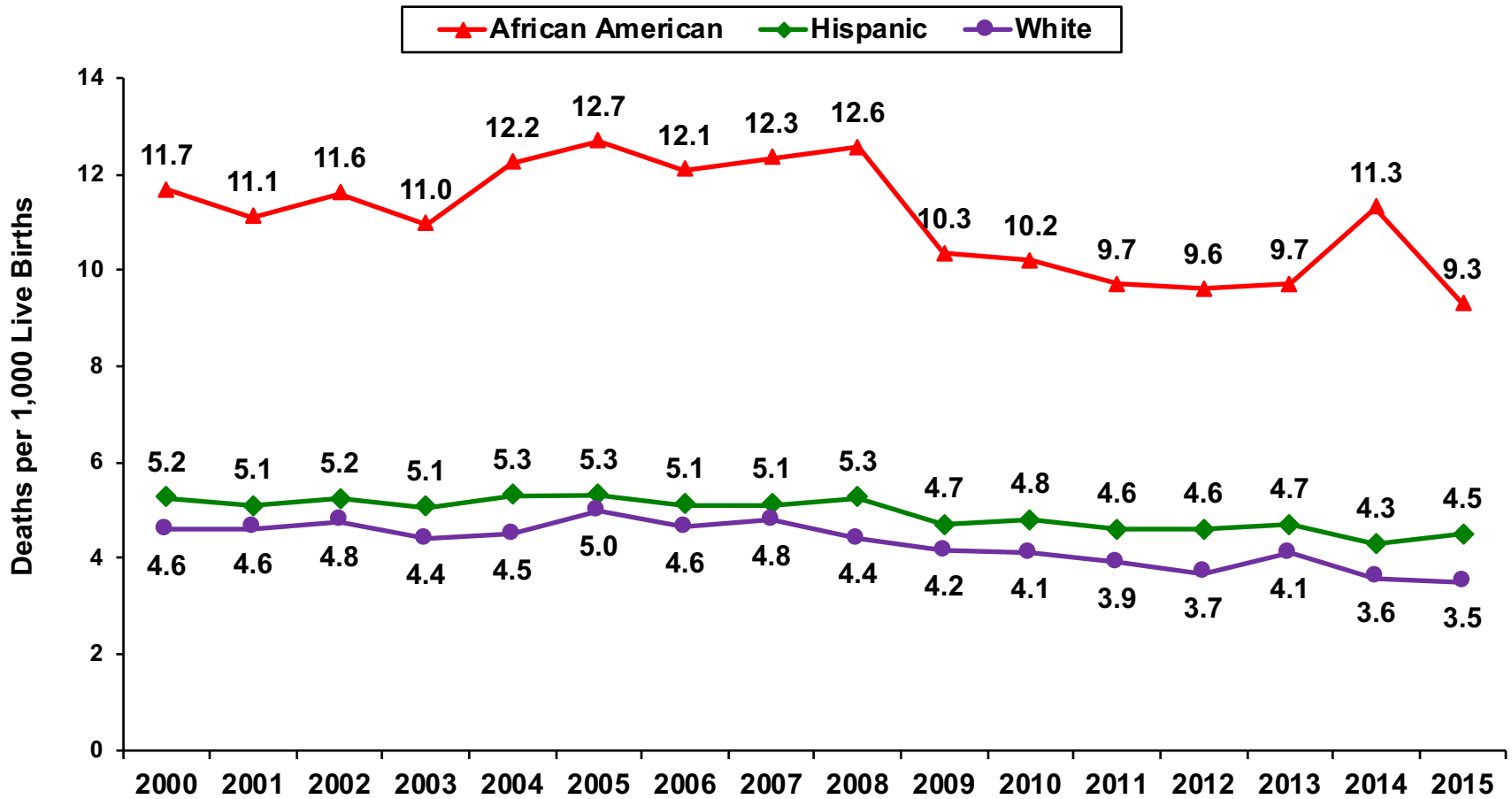
Disparities in Maternal Mortality Rate by Race/Ethnicity, California, 1999-2013



SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013. Maternal mortality rates for California (deaths \leq 42 days postpartum) were calculated using ICD-10 cause of death classification (codes A34, O00-O95, O98-O99). Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, May, 2015.



Disparities in Infant Mortality Rate by Race/Ethnicity, California, 2000-2015

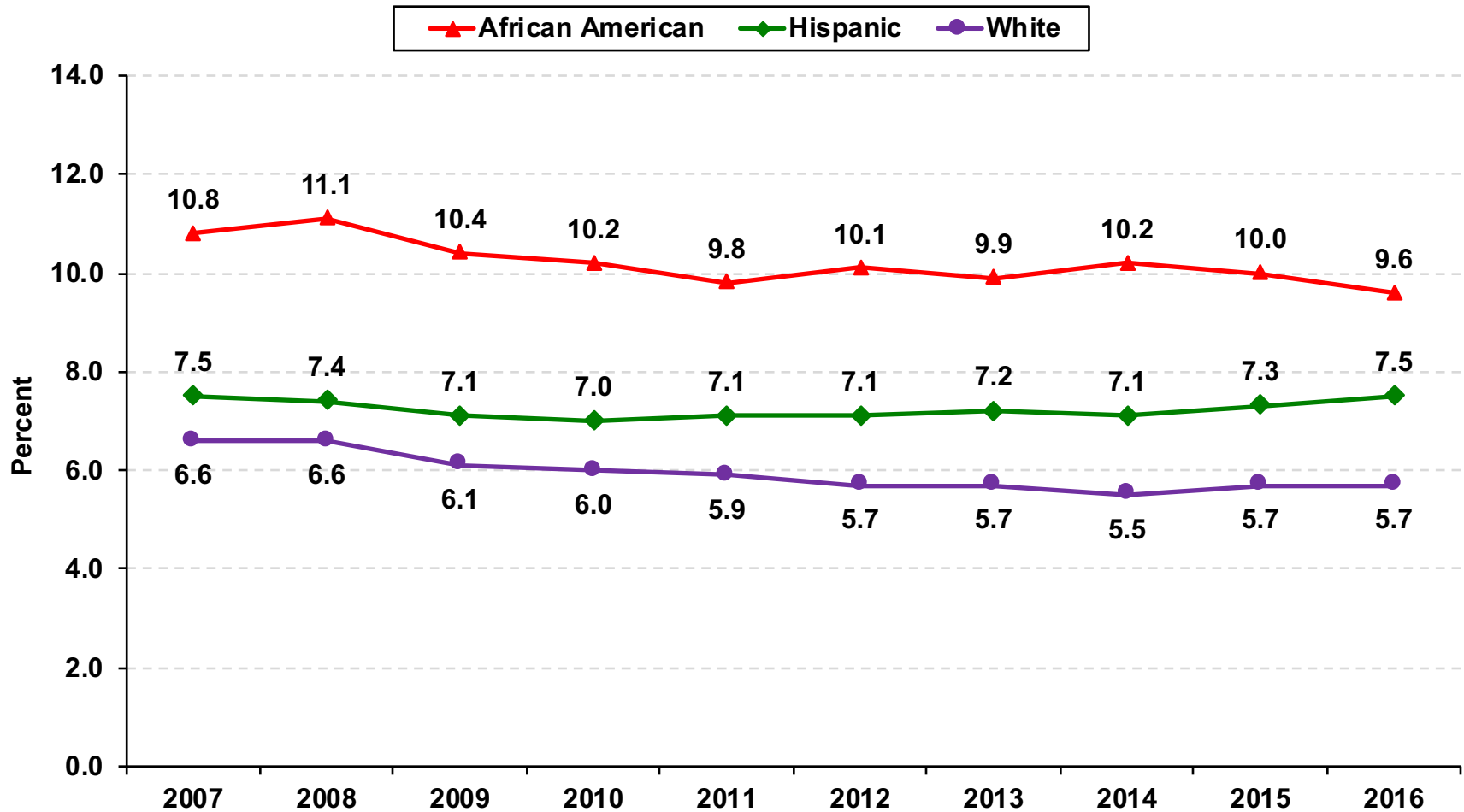


Data Sources: California Birth Cohort Files, 2000-2015

Prepared by the Epidemiology, Surveillance and Federal Reporting, Maternal, Child and Adolescent Health Division, Center for Family Health



Disparities in Preterm Singleton Births by Race/Ethnicity, California, 2007-2016



Note: Includes California resident live births with gestational age range 17-47 weeks. Preterm is <37 weeks gestation. Gestational age is based on obstetric estimate.

Source: California Department of Public Health, 2007-2016 Birth Statistical Master Files

Prepared by the Epidemiology, Surveillance and Federal Reporting, Maternal, Child and Adolescent Health Division, Center for Family Health



Strategies for Interventions to Reduce Racial Disparities in Health Outcomes

- Reduce socioeconomic inequalities
- Increase access to healthcare
- Ensure high quality care for all
- Change the structural environment in which people live to be health promoting
- Reduce health risks that are borne more by certain sub-populations

CMQCC Webinar Speakers

Overview of Racial Disparities in California Pregnancy-Related Mortality

Paula Krakowiak, PhD

California Department of Public Health
Maternal Child Adolescent Health Division, Epidemiology



Quality Improvement Opportunities among Women who Died from Cardiovascular Disease in California

Lucy Van Otterloo, PhD, RNC, CNS

Community Perinatal Network
Regional Perinatal Program of California



Moving Toward Equitable Implementation of the CVD Screening Algorithm

Afshan B. Hameed, MD, FACOG, FACC

Professor OB/GYN, Division of Maternal Fetal Medicine
Professor, Division of Cardiology, Medical Director, Obstetrics
Medical Director, Quality and Safety, University of California, Irvine



A decorative graphic on the left side of the slide consists of several overlapping, semi-transparent orange squares of varying sizes, arranged in a stepped pattern that ascends from left to right.

Overview of racial disparities in California pregnancy-related deaths

Paula Krakowiak, PhD

California Department of Public Health

Maternal Child and Adolescent Health Division

Epidemiology Surveillance and Federal Reporting Branch

Key Definitions

Maternal Mortality Rate (*WHO*)

Deaths while pregnant or within 42 days post-pregnancy from pregnancy-related causes per 100,000 live births

Pregnancy-Associated Deaths

(*CA-PAMR, CDC/ACOG*)

Death of a woman while pregnant or within 1 year post-pregnancy from *any* cause

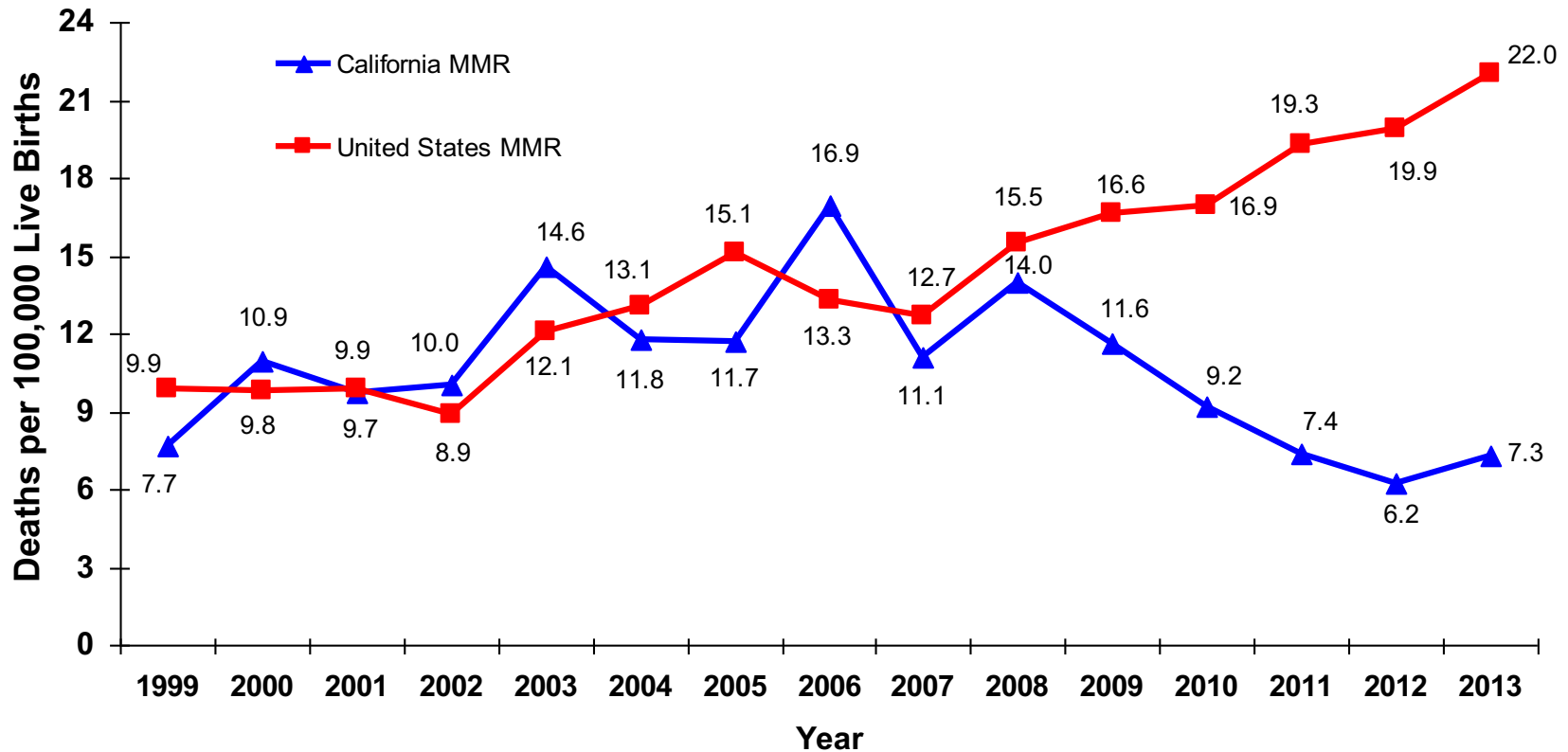
Pregnancy-Related Deaths

Subset of pregnancy-associated deaths. Only include deaths related to pregnancy or aggravated by pregnancy or its management

Not Pregnancy-Related Deaths

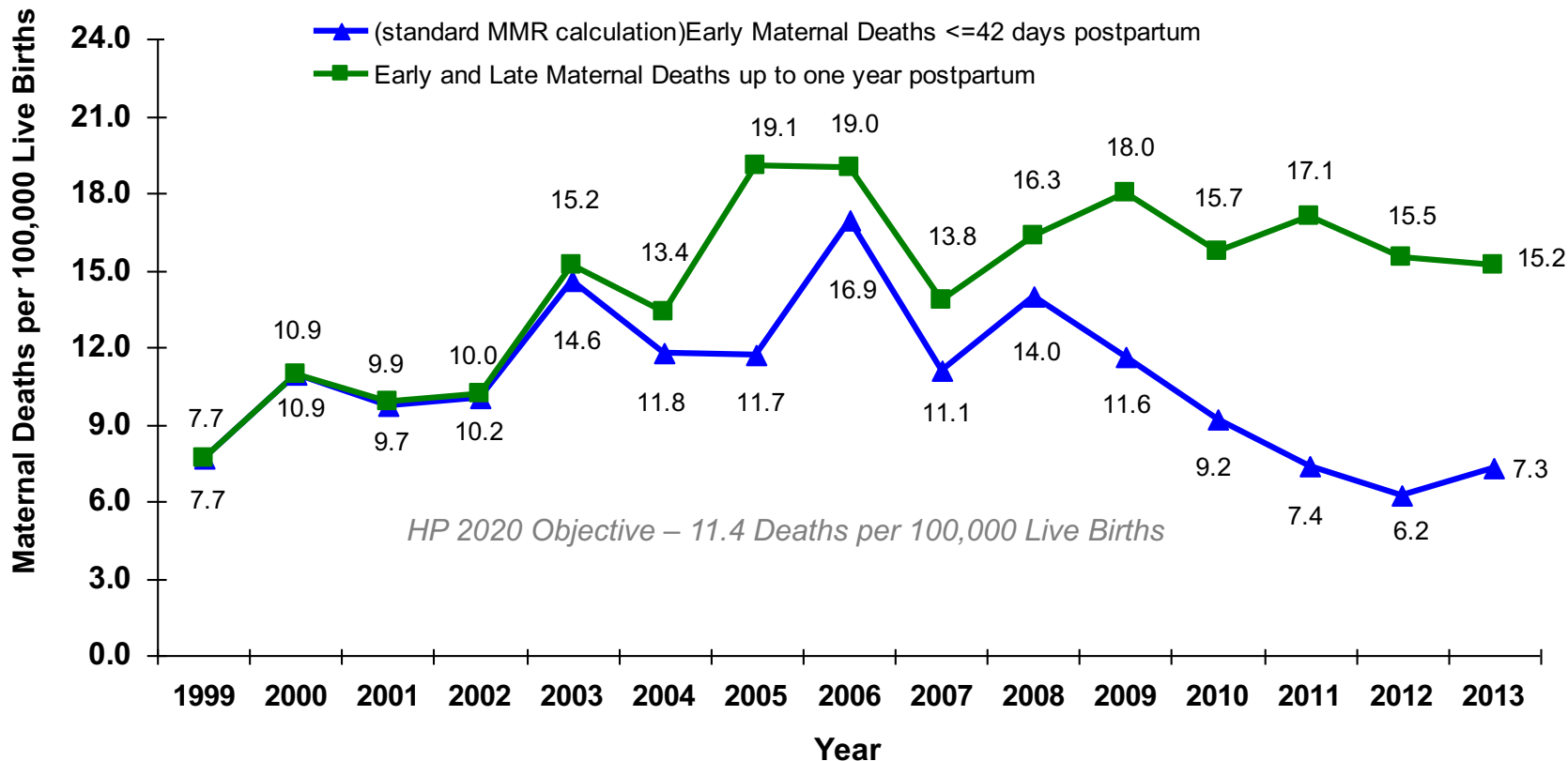
Subset of pregnancy-associated deaths. Deaths *not* related to pregnancy or its management

Maternal Mortality Ratios, California Residents and the United States; 1999-2013



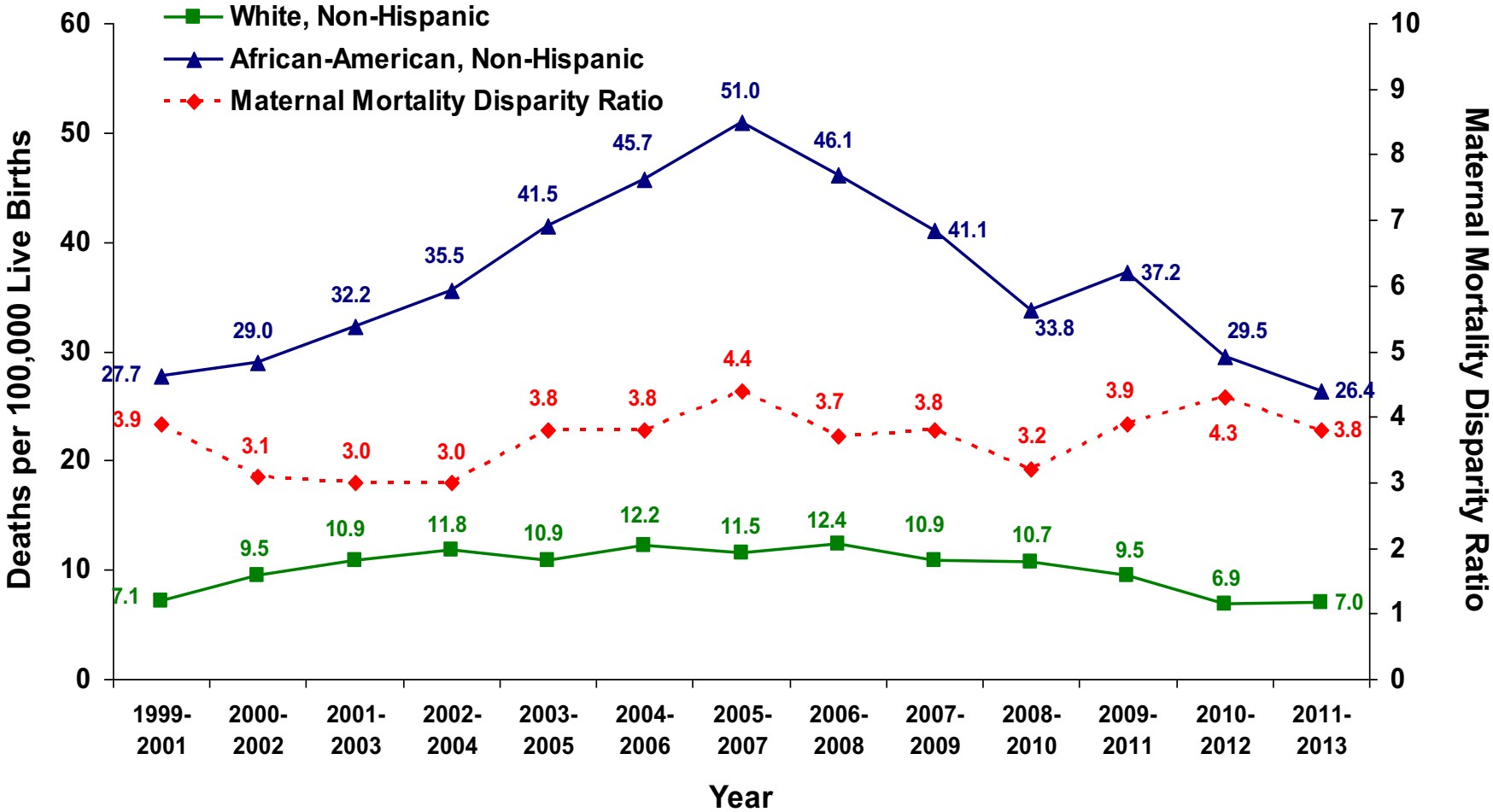
SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013. Maternal mortality for California (deaths \leq 42 days postpartum) was calculated using ICD-10 cause of death classification (codes A34, O00-O95, O98-O99). United States data and HP2020 Objective use the same codes. U.S. maternal mortality data is published by the National Center for Health Statistics (NCHS) through 2007 only. U.S. maternal mortality rates from 2008 through 2013 were calculated using CDC Wonder Online Database, accessed at <http://wonder.cdc.gov> on March 11, 2015. Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, May, 2015.

Maternal Mortality Rate (early and late deaths) California Residents, 1999-2013



SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013. Maternal mortality for California (Early maternal deaths ≤ 42 days postpartum) was calculated using ICD-10 cause of death classification (codes A34, O00-O95, O98-O99) and code O96 is also included when calculating Early and Late Maternal Deaths up to one year postpartum. Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, March, 2015.

Disparities in Maternal Mortality by Race/Ethnicity, California Residents, 1999-2013



SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013. Maternal mortality rates for California (deaths ≤ 42 days postpartum) were calculated using ICD-10 cause of death classification (codes A34, O00-O95, O98-O99). Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, May, 2015.

What is CA-PAMR?

- Enhanced surveillance of pregnancy-associated deaths *while pregnant or within 1 year of the end of pregnancy*
- Initiated in 2006 by the California Department of Public Health (CDPH) to investigate rise in maternal mortality and widening racial/ethnic disparity in California
- Seeks to identify:
 - Cause of death and timing
 - Whether pregnancy-related
 - Contributing / Critical factors that may have led to death
 - Level of preventability
 - Opportunities to improve care and support of (expectant) mothers

Goal: To reduce pregnancy-related deaths and associated health disparities

CA-PAMR Project Team

- California Department of Public Health (CDPH);
Maternal, Child and Adolescent Health (MCAH)
 - Project home, funder
 - Public health authority
 - Vital records, epidemiology
- Public Health Institute (PHI)
 - Procure investigative reports, medical records
 - Data management and analysis
- California Maternity Quality
Care Collaborative (CMQCC)
 - Quality improvement
 - Committee support
 - Engage maternity care clinicians
- Multidisciplinary Expert
Review Committee



CA-PAMR Methodology

Construct Pregnancy-Associated Death Cohort



Pre-screen P-A deaths: Apply exclusion criteria



Abstract data: Coroner investigative reports, Medical records,
Other relevant data

Expert Committee reviews cases: Identify COD, P-R deaths,
preventability, quality improvement opportunities (QIOs)



Analyze quantitative and qualitative data

Expert Committee produces data-driven recommendations

THE CALIFORNIA PREGNANCY-ASSOCIATED MORTALITY REVIEW

Report from 2002 to 2007
Maternal Death Reviews

This project was supported by Federal Title V
Maternal Child Health block grant funds received
from the California Department of Public Health;
Center for Family Health; Maternal, Child and
Adolescent Health Division

Spring 2018



CA-PAMR Webinar

CDPH Website:

<https://www.cdph.ca.gov/Programs/CFH/DMCAH/Pages/PAMR.aspx>

Or search:

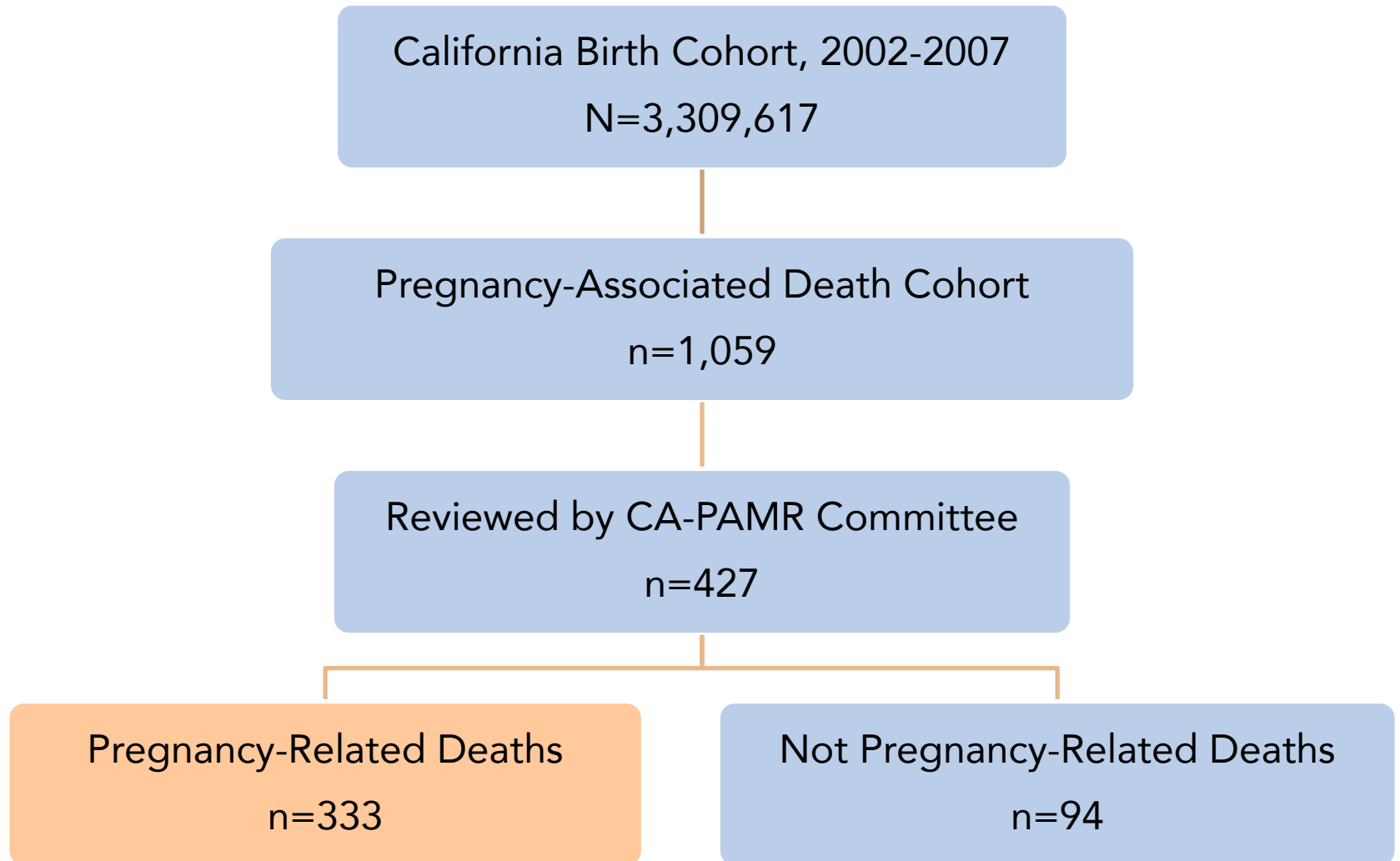
“California Pregnancy-Associated Mortality Review (CA-PAMR)”

Website contains:

- Project description, background and methods
- Key findings from latest review of obstetric deaths
- Links to **Reports** and **Toolkits**

November 7, 2018

Identification of Pregnancy-Related Deaths, California, 2002-2007 (N=333)





Leading Causes of Pregnancy-Related Deaths, California, 2002-2007 (N=333)

Cause of Death	n	%
Cardiovascular Disease (CVD)	87	26%
<i>Cardiomyopathy</i>	51	15%
<i>Other CVD</i>	36	11%
Preeclampsia/Eclampsia	54	16%
Obstetric Hemorrhage	33	10%
Venous Thromboembolism (VTE)	29	9%
Sepsis	27	8%

CVD Pregnancy-Related Mortality Rate: **2.6** deaths per 100,000 live births



All Pregnancy-Related Deaths by Race/Ethnicity, California, 2002-2007 (N=333)

Race/ Ethnicity	Total Deaths	Pregnancy-Related	
		MR	95% CI
Black	71	39.9	30.6, 49.2
White	81	8.5	6.7, 10.4
Hispanic, any race	151	8.9	7.5, 10.4
Other	30	6.1	3.9, 8.3

MR = Mortality Ratio (per 100,000 live births); CI = Confidence Interval

Pregnancy-Related Mortality Rate among **Black women: 39.9** deaths per 100,000 live births

4.7 times higher rate than white women



CVD Pregnancy-Related Deaths by Race/Ethnicity, California, 2002-2007 (N=87)

Race/ Ethnicity	CVD Deaths		Total Deaths	CVD Deaths	
	No.	Percent		MR	95% CI
Black	31	44%	71	17.4	11.3, 23.6
White	22	27%	81	2.3	1.3, 3.3
Hispanic, any race	30	20%	151	1.8	1.1, 2.4
Other	4	13%	30	***	***

MR = Mortality Ratio (per 100,000 live births); CI = Confidence Interval

CVD Pregnancy-Related Mortality Rate among **Black women: 17.4** deaths per 100,000 live births

7.6 times higher rate than white women



Top Contributing Factors for CVD Pregnancy-Related Deaths in California

- Underlying medical condition
- Delay in seeking care
- Obesity
- Lack of recognition of CVD symptoms

Patient-level

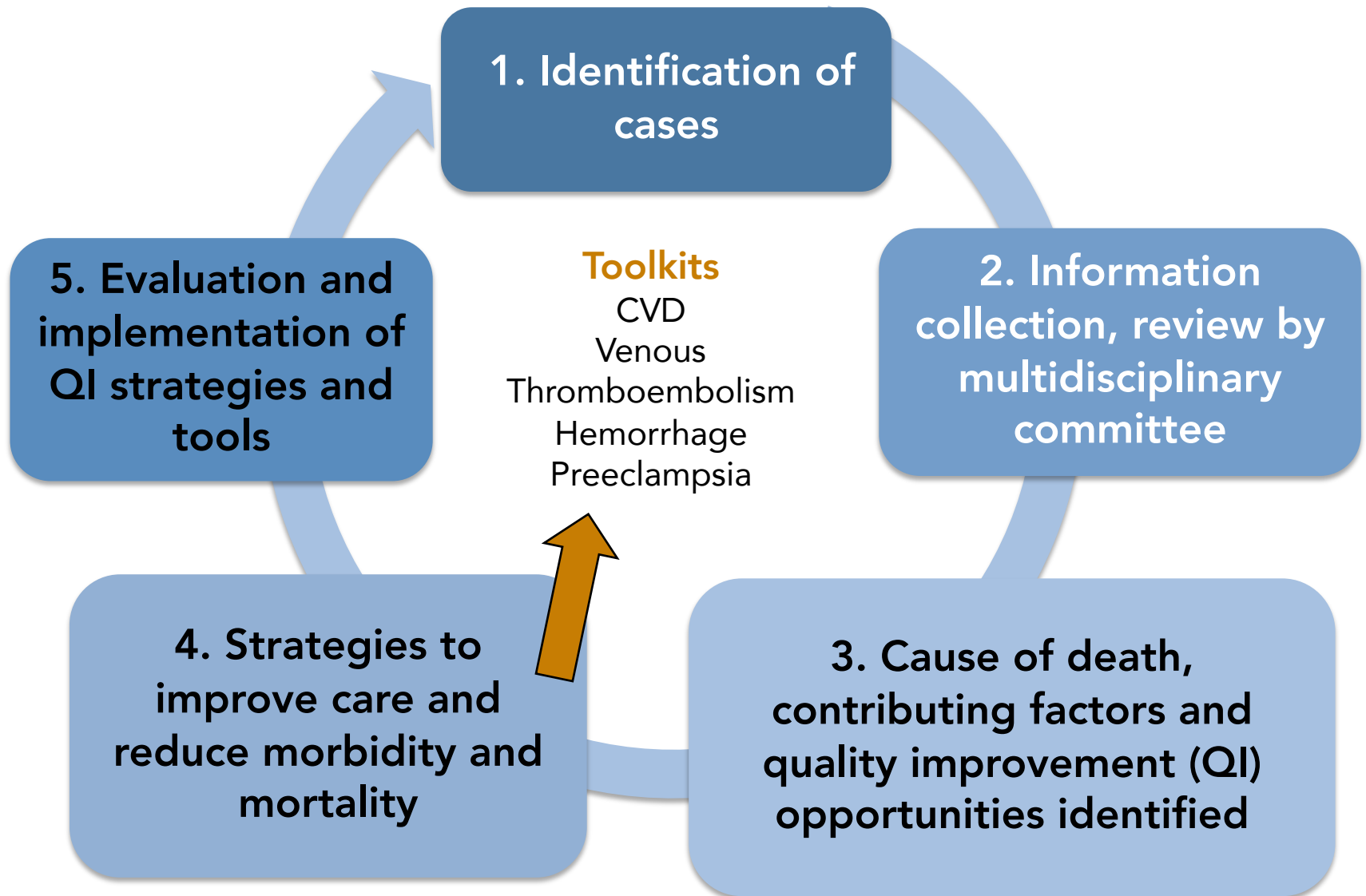
- Inadequate response to clinical warning signs
- Ineffective care
- Misdiagnosis
- Failure to refer or consult

Provider-level

No differences in proportion of contributing factors **by race/ethnicity**, except for obesity.

No differences in preventability by race/ethnicity

CA-PAMR Quality Improvement Review Cycle



The logo for CMQCC (California Maternal Quality Care Collaborative) features the letters 'CMQCC' in a bold, sans-serif font. The letter 'Q' is highlighted in orange, while the other letters are in dark grey.

California Maternal
Quality Care Collaborative

A decorative graphic on the left side of the slide consists of several overlapping, semi-transparent orange squares of varying sizes, creating a stepped, staircase-like effect.

Quality Improvement Opportunities among Women who Died from Cardiovascular Disease in California

Lucy Van Otterloo, PhD, RNC, CNS
Community Perinatal Network
Regional Perinatal Program of California

Cardiovascular Disease: Quality Improvement Opportunities

- Spotlight on CVD
 - 87 maternal deaths due to CVD (26%)
 - Chance to alter outcome
 - (strong-to-good): 26%
 - (some): 56%
 - (none): 19%
 - Analytic approach: Qualitative analysis using 4R framework
 - Multidisciplinary team: Nursing; Sociology; Obstetrics
 - Goal: identify key quality improvement opportunities
 - 276 quality improvement opportunities (QIOs) identified

Improvement Opportunities

Quality Improvement
Opportunity (QIO)

QIOs were determined by
COMMITTEE CONSENSUS

[Alternative] approaches to recognition, diagnosis, treatment or follow up, at the **patient, provider, and/or facility/system levels**, that may have led to better patient care and/or a better outcome.

Mitchell, C, Lawton E, Morton, C, McCain C, Holtby S, Main E. (2013). California Pregnancy-Associated Mortality Review: Mixed Methods Approach for Improved Case Identification, Cause of Death Analyses and Translation of Findings. *Maternal Child Health J.*
DOI:10.1007/s10995-013-1267-0

4 R Framework Council on Patient Safety

- Readiness
- Recognition
- Response
- Reporting

The 4Rs characterize actions necessary to prevent maternal mortality and morbidity and can guide implementation of quality improvement measures

Bingham, Lyndon, Lagrew, & Main, 2011;
D'Alton, Main, Menard, & Levy, 2014

**COUNCIL ON PATIENT SAFETY
IN WOMEN'S HEALTH CARE**
safe health care for every woman

READINESS

PATIENT SAFETY BUNDLE

Maternal Venous Thromboembolism Prevention

Hypertension

Obstetric Hemorrhage

Every Unit

- Standards for early warning signs, diagnostic criteria, monitoring and treatment of severe preeclampsia/eclampsia (include order sets and algorithms)
- Unit education on protocols, unit-based drills (with post-drill debriefs)
- Process for timely triage and evaluation of pregnant and postpartum women with hypertension including ED and outpatient areas

Every unit

- Hemorrhage cart with supplies, checklist, and instruction cards for intrauterine balloons and compressions stitches
- Immediate access to hemorrhage medications (kit or equivalent)
- Establish a response team - who to call when help is needed (blood bank, advanced gynecologic surgery, other support and tertiary services)
- Establish massive and emergency release transfusion protocols (type-O negative/uncrossmatched)
- Unit education on protocols, unit-based drills (with post-drill debriefs)

Every patient

- Assessment of hemorrhage risk (prenatal, on admission, and at other appropriate times)
- Measurement of cumulative blood loss (formal, as quantitative as possible)
- Active management of the 3rd stage of labor (department-wide protocol)

Every hemorrhage

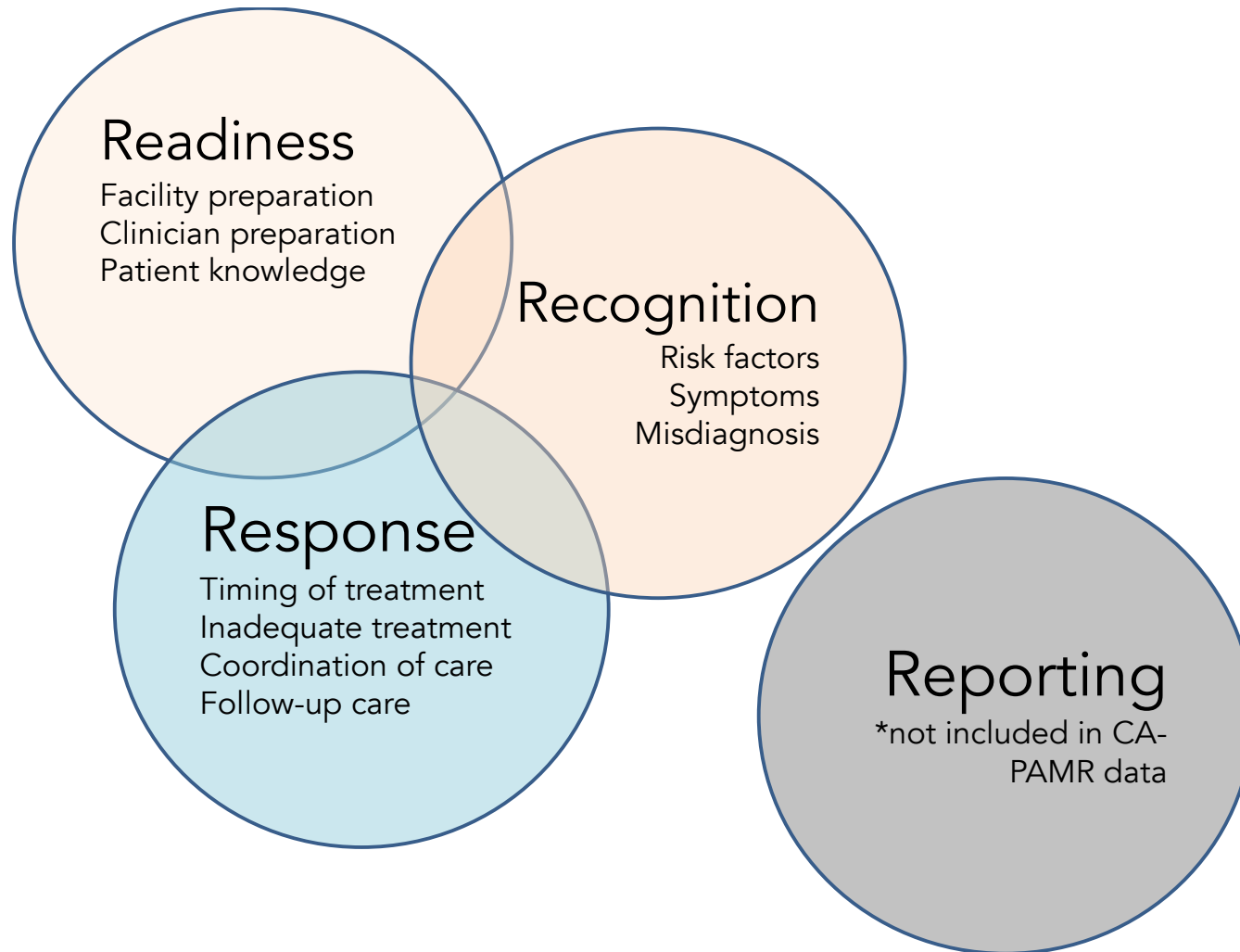
- Unit-standard, stage-based, obstetric hemorrhage emergency management plan with checklists
- Support program for patients, families, and staff for all significant hemorrhages

Every unit

- Establish a culture of huddles for high risk patients and post-event debriefs to identify successes and opportunities
- Multidisciplinary review of serious hemorrhages for systems issues
- Monitor outcomes and process metrics in perinatal quality improvement (QI) committee

by of case. The Council on Patient
This bundle reflects emerging clinical
to be confirmed as dictating an exclusive
to local resources, standardization
of women's health for the promotion
May 2015
oman.org

4 R Framework and QIO Definitions



QIO Readiness Themes among CVD deaths, CA-PAMR, 2002-2007

- Facility preparation
 - Women at very high risk for morbidity not cared for at facilities with specialist expertise and capacity
 - Women at high risk not cared for on the right unit within the facility
 - Lack of standardized policies and protocols

- Clinician preparation
 - Lack of routine assessment of all pregnant women especially those with known risk factors
 - Lack of knowledge of how to perform CPR on a pregnant woman

- Woman's knowledge
 - Awareness of signs and symptoms warranting medical attention

QIO Recognition Themes among CVD deaths, CA-PAMR, 2002-2007

- Missed risk factors
 - Family or medical history
 - Obesity
 - Current or past substance use

- Missed signs and symptoms
 - Shortness of breath, decreased oxygen saturation, tachycardia, crackles, wheezing, shoulder pain, fatigue, cyanosis, anemia, murmur

- Missed diagnosis/evaluation
 - Anxiety, asthma, pneumonia, pyelonephritis, substance use

QIO Response Themes among CVD deaths, CA-PAMR, 2002-2007

- Delayed treatment
 - Necessary diagnostic measures, medications, intubation, cesarean, triage and transport
- Inadequate or inappropriate treatment
 - Mismanagement of the woman's deteriorating condition
- Lack of follow-up
 - Women with high-risk factors or symptoms during delivery hospitalization were not followed post-discharge

Readiness Action Recommendations

- Facility preparation
 - Identification and transfer of women with high-risk factors during pregnancy and postpartum period
 - Availability of appropriate equipment
 - Access to maternal-fetal medicine/subspecialties
 - Improve communication and collaboration between obstetrics and emergency department and/or intensive care unit
 - Clinician education
 - Provide social services/case management

Readiness Action Recommendations

- Clinician Preparation
 - Physician and staff education
 - Pulse oximetry use
 - Obstetric cardio-pulmonary resuscitation

- Woman's knowledge
 - Prenatal and discharge teaching for risk factors, risk-reduction strategies, presence of symptoms, and when to seek care

Recognition Action Recommendations


- Missed risk factors
 - Routine risk assessment ante-, intra-, and postpartum
- Missed signs and symptoms
 - Assess and report abnormal warning signs
- Missed diagnosis/evaluation
 - Consider cardiovascular diagnosis in presence of common pregnancy concerns

Response Action Recommendations

- Timing of treatment
 - Begin immediately
 - Early transport to higher level of care
- Type of treatment
 - Standardized policies for evaluation and medication
 - EKG, Chest x-ray, cardiac enzymes, ECG
 - Ace inhibitors; Beta blockers; Furosemide
- Coordination of care
 - Routine consultation & co-management between OB & cardiologist/intensivist
- Follow-up care
 - Earlier follow-up after discharge, esp. postpartum

Disparities

- Substantial disparity in CVD mortality occurred among African American women – no clear answers
 - Higher incidence of risk factors associated with CVD
 - Not identified as high risk needing further evaluation
 - Access to quality care
 - Insurance accessibility – loss of healthcare coverage
 - Appropriate diagnostic measures
 - Delayed treatment
 - Racism, chronic stress, and social environment

A decorative graphic on the left side of the slide consists of several overlapping, semi-transparent orange rectangles of varying heights and widths, creating a stepped, staircase-like effect.

Moving Toward Equitable Implementation of the CVD Screening Algorithm

Afshan B. Hameed, MD, FACOG, FACC

Professor OB/GYN, Division of Maternal Fetal Medicine

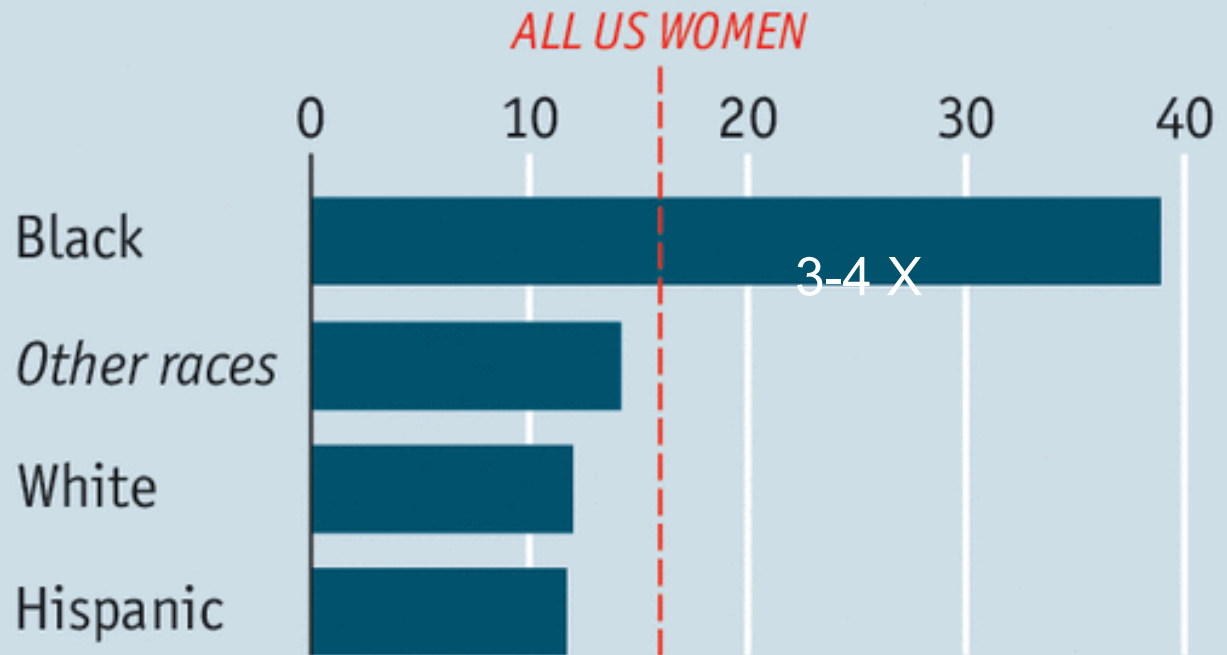
Professor, Division of Cardiology, Medical Director, Obstetrics

Medical Director, Quality and Safety, University of California, Irvine

Significant reductions in maternal mortality and morbidity can not be accomplished without addressing the gaps in maternity care for black women

The colour of risk

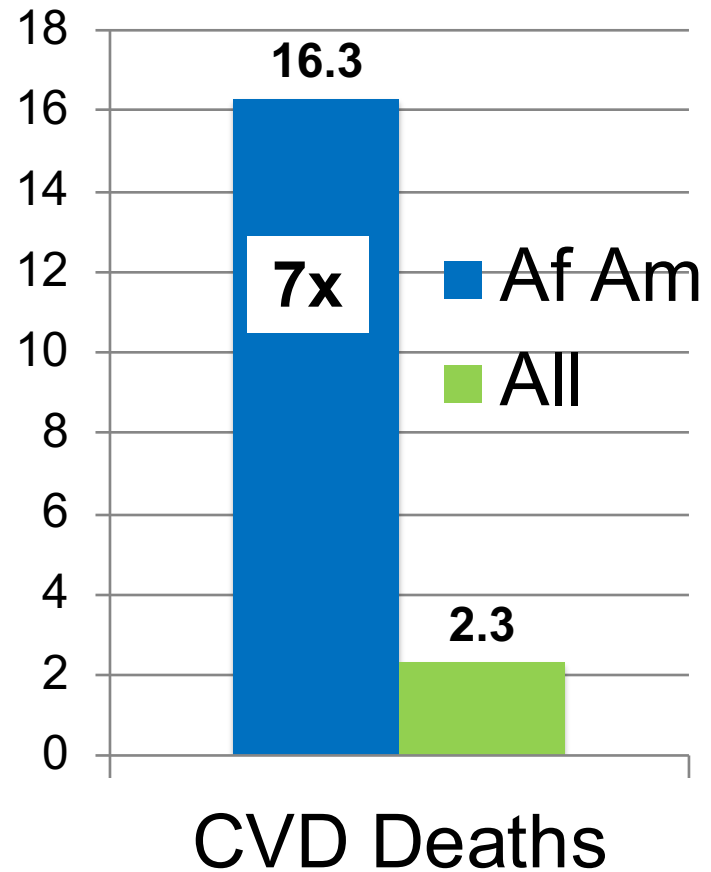
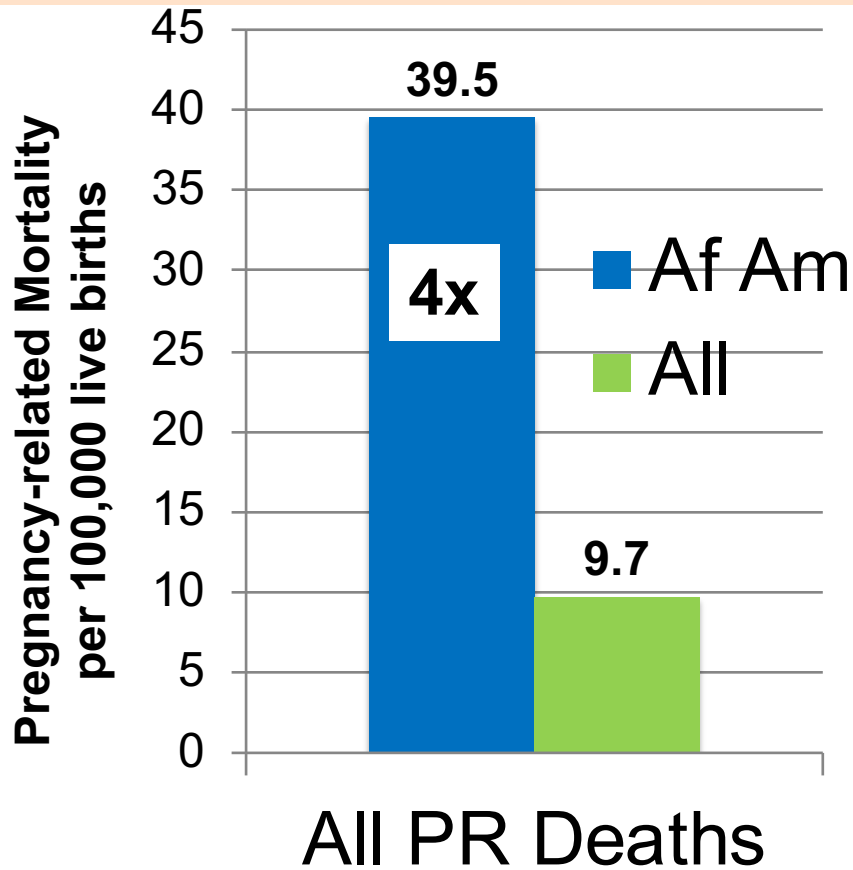
United States maternal mortality rate, 2006-10
Per 100,000 live births



Sources: Creanga *et al*, *Obstetrics & Gynecology*

Economist.com July 17, 2015

Racial Disparities in Pregnancy-Related Mortality, CA-PAMR 2002-07



Main et al. Pregnancy-Related Mortality in California. Obstet Gynecol April 2015

Pregnancy-Related Mortality Due to Cardiomyopathy: United States, 2006-2010

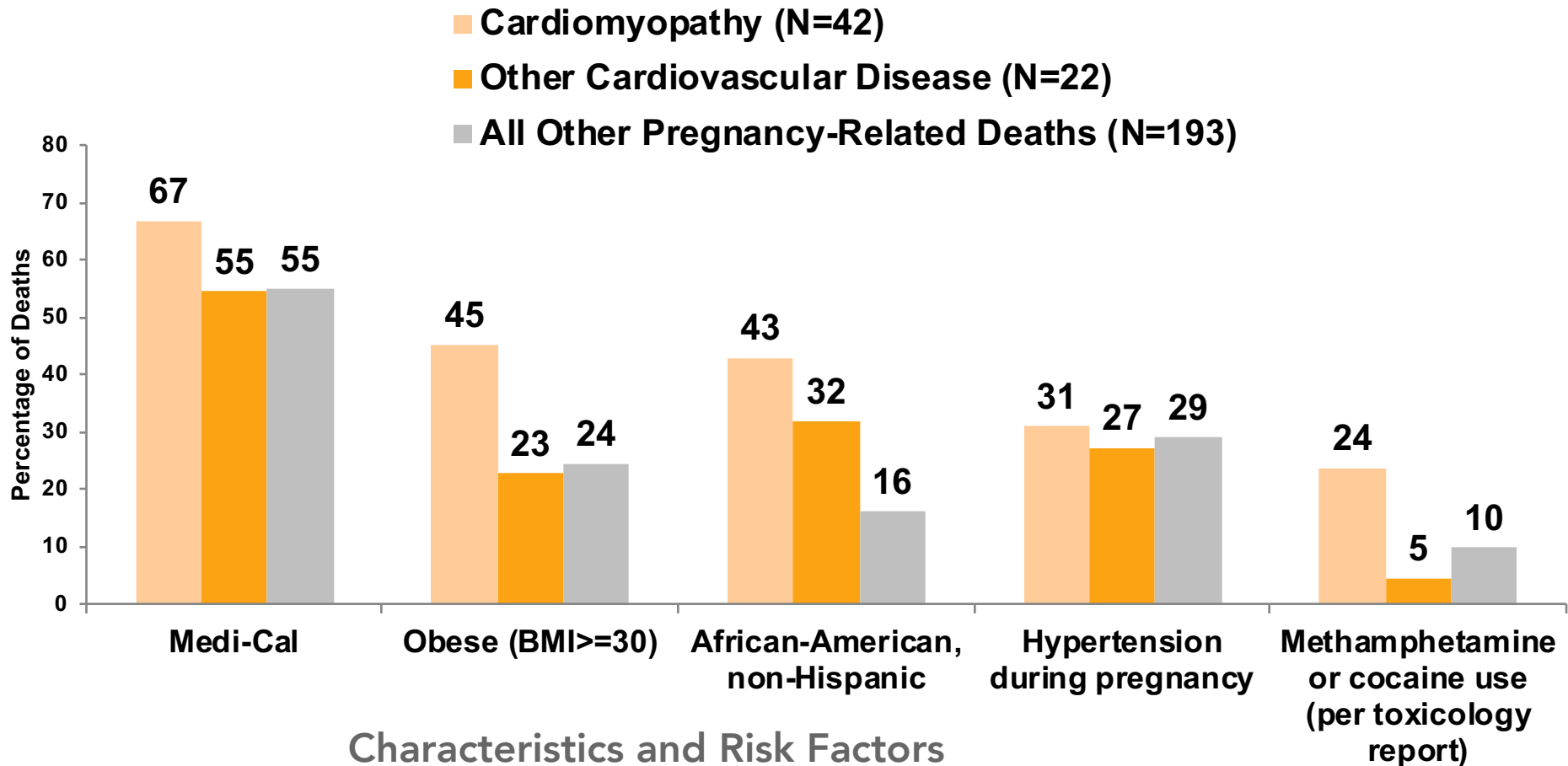
Pregnancy-related mortality ratio
16 deaths per 100,000 live births

Race-Ethnicity	Mortality Ratio
Hispanic	11.7
Non-Hispanic White	12.0
Other	14.2
Non-Hispanic Black	38.9

non-Hispanic black vs. non-Hispanic white 3.2

Creanga AA et. al. Obstet Gynecol 2015;125:5-12

Characteristics and Risk Factors among CA-PAMR, 2002-2006



Hameed AB, et al. Am J Obstet Gynecol 2015;213:379.e1-10.

Pregnancy-Related Mortality Due to Cardiomyopathy: United States, 1991-1997

- 245 CMP deaths (70% PPCMP)
- 6-fold excess risk of death for African-American women

Creanga AA et. al. Obstet Gynecol 2015;125:5-12

Timing of CVD Diagnosis, CA-PAMR 2002-2006, (n=64)



- Preexisting (prior to pregnancy)
- Prenatal period
- At labor and delivery
- Postpartum period
- Postmortem

□ Timing of Death

- 30% of all CVD deaths were late, i.e. >42 days from birth/fetal demise vs. 7.3% of non CVD pregnancy-related deaths
- Driven by CMP deaths, i.e. 43% late deaths

Hameed AB, et al Am J Obstet Gynecol 2015;213:379.e1-10.

Signs and Symptoms among Women who died of CVD, CA-PAMR 2002-2006

Symptoms

(SOB, wheezing, palpitations, edema, chest pain, dizziness, or extreme fatigue)

- ❑ Prenatal period: 43%
- ❑ Labor and delivery: 51%
- ❑ Postpartum: 80%

Abnormal physical exam findings

- ❑ HTN >140/90 mm Hg (64%)
- ❑ Tachycardia >120 bpm (59%)
- ❑ Crackles, S3 or gallop rhythm etc. (44%)
- ❑ O2 <90% (39%)

Only 2 women entered pregnancy with known CVD

Hameed AB, et al. Am J Obstet Gynecol 2015;213:379.e1-10.

Hypertension in African Americans

- More prevalent in this population
 - Accelerated progression from pre-hypertension to hypertension
 - Higher nocturnal BP – total BP load

 - Patient Factors
 - Lower socioeconomic status
 - High sodium/low potassium intake
 - Poor maternal nutrition – low birth weight with renal disease
 - Obesity
 - Genetic factors
 - Susceptibility to left ventricular hypertrophy for the same BPs
(Kizner JR et. al. Differences in left ventricular structure between black and white hypertensive adults. Hypertension 2001;43:1182)
 - 4-5 fold higher risk of renal failure
 - Environmental factors
 - Racism and stress
- Carson AP et. al. Hypertension 2011;57:1101
Selassie A et. al. Hypertension 2011;58:579

Why?

- Increased burden of cardiovascular risk factors
 - Hypertension
 - Diabetes
 - Obesity
- Genetic
- Environmental

Cardiovascular Complications in Hypertensive African Americans

	Blacks vs. Whites
Overall CV mortality	3 x higher
Mortality <50 year of age	6-7 x higher

Carson AP et. al. Hypertension 2011;57:1101
Selassie A et. al. Hypertension 2011;58:579



Final Common Pathway

- Heart Failure
- Arrhythmias
- Death

CVD Case Presentation

- 25 year old obese (BMI 38) African-American G2P2 presents 10 days after an uncomplicated vaginal birth with fatigue and persistent cough since delivery.
- BP 110/80, HR 110, RR 28, afebrile, with O2 sat 94% on room air.
- She gets diagnosed with respiratory infection and is prescribed an antibiotic. Her fatigue is attributed to lack of sleep by the care provider.

CVD Case Presentation (*CONTINUED*)

- One week later, she presents again with continued symptoms. Antibiotics are switched and beta-agonists are added for presumptive "new-onset asthma."
- Two days later, the patient experiences cardiac arrest at home and resuscitation attempts are unsuccessful.
- Autopsy findings were indicative of cardiomyopathy.

CVD TOOLKIT ALGORITHM

Red Flags

- Shortness of breath at rest
- Severe orthopnea ≥ 4 pillows
 - Resting HR ≥ 120 bpm
- Resting systolic BP ≥ 160 mm Hg
 - Resting RR ≥ 30
- Oxygen saturations $\leq 94\%$ with or without personal history of CVD

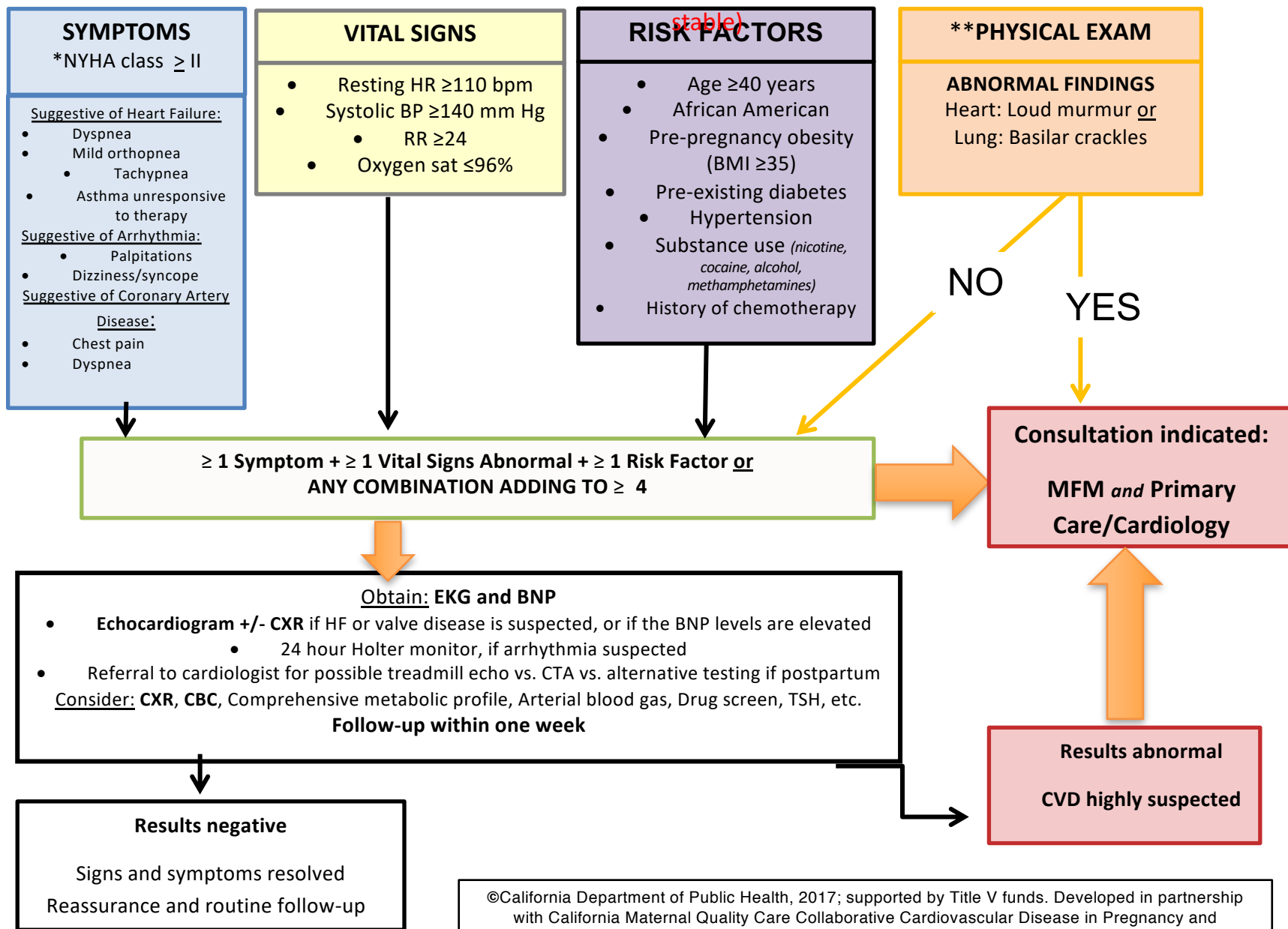
**Personal History of CVD
Without Red Flags**

CONSULTATIONS with MFM and
Primary Care/Cardiology

PROMPT EVALUATION and/or
hospitalization for acute symptoms
plus
CONSULTATIONS with MFM and
Primary Care/Cardiology

(No Red Flags and/or no personal history of CVD, and hemodynamically

stable)



CVD Algorithm Validation

- We applied the algorithm to 64 CVD deaths from 2002-2006 CA-PAMR.
- 56 out of 64 (88%) cases of maternal mortality would have been identified.
- Detection increased to 93% when comparison was restricted to 60 cases that were symptomatic.

Hameed, AB, Morton, CH and A Moore. Improving Health Care Response to Cardiovascular Disease in Pregnancy and Postpartum Developed under contract #11-10006 with the California Department of Public Health, Maternal, Child and Adolescent Health Division. Published by the California Department of Public Health, 2017.

CVD Screening

- Toolkit Implementation
 - Baseline screening on all pregnant and postpartum women
 - Establish screen positive rate
 - Validation of the CVD algorithm

Implementation Steps

- EMR dot phrase/template for outpatient/inpatient
- Screen all women by applying algorithm
- Follow up information on screen positive by algorithm and results of further cardiac testing
- Collaborate with other institutions to combine the information

UCI – Study Protocol

- Descriptive study of algorithm implementation
- Goals:
 - Describe the clinical burden of screening in our population
 - Describe outcomes for women designated “at risk” based on the algorithm
 - Determine which variables contribute highest “relative risk” of true cardiac disease
- *Apply algorithm to all patients at least once in pregnancy*

UCI Study Protocol

- Primary outcome:
“positive screen”
 - Red flag criteria
 - Prior CVD history
 - Score ≥ 3 or 4
 - Physical exam findings
 - Persistent concerning symptoms
- Secondary outcomes:
 1. **Cardiovascular disease suspected**
 - (abnormal ECG or BNP > 100)
 2. **Cardiovascular disease confirmed**
 - Echocardiogram findings –
Systolic or diastolic dysfunction
Chamber/septal hypertrophy or dilation
Pulmonary hypertension
Valve disease
 - Pathologic arrhythmia
Confirmed by ECG/Holter or EP study
 3. **Need for cardiovascular medications**

UCI Study Protocol

- Proposed review at 3 and 6 months
- Submitted to IRB - approved as QA project
- Started implementation April 9, 2018
 - Epic dot phrase with algorithm
 - "cardiovascular screen" placed in problem list
- Baseline information for later validation study

2. Does the patient have a personal history of CVD without 'Red Flags'? (Including: congenital heart disease, cardiac surgery, ischemic heart disease, or cardiomyopathy. Of note, NOT HTN)
 {Blank List Multiple Choice Multiple Lines:19989}

3. Select any of the following abnormalities the patient presents with OR is elicited through examination in each respective category:

Concerning Symptoms	{Blank List Multiple Choice Multiple Lines:19996}	
Abnormal Vital Signs	{Blank List Multiple Choice Multiple Lines:	Dyspnea
Risk Factors	{Blank List Multiple Choice Multiple Lines:	Mild Orthopnea
Abnormal Physical Exam Findings	{Blank List Multiple Choice Multiple Lines:	Tachypnea
		Asthma Unresponsive to therapy
		Palpitations
		Dizziness or Syncope
		Chest Pain

4. In review of Question 3, please select any of the following criteria recommended work-up and consultation:

{Blank List Multiple Choice Multiple Lines:20013}**

****If any *Abnormal Physical Exam Findings*, please order ECG, BNP, TTE and refer to cardiology.**

5. Did this patient meet any of the aforementioned criteria listed in Question 4?

{Blank List Single Selection:20014}

New Problem

Problem:

Display:

Priority: Noted: Chronic Hospital problem

Class: Resolved: Share with patient Principal problem

Present on admission? Yes No Clinically undetermined

Episodes:

Linked	Name	Type	Noted	Status	Comment
<input type="checkbox"/>	G2P0	PREGNANCY	1/18/2018		

Overview:

Rich text editor toolbar with icons for bold, italic, link, unlink, list, and refresh, along with a text input field containing "Insert SmartText".

CVD Screening Information

- Date of Patient Screening: 4/8/2018
- Screening Practitioner: Nisha Garg, MD
- Patient met inclusion criteria as indicated in Question #4: Blank List Single Selection:20460

Yes
 No

[File to History](#)

Accept **Cancel**

California Toolkits to Transform Maternity Care

NEW Toolkits

- Venous Thromboembolism Toolkit (2018)
- **Cardiovascular Disease Toolkit (2017)**

Other Toolkits

- Supporting Vaginal Birth Toolkit (2016)
- OB Hemorrhage Toolkit (ver. 2.0, 2015)
- Preeclampsia Toolkit (2014)
- Early Elective Deliveries Toolkit (2010)

A California Toolkit to Transform Maternity Care

Improving Health Care Response to Maternal Venous Thromboembolism
A California Quality Improvement Toolkit

February 2018

THIS COLLABORATIVE PROJECT WAS DEVELOPED BY THE MATERNAL VENOUS THROMBOEMBOLISM TASK FORCE, CALIFORNIA MATERNAL QUALITY CARE COLLABORATIVE, STANFORD UNIVERSITY, MATERNAL, CHILD AND ADOLESCENT HEALTH DIVISION, CENTER FOR FAMILY HEALTH, CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

CMQCC
California Maternal
Quality Care Collaborative

A California Toolkit to Transform Maternity Care

Improving Health Care Response to Cardiovascular Disease in Pregnancy and Postpartum

November 2017

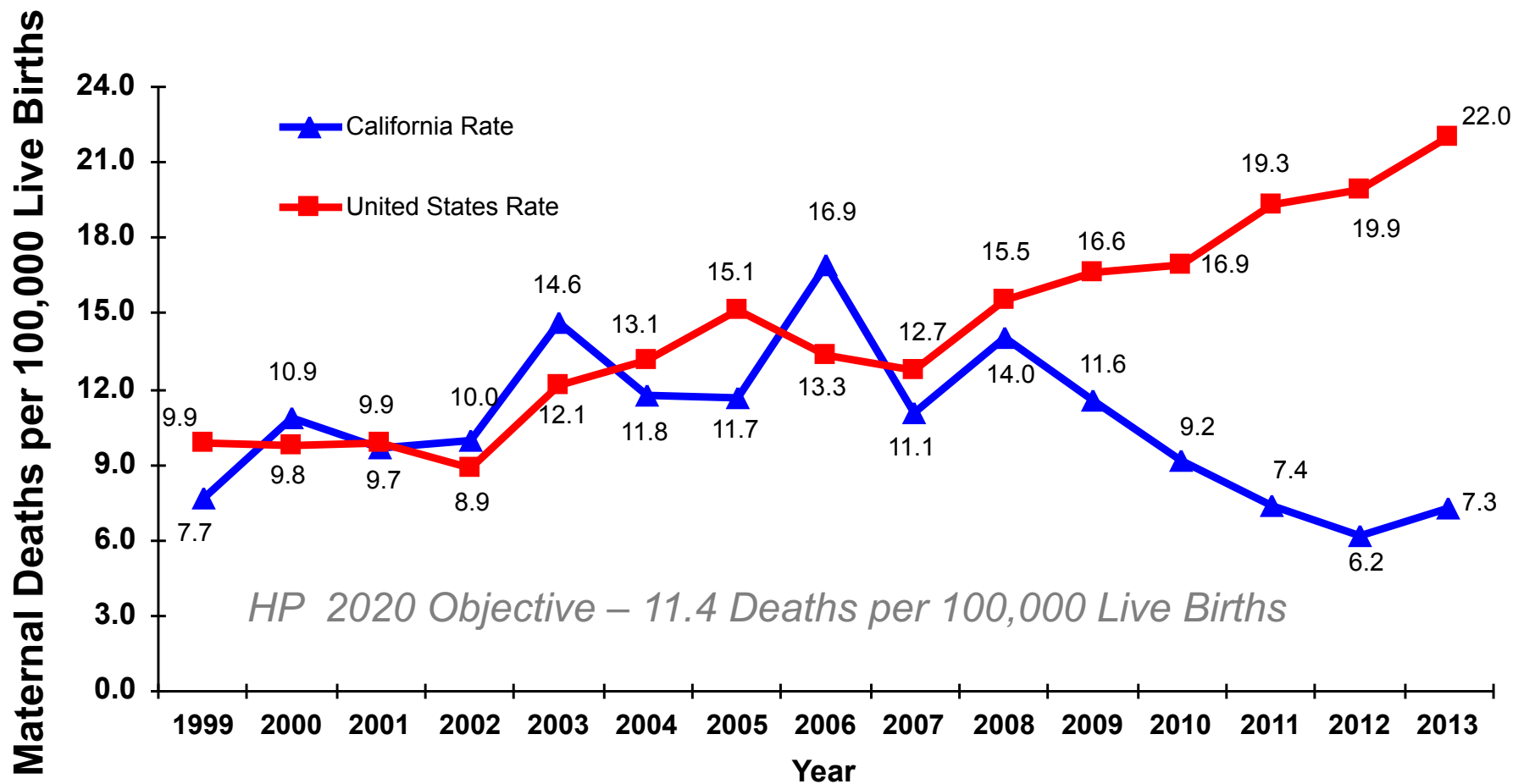
THIS COLLABORATIVE PROJECT WAS DEVELOPED BY: THE CARDIOVASCULAR DISEASE IN PREGNANCY AND POSTPARTUM TASK FORCE, CALIFORNIA MATERNAL QUALITY CARE COLLABORATIVE, STANFORD UNIVERSITY, MATERNAL, CHILD AND ADOLESCENT HEALTH DIVISION, CENTER FOR FAMILY HEALTH, CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

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The Toolkit series were developed by CMQCC with funding provided by California Department of Public Health, federal Title V MCH block grant funds

Maternal Mortality Rate, California and United States; 1999-2013



SOURCE: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013. Maternal mortality for California (deaths \leq 42 days postpartum) was calculated using ICD-10 cause of death classification (codes A34, O00-O95, O98-O99). United States data and HP2020 Objective use the same codes. U.S. maternal mortality data is published by the National Center for Health Statistics (NCHS) through 2007 only. U.S. maternal mortality rates from 2008 through 2013 were calculated using CDC Wonder Online Database, accessed at <http://wonder.cdc.gov> March 11, 2015. Produced by California Department of Public Health, Center for Family Health, Maternal, Child and Adolescent Health Division, March, 2015.

Thank you for attending today's Webinar

- Racial Disparities in Maternal Mortality: Spotlight on Cardiovascular Disease

- Announcements
 - Today's webinar will be recorded and archived (within 72 hours) on CMQCC's YouTube Channel: www.youtube.com/CMQCC
 - Email cmorton@stanford.edu with follow up questions or comments
 - Look for the evaluation survey in tomorrow's email! We want to hear how our webinars are relevant to your work to improve maternity care