

13

LABOR WARD DRILLS

M. Tipples and S. Paterson Brown

INTRODUCTION

As the leading cause of maternal mortality world-wide and a major contributor to maternal morbidity, massive obstetric hemorrhage deserves center stage in the training of mid-wifery and obstetric staff. That this need for training is global is highlighted by the recent increase in deaths due to obstetric hemorrhage in the UK (CEMACH¹). Although much knowledge is gained at the bedside, practical teaching with a structured approach to this unique life-threatening emergency provides a sense of security and preparedness that cannot be obtained by reading or attending lectures.

Several well-established courses focus on practical emergency teaching, and further information is available through their websites: ALSO at www.also.org.uk, MOET at www.alsg.org.uk, and MOSES at www.bartsandthelondon.org.uk/simulationcentre/courses.asp. These courses present a structured approach to resuscitation with skills, drills and scenarios taught and applied to the seriously ill patient. As good as such courses may be, they cannot begin to train everyone in all things and there remains a need for strong local supplementation.

All functioning obstetric units should possess a multidisciplinary massive hemorrhage protocol, which should be updated and rehearsed regularly. Running these sessions as a local drill helps to test such systems in place to deal with obstetric hemorrhage and makes them particularly useful to local staff. Clinical scenario and skills training add detail and depth to this training, but efficiency in the system is an essential prerequisite to effective care. This chapter describes how various practical training techniques (drills, skills and scenarios) work and how such programs are set up locally.

GENERAL PRINCIPLES OF ADULT EDUCATION

Adult learning

Before embarking, it is worth reflecting on how adults learn and appreciating that they are not satisfied with facts alone, but also like to understand and be able to apply the knowledge they acquire. Three different processes are involved in learning, all of which can be complementary and are featured in practical teaching sessions.

Visual

This includes the learning we do through reading, but also includes what is assimilated through watching a person or people doing something practical. Being able to picture the scene and actions that were taken enables one to easily recall them when a similar situation presents itself.

Auditory

This includes learning through listening, but also includes dialogue, questions and discussion.

Kinesthetic

This involves learning through doing and includes both hands-on practice and role play. Hands-on practice is especially useful for practical skills, whereas role play encourages the learner to work logically through a sequence of events in a clinical scenario.

All three forms of learning are variably suited to different things. For example, learning to tie a knot can be visualized and explained, but one needs to do it to finally realize the skill. Of

importance, different individuals tend to gain more from one approach compared to another: some prefer watching what is going on, others benefit most from open discussion and feedback, and still others relish the challenge of being the doers in the practical teaching demonstration. Appreciating these differences and staying sensitive to the particular needs of those being taught helps keep practical teaching fun and effective while, at the same time, avoiding what can be extremely stressful for some individuals.

Practical teaching

The same preparations should be made whether teaching skills, drills or scenarios.

Knowledge

A sound knowledge base is required before practical teaching can be undertaken successfully. An initial lecture/workshop/discussion should be organized if staff are unfamiliar with practical teaching or if new material is to be taught, as this allows staff to prepare themselves. It also helps reinforce the idea that practical teaching is an opportunity to put what one knows into practice.

Environment

A suitable location should be found that is conducive to the teaching that has been planned. The layout of the room should allow those involved in the scenario to access the patient and those watching to see clearly. Heating and ventilation should be considered, but acoustics are vital and can sometimes conflict (e.g. noise from an open window). When teaching about obstetric hemorrhage, a delivery room or an operating theater makes for a very realistic environment, but it occasionally conflicts with clinical needs. To try to avoid this, one can plan impromptu teaching when the delivery suite is quiet. Such 'unannounced' teaching is good for testing how the systems are working (i.e. drills), but, as it does not allow planning in terms of who or how many people can be taught, it may be less useful when running clinical scenarios. Another alternative is to consider reducing

elective surgery to facilitate training at a given time, remembering, of course, that labor ward workloads are unpredictable and a back-up teaching location needs to be available (for example, a seminar room or antenatal classroom).

Setting the tone

The instructor should give a general explanation at the beginning of the teaching session. This will establish the mood and motivate the learners by outlining the usefulness of the content. For example 'Obstetric hemorrhage is the leading cause of maternal death globally, and today we are going to run through a simulated case of placental abruption. The aim is for you to consolidate and apply your knowledge of this, which should assist you when you face a similar situation in a real emergency'. At this stage, it may be useful to place the clinical problem in the context of recent local events.

The specific objectives of the session should then be explained together with what is expected of everyone in terms of who is going to do what, and whether questions can be asked throughout, or be kept till the end. It is extremely useful to allow questioning throughout, as many people will forget if asked to wait till the end, but it can spoil the momentum of the scenario and role play. This must be judged anew in each session.

Dialogue

The actual 'doing' in practical teaching and role play works through the simulation starting from very specific instructions. Progress can vary according to what the learner does, and the instructor needs to stay alert and flexible in order to remain in control, to cover all intended teaching points and to guide the session to an appropriate conclusion.

Feedback

This is sometimes known as critique and is an essential part of the learning process as it promotes retention of important points. One form of systematic feedback, described by Pendleton and known as Pendleton's rules, comprises four

stages: the learner says what she/he did well, then what she/he could improve upon; this is followed by the trainer saying what the learner did well and then what can be improved upon. Allowing the learner to comment first gives the instructor an opportunity to assess the candidate's insight into her or his own ability and behavior. The instructor then has the opportunity to highlight both good practice and areas for improvement not already covered by the learner in order to stress and reinforce learning points to all present.

Closure

Bearing in mind that adults need to understand before they change behavior, it is crucial that questions and discussion be encouraged. A summary of the key learning points from the session should then be given, so that everyone leaves with a clear message of the most important issues.

DRILLS, SKILLS AND SCENARIOS

These three styles of teaching differ in their aims. All require and test different skills and

knowledge, the features and differences of which are summarized in Table 1, together with examples of suitable teaching material.

Drills

These are practice or 'dummy' runs and are comparable to fire practices in testing the local systems. Running a drill not only allows local scrutiny (i.e. what actually happens when the alarm is put out), but also can be a very effective test of local arrangements and services and of staff knowledge of them.

Preparations for a drill

When running drills, the staff that are going to be involved should be faced with the drill in a normal clinical area, unprepared, in order to receive a realistic idea of what would happen in a true situation. Clearly, the drill should not conflict with patient care and therefore the timing will depend to some extent on existing workload. The lead clinician for the teaching session should, however, have informed the lead midwife and, in the case of an obstetric hemorrhage, the transfusion hematologist and other

Table 1 Key features and differences in skills, drills and scenario teaching

	<i>Skill</i>	<i>Drill</i>	<i>Scenario</i>
Definition	Acquisition of a skill	A chain of events in response to a problem	Improvised clinical role play
Aim of the teaching	Ensure correct technique	Test the local emergency system	Apply and practice clinical care in a improvised set-up
Teaching environment	Seminar room	Throughout hospital in day-to-day environment	Seminar room, operating theater or delivery room
Examples of things suitable for teaching and testing in relation to obstetric hemorrhage	Brace suture Rusch balloon Aortocaval compression CPR	Response to the emergency massive obstetric hemorrhage call	APH – abruption – placental previa PPH – atony – trauma – RPOC
Skill mix	Doctors and midwives	All delivery suite staff and laboratory staff, hematologists and porters	Multidisciplinary: obstetricians, midwives, anesthetists, pediatricians

CPR, cardiopulmonary resuscitation; APH, antepartum hemorrhage; PPH, postpartum hemorrhage; RPOC, retained products of conception

necessary individuals, such as transportation staff. This is not only as a matter of courtesy but also to plan timings in order to avoid clashes of interests. The transfusion hematologist may prepare spare serum for grouping and make empty blood bags available for the ‘dummy run’.

Running the drill

Table 2 illustrates an example of an assessment sheet for a massive obstetric hemorrhage drill, suggesting things that can usefully be monitored; these include the following:

- Who responds to the initial emergency buzzer?
- Is the appropriate emergency call put out?
- How effective is the emergency bleeping system?
- Is transportation alerted and does she/he respond?
- Do transfusion staff receive any communication?
- How quickly does blood arrive at the bedside?
- How quickly is the patient transferred to the operating theater?

Table 2 Example of an assessment sheet for massive obstetric hemorrhage drill. This assessment sheet can be expanded to include the response times for individual doctors, and their reactions and actions

-
- Time emergency buzzer pulled
 - Staff responding to the initial buzzer
 - Time switchboard received emergency call
 - Staff responding to the emergency bleep
 - Initial treatment of ABC (airway, breathing and circulation) resuscitation instituted quickly and effectively
 - Time transportation person arrives in blood transfusion
 - Time blood samples received in the laboratory
 - Time appropriate blood arrives at patient’s bedside
 - Time patient transferred to the operating theater
-

- When does the anesthetist/consultant/hematologist arrive?

Such analyses can help to illustrate system failures and modify local policy. The identification of problems stimulates and informs guideline development. Clarifying the roles of different staff and streamlining activity can also improve future responses and improve care. Such developments can be monitored at future drills and improvements in the system should be fed back to staff.

Having run drills for obstetric hemorrhage at Queen Charlotte’s and Chelsea Hospital for many years, the following are examples of problems identified and system changes made in response.

Communication As identified in numerous confidential enquiries, problems in communication often hamper emergency responses. We found that we struggled with instructions between clinicians and blood transfusion staff regarding what was needed when: could we wait for group-compatible blood or even cross-matched blood? How long could we wait to have blood at the bedside? What clotting products did we need when? These are some examples of questions often not clarified over the ‘phone’. It became obvious that this job was being delegated to someone very junior on the delivery suite and misunderstandings were common. As solutions we, first, installed a red phone in the operating theater that linked exclusively with a red phone in the transfusion laboratory. This enabled blood requirements to be discussed by the anesthetist directly with transfusion staff without them having to leave the patient to go to a phone outside the theater. Second, we identified time limits for transfusing blood at the bedside (for example, ‘we need 4 units of blood within 30 minutes’), rather than discussing whether we could wait for blood to be cross-matched or not. This left the laboratory in no doubt of the clinical needs and has minimized delay in blood arriving at the bedside when needed.

The role of transportation The transportation person initially arrived in the delivery suite when a hemorrhage call was put out in order to take blood samples to the laboratory for grouping/

cross-matching, but this was deemed inefficient and delayed blood being brought to the bedside in the most urgent cases. As solutions, we, first, changed the process so that the transportation person now goes straight to the laboratory in readiness for the most urgent of needs in collecting O-negative blood. Second, the installation of a chute for samples to be sent to the laboratory has also helped in this context. If the clinical condition of the patient can wait for group-compatible blood, the transportation person stays in the transfusion laboratory until the sample has arrived by chute and has been grouped, ultimately bringing the appropriate blood to the delivery suite.

Skills

The teaching of practical skills can be useful in obstetric hemorrhage teaching sessions. The need for specific teaching often becomes apparent during the discussion and questioning when running a scenario. Things may have been mentioned which are not fully understood, and such circumstances illustrate how important it is for scenario teaching to be constructive. Staff must feel able to question about what something is or how it is done.

In obstetric hemorrhage, the following skills may be needed:

- Medical skills
 - bimanual uterine compression
 - aortic compression
 - cardiopulmonary resuscitation
- Surgical skills
 - insertion of an inflatable uterine balloon
 - insertion of a Brace suture
 - intravenous cut-down for venous access

Preparation for skills teaching

When teaching any practical skill that may be required in an emergency, it should be done slowly and calmly, giving ample time for reflection, questions and practice. The use of manikins and surgical aids works well, but one must remember to point out the differences to be expected when working *in vivo* (such as the need to keep an inflatable uterine balloon well into the cavity while inflating it, or how to deal

with the tendency for the Brace suture to slip off the ‘shoulders’ while pulling it tight).

Running the skills teaching

This teaching process is best done in four steps:

Step 1 The instructor demonstrates the skill in silence. The skill is performed at normal speed so that the candidates appreciate their ultimate aim.

Step 2 The instructor then demonstrates the skill slowly with a commentary. Providing the commentary and breaking the technique down add understanding to the process and can highlight points of caution and safety as well as adding helpful hints.

Step 3 The learner provides the commentary, which the instructor follows while demonstrating the skill for the third time. The instructor must be careful not to assume knowledge during this process and stop in mid-flow if errors are made. This step is crucial in terms of surgical safety, as the instructor can tell what the learner understands. Any errors or omissions can be addressed immediately (this step may need to be repeated).

Step 4 Once step 3 is completed satisfactorily, the learner is allowed to perform the skill while providing a commentary under direct supervision.

Scenario teaching

These practical teaching sessions describe a clinical picture and facilitate role play to manage the problem. The aim of such teaching is to demonstrate appropriate clinical behavior. This includes clinical knowledge and how it is applied, but also how individuals work together as a team and communicate. Such interactions can be complex and are worth detailing further before illustrating massive hemorrhage scenarios.

Teamwork

The ability to work together as a team is fundamental to good clinical care. Individuals possess differing expertise and the group’s dynamics

and ability to carry out specific tasks depend upon the interpersonal skills of all team members. Watching a group working together can highlight problems and help focus remedial action in terms of teamwork and occasionally individual behavior.

Every team needs a leader, and deciding who the leader is to be can sometimes be difficult. It is important to recognize that the team leader need not be the most senior person and, as the scenario develops, sometimes the leader will need to change. In any event, the leader should have appropriate knowledge and skills, be a good communicator and motivator, be able to maintain situation awareness (see the whole picture) and distribute the workload. At the same time, watching staff adapt to each other can be hugely instructive, and discussing these issues afterwards can help them understand each other, as well as individual needs and stresses.

Communication

The process of asking for and providing information, and of listening to what other people are trying to say, should be simple. It clearly is not and is repeatedly raised as a problem area in confidential mortality reports. In the Confidential Enquiry Report of 1997–1999², the greatest cause of substandard care in maternal deaths was failure of communication and team working between professionals. When running practical teaching sessions, communication within the team can be witnessed and discussed afterwards. Generally speaking, when dealing with any emergency, single precise commands should be addressed to specific individuals. Voices should not be raised and an air of calm control should be apparent. Unfortunately, some individuals tend to become overexcited, and noise levels can build up, which can affect everyone’s behavior, as well as making it difficult to hear what is being said without resorting to shouting. Pointing out such behavioral features under stress during mock emergencies can only help to raise awareness.

Preparing for scenario teaching

When preparing for role-play, it is important to try to make things as realistic as possible.

The patient Depending on the subject to be taught, either a manikin or a live person can be used. Manikins tend to be good for collapse and cardiopulmonary resuscitation, whereas live models are better when responses are needed (for example, eclampsia). Either can suit massive obstetric hemorrhage. The advantage of a live model is that everyone usually learns a great deal with regard to how all levels of staff communicate with a patient in such emergencies

The equipment It helps to be more realistic if there is some equipment available when running clinical scenarios. This should be kept simple, but using it helps to illustrate what important features have been dealt with (e.g. lateral tilt and oxygen) and what omissions have occurred (e.g. intravenous access or urinary catheter). Table 3 is a suggested minimum equipment list for a massive hemorrhage scenario.

Running the scenario

Who should be involved? Deciding who should be involved in the role play and who is better left to watch quietly can be difficult. If the members of staff are new to scenario teaching, it is best, initially, to ask for volunteers. Lack of volunteers may be due to simple factors like being shy, but it may result from fear of ignorance

Table 3 Basic equipment list for practical obstetric hemorrhage training

Airway and breathing
• Guedel airway
• Oxygen mask with bag and tubing
• Stethoscope
Circulatory
• Wedge (to provide lateral tilt for the pelvis)
• Tape
• Two large-bore intravenous cannulae (14FG)
• 20-ml syringe
• Blood bottles for full blood count (FBC), cross-match (XM), clotting studies
• 2-liter bags of crystalloid run through giving sets
• Catheter
Specific equipment for massive obstetric hemorrhage
• Intrauterine inflatable balloon and bladder syringe

being exposed or raising issues of competency. It is for this reason that didactic teaching is needed prior to running scenario training, so that the theoretical material has already been covered. Those previously unsure of the theory behind the problem can build on their newly acquired knowledge in a practical way. Indeed, once members of staff become used to this method of teaching, more will come forward. Occasionally, someone may need to be invited to join in, but this should be done sensitively and with support.

Give people defined roles People need to be given a defined role and told what they can or cannot expect in terms of back-up. For example, 'You are the senior house officer who has just answered the emergency buzzer to this multiparous patient. She has just bled briskly following spontaneous vaginal delivery. The midwife is here, but all other staff are busy with an emergency in theater and you should not expect help for at least 10 minutes. Please carry on as you would in real life. I will give you any observations you request'.

Keeping the scenario going The patient can be primed to give certain responses, and monitors can be prepared with readings (cardiotocograph paper sticking out of a machine/blood pressure recordings on a monitor, etc.), but it is the instructor's role to keep the scenario flowing and give as much or as little information as is requested. The scenario needs to progress, however, and gentle encouragement and occasional subtle prompts can assist the learner in achieving the key treatment points. The aim of running scenarios is not to display ignorance, but to empower individuals to apply their knowledge in a logical and timely manner. Depending on the performance and ability of the candidate, the scenario can be resolved early or become more complex. This needs to have been anticipated by the instructor well in advance. If the candidate is becoming stressed, but has done all the basic key treatment points, then the scenario can resolve and the candidate can be congratulated. If the key treatment points have not been achieved, then help can be at hand in the form of a registrar or consultant arriving to help. If the learner is doing a fantastic job, then

the scenario can progress and more complex features can be added.

Prompting can be difficult if it is to be done sensitively without demoralizing or embarrassing the learner, and is the real skill in making this form of teaching constructive. The examples that follow may be useful in the massive hemorrhage situation:

- Lateral tilt can be forgotten in the pregnant woman and a prompt asking whether there is 'anything else that could improve the circulation?' may jog a response;
- If there has been no apparent registering of, or response to, observations, information about tachycardia or hypotension can be repeated;
- Comment that uncross-matched blood is now available if staff have lost their train of thought and had already mentioned they would request blood but then forgotten about it;
- Providing the patient's physiological responses can intervene to slow down/speed up the action as required. For example, once intravenous fluids have been commenced, inform the candidate that the blood pressure is improving but that the bleeding is still brisk vaginally. This will encourage the candidate to move on to assess the cause for this;
- If the candidate moves away from the intravenous access without taking any bloods for laboratory investigation, the instructor may slow things down by asking if she/he would do anything else before moving on to assess the cause of the bleeding. The candidate could also be prompted with an empty syringe and blood bottles, if necessary, to make a teaching point.

Drawing things to a logical conclusion When the scenario has run its course, all people who have been involved in the role play should be congratulated and thanked for their participation, and then encouraged to engage in the feedback process as described above. Questions and discussion should then be encouraged before closure, with particular emphasis given to the key treatment points.

POSTPARTUM HEMORRHAGE

Examples of possible massive obstetric hemorrhage scenarios are given, together with their key treatment points in Tables 4 and 5.

SUMMARY

Setting up practical teaching locally improves local processes, builds on teamwork, aids with communication, and improves clinical knowledge and its application in the

emergency situation. It is best kept simple and, because it can be stressful to those involved in role play, it must be introduced sensitively and conducted within an encouraging atmosphere. Staff need to know what style of teaching will be used, and what its aims are. Advertising the planned content of the session in advance will encourage staff to prepare and capitalize on enthusiasm and learning.

Table 4 Sample scenario for postpartum hemorrhage due to atonic uterus

Candidate information

A 34-year-old grand multipara delivered a healthy baby boy weighing 4.00 kg 40 minutes ago. She had physiological management of her third stage and the placenta was delivered 10 minutes ago. The midwife has noticed some fresh brisk vaginal bleeding and accosted you as you were walking past the delivery room.

Initial observations

Talking but very pale. Pulse 110/min, blood pressure 120/80 mmHg; large volume of blood on floor and bed.

Please proceed as you would in real life together with the midwife who called you. I will give you any observations you request. (The candidate can be obstetric or midwifery as either should be able to manage this emergency initially. If further progress to theater is needed, more senior help can arrive as requested.)

Instructor's notes/Key treatment points

Achieved

- Call for help and initiate the massive obstetric hemorrhage drill
 - Recognize that this is a circulatory problem: progress rapidly through airway and breathing and attach face mask for oxygen
 - Establish intravenous access
 - Send blood for full blood count, cross-match, coagulation, and U&Es
 - Commence intravenous fluids
 - Do clinical examination and diagnose uterine atony
 - Give uterine massage
 - Administer a uterotonic agent
 - Do a vaginal examination and evacuate clots
 - Check no obvious vaginal lacerations
 - Do bimanual uterine compression
 - Go through drugs cascade logically and give intravenous fluids and blood appropriately
 - Consider examination under anesthetic if patient fails to respond and consider other causes of postpartum hemorrhage
 - Knowledge of surgical techniques to control hemorrhage, i.e. Rüşch balloon, Brace suture, etc.
-

Table 5 Sample scenario for postpartum hemorrhage not due to atony*Candidate information*

A 24-year-old primipara is induced at 42 weeks' gestation. She is having intermittent abdominal pain when the prostaglandin is inserted. Within 1 hour, she is transferred to the delivery suite where she delivers a baby boy weighing 3.8 kg followed by the placenta.

Initial observations

Talking; pulse is 100/min, blood pressure 115/70 mmHg; steady trickle of blood vaginally.

Please proceed as you would in real life and I will give you any observations you request.

(This scenario is more complex – a precipitate labor with the possibility of a concealed abruption. The focus will be on distinguishing between genital tract trauma and disseminated intravascular coagulation (DIC).

How this scenario will unfold will depend on the learner's experience and ability.)

*Instructor's notes/Key treatment points**Achieved*

- Call for help and institute massive hemorrhage call
- Recognize circulatory problem. Move swiftly through airway and breathing. Administer face mask for oxygen
- Insert intravenous access
- Send blood for full blood count, group and save, and coagulation screen
- Commence intravenous fluids
- Abdominal examination to confirm uterus well contracted
- Vaginal examination to check for vaginal lacerations
- Transfer to theater for analgesia and examination
- Catheterize
- Full EUA: check vagina, cervix and uterine cavity

EUA, examination under anesthetic

References

1. Lewis G, ed. and Confidential Enquiry into Maternal and Child Health (CEMACH). *Why Mothers Die 2000–2002 – The Sixth Report of Confidential Enquiries into Maternal Deaths in the United Kingdom*. London: RCOG Press
 2. *Why Mothers Die 1997–1999: The Confidential Enquiry into Maternal Deaths in the UK*. London: RCOG Press, 2001
- Firth-Cozens J. Teams, culture and managing risk. In Vincent C, ed. *Clinical Risk Management: Enhancing Patient Safety*. London: BMJ Books, 2001: 355–68
- Gaba DM, Fish KJ, Howard SK. *Crisis Management in Anesthesiology*. New York: Churchill Livingstone, 1994
- Glavin R, Maran N. Simulation and non-technical skills. In Greaves JD, Dodds C, Kumar C, Mets B, eds. *Clinical Teaching: a Guide to Teaching Practical Anaesthesia*. Lisse: Swets & Zeitlinger, 2003: 219–29
- Helmreich RL, Schaefer HG. Team performance in the operating room. In Bogner MS, ed. *Human Error in Medicine*. Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1994:225–53

Further reading

Mackway-Jones K, Walker M. *Pocket Guide to Teaching for Medical Instructors*. London: BMJ Books, 1999