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Emergency Perinatal Drills

Amr ElNoury

A. Professor Obs. & Gyn.

FRCOG, FRCS(Ed), MD

European Diploma of Endoscopic Surgery, France

Diploma of Reproductive Medicine and Reproductive Biology, Geneva



Emergency Obstetric drills

- What is a Drill?
- Why there is an interest in emergency drills?
- Examples of Emergency Perinatal Drills
- Difficulties in running a drill.
- Advantages of drills

Emergency Fire Drill



“Drill” means a response to a planned, simulated event.

- Fire Drills are the best indicator that an emergency evacuation will go smoothly and successfully

- Few obstetricians are exposed to enough frequency of perinatal emergencies.



- The element of experience may not be as important as a well-conceived ‘fire-drill’, promptly executed.
- A rehearsed series of manoeuvres in planned and simulated event “Drill” may be the only salvation”.

Examples of Common Perinatal Drills

- Massive obstetric haemorrhage.
- Shoulder dystocia.
- Eclampsia.
- Maternal collapse and CPR.
- Neonatal resuscitation.
- Cord prolapse.
- Crash caesarean section.

What is an Emergency Perinatal drill?

- On-site training of perinatal emergencies with a **simulation-training scenario** to provide controlled experience in an obstetric unit.
 - **without exposure of real patients** to inadequate care
 - Use **model based scenarios**.
 - Use protocols (**EBM**).
- To execute (drill) a sequence of actions and management in response to a planned, simulated event

Aim of the drill

- The aim of drill is to **train the staff** and **test local systems and protocols** for responding to emergencies, as well as to test professional **teamwork** and individual **skills, behaviour** and **knowledge**.

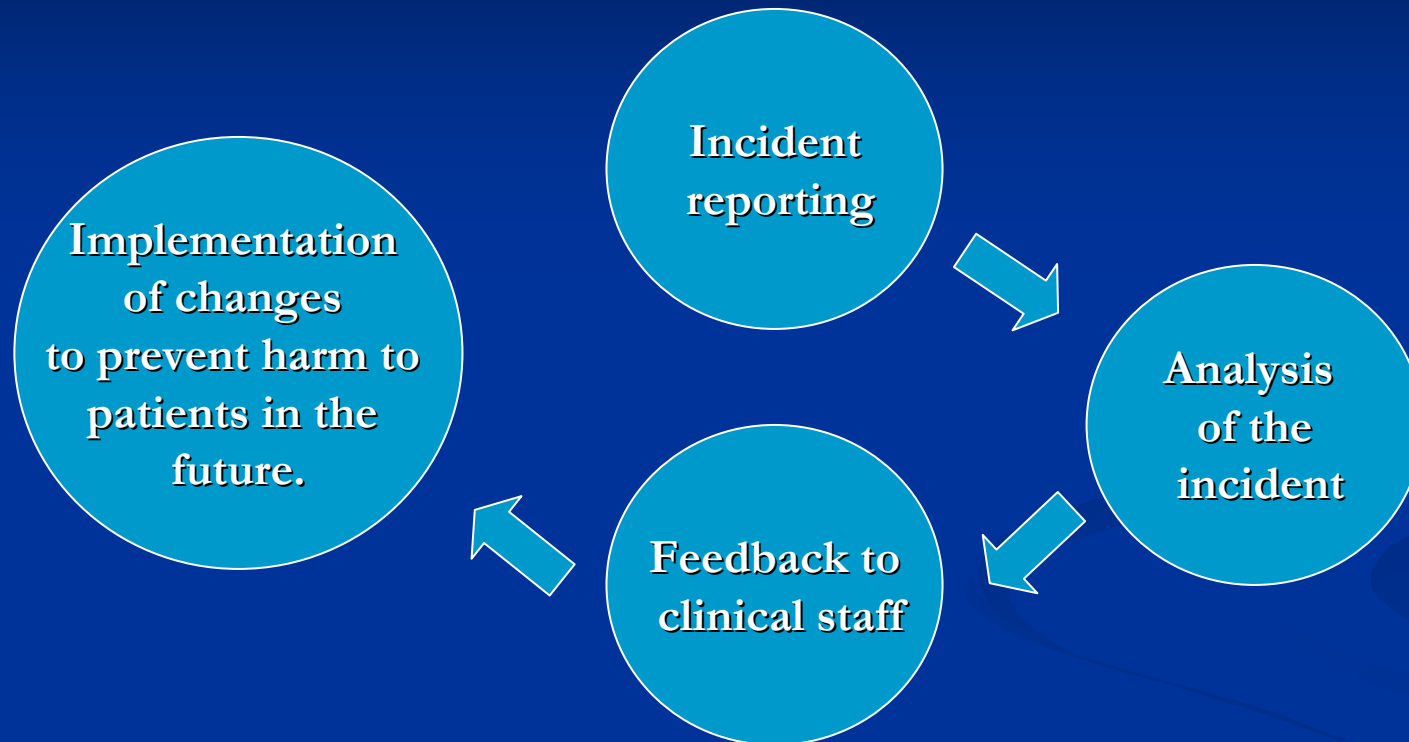
Increase efficiency during an actual event.

Why Perinatal Drills?

- Interest in improving the management of obstetric emergencies.
- Recommended by:
 - Confidential Enquiry into Maternal Deaths & Stillbirths in the UK
 - RCM & RCOG
 - Joint Commission Accreditation of Healthcare Organizations (JCAHO).
- Affects the amount of medical negligence insurance a hospital is required to pay
- Participation in annual skills drill' is part of qualification for Level 2 status.

- has been recommended by the Confidential Enquiry into Maternal Deaths¹ (CEMD) and the Confidential Enquiry into Stillbirths and Deaths in Infancy² (CESDI) based in the UK (which have now become part of the Confidential Enquiry into Maternal and Child Health [CEMACH]).

The Traditional Cycle of Risk Reduction



- In this system adverse incidents must occur before corrective measures can be taken.
- Maternity services cannot afford to wait for a real case to test the quality of emergency care

Emergency Obstetric Drills in UK

- 185 Maternity units Interviewed
- 95 centres (51%) were conducting 'fire drills':
 - massive obstetric haemorrhage, / shoulder dystocia, / eclampsia, / maternal and neonatal resuscitation / cord prolapse / breech delivery
- 90 units (49%) were not conducting drills
- 26 units (29%) were developing them.

How a drill is run?

“Drill” means a response to a planned, simulated event.

“Clinical Senario”

- Actor,
- Mannequin
- Doll



Information for staff participating in drill

- You are about to take part in a simulated obstetric emergency.
- The patient is an actor so please simulate any invasive procedures.
- Say aloud what you are doing—for example, "I am siting a green venflon."
- Everything else that you might do in this situation should be carried out as normal.
- Any intravenous drugs or fluids should be prepared as normal but delivered into the receptacle beside the patient.
- All the members of the hospital team are taking part in this simulation

Examples of Common Perinatal Drills

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Eclampsia Drill

Clinical scenario

36 year old
primiparous woman,
at 32 wks
PIH & IUGR

On admission her BP 148/96,
and urine (dipstick)
showed +++ of protein.

She now mentions
headache &
visual disturbance.

Oral labetalol was started.
her blood pressure fell to 146/90.
She has gone into spontaneous labour
and has been transferred to the
delivery suite.

Drill

A Dr or a midwife is asked to take over the patient's care.

- Allowed to obtain information from the patient and her notes.
- The patient then simulated a convulsion.
- The drill scenario developed in response to the actions of the staff, who were guided by the patient (for example, simulating airway obstruction) and by observations posted by the drill director, such as blood pressure readings.
- A separate observer charted the drill's progress.

After the end of the drill

- A debriefing session.
- Staff are invited to discuss positive and negative points about their performance and that of the team during the drill.
- This is followed by a systematic discussion of the key events and responses that should have taken place.

Eclampsia Drill:

Key events and responses

Call for help

- Obstetric specialist registrar or consultant / Anaesthetic / specialist registrar or consultant / Senior midwife / Staff.

- **Correct patient positioning** (left lateral)

- **Airway** assessment and management

- Delivery of oxygen

- **Intravenous access**

- **Pharmacological intervention:**
 - Correct order and choice of drug

 - Correct dose and administration

- **Monitoring:**

- Oxygen saturation
- Blood pressure
- Heart rate and rhythm
- Blood glucose concentration
- Fetal wellbeing (CTG)
- Renal function (urinary catheter)
- Magnesium toxicity

- **Delivery plan**

Problems identified during drills

Problems identified during drills

- Difficulty summoning senior staff urgently
- Multiple different protocols for managing eclampsia, many out of date.
- Deficiencies skills and knowledge of individuals in the management of eclampsia.
- Time wasted fetching individual items for management of seizures
- Confusion about staff roles, resulting in inefficient activity.

Action to Correct Problems Identified During Drills

- Rapid activation of team through one switchboard call
- Development and dissemination of an EBM protocol
- Correct positioning of the fitting patient
- Choice of first line anticonvulsant;
- Safe administration of magnesium
- Immediate individual feedback and education;
- Didactic instruction on magnesium administration
- Creation of strategically placed "**eclampsia boxes**"
 - Necessary equipment
 - Protocol
 - Variable presentation of magnesium in drug cupboards liaison with pharmacy
- Clear division of tasks in management protocol

Figure 1 Pack containing equipment for magnesium therapy



Thompson, S et al. Qual Saf Health Care 2004;13:127-129

Shoulder dystocia Drill

- High perinatal mortality and morbidity
 - Brachial plexus injuries 4–16%
 - Temporary 90%
 - Permanent 10 %

- Increased maternal morbidity:
 - Postpartum haemorrhage (11%)
 - Fourth-degree perineal tears (3.8%),

- 50 per cent of all shoulder dystocia **cannot be predicted,**

- All birth attendants need a well rehearsed ‘fire-drill’ to optimise the outcome.

Clinical Senario

- Mannequin
- Doll and pelvis



HELPERR mnemonic from American Life Support Organisation

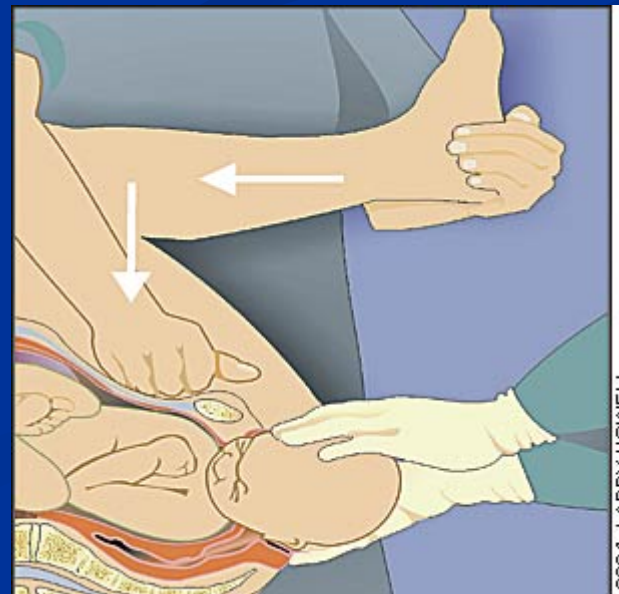
- H** Call for **h**elp
- E** Evaluate for **e**pisiotomy
- L** **L**egs (the McRoberts' manoeuvre)
- P** **S**uprapubic pressure
- E** **E**nter manoeuvres (internal rotation)
- R** **R**emove the posterior arm

- Immediately after recognition of shoulder dystocia, **extra help should be called.**

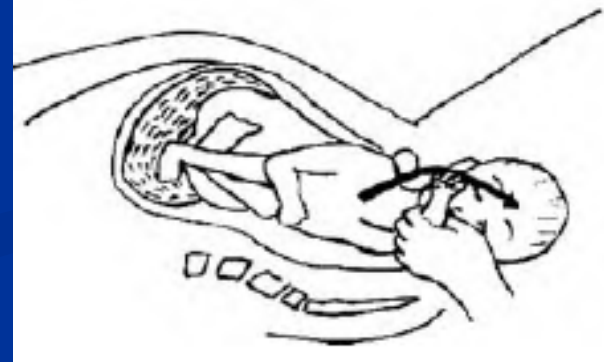
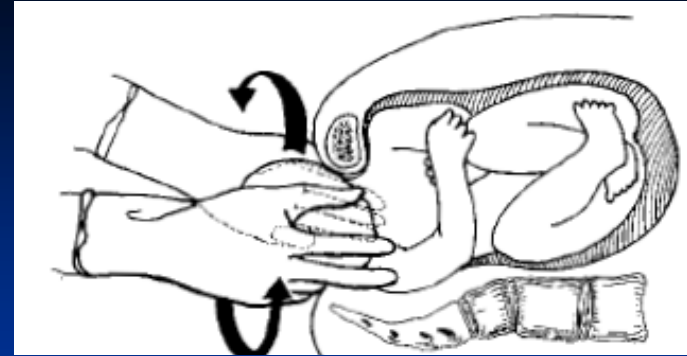


- **McRoberts' manoeuvre** is the single most effective intervention and should be performed first

- **Suprapubic pressure** is useful.



- Advanced manoeuvres should be used if the McRoberts' manoeuvre and suprapubic pressure fail.
- **Internal rotation.**
- Delivery of posterior shoulder.



- Several third-line methods have been described for those cases resistant to all simple measures.
- These include:
 - *cleidotomy*
 - *symphysiotomy*
 - *Zavanelli manoeuvre.*
- It is rare that these are required.

Documentation

“Recording “

- Time of delivery of the head
- Direction the head is facing after restitution
- Manoeuvres, their timing and sequence
- Time of delivery of the body

- Staff in attendance and the time they arrived
- Record the fetal heart rate noted at various times
- Condition of the baby (apgar score)
- Umbilical cord blood acid-base measurements.

Patient and Family Debriefing

- To make sure the patient has understood what has happened.
- Why you have done what you have done, and why the outcome is as it is.

Emergency Obstetric Drills in UK

- 185 Maternity units Interviewed

Acute obstetric emergency drill in England and Wales: a survey of practice. BJOG. 2005 Mar;112(3):372-5

Reasons for not running fire drills

- Staff found it threatening and stressful (on trial) or not helpful.
- Difficulty arranging multidisciplinary training.
- Times restraints
- Historically separate training programmes for midwives and doctors,

Difficulties encountered when running fire drills

- Difficulty of running drills in busy units,
- Requirement of a dedicated risk management staff
- Planning and conducting fire drills demanded a substantial amount of time and energy
- Each drill may only include a few staff.

Positive aspects of fire drill

- **Increased confidence** in emergency teamwork
- Making the drill training constructive and fun so that it was perceived as a **positive learning experience** and not a threat.
- **Individual feedback** was given privately where necessary.
- **Better physical organisation of emergency equipment** on labour ward, Or better knowledge among staff of the location of the eclampsia box or defibrillator
- **More conveniently located telephones.**
- **Development of laminated protocols** for the management of emergencies which were kept in every delivery room.

Positive aspects of fire drill

- Increased confidence
- positive learning experience
- Individual feedback was given
- Better physical
- Better organisation of emergency equipment
- More conveniently located telephones.
- Development of laminated protocols

Positive aspects of fire drill

- Patient management **follows evidence based practice**
- Staff are **summoned faster**
- Resuscitation process is **better organised.**
- **Drugs** are prepared and administered more quickly.
- Increase their comfort with the order of manoeuvres
- These improvements were mainly due to **simplification and reduction of tasks** required when a patient has an obstetric emergency.
- Useful educational activity.

Positive aspects of fire drill

- Management follows EBM
- Staff are summoned faster
- Resuscitation process is better organised.
- Drugs are prepared and administered more quickly.
- Simplification and reduction of tasks.
- Useful educational activity.

Positive aspects of fire drill

- Organization of supplies for OB emergencies
- Synchronization of the clocks in the Labour ward and ORs on the computer systems, to assure accuracy and proper documentation of events
- The review of existing trays for adequacy of instruments or medications

Positive aspects of fire drill

- Perceived benefits of multidisciplinary training including midwives, doctors, health care assistants, porters, theatre staff and adjunctive services such as the hospital switchboard.
- Training together shows how the team would work together in a real emergency.
- Can be used to rate technical skills and behavioural performance during the management of emergencies.

Evaluation of Emergency Drills

- A systematic review of skills training in the UK,
 - Little evidence available
 - Difficult to demonstrate a benefit of training.
- More recently, training with a simulation-training scenario improved resident performance in the management of shoulder dystocia.
- Moreover, training with a mannequin which provides force feedback may reduce the peak force used by the birth attendant during simulated delivery.

Evaluation of Simulation and Fire-drill training for obstetric emergencies

- Simulation and fire-drill evaluation (SAFE) study
 - The south west obstetric network
- **Phase 1:**
 - develop methods and tools to evaluate the effect of simulation and fire drill interventions for the management of acute obstetric emergencies.
 - Assessing the knowledge and skills of the staff
 - Assessing the teamwork involved.
- **Phase 2:**
 - Randomise staff to different forms of training for emergencies.

Conclusion

- Traditional methods of risk management reduction may not be applicable to infrequent yet serious conditions such as eclampsia.
- Perinatal emergencies Drills
 - Allows risks to be identified without exposure of real patients to inadequate care
 - Allows a greater sense of 'reality'
 - Provides controlled experience for all staff and promotes teamwork practices within a clinical unit
 - Can identify and correct potential deficiencies in the care of patients

Conclusion

- Test local systems and protocols, communications, teamwork and individual skills and behaviour and knowledge.
- Increase efficiency during an actual event.
- can identify and correct potential deficiencies in the care of patients
- **Action to Correct Problems Identified During Drills**

Thank You

Amr ElNoury

