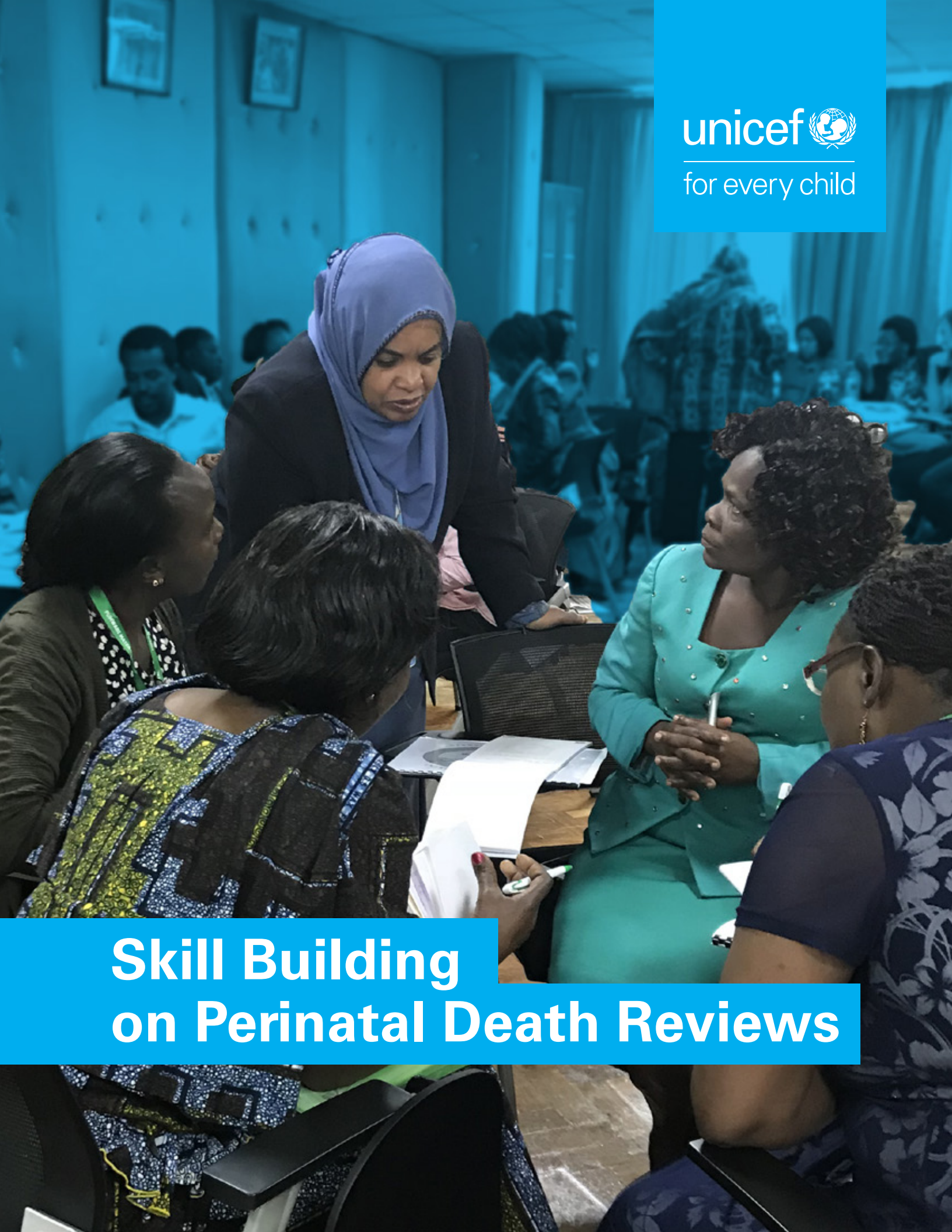


unicef
for every child

Skill Building on Perinatal Death Reviews

Acknowledgements

This facilitator guide has been prepared by Dr. Gaurav Sharma as part of his consultancy with UNICEF New York. We acknowledge the support and contribution by MPDSR TWG and specific contributions by Dr. Allisyn Moran (WHO), Dr. Asia Hussein (UNICEF Tanzania), Dr. Mary Mmweteni (UNICEF Tanzania), Dr. Nathalie Roos (WHO), Dr. Nemes Iriya (WHO Tanzania), Dr. Tedbabe Degefie Hailegebriel (UNICEF), Dr. Nabila Zaka (UNICEF), Ms. Kate Kerber (University of Alberta) and Dr. Kusum Thapa (JHPIEGO). We would also like to acknowledge the contribution of all participants who attended the pilot workshop on perinatal death reviews for health facility teams held on 3-5th of September 2018 in Njombe, Tanzania. It is our hope that with regular reviews of perinatal deaths, and an analysis of the causes of deaths, countries can identify solutions that if implemented, would reduce the high rates of preventable perinatal deaths.

COURSE OUTLINE		
Day one	Learning objectives	Time
Session 1	1. Describe the training format 2. Explain how to use the learners guide 3. Goals and Objectives 4. Who is the audience 5. Guiding principles for perinatal mortality reviews	30 mins
Session 2	1. Identify areas of perinatal mortality audit where learners feel confident and where they require further instruction 2. Identify learner experience with M(P)DSR/PMR/ QI within the facility / district	35 mins
Session 3	1. Discuss common myths and misconceptions related to perinatal death reviews 2. Learn about the relationship between quality improvement processes and perinatal death reviews.	40 mins
Session 4	Definitions; aims and objectives. 1. Understand the definitions of stillbirths and neonatal deaths 2. Understand the causes of stillbirths and neonatal deaths 3. Describe the aims and objectives of a perinatal mortality reviews 4. Understand modifiable factors that can lead to perinatal deaths 5. Identifying perinatal deaths	90 minutes
Session 5	Six steps of mortality audits 6. Introduction 7. Describe and identify the six steps of the mortality audit cycle 8. Presentation 9. Case study on perinatal mortality audits	150 minutes
Session 6	Getting started on facility-based death reviews 1. How to get started with perinatal death reviews 2. What are some successful factors from MDSR experiences 3. Composition and functions of the perinatal mortality review team at the facility, district and national levels	30 minutes

COURSE OUTLINE		
	4. Describe existing and/ or potential linkages between perinatal mortality review/ MPDSR and quality improvement structures at the facility and the district levels.	
Session 7	1. How to form or strengthen existing QI or MPDSR committees at health facilities to optimize PDR processes? 2. How to form or strengthen existing QI or MPDSR committees at district level to optimize PDR processes? 3. Describe existing and/or potential linkages between M(P)DSR and quality improvement (QI) structures at facility and district level?	65 minutes
Day Two	**Learning objectives**	**Time**
Session 1	Review content discussed over the past six sessions.	30 minutes
Session Two	1. State the key components for documentation of perinatal mortality reviews. 2. Be well acquainted with the minimum set of perinatal indicators, births and deaths summary form, stillbirth and neonatal death review form. 3. Learn how to take effective meeting minutes 4. Determine the flow of information 5. Learn how to make effective case reports.	120 minutes
	Walk learners through a prefilled form	
	Group activity stillbirth and neonatal death case review form	
	Summarise findings and clarify any questions.	
Session Three	Monitoring and analysing perinatal data and audit trends: 1. Learn how to calculate, analyse perinatal mortality indicators 2. Practice monitoring and analysing trends in perinatal death audits at the facility level 3. Learn how to identify and classify modifiable factors.	100 minutes
Session 4	Recommending and implementing solutions	30 minutes

COURSE OUTLINE		
	1. Learn how to prepare SMART recommendations to address modifiable factors that lead to preventable neonatal deaths and stillbirths. 2. Learn how to disseminate recommendations from review meetings 3. Learn how to implement changes at the health facility level. 4. Learn factors responsible for success of perinatal death reviews.	
Session 5	Evaluating and refining 1. Learn about the importance of embedding periodic evaluations in perinatal death review programs? 2. Learn about some of the important questions for evaluation of perinatal death reviews? 3. Learn about important considerations for scaling up of the perinatal death review system?	30 minutes
Final assessment using the individual learning plan		15 minutes
Workshop wrap up and evaluation		15 minutes

Prepared by: Dr. Gaurav Sharma for UNICEF, Oct 2018

PREPARATORY ACTIVITES

Good preparation is important for the success of the training. This entails identifying the right facilitators, participants, venue, supplies and teaching aids. As in all trainings give adequate time for the planning stage.

Facilitator selection criteria:

- Doctors, nurses or midwives that are up-to-date in their knowledge of care during pregnancy and childbirth and neonatal care.
- Proficient in the skills they will teach,
- Able to use competency-based learning methods and methods of assessment,
- Interested in being trainers.

Recommended Participants:

- Facility-level health providers (i.e. doctors, physicians, nurses, midwives)
- Facility and district managers who supervise staff implementing MDSR/QI

Venue: Identify classrooms suitable for interactive presentations and group activities. Seating in classrooms should be comfortable and lighting and ventilation adequate. At a minimum, notebooks and pens should be provided for each learner. Flipcharts, marker pens, and LCD projector should be available in each classroom.

Teaching Aids: Prepare three sets cards or big stick it notes with six assorted colours the six steps of audit cycle written on them. i.e. **Identify, Collect, Analyse, Recommend, Implement and Evaluate**. This will be used session five of day one. Print four flex charts on defining stillbirths and associated pregnancy outcomes (ICD-10) which is available from Page 21; adequate copies of recording and reporting forms (Forms 1, 2 and 3) for all participants.

Learners' Folder: Prepare folder with the following content: knowledge assessment, recording and reporting forms, table with definitions of indicators the table on page 62 and the presentations

Data: if feasible request learners to come with 12 months data from their health facility or district on total deliveries, live births, assisted deliveries, caesarean sections, stillbirths-antepartum and intrapartum, deliveries <37weeks of gestation, deliveries <2500 grams, early neonatal deaths(0-6days), late neonatal deaths(7-28days) and maternal deaths. However, if this not feasible use the dummy data provided in this guide

Suggested times:

Two to two and half days is recommended to complete the training. It is important to adapt agenda based on local need and feasibility.

DAY 1/SESSION 1: WELCOME AND INTRODUCTION TO PERINATAL MORTALITY AUDIT

SESSION PLAN

DURATION: **30 min**

SESSION OBJECTIVES: By the end of this session, learners will be able to:

1. Describe the training format
2. Explain how to use the learners guide
3. Learn about the Goals and Objectives of perinatal mortality review
4. Learn about the audience for perinatal mortality reviews
5. Learn about the guiding principles for perinatal mortality reviews

Methods and activities	Materials/ resources
Introduction & Review of orientation package (20 min) • Welcome learners to workshop. • Facilitator(s) introduce him/herself • Participants to introduce themselves • Encourage active participation and collaboration – clarify that the learning environment will be an interactive, respectful, and safe environment where everyone's contributions are valued. • Point out location of restrooms/lavatories • Parking lot: Invite learners to note questions on sticky notes for "parking lot" (specify location). For the interest of time, learners should save their questions and place them on the flip charts. Explain you will answer questions after lunch and breaks during regrouping • Walk through workshop agenda and other sections of learner Guide • Describe workshop format (2 days, discuss lunch and breaks (lunch: 12:00-1:00 PM, two 15-minute breaks) • Take questions • Walk participants through PowerPoint presentation	• Use PowerPoint slides entitled Day 1 Session 1.pptx • Flip chart for parking lot.

GOALS

The overall goal is to end preventable neonatal deaths and stillbirths. Essentially, it is hoped that with regular reviews of perinatal deaths, and an analysis of the causes of deaths, that recommendations could be made that if addressed, would reduce the high rates of preventable perinatal deaths.

PRIMARY OBJECTIVES:

1. To establish a framework to assess the burden of stillbirths and neonatal deaths, including trends in numbers and causes of death
2. To generate information about modifiable factors contributing to stillbirths and neonatal deaths and to use the information to guide actions to prevent similar deaths in the future
3. To use the findings of the perinatal mortality review to formulate appropriate actions to address modifiable factors thereby prevent future perinatal and neonatal deaths.
4. To provide accountability for results and compel decision-makers to pay due attention and respond to the problem of stillbirths and neonatal deaths.

SECONDARY OBJECTIVE:

1. Generate accurate and timely perinatal mortality data at the facility, district and national levels.
2. Identify major medical and non-medical causes of perinatal and neonatal mortality.
3. To raise awareness among health professionals, administrators, programme managers, policymakers about those factors in the facilities which, if avoided, the death may not have occurred (the modifiable factors).
4. Support improvements in Quality of Care for maternal and perinatal health.

WHO IS THE AUDIENCE?

Stakeholders at all levels who can drive positive change should be involved in the process of setting up a perinatal mortality review system at different levels. This could include:

- The Ministry of Health: health planners, managers, policy makers
- Hospital authorities, hospital administrators.
- Clinicians (doctors, nurses, midwives, paraclinical staff)

- Professional associations: Obstetric, pediatrics, perinatal, neonatology, midwifery, nursing associations and councils, anesthetists.
- Researchers: social scientists, epidemiologists, public health researchers
- Health information system specialists and Monitoring and evaluation personnel
- Civil society representatives
- Parent groups
- Community leaders

GUIDING PRINCIPLES FOR PERINATAL MORTALITY REVIEWS

- No blame policy
- Death reviews focus on health systems not individuals
- Review meetings are a learning opportunity for all participants to improve quality of care and end preventable deaths
- Builds on existing QI committees and existing MPDSR work
- A zero-reporting principle is adopted
- Detailed patient history is important; documentation of patient case notes is the main source of information for the audits
- Perinatal mortality reviews are similar to maternal death reviews MDSR
- Perinatal mortality reviews can be integrated with maternal death reviews.
- Data are anonymized and cannot be used for disciplinary purposes.
- The death reviews are incomplete without response to prevent avoidable factors in the future.
- The response mechanism often involves a multi-sectoral approach
- It is better to start small, learn from the experience, refine and adapt as one scales up
- Perinatal death reviews should also be incorporated in the curricula of medical, nursing and midwifery institutions

DAY 1/SESSION 2: INDIVIDUAL LEARNING PLAN AND EXPERIENCE WITH PERINATAL MORTALITY AUDIT

SESSION PLAN

DURATION: 35 min

SESSION OBJECTIVES:

By the end of this session, learners will be able to:

1. Identify areas of perinatal mortality audit where learners feel confident and where they require further instruction
2. Identify learner experience with M(P)DSR/PMR/ QI within the facility / district

Methods and activities	Materials/ resources
• Introduction and review the session objectives (5 minutes)	Day 1 session 3.pptx
• Individual learning plan (20 minutes) • Share with learners that they will now complete an Individual learning plan form which will inform facilitators on the needs of the learners. During the workshop, facilitators will be sure to spend extra time and emphasis on those sessions that learners have marked low and moderate • Display slide 3 explaining how low, moderate and high are defined • Learners will take a few minutes to fill out the ILP form located in the learner guide • Bring the group back together. Read aloud the areas of competence, asking those who ranked it low, moderate or high and plot number of learners who responded to each rank	ILP PMR.docx Areas of competence PMR Day 1 session 2.pptx
QI/ MDSR/ PMR experience in their facility (10 minutes) • This form will help facilitators group learners based on their experience	Experience with QI/ MDSR. Docx

• Distribute and request that learners take a few minutes to complete the form • Facilitators will collect completed forms and review these in preparation for group work for the next day	

INDIVIDUAL LEARNING PLAN

Learner: _____ Facilitator: _____ Date _____

Instructions: in the form given below, for each topic listed, assess your level of competency according to the scheme given below.

Level of competency scale	
Low (1)	Topic is new or unfamiliar to me
Moderate (2)	Learner is aware of the topic. Learner is knowledgeable but will benefit from additional knowledge on the topic.
High (3)	Learner is highly knowledgeable on the topic and may be able to provide additional insights during the workshop.

Learning Objectives	Level of competence	Facilitators Notes
Please give a rating based on your level of competence. Low—Moderate –high (1-2-3)		
1. Goals and objectives of perinatal mortality review		
2. Guiding principles for perinatal mortality reviews		
3. Common myths and misconceptions related to perinatal death reviews		

Learning Objectives	Level of competence	Facilitators Notes
4. The relationship between Quality improvement processes and perinatal death reviews?		
5. What are the definitions of perinatal deaths?		
6. Why are perinatal death reviews important?		
7. What are modifiable factors that can lead to perinatal deaths?		
8. What are the six steps of mortality audit cycle?		
9. How do you start facility-based perinatal death review process?		
10. What is the composition and the functions of the perinatal death review team at the facility district and national levels?		
11. What are the key components for documentation of perinatal death reviews?		
12. What do we mean by minimum set of perinatal indicators?		
13. What is the flow of information?		
14. How do you monitor and analyse perinatal data and audit trends at the facility level?		
15. How do you identify and classify modifiable factors?		
16. How do you prepare recommendations to address modifiable factors and implement changes at the health facility?		
17. Why should you evaluate perinatal death review programs?		

Learning Objectives	Level of competence	Facilitators Notes
18. What are important considerations for scaling up a perinatal death review system?		

EXPERIENCE WITH QUALITY IMPROVEMENT/ MATERNAL, NEONATAL, PERINATAL DEATH SURVEILLANCE AND RESPONSE– INDIVIDUAL, FACILITY AND DISTRICT LEVELS

Learner: _____ Facility/District _____

To help tailor, the workshop sessions to respond to different health systems and settings, it will be helpful to understand the current PDR/ MDSR/PDSR/MPDSR and quality improvement systems in your facility or district, if any.

Please complete the questions below and return this form to the facilitator.

1. Does your Facility or District have any of the following? *(please circle Yes or No)*
   - A Quality Improvement team: Yes / No
   - A PMR or MDSR or MNDSR or MPDSR team: Yes / No
   - A joint MDSR/MPDSR + QI team: Yes / No

2. Are you a member of any of those teams? Yes / No

3. If you answered "Yes" to Question 2, please indicate which team(s) you are a member of:

   - The Quality Improvement team: Yes / No
   - The PMR, MDSR, MPDSR team: Yes / No
   - The joint MDSR/MNDSR/ MPDSR + QI team: Yes / No

4. If you are part of a QI team, what approaches are being used:

   - Standards-Based Management and Recognition (SBM-R)
   - Reaching Every District with Quality Improvement (RED-QI)
   - Plan-Do-Check-Act Cycle (PDCA Cycle)
   - Continuous Quality Improvement (CQI)
   - Total Quality Management (TQM)
   - Other, specify _____

5. Please list any indicators that your QI team is currently tracking:

DAY 1/SESSION 3: COMMON MYTHS AND MISCONCEPTIONS ABOUT PERINATAL DEATH REVIEWS

SESSION PLAN

DURATION: **40 min**

SESSION OBJECTIVES:

By the end of this session, learners will be able to:

1. Understand common myths and misconceptions related to perinatal death reviews
2. Learn about the relationship between quality improvement processes and perinatal death reviews.

Methods and activities	Materials/ resources
• Facilitator should go through the presentation and clarify common myths and misconceptions related to perinatal death reviews • Encourage participants to ask questions • Clarify	• Use PowerPoint slides entitled Day 1 Session 2.pptx

Myth1: Pregnancy and Childbirth are no longer dangerous

Deaths related to Pregnancy and childbirth are still an unfinished agenda.

Every year:

- Almost 6 million deaths related to pregnancy and birth occurred in 2015
- 303,000 mothers died during pregnancy and childbirth in 2015
- 2.6 million stillbirths – 50% of whom were alive at the start of labour
- 2.7 million newborn deaths, of which 1 million deaths occur on the day of birth
- The majority of these deaths are preventable through simple evidence-based interventions

Myth 2: Stillbirths mostly occur in high income settings:

- Most of the world's 2.6 million stillbirths each year (2015) occur in low-income and middle-income countries (98%)
- Three quarters in sub-Saharan Africa and south Asia
- About 60% occur in rural areas affecting the families most underserved by health-care systems

Myth 3: Stillbirths are inevitable.

The majority of stillbirths are preventable

- Half of stillbirths occur during labour—1.3 million each year.
    - These deaths mostly happen to infants who are delivered at term and who would have been expected to survive.
    - Although most stillbirths occur in health facilities, more than 40 million women give birth unattended at home each year.
    - Major equity gaps exist for coverage of intrapartum care, especially for home births in Africa and Asia.
- The Lancet Stillbirth Series also conducted a risk factor analysis for stillbirths. It shows that major risk factors for stillbirth are well known and often overlap, and are potentially preventable, including
    - Maternal age >35 years,
    - Maternal infections (syphilis, HIV, etc.)
    - Non-communicable diseases (maternal diabetes and hypertension)
    - Nutrition and lifestyle factors (smoking, alcohol, drugs, obesity, etc.)
    - Stillbirths are also often associated with fetal growth restriction, preterm labour, post-term pregnancy, and suboptimum care during childbirth.
- The analysis also debunks the myth that many stillbirths are unavoidable due to congenital abnormalities. Few are due to congenital disorders.

Myth 4: Preventing stillbirths is expensive

- Investment to prevent stillbirth also improve women's health, generating substantial economic & social benefits
- The cost of averting stillbirth in LMIC is returned almost 25 times by the economic and social value these live children would provide their families and nations

Interventions that prevent stillbirths in continuum of care for RMNCH:

PRECONCEPTION

- Family planning
- Folic acid supplementation/fortification

ANTENATAL CARE WITH QUALITY

- Addressing infections especially syphilis and malaria
- Management of hypertension, diabetes
- Fetal growth monitoring

LABOUR AND BIRTH CARE

- Fetal surveillance and response
- induction of labour for pregnancies lasting more than 41 weeks

Improvement of quality of care at the time of birth also offers quadruple returns on investment through (1) Preventing stillbirths, reducing (2) maternal and (3) neonatal deaths, (4) improving child development[i].

Stillbirths also have many direct, indirect and intangible costs on parents, their families, health services, societies and governments.

Myth 5: There are no global targets focussed on the reduction of stillbirths and neonatal deaths

There are global targets for Neonatal Mortality Reduction set in the Every Newborn Action Plan (ENAP). Targets are that there must be:

- 12 or fewer neonatal deaths per 1,000 live births in every country by 2030
- A global Annual Rate of Reduction (ARR) of 4.3% needed to achieve the global NMR target, but this varies between countries, with 29 countries needing to at least double their ARR.

- Progress is tracked and reported in the ENAP progress tracking report on an annual basis and presented at the World Health Assembly annually.
- In 2018- 75 countries tracked progress on NMR and reported them in the ENAP report.

Similarly, there are also targets for stillbirths (included in ENAP):

- 12 stillbirths or fewer per 1,000 total births in all countries
- All countries to set and meet equity targets within countries by 2030

Myth 6: It is insensitive to talk about stillbirths

Although, there is widespread perception that talking about stillbirths is insensitive, surveys have shown that many parents want to grieve openly after suffering from stillbirths and that there is still considerable stigma all over the world about stillbirths.

Myth 7: Perinatal and neonatal death reviews are very complex to introduce in my setting

Perinatal and neonatal death reviews are not very complex. They can be started on a small scale. They can begin at one health facility, test a few change interventions, evaluate, refine and see whether they work. Teams should make use of quality improvement cycles to bring about desired changes.

Misconception 1: Perinatal death reviews are impossible in my setting as there are too many neonatal deaths and stillbirths.

There are ways to select a sample of neonatal deaths and stillbirth deaths. Every single death that is reviewed can tell us a story about what could have been done differently to unlock solutions that should have been available for each woman and baby. A meta- analysis of before and after effects associated with the introduction of perinatal audits in LMIC countries demonstrated a 30% (95% CI, 21%–38%) reduction in mortality.[ii] However, there are other studies that have not shown any impact.[iii] This suggests that the review process will only be as helpful as end-users make it out to be.

Misconception 2: Death reviews are useless and a waste of time as no one takes any action

By conducting death reviews correctly, we can identify health system, provider-related and patient-related factors. Facility teams can immediately act on the provider-related factors while they can get useful insights from patient-related factors about risks and can demand support from management and district authorities on system-related factors. Facility-specific response to the audit process, including the response to identified modifiable factors is the most critical step in reducing perinatal mortality.

Misconception 3: Death review committees do not meet regularly so the process is difficult to implement.

Experience shows that when senior leadership and management (hospital and district) is involved and committed, these review meetings happen regularly. Having a fixed day/month, - e.g.: every last Monday can be useful to make the process regular. Providing tea/ coffee to participants can make the process relaxed and inviting. The meetings should be focused and last up to one hour. Preparing well in advance about cases to be presented will minimize unnecessary exploration, distractions and will be an efficient use of everybody's time. Involving various levels of providers to select cases to review may be useful in reducing blame. In the initial phases, it may be better to start with reviewing one or two cases during the one-hour meeting and if time permits we can gradually increase the number of cases that can be reviewed. Including too many cases in the beginning may compromise review quality.

Misconception 4: Perinatal death reviews can expose the providers to punitive or disciplinary action

The perinatal death review process should be anonymized, and the committee should talk about case X and not discuss specific identifiers for any individual case.

Committee members should not discuss individual cases outside the review meeting. Gossip may lead to judgement and fear of punishment, and impedes objective, honest and successful conduct of the review. Healthy hospitals should help staff understand that errors are unintentional and that learning from any adverse event is useful.

Misconception 5: It is difficult to create confidence amongst providers that information will not be leaked to the press and the public

Ministries of Health should provide committees with legal backing to prevent the use of findings for litigation purposes. The national guidelines and facility policy should be clear that review findings are for improvement of QoC and will not be used as evidence in any legal proceedings or settlement of a complaint. In case of legal enquiries, there should be a separate investigation, which is for a different purpose intended to assign responsibility or ascertain neglect. Consent forms should be administered prior to interviewing family members. Having a code of conduct that participants sign at each meeting may help reinforce the goal of the review meeting being a safe space. After the committee meeting, all case review notes with identifying information collected for the purposes of the audit should be destroyed. Any case review notes with identifying information should not be shared by electronic means, such as email.

Misconception 6: Quality improvement PDSA cycles and perinatal death reviews are not linked.

Once cases for perinatal death review are identified and reviewed, we will be able to identify modifiable factors and failures in care processes. This leads to development of action plans which generally take two forms: provider level actions and/or a QI project to address systematic issues.

Hence, perinatal death review findings help facility teams to formulate realistic problem statements for conducting a quality improvement/ PDSA cycle. Testing of these solutions will help in effective implementation of change ideas.

Misconceptions 7: Perinatal death review cannot be implemented unless there is budget allocated to the process.

Many problems (system, provider) can be fixed by changing management practices and making efficient use of resources - Do not wait for change to come from outside. You have the power to make the change. For example: South Africa's Perinatal Problem Identification Programme (PPIP) started as a research project in 1990 using paper based forms. Now it captures 75.6% of all births in institutions (2014). The PPIP software is available to download freely at: https://www.ppip.co.za/

Misconception 8: Everything is a problem, so we should we start?

There is a lot that can be done, but the first step is to review your data carefully.

For stillbirths:

- In how many women, was foetal heart rate checked at the time of admission?
- How many babies were alive at the time of admission but died as labour progressed.
- What could have been done differently?

For neonatal deaths:

- Classify by birth weight and gestational age.
- Start with deaths amongst term babies and those with birth weight of more than 2500 grams to identify modifiable factors.
- Once we achieve success in this group we can go to lower weight categories.

Note to facilitator: See slides 27 and 28 with an example from EMEN QI project in Bangladesh using MPDSR of how to prioritise.

Summary of the session:

- Perinatal mortality more prevalent than maternal mortality.
- Where MDSR systems exist, conduct both together.
- "No blame", "No name" approach should be taken.
- Review findings must be separate from legal processes

- Start small, learn in detail, test ideas and scale up as you go along.
- Even one case can provide good learning to prevent similar events from happening in the future.
- Getting a count on all deaths that occur in the facility and creating a culture around the importance of reporting all births and deaths is also a good place to start.
- Don’t be overwhelmed- choose a sample. For e.g.: deaths in a certain birth-weight category, cause- specific deaths, deaths on weekends – and vary this at each meeting, so that meetings are not tedious.
- Freely available software such as the PPIP can be a useful tool for data analysis and for managers to monitor their units.
- Showing good success in the beginning motivates everyone in the team.
- Start with things under your control, demonstrate success, management will also become confident, teams will be motivated and own the perinatal death audit process.

DAY 1/ SESSION 4: DEFINITIONS, AIMS AND OBJECTIVES

SESSION PLAN

DURATION: 90 min

SESSION OBJECTIVES:

By the end of this session, learners will be able to:

1. Understand the definitions of perinatal deaths
2. Understand the causes of perinatal deaths
3. Describe the aims and objectives of a perinatal mortality audits?
4. Understand modifiable factors that can lead to perinatal deaths?
5. Identifying perinatal deaths?

Methods and Activities	**Materials/ Resources**
• Introduction (5 min) • Review the session objectives	PPT Day 1 Session 4
Reflections on Perinatal deaths (10 min) • Ask the learners to close their eyes and recall a time when they provided health care for a baby who died soon after birth or was a stillbirth. Tell them to try to recall the causes of the death and any maternal complications the patient may have experienced before the death. • Ask learners to open their eyes and invite one learner to volunteer to share their story	
• **Strengths and Challenges (20 min)** • This activity will encourage critical thinking about the importance of PMR. Based on the story just told and the story you just reflected upon, identify strengths/opportunities and potential challenges • Distribute 2 sticky notes to each learner • Give the learners 8-10 minutes to reflect and list their strengths/opportunities, and challenge from the story • Ask learners to write one strength/opportunity and one challenge • Ask the learners to post their responses on the relevant chart.	2 Flip charts Sticky notes Marker pens

Methods and Activities	Materials/ Resources
• Select a few strengths/opportunities and a few challenges and share with the group. Emphasize that each perinatal death needs to be reviewed and responses defined to prevent future deaths.	
Lecture (35 min) • What is perinatal mortality review? • Causes of deaths? • What are the aims and objectives of perinatal mortality audits? • What are modifiable factors for perinatal deaths? • How to identify perinatal deaths?	PPT Day 1 Session 4.pptx
Group work: Divide participants into three groups (35 minutes) • Ask them to congregate into four corners of the room with flex charts on ICD-10 classification available on page 21. • Distribute case study (ICD 10 case study) • Ask them to go through the case studies (ICD- 10 case study.doc x) and use temporary markers to classify pregnancy outcomes on the ICD-10 classification chart Participants should complete all five cases.	Flex charts on ICD-10 classification Temporary markers x 3 Erasers X 3

What is a perinatal mortality review/ audit

- Mortality audit is a well-known and well-established clinical practice, while death review is also a term used with a similar meaning
- For these reasons, both terms perinatal mortality (death) reviews and perinatal mortality (death) audits are used interchangeably.

Definition of stillbirths

- Varying definitions over time and across settings
- Stillbirths for international comparisons (ICD-10) are defined as late foetal deaths with:
    - Birth weight of 1,000 grams or more
    - Gestational age of 28 weeks or greater
    - Body length of 35 cm or more
- Gestational age is a better predictor of viability than birth weight

- National data in high income settings (gestational age viability is setting specific)
    - Birth weight of 500 grams or more
    - Gestational age of 22 weeks or greater
    - Body length of 25 cm or more

Definitions by timing of stillbirths

- Antepartum stillbirths: Death occurring before the onset of labour
- Intrapartum stillbirths: Death occurring after the onset of labour but before birth.
    - Needs confirmation of the presence of a foetal heart rate at the onset of labour.

Classification by appearance: Macerated versus fresh stillbirths:

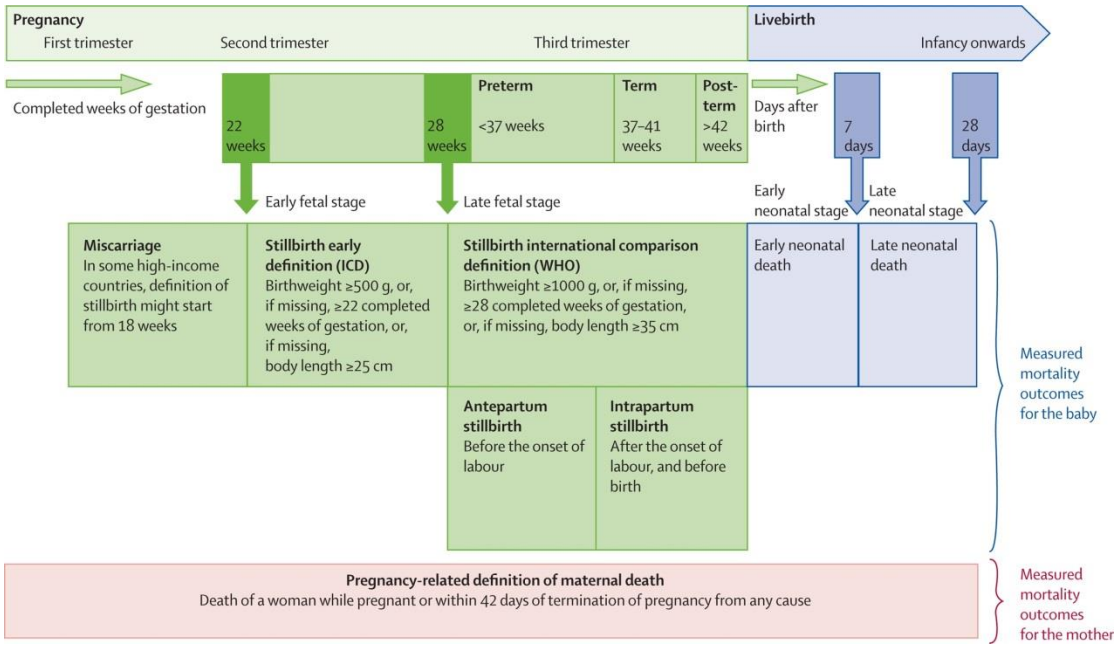
- Often the appearance of skin maceration is used to estimate the timing of stillbirths
- Fresh or non-macerated stillbirths= intrapartum stillbirths
- Macerated appearance= antepartum stillbirths

However, signs of skin maceration only begin after 6 hours of death. In case there are delays in access to care, intrapartum stillbirths may be wrongly classified as antepartum stillbirths. Always important to consider other indicators such as foetal heart sounds/ movement on admission.

Definition of neonatal and perinatal deaths

- The neonatal period is the first 28 days of life
- Neonatal death (1-28 days)
    - Day 1 (first 24 hours of life)
    - Early (1-7 days of life)
    - Late (8-28 days of life)
- Neonatal mortality rate (NMR) is measured as a rate per 1,000 live births
- Perinatal deaths: deaths among early neonates (0-7 days after delivery) and stillbirths at or after 28 weeks of gestation
- Perinatal mortality rate is the number of stillbirths and early neonatal deaths per 1,000 total **births**

Figure 1: Defining stillbirths and associated pregnancy outcomes (ICD-10)



Ref: The Lancet 2011 377, 1448-1463DOI: (10.1016/S0140-6736(10)62187-3)

Mortality rate definitions and data sources

Indicator	Numerator	Denominator	Data Sources
Stillbirth rate	For international comparison: Number of babies born per year with no signs of life weighing ≥ 1000 g and after 28 completed weeks of gestation (ICD-10 also recommends including the number of deaths in foetuses born after ≥ 22 weeks of gestation or weighing ≥ 500 g)	1000 total (live and stillborn) births	▪ CRVS ▪ Household surveys ▪ HMIS and audit systems (often facility-based deaths only) ▪ Estimation models
Neonatal mortality rate	Number of live born infants per year dying before 28 completed days of age	1000 live births	

Indicator	Numerator	Denominator	Data Sources
Perinatal mortality rate	Definitions vary: • Number of deaths in foetuses born weighing ≥ 1000 g and after 28 completed weeks of gestation, plus neonatal deaths through the first 7 completed days after birth • Number of deaths in foetuses born weighing ≥ 500 g and after 22 completed weeks of gestation, plus neonatal deaths through the first 7 completed days after birth • Some definitions include all neonatal deaths up to 28 days	1,000 total (live and stillborn) births	

Causes of stillbirths: The five most important to remember[iv]

1. Childbirth complications: 50% of stillbirths occur in babies alive at the start of labour
2. Maternal infections in pregnancy e.g. syphilis
3. Maternal conditions, especially hypertension and diabetes
4. Fetal growth restriction
5. Congenital abnormalities

What are modifiable factors?

- Circumstances that may have prevented a death if a different course of action was taken (missed opportunity).
- Using “modifiable” instead of “avoidable” or “substandard” helps limit opportunities for blame and presents potential for positive change.
- Example: For a case of birth asphyxia, the following can be modifiable factors.
  - Intrapartum foetal monitoring was not done
  - Health worker could not initiate bag and mask ventilation immediately when the baby did not respond to vigorous stimulation
  - Laboring long at home

There are many approaches to identifying modifiable factors:

A. Family or patient related factors:

1. Did the family understand what to seek care for, when to or where to seek care?
2. Poor compliance to heath worker advice
3. No antenatal care visits or inadequate ANC visits or poor-quality ANC visits.
4. Delay in seeking care
5. Poor and unhygienic care practices
6. Reliance on traditional medical treatments or Birth Attendants

B. System (Administration) related

a. Delayed transfer between higher and lower level facilities
b. Lack of communication between health facilities
c. Delay in admission procedure
d. Delay in receiving necessary treatment;
e. Lack of essential diagnostics, equipment and supplies.
f. Lack of (appropriately trained) staff;
g. Lack of partographs or not using partographs for monitoring of foetal heart
h. Poor communication between health workers

C. Provider related factors

a. Competency of health workers
b. Delay in being attended by midwife/clinician
c. Delay in receiving treatment and interventions
d. Poor monitoring of patient or foetus during labour
e. Omission or delay in referring to higher level or consulting more senior health worker

Root cause analysis: Fishbone diagrams/ Ishikawa diagrams

- Helps to identify all the problems that led to or contributed to the stillbirth or neonatal death.
- Head of the fish is the event

- Contributory factors are the bones of the fish (health system building blocks or 5 Ps (policy, procedure, place, people) or 5 why's and others

Criterion based audits: An objective, systematic and critical analysis of the quality of obstetric and neonatal care against set criteria of best practice

Pre-requisites for criterion-based audits:

- Evidence-based standards that are the source of criteria.
- Written records: 'if it is not written down, it did not happen!'

How to identify perinatal deaths in health facilities:

1. Identify and list all of the possible sources of information from registers on stillbirths at or after 22 weeks gestation, and live births who die within 28 days
2. Death registers (central or ward)
3. Mortuary registers
4. Ward ledgers or registers (delivery room, caesarean registers, OT register, maternity/obstetric ward, NICU, sick babies register, emergency ward, paediatric ward, admissions ward)
5. Search for stillbirths (IUFD, Apgar scores 0 and 0) and deaths among live births who die within 28 days (including those with initial Apgar score >0 but repeat of 0)
6. Cross-check to remove duplicates, as same death may be recorded in several places

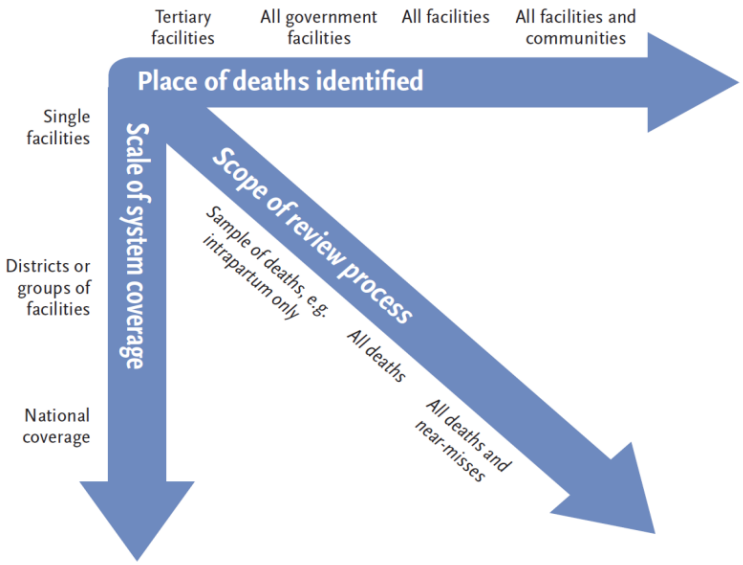
Guidelines for selecting cases to review

- At a minimum, key elements should be captured for all births and deaths i.e.: the minimum set of perinatal indicators
- A *context-specific* approach is useful
- Considerations include the burden of perinatal deaths, resources available and feasibility.
- At what level is the review being conducted: in a single hospital, multiple hospitals, regional or national level.
- Low volume sites may choose to review all perinatal deaths
- High- volume sites hospitals may choose a specific criterion for e.g.: cause specific deaths, deaths on weekends, deaths in a certain birth-weight category.
- At regional or national level, it might be more efficient to select a random sample of all cases across a region or reviewing all cases in a single unit where an excess of cases has been identified.

Dimensions of a phased introduction of perinatal death audits

Perinatal death audits can be started slowly on a small scale, from a single facility and then gradually expanded to more than one facility. For example, programs could begin with one tertiary hospital and then gradually expand to other tertiary facilities. Similarly, a small sample of deaths such as intrapartum stillbirths can be reviewed in the initial phases and then gradually we can start to review all deaths. The perinatal death review process can begin from a single facility and gradually expanded to a group of facilities and then cover all facilities in the country.

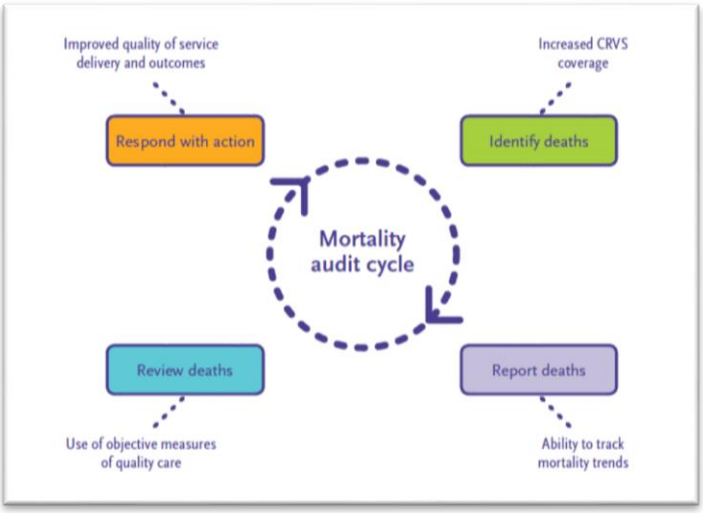
Figure 2: Dimensions of a phased introduction of perinatal death audits



Relationship between mortality audits, wider QoC and CRVS systems

Many resource poor settings lack effective civil registration and vital statistics (CRVS) system. As a result, all births and deaths are not captured in these countries and cause of death is not assigned. Many countries also do not capture neonatal deaths that occur outside the health facility especially countries where births are not registered, and very few countries have a system for tracking stillbirths. Although, national estimates of numbers and causes of deaths are useful, they do not tell the whole story. Examination of individual cases provides us with underlying reasons on why a death occurred and information about what could have been done to prevent such deaths in the future. The majority of stillbirths, particularly those that occur in the intrapartum period, and three quarters of neonatal deaths are preventable. Applying the audit cycle to the circumstances surrounding deaths can highlight modifiable factors in clinical care as well as breakdowns in processes at the district or national level, and ultimately improve the CRVS system and quality of care overall. This is illustrated in figure 3 below.

Figure 3: Relationship between mortality audits, wider QoC and CRVS systems



Group work: ICD 10-PM case study

Instructions to the facilitator:

- Divide participants into three groups
- Ask them to congregate into three corners of the room with displayed flex charts on ICD-10 classification.
- Distribute case study (ICD 10-PM case study)
- Ask them to go through the case studies and use temporary markers to classify pregnancy outcomes on the ICD-10 classification chart

ICD 10-PM Case studies for distribution:

1. 23-year-old primigravida patient, single, no risk factors during pregnancy, referred from lower level health facility, history of amenorrhea for past three months, went to traditional health worker wishing to terminate pregnancy. Given some herbal medicines. Presents to the hospital with a history of bleeding with fleshy mass discharge. On admission complains of abdominal pain, mild fever and no foetal heart sound on auscultation. USG reveals echogenic content suggesting product of conception with free fluid in uterus and pelvic cavity. Diagnosis of incomplete septic abortion What is the outcome of pregnancy? **Answer key: Miscarriage**
2. 21-year-old, gravida 5, para 2+2, haemoglobin 11 gm/dl, VDRL ++, 8 months since last menstrual period, complains of decreased foetal movement. No foetal heart rate on admission, labour induction started, delivered a stillborn baby weighing 1100 grams with signs of maceration of the skin. What is the outcome of pregnancy? **Answer Key: Antepartum stillbirths**

3. 28-year-old, primigravid, short stature, uneventful pregnancy history, labour diagnosed to be prolonged (foetus has failed to engage after two hours of complete dilation). Emergency caesarean section undertaken. Apgar score of 4 at one minute and 7 at 5 minutes. Baby placed under oxygen therapy, weak suckling reflex and cannot breastfeed properly, started on cup feeding, shows progressive improvement and discharged from hospital after two weeks. Baby discharged from hospital but dies at home on day 21. What is the outcome of pregnancy?
   Answer Key: Neonatal death

4. 35-year-old pregnant woman with diagnosis of gestational diabetes with a gestational age of 42+ weeks of pregnancy complains of decreasing foetal movements. FHR was found to be 190 per minute on auscultation. A decision to perform an emergency caesarean section was taken. Baby showed no signs of life at birth and was covered with meconium. What is the outcome of pregnancy?
   Answer key: Intrapartum stillbirths

5. A 35yr old, known to be at full term, with a history of 4 stillbirths and 2 live births delivers a live baby weighing 3.4 kg at the hospital. The baby takes a breath at birth but is floppy and makes no further attempt at breathing. Vigorous stimulation and resuscitation with bag and mask are unsuccessful. What is the outcome of pregnancy?
   Answer key: Early Neonatal Death

6. A 31-year-old primi women at 39.7 weeks gestation comes to the emergency room. History of uneventful pregnancy except recent complaints of decreased foetal movements. Blood group is B Rh-positive, and she is positive for group B streptococcus. Contractions started when she was in the emergency room, but no foetal movements were identified. An external foetal monitor and ultrasound examination confirmed intrauterine foetal death. There was no evidence of physical abuse, nor was there evidence of abruption, either clinically or pathologically.
   Answer key: Intrapartum stillbirths

DAY 1/SESSION 5: SIX-STEP MORTALITY AUDIT CYCLE

SESSION PLAN

DURATION: 120 min

SESSION OBJECTIVES:

By the end of this session, learners will be able to:

- Describe and identify the six steps of the perinatal mortality audit cycle

Methods and Activities	Materials/Resources
Introduction (5 min) • Review the session objectives • Introduce this session by asking learners what they know about audit and show presentation on definition of audit	
Six Steps of Mortality Audit (20 min) • In this activity learners will discuss the six steps of the mortality audit cycle • Divide learners into three groups, and provide each group with a flip chart and set of prepared meta cards with one step written on each meta card • Ask the groups to discuss each step and place the cards in the correct order • The first group to correctly order the steps wins and will present their chart to the large group • Review the steps and correct accordingly	• Flip charts paper • 3 sets of 6 meta cards • Prizes for the winning group.
Presentation (30 min) • Introduce the Six-Step Mortality Audit Cycle • Review each step while asking for examples. Follow the PPT notes. • Clarify any questions that the participants may have. • Highlight that all of these steps will be discussed in detail in subsequent sessions.	Day 1 Session 5a.pptx
Case study on perinatal mortality audits (60 minutes) Introduce and explain the small group exercise In this exercise, participants will be divided into 4 groups and	Day 1 Session 5b.pptx Flipcharts x 4 Markers x4

Methods and Activities	Materials/Resources
conduct the perinatal mortality review using four case scenarios After 45 minutes, the 4 groups present the results of their group work	
Questions and Answers (5 minutes) Facilitators to clarify any questions from learners	

What is an audit?

A systematic and critical analysis of quality of care in the broadest sense, which assesses the impact of procedures for diagnosis and treatment on patient outcomes (ref. WHO 2013 MDSR guidelines, WHO Making Every baby Count 2016)

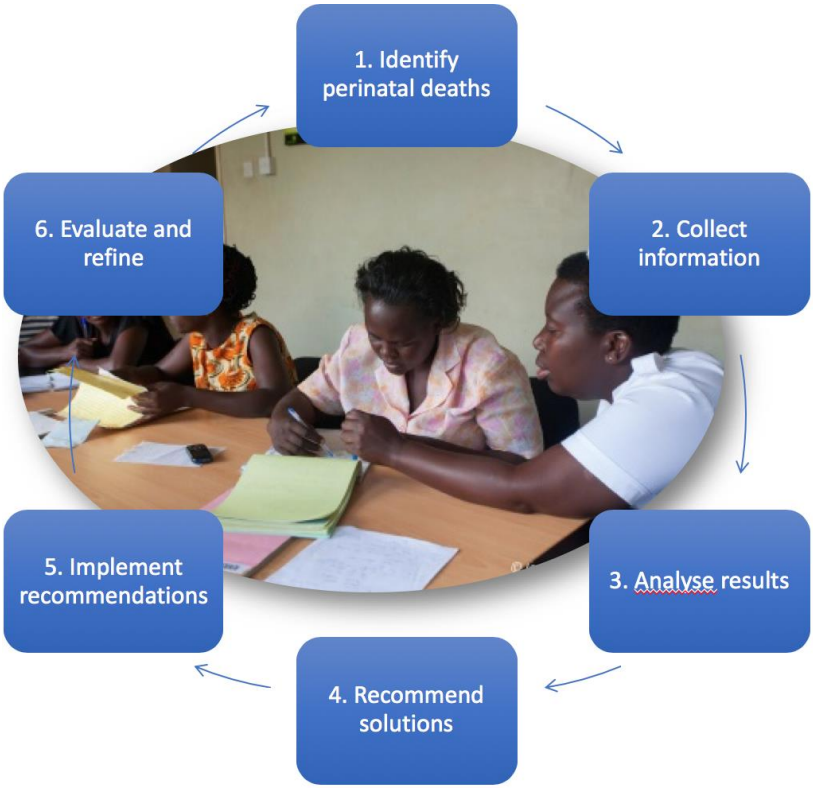
Perinatal audit: "The systematic, critical analysis of the quality of perinatal care, including the procedures used for diagnosis and treatment, the use of resources and the resultant outcome and quality of life for women and their babies" - Dunn, P. M (1996).

A variety of studies have used audits to measure and improve quality in MNH and evidence indicates that under certain contextual conditions audits can be feasible, effective and acceptable.

Six steps of a perinatal mortality audit cycle

1. **Step 1: Identifying cases:**
    - Identify sources for information: Where are deaths likely to occur in my facility?
    - Emergency room registers, General admission and discharge register, Maternity registry, Newborn unit register, Operations Theatre- Obstetric register, Paediatric ward register and Postpartum register
    - Create a list of all stillbirths and neonatal deaths in a facility to improve capturing perinatal deaths for review

Figure 4: Six steps of a perinatal mortality audit cycle



2. Step 2: Collecting information

- Ideally, review within a week of the event
- Paper forms or computerized data entry programs e.g.: South Africa's Perinatal problem identification program https://www.ppip.co.za/
- Necessary data to be used for analysis
- Data verification
- All additional information that can create a richer understanding of delays and modifiable factors

Background and contextual information

- Socio-demographic status: Age, ethnicity, occupation, education, socioeconomic factors
- Antenatal: Obstetric history, planned pregnancy, medical history, antenatal care given, hospitalisation, other barriers for care
- Intrapartum: Date and onset of labour, rupture of membranes, place of labour start, monitoring during labour, date and time of onset of labour, delivery attendant, complications, status of the baby (sex, gestational age, birth weight, APGAR), immediate care, barriers and decision timeline
- Postpartum/ Postnatal: Feeding choice (date and time for first feed), date and time for onset of complications, reported awareness of problems barriers and decision timeline

Minimum perinatal dataset: At a minimum, the Every Newborn Action Plan recommend that we collect at least six indicators for all births and deaths.

1. Maternal age
2. Place of delivery
3. Mode of delivery

4. Birth weight
5. Gestational age
6. Birth outcomes

3. Step 3: Analysing the information

- Selecting cases for review - Will depend on the burden of maternal and perinatal mortality
- Review maternal and perinatal deaths together, if they occur at the same time
- If perinatal mortality burden is high:
    - Use a thematic approach (for instance only birth asphyxia cases, sepsis cases)
    - Only the deaths the first week of the month
    - Cases that are most probably preventable
    - Depending on what any existing QI targets

Minimum indicators to follow over time:

1. Number of vaginal deliveries
2. Maternal deaths
3. Antepartum and intrapartum stillbirths
4. In-facility stillbirths
5. Neonatal mortality rates
    - Quantitative and qualitative information
    - Geographical mapping
    - Analyses at different levels: Facility or individual cases
    - Modifiable factors

What are modifiable factors?

- Something that may have prevented death if a different course of action was taken
    - Identifies missed opportunities
    - Builds momentum for behaviour change
    - More than one modifiable factor associated with each death
    - Ability to designate modifiable factors depends on knowledge of the case and clinical knowledge

Multiple methods for identifying modifiable factors

- Root-cause analysis is a common method
- Delay approach (the three delays –decision, reaching and receiving)
- Level approach (family/patient, administration or provider)

4. **Step 4: Recommending solutions**

- Solutions should target actionable problems, factors, causes and sub-causes
- Solutions should always be **SMART**:
  - Specific
  - Measurable
  - Appropriate
  - Relevant
  - Time-bound
- Possible actions include interventions in the facility, community, linked health services or the public sector.
- Dissemination of audit findings with key message to those who can implement change: Ministry of Health, planners, Professional organisations, Academic institutions, Civil Society Organizations.
- Periodic report in a simple language with findings and solutions

5. **Step 5: Implementing changes**

- The whole purpose of the action cycle!
- Actions with different time frames
- Assign actions to team members of the committee
  - Who?
  - What?
  - By when?
- Leadership is important!
- Important to monitor whether recommendations have been implemented
- Follow up on recommendations.

6. **Step 6: Evaluating and refining**

- How efficient is the system in identifying and reviewing deaths?
- How effective is the system in institutionalising beneficial practices?
    - Document changes over time, through annual review meetings or report helps identify gaps and areas of success.
    - Periodic evaluation of the system improvements
    - Periodic evaluation of the inequality of the information captured

GROUP WORK: CASE STUDIES ON PERINATAL MORTALITY AUDIT

CASE STUDY 1: EARLY NEONATAL DEATH

Zeinab Mohammed married 1 year ago and is a 17-year-old primigravida from xxxx district. Her husband Hassan is a rich businessman and she is his 3rd wife. When she was 20 weeks pregnant she noticed some foul-smelling vaginal discharge, and went to the antenatal clinic at the nearby hospital. It was her 1st antenatal care visit. At the booking visit, the midwife took her full history and filled in a card, measured her weight and blood pressure, checked her blood group, blood hemoglobin levels and palpated her abdomen, listened to the heart sounds of the foetus and told her everything was fine with her and the child. She gave her a tetanus injection, prescribed her iron and folic acid tablets and she had to take 3 anti-malarial tablets at the clinic. When Zeinab mentioned her discharge, the midwife did not examine her but told her that that was normal during pregnancy and that she should not worry.

She went one more time to the antenatal clinic when she was 34 weeks pregnant, got the same treatment and went home. When she was 38 weeks she got labour pains and was taken by her mother in-law to the maternity ward in the hospital. On admission she had moderate contractions, the fundal height corresponded to term, the baby was laying in longitudinal lie and cephalic presentation, the head was 4/5 above the pelvis. The foetal heart was 130/min. On vaginal examination she was 4 cm dilated, the membranes were intact. The midwife recorded the findings on the partograph. She was taken to the labour suite. Four hours later her membranes ruptured spontaneously. The liquor was slightly meconium-stained. The head was now 3/5 above the brim of the pelvis. Cervical dilatation at that time was 6 cm. Foetal heart rate was 120/min. Four hours later the contractions were strong, 4 in 10 minutes, the foetal head 2/5 above the brim, the cervix was 8 cm dilated. The foetal heart rate was 124/min. Zeinab was becoming tired and the contractions were very painful. Finally, after 11 hours of labour she was fully dilated. The midwife told her to push with each contraction. After pushing for more than 1 hour she delivered a male infant of 3.8 kg. The baby was pale and did not immediately cry after birth and was breathing irregularly. The midwife sucked out the nose and mouth and slapped the baby on its back. There was no ambu bag and mask in the labour room. After some time, the baby improved, but was still grunting a bit while breathing. The Apgar score was 3 after 1 minute and 7 after 5 minutes. The midwife wiped the baby dry and wrapped it in a cloth. Then she administered 10 U Oxytocin to the mother and delivered the placenta by controlled cord traction. Blood loss during delivery was 300 ml. The perineum was intact.

Later that day the baby had improved and was able to suck the breast, but he was still grunting a bit when breathing. The next day the baby got fever 38.8oc. The midwife called the doctor and he prescribed antimalarials and ordered tepid sponging and 6 hourly monitoring of the temperature. However, the temperature was only recorded twice a day. The next day there

was still fever and the baby was a bit greyish in colour and slightly jaundiced and had a convulsion, which lasted for 2 minutes and responded well to 1 mg diazepam rectally. The doctor ordered a complete blood count and prescribed ampiclox syrup 8 hourly. The next day the condition of the baby was worse. He was unable to suck, looked lethargic, had a vacant look in his eyes and had slight twitching. The midwife inserted a nasogastric tube and expressed breastmilk was given 3 hourly. The doctor reviewed the baby during ward round and prescribed phenobarbitone 5mg/kg, given in 12 hourly doses. The evening of the same day the baby suddenly stopped breathing and passed away.

After a week the case was reviewed at the perinatal death review meeting.

1. What is the most likely primary cause of death?

2. What factors may have contributed to the death and which are modifiable?

3. What missed opportunities for good care or sub-standard care can you identify?

4. What recommendations you have for the action plan to improve quality of care?

CASE STUDY 2: ANTEPARTUM STILLBIRTH

Aisha Tukur is 21-year-old gravida 4, para 2+2. Her last two pregnancies ended in miscarriage. At 16 weeks' gestation she started antenatal care at the nearest CHC clinic, which was 1 hour away by minibus. At the booking visit the midwife took her full history and filled in a card, measured her weight and blood pressure, palpated her abdomen, listened to the heart sounds of the foetus and told her everything was fine with her and the child. She gave her a tetanus injection, prescribed her iron and folic acid tablets and she had to take 3 anti-malarial tablets at the clinic. Then she was sent to the laboratory for testing of Hb, VDRL and urine for glucose and albumin. The Hb was 11gram/dl. The results of the VDRL would only be available at the next antenatal visit.

After 4 weeks she went back to the clinic. The village health worker who received her, checked her weight, and blood pressure and recorded the findings on her antenatal card. He also checked the register for the results of the VDRL test, which was ++ and recoded the findings on the card. Next Aisha was referred to the nurse/midwife, who examined her and told her everything was fine. She was counselled on danger signs of pregnancy and birth and emergency preparedness. She got her 2nd dose of Fansidar (Sulphodoxime and Pyrimethamine) and was given Iron/folic acid tablets for 4 weeks.

At 34 weeks she noticed a decrease in foetal movements. She went to the antenatal clinic at the CHC and was told by the village health worker to come back after 3 days because on that day there was no antenatal clinic, but immunization clinic at that day. Disappointed and worried about the condition of the child, she returned home. Three days later her husband was not around so she had no money for transport and had to wait until the next week to go to the antenatal clinic.

When she finally went back to the antenatal clinic she could not feel foetal movements since three days. The midwife examined her and could not hear the foetal heart. She was referred to the general hospital 3 hours away by bus and was given a referral letter. She cried, went home and told her husband. The next day they went together to the hospital. She was examined by the midwife, who also could not hear the foetal heart, not even with the Sonicaid (foetal doppler/ultrasound). She was referred to the doctor, who confirmed the intra uterine death.

After admission, labour was induced with an IV drip with 2 U oxytocin, of which the drip rate was gradually increased half hourly. After two infusions she delivered a macerated stillbirth, with a weight of 2.2 kg. The placenta looked somehow abnormal and was bulky. Blood loss was 250 ml.

Some tests were carried out in the hospital and she received two injections before discharge.

The case was reviewed at the next perinatal death review meeting.

1. What is the most likely primary cause of death?

2. What factors may have contributed to the death and which are modifiable?

3. What missed opportunities for good care or sub-standard care can you identify?

4. What recommendations you have for the action plan to improve quality of care?

CASE STUDY 3: INTRAPARTUM STILLBIRTH

Funmi Okintade was a 17-year-old schoolgirl, who accidentally got pregnant from her boyfriend Mussah, who was her classmate in school. They had had occasional sex since three months but never used contraceptives. When the pregnancy became obvious she was expelled from school. Her father was very angry and told her she had brought shame on the family. To hide the situation Funmi was sent to her grandmother in her mother's native village.

She helped her grandmother in the garden and with household chores but did not go to antenatal clinic because she felt embarrassed. After she was 32 weeks pregnant her feet gradually became swollen and later even her fingers. Her grandmother took her to the nearby MCH clinic, where she was seen by the midwife at the antenatal clinic. The female health extension worker was not very nice to her and condemned her pregnancy as a result of her immoral behaviour. Apart from an elevated blood pressure of 130/90, nothing abnormal was found. No laboratory tests were carried out since the MCH had neither laboratory nor dipsticks to test her urine. Funmi was advised to rest at home and to come back after a week.

However, Funmi decided not to go back to the antenatal clinic because she did not like the judgmental attitude of the Health extension worker and her moralistic talks. When she was 36 weeks pregnant, suddenly she got abdominal pain, which persisted. Later the same day she started bleeding and felt weak. Her grandmother called the local TBA, who examined her and told her something was wrong with the pregnancy and that she had to go to the hospital. Her grandmother took her in a minibus to the hospital in town, which was 1 hour away.

On admission she was examined by the midwife in the maternity. Her pulse rate was 100/min, BP: 160/110, Temp: 37^{o} C. She looked slightly pale and had edema of hands and feet while her face also looked slightly puffy. The fundus was at term, the uterus felt hard and the foetus was difficult to palpate but was in cephalic presentation. The foetal heart rate was 120/min. There was slight vaginal bleeding. The cervix was soft and closed. She was admitted and reviewed by the doctor, who prescribed an injection of 5 grams magnesium sulphate in each buttock and an IV injection of 5mg hydralazine, which treatment was repeated after 4

hours. Later that day the BP had gone down to 130/90. Her condition remained stable. On her patient notes no information was recorded on the foetal heart rate since admission.

The afternoon of the next day she went into labour and at 11pm she delivered a fresh female stillbirth with a weight of 2.5 kg. The placenta was delivered by controlled cord traction 15 minutes after delivery of the fetus, together with a large blood clot. Total blood loss was estimated at 500 ml. Magnesium Sulphate was continued until 24 hours after delivery. The edema gradually subsided and the BP returned to normal. Three days after delivery she was discharged in good condition.

The case was reviewed at the next perinatal death review meeting.

1. What is the most likely primary cause of death?

2. What factors may have contributed to the death and which are potentially modifiable?

3. What missed opportunities for good care or sub-standard care can you identify?

4. What recommendations you have for the action plan to improve quality of care?

CASE STUDY 4: BIRTH ASPHYXIA/ MODERATELY PRETERM BABY

Nura Abubakar, who is married to Ishmael Mohammed, is 21 years and gravida 2, para 1. At 20 weeks' gestation she started antenatal clinic at the nearby MCH clinic. No abnormalities were found. At 28 and 32 weeks she attended the ANC clinic again. At gestation 33 weeks her membranes ruptured and she started draining liquor, but there were no contractions. She realized that the foetus was still quite small to be born. When her husband came home from work at 4pm she informed him and the next day he arranged transport and took her to the general hospital.

At the hospital she was admitted in the maternity with a diagnosis of threatened premature labour and put on complete bed rest, with 4 hourly monitoring of vital signs, contractions and foetal heart rate. The draining of liquor diminished, but after 4 days she got slight contractions. She was prescribed a salbutamol intravenous infusion of 10 mg / 1 litre normal saline, but despite this she went into labour the next day. During admission her vital signs and the fetal heart rate were only recorded 12 hourly. On the day she went into labour a temperature of 38^0C was recorded in the morning. At 3pm Nura gave birth to a premature male infant of 1.8 gr with an Apgar score of 6 after 1 minute and 9 after 5 minutes. The cord was clamped after 3 minutes, the baby was wiped dry and wrapped in a cloth, received 1 mg Vitamin K1 intramuscularly and was put on the mother's chest. After Nura received 10 U oxytocin, the placenta was delivered by controlled cord traction.

The baby was treated with Kangaroo Mother Care and initially did well apart from occasional apnoea attacks, which responded well to tactile stimulation. However, by the second day the baby developed more severe breathing difficulties, had an increased respiration rate of 60/min and had chest-indrawing and looked slightly cyanotic. The newborn was unable to suck and was put on 3 hourly nasogastric tube feedings of expressed breast milk and received ampicillin 100 mg BD and gentamycin 5 mg OD. Unfortunately, the maternity had run out of oxygen cylinders, so oxygen could not be given. At night the baby stopped breathing.

The case was reviewed at the next perinatal death review meeting.

1. What is the most likely primary cause of death?

2. What factors may have contributed to the death and which are potentially modifiable?

3. What missed opportunities for good care or sub-standard care can you identify?

4. What recommendations you have for the action plan to improve quality of care?

DAY 1/ SESSION 6: GETTING STARTED ON FACILITY-BASED DEATH REVIEWS

SESSION PLAN:

DURATION: 30 minutes

SESSION OBJECTIVES:

By the end of the session, learners will be able to:

1. How to get started with perinatal death reviews?
2. What are some successful factors from MDSR experiences?
3. Composition and functions of the perinatal mortality review team at the facility, district and national levels?
4. Describe existing and/ or potential linkages between perinatal mortality review/ MPDSR and quality improvement structures at the facility and the district levels?

Methods and activities	Materials/ Resources
Introduction Review the session objectives (5 minutes)	Flip chart Day 1 session 6.pptx
Getting started on facility-based death reviews (20 minutes) • How to get started with perinatal death reviews	Day 1 session 6.pptx

• What are some successful factors from MDSR experiences • Composition and functions of the perinatal mortality review team at the facility, district and national levels • Describe existing and/ or potential linkages between perinatal mortality review/ MPDSR and quality improvement structures at the facility and the district levels.	
Questions and Answers (5 minutes) Facilitators to clarify any questions from learners	

Getting started with Perinatal mortality reviews

- The structure and functions of the perinatal mortality committee may vary by country and the specific health system level (e.g. facility, district committee)
- Most facilities may already have in-house mortality reviews and districts may have a focal person
- Review what already exists
- Start small and scale up gradually
- Phased approach: start with one or two facilities and then expand to other locations, moving towards greater coverage
- Involving the right stakeholders is essential to establish the programme and raise awareness &profile.
- An enabling environment will be useful
- If a quality improvement committee exists, engage with the committee to form a facility level perinatal mortality review committee
- Maternal and perinatal death reviews should be conducted in a collaborative manner rather than in parallel
    - Stillbirths and neonatal deaths are more common occurrences than maternal deaths
    - The Perinatal Death Review process can start with selecting specific cases for e.g.: intrapartum stillbirths or 1st day neonatal deaths

Who leads the process varies by country context

- In some countries obstetricians lead maternal death and stillbirth reviews whereas pediatricians lead newborn death reviews.

- Irrespective of who leads the review, we need engagement from all specialties, hospital administration, district level and community members.
- It is essential to keep review findings separate from the legal system
- Should focus on ability of health professionals to identify opportunities to improve care rather than assign blame.
- Anonymized process of reporting
- Safe custody of any data collected/ patient case files and destruction of review findings after meetings
- Dedicated person for data collection is needed

Expertise needed for the review committee: Diverse range of expertise to identify both the nonmedical and medical problems that contribute to deaths, to prioritize and monitor implementation of recommended actions and to track and analyze trends in audit results and in perinatal deaths, causes and complications.

Success factors identified from the experience with Maternal Death Surveillance and Response (MDSR)

- Committed health committees
- Local champions
- Code of practice for review meetings
- Ensuring confidentiality
- Steering committee should nurture a supportive culture that fosters accountability
- Support from local community leaders, facility directors, or national or state government
- Governments and other key stakeholders need to be involved from the beginning of the facility-based death review process, informed of progress and, as appropriate, invited to attend meetings or sit on steering committees.
- Clear roles and responsibilities
- Adequate resources should be allocated to the programme

Facility-based perinatal mortality audit steering committee

Who?

- Those interested in neonatal and maternal health.
- Representatives from the district health office, the facility administration, clinical staff from the departments of neonatology/ pediatrics, obstetrics, midwifery/nursing, anesthesia, pathology, pharmacy and statistics, as well as community members

Roles and responsibilities:

- Help initiate the case review and mortality audit process and decide on the approach and its scope
- Oversee data collection (identify all facility deaths), perform data analysis and case selection for review meetings
- Develop a schedule for the audit meetings, invite participants and ensure adequate facilitation;
- Develops recommendations (immediate/medium/longer term); oversees and monitors implementation of recommendations
- Assist with dissemination of recommendations and advocate for their implementation.

District level perinatal mortality audit steering committee

Who?

District public health office, hospital directors, community members, representatives from health professional associations, researchers, UN agencies, INGOs, programme managers, civil society.

Roles and responsibilities

1. Supports formulation, follow-up and monitoring of audit recommendations, including district-level actions
2. Sends summary of data (abstraction tool) to national level for national reporting and aggregated analyses
3. Produce annual report on district perinatal mortality, identify epidemiological trends that need immediate interventions, and share the analysis and actions plans with the facility and national levels

National level perinatal mortality audit steering committee

Who?

Led by the MoH, representatives from health professional associations, epidemiologists, researchers, UN agencies, INGOs, civil society, parents' groups and high-level policy-makers.

Roles and responsibilities

1. Analyse data based on the monthly reporting format, on a semester or annual basis, to profile districts, and identify epidemiological trends that need immediate attention
2. Analyse reports from region/state/district on a semester or annual basis, track actions taken, check report quality, identify areas for improvement and provide feedback to region/state/district
3. Develop a schedule for national level audit meetings, invite participants and ensure adequate facilitation
4. Based on the findings of the analysis, design appropriate responses to improve the situation.
5. Produce annual reports by region/ state/ districts which profiles cause of death, key interventions/actions identified, status of implementation, trend in that year, compared to previous year, priorities for the next year.
6. Develop recommendations (immediate/longer term), oversee and monitor implementation of recommendations
7. Present findings of the perinatal mortality audit at relevant forums
8. Assist with dissemination of recommendations and advocate for their implementation

Illustrative composition of a facility-based committee

- Moderator or chairperson
- Presenter
- Secretary
- Data manager
- Members

Role of the Moderator or Chairperson

- Convene the perinatal mortality committee at regular intervals
- Facilitate discussion and encourage respectful and open discussion
- Establish ground rules and remind participants of the code of conduct including confidentiality, and no blame principle.
- Lead review of previous meeting's recommendations and status updates

Role of the Presenter (does not always have to be the same person)

- Identify all perinatal deaths

- Gather all information relevant to the cases to be reviewed
- Conduct the interviews with staff involved with case
- Present summary of clinical cases under review at committee meetings
- Complete relevant forms

Role of the secretary

- Work with the chair to prepare the agenda for the meeting
- In consultation with presenter, ensure relevant documents are available for the review meeting
- Summarize the case analysis
- Sends completed form to appropriate person focal point
- Develop and share report of the review meeting

Role of the data manager

- Periodically review data trends
- Monitor data input quality
- Input data into database
- Send data to receiving parties (MoH, etc.)
- Dashboard development and data visualization

Role of the members

- Participate in review of perinatal deaths in the facility
- Recommend and participate in implementation of action plans
- Ensure confidentiality of meeting proceedings
- Ensure linkages with any other ongoing QI/MDSR teams or initiatives, if not a combined MPDSR/QI team

DAY 1 SESSION 7: FORMING AND STRENGTHENING PERINATAL MORTALITY REVIEW TEAMS

SESSION PLAN

DURATION: 65 minutes

SESSION OBJECTIVES:

The objectives of the session are:

1. Learn how to form or strengthen existing QI or MDSR or MPDSR committees at health facilities to optimize PDR processes?
2. Learn how to form or strengthen existing QI or MDSR or MPDSR committees at district level to optimize PDR processes?
3. Describe existing and/or potential linkages between MPDSR and quality improvement (QI) structures at facility and district level?

Methods and activities	Materials/Resources
Introduction and review the session objectives (5 min)	Hand out roles and responsibilities.
Exercise: Forming and strengthening PDR teams, including roles and responsibilities (30 minutes)	

• Ask learners to divide into small groups based on whether they work at the facility or district level. Facilitator will distribute a copy of the handout to each learner group. Team will complete the exercise
Summary and Synthesis (30 min) • Regroup to share summary of individual group discussions • Synthesize group outputs based on session objectives • Highlight different ways that perinatal mortality reviews can be strengthened at facility and district level based on existent structures and enabling factors
Assignment - Ask learners to review the recording forms located in Day 2 session 2 Remind learners the start time for day 2.

EXERCISE: FORMING OR STRENGTHENING M(P)DSR TEAMS AND PROCESSES

Please check one of the boxes below to indicate which level you are representing:

☐District Group

☐Facility Group

Committee structures, members and roles

1. What types of committee structures exist in your facility/district to support perinatal mortality review processes? Check all that apply for members of your group:

   ☐Joint (combined) MNDSR/M(P)DSR/QI committee

   ☐Separate MPDSR, MNDSR, PMR and QI committees

   ☐MPDSR committee only (no QI)

   ☐PMR committee only (no QI)

   ☐QI committee only (no MPDSR)

2. Reflect on the key tasks of a committee that supports MDSR processes in a facility or district and list the key staff who should participate in a facility/district committee. Please briefly note the rationale for each member.

Titles of essential staff to participate on committee supporting M(P)DSR processes	Rationale

3. List the key roles needed in your committee to optimize Perinatal Mortality Review processes (e.g. chairperson, secretary, data manager, etc.) (See illustrative roles in handout; Note: you may want to return to this question after completing questions below)

4. How will you promote linkages between death audits and quality improvement processes in your facility or district?

Meeting logistics:

5. Frequency – How often will your facility QI, PMR or MPDSR team meet to support death audits and PMR processes (weekly, monthly, quarterly, every time a death occurs)?

6. How long will meetings last?

7. How will you document meeting proceedings with respect to perinatal deaths (please be specific)?

8. Will meeting proceedings on death audits be shared with anyone? If so, with whom? How often?

9. How will you ensure confidentiality of perinatal death reviews meetings (please be specific)?

6-Step death audit cycle:

10. How will you identify all perinatal deaths in your facility (please be very specific)?

11. How will you complete death review forms? What forms will you use, and which staff and/or team member(s) will be responsible for completion of death review forms?

12. How will you review deaths as a team? Will you support a full audit of every perinatal death or will you audit a sample of perinatal deaths? If sample, how will you choose which sample?

13. How will you define/develop recommended actions ("responses") based on preventable factors? Will you use a standardized approach and, if yes, what approach?

14. How will you ensure implementation of recommended actions (please be as specific as possible)?

15. How will you monitor implementation of specific recommendations from audit(s)?

Surveillance and analysis of trends: maternal deaths and causes, complications, common preventable factors and recommendations based on audits:

16. How and who will track trends in perinatal deaths and causes, including proportion of deaths due to specific causes and the occurrence of specific complications? What about trends in modifiable factors? Will this be a task for the PMR team or MPDSR or QI team and, if yes, how will you organize?

17. What data sources are available to track trends in numbers and causes of deaths and how will these be used (e.g. audits, CRVS, HMIS)?

18. How and who in your facility/on your team will track trends in modifiable factors and recommended actions based on audits

HANDOUT: ILLUSTRATIVE ROLES AND RESPONSIBILITIES OF FACILITY BASED PERINATAL DEATH REVIEW COMMITTEE

Role	Responsibilities	Skills	Reports to / consults with
Chairperson	• Convene the perinatal mortality committee at regular intervals • Facilitate discussion and encourage respectful and open discussion • Establish ground rules and remind participants of the code of conduct including confidentiality, and no blame principle. • Lead review of previous meeting's recommendations and status updates	Facilitation Listening	District manager. MOH
Presenter	• Identify all perinatal deaths • Gather all information relevant to the cases to be reviewed • Conduct the interviews with staff involved with case • Present summary of clinical cases under review at committee meetings • Complete relevant forms	Tact, sensitive, attention to detail	Secretary
Secretary	• Work with the chair to prepare the agenda for the meeting • In consultation with presenter, ensure relevant documents are available for the review meeting • Summarize the case analysis	Writing, coordination of tasks,	Moderator/Chair, presenter

	• Sends completed form to appropriate person focal point • Develop and share report of the review meeting		
Data manager	• Periodically review data trends • Monitor data input quality • Input data into database • Send data to receiving parties (MoH, etc.) • Dashboard development and data visualization	Monitoring and evaluation	Moderator/Chair, Presenter, Secretary
Members	• Participate in review of perinatal deaths in the facility • Recommend and participate in implementation of action plans • Ensure confidentiality of meeting proceedings • Ensure linkages with any other ongoing QI/MDSR teams or initiatives, if not a combined MPDSR/QI team	Clinical experts Interested in maternal and newborn health Can devote time and effort	

DAY 2: SESSION 1: REVIEW OF DAY ONE AND CHECK YOUR KNOWLEDGE

SESSION PLAN

DURATION: 30 minutes

SESSION OBJECTIVE:

Review content discussed over the past seven sessions.

Methods and activities	Materials/ Resources
Introduction (5 minutes) Share with learners that this session will focus on reviewing the content shared over the past six sessions Facilitate recap (20 minutes) Ask learners about the most important and practical things they learnt on day one that they can apply to their work once they go back.	
Summarize and revisit the parking lot (5 minutes) Wrap up session by asking the group if they have any questions or concerns	Parking lot flipcharts

DAY 2: SESSION 2: DOCUMENTATION FOR PERINATAL MORTALITY REVIEWS

SESSION PLAN:

TIME: 90 MINUTES

SESSION OBJECTIVES:

At the end of this session participants will be able to:

1. State the key components for documentation of perinatal mortality reviews.
2. Be well acquainted with the minimum set of perinatal indicators, births and deaths summary form, stillbirth and neonatal death review form.
3. Learn how to take effective meeting minutes
4. Determine the flow of information
5. Learn how to make effective case reports.

Methods and activities	**Materials/ Resources**
Introduction to forms (5 minutes) Explain to the learners that this session will be focussed on learning how to complete case summary using PMR forms	Form 1: minimum set of perinatal indicators form Form 2: Birth and death summary form Form 3: Stillbirth and neonatal death case summary form Case study summary Day 2. Session 1.pptx
Documentation of perinatal mortality reviews (30 minutes) • Using the Ppt, discuss key components of minimum set of perinatal indicators to collect for every perinatal death • Review the purpose and components of the birth and death summary form • Review the purpose and how to complete the Stillbirth and Neonatal Death Case Review Form • Learn how to take effective meeting minutes • Determine the flow of information	
• Walk learners through the prefilled form 3 using an example from the case study, highlight what information will be included in the case review form. (10 minutes)	Prefilled form 3. Case study handouts for participants

Methods and activities	Materials/ Resources
Activity (30 min) • In small groups, learners will complete the stillbirth and neonatal death case review forms using the case study examples (see files to the right). • The facilitator should move around the room to offer guidance and review the groups' progress.	Case studies for PDR orientation
Summarize (15 min) • Learners should report on their case study in the larger forum. • Ask other learners to share one way they could improve their case reports • Remind learners of the importance of complete documentation in a medical chart so an accurate case summary can be prepared	

Documentation of Perinatal death reviews:

There are four forms altogether:

1. Form 1: Minimum set of perinatal indicators to collect for all births and perinatal deaths
2. Form 2: Birth and death summary form
3. Form 3: Stillbirth and Neonatal Death Case Review Form
4. Meeting minutes and action items form

Minimum set of perinatal indicators to collect for all births and perinatal deaths (Form 1)

The Every Newborn action Plan specifies a minimum set of six essential pieces of information to collect on each birth and every neonatal death or stillbirth. This information should be collected for all births and deaths in your health facility.

a) Maternal age
b) Place of delivery
c) Mode of delivery
d) Birth weight
e) Gestational age
f) Birth outcomes

Why and when to complete the minimum set of perinatal indicators

Purpose: To identify the minimum elements that should be collected on every birth and death that occurs in the health-care facility.

Time of completion: The form should be completed as close to the time of birth and discharge/death as possible. This information should be compiled before or prior to the start of the perinatal mortality review meeting.

Form 1: Minimum set of perinatal indicators to collect for all births and perinatal deaths

Form 1 has four sections as follows:

1. Section 1: Identification: Mothers, baby, Facility name, district name
2. Section 2: Pregnancy progress and care: obstetric history, mothers age, type of pregnancy, # of ANC visits, HIV status, ART.
3. Section 3: Labour and birth: LMP DOB, time of birth, gestational age, method of determination, place of delivery, attendant at delivery, mode of delivery, sex of the baby, birth weight.
4. Section 4: Details of the death: date, time, type of death

Form 2: Birth and death summary form

The birth and death summary form has two sections:

Section 1:

1. Identification: facility name, which month, district name.
2. Births: total births, stillbirths, neonatal deaths (total #)
3. Multiple pregnancies
4. Born before arrival: total #
5. Mode of delivery: total #
6. Gestational age
7. HIV status
8. Syphilis serology
9. Maternal age

Section 2: Cause of death:

1. Antepartum stillbirth: Congenital, antepartum complications, intrapartum complications, complications of prematurity, infection, other and Unknown/Unspecified
2. Intrapartum stillbirths: Congenital, antepartum complications, intrapartum complications, complications of prematurity, infection, other and Unknown/Unspecified
3. Neonatal deaths: Congenital, antepartum complications, intrapartum complications, complications of prematurity, infection, other and Unknown/Unspecified

Form 3: Stillbirth and Neonatal Death Case Review Form

The Stillbirth and Neonatal Death case review form has five sections.

Section1: Identification: Mothers id, baby's id, facility name, district name.

Section 2: Pregnancy progress and care: Obstetric history, mothers age, type of pregnancy, ANC visits, HIV status, ART

Section 3: Labour and birth: LMP, DOB, Time of birth, Gestational age, Method of determination, place of delivery, attendant at delivery, mode of delivery, onset of labour, FHR on admission, partograph use, model of delivery, Apgar score (1 and 5 minutes), Resuscitation with bag and mask, Sex of the baby and birth weight.

Section 4: Details of the death: Date, time, type of death, cause of death.

Section 5: Critical delays and modifiable factors.

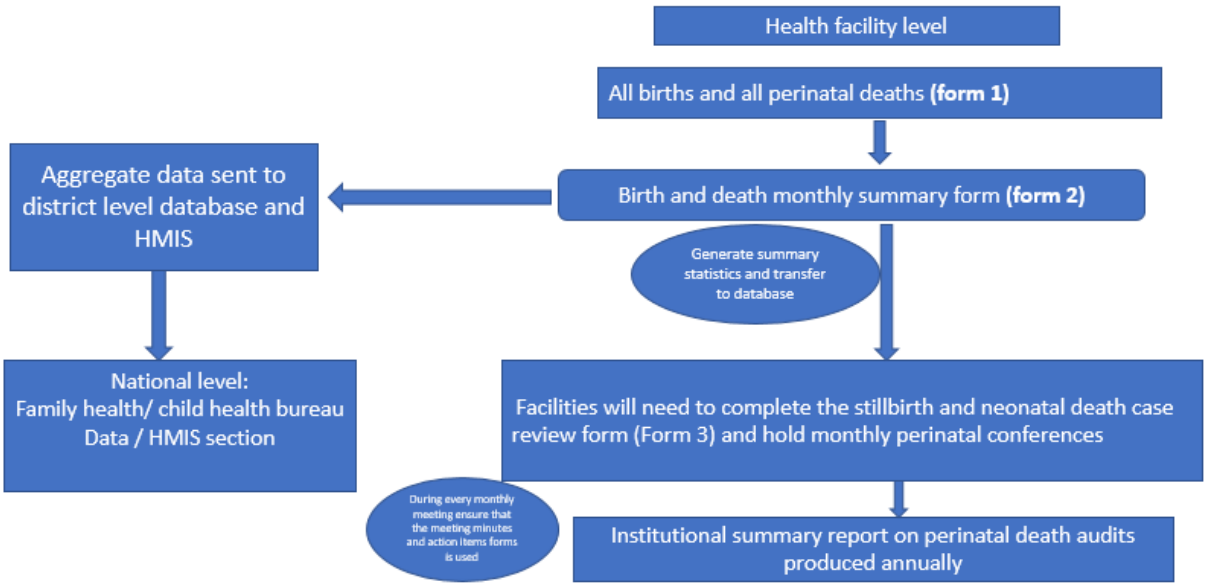
- 5.1: Critical delays: Delay 1,2 or 3.
- 5.2: Modifiable factors: Family related, administration-related, provider-related, others.

Actions taken to address the critical delays and modifiable factors

Forms completed by: ……..

Date: ……..

Determining the flow of information: How does information flow in the perinatal mortality review system:



Meeting minutes and action items form:

The meeting minutes and action items form has the following sections:

1. Identification information
2. Statistics (To be filled before the start of the meeting)
    - No of women who delivered during the month

- Number of babies born
- Preterm birth rate (<37 weeks) %
- Low birth weight rate (<2500 grams) %
- Caesarean section rate %
- Assisted vaginal delivery %
- Antepartum stillbirth rate
- Intrapartum stillbirth rate
- Neonatal mortality rate

3. Details of cases discussed: Main causes, modifiable factors
4. Action plans
5. Date of the next meeting

When to complete meeting minutes and action items form: During the meeting. Do not leave to a later date.

When to circulate: Within 72 hours, type up and stored electronically and circulated to all via email.

Responsible: Chairperson

Details of the case: For main causes enter short summary. For example: Case X.N; No 1234, intrapartum stillbirth 2.5 kgs., ruptured uterus**.** If additional presentation, attach in the back of the meeting minutes

- What were main modifiable factors identified
- Action plans should be developed and documented
- During the following meeting, first review draft meeting minutes of the previous months' meeting and verify whether tasks have been completed and then proceed with new statistics/ case presentations.

DAY TWO SESSION 3: MONITORING AND ANALYSING PERINATAL DATA AND AUDIT TRENDS

SESSION PLAN:

DURATION: 100 minutes

SESSION OBJECTIVES:

1. Learn how to calculate, analyse perinatal mortality indicators
2. Practice monitoring and analysing trends in perinatal death audits at the facility level
3. Learn how to identify and classify modifiable factors.

Methods and activities	Materials/ resources
Introduction (5 minutes) • Review the session objectives • Tell learners that this session is about learning how to use PMR data analysis for improving QoC in facilities and identifying modifiable factors • Take the participants through the PowerPoint presentation. (25 minutes)	Day 2 session 3.pptx
• Ask learners to complete group work on analysing perinatal data (1 hour) • Review the answers with the group.	Group work data exercises. docx
• Summarise (10 minutes) • Discuss and answer any questions from the group	

Analyzing perinatal information

- Helpful to have an analysis plan for collected perinatal data
- Goal: To identify problems that may contribute to stillbirths and neonatal deaths, especially those that could have been prevented modified.
- Use both quantitative and qualitative methods for data collection.
    - Case notes are often limited so interviews will be helpful.
    - Provides a comprehensive view
    - Help the review committee identify priorities for action
- Qualitative and quantitative research methods: Provides a more comprehensive picture
- Quantitative: Geographic location, maternal risk factors, which babies at highest risk, identify trends in mortality rates and medical causes of deaths.
- Qualitative: contributing factors, barriers to care, insights into context of causes of perinatal deaths. For example:
    - Did the baby die because no one realized how sick it was or because the health centre was too far away?
    - Were the right medicines not administered or were they unavailable?

Minimum perinatal indicators: We recommend that six essential pieces of information are collected on each birth and death (ENAP 2014).

1. Maternal age
2. Place of delivery
3. Mode of delivery
4. Birth weight
5. Gestational age
6. Birth outcomes

Suggested indicators for review

1. Numbers of normal vaginal, assisted and caesarean deliveries;
2. Numbers of maternal deaths
3. Numbers of antepartum (or macerated), intrapartum (or fresh) stillbirths
4. Number of early neonatal deaths
5. Neonatal mortality rates.

6. The number of major complications during labour and birth,
7. Indications for caesarean section
8. Others can be added as per national context for example: birth weight, gestational age, Possible Serious Bacterial Illness rates

Data Analysis:

- Choose which indicators to improve and follow up over time
- Electronic data analysis systems such as Perinatal information systems can be designed to produce standardized tables, graphs and maps
- Quantitative and qualitative data analysis will allow for identification of patterns and trends of problems, both non-medical and medical, that lead to perinatal deaths.
- The interpretation of data and action in response to the results of the analysis is the responsibility of the mortality audit committee.
- Summary statistics can be compared against the expected numbers of stillbirths and neonatal deaths
- Distribution of births and deaths by their place of occurrence (home, hospital- public or private sector, level or type of hospital)
- Trends over time
- Seasonality of deaths
- Clustering of deaths at night or weekdays
- Geospatial analysis - access (roads, rivers etc.) and socio-demographic factors

How does Perinatal Problem Identification program (PPIP) work?

- Clinician driven
- All deaths discussed at M&M meetings
- Data entered into PPIP electronically into an open source software.
- Denominator uses district/geographical specific area information (rates per region and per hospital)
- >85% of total births in South Africa analyzed in PPIP
- Further details are available at www.ppip.co.za
- PPIP has an Easy interface to build a health pyramid

Note to facilitators: Some examples of outputs in PPIP have been shown in the PowerPoint.

How to calculate trends at the facility level:

Indicator	Numerator	Denominator	Unit
Stillbirth rate	Number of stillbirths	Total births (stillbirths +livebirths)	1000
Percentage of stillbirths that are antepartum	Number of intrapartum stillbirths/	Total number of stillbirths	100
Early neonatal mortality rate	Early neonatal deaths (1-7 days)	Number of live births	1000
Perinatal mortality rate	Number of stillbirths +early neonatal deaths (1-7 days)	Total births (stillbirths +livebirths)	1000
Neonatal Mortality rate	Neonatal deaths (1-28 days)	Number of live births	1000
Maternal mortality ratio	Number of maternal deaths	Number of live births	100,000
Caesarean section rate (all births)	Number of caesarean section deliveries	Total births (stillbirths +livebirths)	100
Number of assisted deliveries (all births)	Number of assisted deliveries	Total births (stillbirths +livebirths)	100
Low birth weight rate (live births)	Number of babies being born weighing < 2500 grams	Number of live births	1000
Preterm rate (live births)	Number of babies born before 37 weeks gestational age	Number of livebirths	100

Identifying and classifying modifiable factors

- A modifiable factor is something that may have prevented the death if a different course of action had been taken.
- Often due to missed opportunities within the health system.
- They represent potential for positive change.
- Documenting these modifiable factors and analyzing them is an important priority of perinatal death reviews.
- Participants should work together to highlight critical delays and modifiable factors, that can be targeted with appropriate interventions.

What could actually be done to prevent a critical delay or avoidable factor?

Modifiable factors are often discussed in terms of delays in care and in levels of system failure. Many ways to identify modifiable factors.

The Swiss cheese model:

- Constant tension of defenses versus failures
- What is our standard care, and did we achieve that?
- Latent failures versus active failures
- Was our case based on national guidelines?
- Resist jumping to conclusions?
- Question how things are supposed to work versus how they actually worked?
- Reveal vulnerabilities

Three delays model:

Delay 1: Delay in the decision to seek care. For e.g.: a woman may labour at home for too long because she and/or her family are afraid to come for care, are concerned about the cost of care, or do not recognize developing problems.

Delay 2: Delay in reaching care. For e.g.: a labouring woman may not be able to find or afford expedient transportation to a health-care facility.

Delay 3: Delay in receiving adequate care. For e.g.: a labouring woman may arrive at a hospital without any clinicians available to provide care to her, or transfer between lower and higher-level facilities may take too long to provide effective care and prevent stillbirth.

Patient–Provider–System model

Family level: Did the family of a victim of neonatal death not understand when to seek care for their infant? Should families in their community be targeted with an educational campaign or provided with resources to help them get to care sooner?

System level: Was transfer between lower- and higher-level facilities inhibited by administrative barriers? Was there a stock-out of any needed medicines or equipment?

Provider level: Was a health-care provider unable to give adequate resuscitation? Are there needs for additional training or resources for providers?

For example: If a baby dies of congenital syphilis, and the mother did not attend antenatal care, then the modifiable factor would most likely have been related to family- or patient level factors. However, if the mother attended the antenatal clinic but the health worker failed to screen her for syphilis or failed to collect the result and treat her, then the avoidable factor would have been provider-related. Finally, if the mother attended antenatal clinic, and the health worker wanted to screen her for syphilis but either transport or the facilities to perform the test were not available, then the modifiable factor would have been system-related.

Root cause analysis:

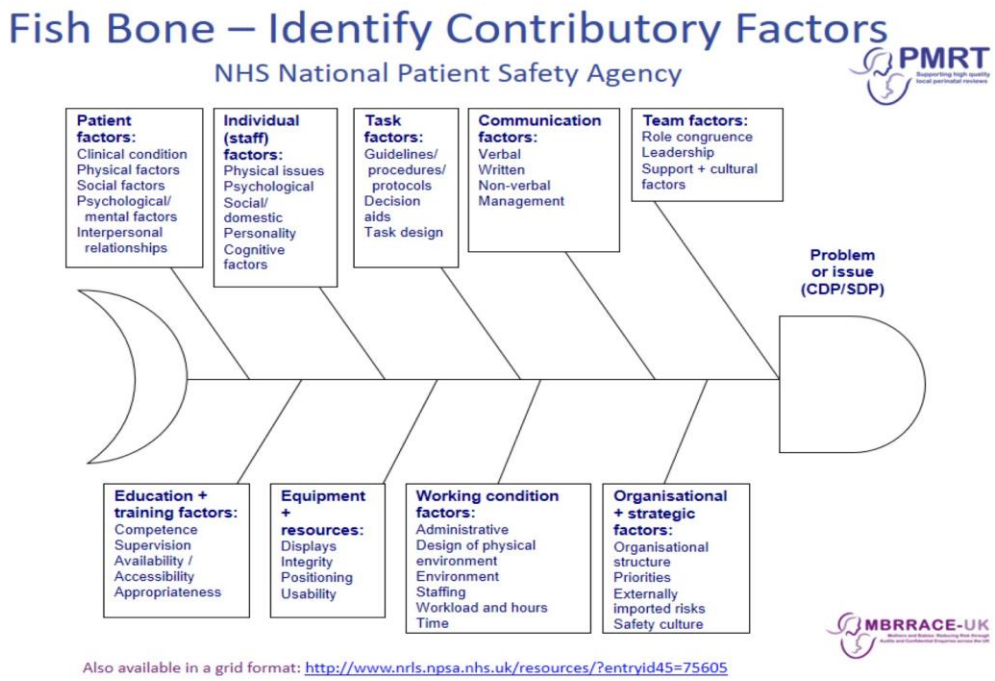
- Define the event
- Identify contributing factors
- Consider each contributing factor
- If contributing factor large or too complex sub-categories are needed
- Create an action plan

A root cause analysis is done through these steps:

1. Record the event at the head
2. Brainstorm contributing factors
3. Record the contributing factors at the end of the bones in a box
4. Brainstorm contributing causes within each contributing factors
5. Record contributing causes on the veins
6. Brainstorm contributing sub-causes on the sub-veins (break down larger contributory causes into sub-causes)
7. Create action targets and develop actionable solutions (circle factors are within their sphere of influence- action targets)

8. Create action spears (who, what, when action)

Figure 5: Example of a fishbone analysis



5 "Why's" Approach

Simple brainstorming approach that can help QI teams identify the root cause(s) of a problem.

Once a general problem has been recognized, use the Fishbone Diagram to ask 'why' questions to drill down to the root causes.

Allows teams to move beyond obvious answers and reflect on less obvious explanations.

For example: A woman undergoing a caesarean-section did not receive antibiotic prophylaxis.

- WHY? The antibiotic was not available in the theatre.
- WHY? The physician did not write a prescription.
- WHY? The physician was unaware of the current protocol.
- WHY? The physician was new and had not been oriented to the clinical protocols.
- WHY? The facility does not have an orientation programme for new physicians

Group work: Please calculate the following:

1. Stillbirth rate
2. Percentage of antepartum stillbirths
3. Early neonatal mortality rate
4. Perinatal mortality rate
5. Neonatal mortality rate
6. Maternal mortality ratio
7. Caesarean section rate (for all births)
8. Assisted delivery rate (for all births)
9. Low birth weight (live births)
10. Preterm rate (live births)

Dummy data for group work- calculating rates.

S. No	Indicator	Numbers
A	Number of deliveries	1000
B	Number of live births	880
C	Number of stillbirths	20
D	Number of intrapartum stillbirths	12
E	Number of antepartum stillbirths	8
F	Early neonatal deaths (0–7 days)	14
G	Neonatal deaths (0–28 days)	18
H	Maternal deaths	2
I	Number of caesarean section deliveries	150

J	Number of assisted deliveries	100
K	Number of babies born weighing < 2500 g	200
L	Number of babies born < 37 weeks gestational age	140

Answer key: Group work- calculating rates

Stillbirth rate	(C/A) *1000	20.0
Percentage of stillbirths that are antepartum	(D/C) *100	60%
Early neonatal mortality rate	(F/B) *1000	15.9
Perinatal mortality rate	((C+F)/A) *1000	34.0
Neonatal mortality rate	(G/B) *1000	20.5
Maternal mortality ratio	(H/B) *100,000	227.3
Caesarean section rate (all births)	(I/A) *100	15%
Assisted delivery rate (all births)	(J/A) *100	10%
Low birth weight rate (live births)	(K/B) *1000	23%
Preterm rate (live births)	(L/B) *100	16%

Data exercises for group work:

Below is a sample of a labour and delivery register of a referral hospital.

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
January	01/01/2017	10001	37	No	Spontaneous	CVD	2800	NA	NA	Alive
January	01/01/2017	10002	38	No	Spontaneous	CVD	2400	NA	NA	Alive
January	03/01/2017	10003	28	No	Induced	CVD	1200	AP-SB	03/01/2017	Alive
January	03/01/2017	10004	38	No	Spontaneous	CVD	2800	NA	NA	Alive
January	04/01/2017	10005	39	No	Spontaneous	CVD	2400	NA	NA	Alive
January	06/01/2017	10006	24	Yes	Induced	CVD	530	AP-SB	06/01/2017	Alive
January	06/01/2017	10007	43	No	Induced	C/S	2600	NA	NA	Alive
January	11/01/2017	10008	39	No	Induced	CVD	2750	NA	NA	Alive
January	14/01/2017	10009	37	No	Spontaneous	CVD	2800	NA	NA	Alive

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
January	15/01/2017	10010	38	No	Induced	C/S	3500	NA	NA	Alive
January	16/01/2017	10011	34	No	Spontaneous	CVD	3800	END	19/01/2017	Alive
January	18/01/2017	10012	41	No	Induced	CVD	1700	IP-SB	18/01/2017	Dead
January	26/01/2017	10013	34	No	Spontaneous	CVD	3800	END	29/01/2017	Alive
January	28/01/2017	10014	38	No	Induced	C/S	3500	NA	NA	Alive
February	01/02/2017	10015	39	No	Spontaneous	CVD	2400	NA	NA	Alive
February	02/02/2017	10016	24	Yes	Induced	CVD	530	AP-SB	02/02/2017	Alive
February	03/02/2017	10017	37	No	Spontaneous	CVD	2800	NA	NA	Alive
February	04/02/2017	10018	38	No	Spontaneous	CVD	2400	NA	NA	Alive
February	06/02/2017	10019	37	No	Spontaneous	CVD	2800	NA	NA	Alive

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
February	07/02/2017	10020	38	No	Induced	C/S	3500	NA	NA	Alive
February	08/02/2017	10021	37	No	Spontaneous	CVD	2800	NA	NA	Alive
February	11/02/2017	10022	38	No	Induced	C/S	3500	NA	NA	Alive
February	12/02/2017	10023	38	No	Induced	CVD	1700	IP-SB	12/02/2017	Alive
February	13/02/2017	10024	34	No	Spontaneous	CVD	3800	END	19/01/2017	Alive
February	14/02/2017	10025	38	No	Induced	C/S	3500	NA	NA	Alive
February	15/02/2017	10026	39	No	Spontaneous	CVD	2400	NA	NA	Alive
February	16/02/2017	10027	24	Yes	Induced	CVD	530	AP-SB	16/02/2017	Alive
February	19/02/2017	10028	31	No	Spontaneous	CVD	1900	END	22/02/2017	Alive
February	22/02/2017	10029	36	No	Spontaneous	CVD	3000	NA	NA	Alive

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
February	23/02/2017	10030	43	No	Induced	C/S	2600	NA	NA	Alive
February	24/02/2017	10031	39	No	Induced	CVD	2750	NA	NA	Alive
February	24/02/2017	10032	37	No	Spontaneous	CVD	2800	NA	NA	Alive
February	25/02/2017	10033	38	No	Induced	C/S	3500	NA	NA	Alive
February	26/02/2017	10034	34	No	Spontaneous	CVD	3800	END	28/02/2017	Alive
February	27/02/2017	10035	38	No	Induced	CVD	1700	IP-SB	27/02/2017	Alive
February	28/02/2017	10036	34	No	Spontaneous	CVD	3800	END	29/02/2017	Alive
March	01/03/2017	10037	38	No	Induced	C/S	3500	NA	NA	Alive
March	01/03/2017	10038	39	No	Spontaneous	CVD	2400	NA	NA	Alive
March	02/03/2017	10039	24	Yes	Induced	CVD	530	AP-SB	02/03/2017	Alive

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
March	03/03/2017	10040	37	No	Spontaneous	CVD	2800	NA	NA	Alive
March	06/03/2017	10041	38	No	Spontaneous	CVD	2400	NA	NA	Alive
March	07/03/2017	10042	37	No	Spontaneous	CVD	2800	NA	NA	Alive
March	08/03/2017	10043	38	No	Induced	C/S	3500	NA	NA	Alive
March	08/03/2017	10044	38	No	Spontaneous	CVD	2400	NA	NA	Alive
March	09/03/2017	10045	37	No	Spontaneous	CVD	2800	NA	NA	Alive
March	10/03/2017	10046	38	No	Induced	C/S	3500	NA	NA	Alive
March	11/03/2017	10047	36	No	Spontaneous	CVD	3000	NA	NA	Alive
March	14/03/2017	10048	37	No	Spontaneous	CVD	2800	NA	NA	Alive
March	14/03/2017	10049	38	No	Induced	C/S	3500	NA	NA	Alive

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
March	18/03/2017	10050	37	No	Spontaneous	CVD	2800	NA	NA	Alive
March	22/03/2017	10051	38	No	Spontaneous	CVD	2400	NA	NA	Alive
March	24/03/2017	10052	38	No	Induced	C/S	3500	NA	NA	Alive
April	01/04/2017	10053	36	No	Spontaneous	C/S	3300	NA	NA	Alive
April	01/04/2017	10054	37	No	Spontaneous	CVD	2800	NA	NA	Alive
April	03/04/2017	10055	38	No	Spontaneous	CVD	2400	NA	NA	Alive
April	03/04/2017	10056	37	No	Spontaneous	CVD	2800	NA	NA	Alive
April	05/04/2017	10057	38	No	Spontaneous	CVD	2400	NA	NA	Alive
April	08/04/2017	10058	37	No	Spontaneous	CVD	2800	NA	NA	Alive
April	09/04/2017	10059	38	No	Induced	C/S	3500	NA	NA	Alive

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
April	10/04/2017	10060	37	No	Spontaneous	CVD	2800	NA	NA	Alive
April	13/04/2017	10061	38	No	Induced	C/S	3500	NA	NA	Alive
April	13/04/2017	10062	37	No	Spontaneous	CVD	2800	NA	NA	Alive
April	17/04/2017	10063	38	No	Spontaneous	CVD	2400	NA	NA	Alive
April	18/04/2017	10064	37	No	Spontaneous	CVD	2800	NA	NA	Alive
April	19/04/2017	10065	38	No	Induced	CVD	1700	IP-SB	19/04/2017	Dead
April	20/04/2017	10066	37	No	Spontaneous	CVD	2800	NA	NA	Alive
April	21/04/2017	10067	38	No	Spontaneous	CVD	2400	NA	NA	Alive
April	22/04/2017	10068	37	No	Spontaneous	CVD	2800	NA	NA	Alive
April	25/04/2017	10069	38	No	Induced	C/S	3500	NA	NA	Alive

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
April	26/04/2017	10070	39	No	Spontaneous	CVD	2400	NA	NA	Alive
April	27/04/2017	10071	43	No	Induced	C/S	2600	NA	NA	Alive
April	28/04/2017	10072	38	No	Induced	C/S	3500	NA	NA	Alive
May	01/05/2017	10073	38	No	Induced	C/S	3500	NA	NA	Alive
May	01/05/2017	10074	37	No	Spontaneous	CVD	2800	NA	NA	Alive
May	01/05/2017	10075	38	No	Induced	C/S	3500	NA	NA	Alive
May	02/05/2017	10076	38	No	Spontaneous	CVD	2400	NA	NA	Alive
May	02/05/2017	10077	36	No	Spontaneous	CVD	3000	NA	NA	Alive
May	03/05/2017	10078	37	No	Spontaneous	CVD	2800	NA	NA	Alive
May	04/05/2017	10079	38	No	Induced	C/S	3500	NA	NA	Alive

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
May	05/05/2017	10080	37	No	Spontaneous	CVD	2800	NA	NA	Alive
May	06/05/2017	10081	38	No	Spontaneous	CVD	2400	NA	NA	Alive
May	07/05/2017	10082	38	No	Induced	C/S	3500	NA	NA	Alive
May	08/05/2017	10083	36	No	Spontaneous	C/S	3300	NA	NA	Alive
May	09/05/2017	10084	37	No	Spontaneous	CVD	2800	NA	NA	Alive
May	10/05/2017	10085	38	No	Spontaneous	CVD	2400	NA	NA	Alive
May	10/05/2017	10086	43	No	Induced	C/S	2600	NA	NA	Alive
May	15/05/2017	10087	39	No	Induced	CVD	2750	NA	NA	Alive
May	16/05/2017	10088	37	No	Spontaneous	CVD	2800	NA	NA	Alive
May	17/05/2017	10089	38	No	Induced	C/S	3500	NA	NA	Alive

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
May	18/05/2017	10090	24	Yes	Induced	CVD	530	AP-SB	18/05/2017	Alive
May	22/05/2017	10091	37	No	Spontaneous	CVD	2800	NA	NA	Alive
May	23/05/2017	10092	38	No	Spontaneous	CVD	2400	NA	NA	Alive
May	24/05/2017	10093	37	No	Spontaneous	CVD	2800	NA	NA	Alive
May	25/05/2017	10094	38	No	Induced	C/S	3500	NA	NA	Alive
May	26/05/2017	10095	37	No	Spontaneous	CVD	2800	NA	NA	Alive
May	27/05/2017	10096	38	No	Induced	C/S	3500	NA	NA	Alive
June	01/06/2017	10097	38	No	Induced	CVD	1700	IP-SB	01/06/2017	Alive
June	02/06/2017	10098	34	No	Spontaneous	CVD	3800	END	04/06/2017	Alive
June	03/06/2017	10099	38	No	Induced	C/S	3500	NA	NA	Alive

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
June	04/06/2017	10100	39	No	Spontaneous	CVD	2400	NA	NA	Alive
June	05/06/2017	10101	24	Yes	Induced	CVD	530	AP-SB	05/06/2017	Alive
June	06/06/2017	10102	31	No	Spontaneous	CVD	1900	END	08/06/2017	Alive
June	07/06/2017	10103	36	No	Spontaneous	CVD	3000	NA	NA	Alive
June	08/06/2017	10104	38	No	Induced	CVD	1700	IP-SB	08/06/2017	Alive
June	09/06/2017	10105	34	No	Spontaneous	CVD	3800	END	12/06/2017	Alive
June	12/06/2017	10106	38	No	Induced	C/S	3500	NA	NA	Alive
June	16/06/2017	10107	39	No	Spontaneous	CVD	2400	NA	NA	Alive
June	23/06/2017	10108	24	Yes	Induced	CVD	530	AP-SB	23/06/2017	Alive
June	24/06/2017	10109	31	No	Spontaneous	CVD	1900	END	25/02/2017	Alive

Month	Date	Mothers id	Gestational age (weeks)	HIV status	Onset of labour	Delivery type	Birth weight (gms)	Type of death	Date of neonatal death	Maternal outcome
June	29/06/2017	10110	36	No	Spontaneous	CVD	3000	NA	NA	Alive

Based on the information in the register above, tally the following for each months January-June

	Jan	Feb	Mar	Apr	May	Jun	Six-month total
Number of deliveries	14	22	16	20	26	14	112
Number of live births	9	14	15	19	23	6	86
Number of stillbirths	2	2	0	1	0	2	7
Number of intrapartum stillbirths	1	2	0	1	0	2	6
Number of antepartum stillbirths	1	0	0	0	0	0	1
Number of early neonatal deaths (1-7 days)	2	4	0	0	0	4	10
Number of neonatal deaths (1-28 days)	2	4	0	0	0	4	10
Maternal deaths	1	0	0	1	0	0	2
Number of C/S deliveries	3	5	5	6	9	2	30
Number of assisted deliveries	0	0	0	0	0	0	0
Number of babies weighing less than 2500 grams	4	8	5	6	4	6	33
Number of babies born before <37 weeks of gestation	4	5	2	1	2	6	20

Now complete calculations for the following indicators for the three months at the large referral hospital in 2017.

	Indicators	**Rate**
1.	Stillbirth rate	7/112x1000=62.5 per 1,000 births
2.	Percentage of stillbirths that are antepartum	1/7x100=14.2%
3.	Percentage of stillbirths that are intrapartum	3/7x100=42.8%
4.	Early neonatal mortality rate	10/86x1000=116.2 per 1,000 live births
5.	Perinatal mortality rate	17/112x1000=192.3 per 1,000 births
6.	Neonatal mortality rate	10/86x1000=116.3 per 1,000 live births
7.	Maternal mortality ratio	2/86x100,000=2,325 per 100,000 live births
8.	Caesarean section rate (all births)	30/112x100=26.7%
9.	Assisted delivery rate (all births	NA
10.	Low birth weight (live births)	33/86x100=38.3%
11.	Preterm birth rate (live births)	20/86x100=23.2%

DAY TWO SESSION 4: RECOMMENDING AND IMPLEMENTING SOLUTIONS

SESSION PLAN:

DURATION: 30 minutes

SESSION OBJECTIVES:

The objectives of the session are:

1. Learn how to prepare SMART recommendations to address modifiable factors that lead to preventable neonatal deaths and stillbirths.
2. Learn how to disseminate recommendations from review meetings
3. Learn how to implement changes at the health facility level.
4. Learn factors responsible for success of perinatal death reviews.

Methods and activities	Materials/ resources
Introduction (5 minutes) • Review the session objectives • Tell learners that this session is about learning how to prepare SMART recommendations to address modifiable factors identified through the Perinatal Death Review process.	Day 2 session 4.pptx
• Take the participants through the PowerPoint presentation. (20 minutes) • Stress on the importance of closing the audit loop.	Day 2 session 4.pptx
• Summarize and answer any questions from the group (5 minutes)	

Introduction

- Country experiences of implementation suggests that perinatal death audits may be a useful tool for reducing stillbirths and neonatal deaths in facilities, and can improve QoC, as long as the audit loop can be closed.
- The ability to effectively implement recommendations identified through audits is pivotal for achieving any impact. When successful, audits can result in a 30% reduction in perinatal deaths.

Recommending solutions

- As data and trends are examined- patterns of problems become evident
- Moving from *problems to solutions* is an integral part of the process to prevent similar deaths in the future
- Solutions are dependent on individuals responsible for the investigation, the breadth of stakeholder involvement, the level of development and local resources
- Committees need the authority to determine what mixture of strategies is best suited to their needs.
- What are evidence based strategies required to address the main gaps in care that have been identified in the review process?
- *What went well and what could have been done better?*
- Solutions should always be SMART
- Assigning a designated person is useful- but assigning implementation and monitoring of tasks to individuals likely to reduce failure to follow through with action.
- A formal platform where review findings are presented should be created, if such a platform does not exist.
- Meeting minutes - essential and follow up on action items.
- Possible solutions include interventions at the level of health worker, health facility, wider health sector, at the level of families or communities.
- Facility based QI approaches are needed to bring about changes in clinical practice or modification of services at the level of systems for e.g.: how to provide the necessary drugs or coverage of trained personnel or establishment of clinical guidelines.
- Use findings to create a list of possible actions (during the review meeting)
- Problems must be prioritized based on the significance of their effect on prognosis, and on the feasibility of the actions necessary to solve them. What is achievable at the point of care?
- For e.g.: the problem of lack of monitoring during labour has a higher priority than the problem of inaccurate data in administrative records
- Recommendations may be specific to a health care provider (improved clinical practices) or health system (improved availability of drugs and commodities) or clinical governance (strengthen clinical guidelines)

Dissemination of review findings

- Important at multiple levels

- Audience: Anyone that can implement recommendations or make a difference towards improving quality of care
- Periodic reports – clear, easy to follow language, standard sections such as data audit trends covering births and deaths, causes and modifiable factors, recommendations and solutions enacted
- No blame and no link to individuals involved in care provision
- Context specific: Newsletters, email listserv, whatsapp groups
- Positive vignettes may also be useful for e.g.: cases of a near miss that were prevented because of an action developed by the audit committee.

Implementing change from Perinatal Death Reviews:

- Acting and implementing change is the entire reason for implementing the audit cycle
- Develop SMART recommendations
    - Immediate term: provider related - improving staffing ratios
    - Medium term: improved logistics supply, establish clinical guidelines.
    - Longer term: patient education, improved infrastructure or transport

- Who is responsible for implementing and monitoring change- maybe more than one person
- Start with things that are easily achievable and use audit meetings as advocacy tools to prompt administration to further action
- Modifiable factors within the control of health workers (detailed history taking, partograph use)
- Modifiable factors within the control of managers (ambulance availability, lack of equipment or supplies)
- Follow up on implementation of recommendations and monitor changes over time.
- Celebrate success and identify successful changes whenever they occur

Keep learning from excellence

- Analyzing cases from pre-conception to bereavement care will identify areas of good practice
- Important to highlight and recognize these areas amongst staff and across wider hospital teams
- Formal process to share stories of excellent care are useful
- Compendium of successful stories
- Use successful stories for advocacy
- How were you able to successfully engage the QI committee to conduct case reviews and determine whether recommendations were being acted upon?
- How to involve opinion leaders to champion the process
- How to strengthen health worker capacity to provide better QoC?

Factors for success

- Proactive institutional ethos that promotes learning as a crucial part of improving QoC
- Supportive political and policy environment at the national or the local level
- Individual responsibility and a sense of ownership
- Leadership at all levels
- A skilled, independent and respected chairperson who is a champion for the process
- Task oriented meeting minutes: recommendations, suggested actions and focal person
- Starting with things under health worker control
- Following up on items that have not been completed
- Staff stability
- Good communication between departments
- Celebrating progress as and when it occurs

DAY TWO SESSION 5: EVALUATING AND REFINING

SESSION PLAN:

DURATION: 30 minutes

SESSION OBJECTIVES:

1. Learn about the importance of embedding periodic evaluations in perinatal death review programs?
2. Learn about some of the important questions for evaluation of perinatal death reviews?
3. Learn about important considerations for scaling up of the perinatal death review system?

Methods and activities	Materials/ resources
Introduction (5 minutes) • Review the session objectives • Tell learners that this session focuses on learning about the importance of embedding monitoring, evaluation and refinement in perinatal death review programs.	Day 2 session 5.pptx
• Take the participants through the PowerPoint presentation. (25 minutes)	Day 2 session 5.pptx
• Clarify any questions and highlight WHO resources on Making Every Baby Count: Audit and review of stillbirths and neonatal deaths and the WHO application of ICD-10 to deaths during the perinatal period: ICD PM	

Evaluation and refining:

- Final step of the audit cycle.
- Evaluation is a process that attempts to determine, as systematically and objectively as possible, the relevance, effectiveness and impact of activities in the light of their objectives
- Identify what worked and what did not; then refine and adapt the approach to improve the process?
- How successful was the audit cycle in identifying deaths, collecting, reviewing and analyzing the information and identifying the problems that contribute to stillbirths and neonatal deaths?
- Is the approach efficient in the way it functions, and has it successfully instituted beneficial practices?
- A before and after design is usually employed- has an improvement occurred after implementation of one or more changes?
- Systems that can provide real-time feedback linked to data showing longer term trends can be motivating for participants. For e.g.: trends showing reduction of IP stillbirths over a 5-year period after introduction of better intrapartum monitoring practices.

Important questions for evaluations

1. How can review meetings be improved and used more effectively?
2. How often and to whom is feedback given?
3. What are the gaps in our feedback procedures?
4. How can the feedback to service providers and senior management in the facility be improved?
5. How can engagement in the audit process, the use of the findings and the application of recommendations be improved?
6. How can feedback outside the facility be improved for e.g at district or provincial levels or in the community?
7. How can involvement from each of these levels be improved?
8. Who is responsible for keeping the audit system together, e.g. one person, a team, formally or informally designated?
9. Who is leading the audit? Who takes responsibility when the leader is not there? What kind of succession plan do we have?
10. How do staffing issues such as rotations and turnover influence the audit activities?

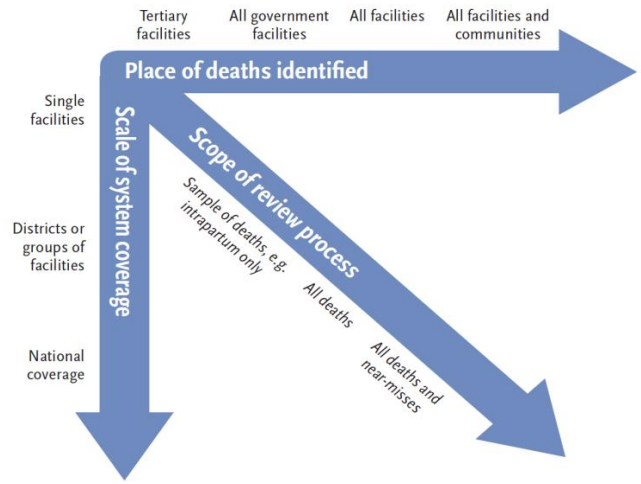
11. If lacking, how can staff stability be improved? What is our facility's responsibility in reaching out to another facility or facilities to introduce and establish an audit programme?

Evaluating and refining

- Ongoing M & E of whether recommendations are being acted upon and followed through.
- Routine monitoring of chosen QI indicators always necessary.
- In depth evaluations necessary in case:
    - Outcomes show no improvement despite actions being taken
    - Mortality rates are not decreasing.
- Mortality rates may not always be the best reflection of program success
- Changes in the types of delays or modifiable factors often more insightful.
- A more detailed evaluation can also be used to assess whether the system can function more efficiently.
- Ideally, there should also be a periodic evaluation of the quality of the information captured, particularly if the system is not linked to an HMIS and CRVS

Designing the perinatal death review system for scale up

- At the national level, policy directives should specifically endorse perinatal mortality audit as a strategy for reducing deaths and improving QoC.
- National guidelines for how to set up an audit committee and conduct meetings, clear guidance on information flows, and standardised tools are helpful.



Other resources:

There are many video resources available on perinatal death audit based on the Making Every Baby Count guide and the ICD-PM. If facilities are available, please show the following videos.

1. Setting up a death review committee: https://www.youtube.com/watch?v=aus5n0qQFgk&feature=youtu.be

2. The WHO application of ICD-10 to deaths in the perinatal period: ICD-PM https://www.youtube.com/watch?v=f1bZoOdjZyU&feature=youtu.be

3. Making every baby count. Audit and review of stillbirths and neonatal deaths https://www.youtube.com/watch?v=cZ6L53EYXgQ&feature=youtu.be

FINAL ASSESSMENT- INDIVIDUAL LEARNING PLAN

Learner: _____ Facilitator: _____ Date _____

Instructions: in the form given below, for each topic listed, assess your level of competency according to the scheme given below.

Level of competency scale	
Low (1)	Topic is new or unfamiliar to me
Moderate (2)	Learner is aware of the topic. Learner is knowledgeable but will benefit from additional knowledge on the topic.
High (3)	Learner is highly knowledgeable on the topic and may be able to provide additional insights during the workshop.

Learning Objectives	Level of competence	Facilitators Notes
Please give a rating based on your level of competence. Low—Moderate –high (1-2-3)		
19. Goals and Objectives of Perinatal Mortality Review		
20. Guiding principles for perinatal mortality reviews		
21. Common myths and misconceptions related to perinatal death reviews		
22. The relationship between Quality improvement processes and perinatal death reviews?		
23. What are the definitions of perinatal deaths?		
24. Why are perinatal death reviews important?		

25. What are modifiable factors that can lead to perinatal deaths?		
26. What are the six steps of mortality audit cycle?		
27. How do you start facility-based perinatal death review process?		
28. What is the composition and the functions of the perinatal death review team at the facility district and national levels?		
29. What are the key components for documentation of perinatal death reviews?		
30. What do we mean by minimum set of perinatal indicators?		
31. What is the flow of information?		
32. How do you monitor and analyse perinatal data and audit trends at the facility level?		
33. How do you identify and classify modifiable factors?		
34. How do you prepare recommendations to address modifiable factors and implement changes at the health facility?		
35. Why should you evaluate perinatal death review programs?		
36. What are important considerations for scaling up a perinatal death review system?		

Workshop Evaluation form:

1) What is your overall assessment of the event? (1 = insufficient - 5 = excellent)

1 2 3 4 5

2) Which topics or aspects of the workshop did you find most interesting or useful?

_____

_____

_____

_____

3) Did the workshop achieve the programme objectives?

Yes No

If no, why?

4) Knowledge and information gained from participation at this event?

Met your expectations Yes No Somehow

Will be useful/applicable in my work **Definitely** Mostly
Somehow Not at all

5) How do you think the workshop could have been made more effective?

6) Please comment on the organization of the event (from 1 = insufficient to 5= excellent)

1 2 3 4 5

7) Comments and suggestions (including activities or initiatives you think would be useful, for the future)

Further comments or suggestions

THANK YOU!

[i] Frøen JF, Friberg IK, Lawn JE, et al. Stillbirths: progress and unfinished business. Lancet 2016

[ii] Pattison et al. 2009

[iii] Allanson, B-WHO 2015;93:424-8

[iv] Lawn JE, Blencowe H, Pattinson R, et al, for The Lancet's Stillbirths Series steering committee. Stillbirths: Where? When? Why? How to make the data count? *Lancet* 2011; published online April 14. DOI:10.1016/S0140-6736(10)62187-3.