Introduction

This answer book provides all the correct responses to exercises conducted during the Maternal and Perinatal Death Surveillance and Response training. It will be provided to all participants at the end of the training, as a reference.

Module 1: Why did Mrs X die?

Practical 1

Q1: What was the direct cause of Mrs X's death?
   **Antepartum Haemorrhage**

Q2: Were there any indirect causes?
   **Anaemia**

Q3: What evidence did the review committees use to make changes in quality of care at the facility?

   **Staff MDR Review:** *Conducted a retrospective audit of files, including Mrs. X's, and also interviewed her family members in the community*

   **International Review (National Enquiry):** *Reviewed aggregated data from across facilities, including social and cultural issues related to access to family planning and gender roles and responsibilities.*

Q4: List 2 actions taken at Hospital level after the first review?
   - Improved blood supply
   - Increased availability of emergency services e.g. Caesarean Section
   - More trained midwives both for ANC and Delivery
### Practical 2

#### Exercise 1: Brainstorming exercise

On your **own**, in the next 5 minutes ....

1. List 2 main causes of maternal death during or immediately after childbirth in Ethiopia
2. List 2 main causes of perinatal death in Ethiopia
3. For each of these, what **social factors** contribute to them?

<table>
<thead>
<tr>
<th>Possible main causes of maternal death</th>
<th>Contributing social factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemorrhage</td>
<td>Poor nutritional status</td>
</tr>
<tr>
<td>Ruptured Uterus/ Obstructed Labour</td>
<td>Insufficient access to family planning</td>
</tr>
<tr>
<td></td>
<td>Too many closely spaced pregnancies</td>
</tr>
<tr>
<td>Sepsis</td>
<td>Lack of clean delivery and clean water</td>
</tr>
<tr>
<td></td>
<td>Unwanted pregnancy, followed by induced abortion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Possible main causes of Perinatal death</th>
<th>Contributing social factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth Asphexia</td>
<td>Laboring long at home</td>
</tr>
<tr>
<td></td>
<td>Lack of transport</td>
</tr>
<tr>
<td></td>
<td>Poor quality care in the health facility</td>
</tr>
<tr>
<td>Prematurity/ LBW</td>
<td>Poor maternal nutrition</td>
</tr>
<tr>
<td></td>
<td>Infection</td>
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<tr>
<td></td>
<td>Poverty</td>
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<tr>
<td></td>
<td>Lack of education</td>
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<td></td>
<td>High work load</td>
</tr>
<tr>
<td>Infections</td>
<td>Maternal infection</td>
</tr>
<tr>
<td></td>
<td>Lack of clean delivery and clean water</td>
</tr>
<tr>
<td></td>
<td>Poor infection prevention practice health facility</td>
</tr>
</tbody>
</table>
Coding maternal and perinatal deaths

Practical 3

Answer

ASSIGNING AN ID CODE: Answers will depend on the location of each participant’s home, but in regional trainings, the REGIONAL component of the code is likely to be the same for most correct answers, and the DATE should be the same of everyone. Therefore, the first code should END:

-08-06-01

The second answer is: AMH-HOS-FEL-09-10-P04

Identification of Deaths

Maternal Death Identification:

Example 1

A 24 year old woman delivered a large healthy baby at home. Two hours after delivery she was bleeding heavily with a fast pulse and low blood pressure. She died four hours after delivery.

ANSWER

- Yes, maternal death,
- direct (haemorrhage),
- should be reported

Example 2

A 36 year old woman is known to be about 6 months pregnant with her 5th pregnancy. She experiences dizziness and night sweats, shortness of breath and has been coughing blood stained sputum. The Doctor diagnosed tuberculosis and found she was HIV positive. She died at 7 months pregnancy of pneumonia.

ANSWER

- Yes, maternal death
- Indirect (HIV/TB are affected physiologically by pregnancy)
- Should be reported

Example 3

A 31 year old woman is 38 weeks pregnant with her 4th child. She is on her way to the local town walking along the main road with her children when a bus knocks her down. She is unconscious and dies 4 hours after the accident.
**Example 4**

A woman dies very soon after arriving at a health facility. She dies without having delivered, but health personnel at the facility were able to feel fetal parts on vaginal examination. The person accompanying her to the facility reported that she had pains for a day and a half, but could provide no further details.

**Answer**
- No, it is not a maternal death, as the death occurred from *incidental* causes
- Should be notified as a death to a woman of reproductive age, but no Verbal Autopsy is required

**Example 5**

A teenage girl is raped and worries she may be pregnant. Two days after the rape she tells a friend, who gets her some herbal medicine. Four hours after swallowing it she collapses and dies.

**Answer**
- Yes, it is a maternal death
- Direct (obstructed labour)
- Should be reported

**Example 6**

A teenage girl has unprotected sex and misses her next period. Her boyfriend gives her some herbal medicine to cause an abortion. Two days later she starts to bleed and 5 days after taking the medicine she becomes feverish and has a very offensive-smelling vaginal discharge. After another 2 days she collapses and dies.

**Answer**
- No/don’t know, it is not a maternal death- the most likely cause of death is poisoning.
- Should be notified as a death to a woman of reproductive age, but not Verbal Autopsy is required

**Example 7**

A teenager has unprotected sex and misses her next period. Her boyfriend gives her some herbal medicine to cause an abortion. Two days later she starts to bleed and 5 days after taking the medicine she becomes feverish and has a very offensive-smelling vaginal discharge. After another 2 days she collapses and dies.

**Answer**
- Yes this is a maternal death
- It is direct probably due to septic shock
- Should be reported
Perinatal death Identification

Example 1

A 24 year old woman, delivered a dead baby at home. She had felt no fetal movements for 5 days. The baby weighed 3kg and there were no signs of life. One week earlier she had had an ANC appointment when her fundal height had measured 34 cm.

**ANSWER**

- yes this is a perinatal death. It is a confirmed death
- This is a stillbirth probably antepartum
- Should be reported

Example 2

A 35yr old, known to be at full term, with a history of 4 stillbirths and 2 live births delivers a 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. Resuscitation is unsuccessful.

**ANSWER**

- yes this is a perinatal death. It is a suspected death
- This is a early neonatal death
- Should be reported

Example 3

A 28 year old farmer goes to the health centre with bleeding. She can’t remember her last period. She is admitted to labour ward and passes a baby that is 15cm long

**ANSWER**

- No, this is not a perinatal death.
- The fetus is too small and the history does not support a pregnancy of more than 7 months gestation.
- Should not be reported

Example 4

A baby that was born uneventfully at home becomes unwell at 23 days of age. He is lethargic and vomits for 2 days before dying at home.
ANSWER

• yes this is a perinatal death. It is a probable death as there is no information on gestational age
• This is a late neonatal death
• Should be reported

Example 5

A baby was born by Emergency Caesarean Section and shows no signs of life. The CS was done for fetal distress. The mother had pushing down pains and was 7cm dilated. The baby was covered with meconium.

Before the woman went into the Operating Room the fetal heart was heard at 100bpm.

ANSWER

• yes this is a perinatal probable death as there is no gestational age documented
• This is an intrapartum stillbirth
• Should be reported

Example 6

A woman delivers a baby weighing 3kg at a health centre and goes home. The baby develops breathing problems and despite receiving treatment dies after 32 days.

ANSWER

• No this is not a perinatal death, as it took place after 28 days.
• Should NOT be reported
Using the Identification & Notification Forms

Practical 5: No answers available for the identification forms as the information will depend on each individual’s made up information.

Investigation and Verification

Practical 6: No answers available for the verbal autopsy form as the information will depend on each group’s discussion

Practical 7: Facility level investigation using the Facility Based Abstraction Form

The following Date was only available on the anonymised case “BA” that was provided for the national ToT. If you use a different anonymised case, new answers will need to be provided.

Transfer of raw data from anonymised clinical notes to the Facility review form. This is an small group activity (2-3 people).

1. Using the notes provided on a perinatal death, complete as much of the facility based abstraction form as possible
2. Return the notes at the end of the session, as these are confidential

ANSWERS:

The following Date was only available on the anonimized case “BA”.

General information of the deceased:

1. Date and time of birth: 04/04/2009 EC at 9:14PM
2. Status of the newborn at birth: Alive
3. Date and time of perinatal death: 05/04/2009 EC at 300 am
4. Sex of the deceased: Male
5. Place of death: Hospital

General information of the mother:

1. Age: 25 years
2. Is the mother alive: Yes

General obstetric history of the mother:

1. Number of pregnancies: 1
ANC history of the mother during pregnancy:

1. ANC: Yes
2. Place of ANC: Unknown
3. Did the mother receive iron and TT?: Yes
4. Maternal disease or condition: Unknown

Intrapartum history of the mother:

1. GA: 42+5
2. Partograph use: No
3. Fetal heart beat during labor: Persistent Tachycardia
4. Mode of delivery: C/S
5. Place of birth: Hospital
6. Total duration of labor: 20 hours
7. Total duration of rupture of membranes: 4 hours
8. APGAR score at 1st and 5th minute: 7 and 8
9. Birth weight of the baby: 2800gm
10. HC: 34.5cm
11. Who assisted the delivery: Obstetrician
12. Problem experienced during labor: Obstructed Labor

Postnatal history of the perinatal death:

1. Baby receive: Vitamin K
2. Baby problem: Birth asphyxia and meconium aspiration syndrome

Cause and time of death:

1. 1st cause of death: Meconium aspiration syndrome with respiratory failure
2. Timing of death: Between 1st and 7th day

Contributing factors:

1. Delay 2: Delay referral from the health center
Review Process

Practical 8: Using the Case Based Reporting Form

There are 2 case based forms that will be filled out by the Rapid Response Team (RRT) / review committee. The form is filled out during the discussion about each case, based on the Verbal Autopsy or Facility Based Abstraction Form.

The maternal or perinatal death reporting form identifies the causes of the death, contributing delays, and determines whether or not the death was preventable.

This is a GROUP activity. Work in the same group as for the Verbal Autopsy practice.

Review the case from the provided medical notes on a perinatal death. This time, instead of looking at the raw notes, you should use the Facility Based Abstraction Form. Conduct a review meeting (role play) – each group member should take a role, e.g. Health facility director, Surveillance officer, midwife, quality officer, etc.

Remember to maintain confidentiality and anonymity at all times!

Annex 10 in National MPDSR Guidance: Perinatal Death Case Based Report Form (PDRF)

(To be filled in 5 copies by the Health Centre/hospital. Send the rest of copies to the next level by keeping one copy)

<table>
<thead>
<tr>
<th>Reporting Facility Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting Health Facility name (H.C/CI./Hosp):<strong><strong><strong><strong><strong>x</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Woreda:__________</td>
</tr>
<tr>
<td>Zone:<strong><strong><strong><strong><strong>z</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Region:<strong><strong><strong><strong><strong>x</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td>Date of Reporting DD/MM/YYYY <strong>/</strong>/__</td>
</tr>
</tbody>
</table>

This PDRF is extracted from: 1. VA 2. Facility based Perinatal death abstraction form

<table>
<thead>
<tr>
<th>Deceased Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deceased ID(code):</td>
</tr>
<tr>
<td>Residence of deceased/parents</td>
</tr>
<tr>
<td>☐ Urban  ☐ Rural  n/k</td>
</tr>
<tr>
<td>Region n/k</td>
</tr>
<tr>
<td>Zone n/k</td>
</tr>
<tr>
<td>Woreda n/k</td>
</tr>
<tr>
<td>Kebele</td>
</tr>
<tr>
<td>Date and time of birth DD/MM/YYYY <em><strong>/</strong>/</em>_ (hrs/min) <em><strong>/</strong></em>/___</td>
</tr>
<tr>
<td>Date and time of death (Not applicable for stillborn) DD/MM/YYYY <em><strong>/</strong>/<strong>/</strong>/</em>__ (hrs/min) <em><strong>/</strong></em>/___</td>
</tr>
<tr>
<td>Sex of the deceased 1. Male 2. Female</td>
</tr>
<tr>
<td>Estimated gestational age at delivery in weeks 42 weeks</td>
</tr>
<tr>
<td>General information of the mother</td>
</tr>
<tr>
<td>Is the mother of the deceased perinatan alive? Yes ☒ No ☐</td>
</tr>
<tr>
<td>Age of the mother 25 (years) Parity 0 Number of alive children 0</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Obstetric History of the mother in relation to this deceased case</td>
</tr>
<tr>
<td>Number of ANC visits in relation to the deceased case</td>
</tr>
<tr>
<td>Number of TT vaccine during the pregnancy of the deceased case</td>
</tr>
<tr>
<td>Status of the baby at birth</td>
</tr>
<tr>
<td>Maternal disease or condition identified</td>
</tr>
<tr>
<td>Timing of the death</td>
</tr>
<tr>
<td>Is the death preventable?</td>
</tr>
<tr>
<td>Component factors (Tick all that apply)</td>
</tr>
<tr>
<td>Delay 2</td>
</tr>
<tr>
<td>Delay 3</td>
</tr>
</tbody>
</table>

Reported by: ______________________ signature: _______________ seal

The probable cause of death in this case was meconium aspiration syndrome. The main issues which should be identified in this case are

- Delay in referral of mother from home and/or the health centre
- Arrival at the hospital with suboptimal documentation eg. Mothers ANC history, length of stay at the health centre and any interventions undertaken
- Delay at the Hospital as the mother was initially taken to GOPD resulting in repeated unnecessary evaluations
- Suboptimal management on NICU with
  - lack of senior supervision for a critically ill infant,
  - lack of diagnostic Chest X Ray over 29 hours
  - lack of documentation on vital signs sheet including lack of fluid balance
• possible human error resulting in very high blood glucose levels possibly secondary to glucose administration

• Poor documentation both before and after delivery, particularly in relation to dates and times and interchange between Ethiopian and international time

Data Aggregation

Practical 9: Interpreting Data

1. Looking at the data on reporting above, review the completeness of the maternal death weekly reports. Answer the following questions:
   
   o Which month had the lowest reporting rate from Health Posts? Yekatit (just 23 HP out of 38)
   
   o How many “silent” health centres are there in your woreda (meaning they are not sending any reports)? 1 (12 Health centres are expected, but just 11 report each month)
   
   o Which category of health facilities has the best reporting? “Other” health facilities – it is 2 out of 2 for every month

2. Now look at Table 2 (provided separately), which provides the details of all 22 maternal deaths reported through MDRF in the past 6 months. Using this data, calculate the following:
   
   o How many of the deaths were considered preventable? 17
   
   o What proportion of all the deaths was this? 77.3% (17/22)
   
   o Give the percentage breakdown (% out of 100) for timing of death
     Antepartum 13.6% (3/22)
     Intrapartum 13.6% (3/22)
     Postpartum 72.7% (16/22)
   
   o What is the commonest cause of death among reported cases? Haemorrhage = 63.6% (14/22)
     What is the second commonest? We don’t really know – “direct others” has the next highest number, 4 deaths.
   
   o What is the contribution of each delay? i.e. determine the percentage of deaths to which Delay 1, Delay 2, and Delay 3 were listed as contributing factors.
     Delay 1= 14 deaths have one of the Delay 1 factors mentioned = 63.6%
Delay 2 = 8 deaths have one of the Delay 2 factors mentioned = 36.3%
Delay 3 = 5 deaths have one of the Delay 3 factors mentioned = 22.7%

- These percentages add up to more than 100%, why is this?

   For 1 maternal death, it is possible to have more than one delay
   contributing to it, for example if there was a delay in deciding to seek help
   (Delay 1) and then a delay at the health facility in receiving the correct
   treatment (Delay 3)

3. Based on your data interpretation, identify 3 key points to present to the Woreda RRT
   members for discussion?

   Possible answer include:
   - Reporting is still patchy and not 100% of facilities report every month
   - Most maternal deaths occur during the postpartum period
   - Haemorrhage is the most significant cause of death
   - Delay in seeking care occurs in the majority of maternal deaths
   - Better data are needed from the review process to try to determine the
     most likely cause of death to avoid such a high number reported in the
     “other” category.
Moving to Action

Practical 10: SMART responses
The most important part of the MPDSR review process is to ensure that realistic and effective responses are identified after every death. In the next activities, work in the same groups as you did for the RRT role play.

NOTE: This is a multiprofessional activity

A 25-year old in her second pregnancy attended ANC x 4 at the health post

In her first pregnancy she had a normal delivery at home and the baby is now 2 years of age and doing well

In the second pregnancy at 28 weeks and again at 36 weeks the midwife thought the fundus was big compared with the stated menstrual dates

The woman complained of being very uncomfortable and finding it difficult to sleep

At 36 weeks the midwife at the health centre referred the woman to the local hospital with polyhydramnios for further management

At the local hospital an Ultrasound showed a twin pregnancy with one absent Fetal heart, the presenting/leading twin had an FH of 140bpm

The obstetric resident decided to induce labour with an ARM (breaking the waters) as she was 3 cms dilated

This was carried out in the admission room and the woman was transferred to Labour Ward

On admission to labour ward there was a prolapsed cord and the fetal heart was absent

Both twins were born vaginally 2 hours later, twin 1 was a fresh stillbirth and twin 2 was a macerated stillbirth

Q1. List 3 Avoidable factors

1... Delayed referral after the 28 week review. At this review the problem of large for dates was noted but no action was taken and the next review was a routine one at 36 weeks. An earlier review eg at 30 weeks should have been planned to decide if early referral was indicated. Earlier referral may have prevented the death of twin 2.

2... Substandard medical care. Inappropriate decision about the mode of delivery. The ARM resulted in a prolapsed cord causing the death of twin 1. The Resident had performed an USS. It
should have been possible to assess the risk of prolapsed cord by a combination of clinical examination and USS eg assessment of amount of liquor and position of the fetus. It is likely that polyhydramnios was present +/- the position of the fetus was suboptimal for vaginal delivery.

3... Substandard medical care. Inappropriate venue of ARM. It was inappropriate to perform an ARM in the admission room where access to C/S would be delayed. If an ARM is performed in this situation it should be a controlled ARM with Anaesthetic and OR staff immediately available.

Q2. List the 3 actions you consider to be most appropriate

1. Organise an education meeting about the quality of ANC for all providers of ANC within 2 weeks. Include the need to identify and refer women with suspected large for dates pregnancies to identify multiple pregnancies and organise appropriate ANC follow up and hospital delivery. Attendance at the meeting should be recorded.

2. Organise an education meeting about multiple pregnancy for all medical, midwifery and anaesthetic staff to increase awareness of the complications of multiple pregnancy and the associated increase in maternal and perinatal mortality and morbidity. The meeting should take place within 2 weeks. Attendance at the meeting should be recorded.

3. Devise guidelines for management of Multiple pregnancy at the facility and start an annual audit of Multiple pregnancies to be conducted by a named Resident. Draft guidelines should be developed by a senior resident and reviewed by the Lead Obstetrician, lead midwife and medical director. The guidelines should include guidance about ANC management, intrapartum and postpartum management of multiple pregnancy. The audit should audit actual management of all cases of multiple pregnancies against the standards set in the guidelines. The guidelines should be completed and signed off at the facility by the Medical Director within 4 weeks and the audit initiated in the following week.

Q3. Are your actions SMART?

<table>
<thead>
<tr>
<th>Action 1</th>
<th>Action 2</th>
<th>Action 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specific</strong></td>
<td>Yes, the participants are specifically mentioned and specific items to include at the meeting are mentioned.</td>
<td>Yes, the participants and content of the meeting are specified.</td>
</tr>
<tr>
<td><strong>Measurable</strong></td>
<td>Yes, a register of attendance confirms not only that the meeting took place but also what % of relevant staff attended</td>
<td>Yes, a register of attendance confirms not only that the meeting took place but also what % of relevant staff attended</td>
</tr>
<tr>
<td><strong>Achievable</strong></td>
<td>Yes, all facilities should hold regular education meetings to improve standards of care.</td>
<td>Yes, all facilities should hold regular education meetings to improve standards of care.</td>
</tr>
<tr>
<td>Realistic</td>
<td>Yes, all facilities should have the capacity to hold such a meeting</td>
<td>Yes, all facilities should have the capacity to hold such a meeting</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------------------------------</td>
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</tr>
<tr>
<td>Timely</td>
<td>Within 2 weeks</td>
<td>Within 2 weeks</td>
</tr>
</tbody>
</table>
ANSWERS to Training Pre and Post Test

For each question, please circle the correct answer:

1. **MPDSR stands for...?**
   - A. Maternal and Perinatal Death System and Response
   - B. Maternal and Perinatal Death Surveillance and Review
   - C. Maternal and Perinatal Death Surveillance and Response
   - D. Maternal and Perinatal Death Systematic Register

2. **What is the most important part of the MPDSR process in order to reduce maternal and perinatal mortality?**
   - A. Identification
   - B. The review of the case
   - C. The analysis of the case
   - D. The actions

3. **Notification. Which of the following deaths should be reported by HEW and surveillance staff?**
   (2 pts for each correct answer)
   - A. 14-year-old girl who died giving birth true/false
   - B. Baby delivered dead at home after 6 months of pregnancy true/false
   - C. 3-week old baby who died of pneumonia true/false
   - D. 52-year-old woman who died in an accident true/false
   - E. 21-year-old woman who died after a vaginal haemorrhage true/false

4. **Screening. Which of these might be a maternal death?** (2 pts for each correct answer)
   - A. 45-year-old woman collapsed and died suddenly. She had missed two periods. true/false
   - B. A woman with a 35-day old baby had a fever for 3 days before she died. true/false
   - C. A 16-year-old girl took some medicine two days after her first sexual intercourse because she thought she might be pregnant. true/false
   - D. A woman, known to be HIV positive, died of pneumonia. Her family did not know the date of her last period. true/false
   - E. A married 26-year old woman miscarriage her pregnancy after 4 months. A week later she developed a fever and was sick in bed for about 5 weeks and died in her sleep. true/false

5. **Reporting maternal or perinatal deaths.** (2 pts for each correct answer)
   - A. Community members can inform HEW about the death of any woman of reproductive age true/false
   - B. A stillbirth at a health center should be reported on the weekly surveillance form true/false
   - C. Only deaths that occur in the labor ward need to be reported by the hospital as part of MPDSR true/false
   - D. The verbal autopsy should be carried out by a doctor true/false
   - E. All maternal deaths, regardless of where they occur, should have a verbal autopsy completed in the community true/false

6. **Reviewing deaths (2 pts for each correct answer)**
   - A. MPDSR review should be conducted by existing Rapid Response Teams (RRT) at every level, with the addition of MNCH experts true/false
   - B. The case based reporting form is completed during the review process in order to summarize causes and determinants of the death true/false
   - C. All action plans will be developed at Regional level and disseminated downw true/false
D. Determining preventability of a death is one of the review’s aims.  
E. Only clinicians should attend MPDSR review meetings

7. Community level factors affecting maternal and perinatal deaths (5 pts for each correct answer)
   A. High fertility rates contribute to complications for both pregnant women and their babies  
   B. If community members correctly recognize danger signs, they can urge the family to seek medical attention quickly

8. Quality of Care factors affecting maternal and perinatal deaths. (5 points each)
   A. Oxytocic drugs are not essential to provide quality care in the third stage of labor
   B. The quality of referral systems, admission procedures, and care during recovery should all be considered during MPDSR data analysis

9. Reporting and Data Flow in an MDSR: (5 points each)
   A. Community deaths will be reviewed by a Health Centre RRT committee and data will be summarized and sent to EPHI and the woreda and regional health offices:
   B. It is not necessary for a review committee to meet or submit a report during a month when NO maternal and perinatal deaths have occurred

10. Which of the following are appropriate actions that might be taken by a Health center review committee? (2 pts. each)
    A. Request BEmONC training for untrained staff
    B. Work with Community leaders and woreda administrator to get electricity supply
    C. Punish the SBA who was on duty during the last death
    D. Ensure iron is available for all antenatal patients
    E. Change the staffing schedules to ensure midwives available at all time