

Definitions, aims and objectives

Day 1 session 4

Session 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

Reflections

- Reflections on perinatal deaths (10 minutes)
- Interactive session on Strengths and Challenges (20 minutes)

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):
Stillbirths are 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
 - 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.

Macerated versus fresh stillbirths:

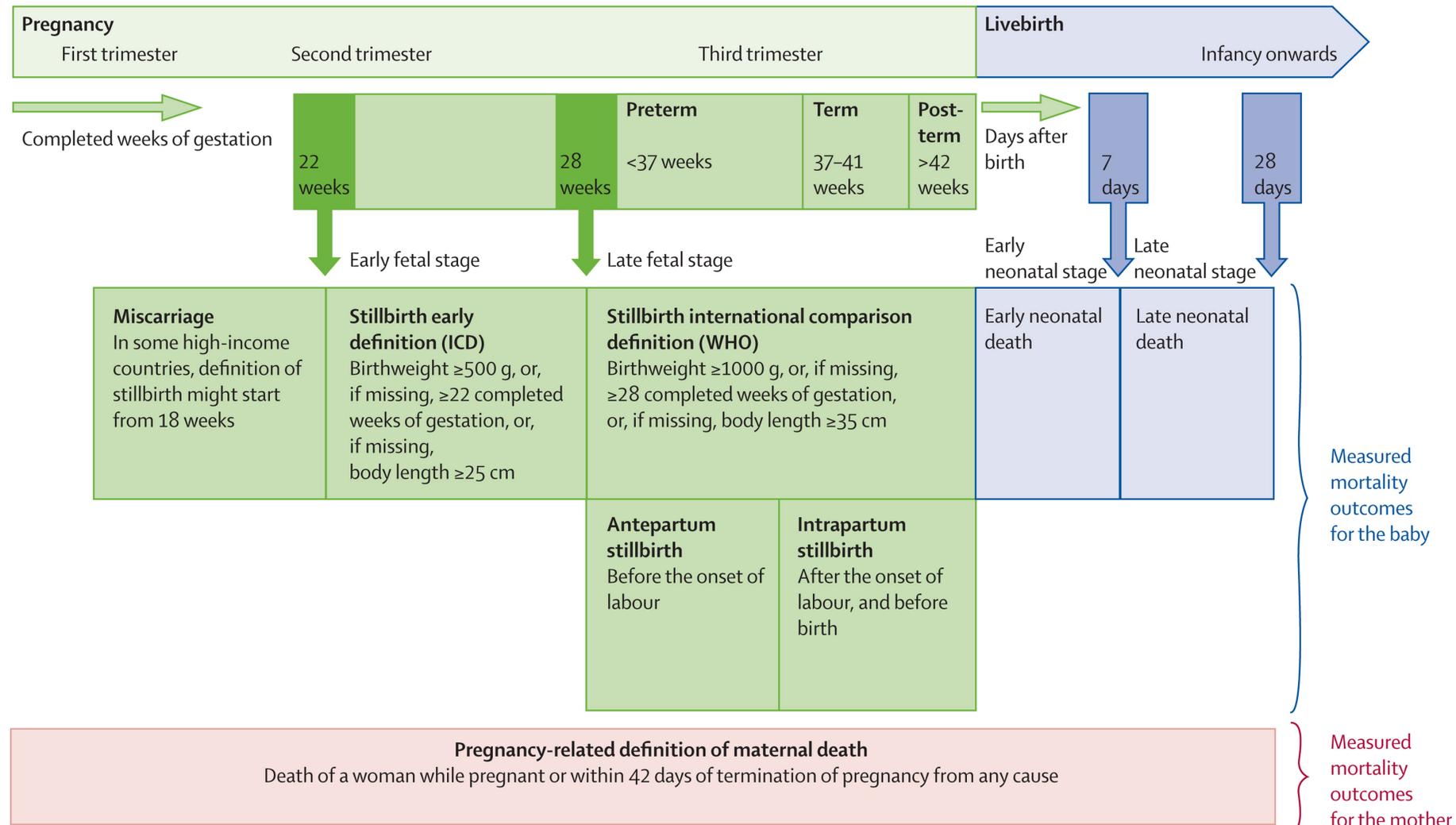
- Often the appearance of skin maceration is used to estimate the timing of stillbirths
- Fresh or non-macerated stillbirths= intrapartum stillbirths
- Macerated appearance= antepartum stillbirths

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**

Defining stillbirths and associated pregnancy outcomes (ICD-10)



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	<ul style="list-style-type: none"> • 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	
Perinatal mortality rate	Definitions vary: <ul style="list-style-type: none"> • 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 	1000 total (live and stillborn) births	

Causes of Stillbirths

The five most important to remember

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

These overlap with the causes of maternal and neonatal deaths

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.
 - Health worker could not initiate bag and mask ventilation immediately when the baby did not respond to vigorous stimulation
 - Laboring long at home
 - Did not auscultate foetal heart sounds upon admission

Many approaches to identifying modifiable factors

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 health 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

Many approaches to identifying modifiable factors (2)

3. 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

4. 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;

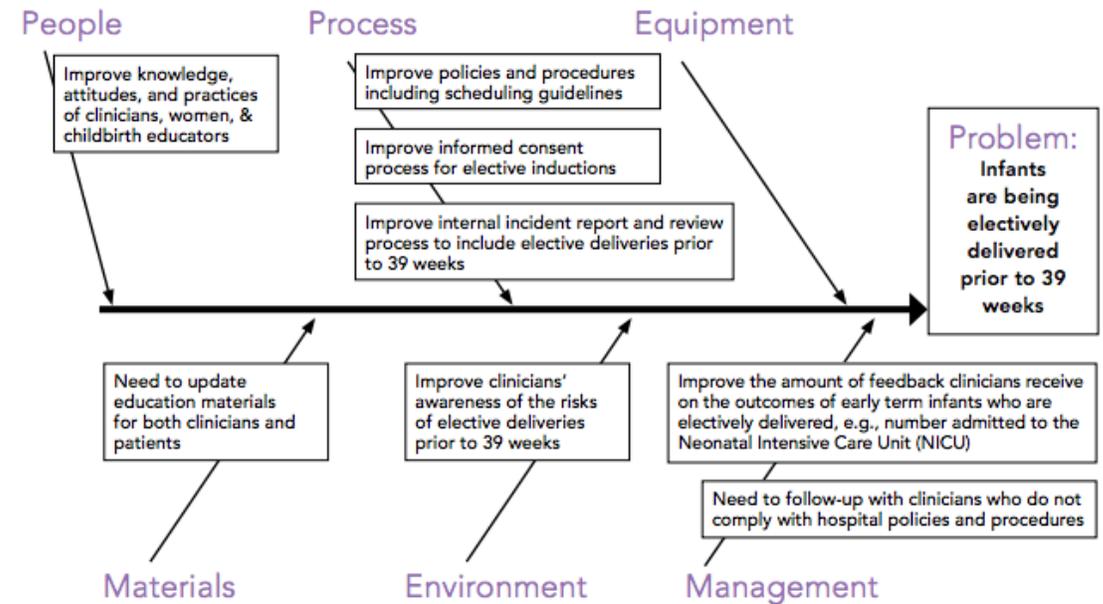
Many approaches to identifying modifiable factors (2)

5. 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

Fig shows a completed fishbone diagram done for the elimination of Non-medically indicated(Elective) deliveries before 39 Weeks Gestational Age

Note: Components of the diagram will vary at individual hospital.



Source: Main E *et al.* Elimination of Non-medically Indicated (Elective) Deliveries Before 39 Weeks Gestational Age. (California Maternal Quality Care Collaborative Toolkit to Transform Maternity Care) First edition published by March of Dimes, July 2010.

Many approaches to identifying modifiable factors (3)

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:

- evidence-based standards that are the source of criteria .
- written records: ‘if it is not written down, it did not happen!’

For example: Blood transfusion in case of PPH

National Criteria:

- All women estimated a loss of at least 1500 ml blood should receive blood transfusion
- Blood transfusion should begin within one hour of decision
- Fluid balance chart should be maintained during transfusion
- Measure current practice

Feedback the findings and set local targets.

Implemented changes in practice.

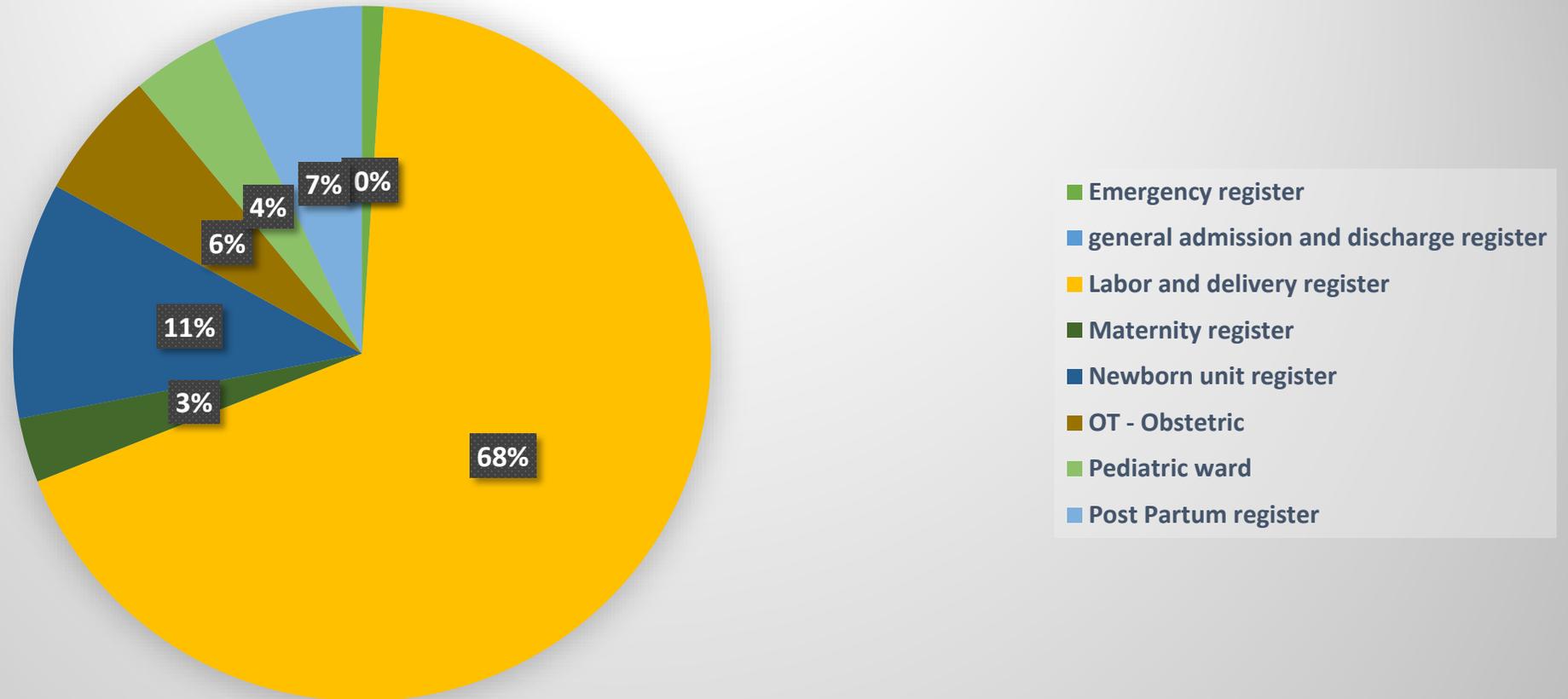
Re-evaluated practice and give feedback

How to identify perinatal deaths

- 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
- Death registers (central or ward)
- Mortuary registers
- Ward ledgers or registers (delivery room, caesarean registers, OT register, maternity/obstetric ward, NICU, sick babies register, emergency ward, paediatric ward, admissions ward)
- 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)
- Cross-check to remove duplicates, as same death may be recorded in several places

Example from Haiti: Where were perinatal deaths identified?

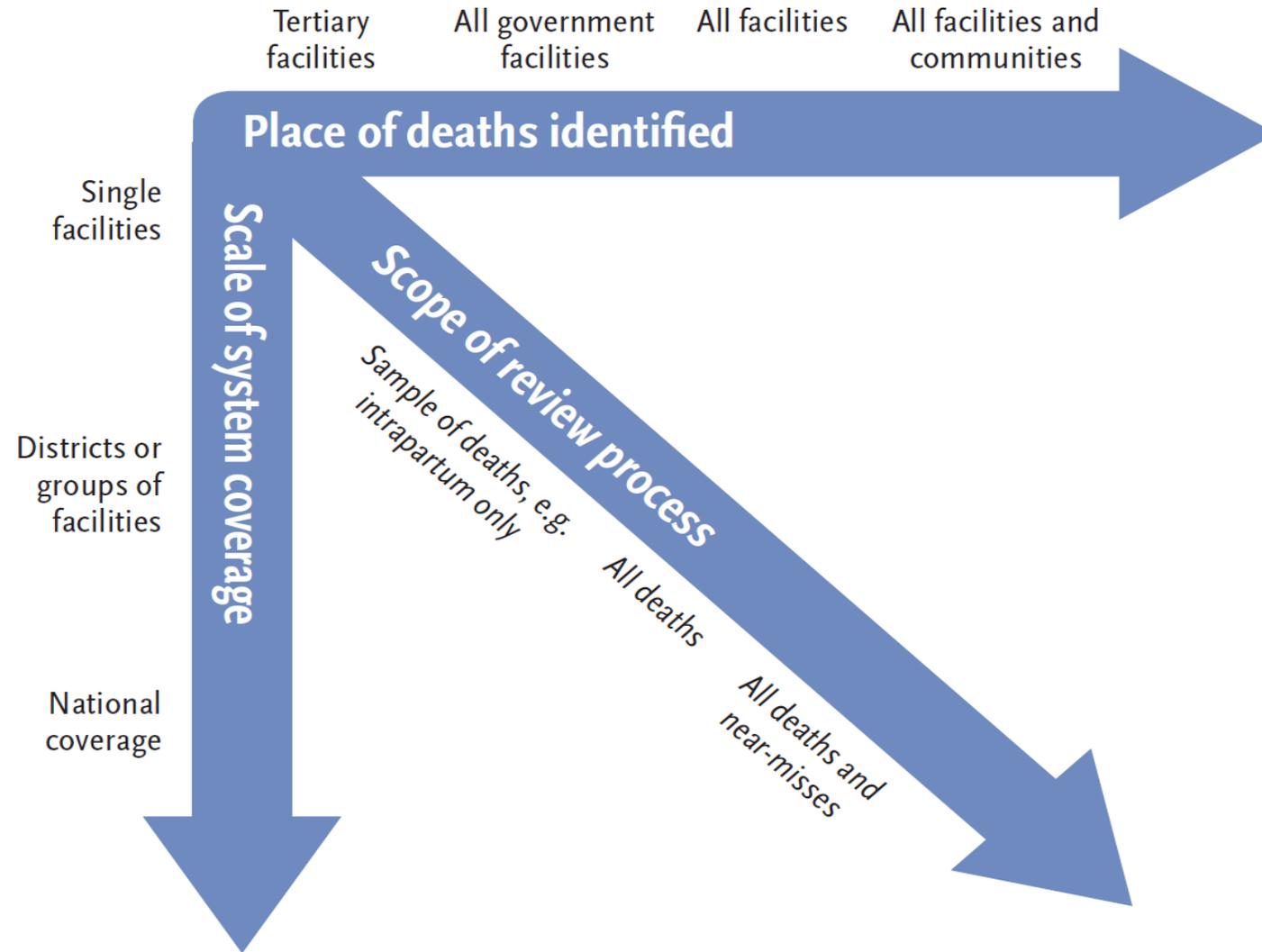
Registers where perinatal deaths was located



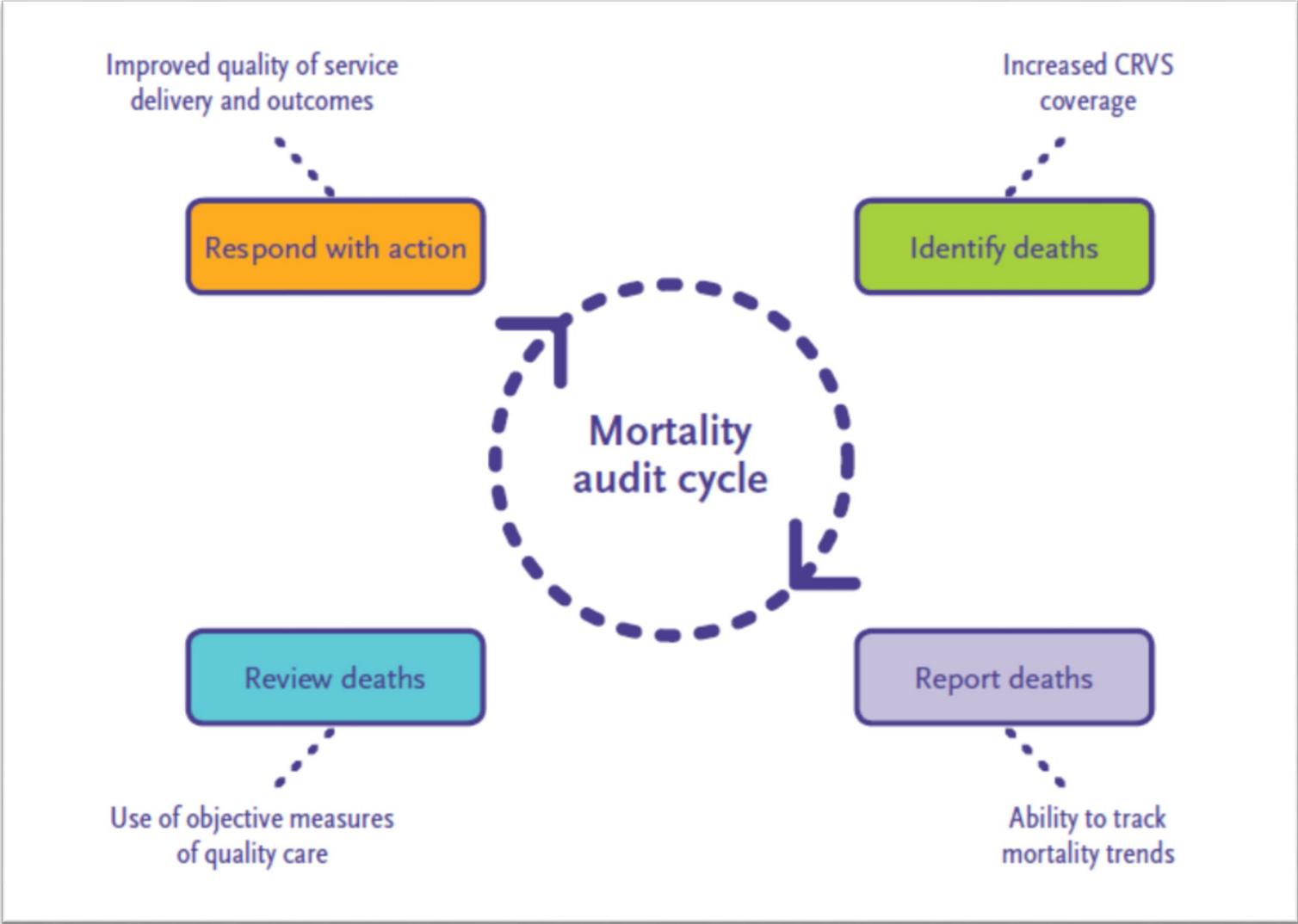
Guidelines for selecting cases to review

- 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 criteria 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



Relationship between mortality audits, wider QoC and CRVS systems



Group work case study

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