Minimally invasive tissue sampling to strengthen identification and characterization of perinatal deaths reviewed under the MPDSR system

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PERINATAL MITS NEPAL

Gandaki Medical College-Nepal
कर्मण्येवाधिकारस्ते
My right is to my work

Background

- Challenges in Implementing Maternal and Perinatal Death Surveillance and Response (MPDSR)
  - The causes of perinatal deaths are not always determined, or not specific
  - Cause of death not determined in 53% of stillbirths and 8% neonatal deaths. (FWD, DoHS, MPDSR Factsheet FY 2079/2080)
  - Ineffective response

Objectives

- To determine the causes of perinatal deaths by integrating Minimally Invasive Tissue Sampling in perinatal deaths reviewed under hospital-based MPDSR in Kaski district.

- To identify the specimens and tissues to determine the causes of death.

Methodology

- Cross-sectional observational study
- Study population: All the perinatal deaths reviewed under the MPDSR system in the Kaski district of Nepal

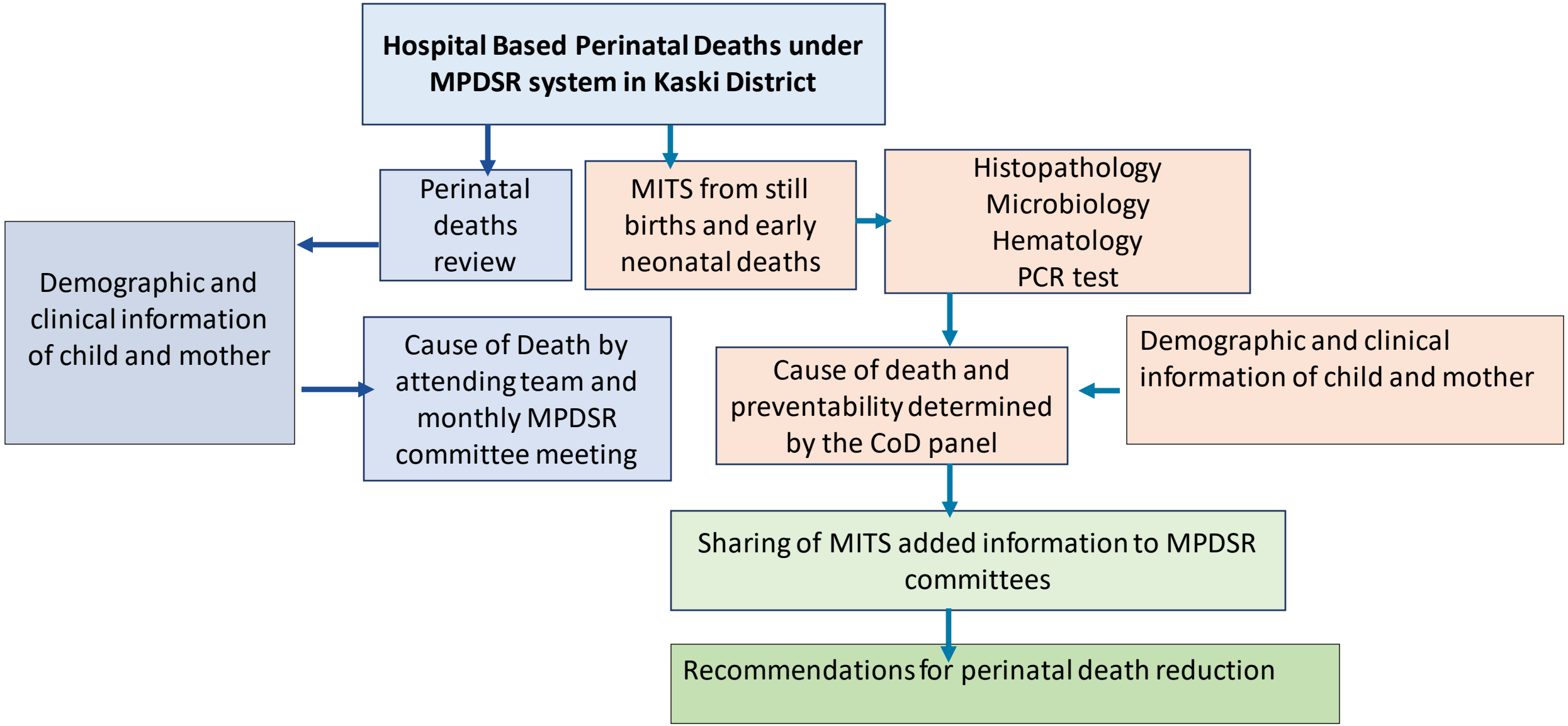
Three medical colleges/university teaching hospitals

- Gandaki Medical College
- Pokhara Academy of Health Sciences
- Manipal College of Medical Sciences

Two provincial hospitals

- Matri Sishu Miteri Hospital
- Sishuwa Hospital

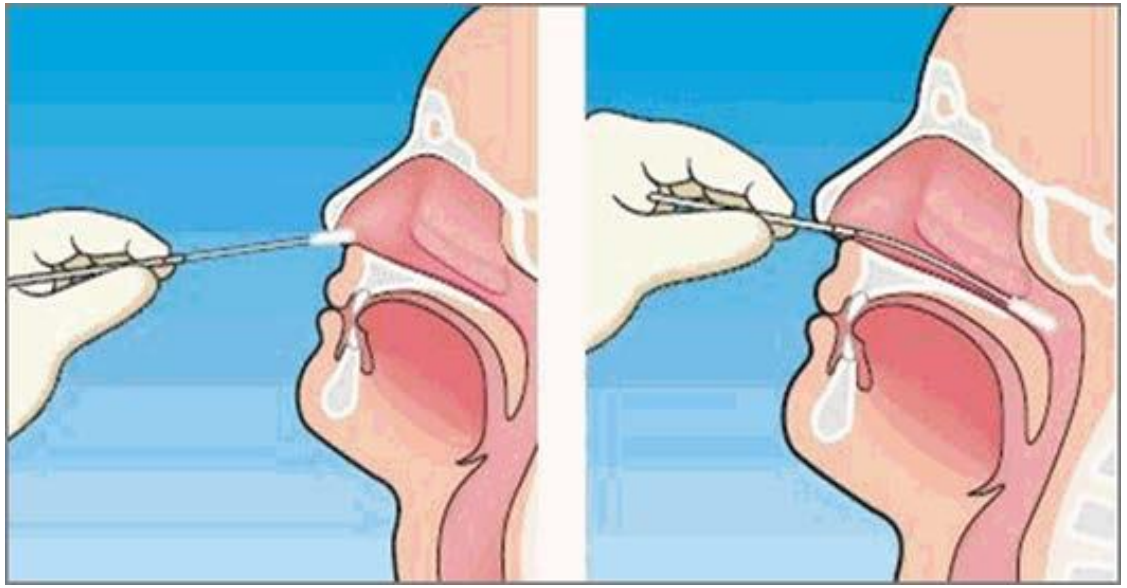
Integration of MITS with MPDSR

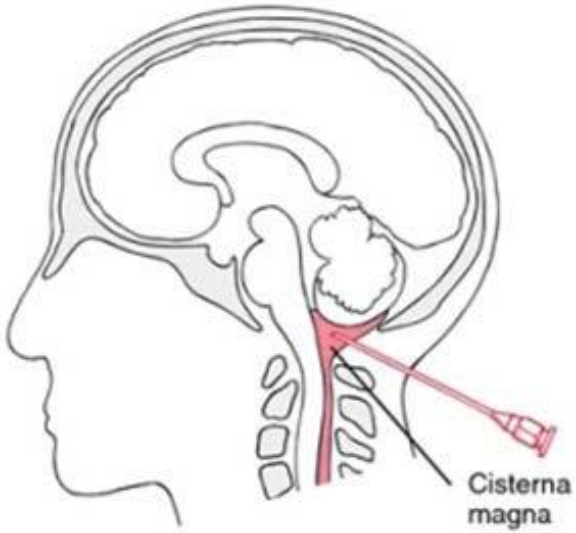


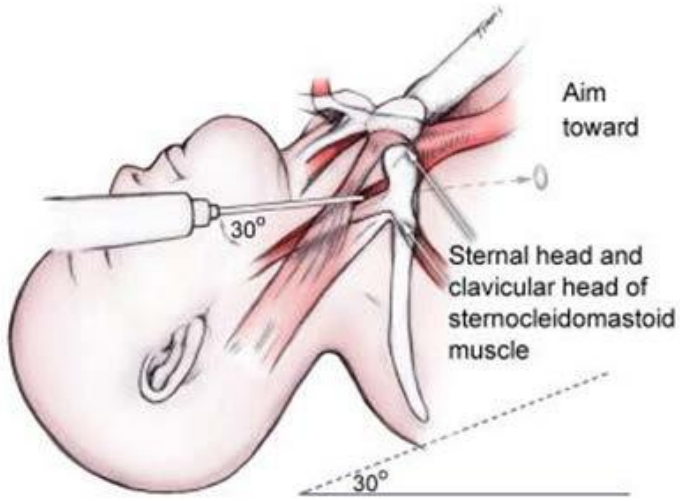
Sample collection

CSF and blood

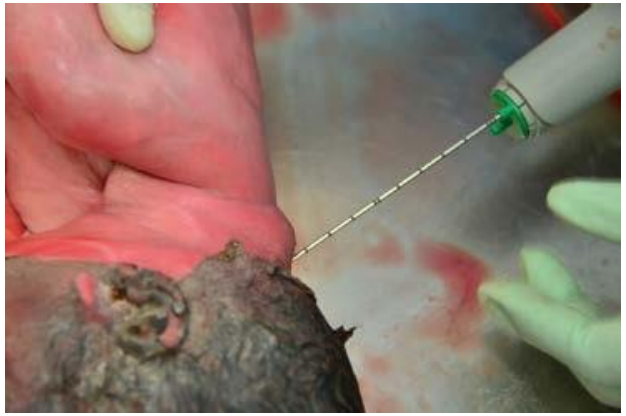
Nasopharyngeal swab



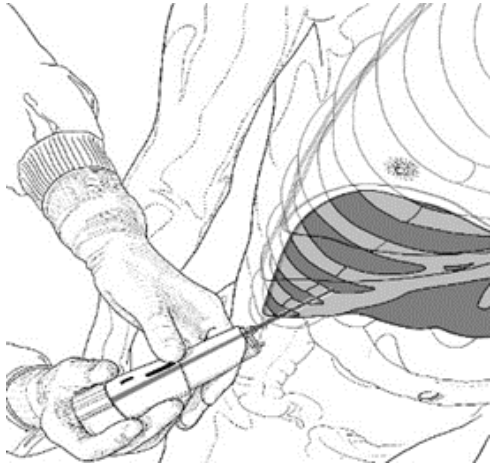




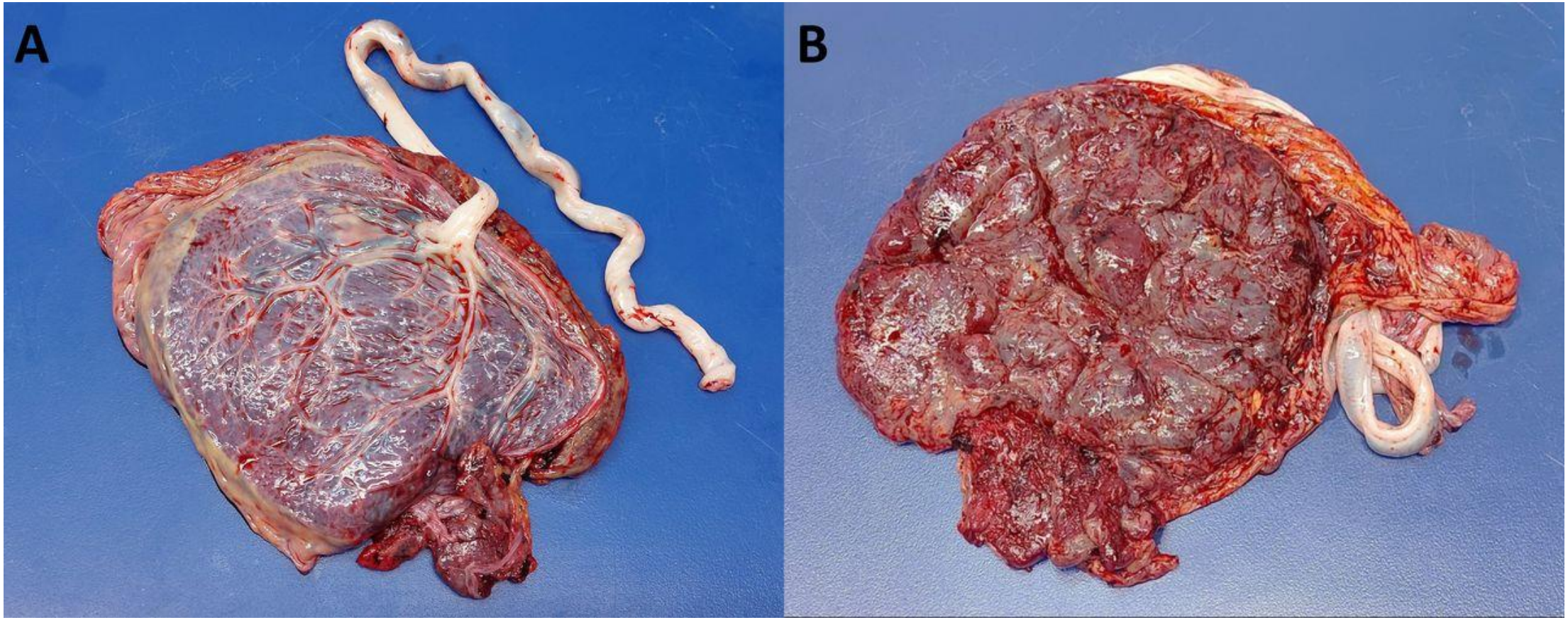
MITS of brain



MITS of lungs and liver



Placenta and cord examination and sampling



Sample analysis

Specimens	Diagnostic tests
NP swab	• Gram stain and bacterial culture • PCR
Placenta	• Histology, bacterial culture
Blood	• Bacterial culture • Serology (HIV, Treponemal antibody test, HBsAg) • TORCH Screen • Blood grouping & Rh typing, Malaria
CSF	• Microbiology (Culture, Gram stain) • CSF analysis
Brain	• Histology
Lungs (right and left)	• Histology, Bacterial culture
Liver	• Histology

Determination of Cause of Death (DeCoDe) with MITS findings

Demographic Data

Clinical Abstraction
Available medical records

Maternal Abstraction

DeCoDe Panel

Cause of Death Assignment
ICD-PM
Recommendations to prevent future death

MITS Collection Data
- Anthropometrics
- Photographs

Other Diagnostics
- Blood, tissue and CSF culture
- Serology
- TORCH screening
- Malaria blood smears & RDT

Molecular Diagnostics
PCR of NP Swab Results

Histopathology Results
Lungs, Brain, Liver, Placenta and cord

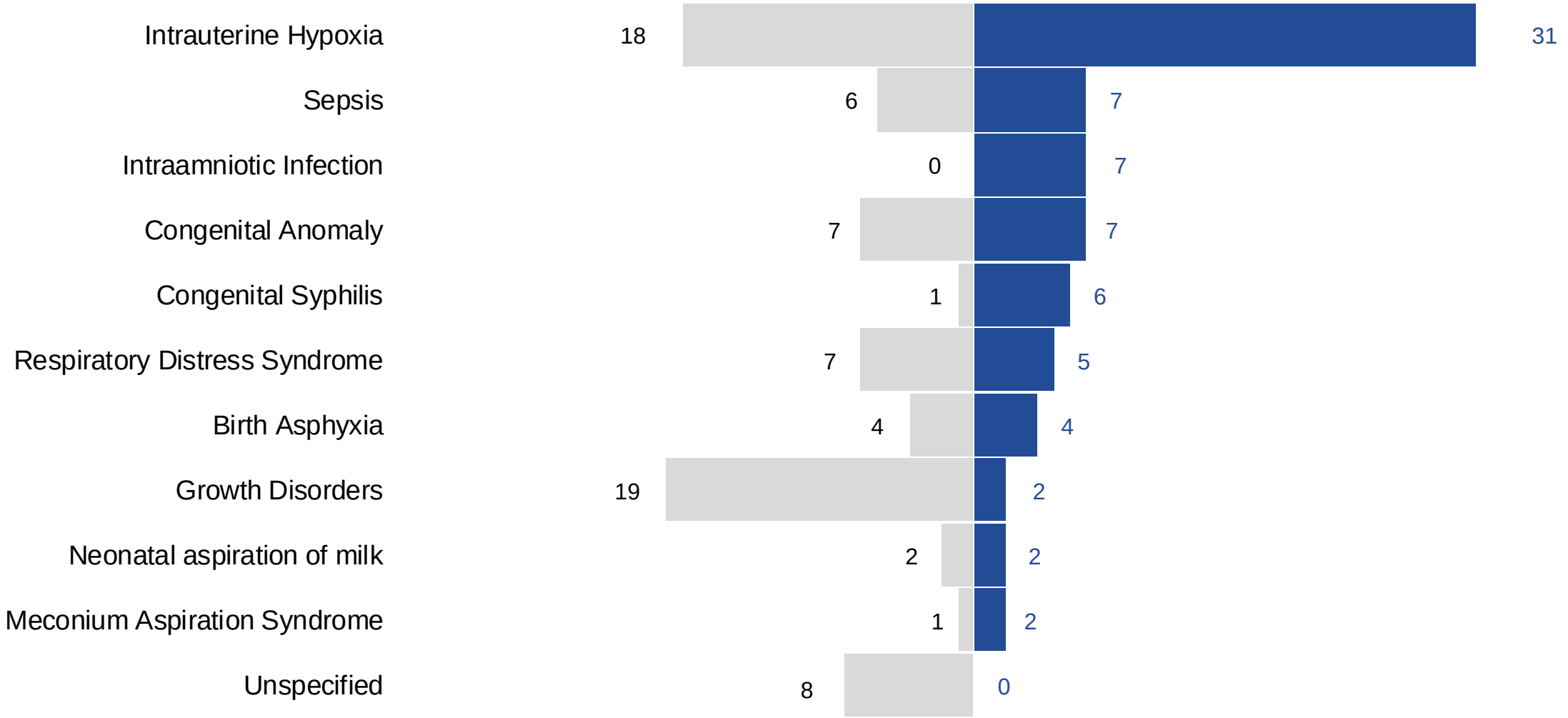
Current data

- Total perinatal deaths reported (11 months period): 162
- Consent rate: 80% (108/135)

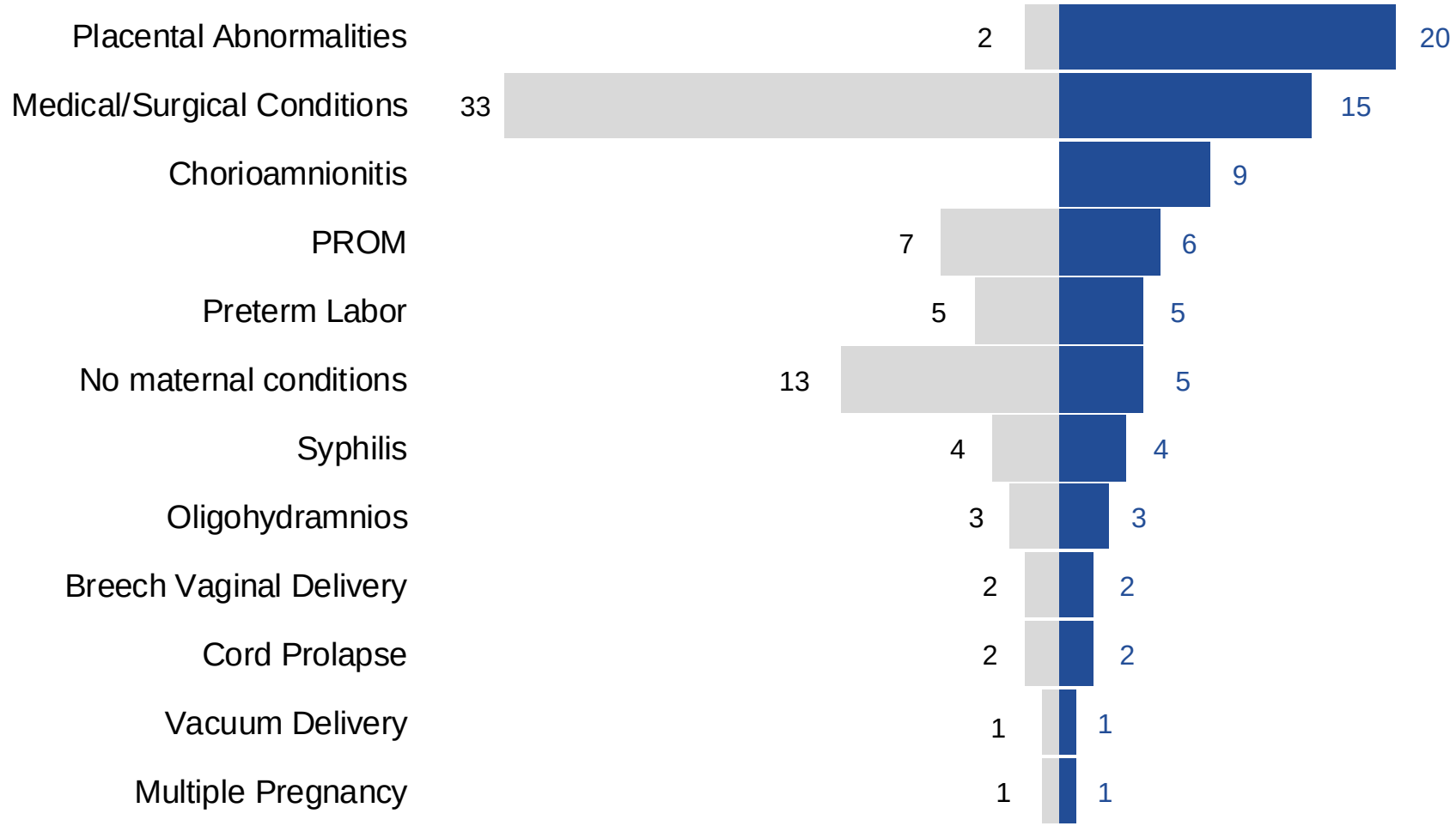
Results

perinatal causes of death

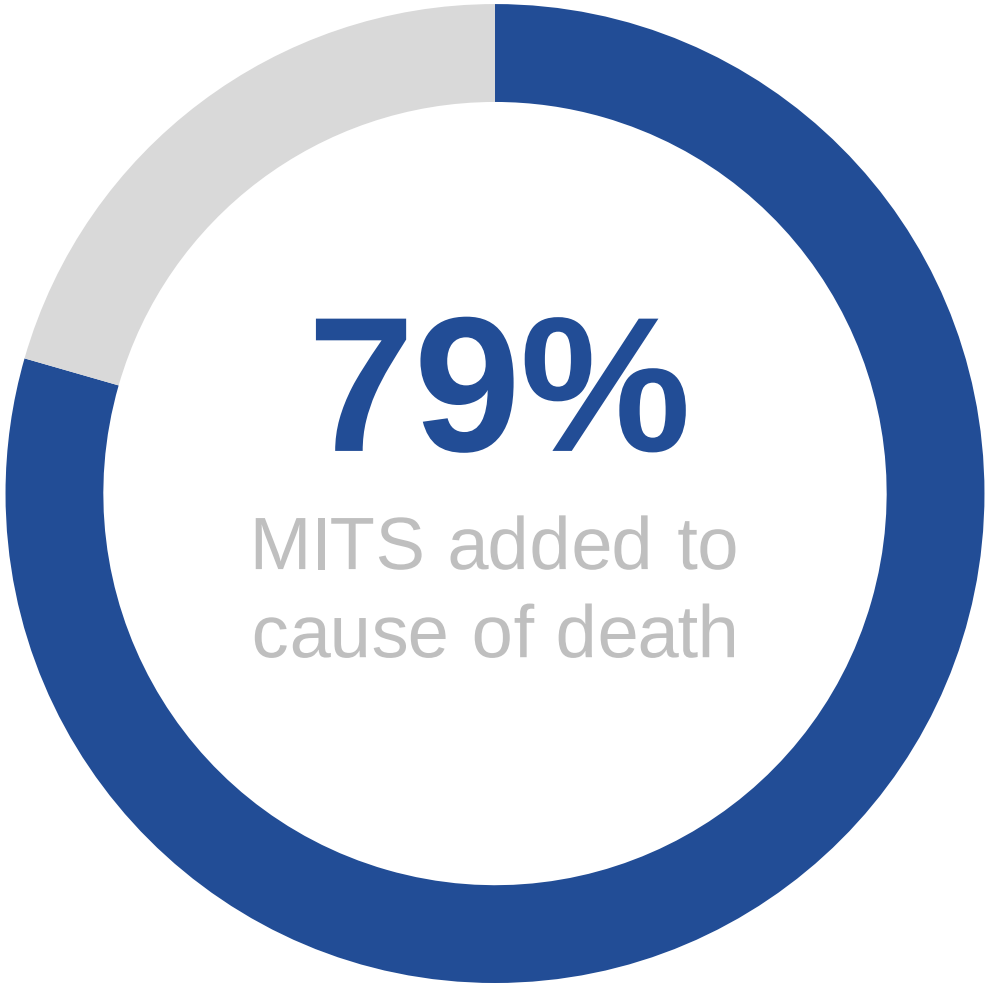
The main causes of perinatal deaths without MITS information and with MITS information.



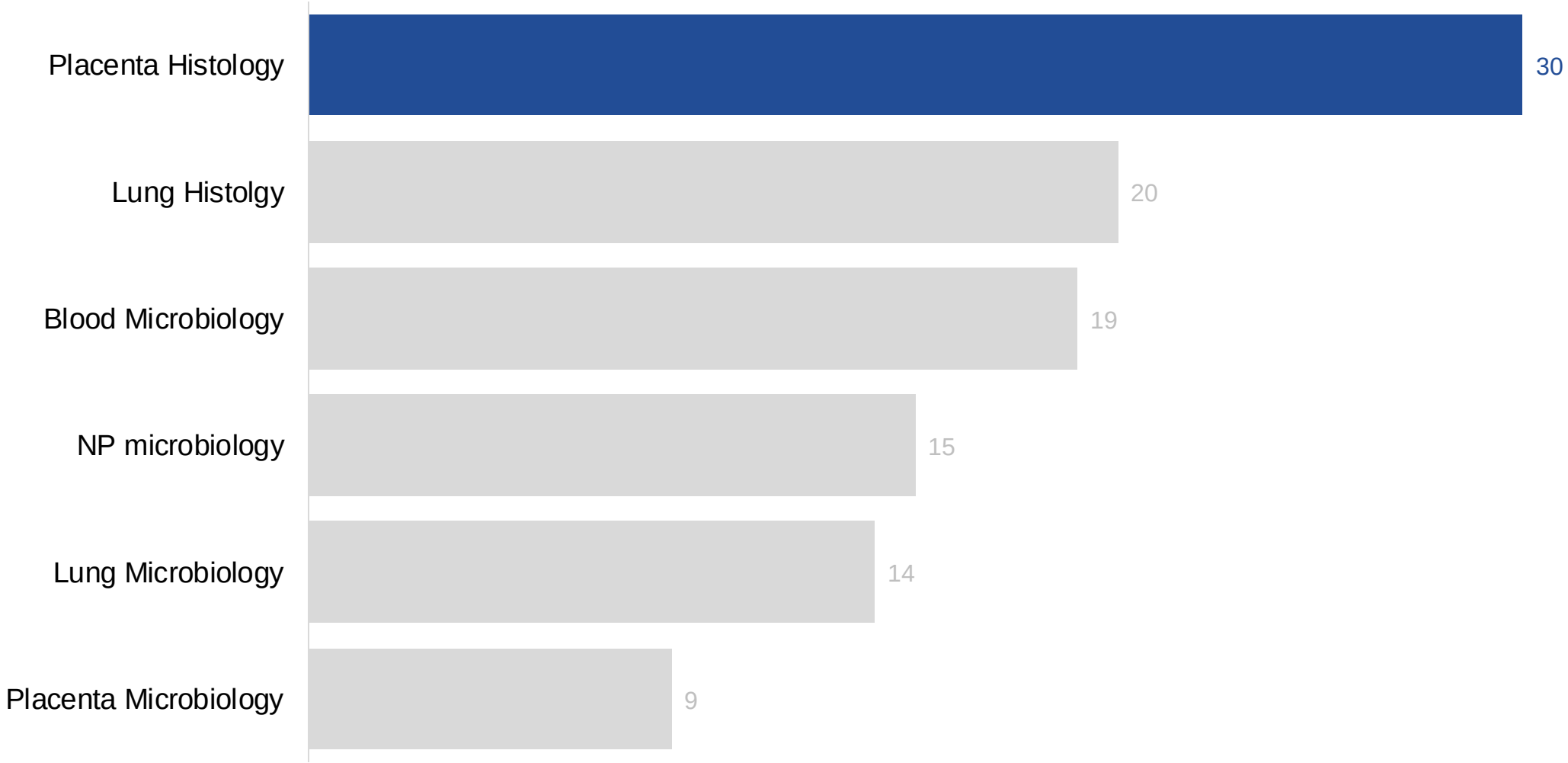
The main maternal causes of perinatal deaths without MITS information and with MITS information.



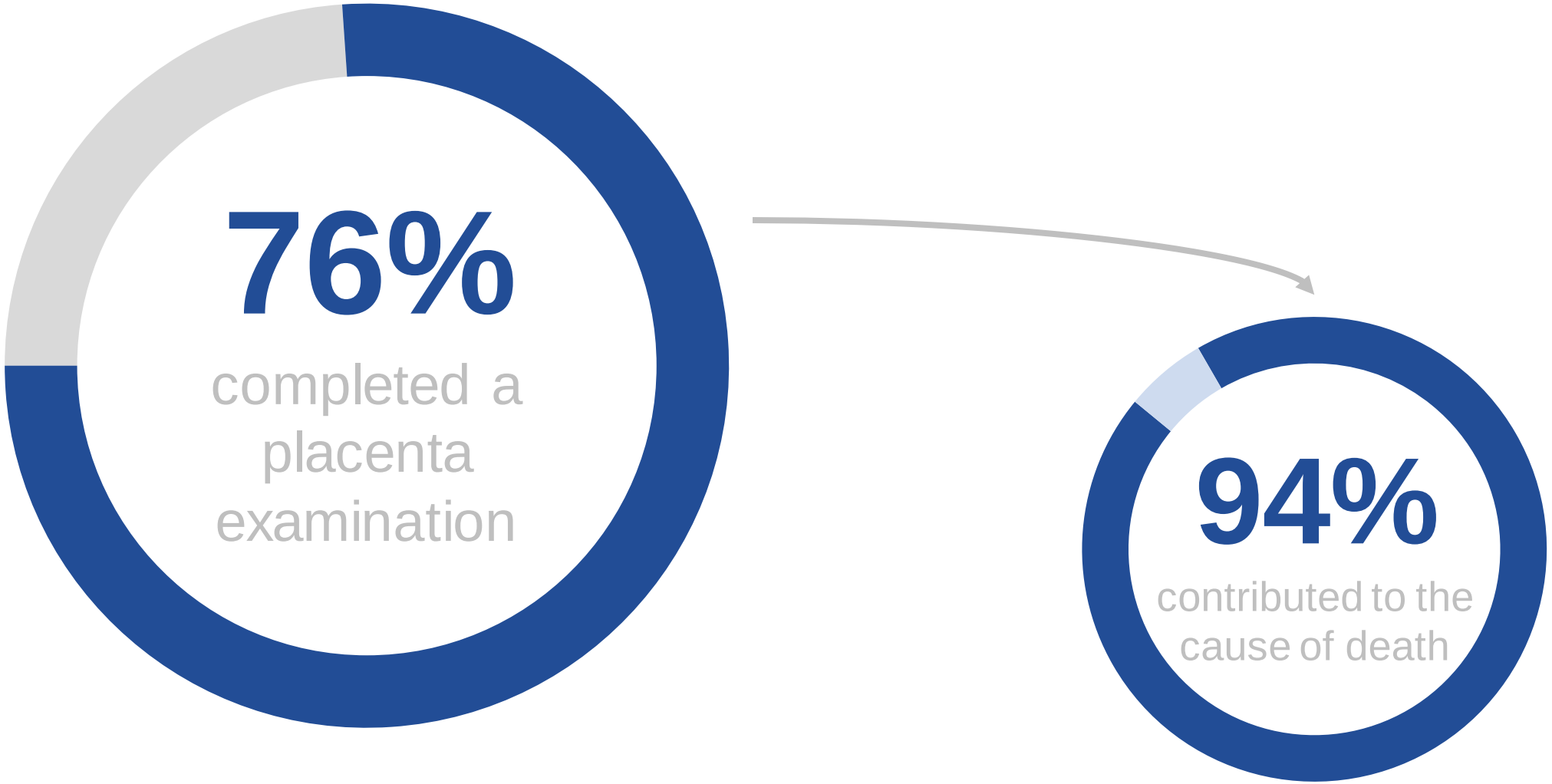
Of the 73 cases of perinatal deaths, for **79%** **MITS information added** to the cause of death assignment.



Of the specimens and tests useful for identifying the cause of death, the **placenta histology** was the most useful.

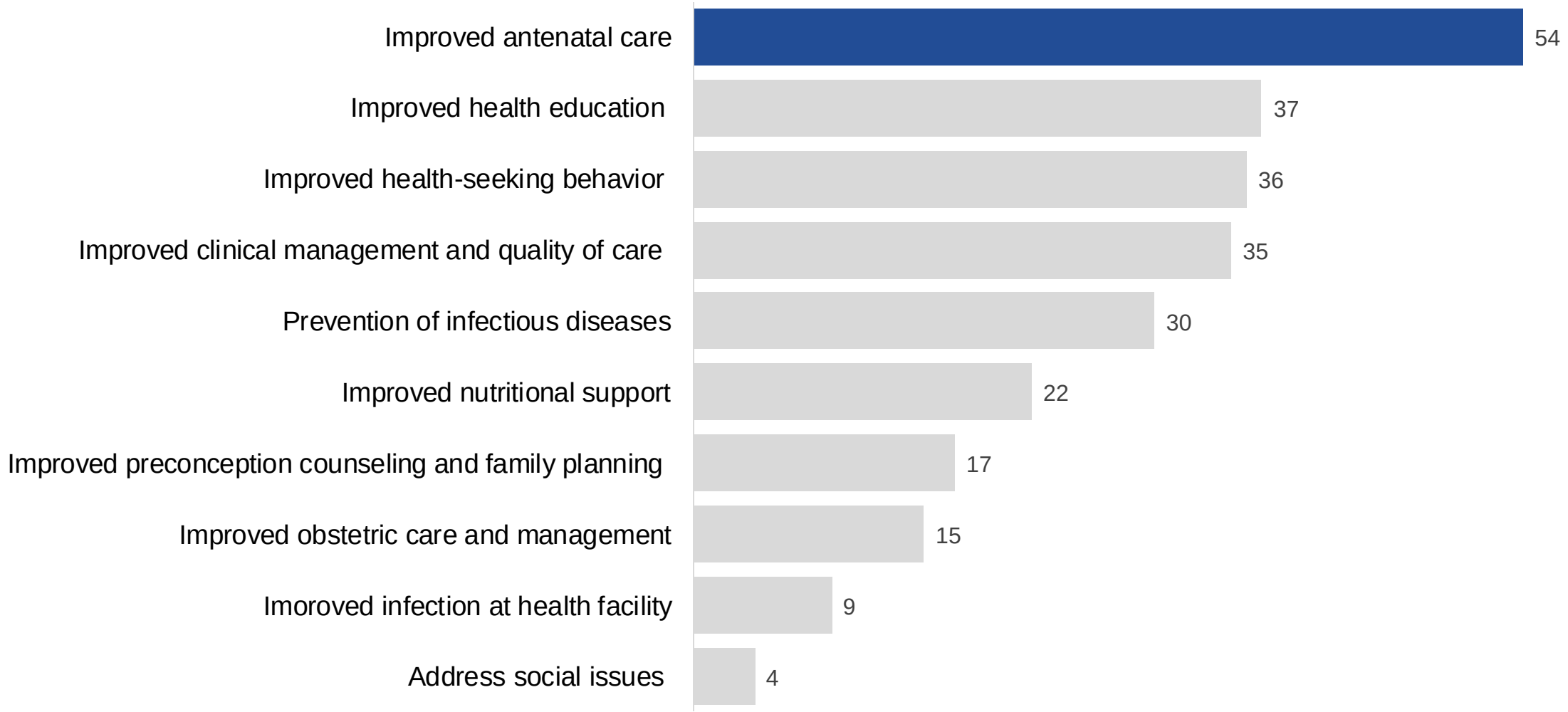


Of the 46 cases of stillbirth deaths, **76%** had **a placenta examination** completed. In **94%** of those cases, the placenta samples **contributed to the cause of death**.



The most reported recommendation for the prevention of perinatal deaths is **improved antenatal care** .

This was the recommendation in 54 of the 68 preventable perinatal deaths.



Discussion

- MITS can be implemented in the existing MPDSR system to strengthen the death surveillance system.

- Prioritisation of samples for establishing cause of deaths
  - Placental examination
  - Lungs
  - Blood
  - Additional samples on case basis

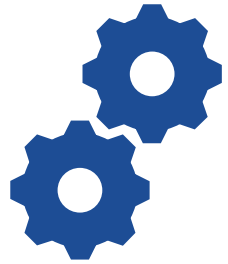
Conclusion

- MITS can provide additional and specific causes of perinatal deaths.
- It can correct misclassification of the causes of deaths and facilitates to develop more effective response.
- Improvement of antenatal care is the most essential for prevention of perinatal deaths.

Ways forward

Evidence generation on the usefulness of MITS

Advocacy



Strengthening of DSS through integration of MITS

Acknoweldgement

- MITS Surveillance Alliance
- Family Welfare Division
- Health Directorate, Gandaki Province
- Health Office, Kaski
- Health Division, Pokhara Metropolitan City
- MPDSR committees

Funding

- The study is supported by the MITS Surveillance Alliance.
- The MITS Surveillance Alliance is funded by the Bill and Melinda Gates Foundation.

MITS SURVEILLANCE ALLIANCE

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Currently, I am working as a principal investigator in a Mortality Surveillance Program, entitled “Minimally Invasive Tissue Sampling to Strengthen Identification and Characterization of Causes of Perinatal Deaths in Kaski District of Nepal (Perinatal MITS Nepal)”