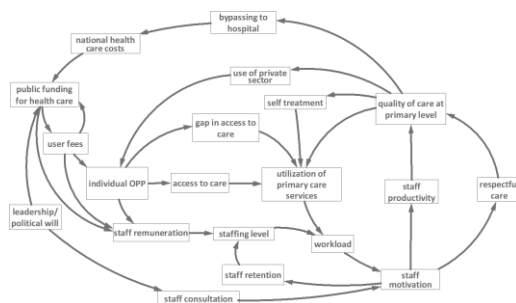
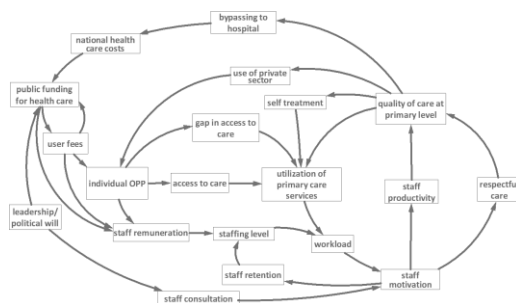


SYSTEMS TOOLS FOR COMPLEX HEALTH SYSTEMS: A GUIDE TO CREATING CAUSAL LOOP DIAGRAMS



SESSION FIVE

APPLYING SYSTEM THINKING TOOLS



Session objectives

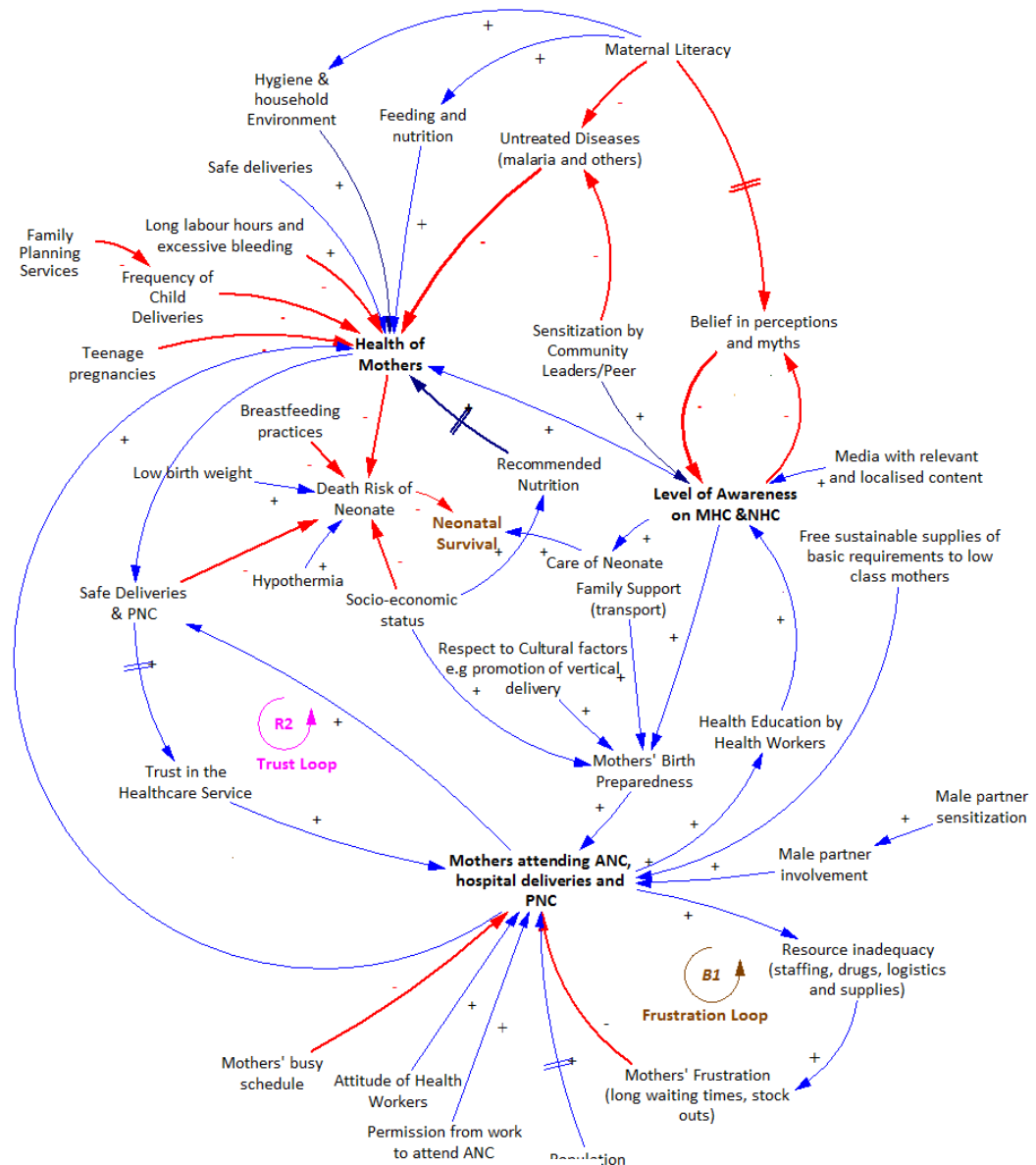
- Interpret causal loop diagrams
- Describe the system dynamics applying principles of complex adaptive systems
- Identify leverage points from a causal loop diagram
- Use a causal loop diagram for inference regarding health system interventions

Demand for health services

Examine the causal loop diagram showing the demand for neonatal and maternal health services

1. Identify linkages and polarities; what key messages emerge?
2. Identify the key drivers of the risk of neonatal death “death risk of neonate” and discuss how these drivers are interlinked
3. Identify any additional feedback loops—are they balancing or reinforcing?

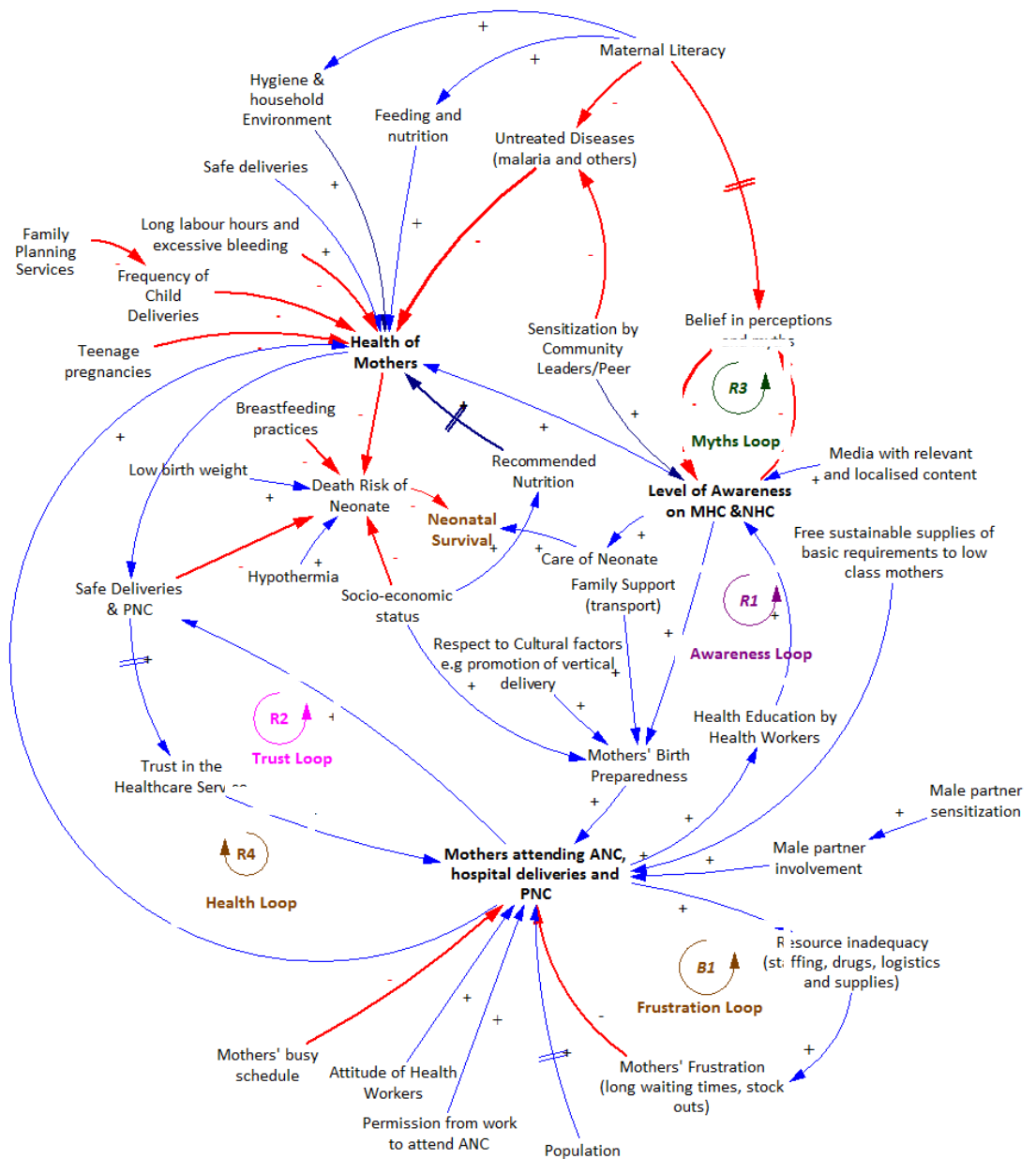
Causal loop diagram showing the **demand** for neonatal and maternal health service delivery.



- Legend**
- + Denotes a **positive** link where a change in the influencing element is in the same direction as the influenced element
 - Denotes a **negative** link where a change in the influencing element is in the opposite direction as the influenced element
 - || Denotes a **delay** where a change in the influencing element produces a change in the influenced element only after a delay

Causal loop diagram showing the demand for neonatal and maternal health service delivery:

Feedback Loops



Denotes a **reinforcing loop (R1)** in counter clockwise direction. Similarly R2, R3 and R4 are Reinforcing loops



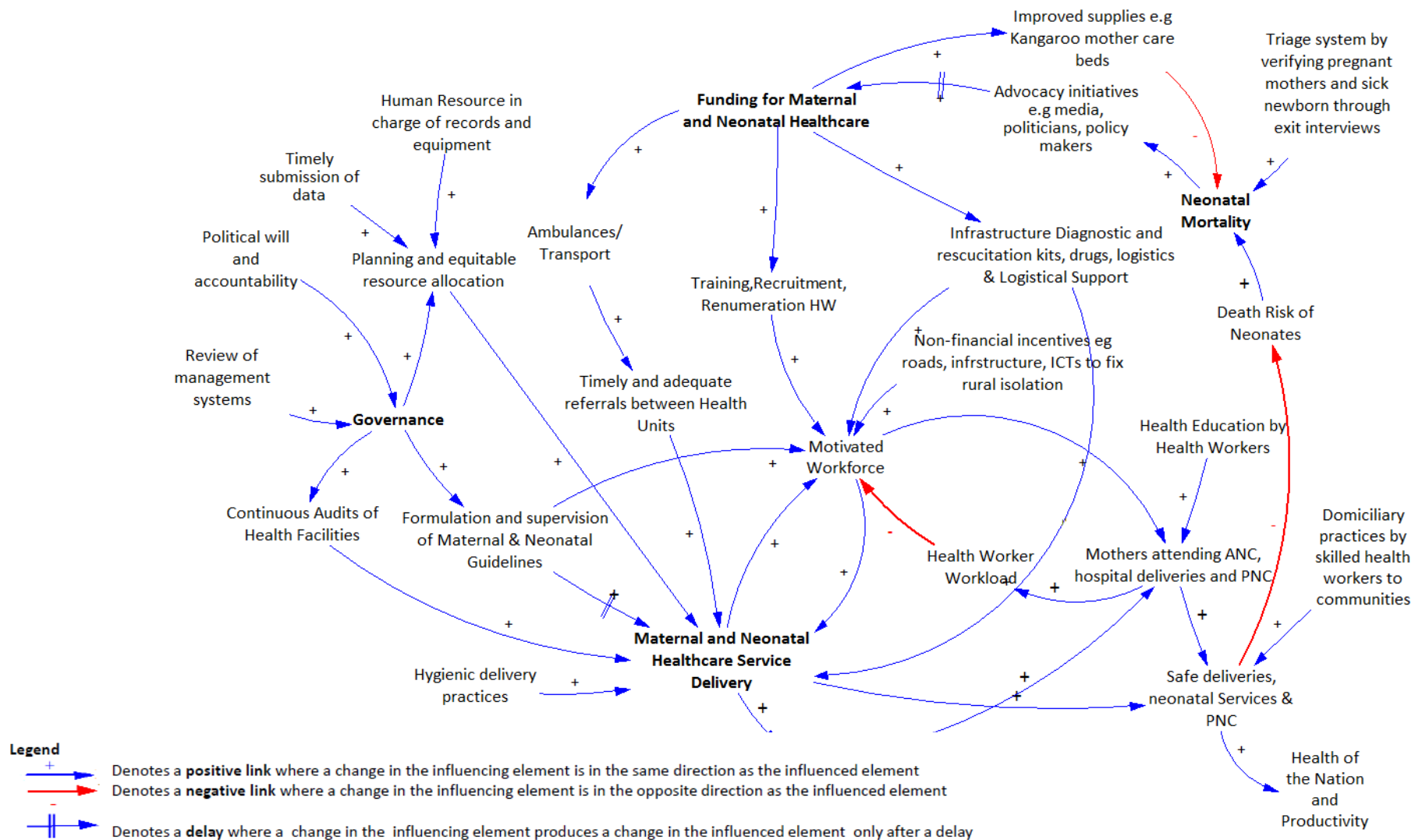
Denotes a **balancing loop (B1)** in a counter clockwise direction

Supply of health services

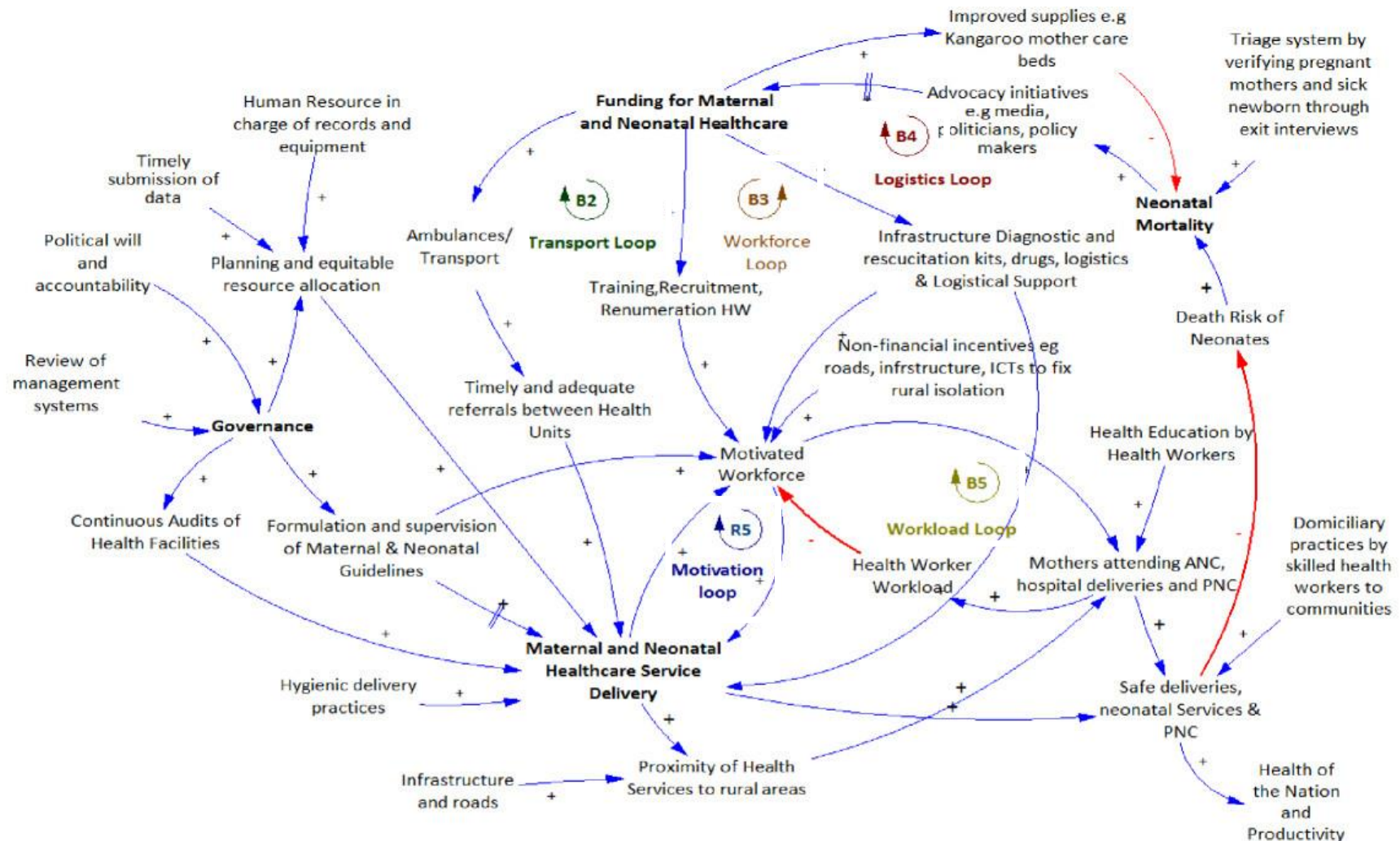
Examine the CLD showing the supply of neonatal and maternal health services

1. What key messages emerge?
2. Identify at least one feedback loop, and describe the loop and its impact on the system

Causal loop diagram showing the supply of neonatal and maternal health service delivery



Causal loop diagram showing the supply of neonatal and maternal health service delivery – feedback loops



Denotes a **balancing loop** (B2) in the clockwise direction
Similarly B3, B4 and B5 are balancing loops



Denotes a **reinforcing loop** (R5) in the clockwise direction

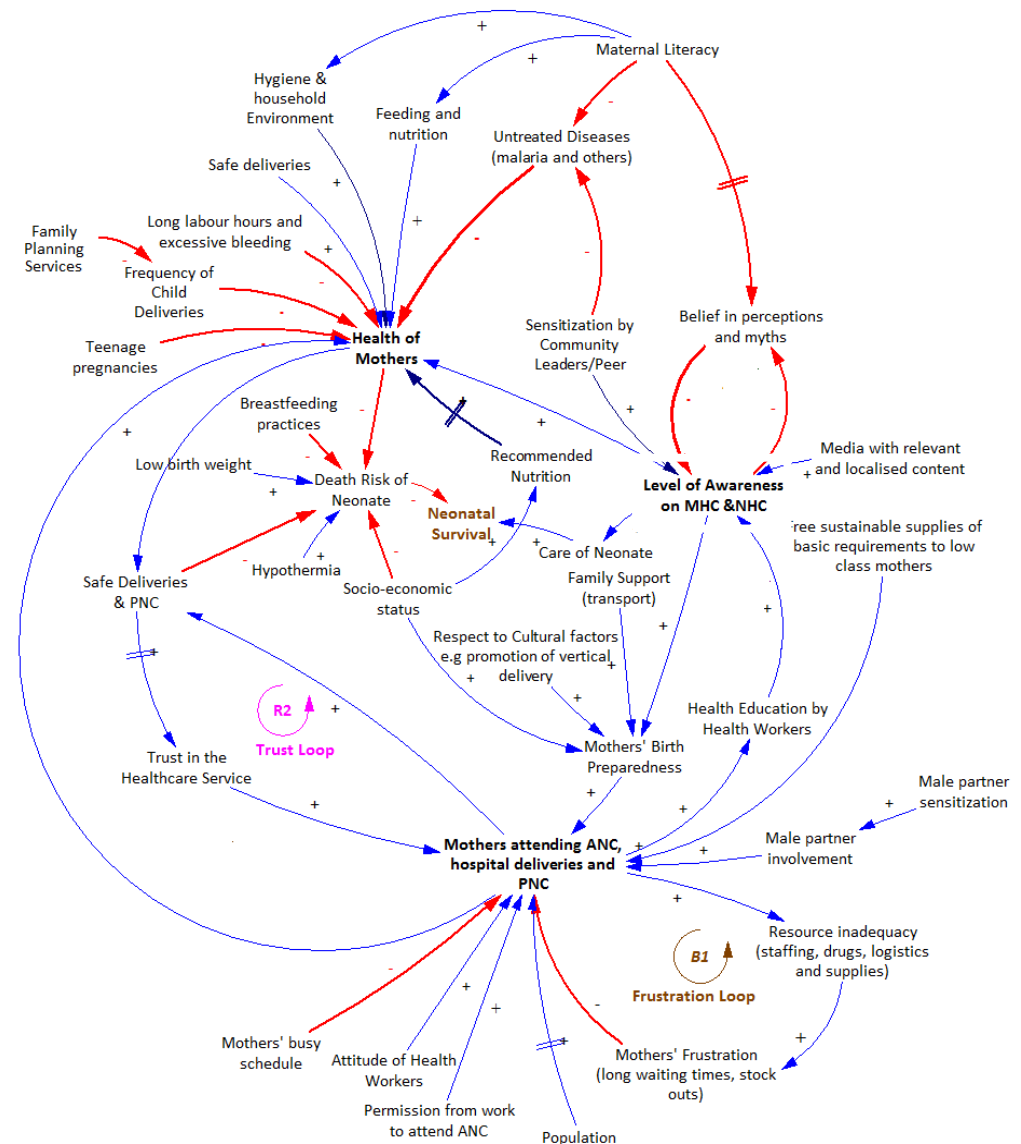
Increasing newborn survival

Using both the supply and demand causal loop diagrams.

- Identify key leverage points aimed at increasing newborn survival from the following stakeholder positions.
 - Provide a rationale based on the CLDs for your decisions
 - Minister of Health (National policy level)
 - Clinic manager
 - Non-governmental organization (NGO) working at community level

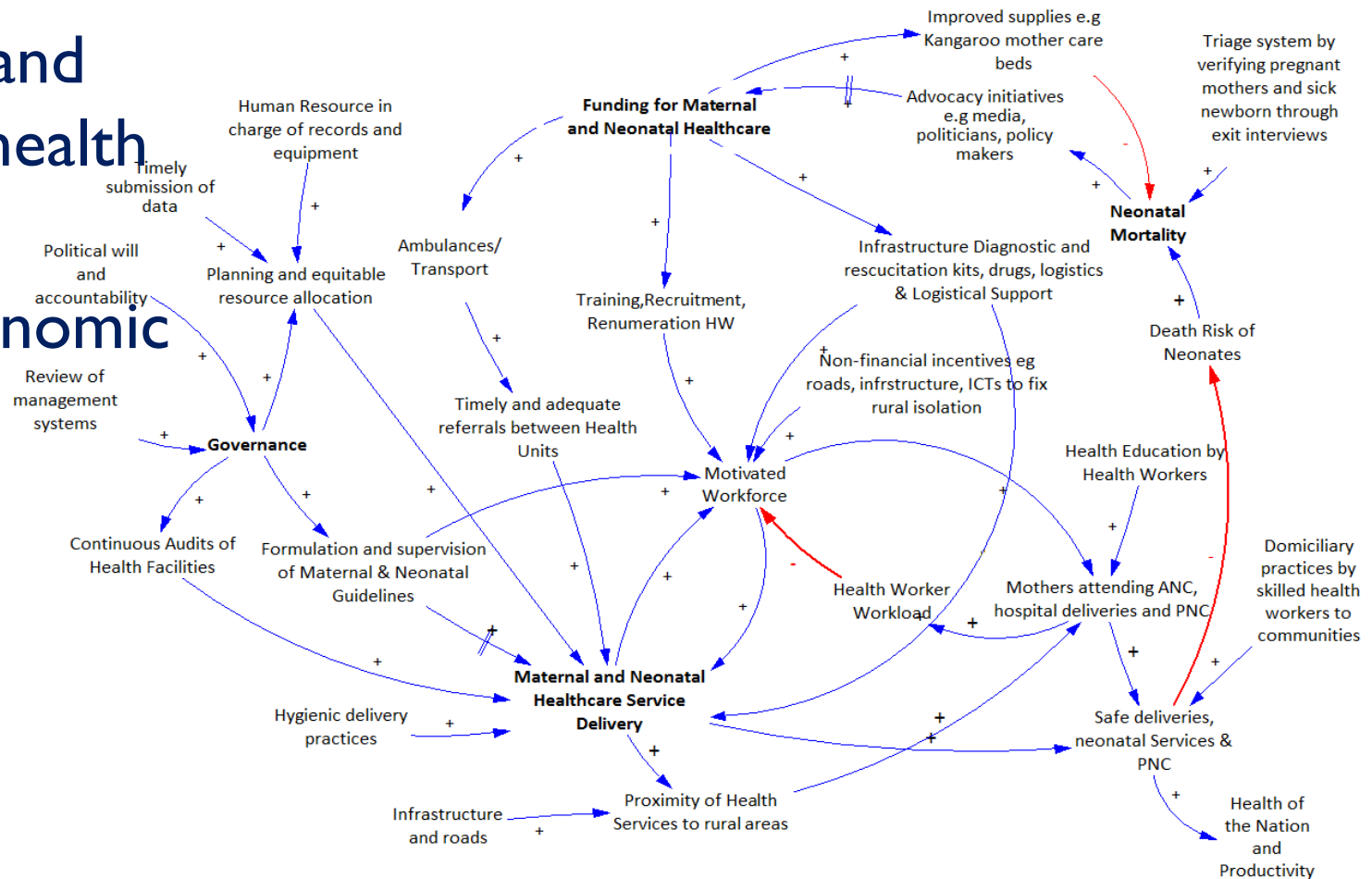
Potential leverage points— demand

- Increased awareness on maternal and neonatal healthcare
- Socio-economic status



supply

- Socio-economic status



Reflection

- What are the implications of feedback loops for determining leverage points?
- What insights do these CLDs provide that might have otherwise been missed?

References

- Rwashana Semwanga A, Nakubulwa S, Nakakeeto-Kijjambu M, Adam T. Advancing the application of systems thinking in health: understanding the dynamics of neonatal mortality in Uganda. Health Res Policy Syst. 2014;12:36

Thank you



Presentation developed by Helen de Pinho MBBCh, MBA, FCPH
assisted by Anna M. Larsen BS, MPH

Averting Maternal Death and Disability Program (AMDD)
Heilbrunn Department of Population and Family Health
Mailman School of Public Health
Columbia University

February 2015