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MAM*AI
Developing an AI-enabled Medical Chatbot for Midwives

Medicus Mundi Switzerland, 30 April 2025

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D-tree

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LIGHT

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Challenges

- Maternal mortality stagnating or increasing globally
- Highest maternal and newborn mortality rates in SSA
  - Tanzania (incl. Zanzibar) among 10 countries accounting for more than 60% of all global maternal and neonatal deaths
- Most pregnant women in Zanzibar seek care at government-run facilities, but facilities are often understaffed and under-resourced
- Nurses provide midwifery care but lack midwifery training in line with international standards
- Scarcity of evidence-based knowledge resources

→ Limited quality of care

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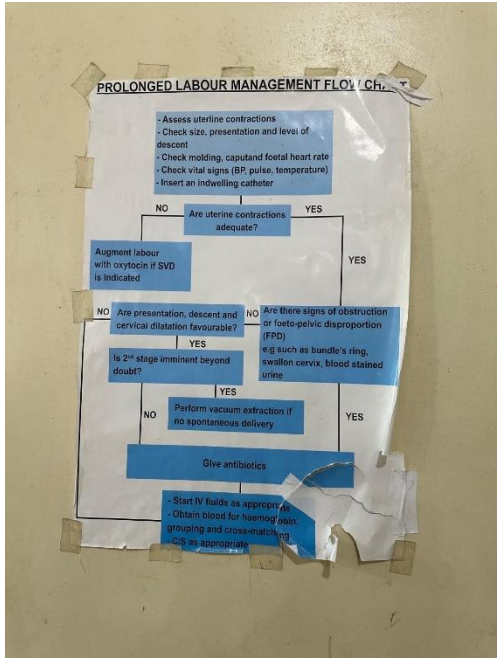

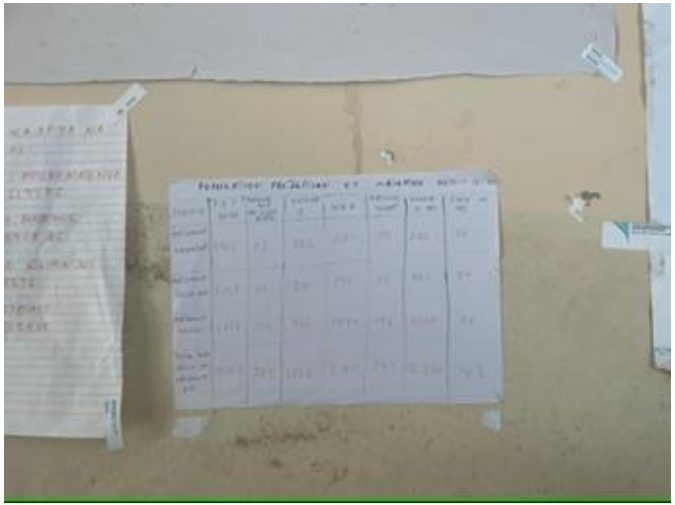

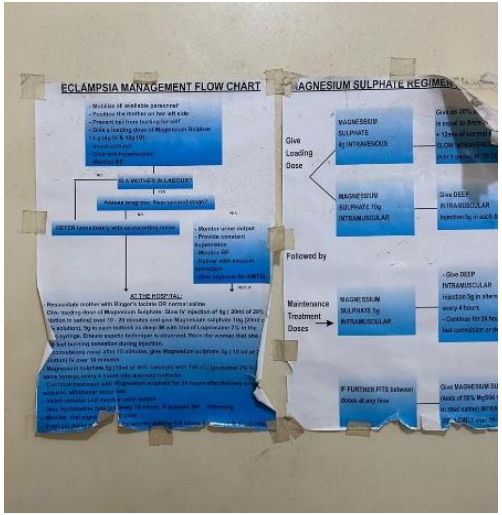

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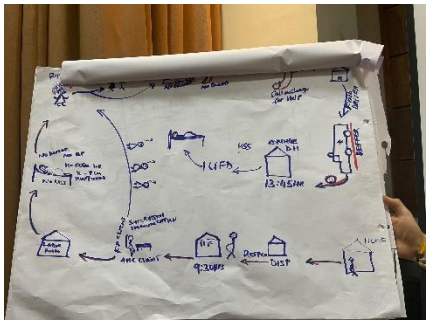
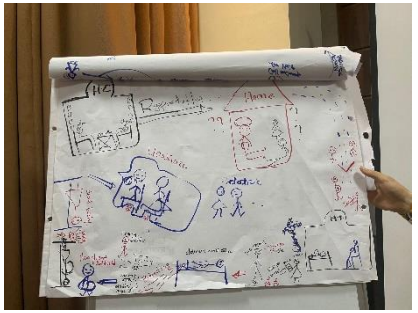
- High quality antenatal, delivery and postnatal care is critical
- Universal access to midwife-led care could prevent 67% of maternal deaths, 64% of neonatal deaths, and 65% of stillbirths, saving over 4 million lives each year by 2035 (Nove et al., 2021)
- Innovative solutions are needed to reach the SDG 3

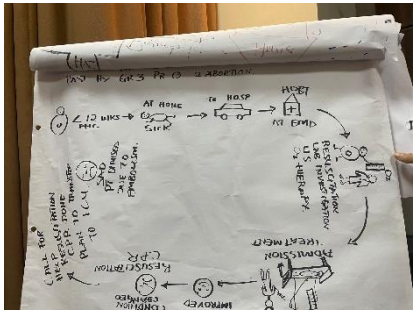
Exploration of needs and pain points

- Human-centered design approach
  - Meeting with large range of stakeholders and potential partners
  - Collecting rapid insights through interviews, participant observation, focus group discussions
  - Triangulation of results

- Co-design workshops
  - End-users: Journey mapping to gain in-depth understanding of clinical decision making
  - Stakeholders + end-users: End-users presenting their findings, joint discussion, needs, challenges







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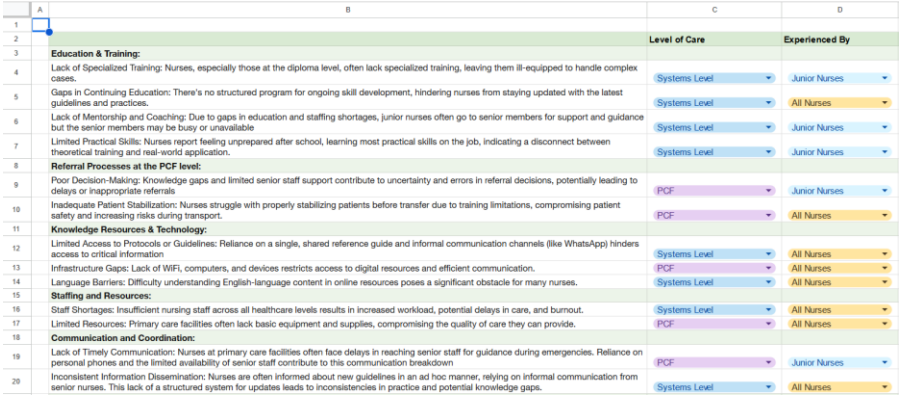
Needs Assessment & Features

- Access to evidence-based resources to support clinical decision-making
  - Quick and in real-time
  - Tailored to the clinical case and situation (dynamic)
  - On the phone
  - Offline
  - Following national clinical guidelines
  - In Swahili



		Level of Care	Experienced By
3	**Education & Training:**		
4	Lack of Specialized Training: Nurses, especially those at the diploma level, often lack specialized training, leaving them ill-equipped to handle complex cases.	Systems Level	Junior Nurses
5	Gaps in Continuing Education: There's no structured program for ongoing skill development, hindering nurses from staying updated with the latest guidelines and practices.	Systems Level	All Nurses
6	Lack of Mentorship and Coaching: Due to gaps in education and staffing shortages, junior nurses often go to senior members for support and guidance but the senior members may be busy or unavailable	Systems Level	Junior Nurses
7	Limited Practical Skills: Nurses report feeling unprepared after school, learning most practical skills on the job, indicating a disconnect between theoretical training and real-world application.	Systems Level	Junior Nurses
8	**Referral Processes at the PCF level:**		
9	Poor Decision-Making: Knowledge gaps and limited senior staff support contribute to uncertainty and errors in referral decisions, potentially leading to delays or inappropriate referrals	PCF	Junior Nurses
10	Inadequate Patient Stabilization: Nurses struggle with properly stabilizing patients before transfer due to training limitations, compromising patient safety and increasing risks during transport.	PCF	All Nurses
11	**Knowledge Resources & Technology:**		
12	Limited Access to Protocols or Guidelines: Reliance on a single, shared reference guide and informal communication channels (like WhatsApp) hinders access to critical information	Systems Level	All Nurses
13	Infrastructure Gaps: Lack of WiFi, computers, and devices restricts access to digital resources and efficient communication.	PCF	All Nurses
14	Language Barriers: Difficulty understanding English-language content in online resources poses a significant obstacle for many nurses.	Systems Level	All Nurses
15	**Staffing and Resources:**		
16	Staff Shortages: Insufficient nursing staff across all healthcare levels results in increased workload, potential delays in care, and burnout.	Systems Level	All Nurses
17	Limited Resources: Primary care facilities often lack basic equipment and supplies, compromising the quality of care they can provide.	PCF	All Nurses
18	**Communication and Coordination:**		
19	Lack of Timely Communication: Nurses at primary care facilities often face delays in reaching senior staff for guidance during emergencies. Reliance on personal phones and the limited availability of senior staff contribute to this communication breakdown	PCF	Junior Nurses
20	Inconsistent Information Dissemination: Nurses are often informed about new guidelines in an ad hoc manner, relying on informal communication from senior nurses. This lack of a structured system for updates leads to inconsistencies in practice and potential knowledge gaps.	Systems Level	All Nurses

Solution → Prototype

- Building on the world's best-performing, open-source, medical AI-powered chat bot based on LLAMA
  - Designed to support clinical decision making
  - Pre-trained on a comprehensive, carefully curated medical corpus for physicians
  - Currently tested and validated globally
- MAM*AI - Co-designing an AI-powered clinical chatbot with and for midwives
  - Allowing to access evidence-based information quickly and based on individual queries
  - Serving as a mentor
  - Knowledge and learning resource

Thank you to

- Tech4Dev, EPFL
- Innovation Office, University of Basel

Thank you for your attention!

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On behalf of the entire team

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