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Workshop Summary

PerspektivForum "Grand Challenges"

Bill & Melinda Gates Foundation and Stiftung Jugend forscht e. V.

October 14–16, 2018 Berlin

Title: "Wearables and technology for maternal, neonatal and child health behaviour change"

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Summary:

What are the general conditions and problems when accessing healthcare solutions in sub-Sahara societies?

1. Climate and geographic factors
2. Politics
    a. Basic requirements: Safety, infrastructure
    b. Education: Knowledge about the disease and governmental problems
3. Family resources
    a. Time of the parents – due to working hours
    b. Money – loss in income, when going to the doctor with a kid
    c. Distance – ability to access a doctor (availability of vehicles etc.)
4. Cultural aspects
    a. Decision about hospital visit/treatment
        i. Societal image of family organization and the role of women and children
        ii. Prioritization among kids because of age and sex
    b. Community aspects
        i. Head of the community
        ii. Local habits and rituals - Probable competition to local shamans

Literature research: Available technologies in sub-Sahara Region - learnings from former mHealth projects[1]:

We decided to use mobile phones for our project as they are available to a vast majority of the population.

[1] Obasola, O. I., Mabawonku, I., & Lagunju, I. (2015). A review of E-health interventions for maternal and child health in sub-Sahara Africa. Maternal and child health journal, 19(8), 1813-1824.

In literature, we identified the following critical success factors for a potential scale-up:

- Evidence for intervention: In order to receive government interest and support
- Financing and Staffing
- Integration into existing (mHealth) Systems as users are already used to it
- Quality of existing systems to enable a sufficient data quality
- Language and local context
- Data protection

How to solve the problem – help families in sub-Sahara countries to evaluate the severity of their child's disease.

- Principal symptom for pneumonia: increased respiratory rate above 50/min.
- Technology: microphone of mobile phones to check for frequency of breathing.
- We did the proof of concept of the technical feasibility to check the respiratory rate via telephone.
- Application: a questionnaire for a call center that suggests whether to visit a doctor immediately or not.

1. Text messages with information about the risk of pneumonia (from big health program that already exists)
2. Mother with sick infant calls from her mobile phone

"This phone call is free of charge. You are calling because you are worried about your child's health."

"We will try to help you in making the decision if you should see a doctor immediately."

Instructions:

"- Please hold your mobile phone's microphone close to your child's mouth and nose"

"- Make sure there is no noise coming from the surroundings"

"- Start at the first audio signal and continue up to the second audio signal"

"[beep]" [...] breathing and immediate data conversion [...] "[beep]"

→ [several possible answers]

A. "Your child is life-threateningly ill. Please seek help at once. Contact [...]."

B. "Based on our test, there is no immediate need to see a doctor. Do not hesitate to contact us again and remember you yourself are the best to assess your child's health."

C. "Our test did not give a clear result. Press 2 to repeat the measurement."