

The Expansion of Mobile Healthcare in Emerging Markets using HeMoClo

Arianna Groetsema¹, Allison Zhang¹, Mr. Sudhanshu Pant²
 Palo Alto High School¹ Mobilitas²



Background

India spends \$215 per capita (1% GDP per year) U.S. spends \$1038 per capita (8.3% GDP)

Poor health pushes 39 million Indians into poverty each year

95% of Indian citizens rely on out of pocket health costs despite India's universal healthcare scheme

Rural India needs 19,236 specialists at its health centers but only has 6,926

31% of the Indian rural population has to travel over 30 km to get needed medical treatment

India has nearly 900 million mobile phone connections and more than 200 million internet users

There are 0.7 physicians per 1,000 Indian citizens

Majority of doctors located in cities but 70% of India's population reside in rural areas

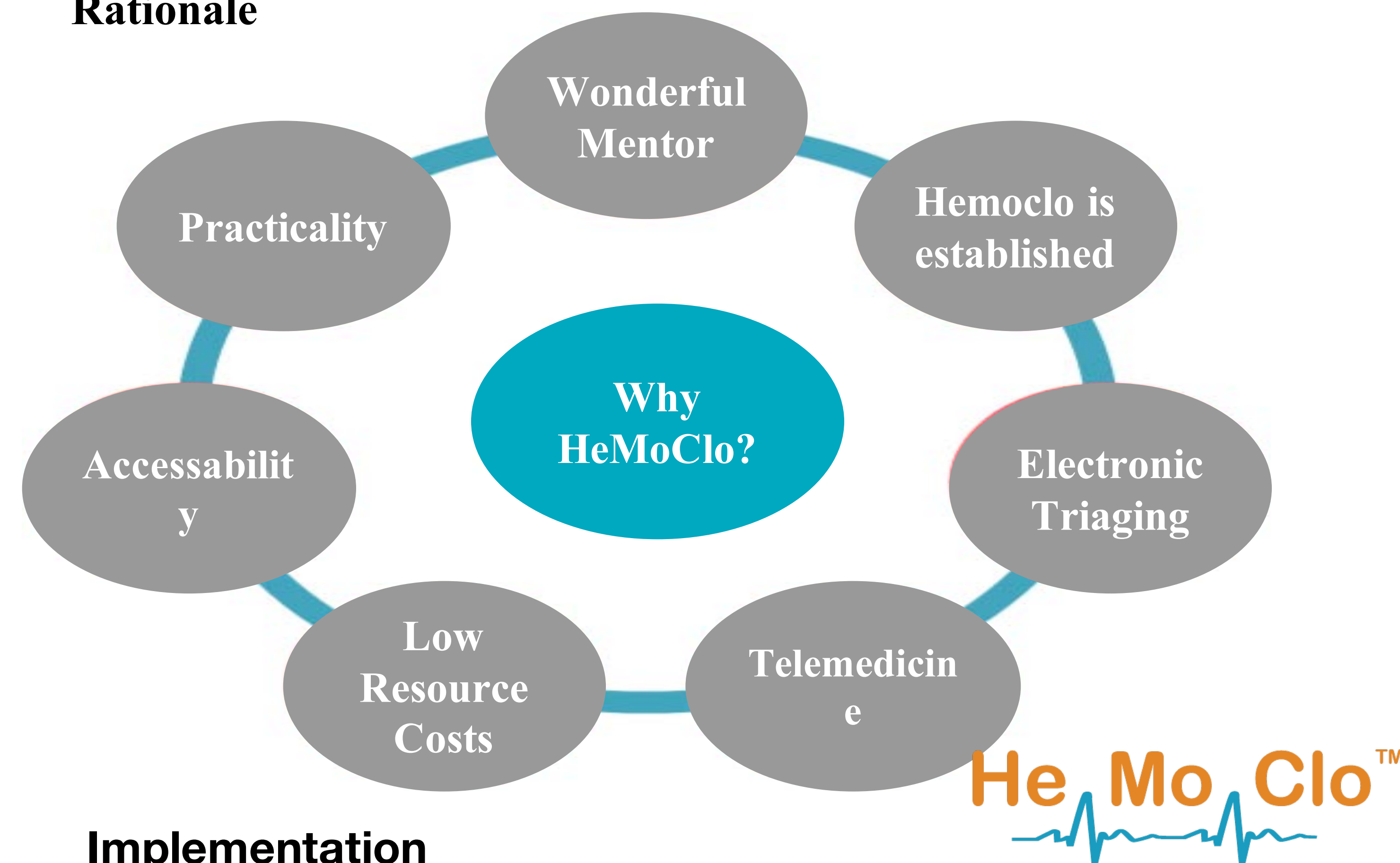
Definition of Problem

Access to adequate healthcare is a basic human necessity in the 21st century. Unfortunately, many impoverished places in the world, including areas in rural India, still lack the benefits of basic health services.

Solution

Develop a method to increase the pace of expansion and sustainability of mobile health systems through the design of locally feasible economic models to facilitate use of HeMoClo to optimize communication between healthcare providers and patients in rural areas.

Rationale



Implementation

1. Modified App Flows

General Changes

Calendar Function

Implementation Continued

Information Support

Include an info button that clarifies and provides guidance for the technical aspects:

ex. ANC: ANC (Absolute neutrophil count) is a measure of the number of neutrophil granulocytes present in the blood

Audio Support

Include audio version of text and input requirements

Information Support

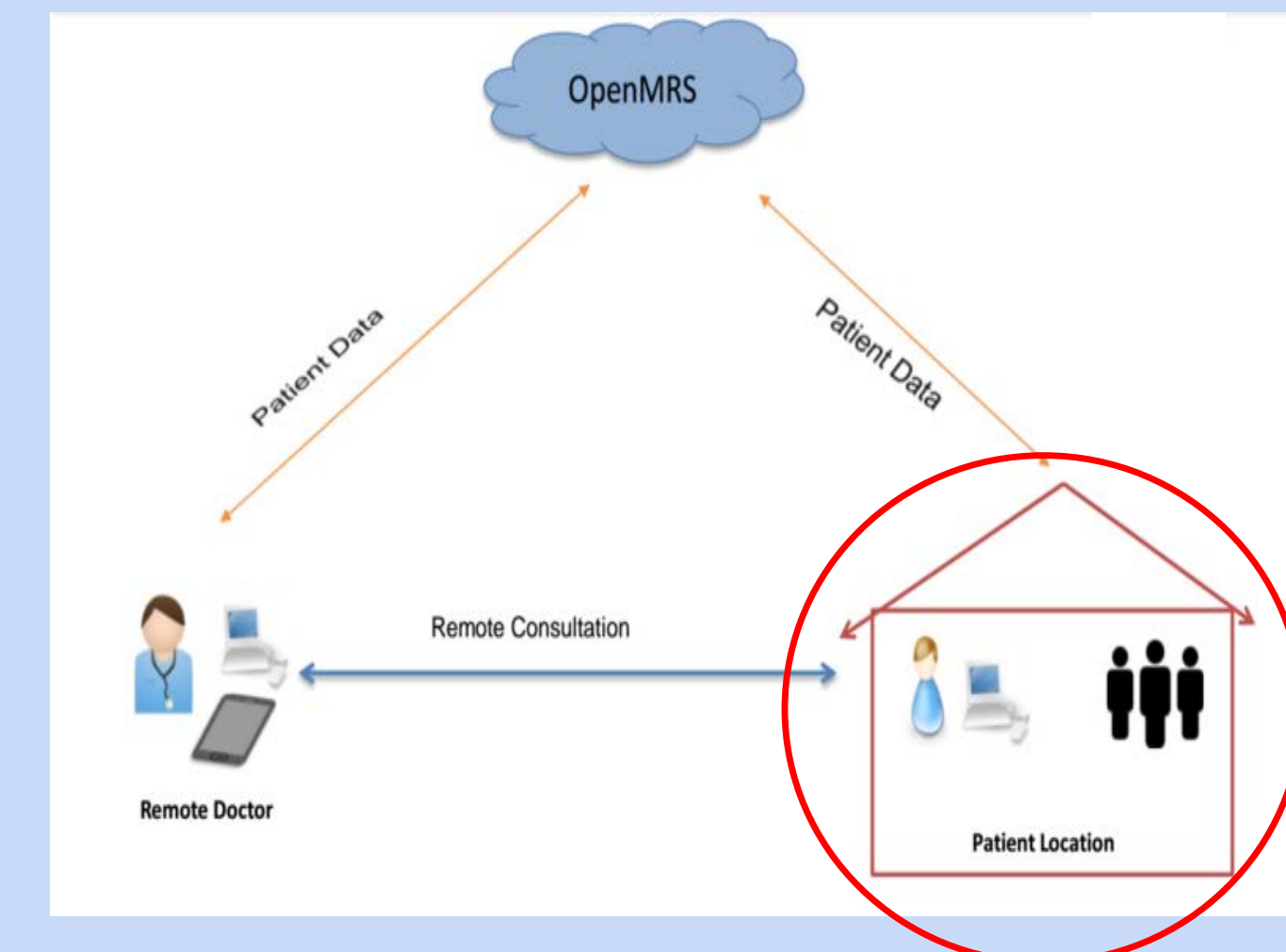
Combination of audio and informational aid for less literate field workers

Compiled Support

Includes specific standards for gauging pain to allow for more accurate diagnoses.

2. HeMoClo Field Implementation

Implementation Diagram



Training Health Coordinators



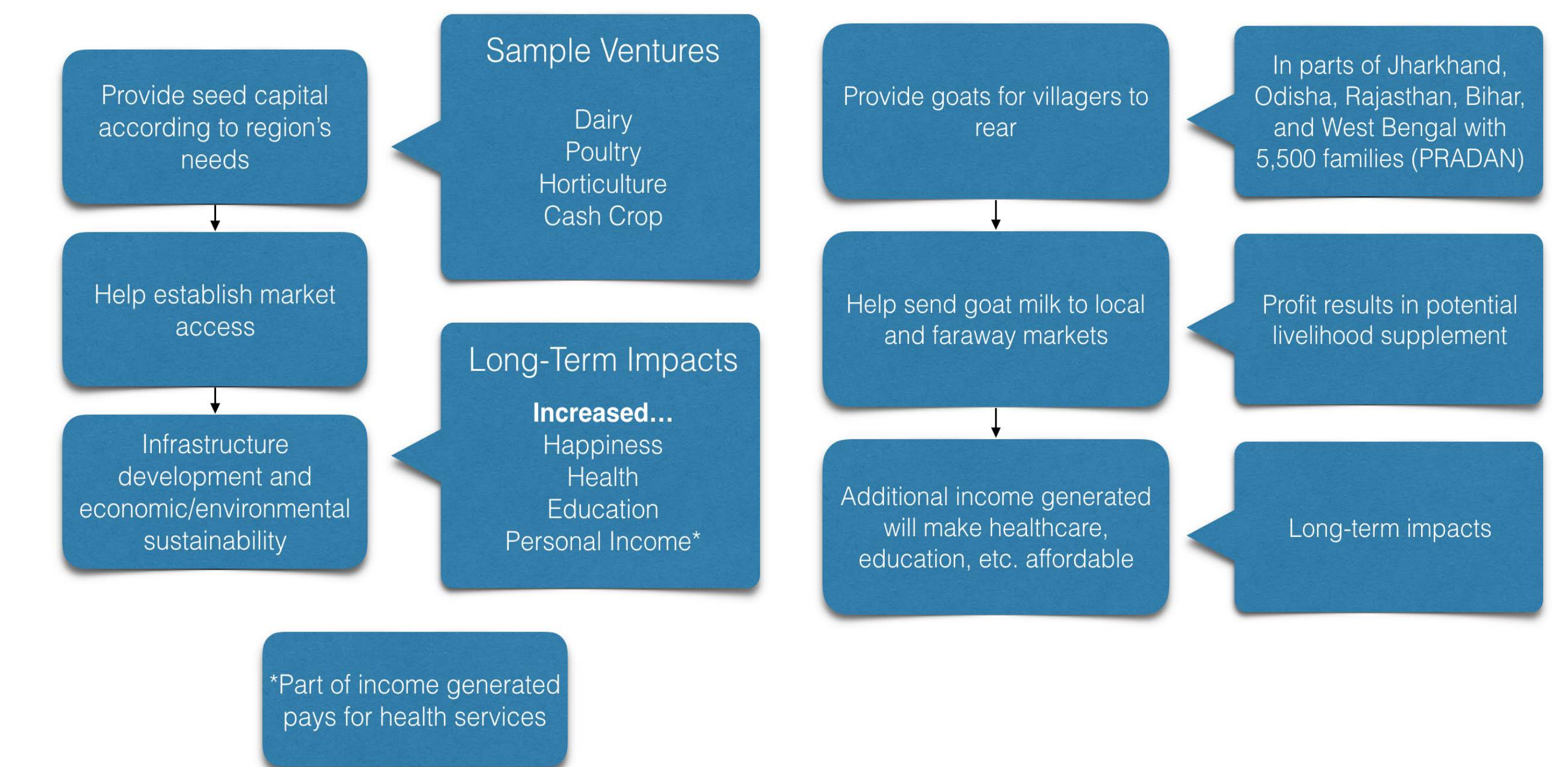
Health Worker-Patient Interaction



Updating HeMoClo with User Feedback

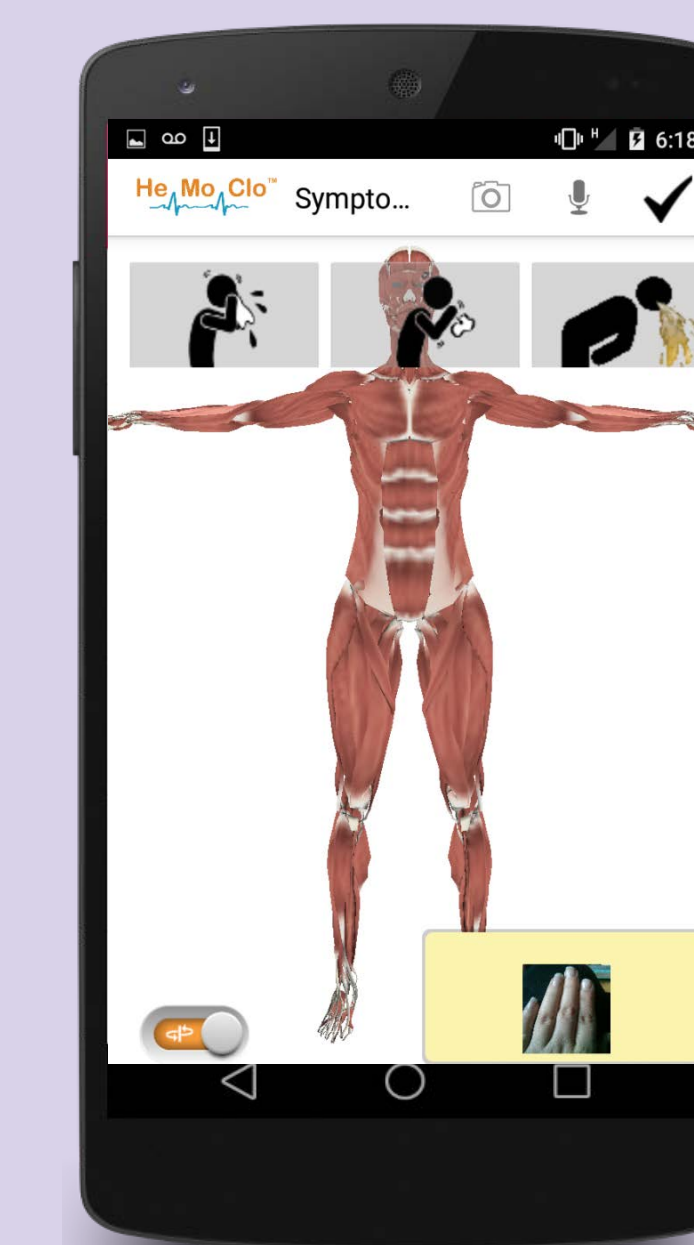


3. Business Model for Rural Economic Development

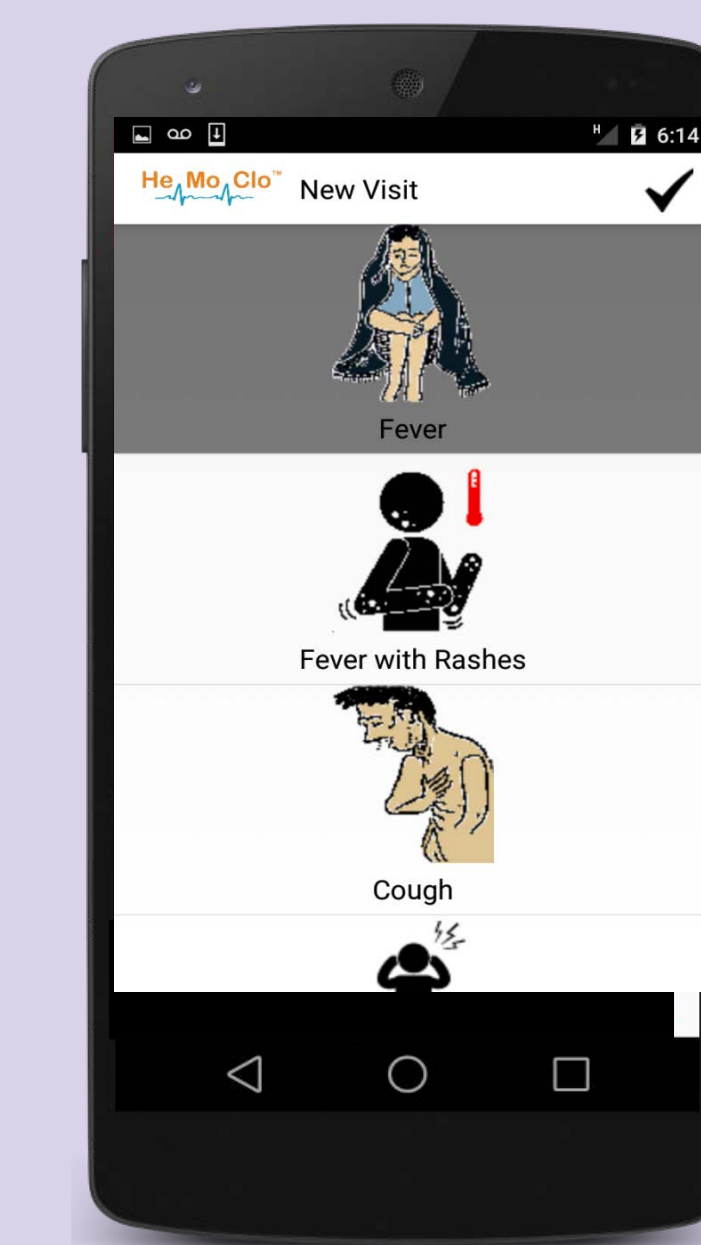


Evaluation

What works:



Mixture of symbols and pictorial models



Intuitive pictorial representations of symptoms that can be used as communication among lower-literacy populations

Taking into account the realities of wireless capabilities and data transfer, some of the modifications shown in Implementation may be unreasonable to carry out. For example, transferring an audio/picture/video file via the OpenMRS makes quick triaging and doctor visitation impossible.

Acknowledgements/References

We would like to thank Mr. Mani Chandrasekar of Mobilitas and Mr. Sanjay Sharma of Pradan for helping answer our technological and non-profit related questions, respectively.

References

"5 Things to know about India's Healthcare System | Forbes ..." 2014. 17 Nov. 2015 <<http://forbesindia.com/blog/health/5-things-to-know-about-the-indias-healthcare-system/>>

"Access to electricity (% of population) | Data | Table." 2011. 19 Nov. 2015 <<http://data.worldbank.org/indicator/EG.ELC.ACCTS.ZS>>

"Can India Transform Its Electricity System? | CleanTechnica." 2015. 19 Nov. 2015 <<http://cleantechnica.com/2015/09/08/can-india-transform-electricity-system/>>

"Census of India: Literacy And Level of Education." 2007. 19 Nov. 2015 <http://censusindia.gov.in/Census_And_You/literacy_and_level_of_education.aspx>

"Healthcare System in India | India - India at AngloInfo." 2012. 17 Nov. 2015 <<http://india.angloinfo.com/healthcare/health-system/>>

"India Internet Users - Internet Live Stats." 2014. 19 Nov. 2015 <<http://www.internetlivestats.com/internet-users/india/>>

"India's universal healthcare rollout to cost \$26 billion | Reuters." 2014. 17 Nov. 2015 <<http://in.reuters.com/article/2014/10/30/uk-india-health-idINKBN0J0VN20141030>>

"Telemedicine in India might be just what the doctor ordered." 2014. 1 Dec. 2015 <<http://blogs.reuters.com/india/2014/06/04/telemedicine-in-india-might-be-just-what-the-doctor-ordered/>>

Dasgupta, Aparajita, and Soumya Deb. "Telemedicine: A new horizon in public health in India." *Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine* 33.1 (2008): 3.

"Transport - India Transport Sector - World Bank." 2005. 19 Nov. 2015 <<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/EXTSARREGTOPTRANSPORT/0,contentMDK:20703625~menuPK:868822~pagePK:34004173~piPK:34003707~theSitePK:579598,00.html>>

"WHO | India." 2003. 17 Nov. 2015 <<http://www.who.int/country/ind/en/>>