malaria consortium
disease control, better health

inSCALE
Innovations at Scale for Community Access and Lasting Effects

inSCALE Technology Innovations

An APE using the inSCALE mobile phone support system to diagnose a sick child

The challenge

Community health workers, known in Mozambique as *Agentes Polivalentes Elementares* (APEs), are intended to improve access to basic healthcare in remote areas. APEs are community members trained to conduct health promotion activities and case management of pneumonia and diarrhoea in children under five and malaria in patients of all ages. To improve the quality of care provided by the APEs and scale-up the programme to the whole country, key challenges need to be addressed to improve APE motivation, supervision and performance.

The inSCALE APE CommCare mobile phone application

Mobile health (mHealth) approaches to improve motivation and performance of CHWs in Mozambique

"That phone helps me because during a consultation, it explains all that I do [including] how much medicine to give by age."

Castarina Joaquim, Agente Polivante Elementar (APE) in Inhassoro district, Inhambane province

Meeting the challenge–inSCALE

The inSCALE project in Mozambique is part of a multi-country study that includes Uganda and is supported by the Bill & Melinda Gates Foundation. The project is working to increase coverage of integrated community case management (iCCM) through community health workers (CHWs) trained to adequately treat children under five years for diarrhoea, pneumonia and malaria.

The goal of the project is to develop scalable innovations based on research which will have a positive impact on CHW motivation, performance and retention in order to increase the quality and coverage of iCCM. This will eventually lead to an increase in the number of children receiving appropriate treatment in their communities or being referred to health facilities.

Findings from a large piece of formative research, including literature reviews, stakeholder analyses and other research activities, were used to identify possible innovations. The feasibility and acceptability of these options were then analysed by key national stakeholders. Based on their recommendations, the inSCALE APE CommCare mobile phone application was developed by Malaria Consortium in partnership with the Inhambane Provincial Health Directorate, Dimagi, University College London and London School of Hygiene and Tropical Medicine.

Innovation: inSCALE APE CommCare application

The inSCALE project is responsible for the country's largest mHealth deployment to date and provides an opportunity to explore the potential impact of technology solutions when implemented in a national health system. As part of the project, APEs receive an Android smartphone with the inSCALE APE CommCare software application and a solar charger. Each APE also receives a monthly automated credit allowance for making calls to peers and to supervisors for support.

The inSCALE APE CommCare application is a phone-based job aid that uses images and audio to guide APEs through the consultation steps to assess, diagnose, treat and refer patients with diarrhoea, pneumonia, malaria and malnutrition, as well as check for vaccination status. Individual patient data inputted by the APEs is stored on the phone until there is a network connection and, together with weekly aggregated data on cases seen and medicine stock levels, sent to a server using the 3G network.

All data is stored on a server providing real-time information that is accessible to programme stakeholders, including provincial and district level statisticians and health planners. The server sends automated emails to APE supervisors at district and health centre level on a weekly and monthly basis, reporting on the APEs' diagnosis, treatment and follow-up of patients. The inSCALE system checks the APE's data and automatically generates recommendations for the supervisor on actions needed. In addition, monthly motivational SMS are also sent to both APEs and supervisors.

Why mobile phones?

There is growing evidence demonstrating the potential of mobile communications to radically improve healthcare services even in remote and resource poor environments. The inSCALE project is committed to using mHealth approaches where they promise to produce long-lasting results and play a significant part in improving the quality of care, as well as data flow and use.

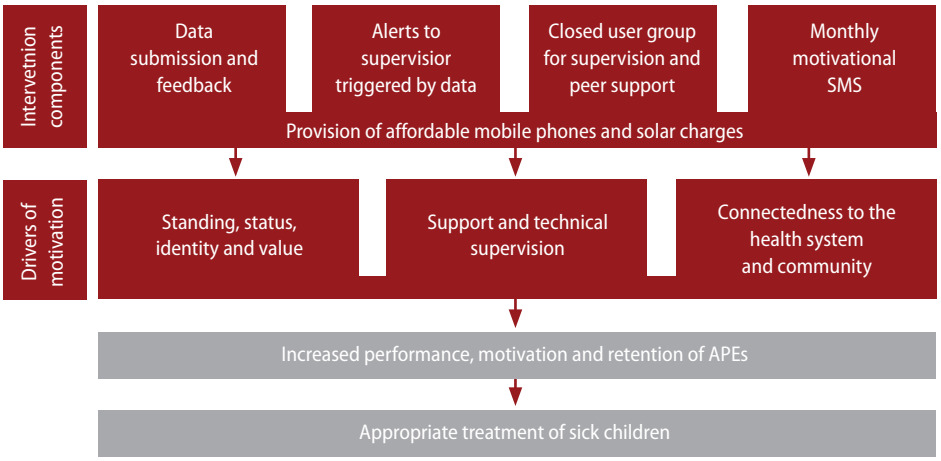
Mobile phone coverage is growing rapidly in Africa, both in terms of network coverage and the exponential number of users. Therefore, mobile phones can bridge the gap between APEs and their supervisors allowing for more frequent interaction and efficient and targeted supervision based on the APEs' submitted data and performance.

APEs can also feel part of a wider community, able to ask for advice and share experiences, as they are able to more freely communicate with their peers.

The inSCALE APE CommCare application highlights and improves the connection between the APEs and the health system as well as acknowledging and encouraging APEs' work. This can increase APEs' sense of collective identity, value and effectiveness.

The application supplies APEs with tools considered important to complete their duties, including consultation support, data submission and an innovative mobile phone respiratory timer for detection of fast breathing, associated with pneumonia.

Conceptual framework of the inSCALE intervention package in Mozambique



Preliminary results

A process evaluation of this intervention was carried out in Mozambique in mid-2014. Preliminary results show that 68 percent of APEs state that they always use the inSCALE APE CommCare application in their work, and many state that it helps them to remember the symptoms to look for. The three most preferred aspects of the inSCALE APE CommCare application were the job aid for newborns, children and pregnant women; improved respiratory rate timer; and treatment and dosing instructions. The inSCALE APE CommCare application is also seen to enhance community perception and legitimacy of APEs. It provides APEs with opportunities to acquire new skills and increases level of support from their supervisors, both of which are key drivers to motivation. Medicine stock data delivered through weekly reports is seen as useful to health facility supervisors, and critical for addressing commodity gaps. An impact and cost-effectiveness evaluation is planned for mid-2015.

Lessons learnt

User-centred design was a key element of this mHealth solution. The Mozambique Ministry of Health staff and APEs were heavily involved in every step of intervention design. The consultation support system in the inSCALE APE CommCare application is based on pre-existing paper-based job aids, and fully aligned with Ministry of Health protocols. Similarly, system-generated reports follow the Ministry of Health templates. This allowed a smooth transition to the phone-based tool and reporting system. Most APEs and supervisors were unaccustomed to using smartphones, consequently introductory sessions on smartphones were held in addition to application training. An app-blocker was also used to lock down unnecessary features of the phone. As a result, APEs demonstrated the necessary technical literacy required for efficient phone use, avoiding over use of other applications that could affect the data allowance. The 'training of trainers' approach was also key to generate project ownership and sustainability. ■

Malaria Consortium inSCALE partners:

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