Of the 11 million children under five who die every year, more than 70% die on account of six preventable causes (UNICEF, 2014). The WHO and UNICEF developed the Integrated Management of Childhood Illness (IMCI) approach to reduce child deaths, illness, and disability, and improve growth and development in children under five. While many countries have adopted the IMCI protocol as their national standard for early childhood illness, IMCI requires extensive and expensive health worker trainings and substantial supervision, and also requires health workers to adhere to time-consuming workflows. These challenges result in decreased adherence to the protocol (DeRenzi, 2008). Together with Community Case Management (CCM), which amplifies the treatment arm of IMCI, the frameworks serve to improve child health but suffer from limitations due to their complex nature.

Benefits of Dimagi's Technology For Child Health

Dimagi has significant experience designing and implementing e-IMCI solutions that replace paper forms and chart booklets with mobile phone and tablet applications. Mobile applications address IMCI and CCM limitations by supplementing health worker trainings, simplifying health workers' workflows, supporting supervision efforts, and increasing communication within the last mile of health systems.

Child Health Programs

Child health programs require extensive health worker trainings. It is difficult to share child health data among stakeholders.

- Mobile applications can supplement health worker trainings with multimedia-enabled training modules
- Programs can remotely update IMCI and CCM applications, enabling smoother programmatic adjustments

Real-time data enables:

- **Supervisors** to detect data irregularities and oversee health workers' activities, including frequency of visits, speed of follow up, number of cases identified, length of counseling sessions, and health workers that aren't adhering to IMCI and CCM protocols
- **Program managers** to conduct health surveillance, monitoring, and evaluation of IMCI/ CCM programs, activating timely response where IMCI implementation is not successful
- **Ministries of health** to access easy-to-read reports on child health data by geographic area and make the appropriate programmatic decisions

Health Clinics

Mechanisms are often not in place to support referrals; clinics often lack medicine to treat child illness.

- Child health records can be sent to referral facilities, decreasing the likelihood of children falling out of the program due to health worker non-compliance or attrition
- Application can consider available stock while performing automatic prescription in accordance with IMCI, based on symptoms entered by the clinician
- SMS interactions allow stockouts to be reported before they occur

Patients

Patients are lost to follow up; families often lack proper knowledge about positive child health practices.

- Registration enables patients to be easily tracked across multiple visits, facilitating a continuum of personalized care according to their specific IMCI status (e.g. cough, fever)
- Multimedia-enabled behavior change messaging engages families on positive health practices
- Mobile tools increase families' likelihood to ask clinicians questions, due to perception that clinicians spend more time examining their child than filling out paper forms (Mitchell, 2012)

Highlighted Projects

Terre Des Hommes, Burkina Faso

Through funding from the Bill & Melinda Gates Foundation, Terre des Homes is deploying CommCare to 400 clinics in Burkina Faso to improve IMCI adherence. Terre des Hommes adopted the Integrated eDiagnostic Approach (IeDA) utilizing the Electronic Consultation Register (REC), a simple and low-cost IMCI diagnostic support tool to help nurses comply with IMCI protocols to ensure data accuracy. REC 2.0 is built on CommCare and includes both a tablet-based mobile app in addition to a web dashboard.

D-Tree International, Malawi

D-Tree International designed a CommCare application while providing technical assistance to the USAID-funded "Integrated (HIV Effect) Migration and Positive Action for Community Transformation" (IMPACT) project. This project aims to improve the quality of life of orphans and vulnerable children in three target districts in Malawi. The application functions as a job aid to health surveillance assistants (HSAs), providing decision support to accurately treat sick children and follows Malawi's government-designated IMCI protocol.

Malaria Consortium, Mozambique

Malaria Consortium is implementing a WHO-modified social autopsy tool. 132 health workers and 50 supervisors are using the CommCare app to collect baseline information on under-five child deaths in order to analyze common bottlenecks and delays to appropriate healthcare. The project aims to increase understanding of where healthcare delays occur, whether children seen by health workers are seen earlier, and why there are still delays for some children in receiving appropriate care in areas covered by health workers. In addition, the project seeks to increase access to quality medical services.

TulaSalud, Guatemala

TulaSalud's mHealth program in Guatemala, KAWOK, uses CommCare for its maternal and neonatal care application, in addition to others for auxiliary nurse services, community surveying, and malaria monitoring and treatment. Key features include remote decision support, SMS alerts, and local language customization, and incorporating open-source products such as Google Earth for GPS tracking. A central function of the application is to strengthen Guatemala's Zero Hunger Pact to reduce chronic and seasonal child malnutrition and child deaths due to acute malnutrition among indigenous communities.

World Vision, Niger

World Vision has initiated an innovative IMCI mobile application to increase integrated community case management (iCCM) and ensure higher healthcare quality through job aids, referral support, and supervision checklists. Mobile phones equipped with the MOTECH suite are enabled with iCCM-specific modules. Job aids using response-triggered decision tree algorithms will ensure adherence to standardized protocols, improving diagnosis and treatment.