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ImTecho

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ImTecho

‘ImTeCHO’ is an innovative mobile phone application to improve performance of ASHAs through better supervision, support and motivation for increasing coverage of proven maternal, newborn and child health interventions among resource-poor settings in India. ImTeCHO stands for “Innovative mobile-phone Technology for Community Health Operations”.

“TeCHO” in Gujarati language means “support”; therefore, “ImTeCHO” means “I am support”. As its name indicate, ImTeCHO is aimed to provide support to all involved in ASHA programme starting from ASHAs to PHC staff to higher level officials so that their job is easier, and more effective.

The initiative is an innovative intervention based on mobile phone technology (called m-Health) to help community based health workers (called ASHAs) and Primary Health Centre (PHC) staff improve coverage of life saving, community based maternal, newborn and child health (MNCH) services towards reducing maternal, newborn, and child, mortality and malnutrition and effectively managing morbidities in predominantly tribal and rural communities. The intervention makes this possible by improving performance of ASHAs through better supervision, motivation and support. The m-Health intervention is named ImTeCHO which stands for “Innovative Mobile-phone Technology for Community Health Operations” and it is a joint initiative between the Department of Health and Family Welfare (GoG) and

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SEWA Rural.

SEWA Rural, a voluntary service organization is providing medical, health and education related services to the rural, poor and tribal population of Bharuch, Narmada and surrounding districts in south Gujarat for past thirty three years.

Considering above facets, ImTeCHO project has quite a comprehensive reach through its delivery centres in form of ASHAs and PHC staff. Though at present only 110 health workers, including village based ASHAs and PHC staff are using ImTeCHO mobile phone application everyday in a pilot phase, there is a huge potential to scale up this innovation to cover about 45 lack mothers and children residing in all 18,000 villages of Gujarat through about 37,000 ASHAs using ImTeCHO mobile phone application in coming years.

Background:-

“ImTeCHO” initiative is being successfully piloted by SEWA Rural in partnership with the Department of Health and Family Welfare since May 2013. SEWA Rural, a voluntary service organization is providing medical, health and education related services to the rural, poor and tribal population of Bharuch, Narmada and surrounding districts in south Gujarat for past thirty three years.

“ImTeCHO” initiative is being implemented in two PHCs (47 villages) in high focus Taluka of Jhagadia in Bharuch district for almost a year now. In addition, same project is also recently introduced in 40 villages of Kaprada Taluka in Valsad District. Thus in total about 90 ASHAs are now satisfactorily using the smart phones in delivering maternal, new born, infant and child care at the doorsteps more effectively.

The ImTeCHO initiative is an innovative intervention based on mobile phone technology (called mHealth) to help community based health workers (called ASHAs) improve coverage of life saving, community based maternal, newborn and child health (MNCH) services towards reducing maternal, newborn, and child mortality and malnutrition



in predominantly tribal and rural communities. The intervention makes this possible by improving performance of ASHAs through better supervision, motivation and support.

The mHealth intervention is named ImTeCHO which stands for “Innovative Mobile-phone Technology for Community Health Operations”. “Techo” in Gujarati means “support”; hence, ImTeCHO means “I am support”. ImTeCHO mobile phone application integrates checklist (to insure standardization of services) with other features that mobile technology offers such as ability to transfer data instantly and apply algorithm automatically to data entered along with features to ensure check-and-balance for truthfulness and accuracy of collected information. ImTeCHO mobile phone application was jointly developed by SEWA Rural and Argusoft India Ltd, an IT company based in Gandhinagar, Gujarat.

There are four components of ImTeCHO mobile phone application:

1. Scheduling and task management: health worker receive alert on her mobile regarding tasks to be completed every day
2. Health promotion using multimedia: Nine mobile based short videos assist ASHA to counsel about key healthy behaviors during their home visits to respective beneficiaries.
3. Automated diagnosis, risk stratification and treatment: ImTeCHO application shows diagnosis and customized treatment plan based on entry made on mobile
4. Support and supervision: ImTeCHO web interface will provide real time information to medical officers for proving timely support (e.g. medicines, high risk patient tracking.) and supervision, monitoring (timely information about beneficiaries who are left out) and incentive management. All this is made possible by using a low-cost smart phone costing approximately Rs.4, 500.

Objective :-

The main objective of “ImTecho” is high risk conditions, health education to prevent serious diseases, vaccinations, and pre-natal checkup. Total 6,500 clients (tribal pregnant women, newborn babies and children) have received services through this project until June 2014. ImTeCHO is currently being used by 90 ASHAs in 90 villages and three PHCS of two districts of Gujarat. Each client received approximately 3 services from health workers through use of ImTeCHO mobile phone application. Hence, 19,500 services were provided to above clients until March, 2014.

However, there is a huge potential to scale up this project to cover about 45 lacs MCH beneficiaries residing in all 18,000 villages of Gujarat through 37,000 ASHAs using ImTeCHO mobile phone application in coming years.

- I. 90 ASHAs in 90 project villages belonging to three PHCs have been trained and all ASHAs are using ImTeCHO confidently and enthusiastically since May, 2013.
- II. 2,500 pregnant women and 4,000 children under the age of 2 years were registered by ASHAs using ImTeCHO and were benefitted from this project in about one year.
- III. Every month, approximately 1500 forms (for home visits, VHND, migration, death reporting etc) were completed by ASHAs using mobile phone.
- IV. Overall 80% of assigned tasks were completed by ASHAs. 75% of assigned PNC visits were completed by ASHAs. Average login rate (number of days ASHA logged in ImTeCHO against expected) was approximately 90%.
- V. All ASHAs are now regularly entering information about services provided during VHND in accurate and timely manner.
- VI. High risk cases, including those suffering from malnutrition, are now accurately identified by ASHAs using ImTeCHO and appropriate care is provided. Nutritional surveillance is now possible. 643 morbidities have been identified so far.
- VII. There is 100% death reporting by ASHAs using ImTeCHO.
- VIII. PHC staff has started using web interface to track high risk cases and manage ASHAs' incentives.

An operational plan with all required tools including training tools have been now developed and field tested. A role out plan is now ready for scaling up ImTeCHO outside Jhagadia.

Need of ImTecho:-

ImTeCHO is an innovative strategy to overcome above problems by using mobile phone technology (called mHealth solutions) to empower ASHAs. ImTeCHO will be used in 3 ways:

- I. Mobile phone as a job aid (ImTeCHO) to ASHAs to increase coverage of maternal, newborn and child care
- II. Mobile phone as a job aid (ImTeCHO) to ASHAs and Auxiliary Nurse Midwives to facilitate referral and care for mother, newborn and child with complications
- III. Web interface as job-aid (ImTeCHO) to PHC staff for monitoring and supporting ASHA program, including timely ASHA incentive payment, supply management, ASHA performance report, and accurate reporting of births and deaths.

Over the course of last decade, significant evidence has been generated about effectiveness of community based interventions which can reduce maternal, newborn, and child mortality and morbidity. To facilitate implementation of the proven interventions, a new cadre of village based Community Health Workers, called Accredited Social Health Activist (ASHA), has been created under the aegis of the National Rural Health Mission (NHRM). Many of the community based maternal, newborn and child health (MNCH) interventions are expected to be delivered or facilitated by ASHA during her scheduled home visits.

Unfortunately, evaluations examining ASHA’s performance have noted that coverage of selected MNCH interventions to be implemented by ASHA is suboptimal. Some of the critical reasons for low coverage is inadequate support and supportive supervision of ASHAs inadequate information about performance, delay and insufficient payment of incentives, poor knowledge and skills of ASHAs, quality of training, and complexity of tasks to be performed Ref:

1. Columbia University. Improving the performance of Accredited Social Health Activists in India: Working papers series. Mumbai. 2011,
2. National Health Systems Resource Centre (NHSRC) and National Rural Health Mission (NRHM). ASHA: Which way forward...? New Delhi, 2011,
3. National Health Systems Resource Centre (NHSRC) and National Rural Health Mission (NRHM). An update on ASHA programme. New Delhi, January, 2013] Also, timely identification of sickness / complications and risk screening among large numbers of maternal, newborn and child cases is much to be desired and many do not reach to appropriate health facility. The non-availability of real time information about such cases to respective Auxiliary Nurse Midwife (ANMs) and medical officers has limited their ability to respond; hence, such complicated cases at home tend not to receive appropriate care.

1. COMPONENTS OF IMTECHO

COMPONENTS	IMTECHO
Decision support system	✓ YES
Awareness raising	✓ YES
Surveillance	✓ YES
Patient monitoring and high risk tracking	✓ YES

Programme management tool	✓ YES
Patient record	✓ YES
Treatment compliance	✓ YES
Community mobilization	✓ YES
Appointment (home visits) reminders	✓ YES
Emergencies	✓ YES

☞ Situation before the Initiative:-

India has the highest burden of maternal, newborn and child mortality and malnutrition in the whole world and may not achieve Millennium Development Goals (MDG) four and five related to reduction in maternal and child mortality. Fortunately, there are now proven community based interventions available to improve mortality and malnutrition. However, the challenge is how to implement such proven interventions at scale with highest possible coverage and quality in near future so that Millennium Development Goals four and five can be achieved in India.

To facilitate implementation of the proven interventions, a new cadre of village based Community Health Workers, called Accredited Social Health Activist (ASHA), and has been created under the aegis of the National Rural Health Mission (NHRM). Many of the community based maternal, newborn and child health (MNCH) interventions are expected to be delivered or facilitated by ASHA during her scheduled home visits.

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Above challenges resulting in sub optimal performance of ASHAs and health workers are some of the important reasons for high rates of maternal, newborn and child mortality and malnutrition in India.

Technology :-

The ImTeCHO mobile phone application is powered by ArguSoft India Ltd's mAID platform. It was customized for SEWA Rural and further extended with collaborative domain knowledge inputs from SEWA Rural experts. Argusoft India Ltd has a long history of providing effective and scalable mHealth solutions in India and abroad. The mAID platform is one of their time tested and proven platforms for mobile based public health initiatives.

1. HOW ImTeCHO WORKS

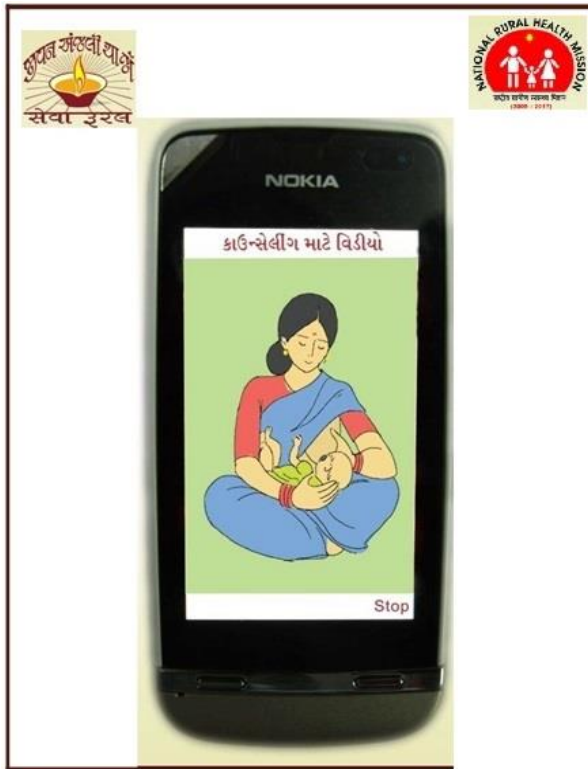
ImTeCHO has two components:

- a) Mobile phone application which is used by ASHAs and
- b) Web interface (computer) which is used by PHC staff including medical officers.

2. When is ImTeCHO being used?

ImTeCHO provides support to ASHAs throughout continuum of care starting from beginning of pregnancy up to child completes critical first two years of age. ImTeCHO is used every day by ASHAs for checking their daily schedule, guide home visitations, record services provided on monthly health and nutrition day, track high risk cases, and record births and deaths. Web interface can be used every day for tracking high risk cases, obtain information about critical indicators, and manage incentives and supplies.

The Web application uses PostgreSQL version 8.4 on the server side. The Mobile module runs on any Android Device (version 2.0 and above) and uses ORMLite for local data persistence on the mobile device and GPRS for encrypted data transfer between the mobile and the central server. All databases used are in the open-source



domain RDBMS. The Database for the web-application is mounted on a Linux Server – Ubuntu Version 12.04 (Long term support version). The Webserver used for the Web Application is Glassfish v3.0.

PostgreSQL 8.4 is used as the database on the server this is a production quality Java application-server that is in the Open Source. The Web-application is accessible thru the internet while the Mobile Devices use 2G GPRS network for data synch.

The web applications expose web services for interoperability with the mobile application module.

The system is built on a modular architecture with well-defined interfaces that are extensible and interoperable with other systems for data exchange Spring Security secures the application layers in the web module. All sensitive data that are stored and transmitted are encrypted. The application login is protected by a password mechanism and application install follows a full handshake PIN verification system.

ImTeCHO is a mobile phone application which used GPRS connectivity to transfer data. Every ASHA will be given a low cost smart phone (costing approximately Rs.4, 500.) which will be General Packet Radio Service (GPRS) enabled and have multimedia feature available. The ImTeCHO mobile-phone application will be downloaded on the mobile which will have various electronic home-visit forms. ASHA will login the mobile-phone application every day and start making home-visits based on the schedule indicated through ImTeCHO application. ASHA will fill out forms on her mobile during home visits. Data will be sent



using GPRS network to a server where data will be stored. In case GPRS is not available, data will be stored in mobile-phone and it will be sent to server when GPRS becomes available. Data entry time will be “time stamped”.

All clients are given complete information about all pertinent aspects of pregnancy and child care through nine videos.

All ASHAs and PHCs staff undergo five days training to receive complete information about the application and how to use it.

Features:-

ImTeCHO application has features relevant for all kinds of community based health workers including ASHAs, nurses, medical officer and other PHC staff.

There is a huge potential to scale up this innovation to cover about 45 lakh mothers and children residing in all 18,000 villages of Gujarat through about 37,000 ASHAs using ImTeCHO mobile phone application in coming years.

Every existing ASHA (within government system) is given a low cost phone (costing approximately Rs.4, 500) which is General Packet Radio Service (GPRS) enabled and have multimedia feature available. The ImTeCHO mobile-phone application will be downloaded on the mobile which have various home-visit forms which are described below. ASHA will login the mobile-phone application every day and start making home-visits based on the schedule indicated through ImTeCHO application. ASHA fills out forms on her mobile during home visits. Data is sent using GPRS network to a server where data is stored. In case GPRS is not available, data is stored in mobile-phone and it is sent to server when GPRS becomes available. Data entry time is “time stamped” to ensure accountability.

Citizens (pregnant women, children) receive essential maternal and child care related services including counseling through multimedia from ASHAs at no cost to them. It is free evidence based service available at door steps to citizens through ASHAs, nurses and doctors with the help of innovative mobile phone based ImTeCHO technology.

ASHAs are available in clients' village all the time and services of ImTeCHO is accessible 24x7, seven days a week, 365 days a year.

GPRS is required for online submission of data. Currently, more than 95% of villages have reliable GPRS availability. In case GPRS is not available, data will be stored in

mobile-phone and it will be sent to server when GPRS becomes available.

Benefits:-

In about a year, total 6,500 clients (tribal pregnant women, newborn babies and children) have received services through this project until July 2014. ImTeCHO is currently being used by 90 ASHAs in 90 villages (population: 90,000) and three PHCs of two tribal districts (Bharuch and Valsad) of Gujarat.

This project, called ImTeCHO, covers following maternal, newborn and child health services to be delivered through ASHAs, nurses and staff of Primary Health Centre (PHC) within government system.

All preventive and curative services to be provided to pregnant and post-partum women at community level. All preventive and curative services to be provided to newborn babies at community level, including treatment of premature babies and serious infections.

All preventive and curative service provided to young children under the age of two years at community level, including treatment of diarrhea and pneumonia. All services aimed at reducing malnutrition among young children at community level.

Sustainability:-

The full technology stack that has been used in the mobile as well as the web components are built on reliable open source and popular technologies. Community feedback as well as expert support is available for all the technologies that are used in the development of the mobile platform.

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User privacy, security of system and personal medical information Individual medical information is collected using mobile phone and is stored on server. This requires strict confidentiality of medical information. The application contains medical information of individuals and hence protected by high levels of data security. In view of this, the application accepts, transmits, processes and stores data using prudent security and data encryption practices as described below.

All data that is transmitted using GPRS from the Mobile Phone to the server and vice versa is encrypted. In addition, the data shall is also codified before encryption to provide an additional layer of obfuscation.

- I. A high level of security is applied at the database level. The database server is protected by a firewall with strict access permissions such that there is no direct access to the database. Only the designated web application can connect to the database using a secured connection.
- II. A web application firewall is used to protect the site against cross-site scripting vulnerabilities and web site vandalism. It also protects the data from SQL injection attacks as well
- III. All sensitive data elements is encrypted and stored in the database. Also a level of indirection in the form of encrypted user identities is also present so that a person's personal information and their medical information can never be co-related other than through the web application.
- IV. Web interface is protected by password; hence, only authorized personnel will be able to access the information.
- V. The database server is also configured behind the firewall and shall have network access only to the webserver. Only the application is able to access the database server to prevent any other application or system to try and break into this data.
- VI. The database server as well as the web application is installed at a Tier 1 high security data centre to prevent unauthorized physical access to the webserver and the database servers.

As mentioned above, most of the implementation is done through existing staff of the health department, including ASHAs and PHC staff; this will remain same in case of potential scale up. A team of trainers is now available at SEWA Rural. It might be possible to arrange ToT for government's district level training team at SEWA Rural in case of scale up. A new cadre of ImTeCHO facilitators will need to be trained as well.

Way Forward:-

ImTeCHO is designed for ultimate integration with another e-governance initiative called "e-Mamta". E-Mamta is an e-health initiative of the Government of Gujarat to track every pregnancy and its outcome. Real time and point of service data entry of ImTeCHO make it potentially complimentary to e-Mamta. Process of inserting common identifier into ImTeCHO is underway. Additionally, ADHAAR number is also being captured in ImTeCHO.

ImTeCHO was invited for a global consultation for maternal health arranges at Harvard University and World Health Organization at Boston, USA in April, 2014. ImTeCHO was judged one of the most comprehensive mHealth interventions.

Future plans:

- I. ImTeCHO will be scaled up in seven high-focus, tribal talukas of Bharuch and Narmada district over next one year (2014-15).
- II. After above scale up, ImTeCHO could be potentially scaled up in all high focus takulas of Gujarat.
- III. A robust evaluation is planned for next year to examine effectiveness of ImTeCHO.
- IV. Apart from MNCH, other disease domains will be integrated into ImTeCHO. This includes management of mental illnesses, tuberculosis, malaria etc. in community setting. This will be right step towards universal health care.

e-Governance News

- ❖ The Skoch Excellence Award 2014' function was held at New Delhi. During this function, Gujarat has bagged 45 Skoch Order of Merit' out of which, the following 12 projects / initiatives has also received Skoch Excellence Award 2014.



- ❖ The Skoch Smart Governance Awards is an initiative recognizing top performing Government organizations and organizations working with the Government, operating at local, State and National level in the area of

Health, Education, Rural Development/Panchayati Raj, Urban Development, Finance, and Security. It is a step towards recognizing the best practices and models of Governance for excellent and efficient implementation of programmes and services delivery.

Sr. No	Winner	Category
1.	Mukhyamantri Amrutam (MA) Yojana	Platinum Skoch Excellence Award for Health & Family Welfare
2.	Integrated Workflow Document Management System	Platinum Skoch Excellence Award for Smart Governance
3.	Mobile Inspection of Rural Development Works	Platinum Skoch Excellence Award for Rural Development
4.	Mobile Phone Application "ImTeCHO" in Tribal and Remote Areas of Gujarat.	Platinum Skoch Excellence Award for Health & Technology
5.	SurakshaSetu - Safe City Surat	Gold Skoch Excellence Award for Police & Safety
6.	Udant- Livelihood Portal	Gold Skoch Excellence Award for Smart Governance
7.	E-Waste Collection	Gold Skoch Excellence Award for Environment
8.	Recycle & Reuse of Water Supply to Pandesara GIDC Industries by TTP	Gold Skoch Excellence Award for Water and Sanitation
9.	Sabarmati River Front Development Corporation Limited	Gold Skoch Excellence Award for Slum Rehabilitation
10.	Online Internal Practical Marks Capturing	Gold Skoch Excellence Award for Education
11.	Mineral Administration and eGovernance using ICT (MAGIC)	Gold Skoch Excellence Award for eGovernance & Technology
12.	Khel Mahakumbh	Gold Skoch Excellence Award for Smart Governance

Web Corner

[Http://imtecho.com](http://imtecho.com)

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