Rural Connectivity: An update

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Fig 1: Use of a telephone to report health events/outbreaks by a healthcare worker from a peripheral centre.

THE NEED FOR THE INNOVATION

Controlling the threat of infectious diseases demands early detection of outbreaks and immediate response. Without timely information and effective two-way communication, health authorities cannot hope to manage the spread of diseases such as SARS and the Swine Flu. In rural areas of the developing world, where many new outbreaks occur, a pay phone is often a community's only link to the outside world. Voxiva's technology turns a village pay phone into a communications device on par with that of a computer, by just calling into Voxiva's system and pushing buttons on the phone, rural health workers can report new cases of disease systematically and in real time. Health authorities can see the information immediately via the Internet, analyze the data, and use the system's communication and messaging tools to respond. By leveraging the world's 2.5 billion phones, as well as the Internet, Voxiva's solutions have a much wider reach than Internet. Although Voxiva's technology was pioneered in Peru, developed mainly for the developing world, but its simplicity and practicality have created great demand in the United States and developed world markets. Voxiva's systems are now used by U.S. government agenciesfrom the Food and Drug Administration (FDA) to the Department of Defence to the San Diego County Health Departmentas well as by private health providers. Among the developing countries like Latin America, Africa, Iraq, and India, Voxiva has deployed health solutions vastly.

Wireless networks have become the technology of choice for increasing access to phone and Internet services in developing countries. They are not only cheaper, easier and faster to deploy than traditional landline alternatives, but also make possible business and service delivery models better adapted to rural, low income communities.

Earlier on 1st February 2004, Voxiva launched its operation in India and won its first contract to deploy a surveillance system for Japanese encephalitis within a month. Voxiva had the potential to transform public health. All the conditions in India are favourable for it to develop it to full bloom- the fixed-phone network reaches into the most rural areas. Mobile networks are building like crazy. The cost of calls has dropped fifty-fold in the last three years. Most importantly, there are a billion people, very few of whom are connected to the health system in a meaningful and systematic way. Voxiva today covers around 6,00,000 villages in India.

Call 1-800-555-5555

Menu

Voice Mail	Press 1
Case Report	Press 2
Update Profile	Press 3
Operator	Press 0

Case Report

To File Report — Press 2
Enter Notification Code
If Negative Report — Press 999

- Is the report from your district?
- What s the date of onset?
- Enter the age of the patient
- Enter patient sex
- What s current status of case?
- Would you like to add a voice message with additional information?

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Notification Codes

Acute Diarrhea	001
AFP	803
ARI	002
Bartonellosis	449
Chagas' Disease	57
Cholera	00
Congenital Rubella	06
Congenital Syphilis	500
Cutaneous Leishmaniasis	551
Dengue	90
Diphteria	369
Disasters	911
Hemorraghic Dengue	91
Hepatitis	16
HIV/AIDS	240
Human Rabies	820
Malaria Falciparum	50
Malaria Vivax	51
Maternal Death	96
Measles	59
Meningococal Meningitis	390
Neonatal Tetanus	33
Plague	209
Pneumonia	18
Rubella	06
Snakebte	20
Tetanus	35
Tuberculosis	010
Typhus Fever	750
Whooping Cough	379
Yellow Fever	950

Fig 2: Voxiva Alerta user cards. Health workers enter numeric codes corresponding to the diseases they must report[1].

Mother and Child Tracking System (MCTS) was launched on 1st January 2011, by the Health and Family Welfare Department with an aim to keep track of each pregnant woman from registration to delivery till PNC for complete service delivery, timely identification of risk, irrespective of place of registration and tracking of every child from birth to the end of immunisation, irrespective of place of registration[2].

MCH is a generic system which aims to provide information of different health services received at the individual level, by monitoring all the encounters that an individual undergoes in his/her health program. This system aims to help the service provider (health worker or Doctor) by categorizing various health services the individual person has to get (with due date) and missed services. It also provides for effective monitoring of different health services drilling down to the individual patient information.

The MCTS is planned to compare data of all pregnant women and infants so as to ascertain deliverance of maternal and child health services from conception till 42 days after delivery in the case of pregnant women and up to 5 years of age in the case of children so as to ascertain that all pregnant women and all new born get full maternal and immunization services.

Karnataka's Health Department has effectively utilized mobile phone technology to furnish well timed healthcare to pregnant women and infants in the state. The information on healthcare services extended to the mother and the child is sent via an SMS on a specific mobile number. The SMS data is integrated in the database maintained at the MCTS data centre for monitoring by the taluk health officers.
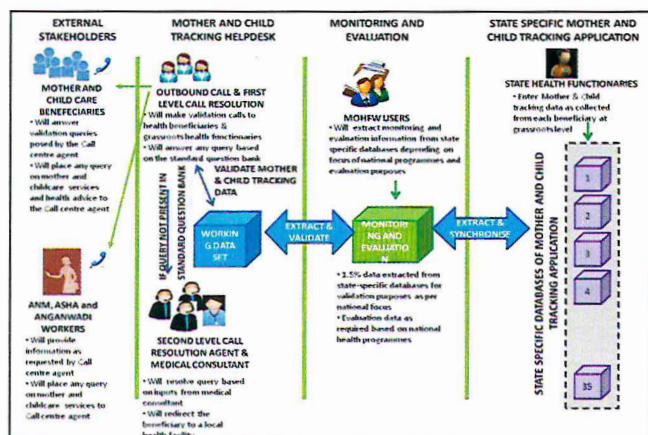
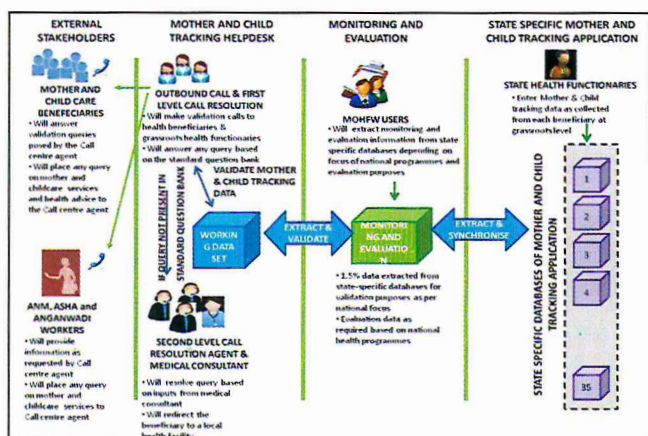*Fig 3: Presentation of how MCTS works.*

Fig 4 : Presentation of how MCTS works.

MCTS has won **Innovators' Challenge Award** instituted by Rockefeller Foundation and **mHealth Alliance** in 2011. Since its launch, around 7,50,000 pregnant women and 2,50,000 children had been registered under this program. Primary objective of MCTS is to decrease MMR and IMR. Registration of pregnant women and issuing a Thayi card is done by the jurisdictional Auxillary Nurse Midwives (ANMs). Particulars about pregnant women / child are captured in a card and then stored in a computer. The particulars of mother/child (only one time entry) accumulated are transferred from the computer to the sub-centres and primary health centres by the computer operator or the block program manager at the taluk office.[4]

ANMs monitor services imparted to pregnant women and children and communicate the data centre about the same by sending an SMS. When the database gets updated, the medical officer or the Taluk health officer gets an alert and thereafter they monitor the services furnished to the pregnant woman or the child in their area. The Medical Officer or the Taluk Health Officer then issues directions to the ANMs if any service is escaped.

Conclusion :

This project has demonstrated that cell phones are a feasible means of collecting and reporting data in real time in remote communities. The project shows that it's not necessary to have the latest Palm Pilot or Tablet PC to create a sophisticated public health surveillance system but given the right technology partner, one can build a surveillance system using cell phones.

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Felicitation to Dr. V.V.Subbareddy, Senior Dentists & IDA Members, IDA Member held on 22/12/2011.