

## CSIR 800

*The Govt of India launched multiple programs and schemes in 2014-2015 to improve living conditions of its peoples through a variety of schemes. These schemes perfectly fit the TECH-VILS as proposed in the CSIR-800 program. In terms of specific projects, we have defined an intervention to improve the quality of care that villages receive at their first point of call - the Primary Health Centre. In doing so, we have demonstrated that in its fullest implementation, the CSIR-800 Program can contribute in a small but significant way to Digital India, DigiLocker, Make in India and Skill India.*

*Based on our earlier interactions with Primary Health Centres we noted that poor infrastructure adversely affected the quality of health care administered. Accordingly we drafted the DS project to survey selected Primary Health Centres across the country for information on the workload of the doctors and PHC staff, the instruments available, the IT infrastructure and the IT skills. The proof-of-concept solution we implemented had a low cost solution for outdated medical instruments, non-existent health records management, and inadequate IT infrastructure prevalent in a majority of the PHCs surveyed.*

*The project was collaboratively conducted with CSIR-CLRI, CSIR-IMMT, CSIR-AMPRI, CSIR-IHBT, CSIR-CGCRI, and CSIR-NEIST. We conducted:*

- A feasibility study of the most necessary parameters to inform on a patient's general health in rural areas; and*
- Initial field tests to assess training needs of PHC staff to handle medical instruments and create records using a specially designed App running on a mobile platform.*

*We also mentored 4 groups of final year medical electronics students in their project work to develop the same medical instruments that were demonstrated in the Primary Health Centers.*

*In our next project we expect funds to develop a device to monitor the jolts that a patient receives when transported along rural roads in an ambulance. By creating suitable visible cues, we expect to create awareness and modify behaviour of ambulance drivers, and hence improve the ride quality for patients.*



# Implementation of the Primary Health Center program

## Selection of Primary Health Centers

We selected those labs with an active group developing technologies for rural development, while also insuring geographical distribution. Six areas were selected based on the earlier distribution of TECHVILS. Ten Primary Health Centers each in Himachal Pradesh, Madhya Pradesh, Odisha, and twenty Primary Health Centers in North-Eastern region, West Bengal, Tamil Nadu were identified for an in-depth survey to document their strengths and constraints.

## PHC Surveys

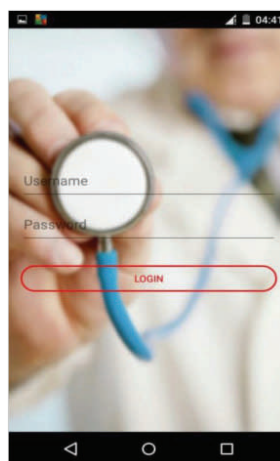
Project assistants were recruited by each of the CSIR labs to conduct a survey to assess the state of the selected PHCs against those issued by Indian Public Health Standards. This field work was coordinated by the CSIR lab with the support of the Medical Officer and the PHC staff.

## Capturing basic health parameters

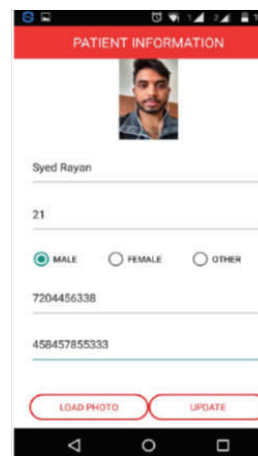
Project assistants who were recruited by the labs to conduct the surveys were taught to use standard over-the-counter digital medical instruments - Blood Pressure Monitor, Pulse oxymeter, Blood sugar, Body temperature and Weigh scales and an accompanying App. Patient health data from these 5 medical instruments was entered on the tablet together with a scan of the hand-written diagnosis and other details such as clinical test reports and prescribed medication. These were demonstrated to the PHC staff in 40 PHCs where this experiment was

conducted. The staff was also taught how to create a Unique Health Record (UHR) number and generate a one page report that could be printed and handed to the patient for reference. In effect this was a simple but effective way to create a secure e-health record for the patients.

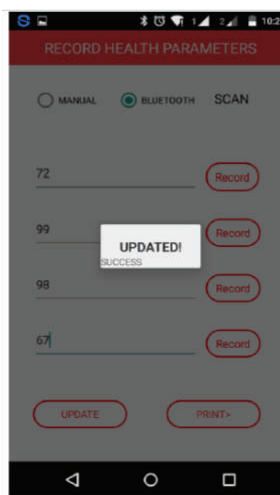
Some screen shots of the app are shown below.



Login page



Patient information page



Health record page



Patient record summary page

## Results of the Survey

The survey of Primary Health Centers has confirmed what is generally assumed of these “first-

point-of-care” in our villages. PHCs generally lacked not only in providing adequate care, but patients were further disempowered as they had no recourse to their medical records if they wished to be treated elsewhere. Our field demonstrations on IT were well received and were seen as a low cost but effective, high quality solution to reducing the workload on doctors, and empowering patients with access to their medical health records enabling them to consult other specialists when the need arose.

### **IT training needs for PHC staff**

The demonstrations at the PHCs in Tamil Nadu, with nearly full coverage of computers and internet connectivity, were interesting as the PHC staff was able to assess the merits of different software for medical records and showed that they had fully embraced the IT advantages. PHCs in Assam have about 40% coverage of computers and internet connectivity. Some of the PHC staff have the necessary aptitude for IT work and are able to operate the App. It may be appropriate to consider the services of NGOs to operate the instruments and print the reports for the doctor – who can save precious moments to use on diagnoses.

### **Student projects**

We mentored 4 groups of students from a local college in their final year project work. The projects

were aligned to developing high quality medical instruments namely a Pulse Oxymeter, a non-contact IR thermometer, and a smart weighing scale. The fourth group wrote an App for a tablet which allowed data from medical instruments to be entered manually and create a record for a patient.

We hope that in the following year, we will be able to develop a device to monitor the jolts that a patient receives when transported along rural roads in an ambulance. By creating suitable visible cues, we expect to create awareness and behavior modification in an ambulance driver, and hence improve the ride quality for patients.

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