



## Learning Journey

### CARE Foundation

#### Insuring Primary Care – A Sustainable Financing Solution for Rural Primary Health

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## Project Basics

### About the project

#### Implementing Partner

CARE Foundation is a non-profit organization with the mandate to make quality health care affordable and accessible to all through the appropriate use of technology. The Foundation implements its mission in three main ways: a) conducting research and providing specialized training, b) developing cost-effective medical products, and c) providing healthcare to low-income populations.

#### Consortium member

The Centre for Insurance and Risk Management (CIRM) is a non-profit organization affiliated with the Institute of Financial Management and Research (IFMR) in Chennai, India. CIRM engages in action research initiatives with insurers, NGOs and regulators to test innovative insurance products and to improve knowledge on risk-mitigating mechanisms.

#### Project Description

The project aims to study the impact of microinsurance coupled with healthcare services delivered through hand held devices (HHDs). In rural areas, the population generally can only access poorly qualified medical professionals for primary care. Additionally, high illiteracy, and a general lack of awareness about good health practices and the importance of managing risks makes microinsurance very difficult to implement in rural India.

Through voluntary health insurance, the project will enable consumers to make informed choices. It is expected that the overall treatment cost will be reduced through prevention, early diagnosis and timely care emphasizing best practices at the hospital. Tele-monitoring will be used for after-care service to prevent re-hospitalization and conduct quality control.

Key aspects of the project include:

- Hiring and training Village Health Champions (VHCs), who are women based in the community, to facilitate access to medical advice from specialists through HHDs and mobile communications. The role of the VHC includes health education, illness prevention, promotion of hygiene, assistance with referrals and transportation to medical facilities.
- Supporting the VHC network with a primary health centre staffed by a medical officer, remote doctors consulting team, nurse, pharmacist and laboratory technician, and which can provide minor procedures, drugs and, diagnostic services.

- Developing and field testing HHDs which include both clinical and non-clinical functionalities to enable delivery of basic health care, data collection, biometric identification, and insurance and financial transactions. Delivery of basic care at the doorstep by VHCs utilizes a Clinical Decision Support System (CDSS), which provides clinically tested protocols to initiate diagnoses and treatment plans. The CDSS is an interface between the VHC and the remote doctor at the CARE clinic.
- Partnering with CIRM to develop and launch a health microinsurance product sold by the VHCs or suitable channels through pre-paid health cards. The enrolment campaign will be supported by an insurance literacy program and distribution of highly discounted preventive products or services to provide clients with some immediate value for their money. Members will receive services at fee for services at nominal prices from the VHC network plus assistance to obtain hospitalization wherever required. Renewals will be encouraged by discounted premiums, and/or increased benefits.
- An [Action Research Program](#) with discounted vouchers will be conducted to test the viability of the product and its impact on health and economic indicators on clients.
- In the last 2 years of the project, the product will be rolled out in 50 rural villages around Yavatmal, in the state of Maharashtra (total population: 100,000).

### Project Summary

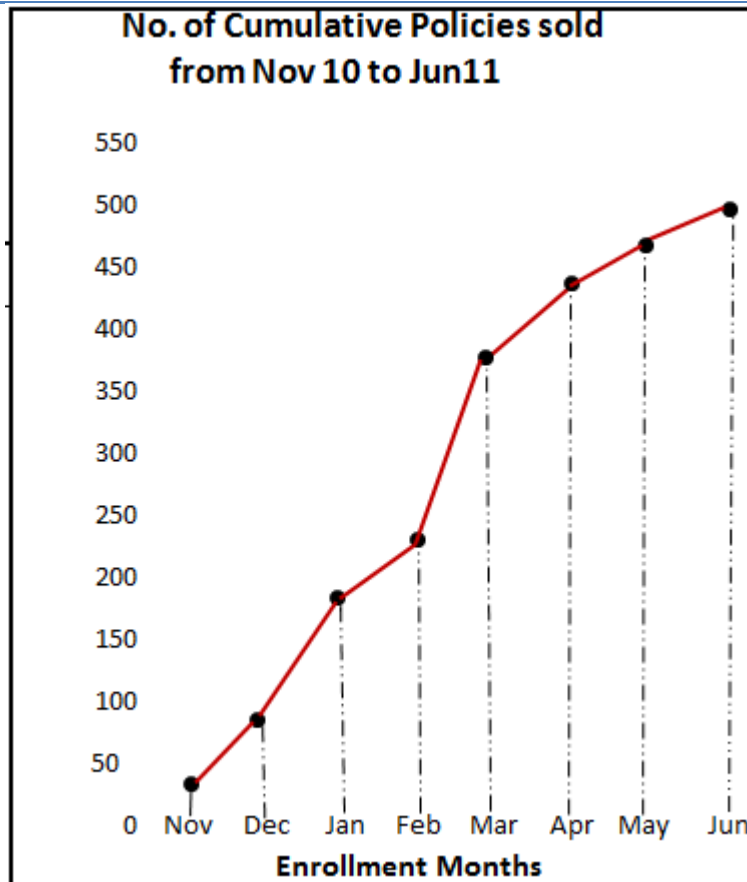
*Project Name:* Insuring primary care – A sustainable financing solution for rural primary health  
*Project Start Date:* June 2009  
*Duration:* 2 years  
*Country:* India  
*Product:* Health

## Project Updates

### Key Indicators

*Analysis Period – 1<sup>st</sup> November 2011 to 30<sup>th</sup> June 2012 (8 Months)*

**1. Cumulative Policies sold:**



**2. Number of Villages covered:** 41

**3. Penetration:**

- a) Enrolled Lives – 2049
- b) Enrolled Families – 487
- c) Range of Penetration 0.3% to 20%
- d) Average Penetration approx 4%

**4. Male/Female Enrolment:** 51% : 49% respectively

**5. Enrolment across various Age Bands:**

- a) 0-18yrs – 853 Lives (42%)
- b) 19-55 yrs – 1103 Lives (54%)

c) > 55 Yrs – 93 Lives (4%)

**6. Occupation Break up (out of 487 Families):**

a) Daily Wages – 315 Families (65%)

b) Farming – 139 Families (29%)

c) Salaried Jobs – 18 Families (3%)

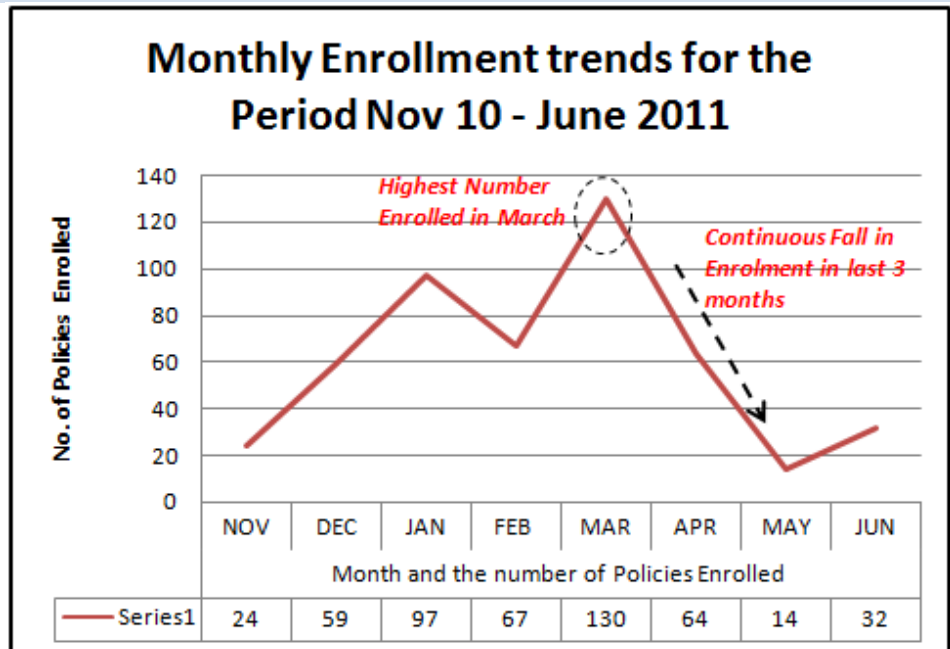
d) Business – 12 Families (2%)

e) Others – 3 Families (1%)

**7. Families WITH discount Vouchers:** 426 Families (87%)

**8. Families WITHOUT discount Vouchers:** 61 Families (13%)

**9. Monthly Enrolment (Lives):**



**10. Number of Claims:** 1158

a) Female Cases– 675 (58%)

b) Male Cases – 483 (42%)

**11. Incidence Rate:** 57%

**12. Age wise occurrence of Claims:**

a) 0 – 18 Years – 397 Cases (34%)

b) 18 – 55 Years – 705 Cases (61%)

c) > 55 Years – 56 Cases (5%)

**13. Amount Claimed:** Rs 42,494

<b>14. Average Cost per Claim:</b>	Rs 37
<b>15. Disease Distribution (Top 3 systems involved), contributing 64% of the claims.</b>	<ul style="list-style-type: none"> <li>a) Respiratory Disorders (URTI, LRTI, Allergic Bronchitis)– 300 Claims (26%)</li> <li>b) Muscular-Skeletal Disorders – 272 Claims (23%)</li> <li>c) GIT Disorders (Acidity, GE, Gingivitis) – 175 Claims (15%)</li> </ul>
<b>16. Patients treated in the Village:</b>	831 Patients (72%)
<b>17. Patients treated/Referred to the Clinic - 327 Pts (28%)</b>	a) 100% of Urogenital & Typhoid cases were treated/referred to the clinic.
<b>18. Gross Premium Collected:</b>	Rs 177,209
<b>19. Net Premium Collected:</b>	Rs 73,348
<b>20. Claimed Amount:</b>	Rs 42,494
	<ul style="list-style-type: none"> <li>a) Claim Ratio on Gross Premium:24%</li> <li>b) Claim Ratio on Net Premium: 58%</li> </ul>
<b>21. Gross Incurred Premium:</b>	Rs 61,251
<b>22. Net Incurred Premium:</b>	Rs 24,005
<b>23. Claimed Amount:</b>	Rs 42,494
	<ul style="list-style-type: none"> <li>a) Claim Ratio on Gross Incurred Premium - 69%</li> <li>b) Claim Ratio on Net Incurred Premium - 177%</li> </ul>
<b>Note: Net Premium Collected = (Premium – Subsidy for vouchers program + other discounts on product premium)</b>	

## What is happening?

### As of August 2009 (Project set-up)

The project kicked off in June 2009. So far:

- CARE sought an insurance partner to bear financial risk for the outpatient product and to support product development, but none was found willing to underwrite a voluntary outpatient product.
- 34 VHCs were recruited to implement community surveys and sell health and hygiene sundries. After gaining 6 months experience, VHCs will “graduate” to operate a HHD, which will enable them to do preventive care and health promotion, door-step diagnosis, referral assistance, and insurance enrolment and servicing. It’s still an open question if the VHCs will be accepted and valued by prospective clients in their new roles.
- Hub-clinic set up: The hub clinic was set up within 8 weeks, but delays occurred to open a pharmacy due to licensing issues.
- The CDSS is being built. Starting with use of the 15 clinical pathways defined by SE Asia WHO. Each pathway will route to: 1) VHC treatment and Rx, 2) remote consultation with doctor (telemedicine), 3) referral to the Clinic or 4) referral to hospital.
- It became apparent quickly that a project undertaking of this scope, with so many facets and stakeholders, would not be easy to coordinate.

### As of December 2009

The project experienced delays in the set up phase across several fronts. One general challenge has been the loss of productivity in the villages due to frequent festivals, marriage celebrations, etc., along with political events including elections.

#### *Action Research*

It took longer to plan the action research program. A complex and robust research agenda was envisioned to assess the viability of the financing and delivery model via HHDs, and to measure its impact on the health and well-being of the target population. An external research partner, CIRM and academic advisors from the Harvard School of Public Health were engaged.

#### *HHD and CDSS*

Additional development of the CDSS modules (clinical protocols) and testing of the connectivity of the HHD from the village locations to the back office server proceeded.

### *VHC training*

Six days of training were delivered to VHCs during their first 3 months in the field using a modular approach. The training modules include information about the goals and objectives of the project, professional development, social mobilization, clinical skills and a 1 day village camp for practical experience.

### *Clinic and referral support*

CARE set up a hub clinic in Yavatmal, securing space and hiring staff. Delays occurred to receive a pharmacy license, which hampered the clinic's ability to become fully functioning. It was also a challenge to find quality doctors to staff the clinic, especially specialists who would come on a rotating basis, so CARE began to explore alternatives to address this need.

### *Project Management*

The Project Manager quickly realized that more support in the field location (Nagpur / Yavatmal) would be needed to strengthen field operations. It also became apparent that further coordination with the clinical support teams, the hardware and software vendors and the research partner would all require oversight to support coordinated efforts to meet interdependent milestones. Reporting and key performance indicators were also drafted, and those that could be measured, such as activity around VHC training, were implemented.



**CARE's Yavatmal Hub Clinic**



## **As of September 2010**

Overall the launch date for the health insurance product has been delayed about one year from the initial plan, though during this period much has been done to put the necessary technology, staff, and processes in place.

### *HHD*

A number of delays to complete development and field testing of the HHD and its software have occurred, around use of multiple languages, authentication systems, connectivity in the field, clinical pathways and software applications for insurance.

From May onwards the healthcare application delivery is in place excluding the insurance application for biometric card, amount utilization and the backend claims module. CARE is preparing a training manual on the HHD.

Limitations in technology connectivity in the field have occurred; in fact, connectivity is variable from one village to next. Twenty to twenty-five HHDs were analyzed randomly, and it was found that roughly 60-70% connectivity occurred with the HDD compared to nearly 100% with mobile phones. Further, there was also a difference in reliability between mobile phone service providers on a magnitude of up to 30%.

Problems were encountered by the software developer: 1) more time was needed to understand the content and structure of the data tables, and to ensure that the software could be adapted by users (dynamic); 2) the key project person left, leaving insufficient backup to continue the development uninterrupted; 3) most importantly, months into the development, it was discovered that the coding language of the HHD was incompatible with that used by the server. The software developer and a sub-contractor were not able to agree on how to address the resulting change in scope of work to address this gap. Ultimately a new programmer had to be hired to create a functioning interface.

Successful field testing of 2 HHDs commenced on 10<sup>th</sup> September in 2 villages. A two day training was conducted on the HHD device and a HHD training manual and practical training program was designed.

### *Research and data collection*

A discount voucher based plan of randomized controlled trial has been designed to study the effect of CARE's intervention (outpatient health financing scheme and preventive package) on various health and health related economic outcomes of the beneficiaries. The final randomized sample is now available for a baseline quantitative study using the census/household listing data.

The baseline study was delayed mostly due to the delay in the product launch, but also due to other administrative requirements, such as finalizing a Memorandum of Understanding with the research partner and obtaining approvals from human subjects research committees.

Additionally, to supplement the initial needs survey done in 2009, a survey on insurance literacy was completed and some data on willingness to pay and understanding of insurance were collected.

### VHCs

Fifty VHCs are available in the field and approximately half are now running community clinics, with others to be phased in January 2011. Currently, a VHC treats about 3-5 patients per day, and collectively they have treated more than 300 patients / month through remote doctor advice supported by mobile phone. Implementation of the HHDs is beginning.

VHC training has been streamlined, to try to enhance skill development and for VHCs to get practical exposure to patients. Interpersonal skills and confidence building were included in the curriculum, and “graduation” ceremonies are being added to increase VHCs’ community image and build trust.



**Facility Staff with the Village Health Champions**

### *Clinic operations*

It took 2.5 months to find a Nagpur call center doctor trained at a good standard (i.e., MBBS, an Indian credential). A qualified female doctor was hired 1 April to facilitate communication with female VHCs and to support common woman/child health care encounters. It was discovered that the VHCs (and the doctors) benefit greatly from having the VHCs visit the call center (and vice versa). It was also observed that a majority of doctors may need further training on appropriate prescribing, and how to use a CDSS.

In Jan 2011, training on disease protocols for clinic doctors was implemented, with emphasis on primary care and chronic care diseases to promote quality and consistency of high volume/cost services. The training and monitoring have yielded positive results in decreasing over-utilization of drugs, injections.

### *Product Design and Price*

An insurance survey in 30 villages was completed in May 2010 to have a better understanding of the community's perception of the insurance product, including premium and benefits. The survey showed virtually no understanding of what the word insurance means, or how it functions.

CIRM estimated that an outpatient product with the envisioned benefits should be priced at Rs 400 (US\$ 8.69) product. These projections were more uncertain due to limited regional data to define benefits and willingness to pay, which seems to be Rs 250-350, not higher. It is expected that the majority of patient encounters will generate a prescription, with about 30% expected to have a diagnostic visit. A huge driver of the program's sustainability should be the use of drugs.

Similarly, the absence of data on cost and incidence of treatment, percentage of referral and risk loading for an outpatient product were additional factors that were difficult to assess. Based on results of the insurance survey and some preliminary data on use of pharmacy and frequency of treatments, CARE determined that a maximum initial price should be Rs 300 (US\$ 6.52) for a family of 4. Overall the program is projected to achieve a breakeven at 6000 insured members.

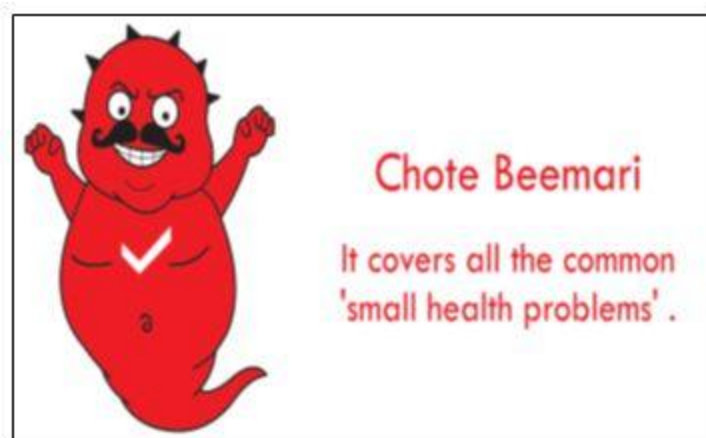
Additional features of the product include:

- The product will be presented as the "Care Arogya Card"
- Sum assured: Rs 2500.
- Additional family members can be added with supplemental premium.
- Chronic conditions such as diabetes, hypertension and asthma are excluded, as are treatments associated with a hospitalization (the cover is for outpatient treatments only)

- Public health vaccinations, immunizations, children nutrition are not covered under the program
- Prevention program: Insured clients will receive at a highly subsidized price a prevention package that includes interventions for airborne, waterborne and vector borne diseases.
- An insurance literacy campaign has been designed and will be rolled out with the product.
- Premium payments will initially be one-time, up-front, but once operations are stable, a monthly installment plan (e.g. 2-3 equal monthly payments) may be tested to increase affordability.

### *Insurance Literacy*

During early 2010 the vendor selected to develop the education materials did not deliver, and finally, 2 new vendors were selected to take over pending deliverables, now due in September. Insurance animation and education materials have been developed and are being translated into the local language, Marathi. Communication materials won't use the word "insurance".



**CARE's Marketing Pitch**

### *Project Management*

One new person will be hired to focus 50% on training/prevention, 50% on insurance. The management team received 2 trainings: public health and management skills. Project management staff is not used to multi-task, as their village culture is to do one thing at a time. A team building event was held in June. More intensive development of back-end insurance accounting applications started.

### *Program training*

Insurance Process Manuals are in development and will encompass the delivery of care using the HHD, client servicing by VHCs and processes for staff.

### **As of July 2011**

The product was finally launched in October 2010, beginning in two villages, reaching 25 villages by February 2011, with approximately 1050 covered lives (or around 5% penetration). Initial enrolment appears to have been stimulated by the vouchers, though approximately 25% of enrollees lacked one. Initial enrolment gradually advanced to reach 41 villages and 487

families and 2035 lives as of June 30 2011. There was a corresponding penetration of 6% and incurred claims ratio of 31.33%. Lower enrolment was observed during May and June, due to lower employment (and thus less income), as well as it being marriage season (which diverts disposable income).

### *HHD*

The product launch was manual (paper-based) because the technology solution remained fraught with ongoing challenges, most significant of which was to establish sufficiently reliable connectivity in the rural locations. To support a gradual, accurate, transition to the technology a database backup system called “CARE health and insurance processing system (CHIPS)” was implemented. Additional challenges still to be resolved with the HHD and its software included:

- Training and acceptance of the technology by the VHCs: it became apparent on the ground that VHCs needed some time to learn how to complete the biometric (fingerprinting) set up as part of issuing ID cards, as it required several steps which were unfamiliar. CARE shifted this responsibility to a more experienced Insurance Executive who supported multiple VHCs.
- The interface between Marathi (front-end language) and English (back-end language) did not permit printing due to the higher number of lines for the Marathi language. Having the product names and prices in the Marathi language helped the VHCs understand what was being offered so that they could more easily carry out transactions for insured and non-insured clients.
- Changes to the product, e.g. adding or deleting a covered medicine, are not reflected in the HHD in real time. To overcome this and keep things simple, the data residing in the HHD at time a service is delivered are always used to define what services or products are covered.
- Connectivity was not yet 100% reliable. Thus, a method to synchronize data input offline had to be implemented.
- The use of GPRS (internet connectivity) was not reliable enough in all village locations to transmit pharmacy data (prescriptions). Instead, a phone call and SMS transaction method was implemented to ensure accurate and consistent transmission of pharmacy data.
- The initial coding for the HHD to recognize and store biometric data for all 10 fingerprints per person was overly complex and did not permit one to one mapping of each fingerprint. Once the software was modified, the biometric data requirements were simplified to limit reading of 2 fingerprints per hand (or a total of four per person).

Vouchers were distributed in 30 villages under the action research program in October 2010, prior to the product launch. A total of 900 vouchers (30 per village) were randomly distributed, with one third of the vouchers (10 per village) offering a 80% discount on the insurance premium (voucher 1); one third of the vouchers offered a 80% discount on the insurance premium and the preventive products package (voucher 2); the final third of the vouchers (voucher 3) offered one free VHC consultation. Initial findings were that enrolment was (not

surprisingly) highest among recipients of voucher 2 (offering the 80% discount for both the product and a preventive products package), since it was the most generous voucher. The least valuable voucher, for a VHC consultation valued at (Rs 50) had virtually no impact on uptake.

The [analysis of the baseline study](#) was completed in April 2010. Key findings included:

- Eighty per cent of healthcare expenses are for primary care.
- Given the poor health care amenities and low awareness of good health practices, adding a preventive package to the program would be particularly useful.
- Availability of services more proximate to clients could add value by reducing transportation costs and opportunity cost of lost wages.

In August 2011 [a qualitative midline study](#) was completed to ascertain client and non-client awareness, to gauge usage of the product in each village, and to gather client and staff input to improve the product.

### VHCs

Additional and ongoing training was held for VHCs in early 2011. As enrolment increased and VHCs gained experience and visibility, their volume increased from 3-5 patients per day to 20 per day. Collectively, their patient volume rose to 1000 patients per month.



**VHCs showing the trophy and plaque for an award won by the project**

With respect to training, CARE began a rotational training approach, in which VHCs began spending 1 day per month in the Yavatmal clinic, working with patients. Additional medical training was introduced, beginning with glucometers (to test blood sugar), then on the topic of



anemia. Refresher training (classroom and field camps) continued for existing skills, such as diagnosis and treatment of fever.

Because of the delays and so many changes occurring to the HHD and related processes, the VHCs required additional re-training on its use. A period of adaptation of at least several months was observed.

VHCs also demonstrated reluctance to sell and service insurance, which was felt to be a factor limiting enrolment. Several modifications were made to jump-start enrolment, including:

- Coordinators with more developed business skills were used to conduct group enrollment camps, which also provided on the job training to VHCs.
- Additional training was provided to supplement the camp experience.
- Families who had visited the clinic were targeted for follow up contact to enroll.
- Organized rounds of household visits were made, and a more detailed tracking of VHC productivity and results with respect to prospecting and enrolling was implemented using a scorecard approach.
- Inviting members to share their experience with prospective clients.

### *Clinic Operations*

Based on feedback from clients, expanded hours for the community clinic were implemented. Now clients can access treatment 24 X 7 at the village level through a VHW. As a result, 125 patient treatments, including emergencies, per month have been provided in the evening or night, after routine daytime clinic hours.



**Entrance to CARE Hospital in Nagpur**

### *Product Design and Price*

In July 2011, CARE introduced two new premium payment options with approximately 30 households in 2 villages. The first option, called “Zatpat Card”, is an installment payment approach. It requires an initial payment of Rs 50, plus Rs 30 per month, with coverage being effective immediately. At the end of the 12 month coverage period, the total premium for the Zatpat Card is Rs 410, compared with the Rs 300 under the one-time payment (up front) option. In a second new payment option, CARE offered 100 households a flexible installment payment method in which households could pre-pay in amounts and at times they choose, until the full premium was paid, at which time the policy would become effective for 12 months.



CARE's vision

Additional value added services are under testing and consideration: deeper and more visible discounts (now 25%) for hospital care at CARE's facility in Nagpur; provision of 1-way transportation to the Nagpur Hospital; facilitating access to a low-cost hospitalization insurance product such as one costing approximately Rs 70 and being offered by New India Insurance Co; offering clients rates at CARE Nagpur Hospital equal to those charged by RSBY (note: RSBY, the Government of India's subsidized program hospitalization insurance for poor families, is just starting to reach Yavatmal

District). Thus far, RSBY implementation in Maharashtra has been limited, and according to news from Maharashtra ministry, an alternative scheme, such as the Arogyasri scheme in neighboring Andhra Pradesh may be implemented.

Despite the easy to understand product design and limited exclusions, some complaints or requests were voiced to add coverage for all drugs, and for vision and dental care. CARE enhanced education about the product via VHCs and with a member passbook, and also increased the number of drugs offered. Additionally, some common palliative items such as over the counter medicines or herbal ointments to relieve headache and backaches were offered to complement the prescription drugs which could be prescribed for the high frequent visits for body ache and general weakness. These items allow the VHC a wider range of options, and create greater choice for clients; at the same time, they potentially limit unnecessary prescriptions and can generate additional revenue for the programme.

A mid-line qualitative assessment was done in July 2011, supplementing on going claim review meetings. Key findings were that clients are generally satisfied with the product, but they are confused by the exclusion for chronic care. There were requests to include injections and intravenous fluids under the benefits and have them administered by VHCs, likely due to a belief that these interventions are "better" than drugs because they are perceived to offer immediate relief. Clients also would like more covered services, especially for dental, skin, and women's and children's health concerns, along with hygiene and nutrition, that could be delivered in their villages either by the VHC or a visiting doctor. While generally the cost of the product is acceptable, there were requests to better accommodate large families or instalment payments. Clients confirmed that trust in the VHC is a key factor on whether to buy the product. The present process for care delivery was recognized to be mostly manual and somewhat administratively heavy.

Also in July 2011, discussions were held with a Dairy Cooperative Society with approximately 16,000 members in Yavatmal Block to be a distribution partner for the product, since this channel held promise to scale up enrolment much faster in villages with VHCs and also new villages not presently offered the product. CARE felt it could afford a commission of 5-6% of



premium, but the Society did not view this to be sufficient relative to other incentives for competing products or activities. Thus, the partnership discussions were ended.

The uptake of the preventive package was generally low, but more sales occurred during monsoon season for malaria products, when risk of malaria is greatest and when education campaigns were in place. Soap is one of the fast moving products for clients, thanks in part to being offered at an 80% discount.

### *Insurance Literacy*

The client passbook, offered since the product launch in Nov 2010, records all transactions and client visits to the community clinic and primary health centre. Additionally, the client passbook contains details about the product, benefits and processes. Based on client feedback, laboratory tests which are covered were added to improve comprehensiveness of the passbook.

### *Project Management*

An Insurance Manger was hired in June 2010 and is based in Yavatmal. This person also supports the HHD and technology aspects of the project. A pharmacy/inventory supply executive was also hired.

### *Program training*

Basic IT training was provided in June and November 2011 to clinic staff to support common IT troubleshooting at the clinic.

HHD device training was given to the VHCs for 2 days, emphasizing practical exercises. The VHC is expected to handle enrollment and issue a biometric card. VHCs will be supported in the field for the initial few days when beginning, to reinforce lessons learned in the training, and to be sure they are acquainted with the technology and related processes.



**Beneficiary biometric card**

## Project Lessons

*Note:* A 4-part video of CARE staff discussing lessons learned in the field as of July 2011 can be viewed in our YouTube channel. Click below to access the videos:

Part 1: [Key lessons on implementing hand held technology for use by health workers in a Primary Health Care microinsurance model](#)

Part 2: [Tips on selecting a good technology when doing a microinsurance program at village level](#)

Part 3: [Designing flexible premium payment system options to address challenges in enrolling villages to a health microinsurance program](#)

Part 4: [Operational lessons learned from a Primary Health Care microinsurance program](#)

### **Is the information technology and hand held device intervention cost-effective and allow the scheme to be sustainable?**

**If CARE had to implement the scheme again, they would use a mobile phone based solution that has a biometric card reader and thermal printer. The connectivity of this solution would likely be better and the cost would be about half (\$300 versus \$600 for HDD). CARE may roll out mobile solutions once the HDDs are at capacity.**

**Development and implementation of CDSS software is complex, both from a technology and a human perspective. It thus requires adequate time and money to allow for variables such as:**

- Bi or multi-lingual requirements between the field and the back office. In the case of CARE, the field staff work in Marathi, a Hindi keypad is used, and the back end is in English.
- Doctors (especially pediatricians), who require additional time to evaluate the treatment protocols and to reach consensus. It turned out that pediatricians were reluctant to support the piloting of a CDSS for pediatric patients, perceiving higher risks to young patients who may be more difficult to diagnose and treat with a telemedicine model. It was agreed that pediatric CARE, CDSS software would not be implemented in the first phase, until a successful pilot for adults was observed.
- Training of doctors to use a CDSS for treatment, record health data and generate prescriptions must include both the rationale for any behavior change (e.g. changing prescribing patterns) and the use of the technology itself. The rule of thumb being adopted by CARE will be to prescribe no more than a 3 day drug supply per prescription; to avoid antibiotics unless warranted and then when used, for no more than 5 days per

prescription. CARE plans to do regular audits of physicians to monitor their prescribing behavior to guide corrective actions.

- Adapting traditional wisdom about systems for insurance, which does not fit in the context of microinsurance packaged with basic health services delivered in a rural setting by a VHC using a HHD. CARE's understanding of the attributes to be tracked went through a series of expansion and contraction, leading to the recasting of a number of database tables and their relationships.
- Building in sufficient flexibility so that users can adapt the software ongoing, for example to accommodate new drugs or improved treatment pathways, or to modify the insurance offering.



A VHC using a hand held device

**Identification of insured patients using biometrics is much more challenging when it is being done with a HHD with functional limitations driven by cost, user, location and technology constraints (e.g. memory and connectivity).** Given limits of the HHD, the system validates identity based on one to one matching of a stored fingerprint on a biometric card to a registered identification number. It cannot identify a client based on a fingerprint alone in the way that a governments or other organizations with much more computing power can). Thus the technology requires a system to map identification number to a finger template. All 4 fingerprints (2 each on left and right hand) for each client will be stored to optimize the ability to identify clients via the HHD. This process is implemented to reduce enrollment time as well as improve ease of use.

**Back-up options for vendors are an essential part of good project management and essential for technology driven solutions.** CARE had several vendor issues arise, notably a dispute with the hardware supplier of the HHD for payments for unauthorized services, and another vendor for insurance literacy that did not deliver as promised. Finding a backup to support for the HHD technology was difficult because of the skill requirements (a C-language programmer was required; this programming skill is difficult to find, even in India). CARE minimized the impact of the delay to get a replacement programmer by proceeding with field testing using the existing version, with the intention to bring in the updated, final version when available.

**Back up options for a critical functionality of the HHD, i.e. connectivity to the server via GPRS, are required.** In rural India, the reliability of GPRS (global positioning via satellite) in the HHD can vary by location and by carrier. This also requires additional training, and operational procedures with the hub clinic and server to ensure seamless service regardless of what technology interface is deployed. Solutions identified by CARE to improve connectivity included:

- A software patch to be developed by HDD vendor and implemented in April to boost connectivity
- Antennas were added to HDDs
- An SMS based application was implemented for back up. Thus, if GPRS does not function, connectivity via a mobile phone will enable VHCs to complete a transaction. All enrolled member data will be backed up, so even if VHC has to call in request, the doctor can access patient info required for health transactions.
- Creating a system (called CHIPS) to back up the technology solution during transition from manual environment and ongoing. This could have been anticipated earlier in the project implementation to smooth the workload during testing and going live, and to enhance process improvements as a result of more extensive documentation.

**Hardware solutions developed in an urban context must be tested in a rural/local context to uncover potential issues.** CARE could have discovered many of the technology challenges earlier, had preliminary testing in the actual context been done instead of relying on testing done at the location of the hardware vendor. Additionally, it would have been helpful to study lessons learned by other users of biometric data, and to better integrate work of the developers of the front end modules with the software development by the vendor.

### **Does purchasing the insurance package increase the access to health care, health outcomes, and financial risk protection of the insured participants?**

**Comprehensive field surveys are essential to provide data to develop more relevant product features and to understand attitudes, health seeking behavior and willingness to pay.** Due to little to no data on outpatient costs and utilization, CARE has had to make fairly broad assumptions based on focus groups and some preliminary data around how outpatient services are used to design and price an initial product. They will need to closely monitor and adjust as experience is gained.

**Because use of the HHD by VHC's innovative, earlier and more comprehensive testing of the CDSS would have provided important knowledge about referral rates, diagnoses, drug use, etc., leading to greater confidence about how to design and price the product.**

**Pharmacy management is a leading determinant of the sustainability of an outpatient insurance product.** Based on initial utilization of the CARE clinic, pharmacy claims (drugs, injections and intravenous fluids) are expected to drive up to 65-70% of all claims costs, so the frequency and unit cost of prescriptions is critical.

**A bias for injections and intravenous fluids as a usual treatment option exists.** Ongoing education is required to inform patients on the appropriate use of various treatment modalities. There is a perception that an injection or intravenous fluids are best to “feel better fast” and are more curative than drugs or other treatments, thus influencing health seeking behavior and perceptions of quality of care.

**Promotion and prevention programs can vary in cost, thus budgets should be determined up front to aid efficient development.** A local vendor is essential for prompt service and to control procurement costs. Initially, the prevention program was to be bundled with the insurance product, but it was thought to make it too expensive. The package would also include an education booklet (with pictures illustrating various ways that disease is spread and means of prevention), and ‘SwachGhar Award’ (to be given to one client every 6 months after inspection of client homes).



CARE enrolment campaign

**Prospective clients in rural Maharashtra do not appear to understand the concept of insurance, so it can be useful to avoid use of insurance terms, and emphasize good health, avoidance of disease, etc.** In addition to this key finding, a survey on insurance literacy was completed to supplement the initial needs survey done in 2009 suggested:

- Tribal people are willing to pay less for insurance than non-tribal people, despite having poorer health.
- By and large, people will choose (and VHCs will recommend) what is cheapest.
- The target market does not understand the proposed product or exclusions.
- It's advisable to have a health advisor to support the VHC; in some villages this is a key influencer in the community, someone like the head of a self-help group.
- The health seeking behavior of prospective clients can be to not follow referral advice. They 1) think they don't need the referral, 2) prefer to wait to see if the condition resolves, and 3) want to avoid travel.

**Regulatory requirements are important to understand and use in developing both clinical and VHC drug dispensing protocols.** The CARE project has experienced some limitations in setting up a hub pharmacy (licensing problems), and also in expanding the list of drugs that VHCs are permitted to dispense due to regulatory constraints based on the limited training credentials of the VHC.

**Marketing and awareness building about insurance should target male members of households as well as females.** Although women hold primary responsibility for health of their families, they may not be empowered to decide whether to buy insurance. Thus, marketing efforts tailored to men who may veto insurance enrolment are important. It may be valuable to bring men and women together for sales/enrolment discussions.

**The Clinic is a source of potential insurance clients.** CARE observed that a number of potential clients bypass the VHC and directly seek treatment at the Clinic in town, either due to preference or due to lack of understanding of the services offered by VHCs and the potential benefits of insurance. Recognising this, CARE increased its promotion to Clinic patients of the services available from VHCs and the benefits of the insurance product, i.e., doorstep service and referrals to the Clinic when needed. Slightly higher fees were also implemented at the Clinic to provide an additional incentive to visit the VHC.

### **The likely impacts of public health interventions (preventive and promotive interventions) on health outcomes and expenditures in target population**



**A typical VHC consultation**

**People with a history of self-employment and dynamism are better candidates to become successful entrepreneurs (VHCs).** Selecting and training the VHCs proved challenging. Hiring proceeded in batches and before long it was apparent that at least one third of those hired were probably not able to meet the requirements of the training. Issues ranged from the women being migratory (often following husbands to other villages), to not having basic work skills such as good attendance at trainings, to the belief that the opportunity may not be

lucrative enough. Because the deployment of the HHD was delayed, this had an adverse impact on being able to fully train and get VHCs out in the field, resulting in higher attrition.

**Setting up a VHC program from scratch is a tremendous undertaking, complicated by the training requirements of using the HHD.** VHCs need continuous training, including refreshers. Social prestige and recognition are powerful motivators for VHCs in addition to attractive compensation. Initially VHCs receive 6 days of training followed by 3 days every other month to receive 5 modules over 10 months. The goal is to train VHCs to the level of a nurse at the end of 1 year, upon completing all envisioned clinical training modules. CARE continued to adapt to the realities of the field by implementing the following measures:

- The social prestige of being a VHC is emphasized (it is not just a job to make money)
- Women with a background in self-employment are sought
- Interpersonal skills, including confidence and communication are evaluated and reinforced.



**It is difficult to get specialist doctors to visit the hub clinic when patient volume is low, and difficult to attract patients to the clinic without an array of specialists.** One way in which CARE will address this challenge is to again use technology. Video conferencing will be implemented to allow remote consultations by specialists and to obtain support for visiting specialists at CARE Nagpur hospital.

### Project management lessons

**It's important to recognize the training needs of VHCs, clinical staff, and project staff and partners:**

- **A dedicated implementation team training is invaluable to ensure commitment and focus on a very complex project multiple components.** CARE has had some staff turnover and observed gaps in skills as the project has unfolded, and then moved to try to address these. One 2 day team building session was held in June. It has been important to create a team spirit between the field staff at the hub clinic and Yavatmal and the referral center in Nagpur, as well as to the project management oversight in Hyderabad, and the software vendor in Bangalore and the research partner in Chennai.
- **Targeting capacity building is necessary depending on gaps observed (clinical operations, insurance concepts, project management, etc.)** In particular, for many, insurance is very new, and they need sufficient training and exposure to the concept. Insurance is not a core competency of CARE, so this must be built.

**Contingency plans should be considered for all key inputs to the project: technology, insurance literacy, clinical staff and clinic operations, VHC hiring and training, etc.** Without these in place, and constant oversight, project delays can be more likely. The delays documented with respect to the HHD and the development of an insurance literacy program demonstrates this point.

**Development of systems and procedures to handle servicing of non-insured clients requires separate consideration** (e.g. what kind of registration is needed for clients who do not have an identification card?). The HHD generates a unique identification number even for non- insured clients. Because all encounters and transactions get recorded, it can be possible to analyze even follow up visits and understand the health seeking behavior and costs of non-insured clients, and to use the data to support appropriate conversion to insurance at a later date.

**Establishing a new distribution channel may sound like a good solution to increase enrolment, but developing a financially viable channel is another matter.** On the surface, the potential outreach of the Dairy Cooperative Society in Yavatmal District was attractive – but CARE could not offer an incentive payment rich enough to interest this prospective partner.

## Next Actions

The Project period has been extended by six months to allow for more observation and product refinement, especially since the launch was delayed by one year. The end-line research study, completed in December 2011, is expected to be published by April 2012.

Work will continue to standardize and scale up the HHD. Four more villages (in addition to the two that are live as of end of 2011) are in the pipeline to join in early 2012. Further work will be done to synchronize data across health worker, clinic doctor and remote (hospital) doctor.

The CARE Foundation plans to add a description of value added services to client passbook. These include:

- Discounts for X-ray & Ultrasound
- Discounts for hospitalization at a pediatric hospital and a gynecology hospital in addition to CARE Hospital
- Specialist Consultations at 25% discount
- Free Electrocardiogram
- Free annual eye and dental check up
- Discount for anemia and blood glucose tests
- Discount on selected over the counter products
- Discounts for members enrolled under a chronic care program



Entrance to the CARE clinic



The CARE Foundation will test ways to increase client value through product refinements or new services, such as:

1. Addition of maternal care, with emphasis on screening for high risk pregnancy and routine monitoring and linkages to existing programs for pregnant women
2. Eliminating extra charges for children over age 18
3. No limits for usage (visits)
4. Offer a 50% discount for lab, injections & IV fluids (value added service)
5. Pilot a lower cost (Rs 200 instead of Rs 300) product which covers consultations but has a 50% co-payment for drugs, lab, injections & IV fluids (versus fully covering these services).
6. Complementary inpatient insurance. RSBY (India's national inpatient hospitalization scheme for the poor) has not yet been implemented in Yavatmal District. In January 2012, CARE Foundation will conclude a field study by an Indian insurer on the feasibility to introduce hospitalisation products which could complement the outpatient primary care product. Reports and discussions are in the pipeline and explore a possibility for implementation in the project area through the VHC network.

#### *Distribution*

CARE Foundation is investigating use of a volunteer, incentive based model to increase the penetration of the outpatient insurance product as well as to distribute other over the counter healthcare products in the same and neighboring villages

The clinical understanding of coordinators with will be upgraded by additional training.