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India
Global Accountable Care In Action

INDIA

Enhancing Care Management for Diabetes Patients in Rural Communities

SughaVazhvu Healthcare | Tamil Nadu, India

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SughaVazhvu Healthcare | Tamil Nadu, India
Provider Type: Private Primary Care Network
Program Name: Chronic Care Package

PART 1: BACKGROUND

Country Profile

India's population of 1.2 billion faces the dual epidemiological burden of infectious diseases traditionally seen in developing countries and non-communicable diseases (NCDs or chronic diseases) that are typical of more advanced economies. Public health challenges, including poor sanitation and inadequate access to primary care, have not only resulted in high health inequality but also contributed to increasing rates of communicable diseases and maternal and child mortality. At the same time, the prevalence of chronic diseases, such as diabetes, cardiovascular disease, and cancer, is increasing. Currently, over 60 percent of deaths in India are attributed to chronic diseases and their prevalence is expected to rise.[1]

The growing prevalence of chronic conditions and continued gaps in public health in many areas has created pressure for expanding primary care and other basic health services in urban and rural settings. Health care spending represents approximately four percent of GDP.[2] At this time, the Indian health system is fragmented, unregulated, and largely private with approximately 70 percent of expenses paid out-of-pocket by patients.[3] The average Indian spends approximately $40 USD per year on out-of-pocket health care expenses.[4] State-level public spending on primary health care system is low with a strong focus on treating infectious diseases and noticeable symptoms, and quality is mostly perceived to be low.[5] There is little to no preventative care available as public clinics are ill-equipped, understaffed, and poorly stocked.[6] A majority of the private health care providers are specialists in urban areas, and some do not meet professional qualifications. Over-prescribing medications is also common and contributing to antimicrobial resistance.[7,8]

The prevalence of chronic diseases is projected to increase rapidly as the population ages and economic development continues and health care expenditures in India are estimated to exceed $280 billion by 2020.[9] Even today, the deficit in primary care results in poor access to care, poor practices, and poor health outcomes, even when compared to other middle and low-income neighboring countries like Sri Lanka or Bangladesh.[10]

Overview of SughaVazhvu

The Tamil Nadu state in southern India has one of the highest mortality rates in the country due to cardiovascular diseases at approximately 36 percent.[11] To meet the growing need for primary care, SughaVazhvu Healthcare (SughaVazhvu), a private nonprofit health care provider, was founded to provide quality, managed, and accessible primary care for the rural Indian population that it serves. Private investment created the hub-and-spoke system with seven rural community clinics and a specialist center in 2009 to overcome gaps and expand the reach of health services into rural communities in Tamil Nadu. Each clinic cost $6,000 USD to build and supply, and the specialist clinic cost $10,000 USD to build and supply.[12] As the organization is a nonprofit, the cost of services and salaries are set to break even. Clinician salaries are approximately $3,000 USD per year, and health extension worker (comparable to community health workers in the U.S.) salaries are about $600 USD. Additional costs include pharmaceutical and laboratory expenses, which average $1 USD per patient.

SughaVazhvu has implemented accountable care principles for primary care in a rural setting. This case study focuses on a subscription-based program for chronic disease management, which was first piloted at the Andipatti clinic in 2013 in response to the growing burden of chronic NCD in the region. It was later expanded to six additional rural clinics in July 2014. The results discussed in this case study focus on the first-year experience of the innovative Andipatti clinic pilot program.

The Chronic Care Package Model

Women wait in the Ponnapur Clinic's pre-consultation area and hold bar-coded household identity cards and pamphlets that detail services offered at the clinic.

The Chronic Care Package is designed to improve access to complex disease care and provides evidence-based care. Patients must select tailored Chronic Care Package and must pay up front on a quarterly, bi-annual, or annual basis to receive a pre-defined set of services. SughaVazhvu offers a variety of subscription levels to accommodate different needs. For example, patients pay more for extensive service packages or if they have a severe pre-existing condition. SughaVazhvu estimates that their average client spends $20 per year for comprehensive care, which includes clinician visits, drugs, and diagnostics within their network. Although patients still pay out-of-pocket for health services, this amount is half the cost of national average and more affordable for most participants.[13]

There are a variety of subscription levels to account for different consumer preferences and disease type.

As this program focuses on expanding coverage, the prices are set to meet the average local resident's inclination to pay, known as the willingness to pay (WTP) threshold, in order to foster program demand. This means that the price has to be not only financially sustainable but also perceived as worth the price.

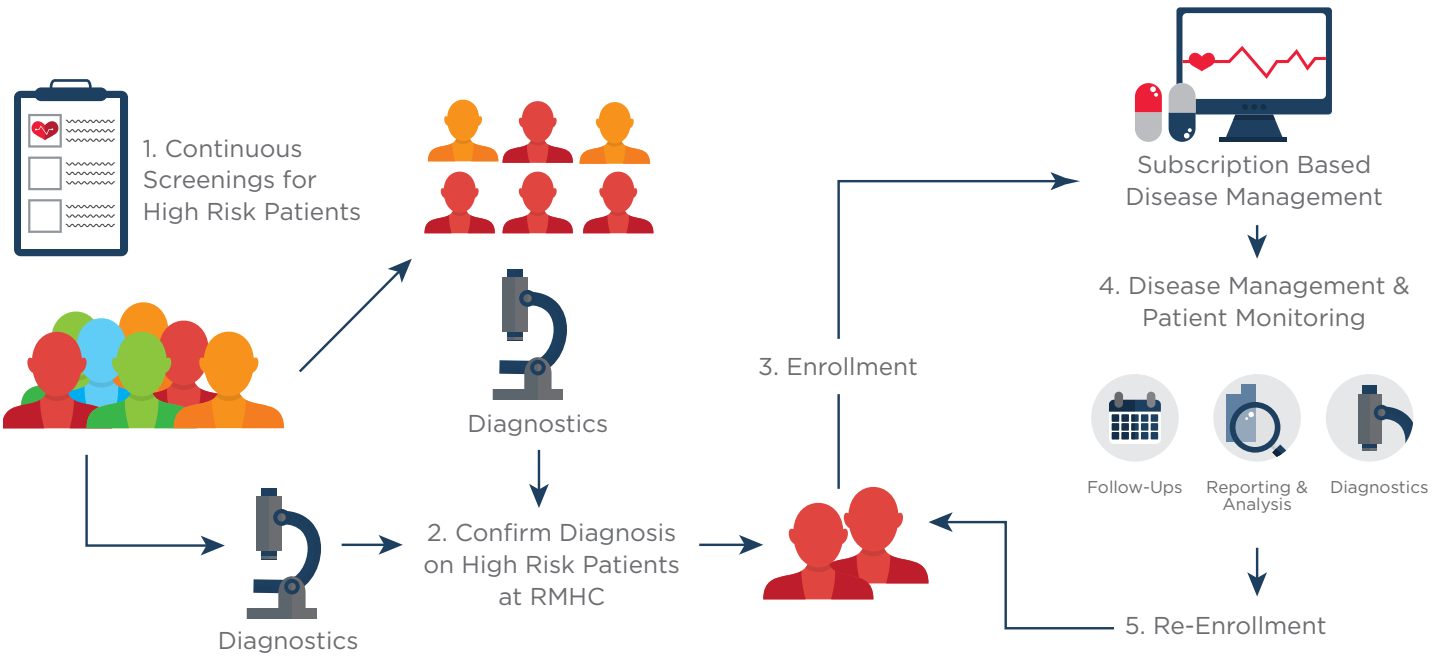
The four fundamental benefits of the program include: easy access to health care providers, quality medications, cost-savings to the patient, and reduced reliance on patient fees at each time of service. Overall, the innovative model addresses the high prevalence of chronic conditions in rural India while ensuring affordability for both the patient and the health care system.

Although it is still a small pilot project, the program has expanded access to diabetic care for a rural population who once lacked comprehensive health services **(more results in Part 3)**. During its implementation, SughaVazhvu has faced challenges and developed key lessons learned including the value of refining a strong team-based care structure with non-clinical staff, cloud-based data systems, and an emphasis on patient-centered care that evaluates provider satisfaction. These are explained in more detail in **Part 4.**

PART 2: INNOVATIONS IN CARE

SughaVazhvu is designed as a hub-and-spoke system with general practitioners and health workers that provide care in rural clinics (spokes), and rely on a shared data and decision support "hub," along with shared specialists and laboratory services. The service delivery network includes: seven rural health clinics (clinics/spokes), a mobile clinic (spoke), and a diagnostics center (hub). The urban diagnostics center hub is shared among the clinics and includes internists, pharmacists, and diagnostic laboratory services. The entire service delivery network is technology-enabled and supported by a cloud-based Health Information Management Systems (HIMS) that SughaVazhvu developed. All providers, including the general practitioners, health workers, and specialists use this technology. The software serves multiple functions including diagnostic data sharing, electronic health records (EHRs), decision support with specialists and physicians, supply chain management, and operational workflow management (**Figure 1**).

Figure 1: Subscription Package Flow Chart



Step 1: SughaVazhvu uses the HIMS to geo-coordinate and record family structure in the surrounding area. Health workers identify households that have potentially high-risk patients on the basis of age and self-reported patient/family history. The health workers then conduct a more detailed, weekly risk screening in the community using a mobile-based measuring tool known as the Rapid Risk Assessment (RRA) tool.[14] High-risk patients are then referred to the nearest clinic for more comprehensive diagnostic evaluation.

Step 2: Upon confirming a diagnosis, patients can enroll in a tailored subscription-based program. They are offered to select a subscription package from $20 to $60 USD depending on their preferences and disease type (**Figures 2 and 3**). These packages provide primary care services that diabetic patients need to manage their disease and prevent unnecessary complications. If a patient's diabetes or hypertension gets out of control or if they have a complication requiring hospitalization, the patients will be referred to the nearest hospital center. Services outside of SughaVazhvu are not covered.

Step 3: The person selects a package and pays according to their plan.

Step 4: SughaVazhvu's general practitioners and health workers provide primary care services to the patient to manage their chronic disease.

Step 5: Patient re-enrolls.

Figure 2: Chronic Care Package Annual Components

HYPERTENSION PACKAGE	DIABETES GOLD PACKAGE	DIABETES SILVER PACKAGE
12 clinic visits (1/ month)	11 clinic visits	9 clinic visits
1 year of medications	5 home visits	1 year of medications
Regular BP checks	1 year of medications	9 point of care blood glucose testing
1 blood glucose check-up at enrollment	15 point of care, blood glucose and BP tests	Clinician and health worker always available by phone
Clinician and health worker always available by phone	2 tests for HBA1C	Ongoing patient education
Ongoing patient education	1 annual health exam	
	1 eye and heart specialist check-up and consult	
	Clinician and health worker always available by phone.	
	Ongoing patient education	
INR 1200/year (20 USD)	INR 2,400/year (40 USD)	INR 1,200/year (20 USD)

**Exchange rate approximately 60 INR per 1 USD.*

Figure 3: Chronic Care Packages Available

Package Type	Price (INR) / Year
Diabetes only – SILVER	1,200 (20 USD)
Diabetes only – GOLD	2,400 (40 USD)
Hypertension only	1,200 (20 USD)
Hyperlipidemia only	2,000 (33 USD)
Diabetes SILVER + Hypertension	1,600 (27 USD)
Diabetes GOLD +Hypertension	2,800 (47 USD)
Diabetes SILVER+ Hyperlipidemia	2300 (38 USD)
Diabetes GOLD + Hyperlipidemia	3500 (58 USD)
Hypertension+ Hyperlipidemia	2300 (38 USD)

Lavanya, a master trainer, conducts a pre-consultation assessment of patients using SughaVazhvu's population-based individual screening protocol at the Ponnapur rural clinic.

PART 3: CHARACTERIZATION OF ACCOUNTABLE CARE AT SUGHAVAZHVU

This case study uses the five pillars of the Global Accountable Care Framework to describe the Chronic Care Package **(Figure 4).**

Figure 4: The Five Pillars of Accountable Care and Key Innovations in SughaVazhvu

Conceptual Pillar	Definition	Key Success Factor at SughaVazhvu
Population	Identifying a defined group of patients for which providers are responsible	Identifies rural population with chronic disease and offers subscription-based program with the goal of improved care quality and access
Performance Measures	Defining a set of targeted performance measures that ensure patient-centered outcomes are met	Evaluates health outcome measures based on qualitative interviews to measure patient knowledge and satisfaction, as well as clinical measures
Continuous Improvement	Evaluating performance through learning and Continuous improvement feedback loops	Constant program evaluation of clinical health outcomes and patient satisfaction by research team
Payments and Incentives	Establishing aligned payments, non-financial incentives and rewards to outcomes that matter to patients	Supports fixed staff salaries with bonus for patient package recruitment; voluntary enrollment means program will not succeed unless it retains and grows membership
Care Coordination & Transformation	Implementing delivery and care transformation reforms that improve low-cost, high-impact, or high-value, care coordination including team-based structures, better decision support systems and enriched IT and analytics	Creates physician-led care teams that are responsible for ensuring improved patient care coordination and the use of a comprehensive EHR

Population: What population group is included in the model?

The program is designed to support chronically ill patients within a geographic catchment area (approximately 10,000 households). The catchment is the base population for each of the seven clinics to screen all potential clients over the age of 35. Each area includes approximately five villages within the five-kilometer diameter of a primary care facility, which are the spokes in the program model. As of July 2014, SughaVazhvu reports 194 enrolled chronic care patients, or approximately seven percent of eligible patients, across the health care network. A third of enrollees are from Andipatti clinic. Approximately seven percent of those screened to be at-risk actually purchase a subscription program package.

Performance Measures: What are the types of measures that are used in the model?

The program's main performance measures are patients' knowledge about their disease, patients' self-efficacy, blood pressure level, blood glucose level, and patient satisfaction. These measures are pulled from electronic patient records and from monthly patient satisfaction phone surveys. Among these indicators, SughaVazhvu is evaluating patient adherence rates and key outcome indicators. This performance is likely to affect SughaVazhvu's opportunities for further expansion. Physicians within SughaVazhvu are paid on a salary basis with bonuses for recruitment and retention of more eligible patients. These adherence and outcome measures may also become part of clinician payments in the future (**Figure 5**).

Figure 5: Performance Measures for the Chronic Care Package

Performance Measures	Linked to Clinician Payment
Number of New Patients in Plan	Yes
Follow-up Frequency	No
Medication Adherence	No
Retention in Care	Yes
Patient Knowledge	No
Patient Satisfaction	No
Blood Pressure	No
Blood Glucose	No
Lipid Profile	No
Anthropometric Parameters (BMI, WHR)	No

Continuous Improvement: What system is in place for performance improvement?

Since the success of the Chronic Care Package depends on enrollment and retention, patient feedback is actively sought and used to improve and course-correct the program. Feedback is collected monthly via patient phone surveys that include discussions of appointment scheduling, affordability, communication, patient experience, and overall satisfaction. These surveys found that diabetes patients were interested in nutritional support charts, and as a result they were added to the program.

A young boy waits to be seen at a SughaVazhvu clinic.

The SughaVazhvu research team is also actively involved in project monitoring and evaluation and routinely provides analysis on ways to improve the program and recruit more patients. The program has undergone technical upgrades to its HIMS to enhance patient management and easy data entry for tracking gaps and opportunities for improvement.

Payment and Incentives: How are financial and non-financial incentives used in the model?

In this elective business model, the clinics must attract and retain chronically ill patients who choose to participate and pay for the service packages voluntarily; thus, providing a set of services that patients find worthwhile is critical to sustaining each clinic. In order to expand the clinics and their subsidized support over time, SughaVazhvu must demonstrate not only active participation from the chronic disease population but also improvements in results including adherence and disease management. Within the clinics, staff including clinicians and health workers receive salaries with incentives for Chronic Care Package enrollment. The monthly bonuses are dependent on the number of subscriptions purchased and are adjusted for quarterly or bi-annual package purchases. A bonus for each annual subscription amounts to a minimum of $4 USD for physicians and $1 USD for health workers.

Care Coordination and Transformation: What types of team-based structures or data analytic support are used to reinforce care transformations?

Compared to the fragmented fee-for-service care previously available, the Chronic Care Package has changed care delivery methods for patients with chronic, lifestyle-related conditions. As there were limited regional health facilities prior to SughaVazhvu, patients now have close access to primary care services. Previously, patients would travel long distances to visit expensive specialty clinics with high out-of-pocket costs. The main care coordination changes include: integrated team-based care, targeted patient engagement, and widespread use of HIMS to support clinical decision-making and data sharing. Notably, the HIMS, which is accessible offline, has freed up clinical time and has improved patient outcomes.

A SughaVazhvu clinician prepares medications for a patient.

SughaVazhvu has created care teams to deliver care with patient satisfaction in mind. The health workers, primary care physicians, and specialists work closely as a team to manage enrolled patients. For example, the health workers consistently obtain clinician input for home visits and follow-up phone calls. Additionally, the program focuses on efficient and targeted patient education to aid patients with self-monitoring and notifies patients of upcoming appointments via text or email.

Practical health information technology is a major care innovation that enables all of these services to be allocated efficiently and appropriately to patients. The SughaVazhvu network is technologically-enabled with HIMS to improve patient care and team coordination. The HIMS serves multiple functions ranging from EHR to diagnostic data-sharing, supply chain management, and operational workflow management. The network system was designed to provide accurate information on critical data elements for patient care to all staff at different levels of the organization. This open source data storage has both web-based and 'offline' mobile-based versions to allow data entry without standard computer access, which is important since power outages are common. The mobile version can geomark patients, input partial patient data, and has a mobile application that examines chronic disease risk factors such as age, body mass index (BMI), waist circumference, tobacco use, and alcohol consumption. The computer version of the software program has the full patient record that can be accessed by all care providers. In order to improve care coordination, primary care physicians and specialists are able to track patients and their medications in the

system. Additionally, the HIMS application auto-generates weekly coordinating task calendars for all care team members. The weekly calendar streamlines the clinic's workflows, which frees up time for increased community engagement activities, home visits, and follow-up calls.

SughaVazhvu's Results

Andipatti Pilot Results

Overall, in the first 16 months of the program in Andipatti, there were 62 enrollees and 132 total package subscriptions including renewals. Forty-four of the enrollees were male (70 percent). Approximately 83 percent of enrollees purchased the diabetes subscription, which is the most common package. Eleven percent of enrollees purchased the package for both diabetes and hypertension, and six percent of enrollees selected the hypertension package. **Figure 6** shows the results from the first year of the Andipatti clinic; **Figure 7** shows qualitative results.

Figure 6: Key Results Year One

Measure	Baseline August 2013	6 Months Feb 2013	12 Months August 2014	16 Months Nov 2014
Package Uptake (enrolled subscriptions)	2	22	96	132
Number of Patients	2	17	57	64
Number of Renewals (renewal subscriptions)	0	5	37	67
Number of Patients with Renewals	0	4	27	38

Josephine, a health extension worler at Ponnapur clinic is congratulated at the clinic's launch for her effort to enroll patients.

Fifty five (88 percent) of the 62 enrollments were for quarterly subscriptions. Of these 55 subscribers, 34 enrollees renewed their quarterly subscription at least once, and 26 of these subscribers are still enrolled in an active package. As of November 2014, there were 41 active subscriptions in the Chronic Care Package at Andipatti. The average attrition rate for quarterly subscribers was almost 40 percent at six months for Andipatti. There were a total of eight subscriptions that were either biannual or annual within the first year. Patient attrition is discussed in Section 4.

Of the 64 enrollees, 20 (32 percent) patients renewed their packages at least twice, indicating a high degree of satisfaction with services provided. Patient satisfaction was also measured by the median number of visits to the clinic; there were 29 clinical visits amounting to at least three clinic visits every month in a nine month period.

Figure 7: Qualitative Responses

Qualitative Responses	
Value of pre-payment	*"There (at other providers) we must leave here (home village) and go all the way and it (costs) about 200 rupees. Sometimes even 350 (rupees). It depends on the body condition and tests (prescribed). Here (at SughaVazhvu) it (costs for diagnostics) is finished in the amount we pay before (at time of enrollment) itself. It is good too. And we don't have to start from here (home village) and go all the way (to other providers). The expenses get reduced too. We decided that this (service at SughaVazhvu) is enough and we hardly go outside now. From when they (SughaVazhvu) started testing we keep seeing the tests here (SughaVazhvu) itself. Only if they (SughaVazhvu) say they can't do it here (at SughaVazhvu clinic), we will go outside (to other providers)."* – Mrs. S – Thrice renewed enrollee.
Interpersonal quality	*"They (SughaVazhvu) are seeing well, dear. Nothing to complain. Moreover, the sir (SughaVazhvu doctor) he is very friendly, he mingles with us well and talks to us well. He is almost like a relative, if we don't come he will call us. If we don't have medicine for a day also, he'd call us asking why we haven't come and that the medicines must be over by now. He (SughaVazhvu Doctor) will remind us to come and take the medicines and remind us to take them regularly. And for the tests too, he will remind us to come on Saturday at 7 am"* - Mrs. S – Thrice renewed enrollee *"They (SughaVazhvu doctors) will see very well. They (SughaVazhvu doctors) will respond well, ask what is happening and explain to us well. Everything they (SughaVazhvu doctors) will ask us in details and explain to us (the reasons), there are no shortcomings in service at all. It is because of them (SV doctors) that I am better now, otherwise by this time, I might not even be alive. For a year they said it was INR 1200, I said that is okay."* – Mr. TM – Twice renewed enrollee
Value of health education	*"When I was anemic they (SughaVazhvu) made me alright. So I believe them. They asked me to take pomegranate, apple, green vegetables etc .They also suggested me to take 'Avaramsenna*[15] *and I too will take fenugreek daily in the morning." "I had pressure too then, so early in the morning I took fenugreek potion. So, all these things little by little I try to incorporate in my foods. I started feeling better." "No other (doctor) told me such thing in (any) other Hospital. After following their (SughaVazhvu doctor) instruction in food intake I feel the difference too. So, I have faith in them (SughaVazhvu) and I continue."* - Mrs. SM – Thrice-renewed enrollee
Referral network	*"It is good. Once I helped a person join with SV. This person was in Athanakottai and he had sugar (diabetes) for more years than I have. He is a teacher there. He was spending so much, going here and there (to other providers), sometimes all the way to Pudukottai (nearest township from the village). So I informed him about SughaVazhvu and he has joined. And he thinks it is okay too. He used to buy medicines for more than 1000 rupees per week outside." "Similarly if anyone asks also I will refer them to SughaVazhvu. Any one with sugar (diabetes) I will refer them to SughaVazhvu. Now there are many people going too."* – Mr. TM – Twice-renewed enrollee *"They (SughaVazhvu) are seeing well, the expenses are lower and they (Sughavazhvu staff) talk to us with care. They (SughaVazhvu) remind us for tests and taking medicines. So we tell some four to five other people that we know*. – Mrs. S – Thrice-renewed enrollee

An independently conducted qualitative study on health seeking behavior and preferences has included interviews from chronic care package subscribers, whose responses shed light on patient perspectives (Figure 6). The strongest theme that emerged is the perceived high value for a doctor-patient interpersonal relationship, which in turn increases patient loyalty to the program.

For example, a patient that has renewed three times, Mrs. S. states, *"the doctor sees well and is taking good care and I feel that I will see here till my life ends."* This indicates that the patient values the coordinated care approach where patient-care is customized on the basis of individual needs to involve the patient in their own care. In the context of coordinated care, subscribers also recognize value of the patient health-education, which further enhances loyalty to the program. As Mrs. SM explains "*No other (doctor) told me such thing in (any) other Hospital. After following their (SughaVazhvu doctor) instruction in food intake I feel the difference too. So, I have faith in them and I continue."* Another emergent theme has been value-for-money, and when combined with perceived 'high-quality' of interpersonal care often motivates patients to refer others, which will help lead to the future success of the Chronic Care Package.

While patient engagement, experience, and satisfaction results have been promising, the pilot is still in its early stages. Over time, more extensive evaluations will be possible to better understand which patients are enrolling and reenrolling and the longer-term impacts on clinical outcomes.

PART 4: THE FUTURE OF ACCOUNTABLE CARE AT SUGHAVAZHVU

Challenges and Policy Solutions

In India, there is a disparity between the advancing rates of chronic diseases and the slow rates of progress by the national health systems in adapting to focus on the growing disease burden. As part of the 11th Five Year Plan in 2010, the government launched the National Program for Prevention of Cardiovascular Disease, Cancer and Stroke (NPCDCS) in 100 districts throughout the country with low health indicators. The emphasis of the program on early diagnosis, treatment, and referral is laudable but incomplete without an equal emphasis on results including patient engagement, treatment adherence, and ongoing disease management to prevent disease progression and complications.

The subscription model is a nontraditional approach designed to promote and provide access for active management of chronic conditions to the rural Indian population. The focus is to support reforms in care delivery that achieve measurable improvements in diet, lifestyle, and medication use with efficiency and value in achieving improvements in chronic disease outcomes driven by patient choice to join and continue in the program. Despite a small sample size, the first year of implementation provides unique and useful ground-level insights into the challenges of launching and scaling-up interventions that target chronic care delivery to underserved populations (**Figure 8**). Major challenges include: overcoming the upfront subscription fee, focusing on patient uptake, and limitations in care provision.

Challenge 1: Overcoming Upfront Subscription Fee While Retaining Accountability

SughaVazhvu set a fee rate for disease management packages based on local market research; however, some patients who do not renew the subscription continue to cite high package costs as the biggest barrier. The higher priced packages have very low uptake, and the cost may potentially deter patients from seeking appropriate care. Moreover, data from qualitative research on the acceptability of community health insurance in this community indicate that people show a preference toward pay-per-use rather than pre-

payment for health care services. Patients who were diagnosed with chronic conditions prior to the start of the subscription service have a higher buy-in rate than those who are newly diagnosed. This difference is attributable to established patients having a greater understanding of the costs of disease maintenance, which is 40 percent lower in the program. There needs to be cost comparisons and easier financial understanding of the benefits of pre-payment for disease management in order to overcome the uncertainty of upfront subscription costs for newly diagnosed patients.

Payment for primary care services, in the form of user fees, has always been a point of contention in India. The absence of regulated insurance and limited risk-pooling mechanisms covering primary care and preventive services places the responsibility of payment on the patient. A lack of awareness of observable symptoms during early disease stages may discourage patients from planning ahead for future costs or understanding the need for upfront payment.

On the other hand, this bundled payment model has resulted in access to notable transformations in chronic disease management and has significantly improved the health of many chronic disease patients compared to more expensive and less well-coordinated services from private practitioners. Given limited public health care budgets, the Chronic Care Package appears to deliver a relatively high value for money that has not otherwise been possible in this context. At least for many individuals with chronic diseases in this region of rural India, the program has provided a better alternative to traditional public health care services and unaffordable and inefficient private fee-for-service care.

Since many chronic disease patients who enroll in the program decide to continue, a strategy to overcome the challenge associated with upfront cost while operating within public budget constraints is to explore public-private partnership opportunities, such as one with the state government under the NPCDCS program. Under the current NPCDCS model for cardiovascular diseases, the Sub-Centre of the District Health System performs prospective screening involving blood pressure measurement and blood glucose measurement using strip-based tests. All confirmatory diagnosis and treatment is referred up to the next unit in the public health hierarchy. Partnering with the state government to offer diagnostics via the innovative mobile tool as well as disease treatment and management is a potential solution to reduce the cost of care packages that provide accessible support in villages. Alternatively, SughaVazhvu can partner with local financial services and microfinance institutions to develop and test sustainable health protection products or consider community risk pooling strategies to subsidize disease management packages.

Challenge 2: Focusing on Patient Uptake: Strengthening the Patient as a Care Partner

A critical organizational challenge to transforming the health system is the paradigm shift from a treatment-based to prevention-based approach. For this accountable care approach to succeed broadly, achieving high levels of patient engagement and ongoing participation is critical. The three key patient adoption or uptake challenges include: 1) invasive diagnostics to confirm disease condition in previously unidentified patients; 2) pre-existing health seeking behavior of patients; and, 3) gender bias in uptake of services. The three challenges described below indicate the need for a long-term community engagement strategy focused on the local culture. Care transformations are not solely about care delivery reforms. Policymakers and implementers should rethink strategies that enhance disease awareness that include supporting and encouraging the patient/family as a care partner in determining their health trajectory.

Confirmatory Diagnostics. SughaVazhvu employs two different tools to identify at risk individuals for chronic diseases – the Population-Level Individual Screening Protocol (PISP) in the clinical setting and a community-based RRA. Further diagnostic tests are mandatory to transition from the screened “at risk” status to “confirmed disease” status. This step presents a systemic challenge as it requires patient willingness to undergo diagnostic testing after being flagged during the screening or via the RRA. Diagnostic tests can be costly and/or physically invasive or otherwise unpleasant. Prioritizing subsidies or implementing other steps to encourage participation in chronic care diagnostic testing to facilitate early detection could improve the effectiveness of the program.

Health Seeking Behavior. The culture in rural India has emphasized self-medication or local traditional healers as the first line of care providers. This is reinforced by the fragmented primary care landscape and inefficient public health infrastructure in turn driven by traditional public and private health care payment systems. Consistent with that, there is a general lack of knowledge of chronic condition prevention. Treatment is sought for observable symptoms, so patients seek primary or specialist medical care only when symptomatic and the severity of disease has progressed. In conjunction with changes in payment policies to address these gaps in care, there is a need to develop culturally appropriate patient engagement strategies focused on trust-building and disease awareness.

Gender Bias. Among the enrolled users, there is a clear difference in gender-based utilization of services; male subscriptions and renewals vastly exceed female subscriptions. Cultural acceptance of treatment for women with few observable symptoms is a participation barrier. There is a need to expand promotional efforts to focus on prioritizing chronic disease care for women. One way this can be done is by increasing male support for female program promotion by targeting males through the lens of family decision-makers. For example, community screenings could also target households while men are at home to receive notice of their spouses' high-risk condition. Men should be encouraged to accompany women to their confirmatory diagnostic testing at the health clinics. Another proposed way to increase female participation is to offer new targeted female packages with additional subsidies or complementary supplemental services such as anemia medication, family planning, obstetrics, menopause management, and cancer screenings.

Challenge 3: Limitations in Care Provision

The clinic model is designed to make affordable health care accessible to the last mile; each clinic has a defined catchment population within a five kilometer radius from the clinic. The disease management packages have also been designed to facilitate patient monitoring through scheduled monthly consultation and diagnostic visits. Access barriers exist for people living at the outer perimeter of the catchment area, especially the geriatric and female populations. The launch of the Chronic Care Package across each catchment involves home- and community-based enrollment drives that raise an expectation among those enrolled for all subsequent diagnostic tests and medications to be delivered to their doorstep. Moreover, in certain communities, working adults prefer to seek services in the evenings when clinics are closed. Potential solutions include medication disbursement during community-based activities and alternate clinic timings.

The prevalence of two or more chronic diseases increases the complexity of treatment, and influences the utilization of the Chronic Care Package. The current disease management packages cater to a subset of chronic conditions associated with NCDs. Patients with two or more pre-existing chronic diseases that are not covered by the package, and also diabetic or hypertensive, are apprehensive about signing up for a package that only partially caters to their medical needs. Providing specialist care at the semi-urban facility to manage both enrolled patients and those with two or more chronic diseases is one potential solution; however, access to these specialists will involve travel long distance, which may result in lost wages. These challenges can be mitigated by having a specialist consult at the local clinic on a monthly basis, which would diminish patient travel time and the amount of time a patient takes off work. Alternatively, telemedicine solutions can help facilitate specialist-enabled disease management. To keep healthy patients enrolled while providing these additional services, public spending would need to be increased.

Figure 8: Key Implementation Challenges of Andipatti Pilot

Challenge Type	Challenge	Description	Proposed Solution
Organizational	Upfront Subscription Fee	The number one cited reason for lack of renewal is high costs	Support community and patient education efforts surrounding the Chronic Care Package
		The higher priced packages have very low uptake	Work on establishing lower prices or establishing partnerships to cover higher cost packages
		Newly diagnosed patients have lower plan uptake than previously diagnosed patients	Outline importance of early disease maintenance
Structural (Social Norms)	Patients as Care Partners	Invasive diagnostics required to confirm disease condition in previously unidentified patients	Prioritize financially subsidizing chronic care diagnostic testing
		Pre-existing health behavior favors reactionary treatment versus prevention and on-going disease maintenance	Educate community on the importance of prevention and early treatment and build trust within the communities served
		Previously diagnosed patients favor relationships with existing providers.	Increase trust and reputation of SughaVazhvu
		Gender uptake of services is fragmented and highly dominated by males	Expand promotional efforts to focus on prioritizing female care
Organizational	Limitations in Care Provision	Clinic only operates during normal business hours	Offer extended clinical hours and increased drug distribution within communities
		Frequent specialist visits have high opportunity costs due to time of work and incurred travel costs	Explore tele-medicine solutions and specialist rotation at clinics

Policy Implications

The subscription model for chronic disease management is becoming increasingly popular in India due to its innovative approach to chronic care delivery. While still in its first year, the Chronic Care Package has increased high-quality care with established cost controls. Gaps and challenges encountered showcase the need for continuous program improvement, especially given public budget constraints.

Add outcomes-based payments. Current clinician payments in the program are tied to enrollment and re-enrollment. While this has clearly resulted in many substantial innovations in care, it is not yet clear how

these improvements in care translate into improvements in medication adherence, behavioral change, and population chronic disease outcomes. These data are being collected as part of the program and should be evaluated to help assess its impact and guide further policy reforms including changes in subsidy design and scope of services. These population care and outcome improvements should also be part of policy decisions about extending and expanding the program.

Build on progress in patient engagement. Outcomes in chronic care management are dependent on non-pharmacological interventions involving lifestyle and behavior modification. This program has promoted a much more patient-focused approach to care that encourages patient involvement in individualized care plans, but there is opportunity to further encourage recruitment of patients. For instance, as more results become available, program outcomes should be highlighted to the potential client audience that demonstrate program utility or value to increase enrollment by relating program results to the patient's financial threshold.

At a community level, program findings and general disease information could be shared with local government agencies, women's groups, schools, and colleges. The goal is to create an open dialogue with the community to raise program awareness and increase healthy behavior change. Community engagement and trust-building will result in increased uptake. SughaVazhvu will also explore telemedicine and mobile-based communication strategies, such as text messaging and interactive voice response, as ways to improve patient engagement and adherence.

Provide support for diagnostic testing. Given the invasive nature of some diagnostic tests, even if additional public subsidies are not available, SughaVazhvu plans to explore strategies to support diagnostic testing. There are also plans to incentivize frequent routine diagnostic testing for patients with established care providers to monitor disease progression and to encourage disease management. Routine testing even for patients not under SughaVazhvu care will lead to better health outcomes at a community-level.

Develop more evidence on optimal subscription pricing to improve chronic disease outcomes in the population. The subscription package model in Tamil Nadu is in its second year of implementation. As noted above, there is room to build more evidence on how pricing affects the uptake of certain packages and enrollment by gender. Further evidence will shape future programs for maximum patient engagement and positive population outcomes.

Next Steps

The subscription-based Chronic Care Package at SughaVazhvu is amid the first year of full scale-up across all seven rural clinic including rollout of prevention and disease management. Similar programs for transforming primary care and chronic disease prevention, such as HealthSpring in Mumbai, are being explored in more urban regions where a larger part of the population has the ability to self-pay. Although this patient-driven accountable care approach is a fundamentally different model for payment and care delivery in India, it is already showing significant impact on population health with limited public costs. Larger-scale pilots, in more communities and states, could be implemented based on the promising early

results to quickly develop more evidence. In addition, the care delivery reforms that are emerging from this model – such as low-cost but effective health IT systems and targeted, inexpensive interventions to engage chronic disease patients more effectively – may provide useful models for care transformation outside of India. Given the global burden of chronic disease, finding more effective innovations in care and methods to sustain and expand them is an extremely urgent public health need.

Editor's note: SughaVazhvu provided the source data for this document and is responsible for its accuracy

Endnotes

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14. The RRA was developed in collaboration with SughaVazhvu's research partner, IKP Centre for Technologies in Public Health (ICTPH), as mobile-based, cost-effective screening tool available at point of care.

15. Avaram Senna or Senna auriculata is said to contain a cardiac glucoside (sennapicrin) and sap, leaves and bark yield anthraquinones, while the latter contains tannins. The root is used in decoctions against fevers, diabetes, diseases of urinary system and constipation. The dried flowers and flower buds are used as a substitute for tea in case of diabetes patients.