Universal Health Coverage in Kerala Through a Primary Care Pilot Project

Final Report

Department of Health and Family Welfare,
Government of Kerala

Prepared by

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January 2016

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Acknowledgements

Many active participants helped coordinate and create documentation for this report on the Universal Health Coverage Primary Healthcare Pilot Project. We wish to acknowledge the Department of Health and Family Welfare, Government of Kerala, for developing a plan to pilot test a new model of primary healthcare as a basis for Universal Health Coverage in Trivandrum district. We would also like to acknowledge the team from the State Health System Resource Center of Kerala as the implementer and coordinating agency for the pilot project under the National Health Mission of Kerala. The State Health System Resource Center made valuable contributions during the design and implementation phase of the pilot project.

We would like to thank the esteemed representatives from various other departments including, but not limited to, the Directorate of Health Services; the Directorate of Medical Education; the National Health Mission, Kerala; and others who have offered leadership, guidance, and practical support to the pilot project. We are thankful to the staff of the National Health System Resource Center for their role as knowledge partners guiding the study and disseminating the findings. We also offer our sincere gratitude to the consortium of primary care and public health experts from the National Health Service, United Kingdom, led by the team from the University of East London. This team was involved in every aspect of the pilot project for two years, from design to implementation, until July 2014. Our sincere gratitude to all the support and valuable contributions made by the medical officers and staff of the institutions that participated in the Universal Health Coverage Primary Healthcare Pilot Project, including those at the Primary Healthcare Center at Kallikad, the Primary Healthcare Center at Chemmaruthy, and the Community Healthcare Center at Venpakal. The assessment and documentation of the Primary Healthcare Pilot Project in Kerala was made possible by financial support from the United Kingdom.

Executive Summary

This report introduces one of the first attempts to provide universal health coverage to a defined population in India. The Department of Health and Family Welfare, Government of Kerala, implemented the Universal Health Coverage Primary Healthcare Pilot Project in the state through a bottom up approach. The pilot project was conceived in 2012. The project has already gained national and international attention. This report is an attempt to capture the origin, design, implementation, and preliminary evaluation of the pilot project. This report also provides information about the experiences, lessons learned, and impact of the pilot project.

Introduction

In 2012, the Twelfth Five Year Plan recommended strategies to address the national health goals. For the first time, the term "universal health coverage" was used in the approach paper of the plan. The plan called for achieving universal health coverage in all urban and rural areas. The strategies focused on providing high quality services, increasing accountability in healthcare delivery, and lowering out of pocket expenses on health. Primary care is an important component of universal health coverage. The Twelfth Five Year Plan emphasized the need to strengthen primary care services by improving manpower, infrastructure, and the proactive role of health workers in the community.

Kerala has achieved impressive health targets despite per capita income that is comparatively lower than that of several other Indian states and many developed countries. An analysis of the health situation in Kerala shows that the state has a low mortality and high morbidity profile. The morbidity profile of the state has shifted toward high prevalence of preventable and manageable noncommunicable diseases, including cardiovascular diseases, diabetes, and hypertension. The design of the health system focuses heavily on the management of maternal and child health, communicable diseases, and nutrition.

This mismatch between the services offered and the health needs of the population in itself indicates a need to redesign the health system or reengineer the process cycle in medical institutions. It is within this context that a decision was made to pilot a project to align primary care with growing healthcare needs related to noncommunicable diseases. The concept of universal health coverage was used to guide the pilot project. Analysis of the usage of public healthcare institutions revealed low use of resources at the grassroots level, coupled with high patient turnover at the secondary and tertiary care facilities. Sixty to seventy percent of primary care services in Kerala are provided by private secondary and tertiary care hospitals. Even though patients report to the primary care facilities, they are routinely referred to secondary and tertiary care facilities without any attempt to

treat them at the primary care centers. The skill levels required to treat the patients differ at different facilities. Patients are referred to hospitals from subcenters.[1]

Problem Statement

Many of the health challenges in Kerala stem from the mismatch between the health needs of the population and the availability of services. Currently, the primary healthcare system addresses communicable diseases and reproductive and child health needs. The health system has not been redesigned to meet the needs of a population in the midst of a significant demographic and epidemiological change. These changes are leading to varied disease profiles.

The primary care system also faces challenges in human resources. The primary care workforce is not well trained to provide high quality care. Primary care is not considered a team effort. Different providers work in isolation. Primary care providers are viewed as less prestigious than specialists. Incentives to work in rural areas are lacking. Health staff members in rural areas do not access professional and career growth opportunities.

The lack of effective linkages between different levels of care also poses a challenge to the efficiency of the health system. No standard protocols exist for referral and follow up of cases. Inefficiency in the primary care system has led to a culture where patients bypass basic facilities and approach specialist institutions directly, even for minor ailments, straining available resources further. Across the health system, bypassing the primary level of care has resulted in increased costs and harm to the health of the population. Even for follow up and continued treatments, patients go to the secondary and tertiary care centers. As a result, the primary care centers are underused and the secondary and tertiary care centers are overused, leading to poor quality services. The healthcare system needs processes to regulate the flow of patients from primary to secondary and tertiary levels of care, depending upon the complexity of the situation.

With an objective to ensure proper referrals and reduce overload in the secondary and tertiary care centers, the state of Kerala aimed to strengthen its primary care centers. The state aimed to ensure the availability of quality treatment and preventive services at the public primary care institutions closest to the community. The healthcare system also needs to implement appropriate health promotion and prevention strategies. Various sectors must coordinate to manage the health needs of the population. The state must reorient primary care teams on health promotion and preventive care issues. The competence of primary care centers needs to be improved, through strong leadership and collaborative efforts with relevant agencies.

Strategy and Approach

Kerala proposed addressing the weaknesses in the primary care system through a combination of strategies. For the primary care staff to function as a team, gaps in the knowledge and skills of the primary care staff needed to be identified. The system needs trained personnel who can take responsibility for the health needs of the families living in the catchment area of their primary care centers. The primary care teams should have the skills to assess individual and family health needs during home or clinic visits. The primary care teams should ensure lifestyle modification, disease screening, and medication for clients. The primary care teams should triage patients who attend the outpatient clinics and provide the full range of services appropriate to the primary care level. The primary care teams should refer cases that need higher levels of care to the appropriate facilities, and manage follow up. The primary care teams should strengthen the relationship with the local panchayats[2] to develop the environmental interventions necessary to promote good health. These interventions should address social determinants of health such as sanitation, vector control, water supply, and related issues. The state needs an information technology framework that will provide an electronic platform to interact with the citizens, identify skill gaps, and provide a unique identity to every person under the care of the primary care provider. The state needs to build public health interventions through active collaboration with allied health departments, managed by or under the umbrella of the local self government institutions.

Design and Implementation

While the state of Kerala was exploring ways to improve its primary care system, a team of experts from the University of East London submitted a proposal to the Indian Ministry of Health and Family Welfare. The proposal was to study how the model of general practitioners from the National Health Service in the United Kingdom could be implemented in the state of Kerala to improve primary care services. Based on the vision of the state, the Kerala Department of Health and Family Welfare developed a plan to pilot test a model to move closer to universal health coverage in three selected facilities in Trivandrum district. The model was based on a bottom up approach, meaning facility based. The bottom up approach focused on expanding services offered, strengthening primary care centers, and addressing the needs of the catchment population.

The Community Healthcare Center in Venpakal and the Primary Healthcare Centers in Kallikad and Chemmaruthy were selected as the pilot project sites. The government convened a core committee of primary care experts. The committee was headed by the secretary to the government and included representatives of the health services and medical education departments. The role of the core committee was to support the proposed pilot project facilities. The team from the University of East

London provided technical support for the design of the program, training, development of protocols, and the design of software. The team was engaged by the government of Kerala to implement the pilot project at the selected primary healthcare centers for a period of six months, from January to July 2014. After July 2014, the involvement of the team from the University of East London ended, at the direction of the government of Kerala.

The Universal Health Coverage Primary Healthcare Pilot Project began in December 2012 and ended in December 2014. A team of doctors, paramedics, accredited social health activists (ASHAs),[3] auxiliary nurse midwives (ANMs), and local self government representatives from the health sector in Kerala worked together to expand the concepts introduced by the team from the University of East London into detailed plans tailored to the needs of Kerala. The State Health Systems Resource Center of Kerala oversaw the management and implementation of the project.

The pilot project introduced several changes, including new infrastructure to ensure patient friendly environments, to create designated preassessment or prediagnostics areas, to redesign patient flow, and to reduce waiting time. Other changes included the introduction of information technology to register patients electronically for ease of data entry and to track each patient record; the provision of laboratory and diagnostic services; and the procurement of drugs, equipment, and supplies.

The pilot project also introduced new good practices. Some of these practices included task shifting, training of facility staff to register patients, strengthening skills to use evidence based protocols for six priority diseases (diabetes mellitus, hypertension, antenatal care, immunization, fever management, mild to moderate depression, and immunization), and the use of referral pathways. The pilot facilities also emphasized health education campaigns to engage the community and to involve the local self government representatives more actively. The pilot project staff members were trained to strengthen not only clinical but also nonclinical skills to improve the quality of services.

Challenges

The project managers encountered a number of challenges during the implementation of the project. Many of these challenges centered on limitations related to workforce training, continuity, and incentives. At the outset, the project needed to help primary care physicians and paramedical staff understand that primary care institutions could be used to manage noncommunicable diseases, and not just maternal and child health services. The confidence level of the staff was low. Trained staff members were moved out of the centers during annual general transfers. New staff members, both departmental and medical, had difficulty familiarizing themselves with the pilot project. After the pilot project ended in December 2014, no efforts were made to continue mentoring and guiding the pilot

project facility staff on day to day problems related to the protocols, use of software, patient registrations, or task shifting. During the course of this project, the lack of leadership among the primary care physicians became obvious. The pilot project facilities lack continued supervision and leadership. Other challenges included patient overcrowding, unreliable internet connectivity, lack of backup power source resulting in impaired patient registration and data entry, and limited compliance with protocols.

During the design phase, the pilot project core committee planned to provide tablets and portable computers to the subcenter nurses. The project managers planned to digitize and integrate all data entry. The project managers planned to enable access to information from all facilities under the project, including subcenters and primary and community health centers. During the short phase of the project, the implementers found it difficult to find appropriate software to digitize data completely and to create a comprehensive database. The data remained with the pilot project institutions and the monitoring of the performance was conducted at the institutions.

Due to financial constraints, portable computers were not issued to the subcenter nurses. Data for different vertical programs, state programs, and the pilot project are still entered in paper based registers at the subcenters and primary care centers. It is challenging to gather data from different sources for the same set of patients coming to the subcenters and primary care facilities from the catchment area. It is evident that a period of less than two years is inadequate for any major improvement to take place in terms of changing the business processes.

Impact

Qualitative assessment

Qualitative assessment of the pilot project was based on interviews conducted with administrative staff, pilot project facility staff, and members of the community. Despite challenges in the design and implementation phase, the pilot model yielded remarkable changes and accomplishments in the three pilot facilities.

According to the interview responses, the three selected pilot facilities were already above average for the district in terms of staff motivation, community activities, and patient volume. While the pilot facilities may already have been high performing relative to other facilities in the district, facility staff and members of the community reported additional improvements as a result of the pilot project. These improvements included a tremendous increase in the level of commitment, team spirit, and involvement of medical staff with the local self government representatives. Based on the perceptions of the facility staff, the health seeking behavior of patients improved. Patient trust in the government primary care facilities increased. Patients who used to go to the city for treatment started to use the local

primary care centers. Members of the community became willing to visit the primary care facilities as the first point of contact with the health system. These positive changes were attributed to the patient friendly environment at the facilities and the availability of laboratory services and drugs.

Laboratory facilities, which were not included in the initial pilot project design, were made available, on demand, during implementation. Infrastructure of the facilities improved. The pilot project helped the facility staff improve relations with their local self government representatives and communities. Health awareness within the community increased, due to active engagement of the facility staff in the health education camps. The quality of the primary care facility at Chemmaruthy improved enough to meet the Kerala Accreditation Standards for Hospitals. The other two facilities are also in the process of receiving the accreditation certification.

Quantitative assessment

Based on the quantitative data assessment,[4] the number of outpatient registrations, registrations for six diseases selected for the three pilot project facilities, referral cases, and follow up cases stayed almost the same for 2013 and 2014. There was a slight increase in numbers for diabetes mellitus, hypertension, depression, immunization, and antenatal care, and a decrease in cases of fever in all the three pilot project facilities. The outcomes for outpatient registrations, registrations for six diseases selected for the pilot project, referral cases, and follow up cases for 2013 and 2014 were also compared with a control primary care facility in Veeranakkavu in Trivandrum district. The data from the control facility, when compared with the pilot project facility data for 2013 and 2014, showed slight improvement.

Despite all the achievements and changes made during the pilot project implementation, it remains unclear whether changes during the two year period can be attributed to the pilot project alone. The outcomes at the pilot facilities could be attributed to a combination of existing vertical programs, community based programs, as well as the pilot project. The ACCESS Health assessment team collected data not only from pilot project software at the three facilities but also referred to manual registers at the pilot facilities, manual registers at the subcenters, and the state level Health Management Information System. The data collected from the pilot facilities do not represent the data solely from the pilot project interventions or the pilot project software. There was only slight change in data trends in the pilot project facilities, from 2013 to 2014, when compared with the control facility.

The interviewees did recognize that there were changes at the three pilot facilities that were specific results of the pilot project. The project was responsible for new infrastructure; patient registration software with built in protocols; more workforce; task shifting; more patient friendly environments; the availability of diagnostics, laboratory services, and medicines; and an emphasis on monthly community

meetings for better interactions, relationships, and involvement with the local self government representatives.

Scope for Improvement and Expansion

The existing pilot project facilities can be strengthened further. Several gaps need to be addressed before the pilot project is scaled to other facilities in the state, or to other parts of the country. These gaps include the need for ownership of the project and continuity to guide and manage the interventions as planned. Continuous orientation and refresher trainings are required to ensure consistent use of software for patient registration, protocols, referrals, and follow ups; team building; and constant mentoring and monitoring of the staff. The project core committee should introduce incentives for providers and staff to comply with standard treatment guidelines, referrals, and follow ups. Indicators need to be set to measure performance. Data at all levels need to be digitized and integrated. At the facility level, internet connectivity and backup systems are necessary to ensure the smooth functioning of the software. As requested by the facility staff, a data entry operator could be appointed at the primary care facilities for ease of data entry. Procurement of modern equipment will save time and improve the accuracy of information. Strategy and budget provision will ensure adequate staff and supplies and regular maintenance on an ongoing basis.

Conclusion

The initiative to expand universal health coverage through a primary care project has helped realize the potential of the primary care institutions to achieve better healthcare coverage for the rural population. This kind of project is one of the ways to improve the commitment of primary care center staff to provide needed services and to instill confidence in the population to rely on publicly funded institutions for care. The pilot project represents an effort to strengthen the existing system. The government of Kerala plans to expand the pilot project to the entire state. From an administrative perspective, continued leadership, supervision, allocation of primary care resources from the state budgets, and ongoing training of staff are all necessary to ensure uninterrupted and strengthened implementation and expansion of the project.

As the implementer and point agency for the pilot project, the State Health System Resource Center must ensure the continuity of the processes planned for the pilot project. In the state of Kerala, the primary healthcare system needs a stronger gatekeeping system and a regulatory framework to require all citizens to report and undergo screening at the primary healthcare centers as the first point of contact. A performance based incentive system is important to motivate better performance in the staff and to support better outcomes. Although the project aimed to improve some of the fundamental elements of the existing primary care system, the duration

of the project was too short to make many commendable achievements. This project has helped policymakers and field workers realize the potential of primary care institutions to achieve universal health coverage in a state like Kerala, one of the better performing states in India. The pilot has provided a road map for universal health coverage that others may follow.

Chapter One

Project Background

The Twelfth Five Year Plan Steering Committee report on health was published in 2012 by the health division of the Planning Commission of India.[5] The report highlighted several national health goals. The national health goals included reductions in the maternal mortality ratio, infant mortality rate, and total fertility rate. Other national health goals included the prevention and reduction of underweight children under three years of age, prevention and reduction of anemia among women aged fifteen to forty nine years, and raising the child sex ratio in the zero to six years age group. Prevention and reduction of burden of diseases, especially communicable, noncommunicable, mental illnesses, and injuries, and reduction of out of pocket expenditure are priority national health goals.

One of the strategies recommended to address these goals was to deliver universal health coverage in all urban and rural areas. The government would focus efforts on providing quality services in healthcare to meet citizens' expectations, increasing accountability in healthcare delivery, and lowering out of pocket expenses on health. The High Level Expert Group[6] proposed a definition of universal health coverage to guide the work:

"Ensuring equitable access for all Indian residents in any part of the country, regardless of income level, social status, gender, caste, or religion, to affordable, accountable, and appropriate, assured quality health services (promotive, preventive, curative, and rehabilitative) as well as services addressing wider determinants of health delivered to individuals and populations, with the government being the guarantor and enabler, although not necessarily the only provider, of health and related services."

One of the important components of universal health coverage is strengthening primary care services through improved manpower, infrastructure, and the active role of health workers in the community. In general, universal healthcare is a development process and a journey toward achieving the right to health.[7] India has a population of over one billion. Nearly seventy percent of the population resides in rural areas.[8] Studies have shown that approximately six million households are pushed into poverty every year due to the financial burden incurred from healthcare costs. Nearly two thirds of out of pocket expenses are for outpatient services, diagnostic tests, and drugs.[9]

The World Health Organization used the term universal health coverage for the first time in 2010. To many, universal health coverage meant universal healthcare and not universal health coverage. The confusion did not stop at the level of meaning but also extended to the implementation level.

In 2005, the government of India launched the National Rural Health Mission. The National Rural Health Mission was initiated to address problems across primary healthcare, to improve the health system, and to improve the health status of those living in rural areas.[10] A core strategy of the Rural Health Mission was to strengthen the infrastructure and human resources of existing primary healthcare centers and community healthcare centers. These strategies aimed to achieve a number of goals, such as reduce infant mortality, maternal mortality, and the incidence of several communicable diseases. The National Urban Health Mission intended to address the needs of the urban poor but was not implemented during the Eleventh Five Year Plan period. The Twelfth Five Year Plan included urban healthcare as a priority area. The National Rural Health Mission plan recognized the importance of primary care as a means to improve access to healthcare and to accelerate progress toward the health related Millennium Development Goals. Several states, including Kerala, made substantial progress toward improving primary care during the National Rural Health Mission years.

Many state governments in India initiated discussions on universal health coverage. Very few of them had the capacity to roll out a comprehensive plan. It is within this context that Kerala began contemplating how to achieve universal health coverage on a pilot project basis. The process of initiating became easy when the University of East London submitted a proposal to replicate some of the practices adopted by the National Health Service in United Kingdom to develop clinical care pathways for select common ailments.

The leadership in Kerala had to decide where to begin this work. After several rounds of discussions, Kerala stumbled upon a concept, what noted economist CK Prahalad termed, “fortune at the bottom of the pyramid.” The leaders of Kerala felt that primary care institutions were the place where universal health coverage could be initiated with maximum impact. These institutions suffer from gross underuse of resources. Primary care institutions are commonly understood as centers of immunization and antenatal care. Primary care centers are not where people go to seek treatment for common health conditions.

Kerala adopted the principle of fortune at the bottom of the pyramid. The Department of Health and Family Welfare believed that the primary care institutions can become the places where clinical treatments could be delivered for a wide range of conditions, particularly for noncommunicable diseases. This reprioritization will not only help people get better access to but also, decongest health centers providing more specialized care.

Introduction

Kerala has achieved impressive health targets despite per capita income that is relatively lower than that of several other Indian states and many developed

countries. Kerala attributes its better health outcomes to its focus on high quality of healthcare, equity, access to education, poverty reduction strategies, and the priority placed on child welfare. An analysis of the health situation in Kerala demonstrates a low mortality and high morbidity profile. This pattern is more evident in the urban areas of the state.

Health Scenario

The High Level Expert Group has incorporated a chapter on social determinants of health in its report on universal health coverage. The report highlighted the critical importance of including the wider determinants of health in strategies to address health improvement and to tackle health inequalities.[11] The government of Kerala believes that the primary healthcare system is not well equipped to manage the current health issues of the state. Current primary healthcare services in the state focus on family planning and pregnancy related services and are inadequate.

Out of pocket expenditure on healthcare in Kerala is an area of concern. According to studies conducted by Kerala Sastra Sahithya Parishad, on average, a person in Kerala spends almost six thousand Indian rupees per year (about ninety five US dollars) out of pocket to seek medical care. The average out of pocket expenditure of a person visiting outpatient clinics in the government sector was 4,034 rupees per year (about sixty five US dollars). In the private sector, this outpatient expense was not very different, at 4,739 rupees per year (about seventy five US dollars). For inpatient care, the average annual out of pocket expenditure was 6,267 rupees (about one hundred US dollars) in the government sector and 30,800 rupees (about 490 US dollars) in the private sector.[12] The escalated out of pocket expenditure was mostly due to expensive corporate hospitals. Overall government spending on healthcare needs to be analyzed in detail, especially the proportion invested in primary healthcare. This analysis should include an examination of spending by local self government institutions as well as the indirect benefits to the health sector of spending on social welfare, housing, drinking water supply programs, and sanitation.

Until recently, small and medium sized private hospitals owned and run by doctors, missionaries, or philanthropic agencies provided services at reasonable price to the people of Kerala. Private hospitals are present all across the state, unlike primary healthcare centers and community health centers. The health centers are built on donated land. The health centers are often located far away from residential areas or junctions. The overall cost of using the services of private facilities is not very different from the cost of seeking care at distant primary healthcare centers or community healthcare centers. These small and medium private facilities are disappearing in the face of corporate multispecialty hospitals and escalating costs.[13]

Disease Profile

According to the 2011 census, Kerala has a population of approximately thirty four million. The average life expectancy is about seventy five years. Nationally, life expectancy is sixty nine years (Table 1). The infant mortality rate is as low as twelve per thousand live births in Kerala. The crude death rate of the state stands at seven per one thousand. The maternal mortality ratio is eighty one and among the lowest in the country. [14,15] These achievements are thought to be associated with the high literacy rate, approximately ninety five percent in the state.

Table 1: A Comparison of Health Indicators for Kerala and India

MORTALITY RATES	KERALA	INDIA
Crude Death Rate	7 (SRS 2012)	7.1 (SRS 2012)
Infant Mortality Rate	12 (SRS 2012)	44 (SRS 2012)
Maternal Mortality Ratio	81 (SRS 2007-09)	212 (SRS 2007-09)
Life expectancy at birth	74.6 (Census 2011)	67.14 yrs (Census 2011)

Source: Sample Registration System statistical report, 2007-2009; 2012 and Census 2011

A study based on secondary data collected by national research institutions revealed that almost 180 out of every one thousand people in Kerala had a history of ill health.[16] Another evaluation showed that the morbidity rate is around twenty five percent.[17] Noncommunicable diseases, such as cardiovascular diseases, diabetes, and hypertension, can be prevented and managed if identified at an early stage. Noncommunicable diseases were the major causes of morbidity in Kerala. The evaluation also highlighted the potential benefits that could be achieved if health promotion and disease prevention were strengthened.

Cardiovascular disease tops the list of major killer diseases in Kerala. Cardiovascular diseases account for more than twenty percent of deaths, with age adjusted mortality rates of 332 and 128 among one hundred thousand men and women, respectively.[18] Premature mortality, deaths below sixty years of age, account for more than fifty percent of deaths due to cardiovascular disease. Premature mortality has resulted in a twenty percent reduction of the state domestic product. The incidence of heart disease among the younger population (below fifty years of age) is as high as fifty percent in Kerala. The economic burden that has resulted is as high as twenty

percent of the gross domestic product of the state. The rate of heart disease in rural areas is low, at approximately seven percent.[19]

Table 2: The Prevalence of Risk Factors for Noncommunicable Diseases

NONCOMMUNICABLE DISEASE FACTORS	PERCENT (%)
Diabetes	15
High blood pressure	29
High cholesterol (>200mg/dl)	51
Tobacco users	50
Overweight (body mass index >25)	25
Physical inactivity	7
Alcohol consumption in men	31

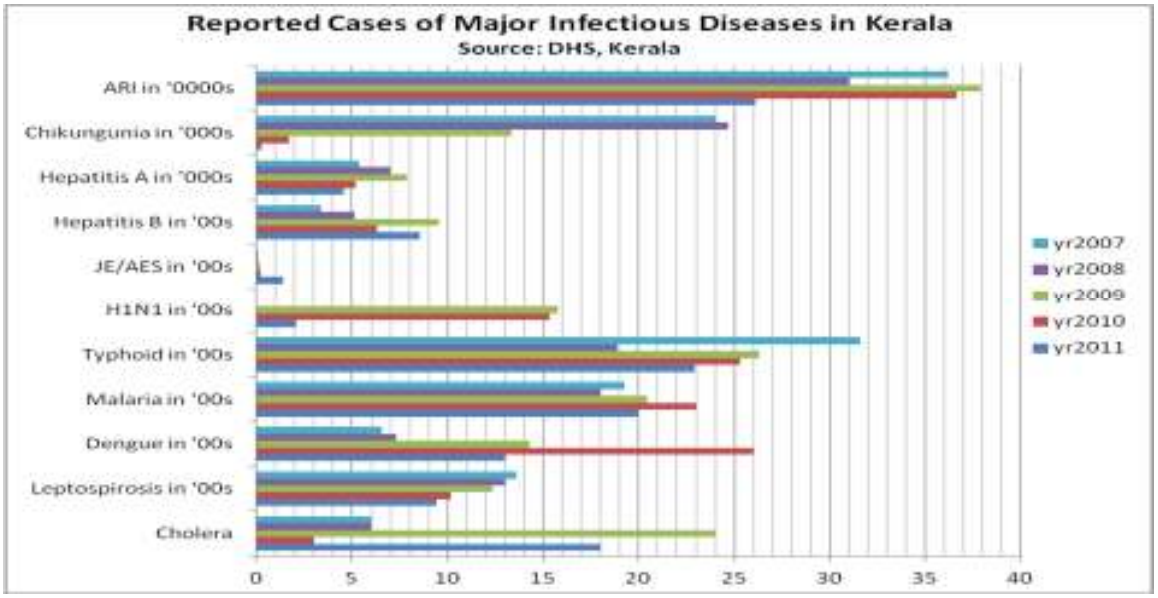
Source: Thankappan KR, Shah B, Mathur P, Sarma PS, Srinivas G, Mini GK, Daivadanam M,Soman B, Vasa RS. Risk factor profile for chronic non-communicable diseases: results of a community-based study in Kerala, India. *Indian J Med Res*. 2010 Jan; 131:53-63.

The state cancer registry data show a prevalence rate in rural areas of approximately twenty per one hundred thousand. In urban areas, the prevalence was approximately thirty one per one hundred thousand. Breast cancer is the most common cancer among women, with around 1,600 new cases being registered by the Regional Cancer Center in 2008 alone. In 2010, more than 1,600 deaths among women were due to breast cancer.

The mental health profile of the state is also a cause for concern. Kerala has the highest age standardized suicide death rate in India. The age standardized suicide death rates per one hundred thousand people for the past fifteen years and above are as high as sixty six for males and thirty two for females. Nationally, the figures are twenty six for males and eighteen for females.[20] It is of particular concern that in Kerala, among females between fifteen and twenty four years of age, suicides constituted more than fifty percent of all deaths.[21]

Infectious diseases also contribute significantly to morbidity (Figure 1). The prevalence of illness due to infections is almost twenty percent in rural areas and around thirty percent in urban areas. Environmental and ecosystem changes, socioeconomic changes, and increased population mobility have all been associated with the emergence of new infectious diseases. Dengue fever, Chikungunya, H1N1, and scrub typhus have emerged in the state, posing a heavy burden on the health system each year.[22] In addition, malaria and vaccine preventable diseases, such as measles and diphtheria, are reemerging. These developments signal a need for vigilance, improvements to the surveillance systems in the state, and regular training of field workers and medical officers at the primary and community healthcare centers.

Figure 1: Infectious Diseases in Kerala



Source: Department of Health Services, Government of Kerala

In summary, Kerala is battling a double burden of diseases. Kerala faces both lifestyle diseases as well as diseases linked to poverty and malnutrition, including waterborne and other infectious diseases. Anemia and nutritional deficiency diseases continue to be a major source of concern. The prevalence of anemia and other indicators of nutritional deficiency, as reported by the National Family Health Survey III, are shown in Table 3.

Table 3: Prevalence of Conditions Related to Nutritional Deficiency and Rates of Childhood Immunization

INDICATORS	PERCENT (%)
Fully immunized children	75
Underweight children	29
Children under 3 years who are stunted	21
Children aged under 3 years who are wasted	16
Children aged under 3 years who are underweight	28.8
Women aged 15-49 years with below normal body mass index	12.5
Men with below normal body mass index	11.9
Women who are overweight or obese	34
Men who are overweight or obese	24.3
Anemia among children aged 6-35 months	55
Anemia among ever married women aged 15-45 years	32.3
Anemia among pregnant women aged 15-45 years	33

Source: National Family Health Survey III (2005- 06)

Role of Community and Local Self Governments

In Kerala, the role of social determinants of health and the need for coordination between sectors are widely recognized. The present complexities of emerging and reemerging communicable diseases and the increasing prevalence of noncommunicable diseases need to be analyzed in the context of the wider determinants. We need to recognize the links between inadequate provision of safe water and sanitation and the absence of solid and liquid waste management systems

and diseases, including cholera, hepatitis A and E, typhoid, and other vector borne diseases such as dengue fever and malaria. Similarly, the risk factors for diabetes, hypertension, and cardiovascular diseases are associated with changes in lifestyle and dietary habits. The burdens posed by these diseases cannot be resolved through better medical care alone. Appropriate health promotion and prevention strategies, with mechanisms to enable intersectoral coordination, need to be developed. The state needs to reorient its primary healthcare system. Kerala endorsed the panchayat raj system in the late 1990s, with a devolution of power, money, and control to elected local self government institution authorities. Administrative control of the lower level facilities and functionaries of the health department, along with fourteen other departments, has been handed over to the respective local self government institutions. All primary healthcare centers, together with their subcenters, are now overseen by village panchayats.[23] Technical supervision and guidance is vested with state health services, even when forty percent of the plan fund allocation is routed through this decentralized system.

This arrangement resulted in many altercations between healthcare providers and local self government institutions in the initial years. Now, an amicable relationship exists between healthcare centers and local self government institutions. The involvement of village panchayats is crucial for the health sector. The village panchayats have a relatively greater financial stake in the healthcare system, compared to block or district panchayats, but the village panchayats have comparatively less technical knowledge about healthcare planning. The president or the chairperson of the Welfare Standing Committee of the village panchayat is often a member from another political party in the ruling alliance. This person plays an important role in the health related policy decisions of the village panchayat. This role offers an ideal opportunity for social auditing[24] of the public health activities of the health centers.

With the launch of the National Rural Health Mission, health sanitation and nutrition committees formed in all rural and urban wards[25] in the state. The accredited social health activists (ASHAs), Anganwadi workers,[26] and other health volunteers, including the Kudumbasree volunteers,[27] are members of the committee. The sanitation and nutrition committees engage in health promotion activities at the community level. During monthly committee meetings, the committees seek feedback to understand the needs of the people. There is ample scope to improve further the overall health promotion, prevention, and disease control activities of these committees, and rehabilitative and homecare activities, as part of a holistic primary healthcare system.

Primary Healthcare Initiatives and Pilot Projects

The original healthcare system was designed to address communicable diseases and reproductive and child health issues. This system has not been redesigned. The state

is in the midst of a significant demographic and epidemiological change. The capacities needed in primary care providers to address the needs of changing disease profiles in the community are not well understood. The skills are not developed in the workforce. Primary care providers work in silos. The public perceives primary care providers as having less professional prestige than specialists. Incentives to work in rural areas are lacking. General practitioners believe that there are no opportunities for professional growth in rural areas.

The inefficiency of the primary care system has led to a culture where patients bypass basic facilities. Instead, patients approach specialist institutions directly, even for minor ailments. There are no protocols for referrals and follow up of cases. The lack of protocols provides opportunities for unethical practices. Providers overprescribe drugs and overdiagnose. Primary care practitioners and academicians need to be involved in the training of primary care staff and develop an evidence base for primary healthcare practice in the state. The state of Kerala needs to identify the knowledge and skills necessary to create a functional primary care team. The primary care teams should have the skills necessary to assess individual and family health needs during initial home or clinic visits and provide guidance on lifestyle modification, screening, medications they need. Primary care teams should be able to triage patients, provide the full range of services that are best provided at the primary care level, refer cases to higher levels of care at the appropriate facility, as needed, manage follow ups, and work with the local panchayat to develop environmental interventions to promote good health. The Department of Health and Family Welfare in Kerala developed a plan to initiate pilot projects based on the primary care needs to move the state closer to achieving universal health coverage.

Maternal health

In 2009, the government of Kerala launched an initiative to reduce maternal deaths in the state through facility based intervention. Technical support was provided by the National Institute for Health and Care Excellence (NICE) in the United Kingdom. The pilot project was led by the state Department of Health and Family Welfare and guided by the Kerala Federation of Obstetrics and Gynecology. The project led to the development and implementation of standard treatment guidelines and quality statements to reduce maternal deaths due to postpartum hemorrhage in the facilities. The standard treatment guidelines and quality statements were implemented in a few pilot maternity hospitals until 2013. The initiative also improved the management of complications in pregnancy and helped to decrease maternal mortality in the state.

Neonatal and infant health

The Indian Association of Pediatrics, Kerala, conducted a study to assess the major causes of infant deaths in the state. The study reported that seventy five percent of infant deaths occurred during the neonatal period and that the major causes of infant

death were prematurity, congenital anomalies, sepsis, and birth asphyxia. The Department of Health and Family Welfare has drawn a road map to reduce infant mortality in the state by implementing certain clinical guidelines and quality standards. The guidelines and standards are expected to change the manner in which neonatal care is practiced in major hospitals. In July 2013, the Department of Health and Family Welfare developed thirteen quality statements relating to antenatal, intrapartum, and neonatal interventions. The Department conducted a gap analysis of seventeen public hospitals across the state to measure the preparedness of the hospitals to implement the thirteen quality statements. The quality statements will be implemented in all public hospitals in the state of Kerala through a government order. ACCESS Health International[28] provided technical support for this work. The National Health Mission, Kerala, provided guidance.

Universal health coverage and primary healthcare

The government of Kerala engaged in two other initiatives to understand the alignment of primary healthcare in the state toward achieving universal health coverage:

In November 2014, the government of Kerala introduced a self assessment tool to study its health system. The tool was developed by the Joint Learning Network[29] Primary Healthcare Initiative.[30] The tool was designed to help countries and states assess and document how their health insurance or financial coverage institutions interact with primary healthcare actors and programs, including public and private providers, disease specific Ministry of Health programs, quality or accreditation agencies, and community groups. The tool also helps to identify opportunities for the state health financing agency to improve its alignment with primary healthcare goals.

Based on the recommendations of the Planning Commission High Level Expert Group on Universal Health Coverage, various Indian states are piloting universal health coverage in two districts. In April 2014, the government of Kerala announced plans to implement a primary care pilot project on universal health coverage in two districts: Malappuram and Palakkad. The primary care pilot project in Malappuram and Palakkad adopted a top down approach. This top down pilot study in two of the districts would provide a basis for various financial protection mechanisms to reduce out of pocket expenditure on medical care among the community. The study would help to define the essential healthcare package of services to be provided to the beneficiaries at the primary care centers. A district level assessment of both Palakkad and Malappuram was initiated to identify the strengths and weakness of the health systems, institutional mechanisms, and capacities to introduce universal health coverage.

Report Objective

After the completion of the Universal Health Coverage Primary Healthcare Pilot Project, in December 2014, the Kerala Department of Health and Family Welfare wanted to document the inception, design, structure, implementation, achievements, and challenges of the project. An assessment of the pilot project would help the state learn about good practices that can be replicated, identify areas for improvement, address challenges to sustain the work in the pilot project, and make an informed decision on whether to expand the pilot to other parts of the state.

Within the next decade, other states and many low and middle income countries are likely to share many of the health challenges currently facing Kerala. States in India and other countries grapple with similar challenges related to health system strengthening and capacity building, and improving human resources, service delivery, and referrals. The development of sustainable solutions in Kerala will benefit other states and countries in the coming years. No other documentation of the pilot project exists. The government of Kerala asked ACCESS Health International, an objective third party, to draft this report. ACCESS Health was not part of the planning or implementation of the pilot project. The documentation process provides an opportunity to collect feedback, highlight the successes and weaknesses of the project, and help amend the pilot project for future expansion in the state and in the country.

Report Methodology

The documentation process lasted three months, from February to April 2015. We collected qualitative information and quantitative data from the pilot project facilities. We gathered pre and post project facility data on several parameters. This data included trends in overall outpatient registrations, the percentage of patients with six priority conditions reported at the facilities, and the percentage of referral cases and follow up cases managed at the facilities before and after the project. We also collected data from a control facility in Trivandrum district to provide a point of comparison.

Our investigators conducted qualitative interviews with twenty administrative and facility staff members. We also interviewed leaders from the Department of Health and Family Welfare, the Department of Health Services, the National Health Mission, the Department of Medical Education, and local self government representatives. Our objective was to capture the origin of the pilot project and to understand the most important factors that allowed the pilot project to be designed and implemented. We also asked the interview subjects about the main challenges in the design process and implementation of the project. The interviews helped us to understand the primary care staff's and patients' perspective on the changes introduced by the project. The interviews also helped us to identify the achievements

of the project and areas for improvement that would help the government plan for the potential expansion of the project throughout the state.

Chapter Two

Project Overview

Motivation

Kerala has among the best health outcomes and a fairly robust primary healthcare system, compared to other states in India. Every village panchayat has a primary healthcare center. There is a subcenter for every five thousand people, which is about standard for India. About sixty to seventy percent of primary care services are provided in private hospitals. This reliance on hospitals to provide primary care places an unnecessary burden on secondary and tertiary care facilities. Some patients are referred to hospitals from subcenters, but most people seek care directly at the major hospitals.

People do not trust the quality of care at primary care facilities. Primary care facilities often do not have diagnostic equipment or medicines. To restore confidence in the primary care system, the state needed to strengthen its primary care centers by making diagnostics, laboratory services, and medicines available. The state needed to ensure that the primary care system provided high quality treatment and preventive services for a wide range of conditions at the institutions closest to the community.

The morbidity profile in Kerala is changing. The double burden of diseases is dominated by noncommunicable diseases. Historically, the health system was designed to tackle communicable diseases and maternal and child health. One of the other objectives of the pilot project was to realign the primary care system, both in terms of the processes at the facilities and services at the primary care level, to tackle not only communicable but also noncommunicable diseases. As a first step, the government of Kerala proposed a restructuring and strengthening of the primary care model in three pilot facilities. The Primary Healthcare Centers in Kallikad and Chemmaruthy and Community Healthcare Center in Venpakal from Trivandrum district were selected as the pilot project sites.

Table 4: Trivandrum District - Pilot Project Facility Profiles

BASIC INFORMATION	PRIMARY HEALTHCARE CENTER, CHEMMARUTHY	PRIMARY HEALTHCARE CENTER, KALLIKAD	COMMUNITY HEALTHCARE CENTER, VENPAKAL
Catchment population	36,494	14,593	29,254
Population density	1,545 per sq km	*	1,244 per sq km
Population below poverty line	6.8%	*	6%

Total households	9,172	*	7,780
Subcenters	5	6	10
Beds	-	-	50

Source: Pilot project facilities registers and database

The three facilities were selected based on four criteria. First was because of their motivated and committed medical officers. The second was the facilities served a mix of both urban and rural populations. Third was their actively engaged local self government representatives. The fourth reason was the location of the facilities. The Directorate of Health Services and the Secretariat are stationed in Trivandrum. The selection of health centers in the same district eased the burdens of travel and monitoring associated with managing the pilot project.

Planning Process

While the state of Kerala was exploring ways to address the double burden of disease through improvements to its primary care system, a team of experts from the University of East London submitted a proposal to the Indian Ministry of Health and Family Welfare to study how the model of general practitioners from the National Health Service in the United Kingdom could be customized to improve primary care services in the state of Kerala. India and the United Kingdom established a partnership, with the support of the Ministry of Health and Family Welfare of India. The team from the University of East London was engaged to facilitate and to offer technical support in the design of the pilot project. The London team provided skills development training, protocol design, and software design.

The government of Kerala convened a core committee of primary care experts to support the pilot project in three selected facilities. The core committee customized the proposed model of general practitioners from the National Health Service to the context of Kerala. The State Health Systems Resource Center of Kerala was assigned to manage and implement the project. The State Health Systems Resource Center was responsible for setting up the project office, data center, and server, and for hiring consultants and office staff for the project. The core committee made small modifications in the roles and responsibilities of the existing primary healthcare center teams. The government planned to implement public awareness campaigns to encourage the public to use the pilot project facilities. The core committee also planned to establish patient liaison groups to offer feedback and support to the primary care teams. The mandate of the patient liaison groups was to develop high quality care, establish the primary care centers as the first point of contact for the

community, and to build consensus with professional associations on accepting the new architecture for the primary care centers in the state.

The major components of the primary care pilot project included skills training, building staff and institutional capacities, installing information technology by digitizing and developing integrated software for the pilot facilities, improving pharmacy and laboratory services, building relationships with the community and local self government representatives, providing infrastructure support to the facilities, and ensuring monitoring of services provided at the facilities. Refer to Appendix A for details on the major components of the primary care pilot project in the design and implementation phase.

Chapter Three

Project Implementation

The Universal Health Coverage Primary Healthcare Pilot Project began in December 2012. The project period was intended to end in June 2014. The project was later extended through December 2014, due to operational delays.

Initial Phase

The initial phase of the pilot project consisted of a series of meetings with the Department of Health representatives to define the pilot project objectives. The planning meetings also included the design of training and capacity building sessions for the project staff. These training session designs focused on team building, leadership skills, and delivering quality services at the pilot project facilities.

Interim Phase

The interim phase of the pilot project took place from January to June 2014. The team from the University of East London conducted a training needs assessment. During this phase, the core committee with the experts held a series of meetings to identify priority disease conditions and to develop evidence based protocols and care pathways. Six priority disease conditions were identified: diabetes, hypertension, mild to moderate depression, antenatal care, immunization, and fever. Training and capacity building sessions were conducted to introduce the project staff to standard treatment guidelines for the six disease conditions. Training was also provided on the use of software to register patients electronically and to follow the standard treatment protocols. During this phase, the State Health Systems Resource Center team ensured renovations to the pilot facilities, appointed additional staff, purchased supplies and equipment, procured drugs, and installed software and hardware to be used during the project. The core committee designed the baseline survey.

Extended Phase

The extended phase of the pilot project ran from June 2014 to December 2014. The extended phase is when the implementation of the pilot project took place in the facilities. During this phase, the facilities started to use the new software. The facility staff underwent refresher training sessions. The information technology team assessed staff use of the software. The research officers from the State Health System Research Center evaluated staff compliance with the project, staff attitude, use of services at the facility by the community, and service delivery provided by the staff. The core committee identified fourteen additional disease conditions and drafted evidence based protocols for a total of twenty disease conditions. The core committee and the team from the State Health Systems Resource Center established and strengthened the laboratory facilities in the primary care centers. A baseline study

was also completed by the Population Research Center and State Health Systems Resource Center.

Chapter Four

Project Achievements

The Universal Health Coverage Primary Healthcare Pilot Project led to many positive changes in the three project facilities. The greatest accomplishments of the pilot project were the introduction of software for electronic patient records; the development of evidence based protocols; and task shifting among nurses and paramedics at the facilities to register patients and to conduct preassessments such as measuring weight, height, body mass index, blood pressure, and blood sugar levels. For the first time in the country, mental health protocols were implemented at the primary care centers. The facilities, through the software, can now track outpatient data for six identified ailments by using evidence based protocols. The software also provides information about the drugs and treatment prescribed to patients in electronic records, wherever data is available. Patient interviews from the pilot project facilities reveal greater public confidence in the selected primary healthcare centers. The pilot facilities have patient friendly environments. Some of the reasons for increased trust in the facilities are availability of staff, availability of laboratory and diagnostic services, availability of medicines, waiting areas for patients, and a cleaner and more welcoming ambiance.

"I have been coming to this center for the past twenty five years. Now, I feel it is not less than a super specialty hospital. Before, I used to visit hospitals outside, in the city. Now, I come here, whether for a general checkup or for any health issue. Here, at this facility, there is screening, diagnosis, and medicines for fever, cholesterol, and blood pressure."

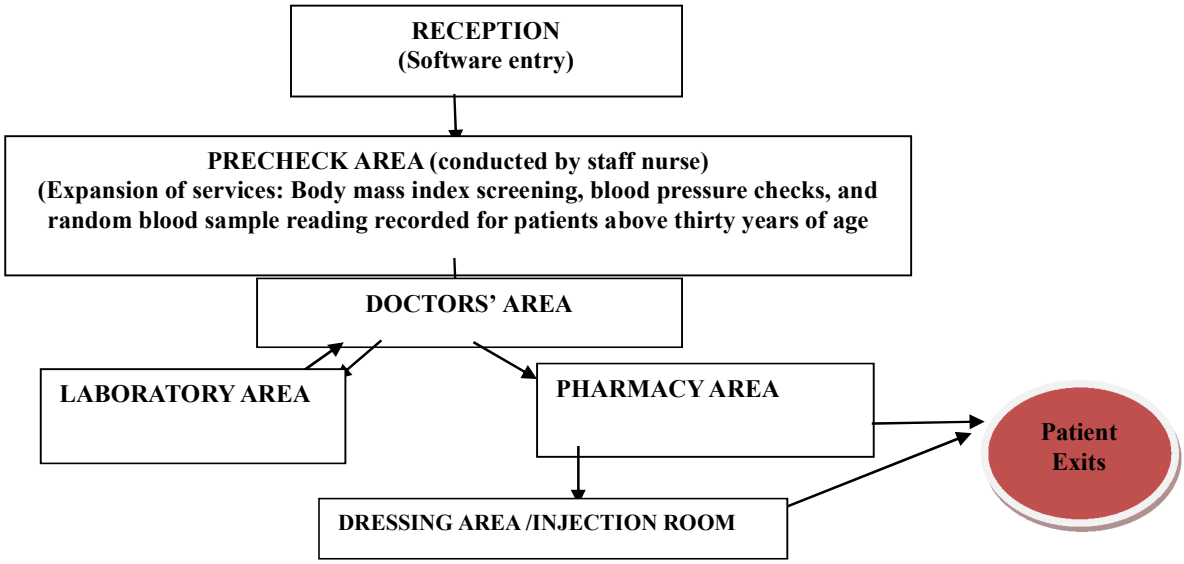
- Patient, Kallikad Primary Healthcare Center -

Restructuring and Reengineering Within the Pilot Project Facilities

Patient flow

The pilot project facilities modified the management of outpatient services by adapting the system used by the National Health Service in the United Kingdom. Prior to the project, there was no designated place for patients to register. Registration is now followed by a preassessment of the health status of the patient. Before the patient sees a doctor, staff members record height, weight, blood pressure,

pulse, and body mass index. Because of this new system, doctors can spend quality time with the patients. The pathway is shown below:



Skills training

Training and capacity building of staff allowed for task shifting within the facilities. The training equipped the staff to use the new software and to follow evidence based protocols and referral pathways. The training and capacity building helped the facility staff to improve relations with their respective local self government representatives and the community. The training and capacity building created a more favorable environment for the staff, improving motivation and commitment.

Quality of services

The physical infrastructure modifications of the pilot project institutions included furniture renovations; laying of tiles; the creation of dedicated patiently friendly areas for reception, waiting, and precheck; an area for patients; and the establishment of a laboratory, pharmacy, and an ecofriendly hospital waste management system. The facilities are also equipped with potable water and clean toilets. All of these changes provided a more patient friendly environment. These changes allowed the Primary Healthcare Center in Chemmaruthy to receive certification at the Kerala Accreditation Standards for Hospitals level. The other two facilities are in the process of receiving this certification as well. The development of evidence based protocols, referral pathways, and patient flow as part of pilot project have improved the overall quality of services at the project facilities.

Based on interviews with medical officers at the pilot project facilities, we learned that the doctors at all three facilities tried to adhere to the protocols and referral

pathways. Due to lack of backup power and overcrowded outpatient departments, patient data is not always entered into the software. The medical officers at the facilities reported immense improvements in pharmaceutical services, provided by the Kerala Medical Services Corporation. The medical officers reported that communicable diseases are monitored routinely. The medical officers also reported that most of the smokers who were counseled at the facilities have quit smoking. Cardiac diseases and obesity are now detected at an earlier stage. The village panchayat has a program to provide funds for medicines and palliative care in the catchment area. The supply of essential medicines has improved. Referrals are planned based on patients' place of residence.

"We received training on diabetes and foot care, hypertension, mental health, immunization and antenatal care, and sterilization for infection control. We are able to provide services more confidently at a lower cost. We are able to provide health education and diet tips to our patients. Camps and community based activities have increased patients' knowledge about diseases."

- Nurse, Kallikad Primary Healthcare Center

Expansion of services

Diabetic complication screening

The pilot project helped to introduce the protocol on screening for diabetic complications. The protocol includes annual diabetic foot care screening services, referral for diabetic retinal screening, and renal screening services at primary care centers. An annual diabetic foot care examination is included as part of the diabetic screening service. This intervention in the pilot project enabled early detection of diabetic complications.

Mild to moderate depression screening

The pilot project helped to introduce mild to moderate depression screening at the primary care level. The project also introduced a treatment algorithm for standardized management of patient services. Screening and referral pathways are established based on individual scores.

Maternal and child care

The project introduced a protocol for antenatal care. The protocol places special emphasis on early identification of high risk pregnancies. The staff was trained and equipped for early referrals in cases with warning signs of high risk pregnancy. Frequently asked questions on immunizations were added in the software so that the pilot project staff can offer clarifications. This software feature has helped the staff to respond to complex questions in the field with clearly defined answers.

Extended outpatient services

Before the start of the project, the Primary Healthcare Center at Chemmaruthy closed at 2 pm. The center has now extended its outpatient hours until 4 pm. The new schedule has helped the institution to cater better to community needs.

"There are lots of improvements in the buildings. Many staff members have been appointed. Now, in the office building, there is a floor for field staff. There is a big conference hall. There has been an influx of trainees. Most of the day to day operations have been digitized. Registration and precheck activities have started. There is enhanced training for all staff on different topics."

- Nurse, Venpakal Community Healthcare Center

Information technology

The new information technology system allows the facilities to collect data to develop a morbidity profile of the community. The facilities collect information on what proportion of the catchment population makes use of outpatient services at the pilot project institutions. The data supports better disease surveillance, including early identification of significant changes to communicable disease incidence and prevalence. The data also supports early detection of noncommunicable diseases among adults over thirty years old.

"The local self government support is very good. Their positive approach and good relationships with facility doctors are some of the main reasons for the success and sustainability of this project. We have received feedback from patients and bystanders that the services are good, at a lower cost, when compared to private hospitals, and that the center is maintained neatly. Patients now trust us for treatment. The relationship between the staff and patients has improved. We charge very reasonable rates for registration. Nobody takes extra money from patients."

- *Medical Officer, Kallikad Primary Healthcare Center*

Relations with community and local self government representatives

The pilot project has placed a greater emphasis on health promotion and preventive activities than on curative services. Interviews with facility staff and patients at the pilot project centers confirmed improved coordination of the facility staff with the local self government representatives and improved leadership at the facilities. The local self government representatives and the facility staff hold monthly meetings in the community to understand the health priorities of the catchment population. Based on the prioritized health needs, the representatives and facility staff plan outreach activities and health education camps.

The representatives and facility staff encourage members of the community to visit the facilities for diagnosis, treatment, and referrals. The patients interviewed at the pilot project facilities reported that the involvement of facility medical officers and other staff in promotional and educational activities has increased awareness of seasonal and lifestyle related diseases. Community members now reach out to the facilities whenever they need any consultation. Awareness in the community about communicable and noncommunicable diseases has increased as a result of community intervention activities.

Capacity building among the community staff and facility staff enabled the development of efficient teams based on the health priorities of the population. The relationship and interaction between staff and patients has improved significantly. The pilot facility staff are recognized for providing health education and diet tips to the patients. Currently, the local self government institutions act as flag bearers for the project. A number of innovative community health projects, such as Arogya Gramam, or "Healthy Village," at Venpakal, and mental and geriatric health projects

at Kallikad, have gained recognition among the state level health projects in 2014. These examples offer insights into how the pilot project has helped to enhance the overall role of primary care providers within the community. The interview respondents – nurses and medical officers – reported that the knowledge of both facility staff and patients has grown through the project trainings. The project has also created a favorable environment to offer tertiary and secondary care expert services at the primary care level.

Project Assessment, Monitoring, and Evaluation

The State Health Systems Resource Center of Kerala oversaw the program management, implementation, monitoring, and mentoring of the pilot project. According to a set work plan, the faculty from the State Health Systems Resource Center was responsible for monitoring facility records and registers every week. The faculty monitored compliance with the established evidence based protocols and use of software to register patients and to ensure availability of drugs, supplies, and equipment. The State Health Systems Resource Center is an independent agency appointed by the primary care core committee to assess the skills gap and to train, monitor, and build capacity of the pilot facility staff. As an implementation partner, the State Health Systems Resource Center was also responsible for ensuring that all design features of the pilot project were functional, identifying problems in the implementation of the pilot project, and addressing any issues.

"We need constant monitoring and mentoring support from the Department of Health and Family Welfare for the universal health coverage programs."

- Medical Officer, Kallikad Primary Healthcare Center

In their interviews, the facility staff reported that the State Health Systems Resource Center provided guidance and supervision to the pilot staff, as needed, on a continuous basis, until December 2014, in accordance with the terms of reference. The State Health Systems Resource Center conducted peer reviews, institution reviews, and prescription audits.

The State Health Systems Resource Center team conducted gap analyses of the pilot centers. As part of these analyses, the team identified the essential equipment required at the primary healthcare centers. The Department of Health and Family Welfare issued a government order to introduce a list of essential diagnostics for

noncommunicable diseases at the pilot facilities, based on World Health Organization guidelines. The State Health Systems Resource Center team conducted a needs assessment to prioritize the diseases and to develop protocols and pathways. The State Health Systems Resource Center team also conducted a training needs assessment to build skills among the facility staff. The district program manager from the National Rural Health Mission visited the centers three to four times a month throughout the pilot implementation period and took account of the number of patients examined by the doctors at each shift and the quality of the services delivered. The data collected manually from the pilot collected manually was also monitored through various other state level information systems. Some of the other information systems and sources of data for the pilot facilities are the Integrated Disease Surveillance Program (IDSP), the Mother and Child Tracking System (MCTS), and the Health Management Information System (HMIS).

Project Limitations

Selection Bias

Prior to the launch of the project, the participating project facilities were already receiving a higher volume of patients than other primary care facilities in the district. The medical staff at the pilot facilities was more motivated and committed to serve the people in the catchment area than staff at other facilities. The local self government representatives in the selected pilot project areas were actively engaged in understanding community needs and overseeing the performance of the pilot facilities.

Quantitative Data Challenges

The data collected from the facilities was not just from the new software implemented during the pilot project. ACCESS Health investigators collected data from different data sources, including the new pilot software; manual registers from the primary care centers and their adjoining subcenters; and other information systems such as the Integrated Disease Surveillance Program (IDSP), the Mother and Child Tracking System (MCTS), and the Health Management Information System (HMIS). There is a possibility that data for outpatient registrations, referrals, and follow up cases were double counted. Data available in the new pilot software is not a true representative of the patient information from the pilot facilities for all the six target diseases, as most of the time data was registered manually.

Project Management Documentation Gaps

As the coordinating agency, the State Health Systems Resource Center managed the implementation support for the project and the monitoring, training, and mentoring of staff at the pilot facilities. The information documented in this report is based solely on the interviews conducted with the pilot facility staff and administrative staff

from the health department, baseline survey data submitted by the Population Research Center, Kerala, and the training needs assessment report submitted by the University of East London team. No monitoring and evaluation reports, meeting minutes, or training reports were documented by the State Health Systems Resource Center.

Areas of Improvement

The facilities with major changes and achievements during the implementation of the pilot project sought attention and recognition from the community and also the health sector. Changes included increase in identification of noncommunicable diseases, reduced incidence of communicable diseases, and increased use of and trust in the three pilot facilities. These improvements strengthened the credibility of the pilot facilities, helped to address community needs, and strengthened the evidence to expand the pilot project model to other parts of the state and country. Despite these positive changes, many opportunities for further improvements exist in the several areas.

Skills Training

After the pilot project, staff is available at the pilot project facilities. However, most of the nursing staff are not well trained in using the computer. The nurses suggested appointing a data entry operator to support ongoing data entry. Doctors do not have the time to use the computers and enter data while seeing patients.

> ***"We are not very well versed or quick at using computers. We need data entry operators or training in using the computers."***
>
> ***- Nurse, Venpakal Community Health Center -***

Human Resources

During the project implementation, the Department of Health and Family Welfare appointed new nursing and paramedic staff on a contract basis. The transfer of trained staff from the pilot facilities to other facilities posed a challenge. New recruits that replaced the trained staff did not receive any orientation training about the new model at the pilot project facilities. New administrative staff members at the Department of Health and Family Welfare also had difficulty orientating themselves within the pilot project. A well structured and managed orientation training for new facility and administrative staff would support uninterrupted service delivery. To

ensure uninterrupted services at the facilities, it is important for the implementers to secure budget to pay the salaries of contract staff at the pilot facilities.

> ***"Job transfers have been a major challenge. We will train some staff, and in a few days they will be moved elsewhere on routine transfers. We lose skilled staff. We haven't been able to train the new staff well."***
>
> - ***Medical Officer, Chemmaruthy Primary Healthcare Center***

There are no incentives for the staff or the doctors to comply with following the disease protocols, the referral and follow up protocols, or the protocols for electronic patient data entry. Since implementation of disease protocols are key to the model, the ineffective use of protocols will render the model redundant. Process and outcome based incentives can motivate the staff to comply with the protocols and to provide high quality services to patients. An incentive structure for work efficiency based on pay for performance will ensure performance and efficiency. Constant monitoring and mentoring of the facility staff to guide and provide ongoing support are essential.

Medical colleges in India do not have academic departments dedicated to primary care. The lack of focus on primary care in medical education adversely affects primary care professional development in the country. Kerala has the potential to lead the establishment of academic departments in primary care, building on the best departments of closely allied specialties, such as community medicine, and converting these into departments of community medicine and primary care. Such academic and service linkages have the potential to help the public in the long run by making medical teaching more relevant to the present day field realities. These linkages can also help healthcare services be more empirical and evidence based. Public health institutes can help facilitate the development of mutually respectful and mutually beneficial collaborations between academics and primary care practitioners. Frontline primary care practitioners need to be closely engaged in academic activities. A curriculum for primary care doctors and a certification process to qualify primary care doctors as family physicians are essential. Certifications for other members of the primary care teams will encourage and motivate the performance of other primary care facility staff.

Expansion of Services

The government of Kerala has approved twenty disease protocols. Six of these protocols were implemented during the pilot project. There is additional demand for protocols for asthma management, geriatric care, and awareness programs for tuberculosis. The six existing protocols implemented across primary care facilities are not fully followed. Expansion and implementation of protocols needs to be uniform across all pilot project primary care centers.

Information Technology

One of the achievements of the pilot project was the introduction of an electronic platform to enter patient records. The facility computers have the software installed. The software is only used when it is convenient for the nursing and medical staff to enter data. There are challenges in installing and upgrading hardware and establishing Local Area Network (LAN) connectivity. Often, the internet server is down or the computers shut down. These technology failures impair patient registration, data entry, and printing of prescriptions at the pharmacy. The facilities need a backup power source and uninterrupted internet connectivity.

To address gaps in computer skills, the facility staff has requested a data operator to manage the data entry process. As an alternative, user friendly software and training to use the computers can also help the nursing staff to ender data more quickly.

"Backup facilities are very limited. If there is any problem with a computer, it is not replaced immediately. Frequent power cuts are also a hindrance to uploading data into the software. We cannot continue to use the software. There is no proper network for internet usage."

- Medical Officer, Kallikad Primary Healthcare Center

The facility staff suggested integrating the new software from the primary care centers with the eHealth program. The eHealth program is a Department of Health initiative to create electronic medical records for the population of Kerala. The project will include a central data server holding health and demographic data. The server will be linked to the Health Management Information System projects from all health institutions in the state of Kerala, right down to the level of subcenters. Integration will improve the use of data and information systems and establish a centrally managed data source.

The state needs to look at ways to strengthen its information technology framework. A redesign of the information technology framework will ensure integration of various vertical and state level primary care program data. Digitization of the Family Health Registers maintained at the subcenters would be a step forward toward the integration of data with the Health Management Information System. This integration will help providers to track patient medical histories.

Monitoring and Evaluation

The pilot project was not implemented and managed by a single team. Initially, the district program manager of the National Rural Health Mission was responsible for the management and supervision of the pilot project. Later, the State Health Systems Resource Center took charge as the coordinating agency for the pilot project. Continuous monitoring and tracking the progress of the project posed challenges. Documentation of these processes is nonexistent. There is also a lack of ownership of the day to day management of the project and continuous improvement of services.

Project Strengthening and Expansion

In the future, the government of Kerala would like to expand the pilot project to other parts of the state. The government approval process is slow. To expedite project expansion, the State Health Systems Resource Center would need to take immediate action to strengthen the existing pilot facilities. The State Health Systems Resource Center would need to oversee the incorporation of the changes and improvements suggested by the pilot project administrative and facility staff.

Based on estimates from the government of Kerala, expansion of the primary healthcare pilot project model across the state would take at least three to five years. The government has proposed a phase by phase expansion. The first phase would cover the entire Trivandrum district. The main hurdle would be training the doctors, putting the necessary processes in place, and ensuring the availability of support staff and strong supervision and leadership to oversee the uninterrupted management of the project. As a next step, the government plans to conduct a localized district needs assessment to prioritize disease conditions. Following the completion of the needs assessment, the government plans to develop evidence based protocols, based on health needs in the geographic regions, and to train facility staff. Integration of all health databases with the eHealth program at the state level will be essential for the project expansion. The state will also need to develop a regulatory framework to ensure that all citizens undergo screening at the primary care centers.

Before and After Trends from Three Pilot Project Facilities and One Control Facility

	PRIMARY HEALTHCARE CENTER, CHEMMARUTHY		COMMUNITY HEALTHCARE CENTER, VENPAKAL		PRIMARY HEALTHCARE CENTER, KALLIKAD		CONTROL: PRIMARY HEALTHCARE CENTER, VEERANAKKAVU		REMARKS
	2013	2014	2013	2014	2013	2014	2013	2014	
Outpatient Registration	60,497	**62,287**	85,270	**85,611**	44,884	**34,680**	71,528	**74,400**	No remarkable change in the number of total outpatients registered at the three pilot facilities. Range varies from a 0.3 percent to three percent increase in outpatient registrations at Chemmaruthy and Venpakal. Kallikad outpatient registrations decreased by twenty three percent. The control facility had a four percent increase in outpatient registrations.
Percent of Total Outpatients Presenting With Conditions									
Diabetes Mellitus Method: Diabetes Mellitus cases x 100 / Total outpatient *Source: Noncommunicable Disease Register Annual Consolidation 2013, 2014*	23%	**26%**	29%	**31%**	6.5%	**8.5%**	3.4%	**4%**	Increase in percent of patients screened positive for diabetes mellitus are in the range of seven percent to thirty one percent from the total outpatient registrations. The control facility had a seventeen percent increase in diabetes mellitus screening.
Hypertension Method: Hypertension cases in 2013 x 100 / Total outpatient *Source: Noncommunicable Disease Register Annual Consolidation 2013, 2014*	26%	**29%**	30.7%	**32.8%**	7.9%	**9.3%**	4.5%	**5.32%**	Increase in outpatient screened with hypertension in the range of seven percent to eighteen percent. The control facility had an eighteen percent increase in hypertension screening.
Antenatal Care Method: Pregnant woman who received antenatal care x 100 / Total pregnant woman in	77%	**71%**	100%	**100%**	88%	**93.3%**	72%	**90.4%**	Increase in antenatal care outpatients by seven percent at Kallikad. No change in number of outpatients at Venpakal. Decrease in outpatient registrations for antenatal care by eight percent

community *Source: Health Management Information System data /Maternal and Child Tracking System data 2013, 2014*									at Chemmaruthy. The control facility had a twenty six percent increase in antenatal cases.
Fever Method: Fever cases x 100 / Total outpatient *Source: Communicable Disease Register/Integrated Disease Surveillance Program data 2013, 2014*	1.78%	**1.79%**	14%	**13%**	2.2%	**2%**	12%	**7.9%**	No remarkable change in the outpatients registered with fever cases. Increase by two percent at Chemmaruthy. Decrease in fever registered cases at Kallikad by nine percent. The control facility had a thirty four percent decrease in fever cases.
Depression and Psychiatric Disorders Method: (Common mental conditions + severe mental conditions detected) x 100 / Total outpatient *Source : Noncommunicable Disease Register 2013, 2014*	0.01%	**0.04%**	11%	**10%**	0.9%	**1.8%**	2%	**3%**	Outpatients registered and screened with depression increased by three times at Chemmaruthy and doubled in Kallikad. Depression outpatient cases decreased nine percent at Venpakal. The control facility had a fifty percent increase in depression screening cases.
Immunization Method : Fully immunized children / Eligible children *Source: Health Management Information System data 2013, 2014*	93%	**93%**	100%	**100%**	88%	**97%**	83%	**84%**	Immunization registrations have been consistent at both Chemmaruthy and Venpakal, with a slight increase of ten percent in immunization registrations at Kallikad. The control facility immunization cases increase by 1.2 percent.
Percent of Referrals From Outpatients	0.6%	**0.2%**	3%	**3%**	4%	**3%**	2%	**3%**	Overall referrals to the higher level of care have remained same or decreased, in the range of twenty five percent to sixty seven percent. Referral cases increased by fifty percent at the control facility.
Percent of Follow Up Cases After Outpatient Referrals	0.2%	**0.1%**	62%	**71%**	2%	**3%**	3%	**4%**	Increase in follow up cases in the community ranged from fifteen percent to fifty percent at Venpakal and Kallikad. Follow up cases reduced by half at Chemmaruthy. The control facility follow up cases increased by 33.3 percent.

Chapter Five

Conclusion and Recommendations

Despite the many public health challenges that Kerala faces, the state has many positive attributes. These attributes include strong human resources and the availability of functional health facilities, compared with other parts of India. Kerala has achieved substantial population coverage in terms of its primary healthcare infrastructure. With a little additional support, the health system in Kerala will be able to meet the present day challenges and gaps in health service delivery.

Past experiences suggest that other states are likely to experience health challenges similar to those currently faced by Kerala, within the next decade. The development of sustainable solutions in Kerala is crucial. Kerala can be an example of good primary care practices for other states in the country to follow. The initiative to introduce universal health coverage primary healthcare through a primary care project has helped realize the potential of the primary care institutions to achieve better healthcare coverage among the rural population. The model has achieved its goals of strengthening primary care service delivery and bringing accountability to the facility level. This kind of project can help strengthen the commitment of primary care staff and instill the confidence in the population to depend on publicly funded institutions.

The pilot project represents an effort to strengthen the existing system. The government of Kerala plans to expand the pilot project to the entire state. From an administrative perspective, continued leadership, supervision, allocation of primary care resources from the state budgets, and ongoing training of staff are all necessary to ensure uninterrupted and strengthened implementation and expansion of the project.

The pilot project strengthened the capacity of the facility staff, improved processes, strengthened infrastructure for better management of patients at the primary care centers, and enabled electronic data entry. Members of the community established a rapport with the primary care centers and their staff and grew to trust the quality of services provided at these centers.

Kerala is currently implementing and testing many primary care models. The state has an opportunity to adopt the best of both the bottom up and top down approaches. The top down pilot projects focused on understanding the financial protection mechanisms to reduce the out of pocket expenditure and define an essential healthcare package for the beneficiaries. The bottom up pilot project emphasized the delivery of services. The bottom up approach strengthened the operations of primary care facilities. It is important for the state to take a blended

approach to move toward universal health coverage and align primary care with universal healthcare. Increased emphasis on health promotion and preventive care over curative services is essential to this effort.

One of the main lessons learned from the bottom up approach is the importance of prioritizing changes based on the needs of the population. The primary care pilot project implementing agency needs to carry out strategic assessment exercises every three years to set priorities and reengineer the program. The government needs to introduce incentive structures that pay for performance as a means to improve work efficiency. The government needs to build a referral framework around the primary care centers. The referral framework should include networking with secondary and tertiary hospitals to establish contractual relationships and protocols for referrals and follow up of patients. There are many vertical, state, and community level primary care programs implemented in the state. The Department of Health and Family Welfare collects data, both electronically and manually. Without entering the manual data into the electronic platform, it is difficult to measure outcomes and impact for the entire population.

Another important lesson is the need for a registry of patients, with personal records and information about previous medications and medical history. Data need to be electronic and integrated across all programs. Integration of electronic data is important to ensure accuracy and efficiency in data collection and analysis. The information system is an important aid to manage the registry. The information system will help the staff to follow protocols, provide decision support, and standardize services. As the implementer and point agency for the pilot project, the State Health System Resource Center must ensure the continuity of the processes planned for the pilot project. Health seeking behavior in Kerala is high. The primary healthcare system needs a stronger gatekeeping system and a regulatory framework with the ability to require all citizens to report and undergo screening at the primary healthcare centers as the first point of contact with the health system.

Although, the pilot project was for a short duration, it aimed to improve some of the fundamental elements of the existing primary care system such as: increase in the level of commitment of the staff to provide expanded services at the primary care centers, involvement of medical staff with the local self government representatives, team spirit within the staff and increased belief in the government primary care facilities to seek services at the primary care centers. These positive changes were attributed to the patient friendly environment at the facilities and the availability of laboratory services and drugs. Despite limitations, this project has helped policymakers and field workers realize the potential of primary care institutions to achieve universal health coverage in a state like Kerala. The pilot project has provided a road ahead for others to follow.

Appendix A

Structural Components of the Primary Care Pilot Project

COMPONENT	DESIGN	IMPLEMENTATION	REMARKS
Skills Training	The Department of Health and Family Welfare formed a core management committee for the primary care pilot project. The committee included a senior medical and nursing representative from each of the three pilot facilities. The committee included a representative of the local self government institution, the director of the State Institute for Health and Family Welfare, district health officials, senior clinical specialists from several core specialties (for example, pediatrics, obstetrics, mental health, and general medicine), a pharmacist, and representatives from nursing and pharmacy colleges. The main objective of the forum was to identify skill gaps to be strengthened through training within the primary care teams at the facilities. The assessment looked at how well to provide promotive, preventive, curative and rehabilitative services. The assessment looked at how to treat patients and the community as partners in the care process; how to shift tasks, such as patient registration, to nurses, paramedics, and support staff and away from doctors. The nursing staff measured blood pressure, blood sugar and body mass index for all patients above thirty years. The core management team developed and implemented an essential medicines list. One of the roles of the core management team was to develop the village panchayat representative's ability to monitor healthcare services in the community. The village panchayat representatives were tasked with raising public awareness about the new primary care model, seeking patient feedback, and redressing grievances during monthly meetings. The village panchayat representatives were also mandated to conduct internal and external checks to ensure clinical governance and maintenance of high quality care.	The core management team, including the State Health Systems Resource Center, conducted training needs assessments and trainings as planned in the design phase, with technical support from the experts of the University of East London. The State Health Systems Resource Center planned the mentoring and monitoring visits as proposed in the design phase. The village panchayat representatives engaged actively in supervising and monitoring their primary care centers during the monthly community meetings, along with the medical officer and representatives from the State Health Systems Resource Center. At the end of the first year, the first academic department of primary care was not established, due to disintegrated inputs from the core committee and the medical college. The revised proposal changed the budget. As a result, the establishment of an academic department of primary care was excluded from the scope for the implementation. The primary care center and subcenters are providing a full range of patient services, as planned in the design phase. The State Health Systems Resource Center trained the	The State Health Systems Resource Center discontinued training assessments, staff training, and monitoring and mentoring visits after December 2014. New staff appointed at the pilot project facilities after the training period ended had difficulty understanding the project plan and framework. There are no refresher or orientation trainings for newly appointed staff members at the facilities.

	The State Health Systems Resource Center developed a train the trainer's curriculum to develop skills and capabilities across the facility team. The curriculum used mixed methods, including work based training, supported supervision, mentoring, distance learning, and brief videos. The role of the State Health Systems Resource Center core management team was to support faculty development and to conduct and assess pre and post training assessments and new certification processes for fitness to practice for all team members. At the end of the first year, the core committee planned to establish the first academic department of primary care and the first functional primary care center and subcenter. The primary care center and subcenters would provide a full range of patient services and would have the capacity and capability to provide training, in collaboration with the academic department.	primary care staff during the one year implementation period.	
Infrastructure Support	Based on the design plan, the core committee increased the medical staff in each primary care center from one doctor to three doctors (one per ten thousand people), from one or no nurses to four staff nurses, from one to two support staff. The nursing staff was to conduct the preliminary assessment and documentation of the patients to help doctors save time and focus only on consultation. All support staff was tasked with assisting with registration and other logistics management during peak hours. The core committee appointed one male and one female health worker round the clock in rotation at each primary care center to help the nursing staff manage patients and ensure continuity of care. In the design phase, the core committee introduced safe and private treatment areas for examination, waiting areas, specimen collection areas, and a high standard of biomedical waste management for health and safety.	Based on the design plan, the core committee ensured all human resource appointments. Patient flow in the facilities was followed as designed. Facility buildings expanded and waiting areas and private treatment areas were constructed as planned. The primary care centers implemented waste segregation. Doctors and nurses reported a lack of satisfaction with the waste management system during their interviews. Doctors and nurses suggested improvements to the drainage system.	The core committee hired all additional staff at the pilot project facilities on contract basis. The ability to maintain the same number of staff members after completion of the pilot project is a concern. The Department of Health and Family Welfare must allocate funding to ensure continuity of staff at the pilot project facilities.
Information Technology	The core committee planned to develop an information technology framework. The framework would allow staff to enroll patients electronically at the primary care centers. New software would provide each patient with a unique identification number. The new software would allow staff to register patients, upload patient information, and access clinical guidelines or other	The core committee designed and customized the software, with inputs from the University of East London experts. The core committee outsourced the software development.	After the end of the pilot project, the software should undergo maintenance to remove bugs and install updates. The software

	information related to the healthcare centers using computers. The core committee introduced a wireless network for smooth data synchronization. All staff members would have access to networked computers to record patient information and to access uploaded treatment protocols and guidelines, risk scoring algorithms, and other useful information. The core committee planned to provide all field and subcenter staff with portable computers equipped with tools such as a Global Positioning System (GPS), General Packet Radio Service (GPRS), webcam, and biometrics. The design plan had plans to create detailed demographic profiles of each household along with georeferenced location maps. The field staff would enter information into the tablets. Health workers could update the information during home visits. Based on the design plan, supervisors would track the location of field workers on their tablets and send real time messages and provide instructions by using Over the Air (OTA) updates. The tablets would allow field workers to access patient data on chronic ailments such as hypertension, diabetes, and others. Field workers could send real time reports with geo tags on outbreak prone diseases to higher centers. These real time reports would enable prompt control measures. The field health workers were to serve as liaisons with field staff from other line departments, nongovernmental organizations, and local self government institutions.	Due to budget cut downs, the planned portable computers were not provided. The staff continued to register patients at the subcenters, community camps, and home visits manually. The data at the subcenters, field visits, and primary care centers was not integrated as planned. Staff faced problems with backup power support for computers. The network meant to support the upload of patient information was interrupted. Most of the time, the nurses did not have time to upload patient information offline. The computers ran slowly. Many nurses lacked the technical skills to use the computers. Doctors did not have time to enter patient information while treating patients. The facility staff missed most of the data between patient entry and exit. The staff was unable to track data through a unique identification number, as planned in the design phase. These gaps contributed to double counting of patients who sought care in the facilities for the same ailments multiple times.	needs to be integrated with the Health Management Information System or the eHealth project. Integration will help to manage maintenance and interoperability.
Quality and Expansion of Health Services	Physical modifications to the pilot project facilities included furniture renovations; the creation of precheck, doctors', and patient friendly waiting areas; the creation of laboratories and pharmacies; the establishment of ecofriendly hospital waste management systems; and the introduction of potable water and clean toilets. The core committee planned to upgrade the pilot project facilities to the Kerala Accreditation Standards for Hospitals level to help ensure consistent delivery of high quality services. The State Health Systems Resource Center conducted a training needs	The core committee designed evidence based protocols for the six priority diseases. The disease protocols were built into the software. The protocols were implemented through a collaborative effort, with technical guidance from the core committee, experts from the University of East London, and the health department specialists from the primary care expert group. The core committee added laboratory	No set indicators are in place to measure adherence to the protocols and referral pathways. No set indicators are in place to measure staff performance or to evaluate mandatory data entry protocols. Patient outcomes, such as reduction in number of

	assessment by using a tool developed by the core committee and experts from the University of East London. Based on existing data from the facilities and from the Health Management Information System, the core committee prioritized the six diseases with the greatest burden in the catchment area: fever, immunization, antenatal care, hypertension, diabetes mellitus, and depression. The core committee planned and designed evidence based protocols and referral pathways to provide standard care for the six identified ailments in the pilot facilities. The core committee planned for the pharmacies to be integral to the primary care centers. The design plan called for the pharmacies to stock all essential medicines identified by a list prepared for the pilot project core committee. The State Health Systems Resource Center trained the pharmacists and nursing staff in some aspects of pharmacy. The pharmacists and nursing staff were responsible not only for dispensing drugs but also for offering patients information on how to take their medication and the likely side effects. Laboratory services at the pilot project facilities were not part of the design phase. The core committee planned for the facilities to be able to collect specimens, with transport to and analysis at the most appropriate hospitals with diagnostic facilities. The core committee introduced bar coding of specimens at the primary care centers to ensure accuracy of information. Based on the design plan, lab results would be sent electronically to doctors at the primary care centers. Doctors would receive the results and discuss them with the patients at the centers.	services at the facilities to perform and provide immediate results for simple tests. Laboratory services were not part of the design phase. The quality of care at the primary care facility at Chemmaruthy improved enough to meet the Kerala Accreditation Standards for Hospitals. The other two facilities are also in the process of receiving the accreditation certification. The panchayat provided funds for medicines and for palliative care projects in the catchment area. The supply of essential medicines has improved. Referral pathways were followed. Referrals are now planned according to the patient's place of residence.	people smoking, are not measured. Reported outcomes are based on the perception of the treating doctor. No indicators are in place to measure adherence to disease protocols or referral pathways. Follow ups with patients for backward referrals were not entered into the software. Data used to count referrals and follow up cases at the subcenters and at the primary care centers were collected manually.
Community Engagement	The core committee planned a monthly meeting at each subcenter. The intent of the meeting was to brief the community about public health issues and monthly activities. The meetings would be chaired by the concerned panchayat representative. The male and female health worker would provide update reports at the meetings. During this monthly meeting, the subcenter staff would plan and discuss issues such as outbreaks of diseases; immunization campaigns; vital events like births and deaths; and logistical problems with transport, electricity, and building maintenance. The aim of the meetings was to share not only important information related to the	Community engagement is active, as planned in the design phase. Facility staff and members of the community interacted during the monthly update and review meetings. Health programs were designed collaboratively and implemented in the community, based on needs.	

	health and wellbeing of the community, but also to resolve issues collectively and through mutual support. The primary healthcare centers also conducts similar meetings. The village panchayat president chairs the meetings, with the participation of other heads of the line departments. The core committee expected continuous and constructive interaction to help local bodies to come up with project proposals that are pragmatic and relevant to the community. The partnership with the local self government representatives had several objectives. The partnership was intended to ensure potable drinking water; to ensure the availability of sanitation facilities and their usage; to develop a decentralized household and institutional level mechanism for solid and liquid waste management and to establish appropriate systems in urban areas that lack a decentralized management facility; to develop health promotion activities to prevent noncommunicable diseases; and to ensure regular social audits of primary health care activities.	Even before the design phase, the village panchayats were engaged actively with the primary care facilities. The panchayats supervised the facilities and addressed community needs. With the implementation of the design plan, the subcenter and facility staff became accountable to the community for the activities planned in collaboration with the local self government representatives.	
Leadership and Management	The State Health Systems Resource Center managed and implemented the pilot project. The State Health Systems Resource Center was responsible for the necessary institutional level arrangements. The State Health Systems Resource Center set up the project office, data center, and server and appointed consultants and office staff for the project duration. The primary care core committee proposed small modifications in the composition and responsibilities of the existing primary care center teams. Based on the pilot project design, the government planned to launch a public awareness campaign to encourage the public to use the pilot project facilities. The pilot project design called for the establishment of patient liaison groups. The patient liaison groups were intended to provide feedback and support to the primary care teams to improve quality of care. The groups would help to establish the primary care centers as the first point of contact for the community. The groups would also help to build consensus among professional associations on the new architecture for the primary care centers in the state of Kerala. The monitoring and evaluation wing at the State Health Systems Resource Center planned to conduct peer reviews, institutional reviews, and prescription audits.	As a knowledge partner and the coordinating agency for the pilot project, the State Health Systems Resource Center assigned the roles and responsibilities as planned in the design phase of the pilot project through the end of December 2014. Based on the informant interviews, there have been no subsequent follow ups, trainings, orientation or mentoring sessions, or monitoring of processes and skills of the facility staff at the three pilot project facilities since the end of the pilot project.	

References

[1] A subcenter is a peripheral outpost of the Indian public healthcare system. Each subcenter caters to the healthcare needs of five thousand people in most areas, and three thousand people in hilly, tribal, or marginalized areas. A subcenter provides antenatal, natal, and postnatal care; family planning and counseling; treatment for common illnesses, like respiratory tract infections, diarrhea, fever, and worm infestation; prevention of malnutrition; and implementation of various national health programs. In an ideal situation, a subcenter is staffed by one female auxiliary nurse midwife, one male multipurpose health worker, and voluntary workers to help the auxiliary nurse midwife.
[2] An elective council of about five members organized in the republic of India as an organ of village self government.
[3] Female community health workers appointed by the National Rural Health Mission.
[4] Refer to Table 4.
[5] http://planningcommission.nic.in/aboutus/committee/strgrp12/str_health0203.pdf
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[22] Kumar R S. Emerging and Re-emerging Infectious Diseases in Kerala. Prathiksha, editor. *Health Sciences*. 2012 Oct; 27: 1(1).
[23] A village panchayat is the cornerstone of a local self government organization in India at the village or small town level. The panchayat has a local self government representative or "Sarpanch" as its elected head.
[24] Social auditing is a way of measuring, understanding, reporting, and ultimately improving the adjoining subcenters and primary care and community health centers in the catchment area of the village panchayat.
[25] Ward is an administrative division of a city that typically elects and is represented by a counselor.
[26] Anganwadi workers are community health workers at a village level. Anganwadi workers were introduced by the government of India in 1975, as part of the Integrated Child Development Services program under the Ministry of Women and Child Development. The goal of these workers was to combat child hunger and malnutrition.
[27] The government of Kerala introduced a poverty alleviation program based on microcredit and self help groups. Termed Kudumbashree ('Prosperity of the Family'), the program aims to improve the living standards of poor women in rural and urban areas.
[28] ACCESS Health International is a think tank and advisory group dedicated to improving access to high quality, affordable healthcare in low, middle, and high income countries. ACCESS Health International works in close collaboration with government sponsored health insurance programs, healthcare providers, government institutions, researchers, and funders to catalyze improvements in health systems through research, design, and implementation support. www.accessh.org
[29] http://jointlearningnetwork.org/
[30] http://jointlearningnetwork.org/initiatives/primary-health-care

Primary Care

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