CENTER FOR PRIMARY CARE
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Primary Health Care in Vietnam – Assessing the Doi Moi Reforms and Building a Vision for the Future

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Executive Summary

Over the past several decades, Vietnam has been among a group of nations that has achieved unprecedented gains in population health through a synergistic process of socioeconomic development and strategic investment in health systems. Despite this considerable progress, there remain important opportunities for improvement and innovation in the health sector in order to meet emerging needs based on epidemiological and demographic trends, and to build a system capable of sustainably, efficiently and equitably delivering on the promise of health for all Vietnamese citizens.

The objectives of this report are to: 1) Review achievements and challenges in primary health care (PHC) in the last 30 years since Doi Moi; 2) Analyze relevant evidence on PHC in lower-middle income countries (LMICs); and 3) Provide recommendations for an innovative, high-functioning PHC system based on both the unique strengths and context of the Vietnamese social sector as well as global best practices.

Defining Health Systems and Primary Health Care

For the purposes of reviewing progress in Vietnam and other LMICs, we adopt the WHO Health Systems framework. We use PHC to refer not only to care that is delivered at the level of Commune Health Centers (CHCs) and district hospitals, but also to the set of activities that serve the functions of making care highly accessible, comprehensive, coordinated, integrated across the care continuum, longitudinal, and delivered in the context of the family and community.

Overview of Primary Health Care in Vietnam from 1989-2014

Substantial political commitment and investments in PHC infrastructure in Vietnam have contributed to considerable population health gains. Prior to the Doi Moi reforms, all health services were provided free of charge to the entire population. However, as Vietnam transitioned to a "market economy with socialist orientation," user fees were initiated to health facilities. Recognizing health equity issues with user fees, in 1994 the Communist Party of Vietnam (CPV) and the Government of the Socialist Republic of Vietnam (GOVN) revised the user fee policy to exempt the extreme poor from primary health care service fees. A series of other programs were introduced between the 1990s through 2014 (Program 135, the Strategy for the Protection and Care of People's Health 2001-2010, Decision 139), with the aim of reducing financial barriers to health care for the children under-6, the poor, and marginalized populations.

The PHC system is heavily managed by the provincial and central levels, with little autonomy given to the CHCs. CHCs mainly implement national target programs, rather than examining and treating patients in a holistic manner. CHCs are generally well-staffed in accordance with MOH Decision 3447/QĐ-BYT (dated 22/9/2011), and each is led by either a physician or by a physician assistant. However, there is very little coordination, clear division of responsibilities, or teamwork among the staff. CHCs and district health centers are burdened by the amount of reporting required by the provincial and central levels—which is often uncoordinated and duplicative, with outcomes not circulated back to the CHC level to drive performance improvement.

Most CHCs have medications and equipment to treat common communicable diseases and for the national target programs, but are ill-equipped to prevent or treat non-communicable diseases. Although CHCs, through MOH Decision 3447/QĐ-BYT (dated 22/9/2011), have the infrastructure — electricity, private examination rooms, running water, basic medical equipment, and human resources — to deliver a wide range of services, CHCs are not operating at maximum capacity due to public distrust of quality at the primary care level, a phenomenon that often leads to crowding at the higher levels. Also, some services provided by CHCs, such as labor and delivery, were not utilized, as patients preferred to go into hospitals. This was especially true in urban and delta areas.

Overall, there is room to improve how the PHC system is utilized and deployed. There is a robust infrastructure and network which can be leveraged to transform the PHC system into functional units delivering high quality, community-oriented care to the population in a cost-effective manner.

Primary Health Care in Lower-Middle Income Countries

In LMICs, there is a concern that vertical initiatives, in the absence of a strong PHC system, are not sustainable, can cause inefficiency, and lead to fragmented and non-patient centered care. Also, LMICs face the double burden of communicable and non-communicable diseases. In the context of these challenges, evidence from LMICs such as Thailand, the Philippines, and Cuba, provide useful lessons for Vietnam's health system.

Thailand and the Philippines are especially organized at the local community levels, particularly in rural areas, to provide PHC in an integrated and cost-effective manner. Primary Care Units (PCUs) in Thailand

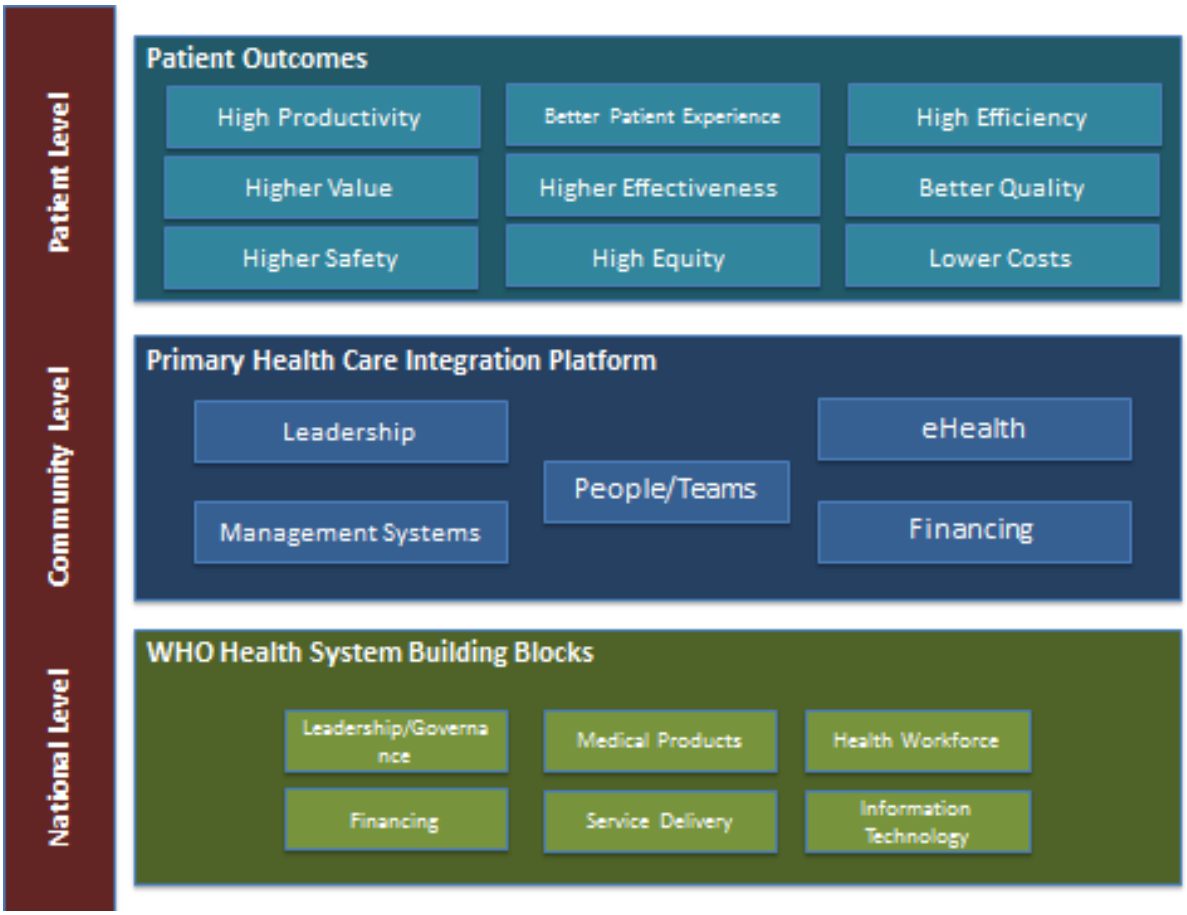
and Local Government Units (LGUs) in Philippines serve as first point of contact for patients. In Cuba, local level doctor-nurse PHC teams provide care within each community. The three countries have varying financing strategies. Due to high out-of-pocket costs for patients, the Philippines has imposed maximum prices on selected drugs to decrease costs. Thailand and Cuba offer universal coverage; Cuba's entire health care system, however, is financed by the government in addition to some international aid.

Another issue is the instability and shortage of LMIC primary care workforce. Countries such as Thailand created a workforce production plan for health workers in the public and private sectors, recruiting and training locally. Cuba mandates that medical graduates spend their first few years practicing family medicine, providing free medical tuition, and posting health professionals to rural parts through a formalized program. Also, many LMIC health systems lack strategic planning and decision making due to a dearth of reliable data, which links to the challenges LMICS have with building and maintaining a reliable health IT infrastructure. The Philippines has been able to partially address an information gap in rural health information systems with an open-source electronic medical record system, but has duplicative health data systems at the national and local levels.

The Primary Health Care Integration Platform and Global Best Practices

Based on literature reviews, ongoing mixed-methods research on high-functioning PHC systems, and expert opinion, we highlight elements of the WHO Health Systems framework that may be particularly essential to PHC and review global best practices within the domains of this integration platform (see Figure 1).

Figure 1: Primary Health Care Framework



Leadership

Engaged, effective leadership at all levels, from health systems executives to frontlines/grass roots leaders, are essential to high-functioning PHC. This requires proactive efforts to engage leaders at all levels in the process of planning, implementing, and continuously improving PHC initiatives and new educational curricula at all levels of healthcare training, from undergraduate to continuing professional education.

People/Teams

Particularly with the shift in disease burden towards non-communicable, chronic diseases, there is an increasing recognition that PHC is optimally delivered by high-functioning, multi-disciplinary teams. Establishing high-functioning teams requires complex organizational and cultural changes, and is an ongoing, iterative process.

eHealth

eHealth can provide critical new infrastructure to help PHC teams optimally work with patients and families to achieve the PHC functions. Many hard-won lessons have been learned from eHealth implementation in high-income countries, and might be applied to help LMICs "leap frog" to a much more functional and efficient approach.

Management systems

PHC teams will need to develop competence and organizational structures to enable continuous process improvements in their work. Developing disease management protocols for non-communicable diseases (NCDs) will help enable teamwork and ensure that all members of the care team are working up to their capacity and training. There will be need for protocols to better integrate and manage care between PHC teams, hospital and specialist services, as well as with community-based and social services. High performing organizations use a balanced set of metrics to ensure accountability and guide performance improvement.

Financing

Out-of-pocket spending for PHC remains high. There is need in many countries to expand the financial coverage of essential PHC services, particularly for the poor, through better insurance mechanisms, whilst ensuring that the quality and responsiveness of these services is high enough to generate demand for them. There are tradeoffs to any approach to provider payment schemes, but there is emerging consensus that capitated or global payments, tied to reporting and incentives related to performance and patient experience, may be the best approach to paying for PHC.

<u>Recommendations</u>

Leadership

1) Develop and implement an executive health care leadership and management curriculum for current leaders of CHCs, District Health Centers, and Provincial Departments of Health that is competency based (intrapersonal, interpersonal and technical skills) and focused on inter-professional collaboration and teamwork.
2) Introduce leadership and management competencies and curricula into undergraduate and graduate medical education in Vietnam.

3) Introduce health systems management masters-level track based on #1 above at the Hanoi School of Public Health and cultivate a cadre of emerging Vietnamese leaders in the health sector, particularly PHC.
4) Consider the need for a comprehensive workforce development strategy that cultivates leadership and career growth for all cadres of healthcare workers.
5) Where possible, decentralize decision making and authority to empower front-lines leaders and managers, while ensuring accountability for quality and responsiveness.
6) Proactively plan for engaging leaders at all levels of the health system, and include front-lines and executive leaders in developing and implementing plans for reform.

Teams

1) Begin piloting collaborative learning processes for developing high-functioning teams in several geographically-representative districts around the country. These processes could focus simultaneously on team development and on creating and continuously improving protocols for managing one or more NCDs, such as diabetes or hypertension, at the commune level. The ultimate goal of these multi-year collaboratives would be to develop a scalable approach to team-based care to be implemented nationwide on a 5-15 year timeframe.
2) Through the work of the collaborative processes, develop standardized job descriptions for health personnel at the CHC and District Level, that may subsequently be adapted to serve local contexts.
3) Promote inter-professional education in both undergraduate and post-graduate medical/health professional education through specific national competency requirements.

eHealth

1) Develop a plan over a 5-15 year timeframe to assign unique patient identifiers to all Vietnamese citizens, and transition to online personal health records. Consider the idea of a Vietnamese "health passport," that contains key elements of health history (such as family and personal medical history, medications, allergies, and immunization status) in structured fields.
2) Develop and enforce national standards for data interoperability, security and portability.
3) Consider issuing requests for applications (RFAs) to private vendors to develop and pilot test eHealth applications in concert with the above-described pilots of team-based care

collaboratives, with the goal of identifying and refining technologies that could be scaled across the country over time.

4) In building eHealth infrastructure, focus on creating robust, functional online linkages between all members of care teams (patients, families, commune health center teams, district and provincial hospitals, specialists, etc.).
5) Plan to build eHealth infrastructure that enables the real-time tracking of important health process and outcome metrics (such as immunization rates, adherence to NCD protocols, and patient/family satisfaction).

Management systems

1) Include QI training and capacity building as part of the collaboratives to transform to team-based care, with plans to scale this approach nationwide over a 5-10 year timeframe.
2) Introduce QI competencies and curricula into undergraduate and graduate medical education in Vietnam.
3) Work with national specialty hospitals and provincial preventative medicine departments, in coordination with CHC representatives, to develop and test standardized protocols for the management of specific diseases (i.e. NCDs) at the CHC level as part of the learning collaboratives, with the goal of scaling nationwide on a 5-10 year timeframe.
4) Provide guidance for CHCs to produce a "resource map" of, and build linkages with, different services in their communities, including social services, charitable organizations, and other medical service providers.
5) MOH to set nationalized and standardize standards for the transfer of patients between the different levels of the health system, with the expectation that these will be locally adapted and implemented.
6) Work with private providers to understand information linkages and performance tracking in the private market.
7) Develop and implement, over a 5-15 year timeframe, a set of shared, balanced metrics for tracking CHC performance (inclusive of both health process and outcome metrics, such as adherence to NCD protocols; organizational metrics, such as how well teams are functioning; and patient experience metrics). Introduce the "score card" approach to CHC staff and patients as part of building QI capacity to use data to guide continuous improvement as well as to create

accountability both to local communities and to the higher levels of health systems governance. Move over time towards public reporting of these data.

Financing

1) Continue efforts to expand social health insurance to all members of society, even the poor who are already compulsorily enrolled (but who may not be utilizing it).
2) Reduce out of pocket expenditures for health care through better health insurance and minimized (or ideally abolished) user fees for PHC.
3) Base the defined benefits package off of technically justifiable criteria based on affordability or cost effectiveness.
4) Integrate social health insurance pools to reduce fragmentation and improve subsidization of poorer funds by wealthier funds.
5) Standardize capitation rates across regions and social sectors, and stop basing them off of historical service utilization patterns, in order to augment financing of PHC in lower-income sectors.
6) Consider implementing performance-based global payments or augmenting service purchasing based on clear, achievable, clinically meaningful metrics.
7) Link any approaches to performance tracking with larger data measurement and quality improvement initiatives aimed at empowering front-lines clinics to deliver high quality, responsive care.

Introduction

Over the past several decades, Vietnam has been among a group of nations that has achieved unprecedented gains in population health through a synergistic process of socioeconomic development and strategic investment in health systems (Table 1).

Table 1: Population Health Achievements

Reached MDG 4: Reducing Child Mortality (19.61/1000 live births, UNICEF, 2013)
Reached MDG 5: Reducing Maternal Mortality (59/100,000 births, WHO, 2010)
Over 90% Childhood Vaccination Rate in WHO Program for Pediatric Vaccinations (UNICEF, 2014)
Life Expectancy at 76 years old (WHO, 2014)
70% of population covered under social health insurance (Cheng, 2014)
Free health care for children under six, elderly (over 80), war veterans, & those who qualify for other social protection schemes (Law of Health Insurance, 2008)

Despite this considerable progress, there remain important opportunities for improvement and innovation in the health sector in order to meet emerging needs based on epidemiological and demographic trends, and to build a system capable of sustainably, efficiently and equitably delivering on the promise of health for all Vietnamese citizens. While there is substantial and admirable infrastructure for health care delivery in the form of clinics, hospitals, and trained health care workers in Vietnam, there is an opportunity to deploy these resources more effectively to optimize health outcomes, return on investment, and the experience of care for Vietnamese citizens. In particular, evidence detailed in this report suggests a lack of capacity to tackle the non-communicable disease (NCD) epidemic and to provide highly responsive, longitudinal, integrated care that is accessible to individuals and families in their communities and homes. Thus, bolstered by the track record of decades of success in health and strategic investment, comes the chance to build and execute a bold new vision for strengthening primary health care systems in Vietnam, further strengthening its reputation as a world leader in providing social services to citizens.

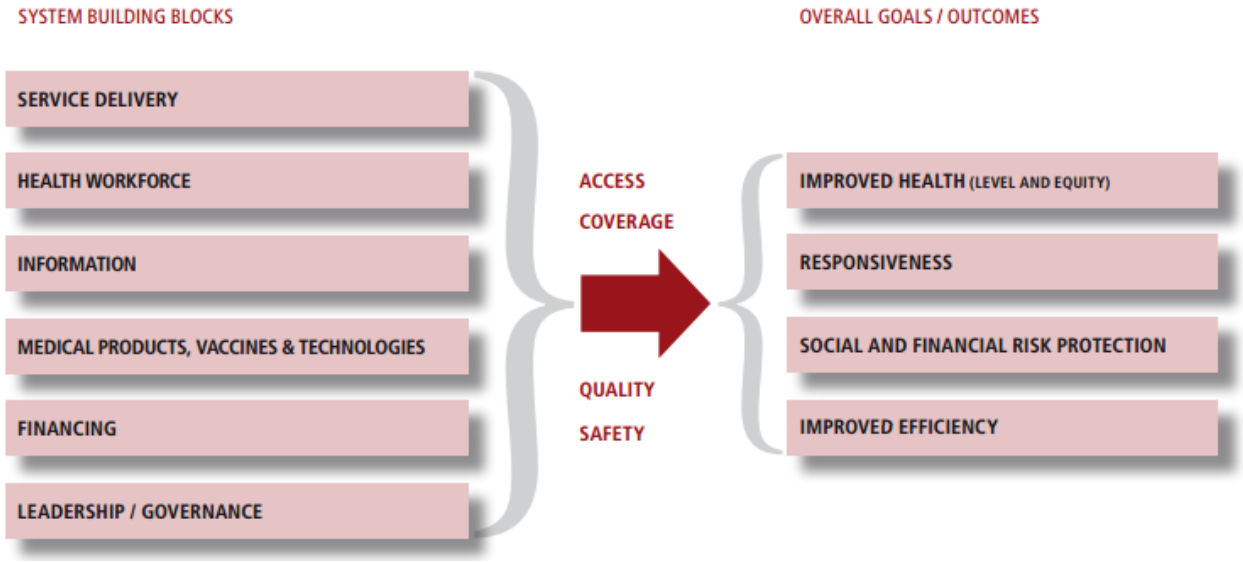
The purpose of this report is threefold: 1) to review achievements and challenges in primary health care (PHC) in the last 30 years since Doi Moi; 2) to analyze relevant evidence on PHC in LMICs; and, 3) to provide recommendations for an innovative, high-functioning primary health care system based on both

the unique strengths and context of the Vietnamese social sector as well as global best practices. Before turning to a review of PHC in Vietnam and worldwide, we provide working definitions of health systems and PHC.

Health Systems and Primary Health Care

Building on the vision of health for all articulated at Alma Ata in 1978 (WHO, 1978), there have been a number of seminal works defining and assessing health systems, PHC, and chronic disease management (Starfield, 1992; Starfield et al., 2005; Institute of Medicine, 2001; WHO, 2000; WHO 2008a; Lancet, 2008; Frenk et al.,1990; Frenk et al., 2006, Wagner et al., 2001). The prevailing framework for health systems, the WHO Health Systems framework, provides a powerful theoretical basis for conceptualizing health systems at the national and regional levels (Figure 1)(WHO, 2007).

Figure 1: The WHO Health System Framework (WHO, 2007).



We adopt this framework to review progress in Vietnam and other LMICs. Later in this report, we highlight domains within the health systems framework that may be particularly important for building high-functioning models of PHC.

There has been considerable discussion over time about the appropriate definition and scope of PHC. Experts have highlighted the distinction between "primary care," which tends to be conceptualized more narrowly as "a client's first point of entry into the health system … [d]rawn from the biomedical model ... It involves a single service or intermittent management of a person's specific illness or disease condition," (Keleher, 2001). PHC, in contrast, has been viewed as a broader "strategy of public health, derived from the social model of health … [which is] both a philosophy and a system response to reducing health inequities and ameliorating the effects of disadvantage" (Keleher, 2001).

One must also understand PHC not merely as the ***structures*** where care is delivered (typically in health centers at the "first level" of the health system) and by whom (typically generalist physicians, physician assistants, nurses and other health care workers). There is increasing acceptance that PHC is most constructively understood as serving several critical ***functions*** within the health system, by making **care highly accessible, comprehensive, coordinated, integrated across the care continuum, longitudinal, and delivered in the context of the family and community (referred to in the rest of the report as "core PHC functions"**); and there is a preponderance of evidence that national and regional health systems that have a greater PHC orientation provide healthcare that is higher quality and lower cost (Starfield, 1992; Institute of Medicine, 2001; Starfield et al., 2005; Frenk, 2008; Friedberg et al, 2010).

Recently, the World Bank and Gates Foundation's Primary Health Care Performance Initiative identified its scope as targeting "those activities required for preventive, promotive, curative, and rehabilitative care for chronic and acute conditions that take place both within facilities and within communities … Primary health care is also viewed in the context of all providers that deliver it, whether they are public or private providers." *Thus, in line with this scope and in the Vietnam context,* ***we use PHC to refer not only to care that is delivered at the level of commune health centers (CHCs) and district hospitals, but also the set of activities that serve the above-described core PHC functions in the health system. We note that this will require further efforts to integrate care across the formal healthcare delivery system and with community-based efforts, and propose an approach towards achieving such integration further on in this report.***

Overview of the Primary Health Care System in Vietnam from 1989-2014

Primary Health Care Reform in Vietnam

Since its inception, the Communist Party of Vietnam (CPV) has strongly committed to equitable health care for the people of Vietnam. This has resulted in creating a vast network of PHC facilities, which provide basic health services throughout the country. With the direction from the CPV, the Government of the Socialist Republic of Vietnam (GOVN) initiated substantial efforts to improve the public sector and increase accessibility to PHC for people, especially the poor and ethnic minorities living in remote areas. This was accomplished by the passage of multiple national laws and policies that emphasized improvements in health services at the community level.

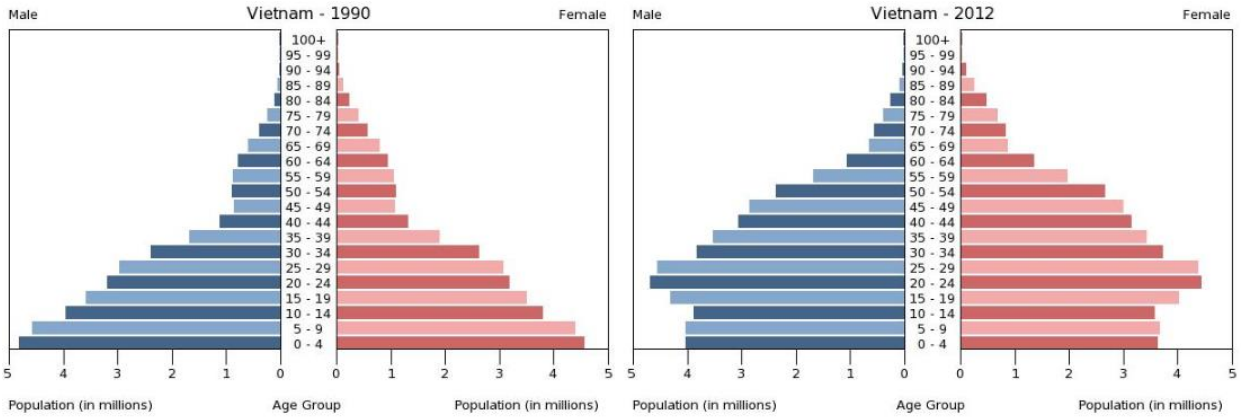
Over the years, additional decentralization of health service delivery enhanced the provinces' legal authority to address PHC access, quality and cost. The overall and health-specific priorities and programs of GOVN made conditions more favorable for intensified attention to PHC and public health at the community level, where CHCs are designated as a major resource for provision of first-level care in the public health system.

The strong commitment and political will for equitable health care for all by the CPV and the actions of the GOVN resulted in remarkable gains in population health and Vietnam's early achievement of the U.N.'s Millennium Development Goals (MDGs). As part of MDG 4, under-five mortality and infant mortality rates have been halved between 1990 and 2006. With MDG 5, maternal mortality declined considerably over the last two decades, from 240 per 100,000 live births in 1990 to 59 per 100,000 live births in 2010. Approximately two thirds of the decrease is related to safer pregnancy and skilled attendant deliveries at CHCs (UNICEF, 2012). Through CHC networks, Vietnam has more than 90 percent child immunization coverage and is able to manage tuberculosis, malaria, child malnutrition, and mental illness such as schizophrenia and epilepsy at the community level. However, despite such tremendous population health gains, it is recognized that many of these gains have bypassed women, minorities and people living in the highlands.

Demographic and Epidemiologic Trends

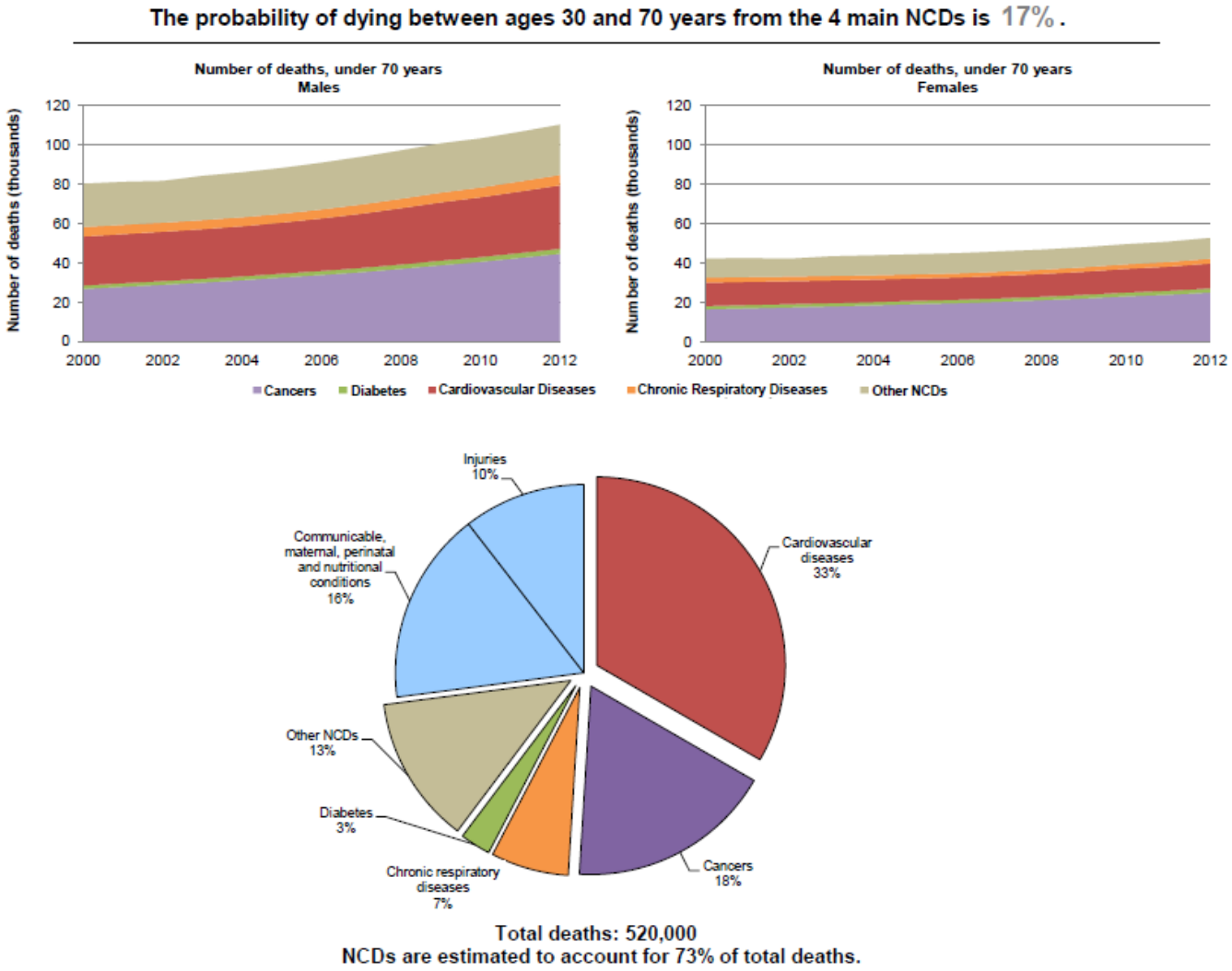
Demographic trends show the people are living longer (Global Health Data Repository, 2014). The average life expectancy is 76 years (WHO, 2014). 64% of the population is under 30 years of age (Figure 2) (General Statistics Office, 2009).

Figure 2: Vietnam Population Demographics Pyramid- 1990 vs. 2012 (US Census Bureau, 2013).



Vietnam has undergone an epidemiological transition from communicable to non-communicable diseases. Non-communicable diseases (NCDs) account for 73% of total deaths, with cardiovascular disease the leading cause of mortality at 33%. According to 2009 statistics published by the Vietnamese Ministry of Health, from 1986 to 2008, the proportion of all hospital admissions attributable to NCDs increased from 39% to 69%, and chronic disease deaths rose from 42% to 63% (Ministry of Health Vietnam, 2010). In terms of number of life years lost (LYLs) due to premature deaths in Vietnam, cerebrovascular disease is the highest ranking cause at 11.2% in 2010 compared to 6.6% in 1990 when the number one cause of LYLs was due to lower respiratory infections. Furthermore, the top five conditions contributing to years lived with disability (YLDs) are all chronic diseases: low back pain, major depressive disorder, chronic obstructive pulmonary disease, neck pain, and migraine. The three risk factors that account for the most disease burden in Vietnam are dietary, tobacco and high blood pressure. Vietnam currently does not have evidenced-based national guidelines/protocols/standards for the management of the major NCDs through a primary care approach (Figure 3)(WHO Viet Nam NCD Profile, 2014).

Figure 3: Proportional mortality (% of total deaths, all ages, both sexes) and mortality due to NCDs (WHO Viet Nam NCD Profile, 2014).



Economic Reforms (Doi Moi)

Since 1986, the CPV and GOVN leadership transitioned a centrally planned economy to a "market economy with socialist orientation," or Doi Moi. The transition has been characterized as privatization, spontaneous decentralization and deregulation. This transition of economic strategy resulted in remarkable economic gains, transforming Vietnam from one of the poorest countries in the world to an LMIC with a per capita income estimated at US $1,374 at the end of 2011. The average life expectancy of the Vietnamese people increased during this time period, from 65.5 years to 75 years. However, this economic transition also included the introduction of user fees at the district health centers, and at provincial and national hospitals; it legalized the private medical sector; and, it put the pharmaceutical

industry outside of State control, liberalizing the transaction of pharmaceutical products (Guldner, 1995). These changes resulted in shifting attitudes on health seeking behaviors, including the migration of health professionals to the more lucrative private sector, self-medication and self-treatment by patients, and higher utilization of medical services in the private sector (Ha et al., 2002). As a result, patient volume declined significantly at the commune and district health centers, leaving the CHCs to mainly treat those who were too poor to afford private sector services and running vertical national targeted health programs (NTPs).

Public expectations and demands for quality health care corresponded with Vietnam's impressive socio-economic growth. Peoples' perception of low quality services and low quality health personnel at the local CHC level, and the general mistrust of the Vietnamese public towards the staff of district level institutions, resulted in many people preferring to go directly to the often severely overcrowded provincial and national hospitals. Additionally, for those with economic means, this has resulted in bypassing the public sector all together and choosing the private sector, including using international clinics or going abroad for medical care. The proliferation of private clinics and presence of domestic and international private hospitals is a testament to this trend. However, the private sector is not only for the rich. In the rural areas, household surveys show that people frequently purchase drugs from drug sellers or see a private practitioner (usually a public employee working after-hours) (Bloom, 1997). The marketization of rural health services has, on one hand, given people more choice, however it also exposes them to more risks in the quality of care and medical products that they receive (Bloom, 1997).

In addition, the changing epidemiological profile, from communicable to non-communicable diseases and from acute care to chronic care, stretched the capacity of CHCs and the general health system, originally set up to implement NTPs targeting single diseases and patients only requiring a one-time interaction with the health system. Finally, with CHC and district level services on the decline, accompanied by low salaries and incentives, health workers are increasingly migrating to the private sector, leaving few available health workers at the community level and increasing the burden at provincial and national health centers. This also increases the cost of the health system as a whole.

Primary Health Care in the Vietnam Health System

The Vietnam health care system can be divided into curative care and preventative care. The curative public health sector is composed of 11,400 commune health centers (CHCs), 900 hospitals (730 general

hospitals and 103 specialized hospitals), 860 general clinics, and 94 specialized clinics (WHO and Ministry of Health, 2012). The entry-point of care is organized at the CHC, each serving a population of roughly 5,000 people, located in both rural and urban areas. As the system is set up, the CHCs serve as the initial point of entry into the health care system. The district health center is the next level up, and serves as the first level with in-patient hospital services. The provincial hospital and specialty clinics serve as referral centers for the district level. From the provincial level, national level hospitals serve as the final referral centers. Existing in parallel with the public system, a private system also emerged after Doi Moi with private clinics in the community, often staffed by public employees after official working hours, to private hospitals in the metropolitan areas. Since Doi Moi, the number of private clinics and hospitals has been on a steady increase. Currently, 4% of registered hospital beds belong to the private sector, and 11% of all hospitals in Vietnam are registered as private hospitals (Cheng, 2014).

The preventative care system is separate from the curative system at the national and provincial level, while some districts either integrate or separate the preventative and curative sectors. The preventative care system, although within the Ministry of Health (MOH), works directly with the various national institutes (i.e. National Institute of Hygiene and Epidemiology, National Institute of Nutrition, National Heart Institute, etc.). Through predominately vertical programming, these national institutes work directly with provincial department of health preventative medicine arm, who in turn gives direction to the district department of preventative medicine to implement the programs at the community level through the CHCs. In many districts, if the prevention and curative systems are not integrated at the district level, the CHCs are the only level that integrates the prevention and curative systems (Duong, 2014).

CHCs are the basic unit of PHC and serve as a foundation for the national health care system. CHCs are responsible for implementing the NTPs, organizing community-level preventative health services such as immunizations, water and sanitation, and promoting various public health campaigns as necessary. CHCs provide examination and treatment for common diseases, health counseling, managing and distributing common medications and medications used in the NTPs, referrals for patients with serious illnesses, prenatal and postnatal care and common spontaneous vaginal deliveries. CHCs also can admit short-term patients for observation and delivery of intravenous fluids. CHCs vary from one geographical area to another, and for this reason, in 2000, the MOH released MOH Benchmark Standards for CHC readiness, comprised of 90 indicators of equipment availability, facility standards, staffing and other

criteria. The latest version of these standards was revised Decision 3447/QĐ-BYT dated 22/9/2011. Please see below for a description of CHCs as organized by the WHO Health Systems Framework, taken from the standards in Decision 3447, as compared to research on the capacity of CHCs based on research from the authors of this report and literature review.

Service Delivery

The CHCs operating hours officially are from 8am-11am, and 2pm-5pm, at least three days per week, with one health worker on call at the CHC every night and reachable directly by phone. Each CHC has a minimum of ten rooms in the rural areas and six rooms in the urban areas. The CHC has to include the following spaces: clinical examination room, traditional medicine room, storage for pharmacy, basic laboratory, 1st aid/emergency room, women's room, GYN clinic/FP room, delivery room, private consultation room, administrative office, and on-call room. Village health workers and CHCs in communes provide health services including consultation for and treatment of common diseases, maternal and child health care including prenatal care, simple deliveries and vaccinations, family planning, and hygiene and health promotion.

From Research and Literature

A study by Duong et al. (unpublished data, 2014), surveying 89 CHCs in 2014 in three provinces in northern Vietnam showed that the majority of CHCs offered basic services in maternal & child health and treatment and control of communicable diseases. Services not commonly available include those regarding diagnostics and testing, and procedural services. Service is defined as providing least one of the following: (1) screening and prevention, (2) treatment and counseling, and (3) management. Please refer to Table 1 for a description of services offered.

Table 1: Services Offered at CHCs (N=89

Service	Service Availability (%) (N=89)
Family planning services	94%
Antenatal Care (ANC) services	91%
Delivery (including normal delivery, basic emergency obstetric care, and/or comprehensive emergency obstetric care) and/or newborn care services	92%

Child immunization services, either at the facility or as outreach	100%
Preventative and curative care services for children under 5	98%
Child nutrition services	100%
Adolescent health services	80%
HIV counseling	86%
HIV testing services	27%
Diagnosis or treatment of STIs, excluding HIV	65%
Diagnosis, treatment prescription, or treatment follow-up of tuberculosis	95%
Diagnosis or management of NCDs including diabetes, cardiovascular disease, mental health, cancer or chronic respiratory disease	90%
Minor procedures (suturing, wound debridement/closure, tooth extraction), including early abortive services.	50%
Blood transfusion services	1%
Laboratory diagnostics, including any rapid diagnostic testing	42%
Storage of medicines, vaccines, or contraceptive commodities	97%

The majority of CHCs have running water pumped into the facility, a way to sterilize medical equipment, a source of electricity, and protocols for hygiene, sanitation and medical waste treatment. CHCs also have formal paper-work for transferring patients to the district level, however no protocols for what types of diseases or disease state severity mandated transfer to district level facilities were identified.

All CHCs also have a robust network of VHW and utilized them to do mass public health communication campaigns. Other than mass communication campaigns, no job descriptions and protocols existed for VHWs.

Leadership/Governance

The Vietnamese government has outlined clear responsibilities for the governance of the health system, specifically with Government Decree No. 172/2004/NĐ-CP dated 29/9/2004,and revised in 2008 (14/2008/NĐ-CP) and Joint-Circular No. 11/2005/TTLT-BYT-BNV dated 12/4/2005 of the MoH and Ministry of Home Affairs, again revised in 2008 (03/2008/TTLT-BYT-BNV) specifying the organizational structure of professional bodies under the District People's Committees and providing guidance regarding the functions, duties and organizational structure of professional bodies assisting the People's Committee, including that of the health sector.

Per Decree 172, instead of only one district health center (DHC) managing overall health aspects within the province, there are 3 institutions — district health bureau (DHB), district hospital, and district preventive health care center — with 3 different functions. The DHB is under the direct management umbrella of the district People's Committee, and responsible for the regulatory aspect in the health sector within the district and holds the management of commune health centers (CHC). Section 2, Article 7.8 of Decree 172 states that the DHB is responsible for the management of the care and protection of people's health, including that of primary health care; preventive medicine; medical care and rehabilitation; traditional medicine; drug prevention and treatment of human disease; hygiene and food safety; health insurance; medical equipment; the population health activities. The district hospital and preventive health care center take indirect responsibility for providing technical supervision and guide to the commune level, reporting to the DHB and is under the direct management umbrella of the provincial department of health. The DHB is in charge of guiding health institutions in the district and CHCs to collect and record the forms and write reports to submit to the provincial Health Bureau and People's Committee.

Based on MOH decision 3447/QĐ-BYT dated 22/9/2011, CHCs are required each to have a steering committee, apart from the commune people's committee (the lowest administrative unit), that oversees the activities of the CHC. The steering committee is composed of a chairman, from the leadership of commune people's committee, a vice-chair, who is the director of the CHC, and the heads of relevant departments in the local government. The steering committee is required to meet every six months and provide direction on the activities and strategy of the CHC, ensuring that they align with the resolutions of the CPV and the commune's Economic Development Plan. The CHC itself is directed by either a medical doctor (MD) or a physician's assistant (PA). The head of the CHC is the medical doctor

who oversees all programs. Each NTP is designated a program secretary, who is a staff member at the CHC, overseeing the operation and implementation of the NTP. Finances for each NTP are allocated by the provincial department of health's department of preventative medicine, down to the commune level.

From Research and Literature

Steering committees were found to exist for CHCs, however, the meeting of the steering committee was much more sporadic and not set as every 6 months per specifications by MOH. All CHCs surveyed by Duong DB were directed by either an MD or PA, with CHCs in more remote/rural areas directed by PAs. The CHC has limited autonomy in its finances and organization, since both domains are mandated by the higher levels and the MOH. Because the scope of work at most CHCs are to run NTPs and provide minimal curative services that are considered free of charge to the population, CHC budgets are dependent on allocations from provincial and national budgets. The process of decision making and strategy making was often not communicated, but rather, a strategy or approach would be developed and communicated to the lower levels, often by decree. Most decision making was top down with little input from the lower levels. CHC leaders often only implemented mandates and programs from the district and provincial levels, with no input into the design or strategy of the program. Leadership skills are currently not taught in undergraduate or post-graduate medical/health professional education. In terms of organizational culture, CHC's organizations are guided by MOH guidelines with minimal variation between the CHCs. Directors of CHC have had no formal leadership training, especially in the areas of the intrapersonal, interpersonal and technical skills of leadership and management.

Health Workforce

In order for the CHC to meet the MOH Benchmark Standards, the CHC needs to operate at least three days per week and to employ a full-time traditional medicine specialist, one village health worker per hamlet, one population/family planning officer (usually a PA or nurse), one pharmacist, and one midwife. The MOH Benchmark Standards indicate that there must be a minimum of five staff per CHC, with a maximum of ten, depending on location and population coverage area. There is no regulation/guideline on a team based approach at CHCs. Capacity building of staff at CHCs is currently regulated by the Law of Examination and Treatment (2009), which mandates that staff obtain a minimum of 48 credit hours of continuing medical/health education every two years in order to renew their practice license.

From Research and Literature

Table 2 below displays the health workforce in Vietnam in 2013, as estimated by the government's GSO.

Table 2: Health workforce in Vietnam in 2013

Staff Type	Number (in *thousands)*	Ratio per 10,000 population
Medical Doctor	68.6	7.6
Physician Assistant	57.1	6.3
Nurse	98.3	10.9
Midwife	29	3.2
Pharmacist	28.7	3.2

In comparison with regional averages, Vietnam is in the middle in terms of medical doctors per 10,000 people, ranking higher than Cambodia (2.3), Laos (1.9), and Thailand (4) and lower than China (14.6), Malaysia (12), and the Philippines (12) (World Bank, 2012).

It is estimated that Vietnam graduates between 2,500-3,700 medical doctors per year from its 12 medical universities (Fan et al, 2012), however, because there is no national examination and licensing system, it is difficult to keep track of how many medical graduates actually practice medicine. Additionally, graduate medical education is not well developed in Vietnam, with less than 10% of medical graduates securing spots in residency programs. Those medical graduates who do not enter residency programs currently need to apply individually to non-standardized and often *de facto*, unregulated apprenticeship-based positions in hospitals that they wish to practice in, contributing further to the low supply and quality of medical doctors in the medical system (HAIVN, 2014). This is similar for nursing and other allied health professionals. In terms of the health workforce at the CHCs, limited financial and career/professional incentives, and a lack of a national distribution of human resources for health, make it hard to recruit and retain a qualified and high-quality workforce at the CHCs. In order to address the low numbers of qualified doctors at the lower levels and mountainous provinces, in 2010, the government introduced the 1816 program, in which specialists from national hospitals to do extended (1-2month) rotations through provincial and district hospitals and build up capacity of local doctors. This program has not yet been evaluated.

CHCs surveyed by Duong et al (unpublished data, 2014) were found to meet MOH requirements for staffing with a robust VHW network, traditional medicine specialist, population/family planning officer, PA and/or MD, and associate-level pharmacist. CHCs located in remote/rural areas were more likely to have a midwife compared to those in urban areas because those CHCs provide delivery services, whereas CHCs by urban centers rarely practice deliveries because the population opts to deliver at the hospitals. The scant literature on the functioning of CHC teams reveals that the CHC staff work under the general direction of the MD or PA, however, little is operationalized in terms of coordination between the work and skills of staff members (Van Minh et al., 2013; Duong, 2014; Philips et al., 2006). The CHC team works more as a collection of individuals, each responsible for or serving as a point person for a NTP or donor project, rather than a cohesive team. Metrics for evaluating CHC staff are not properly communicated or defined. Although regulations surrounding continuing medical/health education is mandated in the Law of Examination and Treatment (2009), a system of CME has not been developed at the national level, including assigning and tracking CME credit hours. Job descriptions for different members of the CHC are non-existent. Trainings for CHC staff are usually done in a profession-specific manner without synergy between how different members of the CHC staff can work together.

Inter-professional education is currently absent from undergraduate and graduate education. Capacity building is currently being done in the form of irregularly scheduled trainings of health workers by the district or provincial level on different vertical NTPs, or on topics deemed necessary by the provincial department of health. Trainings for CHCs are most often conducted by staff at the district level. Health professionals are also frequently sent away to train at district and provincial hospitals on care delivery for different diseases in one, three, six or nine-month courses. However, due to the quick turn over of CHC staff, institutional knowledge at the CHC level is quite limited.

Health Care Financing

Up until the Doi Moi reforms of 1986, health services in Vietnam were free of charge. However, with the introduction of user-fees at the initiation of Doi Moi reforms, and through 1989's Prime Minister Decision No. 45, which formally granted authority to collect "partial expenses" in state-run hospitals and clinics, some may argue that even the public institutions in Vietnam are semi-privatized. Fees were often charged for hospital bed use, nursing, drugs, blood, and diagnostics. This policy allows for the government to shift the financial burden away from itself, directly onto the health facilities themselves. This has resulted not only in "cost recovery" for service providers, but also may promote the

commercialization of services. This commercialization comes in the form of institutionalized "gift payments" to medical staff, and informal arrangements in which hospitals lease equipment to their staff via a fee-for-service model. An especially pertinent example is when the GOVN mandated that all children under six receive free health services. This policy inundated hospitals, especially the national pediatric hospitals, with patients. The hospitals devised a strategy to recover costs by introducing "service-on-demand" models, in which patient can offset wait times by paying premiums to be seen immediately, and obtain preferential treatment in special rooms or in new wards. These two-tier systems at public institutions are mostly commonplace in Vietnam. This has been further supported through Decree 43 (effective 2006), which encourages public service units to finance facility upgrades and increase staff wages through the development of non-government sources of revenue, adopting a "business model of management" in order to "mobilize resources from society" (GOVN Decree 43, 2006). Given this trend, the privatization of health services has occurred largely within the confines of the public service providers.

At the CHCs, fees were collected often just for medications, if they were not covered by NTPs. In 1994, the government revised the user-fee policy to exempt the extreme poor from PHC service fees. Program 135 was introduced in 1998 throughout the whole country, enabling all residents of disadvantaged communes to access health care free of charge. In 1999, the government launched a nationwide program that purchased health insurance cards for the 4 million poorest citizens. In 2001, the GOVN started the "Strategy for the Protection and Care of People's Health, 2001-2010." The major objective was to achieve a situation in which everyone could enjoy PHC services and "equity in the access to and use of health care services, particularly medical examination and treatment services" at all medical levels (commune, district, provincial and national). The strategy also emphasized a plan to scale up initiatives in the area of preventative care, environmental hygiene, and mother-to-child care, as well as simultaneously decreasing the curative health sector. Decision 139 was issued in 2002 to establish in each province a "Health Care Fund for the Poor," for financing health care expenses for the poor, residents of disadvantaged communes under Program 135, and ethnic minority residents in 10 northern and central highland mountainous provinces. A parallel program was subsequently launched that provides free health care for all children under six years of age, irrespective of their household economic status. Finally, in 2014, the GOVN passed the compulsory health insurance law, mandating health insurance for all.

From Research and Literature

Vietnam has made strides toward universal health coverage and expansion of financial protection for the poor, children, and the elderly through the 2009 Social Health Insurance Law. Ostensibly, this law integrated pooling mechanisms among separate pools of beneficiaries, and nearly fully enrolled the poor into coverage. In practice, however, major challenges remain. First, out-of-pocket spending remains quite high, at over 50%, though it is down from previous levels, near 70%. Second, the benefits package is not based on clear technical, cost effectiveness, or affordability concerns, and is often set to cover new technology or medications without a clear basis in rational planning (Somanathan 2013). Third, the social health insurance system remains functionally fragmented despite aspiration toward integration, translating into separate pools of insurance that are highly fragmented and inequitable (Somanathan 2013). For example, the poor are compulsorily enrolled, but their pool is not merged with the formal employed sector pool or the pensioner pool. Regional pools are also kept separate, exacerbating regional disparities in income and health benefits. Insurance pools work best when blended across disparate groups, with healthier and wealthier patients subsidizing poorer and sicker patients. Fourth, fragmentation in insurance pools also leads to fragmentation in capitation rates to providers (Somanathan 2013). Currently, capitation rates to a given provider in a particular region are based on historic utilization rates of those services. Because the poor have tended to have lower utilization due to high out-of-pocket spending, as well as a perception of public PHC facilities as being low quality, historic service utilization is low relative to need. These low rates exacerbate a negative cycle of inadequate reimbursement to the very facilities and providers who are most needed by the poor, while increasing already high rates of capitated reimbursement to providers in higher utilized, often secondary or hospital care in urban areas.

The mix of provider payment systems in use in Vietnam, as well as payment rates, strongly favor provincial hospitals, encouraging patients to bypass the CHCs since they cannot provide comprehensive services (Minh, 2014). A national fee schedule has been created by the MOH and adapted and approved by local provincial departments of health (Minh, 2014). The first version of capitation payments was piloted at CHCs in 2004, and by 2009, it was expanded to, at least theoretically, cover district hospitals for both in-patient and out-patient care. Even with the different types of provider payment mechanisms available, CHCs are mainly still given a fixed budget by district health centers or district hospitals, with the minority able to receive fee-for-service payments directly from patients. This current system does not give priority to the PHC system (Minh, 2014), nor does it allow for financial autonomy by CHCs to

motivate them to improve quality of care, expand access to services, be responsive to patient and community needs, and use their facilities and resources more effectively (Minh, 2014).

In terms of actual costs for services at the CHCs, limited data exist. Research by Minh et al. (Global Public Health, 2014) has shown the cost of an outpatient visit in mountainous, rural, and urban CHCs was VND 49,521 (US$2.40), VND 41,375 (US$2.01) and VND 39,794 (US$1.93), respectively. Personnel costs accounted for the highest share of total costs, followed by medication. The share of operating costs was minimal. Surprisingly, the authors found a high level of variation of costs for CHC services between rural and urban, and between delta regions and mountainous regions, with rural mountainous regions often having the highest cost for CHC services, further contributing to health access and equity for poor and disadvantaged populations.

Information & Research

CHCs are required to report NTPs to district preventative health centers; this information is subsequently reported to the provincial department of health and then to the national institutes responsible for the programs. Each program has its own reporting template, either in the form of physical copies or on MSExcel spreadsheets. Information is sent up vertically through the system; however, feedback mechanisms are unclear.

From Research and Literature

Of all the CHCs assessed by Duong et al., none conducted research activities or used data to drive quality improvement (QI). Even at the district and provincial levels, minimal research activities are carried out. Formal evaluation and assessments of NTPs or other government programs is also minimal. There is limited information in the literature on research activities or QI carried out by CHC personnel.

Medical Products & Technologies

The MOH has issued a list of essential medications and supplies required for all CHCs to meet national standards. These include basic medications such a first line antibiotics, pain medications, and anti-pyretics, along with emergency medications such as epinephrine, morphine, and analgesics. Basic medical equipment required include a blood pressure cuff, scales, IV and suture kits, normal delivery equipment, and oxygen tanks. CHCs are to have a computer and “basic” IT functions. No specifics are detailed or mandated describing what constitutes “basic” IT functions.

From Research and Literature

There is currently no single health IT system that links all four levels of reporting. Each NTP has its own reporting structures and templates. Even though most CHCs have computers and internet capability (consisting of land connection or 3G in remote areas), reporting is still mostly done in handwritten notebooks and transferred by hand to the district health facility. Similarly, regarding medical products, each CHC and district health center is equipped with medical products as regulated by MOH decision 3447/QĐ-BYT dated 22/9/2011 and the list of essential medications and supplies. CHCs are not in charge of their own procurement, but instead rely on district health centers for procurement needs. A handful of CHCs evaluated by Duong et al made their own investments in technologies such as ultrasound machines, dental chairs/equipment, and stocked additional medications not on the essential medications list. Utlization of the machines and medications was a way for CHCs to charge on a fee-for-service basis and generate their own income.

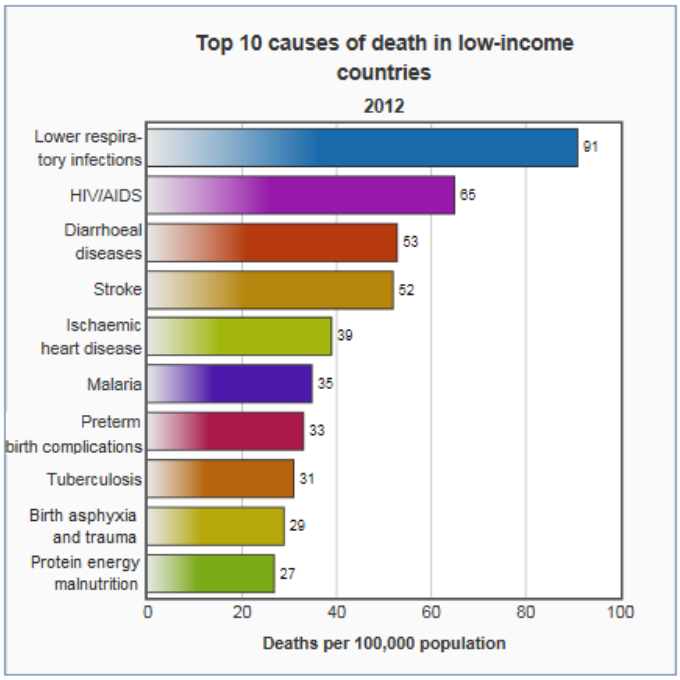
Primary Health Care in Low- and Middle-Income Countries

Primary health care in low- and middle-income countries continues to evolve through changes in strategy, policy, priorities, investment, demography, and epidemiology (Alma Ata, 1978; World Summit for Children, 1990; World Development Report 1993, Sachs Commission on Macroeconomics and Health, 2001, United Nations, 2014).

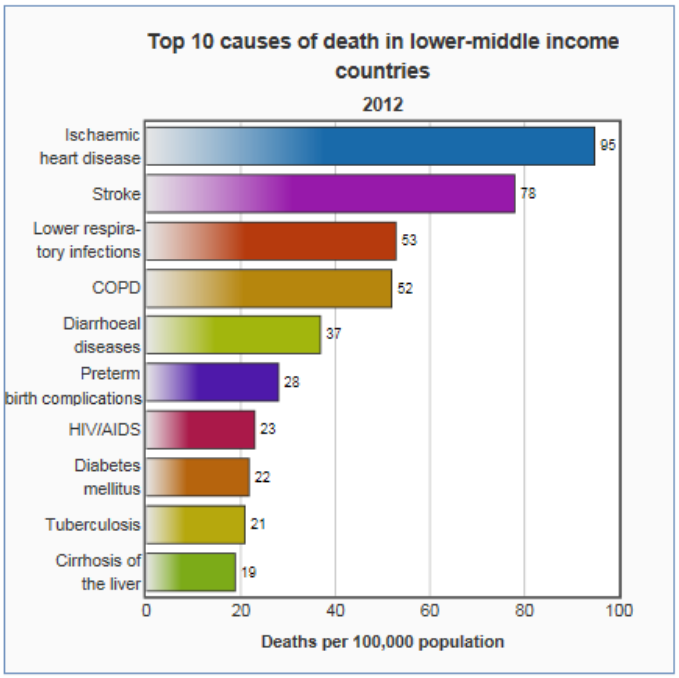
Epidemiological and demographic transitions confront the effective delivery of PHC in low- and middle-income countries. Figure 4 below demonstrates that countries increasingly struggle with the double burden of disease - infections, malnutrition, and reproductive health problems overlap with NCDs, mental disorders, and injuries (Lopez et al., 2006; Mathers and Loncar, 2006; Boutayeb, 2006; Remaise, 2012). The epidemiological transition demands a change in the health care delivery model to accommodate communicable and non-communicable disease as well as acute and chronic care. Management of chronic disease is different from acute care, relying on several features: case finding for assessment of risk factors, detection of early disease, and identification of high risk status; a combination of pharmacological and psychosocial interventions; and long-term follow-up with regular monitoring and promotion of adherence to treatment (Beaglehole et al., 2008; Vasan, 2013, Vasan, 2014). The health risks associated with globalization, including pandemics, the trade in harmful products such as tobacco and other drugs, climate change, and the dissemination of harmful lifestyles all represent additional burdens of morbidity and mortality (Frenk, 2009).

Figure 4: The 10 Leading Causes of Death by Country Income Group (WHO, 2012).

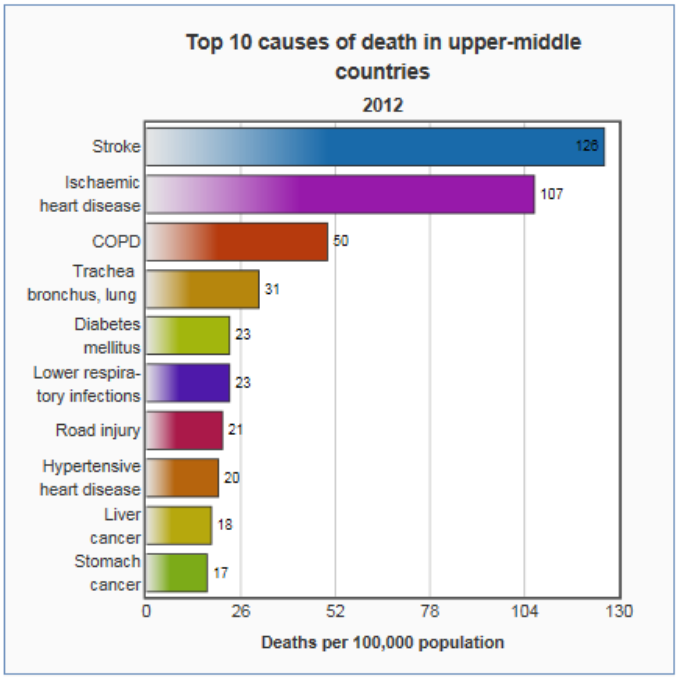
Low income



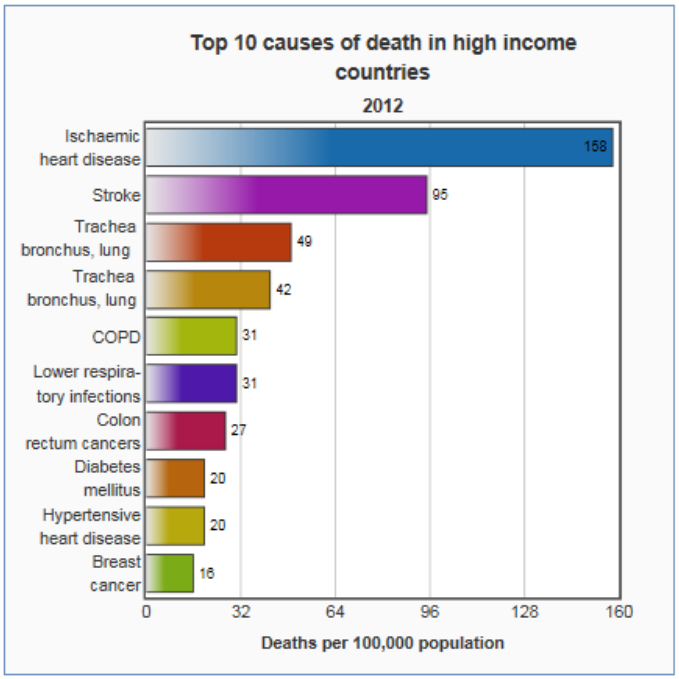
Lower-middle income



Upper-middle income



High income



The demographic trend toward an older population will challenge PHC systems in LMICs as they do in high income countries. Further, as demographics change and countries expand their economies, citizens develop higher expectations for systems of care that can be responsive to their increasing and chronic needs, especially in the setting of technological advances in medicine. An increasing proportion of the population in low- and middle-income will be 60 years or older (Chatterji 2014). The characteristics of this aging population, and the response to the diversity of health needs, are complex. Low- and middle-income countries currently have little valid data on older person morbidity, often characterized by lifestyle risk factors and chronic diseases (Chatterji, 2014). Few low- and middle-income countries have established coordinated and continuous care to address the unique needs of older people (Beard, 2014). Improved systems are needed to provide chronic management for non-communicable diseases such as heart disease, diabetes, cancer, and stroke. Older people are likely to have multiple, concurrent, and inter-connected problems which often lead to a loss of function, frailty, impaired cognition, incontinence, gait problems, and imbalance (Beard 2014; Lee, 2009). Meanwhile, as these countries go through the epidemiological transition imprecisely, large communicable disease needs remain unmet.

The past three decades provide examples for comparison of comprehensive (horizontal) and selective (vertical) PHC, examples of what worked well and what did not, and a suggestion for the main components of essential PHC services (Lawn, 2008). PHC now emphasizes a focus on integration (Lawn, 2008). Debates over selective (vertical) versus comprehensive (horizontal) delivery have shifted toward combining the strengths of both approaches in a “diagonal” health system towards integrated delivery in the continuum of care (Walsh et al., 1979; Horton, 2004; Rohde et al., 2008; Sepulveda et al., 2006; Frenk, 2009). Most evidence to date suggests that selective primary care alone cannot meet the needs even of low-income countries stuck in pre-epidemiological transition states, let alone countries with double burdens of disease.

Debates over community versus facility-based health care, particularly around childbirth, now consider the importance of integrated health systems, health system building, and human resource investment (Lawn, 2006; WHO, 2005; Kerber et al., 2007; Vasan, 2013; Vasan, 2014). As the emphasis shifts back to comprehensive, integrated services, the complexity of tasks, associated logistics, and managerial support required is ever increasing. Integration of common management functions for all programs — e.g. leadership, financing, essential drugs, transport, supervision, and information — is a crucial first step in providing comprehensive care. However, integration and coordination within health systems remains

an important challenge with limited empirical evidence of what works (Briggs and Garner, 2006; Bhutta et al., 2008).

Achieving effective coverage of integrated PHC services requires consistent political and financial commitment, focused implementation based on local epidemiology, use of data at the district level for monitoring, evaluation, improvement, and priority setting, and effective engagement with communities and other non-health sectors (Lawn, 2008).

Technical agreement has advanced around what to do to improve survival in the poorest countries (Bhutta et al., 2008), but evidence for specific health system strengthening techniques remains sparse (Lawn, 2008; Lewin, 2008). Many systems have not worked adequately or at all due to poorly developed management systems, unaccountable and unresponsive staff, chronic underfunding, and absence of attention and investment (Rohde, 2008; Ekman et al., 2008). Strengthening health systems is a key challenge to improve delivery of cost-effective interventions in PHC. Evidence from systematic reviews points toward the effects of governance, financial and delivery arrangements, and implementation strategies to improve interventions in PHC in low- and middle-income countries (Lewin, 2008). However, evidence in favor of other specific health systems strengthening tactics remains sparse, with various priority areas outlined (Lewin, 2008).

There are several lessons from overachieving PHC systems in low- and middle-income countries. High achieving countries — both those that scaled selective PHC services such as immunization and family planning, as well as those that have achieved more comprehensive PHC strategies such as high coverage of skilled attendance at birth — demonstrate the need for a nationally agreed-upon set of PHCfunctions that all stakeholders are committed to implementing, attention to district management systems, and consistent investment in PHC extension workers linked to the health system (Rohde, 2008). Other lessons from overachieving countries include: accountable leadership, consistent national policy progress; building coverage of care and comprehensive health systems; community and family empowerment, involving community both in health promotion and demand for care, with community health workers for provision of curative care when appropriate; district-level focus, with data to set priorities for funding at district level and track results; identifying and redressing disparities; and equity priority, removing financial barriers for the poorest families, and protection against unaffordable health costs (Rohde, 2008).

Leadership/Governance: With some notable exceptions (e.g. Cuba and China), most LMICs have decentralized their health systems (Zakus and Bhattacharyya, 2007), giving local or regional governance bodies a greater degree of freedom in designing systems to fit local circumstances and needs. One governance challenge for many LMIC health systems is the lack of extensive strategic planning and decision-making to determine the country's health priorities (McGregor, 2014). While some have questioned whether comparison of health systems is even possible (McKee and Figueras, 1997; McKee 2001), LMICs may benefit from development of comparative guidance that is timely and usable by a broad range of health system stakeholders (Bosch-Capblanch et al., 2011; Lavis et al., 2012) health system monitoring and accountability (Balabanova et al., 2010; McClellan et al., 2014), greater focus on the role of national health systems and redistributive health policies in promoting safe delivery and reduction in under-5 mortality (Kruk et al., 2012; Kruk and Prescott, 2011), and health system integration (Shigayeva et al., 2010; Shigayeva and Coker, 2014; Gruen et al., 2008).

Health Care Financing: There is limited evidence regarding the utility of community based insurance (Lagarde et al., 2006), the impact of user fees (Lagarde et al., 2006), pay-for-performance (Petersen et al., 2006), working with for-profit providers (Liu et al., 2008; Patouillard et al., 2007), contracting out health services (Lagarde et al., 2006), user payments for drugs (Austvoll-Dahlgren et al., 2008), and conditional cash transfers to households (Lagarde et al., 2007; Gilmour et al., 2013; Rasella et al., 2013; Priebe et al., 2013) in LMICs. In sum, the evidence suggests that expansion toward universal health insurance, while costly, can drive health gains in the population. User fees have been shown to reduce the likelihood of poor households having access to necessary PHC services, and in some countries, conditional cash transfers appear to improve access to quality services.

Health Workforce: LMICs continue to struggle with emigration of licensed health professionals to higher income countries (World Health Report, 2006; Penaloza et al., 2011). LMICs have tried intervening to stem the outbound migration of health professionals with financial incentives, career development interventions, continuing education interventions and altering the available resources to incentivize health professionals to stay in the LMIC (Penaloza et al., 2011). Unfortunately, there is limited data or evidence regarding the effectiveness of these strategies. Such outbound migration from LMICs further constricts their already limited supply of health workers, and we can expect this to negatively impact clinical performance and health outcomes. However, LMICs have developed various roles for informal

health providers with mixed health outcomes (Farzadfar 2012; Glenton et al., 2011; Lewin, 2010; Sudhinaraset, 2013; Berendes et al., 2011; Basu et al., 2012). LMICs may benefit from a focus on managerial supervision of health care workers (Bosch-Capblanch et al., 2011) and from community based strategies for mental health care (Chatterjee et al., 2014; Kakuma et al., 2011).

Medical Products/Technologies: LMICs continue to struggle with health information technologies. Health information technology (HIT) has evolved differently in every country, LMIC or otherwise. Higher income countries continue to struggle to build a HIT infrastructure that is at once user-friendly, affordable, and interoperable so that pharmacies, physician's offices, hospitals, and patients can share information to make the best health decisions for the patient (Fraser, 2005; Jha et al., 2008; Adler-Milstein et al., 2014). LMICs have more limited resources, and none has successfully implemented a complete electronic medical record (EMR) system to scale. While WHO has acknowledged the potential of electronic health records (EHRs), and many agencies are funding e-health efforts, there has been a recent call for increased evaluation of e-health systems in developing countries, to ensure that these systems are safe, beneficial, and not a waste of valuable resources (Blaya et al., 2010).

Information/Research: A lack of reliable data on the health system's workforce, finances, facilities, performance, and outcomes may compromise LMICs' ability to make effective decisions (McGregor, 2014; Nolen et al., 2005). LMICs may look to the literature on evidence and information for policymaking with respect to health systems (Adam et al., 2012); interventions for maternal, child, and neonatal health (Bhutta et al., 2008); implications of health policy and practice regarding older people (Prince 2014; Beard and Bloom, 2014; Chatterji 2014), interventions in primary health care systems (Rohde, et al., 2008; Lewin et al., 2008), and confidence in research evidence (Lewin, 2012).

Service Delivery: LMICs have experienced varying degrees of success with maternal, newborn and child interventions (Bhutta et al., 2008; Chopra et al., 2012), adolescent and adult health (Vasan et al., 2013; Vasan et al., 2014), HIV and TB control programs (Coker et al., 2010), prevention and management of chronic diseases (Lambeek et al., 2010; Beaglehole et al., 2008; Di Cesare et al., 2013), and prevention and treatment of mental disorders (Patel et al., 2007).

While the existing literature has heretofore characterized several challenges related to delivering high-value PHC, there is a relative paucity of literature describing best practices or optimal systems designs.

Here, to provide further evidence to guide policy and planning in the Vietnam context, we briefly review evidence about PHC delivery from Thailand, the Philippines, and Cuba garnered through literature searches and key informant interviews.

Thailand

Thailand's Ministry of Public Health (MoPH) manages the health care system, which was a predominantly centralized system until a 1999 Act mandated that "the functions, facilities, budgets, and personnel of central ministries must be devolved to local authorities," and "local health facilities such as health centers and hospitals will be the responsibility of the local authorities" (Pagaiya & Noree, 2009). The Thai health delivery system is dominated by the public sector and health services are divided within a three-tier system made up of sub-district health centers, district hospitals and general/regional hospitals. To achieve universal health care, the MoPH directed all hospitals and health centers to establish primary care units (PCUs) or another community health center to manage and provide health services at the local level in an integrated manner (Pagaiya & Noree, 2009).

The Thai health system includes the following facilities (Pagaiya & Noree, 2009):

- 725 district hospitals covering 82.6% of all districts
- 95 general/regional hospitals covering all the provinces
- 9,765 sub-district health centers and 311 PCUs that cover all sub-districts.
- As of 2007, there were 16,800 private clinics and 429 private hospitals throughout the country, concentrated in urban areas.

Financing

The Thai health system is financed as follows: 66% tax-based financing from the central government; 4% from local government contributions; 18% from out-of-pocket spending. The Universal Coverage Scheme (UCS) was created in 2001/2002 (Hanvoravongchail, 2013). At the same time, the National Health Security Office (NHSO), an independent organization that reports to the National Health Security Board (NHSB) was also created. The NHSO is responsible for the registration of beneficiaries and service providers, and administering the funds and paying the claims according to NHSB regulations. The UCS has NHSO as its purchaser, which contracts with the health care providers to provide health services for its beneficiaries. The Ministry of Public Health and its network of hospitals are the main contractors of the NHSO. The NHSO annually estimates the cost of service provision, and uses a cost per beneficiary

(the capitation rate) to set the annual budget that is submitted for approval. The NHSO receives a UCS budget from the government based on the number of beneficiaries it covers and the capitation rate. The NHSO channels the funds to providers with capitation and diagnosis-related groups (DRGs) as the main payment methods.

Currently, Thai citizens have access to health insurance through one of three programs:

Civil Service Medical Benefit Scheme (CSMBS) (Antos, 2007): Established in 1980 to provide health care to government employees, their dependents (children, spouses, and parents), and government retirees. Health care providers are paid on a fee-for-service basis, which led to rapid increases in program spending, which in turn led the Ministry of Finance to impose cost containment measures, including limiting some benefits and initiating a shift to prospective payment using diagnosis-related groups (DRGs). The program is financed through general tax revenue with no premiums from the beneficiaries.

Social Security Scheme (SSS) (Antos, 2007): Established in 1990. A compulsory insurance program for employees of private businesses. The SSS pays a fixed capitation rate per employee, but additional payments may be made for certain high-cost services and to account for the additional health care needs of patients with chronic conditions. Financed equally by employers, employees, and the government, each of which contribute 1.5 percent of taxable wages. Beneficiaries have copayments for some services.

Universal Coverage Scheme (UCS) (Hanvoravongchail, 2013): Universal health coverage was established in 2002, and roughly 99% of Thais are insured. This universal coverage scheme was called the “30-Baht for All Diseases Policy” in because it established a Universal Coverage Scheme (UCS) to cover about 45 million Thais, who were not already covered by the Civil Servant Medical Benefit Scheme and the Social Security Scheme, by requiring only a 30-baht (~ US$1) copayment per visit. In 2007, Thailand abolished the co-payment and the Universal Care System (UCS) became free for customers. In 2012, the policy was reverted again and returned to the 30-baht setup.

Health Workforce

The Thai health reform efforts to increase access to care and implement universal insurance coverage led to more citizens using health care services, but a shortage of available health workers to meet this growing demand for care (Antos, 2007; Pagaiya & Noree, 2009). Given these shortages in the health workforce, the Thai government established a health workforce planning and production effort, which has been in place for over two decades. There is a workforce production plan for both the public and private sector for doctors, nurses, and primary care workers. These efforts improved health worker to patient ratios, but it is not clear whether this can be sustained.

In Thailand, the local health system of district hospitals and sub-district health centers are staffed by nurses and primary care workers (Antos, 2007). Primary care workers are recruited locally, trained for two years at local training institutes, and work in their home provinces. They perform health prevention and promotion functions as well as basic medical care at the health center under the jurisdiction of the medical chief of the provincial health office. As in many other countries, doctors are the clinical experts. The PCUs provide the majority of the primary care services (92.66 percent).

Service Delivery

Three to five employees work at each PCU, including nurses, health workers, and public health professionals. There are no doctors in the PCUs. The rest of primary care is delivered through hospitals.

The primary health system also has strong community involvement. Monks, temples, other community organizations and leaders constitute a network of 800,000 trained community health professionals. Volunteers are not paid but are trained in basic medical care, and receive incentives such as free medical care for their families. Once trained, they can work as health communicators and take care of their own families and their neighbors. "Volunteer participation has become such a mainstay of community involvement in Thailand that it has been incorporated into development strategies of both governmental and nongovernmental organizations. It was incorporated into 2001 national health legislation and into the recent reform of the country's national health system" (Treerutkuarkul, 2008).

Information

The MoPH has a monitoring and evaluation system and uses key performance indicators to assess the progress and achievements made toward its health policy and strategy goals (Bureau of Policy and Strategy, 2013). MoPH also collects routine reports on expenses, common diseases, revenues, and other

issues, but the Ministry does not require providers to send these reports so there is no uniform collection (Aljunid et al., 2012). There is little to no sharing of administrative databases across providers due to the fragmented insurance and provider system (Treerutkuarkul, 2008). The reports the MoPH collects are mainly for the monitoring of performance and administration. Each insurer has health care utilization data, but it is primarily used for financial purposes, and there are no connections between these databases (Treerutkuarkul, 2008).

There are mixed IT capabilities across PCUs, and both paper and computerized records are kept on individual and family health and insurance (Kijsanayotin, 2009). Almost all (99.8 percent) of PCUs have a computer, and half have internet access. It is estimated that PCU staff spend 40% of their work hours on data management. The information collected is used mainly for administrative purposes (payment, measurement and evaluation, etc.), but also for maintaining complete medical records and reports (Kijsanayotin, 2009).

All public provincial and large private hospitals use some form of IT internally to "manage drug dispensing, receipts, outpatient card searching, and appointment booking" (Thavichachart & Kasitipradith). They often have software programs designed specifically for their use. The problem with this is that these unique systems make sharing electronic information impossible. Hospitals share information externally (with insurers, for example) through hard copies. The Thai health system is working towards an EMR exchange network to connect records across providers, but it remains a work in progress.

Philippines

The Philippines' decentralized health system is governed by the Department of Health (DOH) at the national level, while local government units (LGUs) and the private sector provide local health services (Thukral, 2012). LGUs are grouped into 17 administrative regions; they are required to form and enforce policies related to health matters in accordance with the national policies set by the DOH. "Provincial governments are mandated to provide secondary hospital care, while city and municipal administrations are charged with providing primary care, including maternal and child care, nutrition services, and direct service functions" (Romualdez et al., 2011). LGUs also manage rural health units (RHUs) and Barangay Health Stations (BHS). RHUs were created for every municipality in the country in the 1950s to improve access to health care in the difficult-to-reach areas of the country. "[BHS]s are staffed by barangay

health workers, volunteer community health workers, and midwives, while the RHUs are staffed by doctors, nurses, midwives, medical technologists, sanitary inspectors, nutritionists and volunteer health workers" (Romualdez et al., 2011).

Financing

In the Philippines, there are three major payer groups for health care (Department of Health): (1) national and local governments, (2) social health insurance, and (3) private sources. Government accounted for 29-41% of total health expenditures in the period 1995-2005. Health as a share of total government spending in the same period was about 5.9%, lower than in Thailand (10%), only slightly higher than Indonesia (4.1%) and comparable to Viet Nam (6.3%). In 2010, the new government began a push to achieve universal coverage, and especially focused on increasing the number of poor families enrolled in PhilHealth (the social health insurance program). As of April 2011, 4.4 million new families had enrolled – a 100% increase.

Patients tend to shoulder significant out-of-pocket (OOP) costs in the Philippines, and OOP payments account for almost half (48%) of total health expenditures (Department of Health). Most patients pay OOP for prescriptions. Drug prices were unregulated until recently. In 2009, the DOH imposed maximum retail drug prices (MRDPs) on selected drugs, which resulted in a 50% reduction in prices.

Doctors in private practice generally charge fee-for-service. Doctors and other health care professionals working in the public sector are paid salaries. Physician fees are not regulated and physicians are allowed to balance bill their patients. Services provided by RHUs are free of charge to the patient, and PhilHealth pays providers by case. There are user fees for inpatient services in both public and private hospitals, and there is no regulation of those fees.

Health Workforce

There is significant "brain drain" among Filipino health care workers; many health professionals emigrate overseas to pursue their health careers either because of economic need, a lack of available positions in the Philippines, appealing professional and career development opportunities abroad, and/or opportunities for higher living standards (Lorenzo, 2005; Ronquillo et al., 2005). A continuing issue is the availability of health professionals in rural or remote areas. There are more health workers in cities and other urban areas, and only midwives and village health workers were found in substantial

numbers in remote rural areas (Ronquillo et al., 2005). As of 2010, estimates reported 12 doctors and 61 nurses and/or midwives per 10,000 people (Dawson et al., 2011). There is no current health workforce information system, and no count of actual health workers.

Information

The general consensus about the Philippines' health data systems is that both the local and national data systems are not well-integrated, and that at times these systems are duplicative, and full of gaps. There are also no health IT standards or governance, which would hinder any attempts to make the various data systems inter-operational, as they all look different. Furthermore, the disease surveillance systems were established vertically, and so there are silos of information and data, which have produced redundancies and duplications (Romualdez et al., 2011).

The Philippine Health Information Network (PHIN) is led by the DOH and is designed to implement the Philippine Health Information System (PHIS). The PHIN and PHIS clearly document the health information strategy at the national and regional levels but the specifics and operational aspects at the field level (barangay), as well as among individual patients, are vague at best. The Community Health Information Tracking System (CHITS) was established by the University of the Philippines-Manila. It uses open-source software to provide a free electronic medical records system for rural health units and helps to partially address an information gap in rural health information systems. CHITS is now operating in several health centers.

Service Delivery

BHSs and RHUs serve as patients´ first point of contact for primary care. Inpatient care is provided by public and private health care facilities categorized as secondary and tertiary level hospitals. According to one WHO report, there are "Women's Health and Safe Motherhood Teams" operating in every community-level BHS. These teams are composed of a RHU doctor who supervises the team, a RHU midwife who leads the team, at least one baranguay health worker, and one traditional birth attendant. These teams are responsible for tracking pregnancies, providing antenatal care and birth planning, providing delivery and postnatal care, education and counselling, timely referral, outreach services (including sexually transmitted infection treatment, adolescent and youth services), family planning, and community education (Figure 5) (WHO and Department of Health, Philippines, 2012).

Figure 5: Classification and characteristics of health facilities and services in the Philippines, 2012 (WHO and Department of Health, Phillippines, 2012).

Facility	Number	Characteristics
Hospitals		
General Hospitals	70	Most hospitals at all levels provide services for all kinds of illnesses, diseases, injuries or deformities. It has emergency and outpatient services primary care services, family medicine, pediatrics, internal medicine, obstetrics-gynecology, surgery including diagnostic and laboratory services, imaging facility and pharmacy.
Level 1 General Hospitals		Level 1 general hospitals also include: isolation facilities, maternity, dental clinics, 1st level x-ray, secondary clinical laboratory with consulting pathologist, blood station, and pharmacy.
Level 2 General Hospitals		Level 2 hospitals include level 1 services and departmentalized clinical services, respiratory units, ICU, NICU and HRPU, high risk pregnancy unit, tertiary clinical laboratory, and 2nd level x-ray
Level 3 General Hospitals		Level 3 hospitals include level 2 services and teaching/training, physical medicine and rehabilitation, ambulatory surgery, dialysis, tertiary laboratory, blood bank, 3rd level x-ray
DOH hospitals		A tertiary hospital which specializes in the treatment of patients suffering from a particular condition requiring a range of treatment (e.g. Phil. Orthopaedic Centre, National Centre for Mental Health); patients suffering from disease of a particular organ or groups of organ (e.g. Lung Centre of the Philippines, Phil. Heart Centre); or patients belonging to a particular group such as children, women, or elderly (National Children's Hospital, Dr. Jose Fabella Memorial Medical Centre). Tertiary care facilities located all over the country serving as referral hospitals in the different regions of the country and providing anticipated range of tertiary services.
a. Specialty hospitals	16	
b. Other DOH hospitals	54	
Other health facilities		
Category A: Primary care facility		First contact facility offering basic services including emergency and normal delivery services. Includes: in-patient short-stay facilities, medical out-patients, overseas workers and seafarers facilities, and dental clinics.
Category B: Custodial care facility		Provides long-term care for those with chronic or mental illness, substance/drug abuse treatment and rehabilitation, sanatorium/leprosarium, and nursing home facilities.
Category C: Diagnostic / Therapeutic facility		Laboratory facilities, radiology including x-ray, and nuclear medicine facilities
Category D: Specialized out-patient facility		Including for dialysis, ambulatory surgery, in-vitro fertilization, stem cell services, oncology and chemotherapy, radiation oncology, and physical medicine and rehabilitation.
		PNAC is a unit within the DOH responsible for promoting HIV/AIDs program and provides secretariat support to HIV/AIDs prevention and control, Diabetes Foundation, Heart Association and Philippine Coalition for the Prevention of NCDs are organizations with membership from the public and private sectors.

Cuba

Cuba has a socialized health system. Almost all facilities are government owned and operated, and almost all medical professionals are government employees. At the highest level, the Ministry of Public Health (Spanish acronym: MINSAP) administers and oversees the functioning of the entire system, as well as setting policies, procedures, and guidelines. It administers 5 national hospitals, 12 institutes, 20 medical and pharmaceutical institutes, 4 factories, and 12 health care centers (Reed, 2008). The provincial and municipal administrative governments are responsible for local-level health institutions, which include: 279 local hospitals, 436 polyclinics, 227 maternity homes, and 197 homes for the elderly (Reed, 2008) And while policies and procedures are established centrally, there is local flexibility to

respond to particular health circumstances in each geographic area served by community polyclinics and their family medicine teams (Keck & Reed, 2012).

Further down the chain of command, the supervision of family physician offices (the lowest tier of health service delivery) is centered in the polyclinics. Each polyclinic supports 20-40 family physician offices. To do so, the polyclinics establish "Basic Work Groups" composed of a leader from the polyclinic, a nursing supervisor, an internist, a pediatrician, an obstetrician-gynecologist, a psychologist, and, often, a social worker. Together, these Basic Work Groups are responsible for a specified number of family physician offices, and they review that office's neighborhood health analysis and health status, as well as doctor and nurse performance evaluation (Keck & Reed, 2012).

Financing

The Cuban health care system is financed almost entirely by the government with some additional support in the form of international aid (Reed, 2008). There is universal coverage. Medical attention is free of charge on all levels and access to medical care is guaranteed by the Constitution (Keck & Reed, 2012). There is not an alternative to the government-sponsored health care. Doctors receive a salary from the government and this does not change – no fee-for-service or capitation. Because there is no alternative system, there are no market forces to encourage effectiveness or efficiency.

Health Workforce

In terms of medical training, in Cuba, medical school tuition is free, but medical school graduates are required to spend their first few years of practice in family medicine. After practicing family medicine, doctors can then choose to pursue a specialty (Keck & Reed; Reed, 2008).

As of 2009, Cuba's health workforce was estimated as follows: (Iniguez, 2013):

- 119 mid-level technicians per 10,000
- 86.5 nurses per 10,000
- 66.6 physicians per 10,000
- 74,880 active physicians
- 73% were specialists
- 45% trained in family medicine, 75% of whom completed residencies in this field
- 10.3 dentists per 10,000

Cuba has realized a relatively good distribution of health professionals across the country. This is due, in part, to "the Rural Medical Service" (RMS), which was established in 1960. It posted hundreds of newly graduated physician volunteers in remote areas as an early part of the efforts to distribute personnel and facilities across the country according to health needs (Keck & Reed, 2012).

Information

MINSAP collects all data and publishes some on its website. The main government agencies collecting health data include the Center for the Study of the Population and Development and the National Statistics Office (Reed, 2008). These agencies gather data from all levels of the health system, including the family medicine offices. The National Statistics Office is complemented by the Health Tendencies Analysis Unit (Spanish acronym: UATS). UATS uses a 3-pronged approach (Keck & Reed, 2012):

1. Action Alert System: various surveillance techniques provide early warning and response to population health hazards.
2. Strategic analysis of epidemiological data from the national, provincial, and municipal level to elucidate disease patterns and predict disease behaviors in order to develop and prioritize intervention strategies; and
3. An evaluation of health outcomes to determine the success of interventions.

The U.S. embargo on trade with Cuba means that the country often has trouble accessing and replacing medical technology equipment, which has forced physicians to be resourceful or innovative.

The reform efforts of the 1990s included a focus on reviving technology programs and research, but it is unclear whether this was implemented. The status of EMR implementation/utilization, telemedicine, or other HIT at the local level seems stalled. Clinically, medical records remain in paper chart form, which raises difficulties in coordinating care at different levels.

Service Delivery

Cuba's current health system (Figure 6) is a product of extensive health reform efforts initiated by MINSAP following economic crises in the early 1990s, which had led to supply shortages, deteriorations of health care facilities, dissatisfaction with health services, and a lack of health professional trainings. Reform efforts prioritized the following five areas: "reorientation of the health system toward primary

care; revitalization of hospital care; revival of cutting-edge technology programs and research institutes; development of the Natural and Traditional Medicine Program; and greater attention to emergency, dental and optical services" (Iniguez, 2013). In "reorienting the health system toward primary care" during the period of health reform, MINSAP decided to incorporate some secondary and tertiary-level health services into primary care. As a result, the local polyclinics began to offer higher level health services, such as rehabilitation, radiology, ultrasound, optometry, and emergency and trauma care, in addition to the more routine primary care services (Iniguez, 2013).

The polyclinics are the main source of health care - in 2010, polyclinics were the site of close to 90% of total outpatient visits and 65% of all emergency visits (Iniguez, 2013). In 2008, the polyclinics and primary care were altered again to adjust for rising caseloads. Polyclinics were reclassified into three types, "based on hours of operation and staffing, location and patient access to other health facilities" (Iniguez, 2013).

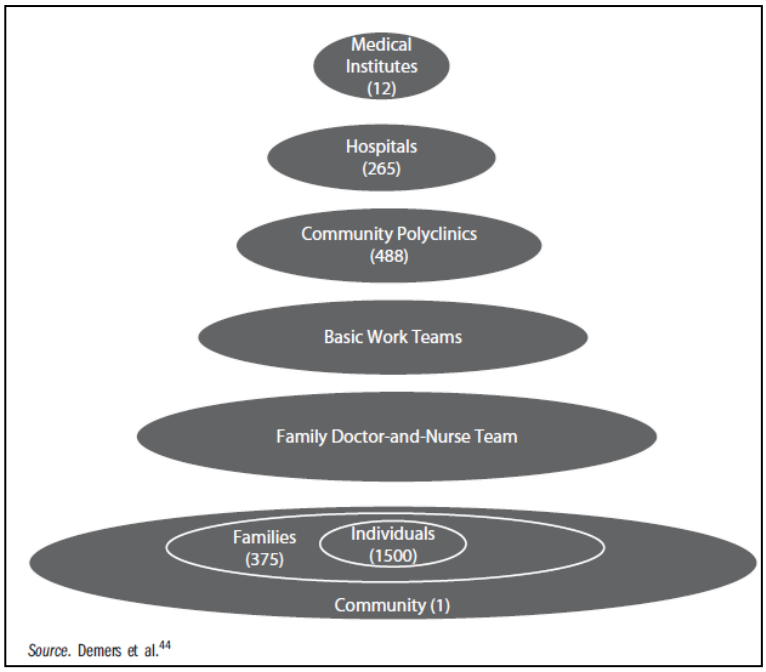
1. Type I offices: Open eight hours a day during the week, half a day on Saturdays, and with evening hours one day a week. Staffed by a multidisciplinary team that cares for an average of 2500 to 3000 people.
2. Type II: Operated eight hours a day by family nursing staff to serve the population, working under the supervision of an offsite physician.
3. Type III: Located in the most remote sites. A physician and nurse are available 24 hours a day.

Cuba also has maternity homes to provide pregnant women from remote areas with care and lodging close to hospitals (Iniguez, 2013). These homes provide antenatal care, health education around breastfeeding and child care, and a good diet. The number of pregnant women in maternity reached 52.8 per 100 live births by 2010.

Like the polyclinics, all patients are classified into four categories. They are categorized according to level of health risk, from I to IV – the higher the category number, the higher the patient risk and presumed health care needs (Campion & Morrissey, 2013). The community clinics report regularly to the district on how many patients they have in each risk category and on the number of patients with conditions such as diabetes or asthma (among others), their patients' immunization status, and pregnancies in their jurisdictions necessitating prenatal care (Campion & Morrissey, 2013). Every patient receives one home visit each year from their family doctor/nurse team, but those with chronic

conditions are seen at home a minimum of once per quarter (Keck & Reed, 2012). When necessary the local doctor and nurse teams can refer patients to a district polyclinic for special evaluation, but the ongoing treatment will likely be done in that community doctor and nurse team setting. These house calls are a time when the physicians will address problems with compliance or follow-up, and an opportunity to educate households on health issues. For example, "in an effort to control mosquito-borne infections such as dengue, the local health team goes into homes to conduct inspections and teach people about getting rid of standing water..." (Keck & Reed, 2012).

Figure 6: The Cuban Health Pyramid (Keck & Reed, 2012).



Consultorios are the local-level doctor/nurse teams located in every community that provide the basics of primary care. They are one step below the polyclinics. Each consultorio is responsible for the care of 100-200 households. These teams are also assisted by medical school interns, who are required to spend time delivering care in a community setting. The teams provide basic health care, annual home visits, ongoing treatment for specialty care/procedures provided elsewhere (e.g., surgery follow-up and wound checking), health education, and immunizations. They refer to the more resource-rich polyclinics when necessary. Physicians are fairly collaborative, calling other physicians or specialists as necessary.

Summary

In LMICs, there is a concern that vertical initiatives, in the absence of a strong, integrated PHC system, are not sustainable, can cause inefficiency, and often lead to fragmented and non-patient centered care. The literature indicates that most LMICs have decentralized their health systems, maintaining control of finance, governance, policy and standards at the central or national level, and delegating care delivery to the local level. This proves the case, to varying degrees, in Thailand, the Philippines, and Cuba. Another challenge prevalent in the case studies and in the literature is the instability and shortage of the PHC workforce. Thailand has addressed its current workforce challenges with a workforce production plan for health workers in the public and private sectors, recruiting and training locally. By comparison, Cuba's workforce needs seem less acute, due to staffing primary care clinics with inter-professionals, the implementation of the rural health service, and the national mandate that medical graduates spend their first few years practicing family medicine. Vietnam likely has the most in common with the three case studies in terms of the struggle most LMIC health systems have with strategic planning and decision making due to a lack of reliable data, which links to the challenges LMICS have with building and maintaining a reliable health IT infrastructure. Thailand and Cuba have monitoring and evaluation systems to assess health system data, but in terms of eHealth, the highlight is the Philippines' ability to address an information gap in rural health information systems with an open-source electronic medical record system.

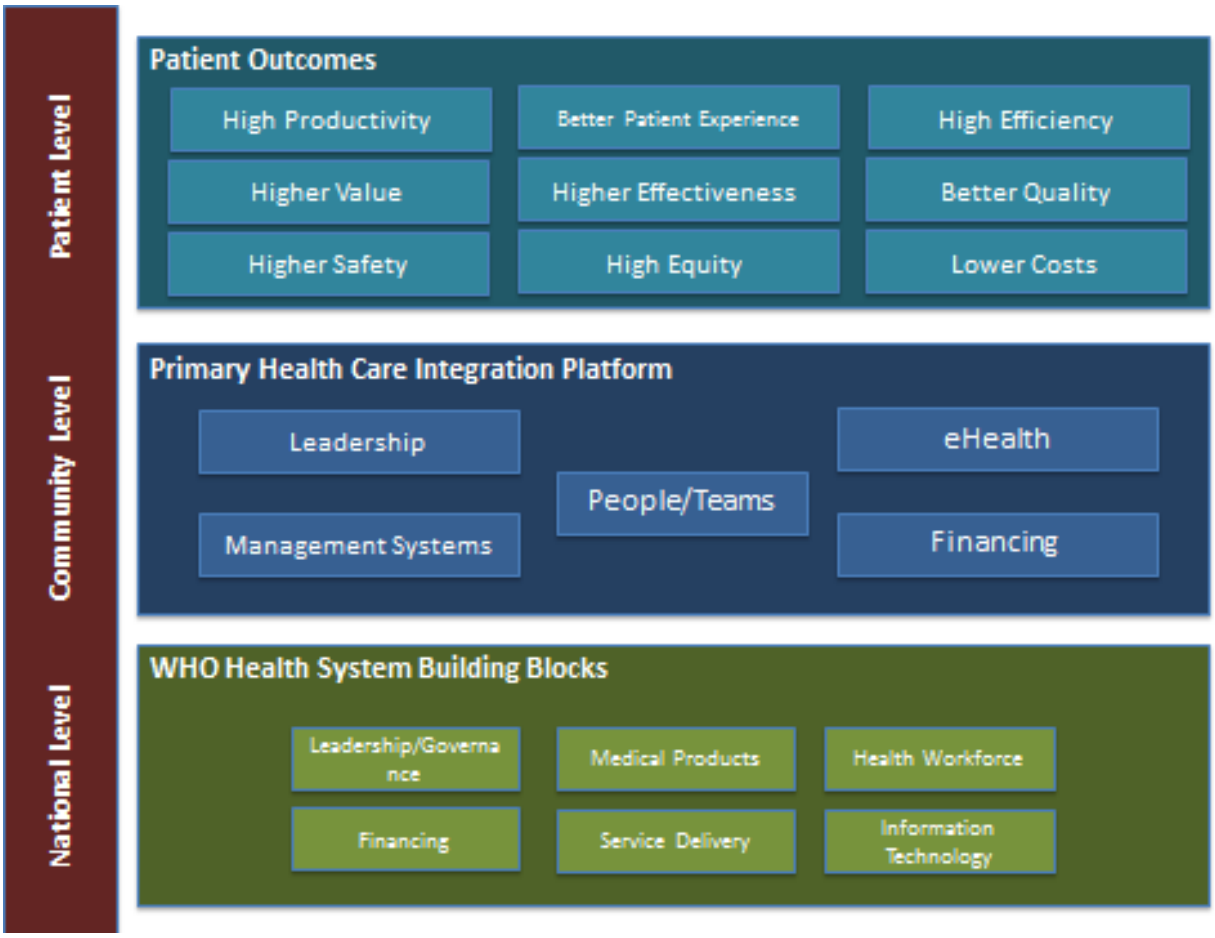
In light of these challenges, it is important to consider potential more comprehensive solutions. Although these LMICs offer important evidence for changing the primary care landscape, there is considerable opportunity to improve on the provision of comprehensive, responsive, high integrated PHC.

The Primary Health Care Integration Platform and Global Best Practices

The WHO Health Systems framework is a powerful conceptual tool for understanding health systems at the national and regional level. Our research group is engaged in a multi-year research program aimed at understanding optimal systems design and function for PHC systems. Based on a synthesis of 1) the best available peer-reviewed evidence from health care and management literature; 2) original, in-progress, mixed-methods case study research of high performing PHC systems around the world; and, 3) expert opinion, we have identified several focus areas within the WHO framework that may be particularly relevant to PHC.

There is a burgeoning understanding that PHC is optimally delivered by well-organized, effectively-managed teams of health care providers that include physicians, other allied health professionals, and often lay health workers, such as community health workers (Bodenheimer et al., 2002; Rowe et al., 2005; Victora et al., 2011; Witmer et al., 1995; WHO 2008a). Innovations in information technology and its application to health care, often referred to as "eHealth," can provide new infrastructure to help shift PHC and health systems from a paradigm that is reactive and based on visits to clinics and hospitals, to one that is proactive, population-oriented, and empowers individuals to make healthy lifestyle choices through home-, workplace-, and community-based services (Bates and Gawande, 2003; Nolen et al., 2005). We therefore refer to a "primary health care integration platform" as the synergistic activity of PHC enabled by well-designed eHealth systems. Based on a synthesis of existing literature, as well as an ongoing review of high-performing primary health care systems, we highlight five focus areas from within the WHO building blocks that we believe are foundational to a high functioning PHC platform. These are: Leadership, People/Teams, eHealth, Management Systems, and Financing (Figure 7).

Figure 7: A Primary Health Care Framework.



Here, we review key evidence related to the five focus areas:

Leadership

Evaluations of health systems and front-lines PHC transformation efforts consistently identify engaged and effective leadership as a critical success factor (Sugarman et al., 2014; Bitton et al., 2014; Bodenheimer et al., 2014; Chigudu et al., 2014) Engaged leadership means that when a systems reform or transformation is implemented, success requires that leaders from every level, including top-level executives and front-lines team leaders, must not only be informed of the reform, but also be prepared to actively support and take action to promote its implementation. Ensuring that leaders are engaged requires taking proactive steps during both program planning and implementation to solicit and include input from leaders that informs both program design and course corrections. Most decisions will involve compromise that does not completely serve any individual stakeholder's interests, but it is important to

have engaged in a "fair process" to get to the decision, and doing so will lead to much smoother and more successful implementation (Kim and Mauborgne, 2003).

Having engaged leaders is necessary but not sufficient to high-functioning PHC – there is also a need for effective leadership at all levels. Based on an extensive review of the literature on leadership in health care and other sectors, a well-rounded definition of a competency includes: a set of behavioral characteristics and practical skills that allow individuals to perform successfully in their professions; the ability of individuals to teach and apply these characteristics and skills in new conditions and environments; and characteristics and skills that are observable, actionable, and ultimately measurable (Table 1) (Sullivan and Atlas, 2014). Competencies for healthcare leadership generally fell into the following categories: intrapersonal (e.g., empathy, responsibility, resilience, and ethical integrity), interpersonal (e.g., communication skills, team building skills, and the ability to motivate to accomplish a goal), and technical (e.g., possession of specific scientific or business knowledge).

Table 2: Most Highly Cited Leadership Competencies in the Management and Health Care Literature (Atlas, 2014).

Management Literature	Health Care Literature
• Visionary/direction setting	• Resilience
• Management/execution skills	• Ethics/integrity
• Ability to be inspirational/intellectually stimulating	• Adaptability
• Charisma	• Communication Skills
• Confidence	• Professionalism
• Empathy	• Business skills and knowledge
• Ability to build useful relationships and networks	• Relationship management

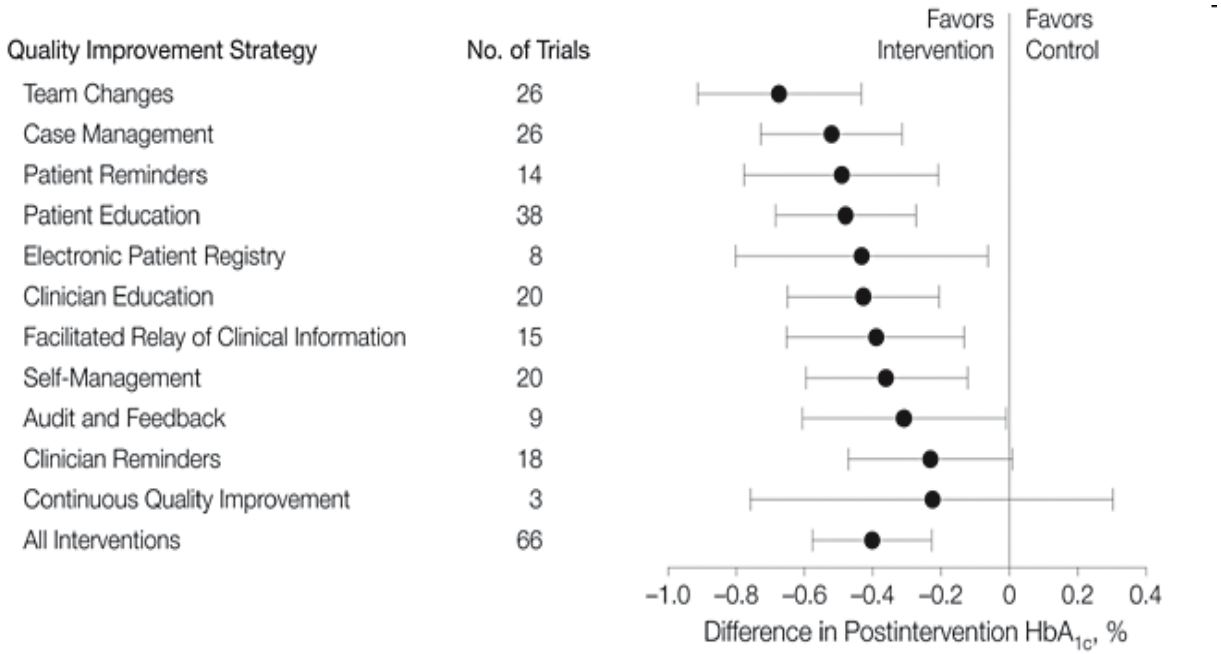
The notion that leaders are born and not made, or that there are certain personality traits that make individuals particularly effective leaders, has been debunked in the field of management for some time (Goleman et al., 2013; Kouzes and Posner, 2006). In the context of calls for sweeping reform in health care education towards a focus on health systems (Frenk et al., 2010), there is increasing recognition that leadership training needs to be a core part of the training of health care workers (NHS Leadership Academy, 2011; Bohmer, 2012; Blumenthal et al., 2012). Given the near complete absence of leadership training from health care education previously, this will require new programming throughout the pipeline from undergraduate education to continuing practitioner education. Thus, a successful PHC

reform effort will require a robust and comprehensive strategy for both engaging and building capacity for leadership at all levels of the health care delivery system.

Teams

Across health care, there is a growing understanding that creating high-functioning teams is essential to delivering safe, high-quality care (Gawande, 2011; Grumbach and Bodenheimer, 2004). In PHC, the shift towards a team-based model is supported by empirical findings that this approach leads to care that is higher quality, provides a better experience for patients, is more sustainable and joyful for providers, and incurs equal or lower total costs, in particular by reducing unnecessary hospitalizations. (Sinsky et al., 2013; Reid et al., 2010; Nutting et al., 2011; Grumbach and Bodenheimer, 2004; Dourado et al., 2012). Team-based care may be particularly important as nations develop from low- to higher-income status, and health care delivery systems evolve to meet the shifting burden of disease towards NCDs. For example, one meta-analysis of different quality improvement interventions in front-lines health centers to improve glycemic control in type 2 diabetes found that of all different strategies, those that involved a change in team structure or function led to the best outcomes (Figure 8) (Shojania et al., 2006).

Figure 8: Postintervention Differences in Serum HbA1c Values After Adjustment for Study Bias and Baseline HbA1c Values (Shojania et al., 2006).



Teams are defined as “a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable” (Katzenbach and Smith, 1996). However, common barriers to PHC teams include systems-level obstacles to communication and efficiency, hierarchies, lack of time and financial incentives, information and interest asymmetry, and the complexity of working with multiple people and backgrounds. Our recent review of management and health care literature revealed key lessons to address these barriers, such as re-envisioning goals, promoting shared decision making, communicating effectively and inter-professionally, clarifying roles within a team, learning from failure, providing organizational structures to support multidisciplinary teams, deconstructing practice hierarchy, promoting culture change, and incentivizing team-based care (Ibrahim et al., submitted for publication).

Relevant management strategies for team-based care include teaming, working with existing teams, and creating customer-based teams, thus offering insights on common, important PHC topics of time-sensitive and inter-professional care, workforce shortages and constraints, and patient-centered care (Ibrahim et al., submitted for publication). Teaming can be incorporated in a setting where needs and staff resources are constantly changing. This strategy combines project management tasks, such as scoping out the project or structuring the group, as well as team leadership to quickly address new challenges. When limited to working with existing team members, metrics objectively identify unproductive members while motivating and rewarding exceptional members with compensation, promotions, and career transitions. Additionally, at the core of patient-centered teams is studying patient life experiences and analyzing their motivations to best tailor their care. This can be done by collecting data on the patient’s home environment and daily routines, and interviewing patients, as well as their families and friends.

Early experience helping existing PHC clinics transform towards team-based models in high-income countries suggests that this can be a complex process necessitating cultural, organizational and technical changes and requiring careful, strategic planning and execution and “adaptive reserve” on the part of participating teams. (Nutting et al., 2009; Bitton et al., 2014; Bitton, 2012) Successful models of support for clinics to accomplish this transformation have typically involved “collaborative series” where teams from PHC clinics meet several times annually, both for didactics and to share innovations, best practices, and support for making difficult changes (Bitton et al., 2014). We could not find literature on the

application of such an approach in LMICs. With necessary caution about the challenge of adapting strategies to different contexts, this may represent an important opportunity for innovation.

eHealth

The early experience with eHealth, mostly in high-income countries, has been mixed. A review of the literature highlights several potential challenges to eHealth implementation, including increased workload and burnout for providers, without strong evidence for improvements in quality of ambulatory patient care (Kirigia et al., 2005; Pagliari, 2007). The main well-established benefits of eHealth to date have been in the inpatient setting, where electronic health records (EHRs) have been shown to reduce medication prescribing errors and drug-drug interactions (Kuperman et al., 2007; Ammenworth et al., 2008). Cutting edge, highly-integrated healthcare delivery systems had greatest success with EHRs when they implemented them in the context of a much broader, strategic re-design of their healthcare delivery system around primary care teams (Paulus et al., 2008). Yet, experts have pointed out that most "first generation" commercial EHRs in HICs were not designed to support team-based, population oriented approaches to healthcare delivery (Bates and Bitton, 2010).

Despite the relative lack of evidence for the efficacy of some eHealth interventions, most advanced health systems are investing heavily in continuing to build eHealth infrastructure. There is an enormous amount of ongoing innovation in this area, and there is little doubt that eHealth will serve as critical infrastructure for healthcare delivery around the world in the 21st century (Bitton et al, 2012). There is early evidence suggesting that well-designed eHealth technologies and strategies, particularly those aimed at empowering and engaging patients and better connecting them with their healthcare teams, may be an effective, higher-value approach to care (Moore et al., 2014; Delbanco et al., 2012; Delbanco et al., 2010). There are many hard-won lessons from early eHealth implementation in HICs that could be applied to help developing nations, and systems newly investing in this area and unencumbered by expensive "legacy" EHR systems, to "leap-frog" to much more nimble, affordable and functional technologies and systems. Key to doing so is understanding that eHealth interventions and systems work best when viewed as part of a "sociotechnical system" to be optimized in concert with the structure and function of the healthcare teams that work with them, as opposed to interventions onto themselves (Sittig and Singh, 2010). This virtuous interaction between well-led and well-managed PHC teams and eHealth systems we describe as the "PHC platform."

An approach to strategically investing in eHealth infrastructure in coordination with developing high functioning PHC teams would be well-advised to focus on building capacity to serve the traditional PHC functions of accessibility, comprehensiveness, coordination, longitudinality, integration and care delivered in the context of family and community (Bitton et al, 2012). "Empanelment," defined as the process of accurately identifying and tracking the entire population of individuals that a clinic or provider serves, is a foundational tactic for building high-functioning PHC teams and providing more proactive care (Sugarman et al., 2014). A necessary step in implementing an eHealth program is therefore to create unique health identifiers for all people, and then, ideally, some form of longitudinal, personalized health record. Innovative approaches to constructing such a record and creating meaningful online connections between families, PHC teams, and the rest of the medical neighborhood (hospital, specialists, and laboratories) has the potential to help health systems make dramatic progress towards serving these PHC functions and thereby improving population health and patient experience and delivering the best value to patients and communities.

Management Systems

In the case of the PHC platform, we see four inter-related sets of procedures and processes as particularly relevant. These are: 1) procedures that enable continuous improvements in quality and operational efficiency; 2) protocols for managing specific diseases in a way that optimizes the contribution of all members of the care team; 3) a framework for how the PHC teams relate to and integrate with community-based and other social services as well as the "medical neighborhood" of specialists, hospitals, labs, pharmacies, and community/social services; and, 4) an approach to performance measurement that creates accountability as well the potential for leaders to identify performance "outliers;" to learn from in the case of high-performers, and to remediate in the case of low-performers.

Frameworks for transforming primary care at the front-lines consider approaches to continuous quality improvement (QI) as foundational (Sugarman et al., 2014; Bodenheimer, 1999). Approaches to QI in healthcare build on decades of experience in other industries, developed from the seminal work of Deming and others (Deming, 1982; Langley et al., 2009). The most emblematic example of continuous QI, the Toyota Production System, involves a constant focus on delivering value to customers through continuous waste reduction and integrating up- and down-stream processes as part of a value chain (Spear, 2004; Bohmer and Ferlins, 2008). QI, perhaps most importantly, is an approach to work that

empowers all members of a team to understand the processes involved in their work together, to identify potential "defects" or opportunities for improvement in the processes as well as potential solutions (Ellner et al., 2014; Edmondson, 2004). As this approach has not been a part of traditional education for physicians and other healthcare providers, there will be need for novel training approaches throughout the pipeline, from undergraduate to continuing professional education.

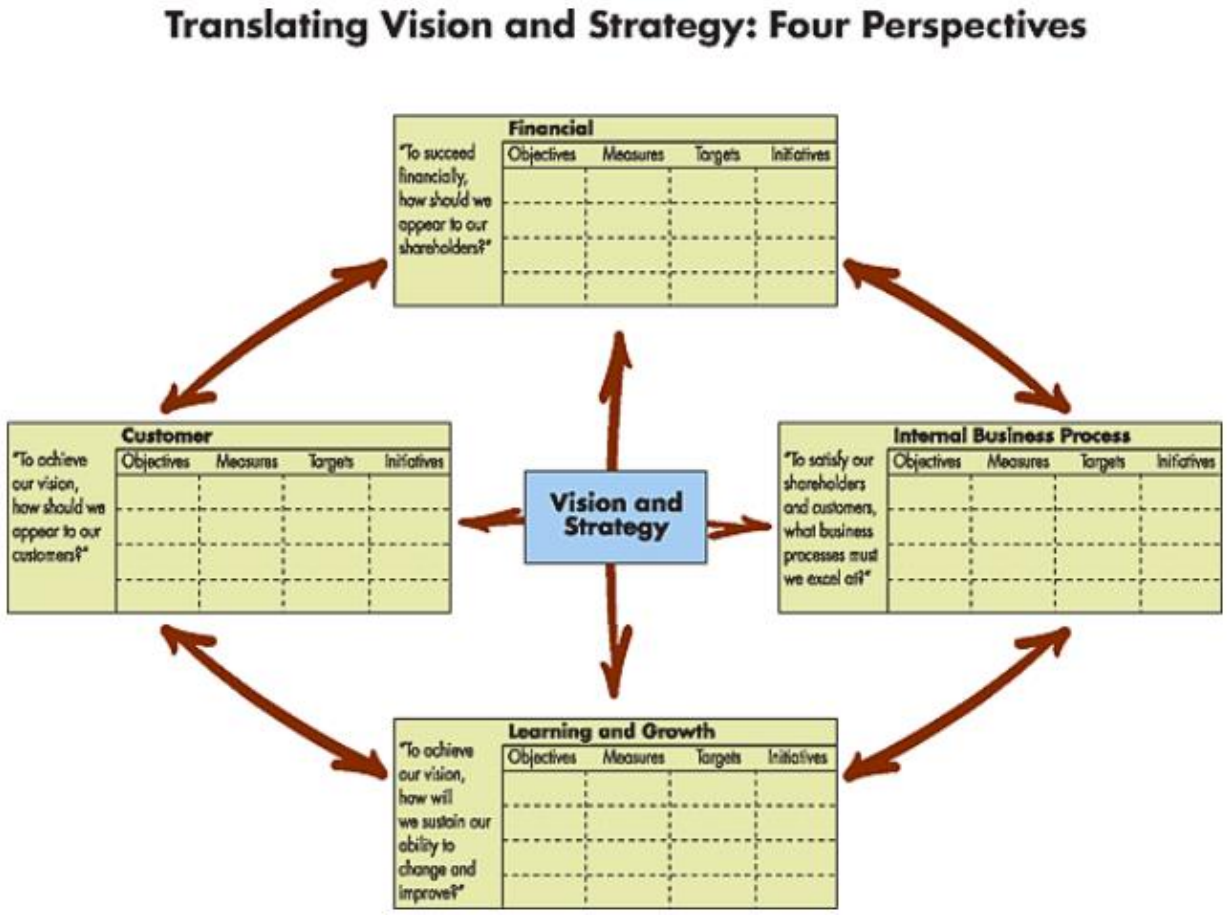
Building on the PHC platform of high-functioning teams and eHealth, particularly given currently limited capacity to respond to NCDs, it will be critical to developing protocols for disease management that make optimal use of all team members, including patients themselves. As noted above, team-based approaches to care have proven to be particularly effective at targeting NCDs (Shojania et al, 2006). In LMICs, there is considerable experience with "task-shifting" and other approaches to community-based, protocol-driven management of HIV that could be applied to NCDs (Samb et al., 2007; Atun et al., 2013). Management experts have articulated an approach to disease management whereby those clinical areas where there is the greatest degree of certainty based on evidence are most amenable to standardized approaches involving non-physician labor (Bohmer, 2009). There is evidence from LMICs as well as HICs that protocols and team-based approaches to prevent and managing NCDs is a highly effective strategy (Binagwaho et al., 2014; Farmer et al., 2010; Jaffe et al., 2013). Thus, there is an important and timely opportunity, in concert and coordination with building the primary care platform, to develop protocols for preventing and managing the most common NCDs.

Delivering on the key PHC functions of accessibility, comprehensiveness, continuity, and longitudinality will require enhanced systems for integrating care across the "medical neighborhood," including CHC teams, district and provincial hospitals, specialists, pharmacists, laboratories, and community/social services. For example, there may be need for "collaborative care arrangements," which have been defined as "pre-consultation arrangements outlining mutual expectations for primary care physicians and specialists as they care for patients together … [including] a pre-consultation exchange between the referring physician and the consultant, the consultation, and subsequent co-management of patients over time" (Greenberg et al., 2014). Thus, there is need for protocols not only for how diseases are clinically managed, but also for how different elements of the medical neighborhood optimally communicate with one another, refer patients, and share information. This is another important opportunity for eHealth innovations that complement and support care redesign.

Finally, there is need for a system of measurement that ensures accountability and helps to guide performance improvement. In the private sector, financial performance had been the gold standard measure of a firm's relative health. Since the mid-1990s, companies have used the "balanced scorecard" to measure performance from three additional perspectives — customers, internal business processes, and learning and growth. Norton and Kaplan, creators of the balanced scorecard, argue that monitoring these additional aspects gives firms a better sense of the capabilities they will need for growth, and for the attainment of long-term strategic objectives (Figure 9). The scorecard requires firms to connect long-term objectives with short term actions by moving through the following four specific processes (Kaplan and Norton, 1996; 2007):

1. Translate the vision — this helps managers build a consensus around the company's strategy and express it in terms that can guide action at the local level.
2. Communicating and linking — lets managers communicate their strategy up and down the organization and link it to unit and individual goals.
3. Business planning — enables companies to integrate their business and financial plans.
4. Feedback and learning — gives companies the capacity for strategic learning, which consists of gathering feedback, testing the hypotheses on which strategy was based, and making the necessary adjustments.

Figure 9: Using the Balanced Scorecard as a Strategic Management System (Kaplan and Norton, 2007).



A performance measurement framework, clearly communicated and implemented throughout a PHC system, creates accountability and the opportunity for feedback, facilitates organizational learning, and allows for testing new hypotheses and adjusting strategy in real-time. For example, the Southcentral Foundation (SCF) provides a performance measurement framework that is aligned and implemented at all levels of their health system. Specifically, SCF's strategic planning process:

1. Occurs as part of an annual cycle of implementing new or evaluating ongoing initiatives generated through the organization's improvement processes;
2. Is grounded in its mission, vision, and corporate goals (shared responsibility, commitment to quality, family wellness, and operational excellence);
3. Assesses both external (e.g., customer-owner feedback) and internal (e.g., staffing needs) factors that could potentially effect the organization;
4. Promotes transparency, transfers knowledge between employees at all levels and divisions, and eliminates duplication of efforts through an Annual Planning Tool.

We believe that establishing and continually improving these management systems over time will enable PHC teams to deliver high-value care to the populations they serve.

Financing

Health system financing efforts are often grouped into the different functions that they serve. These include collection of funds, pooling of resources, and purchasing of services (Evans and Etienne, 2010). Financing PHC systems through fund collection comes from four major sources: 1) direct government spending; 2) social health insurance pools (both public and private); 3) donor funds; and 4) private out-of-pocket spending.

The interplay between the main sources of funding largely determine the inputs into financing PHC systems. Low-income (and many middle-income) countries suffer from a small tax and income base by which government spending and social health insurance pools are derived, and so these countries rely primarily on donor funds and private out-of-pocket spending to finance PHC. Middle- and high-income countries, especially in the wake of recent initiatives to drive universal health coverage, have more options at their disposal in terms of leveraging direct governmental spending and health insurance mechanisms. A variety of contextually appropriate mechanisms can be used to expand access to insurance and reduce individual vulnerability to potentially calamitous health care spending. These pooling mechanisms include pre-payment for given services, voluntary health insurance from private or community sources, or governmental social health insurance schemes (Lagarde and Palmer, 2006). The global movement toward universal health coverage is showing that successful implementation of a variety of pooling strategies can be accomplished sequentially at a reasonable price (UNICO 2014).

Private out-of-pocket spending remains high in many countries due to inadequate insurance mechanisms and often preventatively high user-fees. Recent estimates suggest that half of all health expenditures for PHC in low and middle income come from out of pocket spending (Rawaf et al., 2008).

This phenomenon effects the poor disproportionately, and is clearly associated with worse access to (or even total exclusion from) quality care in low-, middle-, and high-income countries (Evans and Etienne, 2010; Xu et al., 2003). Even individuals and families not living in abject poverty face an ever-present risk of catastrophic health costs when private out-of-pocket spending is high. This adversely effects their

choices about all sorts of care, especially preventive, when they are not shielded from high personal spending through insurance or pre-payment mechanisms. User fees are intended to augment other sources of health financing, and/or to elicit more individual stake in personal health care matters. However, clear evidence suggests that imposition of user fees reduces access to care among the poor without concomitant ownership over health-seeking behaviors, and elimination of these fees improves access to care (Logie et al., 2010). User fees in PHC in particular should be minimized or ideally abolished completely, especially in rural areas.

Purchasing of PHC services can be accomplished through either direct governmental provision of care (such as in Cuba), social or private health insurance mechanisms, direct private out-of-pocket spending, or a combination of the above. Overall, most health systems spend disproportionate amounts of total spending on hospital and technology services at the expense of core PHC functions. This is most pronounced in very high and very low income countries, with spending on primary care <10% of total budgets. Few countries allocate sufficient resources toward PHC. Providers at different levels of the health care system are paid most often in some form of fee for service (FFS), capitation (fixed amount per patient per unit time), or global budget for unit time.

Additional layers of performance-based payments exist, such as bonuses for achieving quality targets, withholds for failing to meet quality thresholds, and shared savings for achieving set cost savings (most often in high income settings). There is no perfect system for paying providers; each has trade-offs. Fee-for-service encourages provider productivity and throughput of patients. However, it has the potential to drive spending upward, encourage unnecessary treatment, and potentially reduce access for the poor if out-of-pocket spending is high. Capitation reduces unnecessary spending, provides easier forecasting of annual revenue, and potentially encourages a population approach to a PHC panel, but also runs the risk of care stinting, inappropriate under-provision of services, and can be problematic to predict adequately sustainable capitation amounts. Global budgets provide clarity of spending targets, but are often inflexible and unresponsive to changing risk and patient demographics, and risk care stinting and low productivity. Combining capitation or global budgets with quality and patient experience thresholds offers the opportunity to protect patients from potential untoward side effects. There is increasing consensus that this approach may be best for promoting integrated care aligned with the core PHC functions (Landon, 2014; Edwards et al, 2014). Similarly, adding performance bonuses and thresholds to

augment fee-for-service, or global budget caps on top of FFS may improve quality and reign in overspending, though evidence is mixed from high income countries.

Conclusion and Recommendations

The CPV has consistently supported equitable and accessible health care for the people of Vietnam. In Vietnam's current development roadmap of "market principles with a socialist orientation," political commitment and investments will need to continue and be increased in order to keep the promises of equitable and accessible health care alive. As Vietnam continues to develop, the health system needs considerable investment and checks in order to sustain the country on the path towards healthy modernization.

The findings of this report suggest that this is a time of great challenge and opportunity in the Vietnamese health sector. Rapid economic growth and reforms across health and other sectors have produced dramatic and laudable improvements in population health indicators. At the same time, prosperity brings with it an epidemiological burden shifting towards NCDs, as well as increased demand for healthcare services that are accessible, high quality, and responsive to patient and family needs. This situation stresses the existing system and leads patients to bypass CHCs for district or provincial hospitals or the private sector. Thus, this is an opportune moment for strategic investment that leverages existing infrastructure and dramatically enhances the systems' capacity to deliver high quality, highly integrated, accessible, comprehensive and longitudinal care, particularly at front-lines clinics at the community level.

Below we provide recommendations in line with the PHC focus areas:

Leadership

1) Develop and implement an executive health care leadership and management curriculum for current leaders of CHCs, District Health Centers, and Provincial Departments of Health that is competency based (intrapersonal, interpersonal and technical skills) and focused on inter-professional collaboration and teamwork.
2) Introduce leadership and management competencies and curricula into undergraduate and graduate medical education in Vietnam.
3) Introduce health systems management masters-level track based on #1 above at the Hanoi School of Public Health, and cultivate a cadre of emerging Vietnamese leaders in the health sector, particularly PHC.

4) Consider the need for a comprehensive workforce development strategy that cultivates leadership and career growth for all cadres of healthcare workers.
5) Where possible, decentralize decision making and authority to empower front-lines leaders and managers, while ensuring accountability for quality and responsiveness.
6) Consider the need and proactively plan for engaging leaders at all levels of the health system inclusive of front-lines and executive leaders in developing and implementing plans for reform.

Teams

1) Begin piloting a collaborative learning process for developing high-functioning teams in several geographically representative districts around the country; these could focus simultaneously on team development and on creating and continuously improving protocols for managing one or more NCDs, such as diabetes or hypertension, at the commune level; the ultimate goal of these multi-year collaboratives would be to develop a scalable approach to team-based care to be implemented nationwide on a 5-15 year timeframe.
2) Through the work of the collaborative series, develop standardized job descriptions for health personnel at the CHC and district level that may subsequently be adapted to serve local contexts.
3) Promote inter-professional education in both undergraduate and post-graduate medical/health professional education through specific national competency requirements.

eHealth

1) Develop a plan over a 5-15 year timeframe to assign unique patient identifiers to all Vietnamese citizens and transition to online personal health records; consider the idea of a Vietnamese "health passport," that contains key elements of health history (such as family and personal medical history, medications, allergies, and immunization status) in structured fields.
2) Develop and enforce national standards for data interoperability, security and portability.
3) Consider issuing requests for applications (RFAs) to private vendors to develop and pilot test eHealth applications in concert with the above-described pilots of team-based care collaboratives, with the goal of identifying and refining technologies that could be scaled across the country over time.

4) In building eHealth infrastructure, focus on creating robust, functional online linkages between all members of care teams (patients, families, commune health center teams, district and provincial hospitals, specialists, etc.).
5) Plan to build eHealth infrastructure that enables the real-time tracking of important health process and outcome metrics (such as immunization rates, adherence to NCD protocols, and patient/family satisfaction).

Management systems

1) Include QI training and capacity building as part of the collaboratives to transform to team-based care with plans to scale this approach nationwide over a 5-10 year timeframe.
2) Introduce QI competencies and curricula into undergraduate and graduate medical education in Vietnam.
3) Work with national specialty hospitals and provincial preventative medicine departments, in coordination with CHC representatives, to develop and test standardized protocols for the management of specific diseases (i.e. NCDs) at the CHC level as part of the learning collaboratives, with the goal of scaling nationwide on a 5-10 year timeframe.
4) Provide guidance for CHCs to produce a "resource map" of and build linkages with different services in their communities including social services, charitable organizations, and other medical service provider.
5) MOH to set nationalized and standardize standards for the transfer of patients between the different levels of the health system, with the expectation that these will be locally adapted and implemented.
6) Work with private providers to start to understand information linkages, and performance tracking, in the private market.
7) Develop and implement, over a 5-15 year timeframe, a set of shared, balanced metrics for tracking CHC performance (inclusive of both health process and outcome metrics, such as adherence to NCD protocols; organizational metrics, such as how well teams are functioning; and patient experience metrics); introduce the "score card" approach to CHC staff and the patients as part of building QI capacity to use data to guide continuous improvement as well as to create accountability both to local communities and to the higher levels of health systems governance; and move over time towards public reporting of these data.

Financing

1) Continue efforts to expand social health insurance to all members of society, even the poor who are already compulsorily enrolled (but who may not be utilizing it).
2) Reduce out-of-pocket expenditures for health care through better health insurance and minimized (or ideally abolished) user fees for PHC.
3) Base the defined benefits package off of technically justifiable criteria based on affordability or cost effectiveness.
4) Integrate social health insurance pools to reduce fragmentation and improve subsidization of poorer funds by wealthier funds.
5) Standardize capitation rates across regions and social sectors, and stop basing them off of historical service utilization patterns in order to augment financing of primary health care in lower income sectors.
6) Consider implementing performance-based payments or augmentation of service purchasing based on clear, achievable, clinically meaningful metrics.
7) Link any approaches to performance tracking with larger data measurement and quality improvement initiatives aimed at empowering frontlines clinics to deliver high quality, responsive care.

References

Adam T, Hsu J, de Savigny D, et al. Evaluating Health Systems Strengthening Interventions in Low Income and Middle Income Countries: Are We Asking the Right Questions? Health Policy Plan. 2012;27 Suppl 4:iv9-19.

Adler-Milstein J, Sarma N, Woskie LR, Jha AK. A Comparison of How Four Countries use Health IT to Support Care for People with Chronic Conditions. Health Affairs. 2014;33(9):1559-1566.

Aljunid SM, Srithamrongsawat S, Chen W, Jin Bae S, Pwu, RF, et al. Health-Care Data Collecting, Sharing, and Using in Thailand, China Mainland, South Korea, Taiwan, Japan, and Malaysia. Value in Health. 2012; 51132-5138.

Alma-Ata 30 years on: "Health for All Need Not be a Dream Buried in the Past." Lancet. 2008;372(9642):863-1008.

Althabe F, Bergel E, Cafferata ML, Gibbons L, Ciapponi A, et al. Strategies for Improving the Quality of Health Care in Maternal and Child Health in Low and Middle Income Countries: An Overview of Systematic Reviews. Paediatric and Perinatal Epidemiology. 2008; 22 (1), 42–60.

Ammenwerth E, Schnell-Inderst P, Machan C, Siebert U. The Effect of Electronic Prescribing on Medication Errors and Adverse Drug Events: A Systematic Review. Journal of the American Medical Informatics Association. 2008;15(5):585-600.

Anderson C. How To Build An Effective Management System. 2005; Retrieved from URL: http://www.bizmanualz.com/blog/building-effective-management-systems-discovery.html. Accessed December 17, 2014.

Antos J. Health Care Financing in Thailand: Modeling and Sustainability. Mission Report to the World Bank. 2007. Retrieved from URL: http://siteresources.worldbank.org/INTTHAILAND/Resources/333200-1182421904101/2007aug-health-financing-modeling.pdf

Sullivan EE, Atlas Z. Core Competencies for Physician Leadership. Harvard Medical School, Center for Primary Care; 2014.xs

Atun R, Jaffar S, Nishtar S, et al. Improving Responsiveness of Health Systems to Non-Communicable Diseases. Lancet. 2013;381(9867):690-697.

Austvoll-Dahlgren A, Aaserud M, Vist G, et al. Pharmaceutical Policies: Effects of Cap andCo-Payment on Rational Drug Use. The Cochrane Database of Systematic Reviews. 2008;1.

Balabanova D, McKee M, Mills A, et al. What Can Global Health Institutions Do to Help Strengthen Health Systems in Low Income Countries? Health Research Policy and Systems / BioMed Central. 2010;8:22.

Bandura A. Health Promotion by Social Cognitive Means. Health Education & Behavior. 2004;31(2):143-164.

Basu S, Andrews J, Kishore S, Panjabi R, Stuckler D. Comparative Performance of Private and Public Healthcare Systems in Low and Middle Income Countries: A Systematic Review. PLoS Medicine. 2012;9(6):e1001244.

Bates DW, Bitton A. The Future of Health Information Technology in the Patient-Centered Medical Home. Health Affairs. 2010;29(4):614-621.

Bates DW, Gawande AA. Improving Safety with Information Technology. NEJM. 2003;348(25):2526-2534.

Beaglehole R, Epping-Jordan J, Patel V, et al. Improving the Prevention and Management of Chronic Disease in Low Income and Middle Income Countries: A Priority for Primary Health Care. The Lancet. 2008;372(9642):940-949.

Beard JR, Bloom DE. Towards a Comprehensive Public Health Response to Population Ageing. Lancet. 2014;61461-6.

Berendes S, Heywood P, Oliver S, Garner P. Quality of Private and Public Ambulatory Health Care in Low and Middle Income Countries: Systematic Review of Comparative Studies. PLoS Medicine. 2011;8(4):e1000433.

Bhutta ZA, Ahmed T, Black RE, et al. What works? Interventions for Maternal and Child Undernutrition and Survival. Lancet. 2008;371(9610):417-40.

Bhutta ZA, Ali S, Cousens S, et al. Interventions to Address Maternal, Newborn, and Child Survival: What Difference can Integrated Primary Health Care Strategies Make? The Lancet. 2008;372(9642):972-989.

Binagwaho A, Ngabo F, Wagner CM, et al. Integration of Comprehensive Women's Health Programmes into Health Systems: Cervical Cancer Prevention, Care and Control in Rwanda. Bulletin of the World Health Organization. 2013;91(9):697-703.

Bitton A, Flier LA, Jha AK. Health Information Technology in the Era of Care Delivery Reform: To what End? JAMA. 2012;307(24):2593-2594.

Bitton A, Schwartz GR, Stewart EE, et al. Off the Hamster Wheel? Qualitative Evaluation of a Payment-Linked Patient-Centered Medical Home (PCMH) Pilot. Milbank Quarterly. 2012;90(3):484-515.

Bitton A, Ellner A, Pabo E, et al. The Harvard Medical School Academic Innovations Collaborative: Transforming Primary Care Practice and Education. Academic Medicine. 2014;89(9):1239-1244.

Blaya JA, Fraser HS, Holt B. E-Health Technologies Show Promise in Developing Countries. Health Affairs. 2010;29(2):244-251.

Bloom DE, Chatterji S, Kowal P, et al. Macroeconomic Implications of Population Ageing and Selected Policy Responses. Lancet. 2014.

Blumenthal DM, Bernard K, Bohnen J, Bohmer R. Addressing the Leadership Gap in Medicine: Residents' Need for Systematic Leadership Development Training. Academic Medicine. 2012;87(4):513-522.

Bodenheimer T. The American Health Care System — The Movement for Improved Quality in Health Care. NEJM. 1999;340(6):488-492.

Bodenheimer T, Ghorob A, Willard-Grace R, Grumbach K. The 10 Building Blocks of High-Performing Primary Care. The Annals of Family Medicine. 2014;12(2):166-171.

Bodenheimer T, Wagner EH, Grumbach K. Improving Primary Care for Patients with Chronic Illness: The Chronic Care Model, Part 2. JAMA. Oct 16 2002;288(15):1909-1914.

Bohmer RM. Designing Care: Aligning the Nature and Management of Health Care. Harvard Business Review Press; 2009.

Bohmer R. The Instrumental Value of Medical Leadership. The Kings Fund; 2012.

Bohmer RM, Ferlins EM. Virginia Mason Medical Center. Harvard Business School Boston; 2006.

Bosch-Capblanch X, Lavis JN, Lewin S, et al. Guidance for Evidence-Informed Policies About Health Systems: Rationale for and Challenges of Guidance Development. PLoS Med. 2012;9(3):e1001185.

Bosch-Capblanch X, Liaqat S, Garner P. Managerial Supervision to Improve Primary Health Care in Low and Middle Income Countries. The Cochrane Database of Systematic Reviews. 2011;(9):CD006413.

Boutayeb A. The Double Burden of Communicable and Non-Communicable Diseases in Developing Countries. Transactions of the Royal Society of Tropical Medicine and Hygiene. 2006;100(3):191-199.

Bradley EH, Taylor LA. The American Health Care Paradox: Why Spending More is Getting Us Less. Public Affairs; 2013.

Briggs CJ, Garner P. Strategies for integrating primary health services in middle-and low-income countries at the point of delivery. The Cochrane Database of Systematic Reviews. 2006;2.

Brugha R. Global health initiatives and country health systems. Lancet . 2009;374(9697):1237-1238.

Bureau of Policy and Strategy, Ministry of Public Health. Thailand Health Profile: 2008-2010, Chapters 6 and 7. Ed. Suwit Wibulpolprasert. 2013. Retrieved from URL: http://www.moph.go.th/ops/thp/thp/en/index.php?id=288&group_=05&page=view_doc

Campion E & Morrissey S. A Different Model – Medical Care in Cuba. N Engl J Med. 2013; 368:297-299.

Chatterjee S, Naik S, John S, et al. Effectiveness of a community-based intervention for people with schizophrenia and their caregivers in India (COPSI): a randomised controlled trial. Lancet. 2014;383(9926):1385-94

Chatterji S, Byles J, Cutler D, Seeman T, Verdes E. Health, functioning, and disability in older adults—present status and future implications. Lancet. 2014.

Cheng T-M. Vietnam's health care system emphasizes prevention and pursues universal coverage. Health Affairs (Project Hope). 2014;33(11):2057-2063.

Chigudu S, Jasseh M, d'Alessandro U, Corrah T, Demba A, Balen J. The role of leadership in people-centred health systems: a sub-national study in The Gambia. Health Policy and Planning. 2014:czu078.

Chopra M, Sharkey A, Dalmiya N, et al. Strategies to improve health coverage and narrow the equity gap in child survival, health, and nutrition. Lancet. 2012;380(9850):1331-40.

Coker R, Balen J, Mounier-Jack S, et al. A conceptual and analytical approach to comparative analysis of country case studies: HIV and TB control programmes and health systems integration. Health Policy Plan. 2010;25 Suppl 1:i21-31.

Das, Jishnu. "The quality of medical care in low-income countries: from providers to markets." PLoS medicine 8.4. 2011: e1000432.

Davis, Stremikis K, Schoen C, and Squires D. Mirror, Mirror on the Wall, 2014 Update: How the U.S. Health Care System Compares Internationally. The Commonwealth Fund. June 2014.

Dawson A, Howes T, Gray N, &Kennedy E. Human Resources for Health in Maternal, Neonatal and Reproductive Health at Community Level: A Profile of Republic of the Philippines. Human Resources for Health Knowledge Hub and Burnet Institute, Sydney, Australia. 2011.

Delbanco, T, Walker J, Bell SK, Darer JD, Elmore JG, Farag N, et al. (2012). Inviting Patients to Read their Doctors' Notes: A Quasi-Experimental Study and a View Ahead. Ann Intern Med. 157(7):461-470.

Delbanco T, Walker J, Darer JD, et al. Open Notes: Doctors and Patients Signing On. Annals of Internal Medicine. 2010;153(2):121-125.

Deming WE. Quality, Productivity, and Competitive Position. Vol 183. Cambridge, MA: Massachusetts Institute of Technology, Center for Advanced Engineering Study; 1982.

Department of Health, Republic of the Philippines. The Philippine Health System At A Glance. Retrieved from URL: http://www.doh.gov.ph/sites/default/files/3%20Chapter1.pdf

Diallo K. Data on the Migration of Health-Care Workers: Sources, Uses, and Challenges. Bulletin of the World Health Organization. 2004;82(8):601-607.

Di Cesare M, Khang YH, Asaria P, et al. Inequalities in Non-Communicable Diseases and Effective Responses. Lancet. 2013;381(9866):585-97.

Dourado I, Oliveira VB, Aquino R, et al. Trends in Primary Health Care — Sensitive Conditions in Brazil: The Role of the Family Health Program (Project ICSAP-Brazil). Medical care. 2011;49(6):577-584.

Duong DB, Non-Communicable Service Readiness and Availability at the Primary Care Level in 3 Provinces in Northern Vietnam. Unpublished Data. 2014

Edmondson AC. Learning from Failure in Health Care: Frequent Opportunities, Pervasive Barriers. Quality and Safety in Health Care. 2004;13(suppl 2):ii3-ii9.

Edwards ST, Abrams MK, Baron RJ, et al. Structuring Payment to Medical Homes After the Affordable Care Act. Journal of General Internal Medicine. Oct 2014;29(10):1410-1413.

Ekman B, Pathmanathan I, Liljestrand J. Integrating Health Interventions for Women, Newborn Babies, and Children: A Framework for Action. The Lancet. 2008;372(9642):990-1000.

Ellner A, Stout S, Sullivan E, Griffiths E, Mountjoy A, Phillips R. Fostering Health Systems Innovation at Academic Medical Centers; Leading in a New Era of Healthcare Delivery. Academic Medicine. in progress.

Erikson D, Lord A, & Wolf P. Cuba's Social Services: A Review of Education, Health, and Sanitation. 2002. Retrieved from URL: http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2004/03/01/000265513_20040301113757/additional/310436360_20050276101005.pdf

Evans DB, Etienne C. Health Systems Financing and the Path to Universal Coverage. Bulletin of the World Health Organization. 2010;88(6):402-403.

Farmer P, Frenk J, Knaul FM, et al. Expansion of Cancer Care and Control in Countries of Low and Middle Income: A Call to Action. The Lancet. 2010;376(9747):1186-1193.

Farzadfar F, Murray C, Gakidou E, Bossert T, Namdaritabar H, et al. Effectiveness of Diabetes and Hypertension Management by Rural Primary Health-Care Workers (Behvarz workers) in Iran: A Nationally Representative Observational Study. Lancet. 2012; 379: 47–54.

Fraser H, Biondich P, Moodley D, Choi S, Mamlin B, & Szolovits P. Implementing Electronic Medical Record Systems in Developing Countries. Informatics in Primary Care. 2005;13:83–95.

Frenk J. Bridging the Divide: Global Lessons from Evidence-Based Health Policy in Mexico. Lancet. 2006;368(9539):954-661.

Frenk J. Reinventing Primary Health Care: The Need for Systems Integration. The Lancet. 2009;374(9684):170-173.

Frenk, Julio, et al. "Health Transition in Middle-Income Countries: New Challenges for Health Care." Health Policy and Planning 4.1 1989: 29-39.

Frenk J, Gonzalez-Block MA, Alvarez-Manilla JM. First Contact, Simplified Technology, or Risk Anticipation? Defining Primary Health Care. Academic Medicine. Nov 1990;65(11):676-681.

Frenk J, González-Pier E, Gómez-Dantés O, Lezana MA, Knaul FM. Comprehensive Reform to Improve Health System Performance in Mexico. Lancet. 2006;368(9546):1524-1534.

Friedberg MW, Hussey PS, Schneider EC. Primary Care: A Critical Review of the Evidence on Quality and Costs of Health Care. Health Affairs. 2010;29(5):766-772.

Frieden TR. A Framework for Public Health Action: the Health Impact Pyramid. American Journal of Public Health. 2010;100(4):590-595.

Gawande A. Cowboys and Pit Crews. 2011; http://www.newyorker.com/news/news-desk/cowboys-and-pit-crews. Accessed December 19, 2014.

General Statistics Office of Vietnam. 2009 Viet Nam Population and Housing Census. 2009; http://www.gso.gov.vn/default_en.aspx?tabid=515&idmid=5&ItemID=10799. Accessed December 12, 2014.

Gilmour S, Hamakawa T, Shibuya K. Cash-Transfer Programmes in Developing Countries. Lancet. 2013;381(9874):1254-5.

Glenton C, Lewin S, Scheel IB. Still Too Little Qualitative Research to Shed Light on Results from Reviews of Effectiveness Trials: A Case Study of a Cochrane Review on the Use of Lay Health Workers. Implementation Science : IS. 2011;6(1):53.

Global Health Observatory Data Repository. Life Tables by Country: Viet Nam. 2014; World Health Organization (WHO): Retrieved from URL: http://apps.who.int/gho/data/view.main.61830?lang=en. Accessed December 12, 2014.

Goleman D, Boyatzis R, McKee A. Primal Leadership: Unleashing the Power of Emotional Intelligence Harvard Business Review Press; 2013.

Greenberg JO, Barnett ML, Spinks MA, Dudley JC, Frolkis JP. The "Medical Neighborhood": Integrating Primary and Specialty Care for Ambulatory Patients. JAMA Internal Medicine. 2014;174(3):454-457.

Gruen RL, Elliott JH, Nolan ML, et al. Sustainability Science: An Integrated Approach for Health-Programme Planning. Lancet. 2008;372(9649):1579-89.

Grumbach K, Bodenheimer T. Can Health Care Teams Improve Primary Care Practice? JAMA. Mar 10 2004;291(10):1246-1251.

Guldner M. Health Care in Transition in Vietnam: Equity and Sustainability. Health Policy and Planning. 1995;10:49-62.

Ha NTH, Berman P, Larsen U. Household Utilization and Expenditure on Private and Public Health Services in Vietnam. Health Policy and Planning. 2002;17(1):61-70.

Hanvoravongchai P. UNICO Study Series 20: Health Financing Reform in Thailand: Toward Universal Coverage Under Fiscal Constraints. The World Bank. 2013. Retrieved from URL: http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2013/02/01/000425962_20130201171946/Rendered/PDF/750000NWP0Box300Reform0in00THAILAND.pdf

Hirshon JM, Risko N, Calvello EJ, et al. Health Systems and Services: The Role of Acute Care. Bulletin of the World Health Organization. 2013;91(5):386-388.

Horton R. UNICEF Leadership 2005–2015:A Call for Strategic Change. The Lancet. 2004;364(9451):2071-2074.

Ibrahim Z, Ellner A, Giesen L, Sullivan E. Management Lessons for High-Functioning Primary Care Teams. Submitted for publication.

Iniguez L. Overview of Evolving Changes in Cuba's Health Services. MEDICC Review. 2013; 15(2).

Institute of Medicine (IOM). Crossing the Quality Chasm: A New Health System for the 21st century. National Academies Press; 2001.

Jaffe MG, Lee GA, Young JD, Sidney S, Go AS. Improved Blood Pressure Control Associated with a Large-Scale Hypertension Program. JAMA. 2013;310(7):699-705.

Jha AK, Doolan D, Grandt D, Scott T, Bates DW. The Use of Health Information Technology in Seven Nations. International Journal of Medical Informatics. 2008;77(12):848-854.

Joshi R, Alim M, Kengne AP, Jan S, Maulik PK, et al. Task Shifting for Non-Communicable Disease Management in Low and Middle Income Countries – A Systematic Review. PLoS ONE. 2014; 9(8): e103754. doi:10.1371/journal.pone.0103754

Landon BE. Structuring Payments to Patient-Centered Medical Homes. JAMA. 2014;312(16):1633-1634.

Kakuma R, Minas H, van Ginneken N, et al. Human Resources for Mental Health Care: Current Situation and Strategies for Action. Lancet. 2011;378(9803):1654-63.

Kaplan RS, Norton DP. Using the Balanced Scorecard as a Strategic Management System. Harvard Business Review. 2007(July).

Kaplan RS, Norton DP. The Balanced Scorecard: Translating Strategy into Action. Harvard Business Press; 1996.

Katzenbach JR, Smith DK. The Discipline of Teams. Harvard Business Review. 2005;83(7):162.

Keck CW & Reed GA. The Curious Case of Cuba. Am J Pub Health. 2012; 102(8).
Reed G. Cuba's Primary Health Care Revolution: 30 Years On. Bulletin of the World Health Organization. 2008; 86(5). Retrieved from URL: http://www.who.int/bulletin/volumes/86/5/08-030508/en/

Keleher H. Why Primary Health Care Offers a more Comprehensive Approach to Tackling Health Inequities than Primary Care. Australian Journal of Primary Health. 2001;7(2):57-61.

Kerber KJ, de Graft-Johnson JE, Bhutta ZA, Okong P, Starrs A, Lawn JE. Continuum of Care for Maternal, Newborn, and Child Health: from Slogan to Service Delivery. The Lancet. 2007;370(9595):1358-1369.

Kijsanayotin B. Thailand Primary Health Care Information Systems. Presented at 4th WHO-FIC Asia-Pacific Network Meeting, Hamamatsu, Japan. 2009. Retrieved from URL: http://www.whofic-apn.com/pdf_files/4th_19_11p.pdf

Kim W, Mauborgne R. Fair Process: Managing in the Knowledge Economy. Harvard Business Review. January 2003.

Kirigia JM, Seddoh A, Gatwiri D, Muthuri LH, Seddoh. "E-health: Determinants, Opportunities, Challenges and the Way Forward for Countries in the WHO African Region." BMC Public Health 5.1 (2005): 137.

Kotter, John P. Force for Change: How Leadership Differs from Management. Simon and Schuster, 2008.

Kouzes JM, Posner BZ. The Leadership Challenge. John Wiley & Sons; 2006.

Kruk ME, Prescott MR. The Role of Health Systems and Policies in Promoting Safe Delivery in Low and Middle Income Countries: A Multilevel Analysis. Am J Public Health. 2012;102(4):645-50.

Kruk ME, Prescott MR, de Pinho H, Galea S. Equity and the Child Health Millennium Development Goal: the Role of Pro-Poor Health Policies. J Epidemiol Community Health. 2011;65(4):327-33.

Kuperman GJ, Bobb A, Payne TH, et al. Medication-Related Clinical Decision Support in Computerized Provider Order Entry Systems: A Review. Journal of the American Medical Informatics Association. 2007;14(1):29-40.

Lagarde M, Palmer N. Evidence from Systematic Reviews to Inform Decision Making Regarding Financing Mechanisms that Improve Access to Health Services for Poor People. Geneva: The Alliance for Health Policy and Systems Research. 2006;67.

Lagarde M, Palmer N. The Impact of Health Financing Strategies on Access to Health Services in Low and Middle Income Countries. The Cochrane Library. 2006.

Lagarde M, Haines A, Palmer N. Conditional Cash Transfers for Improving Uptake of Health Interventions in Low and Middle Income Countries: A Systematic Review. JAMA. 2007;298(16):1900-1910.

Lambeek LC, Bosmans JE, Van Royen BJ, et al. Effect of Integrated Care for Sick Listed Patients with Chronic Low Back Pain: Economic Evaluation Alongside a Randomised Controlled Trial. BMJ. 2010;341:c6414.

Langley GJ, Moen R, Nolan KM, Nolan TW, Norman CL, Provost LP. The Improvement Guide: A Practical Approach to Enhancing Organizational Performance. John Wiley & Sons; 2009.

Lavis JN, Rottingen JA, Bosch-Capblanch X, et al. Guidance for Evidence-Informed PoliciesAabout Health Systems: Linking Guidance Development to Policy Development. PLoS Med. 2012;9(3):e1001186.

Lawn JE, Rohde J, Rifkin S, Were M, Paul VK, Chopra M. Alma-Ata 30 Years On: Revolutionary, Relevant, and Time to Revitalise. The Lancet. 2008;372(9642):917-927.

Lee PG, Cigolle C, Blaum C. The Co-occurrence of Chronic Diseases and Geriatric Syndromes: The Health and Retirement Study. J Am Geriatr Soc. 2009;57(3):511-6.

Lewin S, Bosch-Capblanch X, Oliver S, et al. Guidance for Evidence-Informed Policies About Health Systems: Assessing How Much Confidence to Place in the Research Evidence. PLoS Med. 2012;9(3):e1001187.

Lewin S, Lavis JN, Oxman AD, et al. Supporting the Delivery of Cost-Effective Interventions in Primary Health-Care Systems in Low Income and Middle Income Countries: An Overview of Systematic Reviews. Lancet. 2008;372(9642):928-939.

Lewin S, Munabi-Babigumira S, Glenton C, et al. Lay Health Workers in Primary and Community Health Care for Maternal and Child Health and the Management of Infectious Diseases. The Cochrane Database of Systematic Reviews. 2010;(3):CD004015.

"Life expectancy at birth, total (years)." World Bank, n.d. Accessed on November 14, 2014. Retrieved from URL: http://data.worldbank.org/indicator/SP.DYN.LE00.IN/countries/XN?display=graph.

Liu X, Hotchkiss DR, Bose S. The effectiveness of contracting-out primary health care services in developing countries: a review of the evidence. Health Policy Plan. 2008;23(1):1-13.

Logie DE, Rowson M, Mugisha NM, McPake B. Affordable primary health care in low-income countries: can it be achieved? African Journal of Primary Health Care & Family Medicine. 2010;2(1).

Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJ. Global and regional burden of disease and risk factors, 2001: systematic analysis of population health data. Lancet. 2006;367(9524):1747-1757.

Lorenzo FME. Migration of health workers: Country case study Philippines. International Labour Organization. 2005. Retrieved from URL: http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_161163.pdf

Lorme J. Health Information Technology in Primary Care. Harvard Medical School, Center for Primary Care; 2014.

Marmot M. Social determinants of health inequalities. Lancet. 2005;365(9464):1099-1104.

Marmot M, Friel S, Bell R, Houweling TA, Taylor S. Closing the gap in a generation: health equity through action on the social determinants of health. Lancet. 2008;372(9650):1661-1669.

Mathers C, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. PLoS Medicine. 2006;3(11):e442.
McClellan M, Kent J, Beales SJ, et al. Accountable care around the world: a framework to guide reform strategies. Health Aff (Millwood). 2014;33(9):1507-15.

McGinnis JM, Williams-Russo P, Knickman JR. The case for more active policy attention to health promotion. Health Affairs. 2002;21(2):78-93.

McGregor S, Henderson KJ, Kaldor JM. How are Health Research Priorities Set in Low and Middle Income Countries? A Systematic Review of Published Reports. PLoS ONE. 2014;9(10): e108787. doi:10.1371/journal.pone.0108787

McKee M. Measuring the efficiency of health systems: The World Health Report sets the agenda, but there's still a long way to go. BMJ: British Medical Journal. 2001;323(7308):295.

McKee M, Figueras J. Comparing health care systems: how do we know if we can learn from others? Journal of Health Services Research & Policy. 1997;2(2):122.

Minh HV, Phuong NK, Ozaltin A, Cashin C. Costing of commune health station visits for provider payment reform in Vietnam. Global Public Health. 2014
Ministry of Health of Vietnam. Vietnam health statistics yearbook 2009. Hanoi: Ministry of Health Vietnam; 2010.

Moore JO, Marshall MA, Judge DC, Moss FH, Gilroy SJ, Crocker B, et al. (2014).Technology-supported apprenticeship in the management of hypertension: a randomized controlled trial. JCOM. 21(3):110-122.

NHS Leadership Academy. Leadership Framework. Coventry House, University of Warwick Campus, Coventry: NHS Institute for Innovation and Improvement;2011.

Nolen LB, Braveman P, Dachs JNW, et al. Strengthening Health Information Systems to Address Health Equity Challenges. Bulletin of the World Health Organization. 2005;83(8):597-603.

Nutting PA, Miller WL, Crabtree BF, Jaen CR, Stewart EE, Stange KC. Initial Lessons from the First National Demonstration Project on Practice Transformation to a Patient-Centered Medical Home. The Annals of Family Medicine. 2009;7(3):254-260.

Nutting PA, Crabtree BF, Miller WL, Stange KC, Stewart E, Jaén C. Transforming Physician Practices to Patient-Centered Medical Homes: Lessons from the National Demonstration Project. Health Affairs. 2011;30(3):439-445.

Organization for Economic Cooperation and Development (OECD). "OECD Health Statistics 2014." Accessed on December 2, 2014. Retrieved from URL: http://www.oecd.org/health/healthdata

Pagaiya N & Noree T. Thailand's Health Workforce: A Review of Challenges and Experiences. Paper prepared for International Health Policy Program, Ministry of Public Health, Thailand. 2009. Retrieved from URL: http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/THLHealthWorkforce.pdf

Pagliari C. Design and Evaluation in eHealth: Challenges and Implications for an Interdisciplinary Field. Journal of Medical Internet Research. 2007;9(2).

Patel V, Araya R, Chatterjee S, et al. Treatment and Prevention of Mental Disorders in Low Income and Middle Income Countries. Lancet. 2007;370(9591):991-1005.

Paton RA, McCalman J. Change Management: A Guide to Effective Implementation. Sage; 2008.

Patouillard E, Goodman CA, Hanson KG, Mills AJ. Can Working with the Private For-Profit Sector Improve Utilization of Quality Health Services by the Poor? A Systematic Review of the Literature. International Journal for Equity in Health. 2007;6(1):17.

Paulus RA, Davis K, Steele GD. Continuous Innovation in Health Care: Implications of the Geisinger Experience. Health Affairs. 2008;27(5):1235-1245.

Petersen LA, Woodard LD, Urech T, Daw C, Sookanan S. Does Pay-for-Performance Improve the Quality of Health Care? Annals of Internal Medicine. 2006;145(4):265-272.

Peñaloza B, Pantoja T, Bastías G, Herrera CA, Rada G. Interventions to Reduce Emigration of Health Care Professionals from Low and Middle Income Countries. Cochrane Database of Systematic Reviews 2011, Issue 9. Art. No.: CD007673. DOI: 10.1002/14651858.CD007673.pub2.

Porter ME, Teisberg EO. Redefining Health Care: Creating Value-Based Competition on Results. Harvard Business Press; 2006.

Priebe S, Yeeles K, Bremner S, et al. Effectiveness of Financial Incentives to Improve Adherence to Maintenance Treatment with Antipsychotics: Cluster Randomised Controlled Trial. BMJ. 2013;347:f5847.

Quental N, Lourenço JM, da Silva FN. Sustainable Development Policy: Goals, Targets and Political cycles. Sustainable Development. 2011;19(1):15-29.

Rasella D, Aquino R, Santos CA, et al. Effect of a Conditional Cash Transfer Programme on Childhood Mortality: A Nationwide Analysis of Brazilian Municipalities. Lancet. 2013;382(9886):57-64.

Rawaf S, De Maeseneer J, Starfield B. From Alma-Ata to Almaty: A New Start for Primary Health Care. The Lancet. 2008;372(9647):1365-1367.

Reid RJ, Coleman K, Johnson EA, et al. The Group Health Medical Home at Year Two: Cost Savings, Higher Patient Satisfaction, and LessBburnout for Providers. Health Affairs. 2010;29(5):835-843.

Remaise J, Zeng G, Li G, Tian L, & Engelgau M. Convergence of Non-Communicable and Infectious Diseases in Low and Middle Income Countries. International Journal of Epidemiology. 2013;42:221–227. doi:10.1093/ije/dys135

Rohde, Jon, et al. "30 Years After Alma-Ata: Has Primary Health Care Worked in Countries?" Lancet 372.9642 (2008): 950-961.

Romualdez A, dela Rosa JFE, Favier JDA, Quimbo SLA, Hartigan-Go KY, et al. The Philippines Health System Review. Health Systems in Transition. 2011;1(2). Retrieved from URL: http://www.wpro.who.int/asia_pacific_observatory/Philippines_Health_System_Review.pdf

Ronquillo K, Elegado-Lorenzo FM, Nodora R. Human Resources for Health Migration in the Philippines: A Case Study and Policy Directions. Paper for ASEAN Learning Network for Human Resources for Health, August 2-5, 2005, Bangkok, Thailand. Retrieved from URL: http://www.healthworkforce.info/aaah/reviewal/Philippines%20-%20draft.pdf

Rothman AA, Wagner EH. Chronic Illness Management: What is the Role of Primary Care? Annals of Internal Medicine. Feb 4 2003;138(3):256-261.

Rowe AK, de Savigny D, Lanata CF, Victora CG. How Can we Achieve and Maintain High-Quality Performance of Health Workers in Low Resource Settings? Lancet. 2005;366(9490):1026-1035.

Ruelas E, Gomez-Dantes O, Leatherman S, Fortune T, & Gay-Molina JG. Strengthening the Quality Agenda in Health Care in Low and Middle Income Countries: Questions to Consider. International Journal for Quality in Health Care. 2012; pp. 1–5.

Sachs JD. Macroeconomics and Health: Investing in Health for Economic Development. Report of the Commission on Macroeconomics and Health. World Health Organization. 2001.

Samb B, Celletti F, Holloway J, Van Damme W, De Cock KM, Dybul M. Rapid Expansion of the Health Workforce in Response to the HIV Epidemic. New England Journal of Medicine. 2007;357:2510-2514.

Schiff GD, Bates DW. Can Electronic Clinical Documentation Help Prevent Diagnostic Errors? NEJM. 2010;362(12):1066-1069.

Schroeder SA. We Can Do Better—Improving the Health of the American People. NEJM. 2007;357(12):1221-1228.

Sepúlveda J, Bustreo F, Tapia R, et al. Improvement of Child Survival in Mexico: The Diagonal Approach. The Lancet. 2006;368(9551):2017-2027.

Shigayeva A, Atun R, McKee M, Coker R. Health Systems, Communicable Diseases and Integration. Health Policy Plan. 2010;25 Suppl 1:i4-20.

Shigayeva A, Coker RJ. Communicable Disease Control Programmes and Health Systems: An Analytical Approach to Sustainability. Health Policy and Planning. Feb 23 2014.

Shojania KG, Ranji SR, McDonald KM, et al. Effects of Quality Improvement Strategies for Type 2 Diabetes on Glycemic Control: A Meta-Regression Analysis. JAMA. 2006;296(4):427-440.

Sinsky CA, Willard-Grace R, Schutzbank AM, Sinsky TA, Margolius D, Bodenheimer T. In Search of Joy in Practice: A Report of 23 High Functioning Primary Care Practices. The Annals of Family Medicine. 2013;11(3):272-278.

Sittig D, Singh H (2010). A New Socio-Technical Model for Studying Health Information Technology in Complex Adaptive Healthcare Systems. Qual Saf Health Care. 19(3):i68–i74

Somanathan A, Dao HL, Tien TV. Integrating the Poor into Universal Health Coverage in Vietnam. Universal Health Coverage Studies Series (UNICO). Washington DC: The World Bank. 2013; No. 24.

Spear SJ. Learning to Lead at Toyota. Harvard Business Review. 2004;82(5):78-91.

Stange KC, Ferrer RL. The Paradox of Primary Care. The Annals of Family Medicine. 2009;7(4):293-299.

Starfield B. Primary Care: Concept, Evaluation, and Policy. Oxford University Press, USA; 1992.

Starfield B. Is Primary Care Essential? Lancet. 1994;344(8930):1129-1133.

Starfield B. Primary Care: Balancing Health Needs, Services, and Technology. Oxford University Press; 1998.

Starfield B, Shi L, Macinko J. Contribution of Primary Care to Health Systems and Health. The Milbank Quarterly. 2005;83(3):457-502.

Stenberg K, Chisholm D. Resource Needs for Addressing Non-Communicable Disease in Low and Middle Income Countries: Current and Future Developments. Global Heart. 2012;7(1):53-60.

Stilwell B, Diallo K, Zurn P, Dal Poz MR, Adams O, Buchan J. Developing Evidence-Based Ethical Policies on the Migration of Health Workers: Conceptual and Practical Challenges. Human Resources for Health. 2003;1(1):8.

Sudhinaraset M, Ingram M, Lofthouse HK, Montagu D. What Is the Role of Informal Healthcare Providers in Developing Countries? A Systematic Review. PLoS ONE. 2013;8(2): e54978. doi:10.1371/journal.pone.0054978

Sugarman JR, Phillips KE, Wagner EH, Coleman K, Abrams MK. The Safety Net Medical Home Initiative: Transforming Care for Vulnerable Populations. Medical Care. 2014;52:S1-S10.

Thavichachart T & Kasitipradith N. Thailand HIT Case Study. National Bureau of Asian Research. Retrieved from URL: http://www.pacifichealthsummit.org/downloads/hitcasestudies/economy/thailandhit.pdf

The World Bank. World Development Report 1993: Investing in Health. Oxford University Press, 16th ed. 1993.

The World Bank. Universal Health Coverage Study Series (UNICO). 2013; http://www.worldbank.org/en/topic/health/publication/universal-health-coverage-study-series. Accessed January 15, 2015.

Thukral B. Health System of Philippines. 2012. Retrieved from URL: http://www.slideshare.net/bhaminithukral/health-system-of-philippines-ppt

Treerutkuarkul A. Thailand's unsung heroes. Bulletin of the World Health Organization. 2008; 86(1). Retrieved from URL: http://www.who.int/bulletin/volumes/86/1/08-010108/en/

UNICEF. Maternal and Newborn Health. 2012; Retrieved from URL: http://www.unicef.org/health/index_maternalhealth.html. Accessed December 12, 2014.

United Nations. The Millennium Development Goals Report 2014.Retrieved from URL: http://www.un.org/millenniumgoals/2014%20MDG%20report/MDG%202014%20English%20web.pdf. Accessed January 12, 2015.

U.S. Census Bureau. International Data Base: Vietnam. Retrieved from URL: http://www.census.gov/population/international/data/idb/informationGateway.php. Accessed December 12, 2014.

Van Minh H, Do YK, Bautista MAC, Tuan Anh T. Describing the Primary Care System Capacity for the Prevention and Management of Non-Communicable Diseases in Rural Vietnam. The International Journal of Health Planning and Management. 2013.

Vasan A, Ellner A, Lawn SD, et al. Strengthening of Primary-Care Delivery in the Developing World: IMAI and the Need for Integrated Models of Care. The Lancet Global health. 2013;1(6):e321-3.

Vasan A, Ellner A, Lawn S, Gove S, Anatole M, et al. Integrated Care as a Means to Improve Primary Care Delivery for Adults and Adolescents in the Developing World: A Critical Analysis of Integrated Management of Adolescent and Adult Illness (IMAI). BMC Medicine. 2014, 12:6.

Victora CG, Barreto ML, do Carmo Leal M, et al. Health Conditions and Health-Policy Innovations in Brazil: The Way Forward. Lancet. 2011;377(9782):2042-2053.

Wagner EH. The Role of Patient Care Teams in Chronic Disease Management. BMJ. 2000;320(7234):569.

Wagner EH. Meeting the Needs of Chronically Ill People. BMJ. Oct 27 2001;323(7319):945-946.

Wagner EH, Austin BT, Davis C, Hindmarsh M, Schaefer J, Bonomi A. Improving Chronic Illness Care: Translating Evidence into Action. Health Affairs. Nov-Dec 2001;20(6):64-78.

Walsh JA, Warren KS. Selective Primary Health Care: An Interim Strategy for Disease Control in Developing Countries. The New England Journal of Medicine. 1979;301(18):967-974.

Wennberg JE, Cooper M. The Dartmouth Atlas of Health Care. American Hospital Publishing Chicago, Ill:; 1996.

Witmer A, Seifer SD, Finocchio L, Leslie J, O'Neil EH. Community Health Workers: Integral Members of the Health Care Work Force. American Journal of Public Health. 1995;85:1055-1058.

Woolf, SH., and Laudan A, US Health in International Perspective: Shorter Lives, Poorer Health. National Academies Press, 2013.

World Health Organization (WHO). "Alma Ata Declaration." Geneva: World Health Organization (1978).

World Health Organization (WHO). Everybody's Business — Strengthening Health Systems to Improve Health Outcomes: WHO's Framework for Action. 2007.

World Health Organization (WHO). "Maximizing Positive Synergies between Health Systems and Global Health Initiatives: Report on the Expert Consultation on Positive Synergies between Health Systems and Global Health Initiatives." Geneva, Switzerland: WHO (2008b).

World Health Organization (WHO). Non-Communicable Diseases Country Profiles 2014. http://www.who.int/nmh/countries/vnm_en.pdf?ua=1.

World Health Organization (WHO). "People-Centered Health Care: A Policy Framework." (2007).

World Health Organization (WHO). Viet Nam: Health Profile. 2014; Retrieved from URL: http://www.who.int/countries/vnm/en/. Accessed December 12, 2014.

World Health Organization. The 10 Leading Causes of Death by Country Income Group (2012). 2012; Retrieved from URL: http://www.who.int/mediacentre/factsheets/fs310/en/index1.html. Accessed on December 4, 2014.

World Health Organization (WHO). The World Health Report 2000. "Health Systems: Improving Performance." Geneva: WHO. (2000).

World Health Organization (WHO). The World Health Report 2005. "Make Every Mother and Child Count." Geneva: WHO. (2000).

World Health Organization (WHO). The World Health Report 2006: "Working Together for Health." Geneva, WHO. (2006).

World Health Organization (WHO). The World Health Report 2008: "Primary Health Care-- Now More Than Ever. Geneva: WHO. (2008a).

WHO and Department of Health, Philippines. Health Service Delivery Profile: Philippines. 2012. Retrieved from URL: http://www.wpro.who.int/health_services/service_delivery_profile_philippines.pdf
World Health Organization (WHO) and Ministry of Health, Vietnam. Health Service Delivery Profile: Viet Nam 2012. http://www.wpro.who.int/health_services/service_delivery_profile_vietnam.pdf. Accessed December 12, 2014.

World Summit for Children (WSC), United Nations, New York,29-30 September 1990.

Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJ. Household Catastrophic Health Expenditure: A Multicountry Analysis. The Lancet. 2003;362(9378):111-117.

Zakus D, Bhattacharyya O. Health Systems, Management, and Organization in Low and Middle Income Countries. 2007. Retrieved from URL: https://www.hsph.harvard.edu/wp-content/uploads/sites/114/2012/10/RP248.pdf.

Zimmet P, Alberti K, Shaw J. Global and societal implications of the diabetes epidemic. Nature. 2001;414(6865):782-787.