Commentary

BUILDING URBAN COMMUNITY HEALTH SYSTEMS IN NEPAL

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Nepal's current health system is beset by a failure to fulfill public expectation and demand for quality health services (Peoples *et al.* 2021; Devkota *et al.* 2017). In the aftermath of the COVID-19 pandemic, the role and the nature of our health system is of increasing public interest. It may be possible to translate this public interest into an appetite for structural changes of our health system. The current federal governance structure means that forward-thinking municipal governments can take a lead on these changes on their own.

Although a well-functioning health system involves multiple elements, there are two major elements that need significant deliberation in reconfiguring our health system to match our needs: how we deliver health care, and how we pay for it. While the latter question has often been a topic of policy discussion in Nepal (Mishra *et al.* 2015) mostly in terms of implementing national health insurance and reducing financial catastrophe from the consumption of health services, it is in health care delivery—what care is provided, where it is provided, and how it is provided—where much remains to be done to improve our health system.

In this commentary, we examine the case for building urban community health systems in Nepal as a means of improving health care delivery. We first briefly define health systems, and discuss what we mean by an urban community health system. We then proceed to examine the theoretical and empirical basis for building urban community health systems. We end this commentary by discussing major issues related to building urban community health systems. To do this, we use the World Health Organization's building blocks framework—a widely used and accepted framework to conceptualize, build and evaluate health systems (WHO 2007; Borghi and Brown 2022).

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What is an Urban Community Health System?

A health system is an agglomeration of institutions, people and actions with the primary objective of promoting, restoring or maintaining the health (and consequently—more distally—the wellbeing) of the individuals and the communities it aims to serve (WHO 2000). A health system does this by its principal function of provisioning health services. Health services are a set of interventions designed to prevent, diagnose, treat, ameliorate or rehabilitate a disease condition or ill-health. In modern medicine and public health, health services are designed largely based on the scientific understanding of the pathophysiology of the disease process. These services range from the obvious—like stenting of a blocked artery to treat a myocardial infarction or an outpatient consultation to diagnose hypertension, a home visit to monitor the health of someone with a chronic disease, to the subtle—like public messaging campaigns to reduce smoking to prevent myocardial infarction, to ongoing surveillance services and community interventions services that are designed to detect the calamitous consequences of infectious disease epidemics like COVID-19.

A majority of the health services fall somewhere within this range of health interventions. Interventions that require a lot of resources, technical skills and individualized care (high-intensity), are mostly provided at a hospital, while many others, like day-to-day care for a diabetic patient (low-intensity), can even be provided at home. Others, like health information campaigns, or disease surveillance systems operate community-wide and over a longer time horizon. To best ensure the health of people and communities, a health system requires the capability to provide a range of these interventions, as the need may be.

Our definition of an urban community health system primarily encapsulates three structures and three functions. Structurally, an urban community health system is envisioned within a ward in a city (encompassing a population of about 10,000–50,000 in Kathmandu). The health system is built around this community. A central element of the health system is an urban community health center, which provides clinical services to people under the leadership of a physician. The second element of the urban community health system is a corps of community nurses that is based at the community health center and provides services at the clinic as well as through home health visits as needed. The community health center is linked to the community primarily by this nursing corps. A third element of

the urban community health system is composed of the households and the community itself. Together this urban community health system is expected to provide: 1) health service delivery to benefit individuals, 2) public health services to benefit the community as a whole and 3) health surveillance and regulation. We envision the urban community health system as a public entity under the stewardship of the local government. The local government builds, owns, operates this health system on its own, or in partnership with other public and private organizations. This community health system forms the first point of contact into the overall health system for people in urban areas, and is linked to other elements of the municipal and national health system through a referral network, reporting and information systems, and administrative and management mechanisms.

The Rationale for Urban Community Health Systems

In order to understand the right kind of health systems to build, it is important to understand the demand for and the production of health services. Andersen's behavioral model for health service utilization provides a conceptual framework for understanding the demand for health services (Andersen 1995; Andersen and Newman 2005). The Andersen model conceptualizes the demand for health as a combination of enabling factors, predisposing factors and factors of perceived or identified need. While enabling factors (for example, the types of health facilities and services that are readily available), or predisposing factors (for example, age or sex) influence the demand for health services, it is often perceived or identified need (i.e., disease burden) that is the more important factor (Shah, Rathouz and Chin 2001; Henton *et al.* 2002; Kim and Lee 2016). Because there has been a significant change in the burden of diseases in Nepal over the last three decades, the kind of health services that are needed has also changed. In 1990, about two-thirds of the deaths in the country were because of communicable, nutritional, maternal or child-health related diseases. By 2020, chronic, non-communicable diseases were responsible for two-thirds of the deaths (Pandey *et al.* 2020). Of the top ten causes of death and disability in Nepal, seven are chronic in nature. This burden of chronic diseases is even more severe in urban areas (GBDC 2020). Increasing life-expectancies will also mean that several people will live well into old age requiring care for chronic diseases.

Chronic, non-communicable diseases like hypertension, diabetes have different health services requirements from acute illnesses. While many communicable diseases (for example pneumonia or enteric fever) cause an acute and intense disease for a short period of time, chronic diseases require timely, coordinated, longitudinal care. While the need may often be for low-intensity care, care needs to be easy to access (Sav *et al.* 2015). Such care is best provided through community-based outpatient based facilities, a community nursing program or even within the households (Runyan 1975; Lorig *et al.* 1999).

Other factors also necessitate extending our health systems beyond the hospitals and centering our health systems around communities. Health systems that primarily rely on hospital-based inpatient services while ignoring community-based care have proven inadequate in managing the ongoing COVID-19 pandemic (Kemp 2021). In addition, communities and households aren't mere consumers of health services but also major producers. Michael Grossman's human capital model—first put forward in the 1970s—was one of the first theoretical frameworks to offer this insight (Grossman 1972; Grossman 1999). While health services are conventionally thought of as being produced solely within hospitals or outpatient clinics, Grossman's model posits that individuals, households and communities function as important producers of health services by exercising self-care, and making choices and decisions that preserve and promote their health. Household and community action is also the best possible way of addressing the several distal determinants of disease like nutrition, water and public hygiene (Grossman 1972; Jacobson 2000). The theoretical insight that households and communities are important producers of health services has also been validated by empirical data (Lorig *et al.* 1999; Lorig *et al.* 2001; Brady *et al.* 2013).

Global efforts to restructure and strengthen our health systems have continually emphasized the need for more community-based health systems. The United Nations' political declaration on universal health coverage, the sustainable development goals, as well as the World Health Organization's flagship publications envision future health systems as integrated, community and people centered (WHO 2008; UN 2019). Nepal's own national health policies also allude to the importance of centering our health systems around communities (GoN 2019). However, Nepal's health system fails to adequately operationalize this insight, especially in the urban context.

Instead, the expansion of Nepal's urban health systems has been limited mostly to the provision of hospital services.

In the last three decades or so, market-based ideas and solutions have been more dominant in informing health policy in many developing countries including Nepal (The World Bank 1993). While this has led to an increase in private investment in the health system and an expansion of services, especially in the urban areas, private investment in health has concentrated in parts of the health systems where services can be financialized (Hunter and Murray 2019). Ever since Nepal encouraged private investment in healthcare in the early 1990s, there has been an increasing expansion of for-profit hospitals and medical schools. Within two decades of the adoption of a National Health Policy in 1991, the number of public hospitals increased from 77 to 95, while the private hospitals—mostly located in urban centers—increased from 19 to about 113 (Shrestha and Pathak 2012). At the same time, public and community based health services, whose benefits have significant positive externalities that cannot be financially captured, have not seen commensurate private investment. Even as annual health spending has gone up around the world, this investment hasn't necessarily matched needs (GBDHFCN 2019; Hunter and Murray 2019). Many people aren't able to afford the increasingly privatized, for-profit, hospital based health services, especially if they have chronic diseases that require long-term care (Ghimire, Ayer and Kondo 2018).

Although Nepal is one of the fastest urbanizing countries in the world, public health infrastructure in urban areas has failed to match population growth (Timsina *et al.* 2020; Elsey *et al.* 2019). National health policy papers and strategic plans mention the need for ambulatory and community-based care in urban areas; however, these plans haven't been satisfactorily operationalized. The community-based public health institutions that do exist in urban areas fail to provide quality health services, and predictably, people barely trust or use these institutions. For most people in urban areas, hospitals (and often private clinics) form the first point of contact into the health system. This has opened an enormous need for the provision of longitudinal, cost-effective and evidence-based health services. These imperatives make an integrated community-centered urban healthcare delivery mechanism an obvious gap for our health system to address.

There are several examples around the world where such horizontally integrated, community focused health systems have greatly improved care for

the people. The example of Costa Rica, which has similar life-expectancy as the USA for a fraction of the healthcare cost-per capita is relevant (Ariadne Labs 2021; Commonwealth Fund 2021). Thailand offers a replicable model where a similar community-centered strategy has been used to provide a basic set of services to the people (WHO 2017). Thailand's remarkable success in providing universal health coverage to its people relies on a backbone of community health systems that have been built there over the last several decades (Sumriddetchkajorn *et al.* 2019). An example of an integrated community-centered health delivery system—albeit in a rural setting—has been ongoing for decades in Jamkhed, India (Arole and Arole 1994). Recently the Delhi Government in India has started urban neighborhood clinics—called Mohalla Clinics—that incorporate some aspects of what we propose in this commentary (Lahariya 2020). Delhi's example demonstrates that it is feasible for local governments in a context similar to Nepal's to build an extensive community based health infrastructure.

In 2014, Nepal's government came up with an urban health policy, followed by a guideline to establish urban health promotion centers a few years later (DoHS 2017). The idea behind these urban health promotion centers was to provide basic preventive health and health-promotion services, alongside public health inspection services at the community level. Several urban health promotion centers were established in Kathmandu soon after (The Kathmandu Post 2016). However, this initiative has since faltered.

There were several reasons for this: At a policy level, the plan for the urban health promotion centers (UPHC) was established by the Ministry of Health (MoH). Local governments were not consulted, nor were they educated on why the program was important. As a result of this approach, there was little ownership at the local level. Second, when the program was begun in 2017, the federal devolution of the health system was still ongoing and local governments had not really started to pay much priority to health as an important area for their programs. Third, the ministerial leadership changed right after the program was launched, and the subsequent leadership didn't prioritize the plan. Consequently, there was no ownership of the program at the MoH.

There were problems at the programmatic level as well. A major problem was that there was a mismatch between the health services the UHPCs were designed to provide and the services the community needed. The earlier plan envisioned UPHCs led by medical officers (these are medical

school graduates with only one year of internship training and no additional postgraduate specialist training). Predictably, they were unable to provide a lot of the services that people needed and thus had to refer patients elsewhere. In addition, medical officers don't stay at their jobs for very long because they soon transition to a post-graduate training program within a few months or years. As a result, they aren't able, or have the incentive, to cultivate a relationship with the local community, a vital element for a community health system. Consequently, people never really used these facilities to the extent that they could develop to be an integral part of the community's health system.

With the COVID-19 pandemic, issues of health and health systems reform have gained unprecedented momentum in the national debate. This momentum appears to have created an appetite for meaningful reforms of our health system. Many urban municipal governments may be in a position to invest in the health of their constituents. Investing in health might be one of the best ways for local governments to advance their constituents' agenda. Also, leadership from accountable local governments not only has the potential to make these community health entities financially prudent, but also to make the horizontal integration of local health systems into other aspects of local service delivery, thereby creating a truly community oriented service delivery mechanism that ensures the wellbeing of constituents.

However, many urban municipal governments that may want to provide health services to their constituents are often limited by the lack of expertise on what services to provide, and what kinds of health systems to build. Local governments in the Kathmandu Valley are responsible for the health of more than 10 percent of the country's population, however these governments barely operate a health system, even though the city has enough resources to finance a robust health system to benefit people. This deficit opens an opportunity for urban municipal governments to establish meaningful community health systems. It is therefore useful for these governments to know how to build a community health system in the urban context. In the remainder of the commentary, we provide a succinct discussion of the elements (building blocks) of such health systems.

How to Build a Health System

A commonly accepted model for building health systems is the World Health Organization's building blocks framework (WHO 2007). This framework

can be used to conceptualize an urban community health system. This framework encapsulates six complementary building blocks that map to various outcomes that are fixed a priori. The framework is represented by the following schema (Table 1).

Table 1: Elements of an Urban Health System

Blocks	Outcomes
Health services delivery	
Human resources	Improved health
Medicines, equipment and supplies	Equity and responsiveness
Health information systems	Financial and social protection
Health financing	Efficiency
Leadership and governance	

Health Service Delivery

Health services are the centerpiece of the health system, and all other building blocks of the health system map to their relevant functions and outcomes—like improved health—via the production and delivery of health services. Health services entail the programmatic use of scientific and technical knowledge of biological, epidemiological, pharmacological, and other allied sciences to preserve and improve human health.

A community health system distinguishes itself from other types (or elements) of the health system in that they focus on delivering health services within the community, often on an ambulatory basis—as opposed to a hospital with an inpatient facility. Community health systems often include a formal clinic, and they involve the community and households as a locus of health service delivery.

An urban community health clinic needs to deliver health services that reflect the burden of disease that reflects the community it serves. Based on most measures of disease burden, diseases that are commonly prevalent in urban areas include chronic diseases like hypertension, diabetes, heart diseases and others. As stated earlier, these diseases require longitudinal care—across the care delivery continuum at the clinic, community and the household—where health services can be provided in the most efficient and appropriate manner. However several elements of this can be provided by visiting community health nurses, within homes and communities.

These health services focus on personal health, but also public health and distal factors that contribute to the health of the people that live there. A community centered urban health system also needs to focus on health problems that affect the "public," as opposed to the "person," building on the idea of public health. Infectious diseases that can spread fast are a common example, but also non-communicable diseases that arise from a distal social determinant of disease that the community shares—the built environment that lacks open spaces, or food systems for example—can also be a part of the service delivery continuum.

Human Resources

A community centered urban health system aims to provide services across a wide breadth of health delivery continuum, it needs to have personnel that are capable of providing these services. Many models of urban community health centers are led by a physician who is capable of providing ambulatory care that the community needs; this ideally includes a physician with a post-graduate training and clinical experience in adult and geriatric medicine, maternal, gynecological and child health, mental and behavioral health, and allied specialties. In addition, the physician needs skills and competencies in running and supervising a public health service.

In Nepal, doctors with a post-graduate training in general practice (MDGP) are ideally suited in meeting the demands of a leadership role at an urban community health system. MDGP physicians are specialist doctors with a broad-based three year training after finishing medical school. They are trained to provide a wide range of services, including emergency surgical, orthopedic and obstetric services. Although these physicians were originally envisioned to provide clinical leadership roles at district hospitals—providing a mix of surgical and non-surgical, ambulatory and inpatient care their training also lends itself to a clinical and operational leadership role at an urban community health system (Zimmerman 2008).

The physician is aided by a director of community and nursing services, who not only supervises a nursing corps of several nurses, but also takes leadership of the public and community health services of the health system. The nursing corps provides auxiliary clinical services alongside the physician, as well as longitudinal care at home and in the community. In addition, a community health system needs auxiliary health workers to

run laboratory, pharmacy, information systems along with administrative and finance functions.

Urban health clinics established in Nepal thus far, like the urban health promotion centers mentioned above, have failed in their mission because they have failed at recruiting health workers—mostly physicians—with required clinical proficiency. Usually, these clinics hire medical officers barely out of medical school. There is a gap between the required level of clinical competency and the expertise of these recruits. They are ill-equipped to provide meaningful care for most of the range of ailments seen in a community clinic, and they have to refer most cases to centers where greater expertise is available. In addition, since medical officers quickly move on to postgraduate training, they are unable to develop a long term relationship and trust with the community. Staffing these clinics with a physician with postgraduate training in general practice would obviate many of these extant issues. Organizing ongoing opportunities for further training and advancement of professional skills, while on the job, for the physicians and other high value staff members could help secure sustainable alignment of the long term professional goals of such staff members with the best interests of the community and the urban health care system.

An impediment to recruiting appropriate health personnel is the lack of compensation commensurate with their skills and market value. Current government owned public health systems have struggled in this regard; they have not only failed to account for the productivity of health workers, but also to adequately reward them for their work. Municipal governments need to adequately address this challenge before they can successfully build a publicly-owned community health system.

Medicines, Equipment and Supplies

Logistics, logistic management systems and a supply chain to support such a system form the backbone of any health system. A community health system pharmacy is expected to supply medicines that are included in most essential medicines list, and also additional medicines that may be required by the community. Similarly, it needs to provide laboratory and radiology services that are required for ambulatory care for many chronic diseases, as well as infectious diseases like typhoid, tuberculosis, gastroenteritis and pneumonia.

Pharmacy and laboratory services are important inputs in provisioning health services, and often they can be a service onto themselves that people

seek. While bulk capital expenditures in setting up these services may be substantial, many urban municipalities have resources that they can use to cover these expenses (TDF 2019). Depending on their local context, local governments could decide how they want to run these services: they could be run in-house, or their operations could be outsourced to entities that are better experienced at operating these services.

Even when beneficiaries do not seek clinical services at the clinic, if a community health system is able to provide high quality lab and pharmacy services at a reasonable cost, they may bring in more beneficiaries to seek health services. These services might even be able to generate an operating profit that can then be used to cover other costs (personnel costs for example), while still providing those services at very affordable rates.

Health Information Systems

A community health system primarily requires an information system to keep record of its beneficiaries, their health status and to record the services that are provided to them. This not only enables a periodic auditing, monitoring and even evaluation of the health system, but also helps in budgeting, planning and operations and meeting reporting requirements. An information system may also form part of a broader disease surveillance network.

Because services of an urban community health system are likely to be spread across time (care is longitudinal in nature) and space (care is spread over multiple locations), a robust and easily accessible system becomes very important. Thoughtfully implemented electronic health record (EHR) systems could meet these needs of a typical urban community health system. EHR systems that have been developed by OpenMRS for example, have been used for a similar purpose in Nepal, albeit mostly in a rural setting (Wiken, Poudel and Raut 2018). EHRs can also add functionalities for individual level data collection tools, logistic management systems as well as enterprise resource planning (ERP) systems that may be required by a community health system.

The lack of an overarching nationally accepted electronic health record architecture can make implementation of such a system, especially in the public sector, fraught with uncertainty. However, best practices are starting to emerge (Raut *et al.* 2017). Pioneering community health systems have the opportunity to shape the basis of a broader implementation of these information systems. An efficient, seamless and interoperable information

system is also likely to greatly facilitate the scale up of these urban community health systems.

Health Financing

A suitable financing model is a *sine qua non* of a successful health system. Health systems may be financed publicly or privately and these choices can impact how the system performs (Hsu 2010; Basu *et al.* 2012). Health financing, and the closely related idea of ownership are important determinants of the outcomes that can be expected from a health system.

The Lancet Global Health Commission on financing primary health care recommends a publicly financed community health system (Hanson *et al.* 2022). In a publicly financed model the government pays for the cost of setting up health systems and provisioning care. Care is mostly free for the end user. A common criticism of publicly financed health systems is that such systems often fall short of the financing requirement than is the need. Many publicly financed health systems have also been blamed for lack of accountability. Privately financed health systems run the risk of focusing on providing services that generate a profit rather than focusing on services that make people healthy. They are also likely to put people in financial jeopardy from accessing health services and could make health systems inequitable (Wouters and McKee 2017; see also Ghosh 2011). Municipal governments need to be cognizant of the pros and cons of these financing mechanisms.

In Nepal, local municipal governments spend less than one percent of the current health expenditure (MoHP 2019). Local governments need a greater share of government health expenditures in order to build health systems that meet the needs of their constituents. Urban municipal governments (Kathmandu for example) that are better resourced may be able to mobilize their own resources in order to build health systems. However, because there are no demonstrated examples of models of urban community health systems in the country, many municipal governments are struggling to justify financing them. In view of this lack of a demonstrated example, mobilizing alternative sources of funding to build a pilot health system in an urban ward may offer a practical workaround. Over time interim sources of funding can be replaced by stable public funding.

A publicly owned community health system, where fixed set up costs are borne by the public system, but recurrent costs are financed by a mix of public funds—lump grants or through social health insurance and nominal

user fees or copays—could prove to be a pragmatic funding mechanism over time. Because a publicly owned and set up health system does not aim to make a profit, users are spared the exorbitant fees privately financed systems are often blamed of charging; at the same time because users cover at least some of the operational costs of the health system, they are likely to demand accountability from the system. User fees can also reduce moral hazard—a tendency to overuse health services when they are free (NBER 2016). They could help make health systems sustainable, and ensure that services can be easily scaled up as required. Although user fees have been blamed for increasing catastrophic health expenditures, mechanisms like fee waivers could help ensure that user fees do not place a financial barrier in accessing care.

Leadership and Governance

Leadership and governance ties all the other building blocks of the health system together. This is also arguably the one element that our health system hasn't laid enough emphasis on. Leadership and governance of health systems also closely ties with the ideas of stewardship, ownership and financing discussed earlier. However, the devolution of health, and especially community health systems within the remit of local governments has meant that there is the possibility to experiment leadership and governance models that work best for each local context.

In view of the complexity of operating a health system, running a successful health system is likely to be an ongoing process of learning and evolution for local governments. With the lack of technical and managerial capacity with most local governments in managing and leading health systems, many publicly owned community health systems may benefit from recruiting the help of organizations that are experienced in managing health systems (Mills 2014). The local government may provide such an external entity the terms of reference, a budget and a mandate on the basis of which these entities can operate the publicly owned community health system on behalf of the local government. The local government can also set up a management board under its leadership that can closely supervise the work of such an entity. Such an arrangement could also provide an alternative solution to solve issues in hiring, procurement and similar functions that have beset many publicly owned health systems.

In this commentary, we outlined a theoretical approach to building urban community health systems. This block-based approach to building a health system is expected to map to functions that lead to the desired outcomes of improved health, equity and responsiveness, financial and social protection and efficiency. This approach allows for a bottom-up approach to health system restructuring, with contextual modification of the building blocks to match local context and needs. Demonstration of a few pilot urban community health systems based on this approach could provide a template to scale up a model of care nationwide. This model of care has the potential to equitably and efficiently provision vital health services to people in urban Nepal, and could fill a major gap in our national health system.

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