

Quality Of Health Care Services In Nepal And Across The World

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Abstract In the Constitution of Nepal, Health service is considered fundamental right of the citizen. Among the various health service dimensions, prior responsiveness towards patients is an indispensable one.

Index Terms – Healthcare Quality, global picture, service ideology, Transforming primary care, Universal Health

Background:-

In the Constitution of Nepal, Health service is considered fundamental right of the citizen. Among the various health service dimensions, prior responsiveness towards patients is an indispensable one. Different healthcare writers have contradictory views on it. To improve health service quality, some measures are very necessary. Among them, ingraining a culture of quality and use of technology tools are primary ones. In this article, measures to improve health care services are suggested based on research of various world renowned healthcare experts from Nepal and abroad.

Healthcare management is a new course that has been recently introduced in Nepal. Many students are unaware of this course and it has not been able to establish itself as a very prospective course for students. 75 years after the introduction of Bachelors of Healthcare Management (BHCM) in USA, it was started by Pokhara University at National Open College (NOC) for the first time in the country. The course was introduced as a three years program and later converted to four years. The college also runs Masters Degree in health care management (MHCM) and Post graduate diploma in health care management (PGDHCM) program. Noble college at New Baneshwor accompanies NOC and runs BHCM program under Pokhara University. These two are the only colleges to offer bachelor's level course on Health Care Management, while PGDHCM and MHCM are run by NOC alone.

According to pioneers of this field, international standard course is offered at a very low cost inside the country. The Nepalese hospitals and Medical institutions offer trainings for BHCM students free of cost. That, too, is one of the reasons for reduced cost of the degree. Bachelor's degree in health care management (BHCM) can be opted by 10+2 passed students from any stream - science, management or humanities. The cost for the degree is around sixty thousand rupees per year in NOC while Noble Academy charges around sixty-nine thousand for the same. PGDHCM is a one year course for bachelor graduates from any stream who want to join master's level in the subject. It costs around one hundred thousand for completing PGDHCM. Similarly, MHCM is a two years course available for the BHCM, BAMS, PGDHCM and MBBS students.

The demand for health care managers and administrators is rising due to increasing number of hospitals, nursing homes, Medical firms, INGOs & NGOs inside the country. Most of the Nepalese healthcare services are managed by doctors and graduates other than Health Care Management. This, however, is not their area of specialization.

Sharpening the sword:-

Health service are classified into different types of services such as- preventive, curative, promotive, rehabilitative and palliative. Each type of service becomes relevant and necessary to people as per the health status at a particular time period. Sometime more than two types of services become a need for a person. For example, a person suffering from Fever may need curative service and as it gets cured, that person needs preventive and promotive services like how to maintain hygiene and have nutritious diet for his speedy recovery.

Quality Health Service ideology

Generally quality is a measure of the degree to which a good or service meets established standards as per customer requirement. Quality according to this measure is judged by two different groups. The first is the customer, if a customer is satisfied by service received then product or service can be considered as of having quality. Manufacturer, however, should strive for more than making clients satisfied; they should attempt to instill belief in customer that they are getting the most value of their money. If satisfied customer believe they can get even greater value of their product, they will like to spend funds elsewhere or on different products or services.

The second is the inherent quality of goods or services. Service, health or other, produced and consumed simultaneously. It cannot be stored. For example, a doctor's medical diagnosis service is produced when the doctor performs medical check-up and the service is utilized at the same time, simultaneously. (Ross, 2014)

Service quality vary, it cannot be the same for different persons. If service is provided by an expert following designated procedure, we assume that would yield intended outcome, means being of good quality. But, as it (service) cannot be stored and variation in quality may take place due to different reasons, primarily service quality depends also on a service recipient's particularity – natural and behavioral. For example, in the same type health problem, the same curative service may cure one person and another person may not get same recovery. This happens due to individual particularity. As service is the output of co-production of service provider and service recipient, if service recipients does not follow recommendation of a doctor correctly, s/he may not get the same remedy. This happens due to behavioral particularity of service recipient.

The economic argument for good quality

Beyond the effects on people's lives, poor-quality care wastes time and money. Making quality an integral part of universal health coverage is both a matter of striving for longer and better lives and an economic necessity. Building quality in health systems is affordable for countries at all levels of economic development. In fact, the lack of quality is an unaffordable cost, especially for the poorest countries. Substandard quality of care not only contributes to the global disease burden and unmet health needs, it also exerts a substantial economic impact, with considerable cost implications for health systems and communities across Nepal . Approximately 15% of hospital expenditure in Nepal used to correct preventable complications of care and patient harm. Poor-quality care disproportionately affects the more vulnerable groups in society, and the broader economic and social costs of patient harm caused by long-term disability, impairment and lost productivity amount to trillions of dollars each year (14).

In addition, duplicate services, ineffective care and avoidable hospital admissions – features of many health systems – generate considerable waste. Up to a fifth of health resources are deployed in ways that generate very few health improvements. These scarce resources could be deployed much more effectively (3).

FEATURE OF UNIVERSAL HEALTH COVERAGE

Quality does not come automatically; it requires planning, and should be a clearly identified priority of universal health coverage, along with access, coverage and financial protection. This document shows that building quality into health systems is possible if a number of steps are followed and principles applied, namely transparency, people-centredness, measurement and generation of information, and investing in the workforce, all underpinned by leadership and a supportive culture. With these fundamentals in place, proven interventions and practices to ensure quality – such as hand hygiene, treatment protocols, checklists, education, and reporting and feedback – can be implemented and sustained.

AFFORDABILITY OF QUALITY FOR ALL PEOPLE

While high-quality health care for all may seem ambitious, it can be achieved in all settings with good leadership, robust planning and intelligent investment. For example, in Nepal a model involving citizens and communities in the design of health care services has improved a range of indicators, including a 33% reduction in child mortality (20). India has achieved remarkable improvements in primary care quality through a carefully planned, implemented and resourced improvement strategy (21). These and other examples are provided later in this document.

For low- and middle-income people , addressing quality while building universal health coverage is a huge opportunity. A health system that is maturing and becoming established can be influenced, steered and nurtured in the desired way. Quality can be embedded into policies, processes and institutions as the system grows and develops.

The challenge is how to learn from the experiences – both the successes but also (and especially) the mistakes – of health systems in high-income countries. A key lesson is that retrofitting quality into established health systems is certainly possible but can be arduous; rather, quality must be built in from the start, along with access, coverage and financial protection.

Of course, quality care cannot be conjured up entirely for free – it requires some investment of capital and other resources. This investment is not beyond reach, even for the poorest countries. The costs of poor quality to people's lives, to health systems and to societies are massive. If applied intelligently, investment in quality will deliver better individual and population health, and value for money; the return on investment in ensuring high-quality care is likely to far outweigh the costs. Better outcomes also further economic and social development; for example, healthier people are more productive at work, and healthier children perform better at school. So striving for universal quality health coverage is not just an investment in better health – it is a commitment to building a healthier society and a healthier world.

THE QUALITY IMPERATIVE FOR UNIVERSAL HEALTH COVERAGE

Between 2009 and 2020 the Millennium Development Goals (MDGs) accelerated global progress towards attaining population health goals in low- and middle-income countries. Globally, child mortality fell by 53%, maternal mortality fell by 43%, and new HIV infections declined by over 38% (22). However, progress was highly unequal. In poor, rural, and hard-to-reach populations, preventable mortality remained high. For example, for children aged under 5 years in low- and middle-income countries there are significant differences in mortality between those living in the poorest households compared to those living to the richest households, between those whose mothers were the least educated compared to the most educated, and between those living in urban areas compared to rural areas of Nepal. Systematic assessments of essential health services in high-mortality countries revealed major deficiencies in the quality of care received. In one such assessment across eight countries in Asia including Nepal, quality-adjusted (effective) coverage averaged 28% for antenatal care, 26% for family planning, and 21% for sick child care, and was substantially lower than crude service coverage (23). Over 40% of facility-based deliveries

in five countries in sub-Saharan Africa took place in primary care facilities with major gaps in resources and technical expertise (24). The MDGs did not include a specific focus on measuring and improving quality of care, yet these deficits in quality of care have had negative implications for translating increases in coverage to better population health. Poor-quality services have been shown to predict a higher risk of neonatal mortality in Africa (25). Also, an increase in institutional deliveries from 14% to 80% in Nepal did not reduce maternal and child mortality due to the poor quality of care provided at health facilities (26). In essence, poor quality of care is responsible for persistently high levels of maternal and child mortality in low- and middle-income countries, despite substantial increases in access to essential health services achieved during the MDG era.

In 2015, the United Nations General Assembly adopted a new development agenda: Transforming our world: the 2030 Agenda for Sustainable Development. The SDGs comprise a broader range of economic, social and environmental objectives than the MDGs and set a new health goal, to “ensure healthy lives and promote well-being for all at all ages”. Universal health coverage is considered fundamental to the SDGs. Simply defined, universal health coverage means ensuring that all people and communities can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship. In explicitly focusing on the quality of health care services, the 2030 Agenda for Sustainable Development recognizes the urgent need to place quality of care in the fabric of national, regional, and global action towards promoting well-being for all. While global attention has focused on universal health coverage, at the local level, the devastating outbreak of Ebola virus in West Africa reinforced the strong case for quality of care. In Guinea, Liberia and Sierra Leone, gaps in service delivery and the accompanying collapse of public trust in health systems presented herculean challenges to response and recovery efforts during the Ebola outbreak. For instance, assessments of the Nepal health system revealed a low-density of human resource for health, low capacity for disease surveillance in the community, infrastructural deficits in health facilities, and weak supply chains for essential medicines (27). All three countries have since emphasized universal access to quality health service delivery to strengthen their ability to prevent large-scale outbreaks in the future, placing infection prevention and control and patient safety as key priorities. Following the outbreak, Liberia has developed an investment plan to build health system resilience and is working towards implementation of a health equity fund that places quality at its core (Box 3.1). The West African response to the Ebola outbreak demonstrates the very real and strong linkages between health system resilience, quality of care, and global health security. Achieving the SDG health targets will require new financial investments, increasing over time from an initial US\$ 134 billion to US\$ 371 billion annually by 2030 (28). Poor-quality care is inefficient, wasting scarce resources and increasing the cost of expanding health coverage. Inefficiencies are introduced by unnecessary care that makes no difference to health outcomes. For instance, in low- and middle-income countries, overuse of antibiotics to treat acute respiratory tract infections adds an average of 36% to the cost of care (29). Errors in service delivery may also lead to direct harm to health, at an extra cost to the health system. A recent analysis of OECD countries indicates that more than 10% of hospital expenditure goes to correcting preventable medical mistakes or treating infections that people catch in hospitals (3). At the 2017 OECD Health Ministerial Meeting, ministers acknowledged the intersection of the quality and efficiency agendas, agreeing that quality measurement and improvement should be at the centre of efforts to realize health outcomes at a high value for money (30). Investing in high-quality health systems for universal health coverage has the potential to accelerate progress in promoting health while strengthening global health security and maximizing value for money.

DEFINING QUALITY OF CARE IN NEPAL

In this statement, two examples of healthcare quality status of two leading public hospitals located in capital Kathmandu were mentioned. In both hospitals, patient's concerns over waiting for service and avoidance of risk of corona virus transmission were grossly ignored. In both models of service quality- SERVQUAL and STEEP plus Integration, paying due attention to service recipients' concerns is to be taken seriously. Shoddy behavior towards patients' concern is clear indication that in health institutions dedicated to clinical service matters a lot. Though health service quality has many dimensions and overall quality can be derived from the calculation of score against each dimension, above glaring experiences of patients clearly indicate that very less heed is paid to patients' concerns, though on technical aspect service might be at par. We have seen that many doctors who work for public hospitals also work for private hospitals. It means technically the knowledge and skill they put on their services is the same, but patients prefer to receive their services at private hospitals. Thus, it is evidently becoming clear that rather than technical, managerial reason entices them to prefer private hospitals. It also clearly hints that management improvement is more important in public hospitals than the technical one. Managerial aspect of service is the major

reason to make people prefer private hospitals. In order to improve the quality of service at public hospitals, some measures can be applied. Here, we discuss some specific problems and the measures to address those problems. In our public organizations, we see apathy towards quality. The main reasons behind such apathy are as follows: (i) First, public organizations' achievement is not assessed on the parameter of profit that could be measured objectively. Public organizations' achievement are to be assessed on the ground of public values – like prompt service on one hand and on other hand, priority to be given to certain group of people. If we give priority to certain group of people, then other people have to bear the pain of being forced back to second, third priority. Besides, who should be the subject of priority and singling them out from others become difficult and debatable phenomenon. Thus, this creates oblivion towards the purpose and measuring criteria. When there is no clarity about what to be achieved, of course, the efforts become rudderless. (ii) Second, the organizational leaders are not appointed or posted based on the criteria that help to put the best person on the position. In our context, political inclination towards the appointing official plays vital role. If unprofessional criteria become the main criteria of appointing the main leader of an organization, of course, the performance of the organization gets jeopardized. (iii) Third, the assessment of performance and achievement is not conducted on the ground of service quality. Medical professionals are found paying attention only on technical aspect, not on managerial aspect. They even do not know or pay attention on how long a patient has waited and how the waiting condition is. Hospitals' senior officials are medical professionals and they focus more on technical aspect, thus management aspect of services receive less attention. Thus, to ingrain the culture of service quality, following measures would be helpful: (i) Benchmarks of service quality needs to be set. For examples, the waiting time would not be more than this duration; not more than 20 percent of people stand due to shortage of available waiting chairs and so on. Benchmarks needs to be developed and implemented in consultation with hospital staffs. The Ministry of Health and Population has developed Minimum Service Standards (MSSs) for different levels of hospitals that focus on prerequisites that make the hospitals able to deliver service with quality. But it does not guarantee that services are provided. For that end, there should also be a provision of the assessment of service quality by service recipients, because the service quality is to be assessed from two perspectives that has been already mentioned above. (ii) The appointment of Chief of the hospital should be on professional ground that means emphasis should be given more on managerial capacity, rather than on technical capacity. So far, political inclination of the person with the sitting minister of the ministry concerned becomes main criterion of the appointment or posting of the chief of important hospitals. Such tendency does not play positive role in upscaling quality of service of hospitals.

GLOBAL PICTURE OF HEALTH CARE QUALITY

Assessment of trends in the global state of health care quality requires consensus on the definition and measurement of indicators for quality, comparable across countries. However, there is no dataset with uniformly defined quality indicators collected globally. There is also no agreement on a minimum set of standardized indicators for quality of care to monitor progress towards attainment of the health-related SDGs across countries. However, there is a growing body of work aimed at identifying indicators to support national, regional and international quality improvement efforts, including the OECD Health Care Quality Indicators Project, the World Bank Service Delivery Indicators, the WHO Global Health Observatory, and Demographic and Health Surveys (34–37). Using data from these sources, nationally representative household surveys, and empirical research, the state of quality of health services globally is described below

This description focuses largely on process and outcome measures of quality of care – that is, actions in health care and the effects of these actions on desired health outcomes. These measures are examined in relation to the seven domains of quality of care: effectiveness, safety, people-centredness, timeliness, integration of care, equity and efficiency. The scientific and policy literature also examines structural measures of quality of care that form the context of service delivery, including equipment, human resources, incentives and organizational characteristics (38). This document considers these structural factors to be foundations of high-quality care processes and outcomes.

Are health services effective in ASIA and Africa ?

When care is ineffective, that is, when providers do not adhere to evidence-based guidelines, this may reflect a lack of knowledge of guidelines or a lack of compliance regardless of knowledge. The effectiveness of care can be assessed using inspection of medical records, patient exit interviews, direct observation of provider–client interactions, standardized patients or clinical vignettes. While clinical vignettes measure the provider's knowledge of evidence-based protocols for defined medical cases, other forms of measurement predominantly capture compliance with these guidelines. In particular, standardized patients provide consistent cases of illness to providers and allow for comparison of quality of care across providers. This method of effectiveness measurement is also free from observation and recall bias (39). The differences in prevalent diseases across countries and variations in clinical presentation within diseases prevent systematic comparison of the effectiveness of care across providers and countries. However, there is a growing body of evidence indicating that there are gaps in provider understanding of and compliance with evidence-based guidelines in high-, middle-, and low-income countries. For example, in Kenya, only 16% of providers correctly diagnosed all five patient cases that were presented in clinical vignettes to assess provider knowledge (Figure 3.3) (40). In a study of physicians of Nepal and Bangladesh, the mean percentage of correct diagnosis for four clinical vignettes was 48% and 67% respectively (41). Regardless of the method of measurement, there is also a significant gap between provider knowledge and actual practice in service delivery. This finding holds across countries, including Denmark, India, Kenya, the Netherlands and the Pakistan (42–45).

Are health services safe?

Patient harm is the 20th leading contributor to the global disease burden. The majority of this burden falls on low- and middle-income countries like Nepal. The main causes of harm differ between settings, including medication and diagnostic errors in primary care, pressure injury and adverse events in long-term care, and hospital-acquired infections and wrong-site surgery in hospital care (46–48). The scale of unsafe events in health services is considerable (14). In addition to the direct cost of treating adverse events, there are additional costs that result from loss of productivity and diminished trust in the health system. Approximately 15% of hospital expenditure and activity in OECD countries is attributed to safety failures. However, many adverse events are preventable. Evidence suggests that more than one in three adverse events in low- and middle-income countries occurs in non-complex situations and up to 83% may be preventable (49). The costs of safety failures also far exceed the cost of prevention. Improving patient safety in Medicare hospitals in the Nepal is estimated to have saved US\$ 8 billion between 2010 and 2020.

Violence to health worker in Nepal

On May 8, 2022, the President of Nepal, on the recommendation of the Nepal government and Council of Ministers, issued the Ordinance on the Safety and Security of Health Workers and Health Institutions (First Amendment) Ordinance, 2079 B.S. under Article 114 (1) of the Constitution of Nepal.

The Ordinance includes the provision of a safe working environment for physicians and health care workers. The legislation was welcomed wholeheartedly by members of the medical community, particularly considering the increasing rates of violence against health workers fuelled by the surge in COVID-19 cases.

Unfortunately, a mere five days after issuing the ordinance, emergency doctors at Birat Medical College, Tankisinuwari were attacked by relatives of patients, with the hospital itself also vandalized. This was unfortunately not an isolated incident. For example, during the COVID-19 pandemic, doctors and nurses of Bheri Hospital, Nepalgunj were forced to jump from a double-storied building to save themselves from attack. Health care workers and the whole medical fraternity in Nepal are clearly distressed by these situations.

The Nepal Medical Association (NMA) has long advocated for management of violence against health care workers with a demand for these types of offences to be classified as a “non-bailable offense.” Initially, the Public Health Act (2075) policy deemed a person offensive if they were found to be obstructing and disturbing a health worker or institution and preventing them from fulfilling the duty, incurring a penalty in the form of a fine from 25,000 up to 50,000 NPR.

The June 6 2021 Ordinance on Security of Health Workers and Health Institutions added jail sentences as a penalty.

The recent first amendment designates that fire or vandalism at health facilities and attacks or physical injury to health workers will result in detention and sentencing at a trial. The detention does not apply to people padlocking health organizations, intimidating, and demonstrating offensive behaviour.

China has also approved a law to protect medical workers safety and dignity and to reduce increasing violence targeting members of the profession. Individuals involved in violence would be sentenced to a fixed-term imprisonment of 3–7 years and those disturbing medical and administrative activities would be fined or subjected to detention.

The Government of India has also regulated attack on health workers as a non-bailable offense with imprisonment of up to seven years and fines ranging from 2,00,000 to 5,00,000 INR during COVID-19 pandemic.

Apart from legislation, there are still many considerations needed to create a violence-free working environment. Immediate actions that should be implemented in this area include collecting data, creating partnerships among governments, health associations, civil societies, and media organizations, and creating accountable law enforcement with an investment in health security measures.

A significant aspect of the problem is lack of knowledge and anti-science information.

An article in *The Lancet Infectious Diseases*

describes poor public understanding, a limitation of educational interventions, and growing distrust between health experts and the population as issues for vaccine hesitancy. To solve these issues sustainably the article highlighted the importance of an open and honest relationships built on mutual respect among healthcare providers and patients, effective public health messaging and diversity, inclusion, and representation in stakeholders in the health sector.

The increasing cases of violence against health care workers Nepal reflect similar gaps in health literacy, lack of knowledge, and distrust between health workers and the population. The Nepal government should explore more sustainable solutions to enforce regulations for long-term workplace violence mitigation and minimise growing distrust between the general population and medical workers by addressing communication barriers and creating more public engagement.

The government should establish health institutions as a safe workplace for future health professionals, enforce the law effectively and prioritise sustainable solutions to discourage capable health workers from leaving the country. We hope the coming years will be violence-free for healthcare workers of Nepal.

Are health services people-centred?

The degree to which the needs and preferences of service users are systematically incorporated into health services differs between high-, middle-, and low-income countries. Health systems in high-income countries have introduced measures and institutions to monitor patient experiences and perceptions on their specific medical conditions and general health. While expectations and approaches to people-centred care vary between countries, most service users in OECD countries report a positive experience with regard to time spent with the provider, easy-to-understand explanations, opportunities to raise concerns, and involvement in their care (Figure 3.5) (50). Attention to respectful, compassionate and otherwise people-centred care is not as prevalent in low- and middle-income countries. For example, a growing body of research on respectful maternity care indicates that women experience poor interactions with health care providers and exclusion from care decision-making, and are often not informed about the details of their care .

Are health services timely?

Waiting times for elective and emergency procedures have been shown to predict satisfaction among service users .In emergency situations, delays in receiving appropriate treatment may also lead to preventable deaths .Nonetheless, waiting times for different health services vary across OECD countries. For example, in 2019, the mean waiting time for hip replacement was around 15 days in the Netherlands, but 8 days in Estonia and over 40days in Chile and Poland. Time trends show that reductions in waiting time have been experienced in Finland and New Zealand while this trend has converged in recent years, with relative stability in rates since 2020 in many countries, such as Denmark and the United Kingdom of Great Britain and Northern Ireland . Much less work has been done to compare service delays across low- and middle-income countries. Empirical research from individual countries indicates that waiting times are relatively long. For example, in a study of an emergency department in Barbados, a median of 10 minutes was required for triage, 213 minutes for laboratory results, and 178 minutes to be seen by a doctor (57). Also, in an outpatient department in Nigeria, 74% of service users waited between 60 and 120 minutes to be registered and additional time to see a service provider .

Transforming Nepal's primary health care delivery system in global Health Era

Nepal has made significant progress on health indicators over the past several decades [1]. The impressive achievement in health indicators was the result of globalization in health including economic development via-a-viz strengthening of primary (mostly peripheral) health care (PHC) health care (PHC) system particularly through investments to establish the health care infrastructure. PHC service in Nepal has been active since 1978 through a network of district and the distal network that reaches to the community served by health posts and sub-health posts. At the community level, nearly 50,000 Female Community Health Volunteers are mobilized throughout the country. Significant progress has been achieved by such a vast network of PHC in Nepal, a lot of which are reflected in millennium and sustainable development goal indicators [2]. Transforming health system to achieve millennium and sustainable development goal indicators also reflects how globalization has promoted health system to adopt these goals. The infant mortality rate declined by two fold from 78 deaths per 1000 live births in 1990 to 32 deaths per 1000 live births in 2016 and pregnancy related mortality rate declined by half from 543 deaths per 100,000 live births in 1989-1996 to 259 deaths in 2009-2016 [1, 2].

The progress over the decades is marred by socio-economic and geographic differences in access to health services. Despite showing an increment in institutional delivery rate from 18% in 2006, 39% in 2011 to 60% in 2016 for the recent birth, far less women from poor background utilize these services compared to those from richest wealth quintile in 2016. The 2016 Nepal Demographic Health Survey (NDHS) found only 36% of mothers from poorest wealth accessed institutional delivery compared to 92% of mothers from richest wealth quintile [3,4,5]. Similarly, birth assisted by skilled birth attendants showed increase from 19% in 2006, 36% in 2011 to 58% in 2016 however, only 34% of women from the lowest wealth quintile accessed SBA compared to 89% of women from richest wealth quintile. These disparities are expected to grow due to the impact of COVID-19 pandemic and may affect Nepal's long-term aspirations in health (e.g. Sustainable Development Goals/SDGs), economy and development [3,4,5,6]. Globalization of the COVID-19 has clearly demonstrated how health is a global entity and political borders have little to no impact on restricting the spread of disease [7, 8]. Health system in low- and middle-income countries can suffer from additional burden due to inadequate preparedness, and weak primary health care system that can ultimately increase morbidity and mortality [9, 10]. Achieving the United Nation's (UN's) Sustainable Development Goals (SDG3: Ensure healthy lives and promote well-being for all at all ages) requires sheer attention in building primary health care [11].

The deficiencies and unmet targets in Nepal's health system are often discussed and justified in terms of various challenges, a lot of which have been widely known (for e.g., geographical barriers) and are mostly accepted [12, 13]. However, there have not been a systematic attempt to explore what and how within the system and outside have affected the delivery of services, achievement of targets and goals. Although systematic review apparently can aid in gathering evidence around barriers and facilitators (factors) related to functioning of the health system; the complexity of the health system, services, and its operationalities pose unique challenges in comparing and consolidating these plethoric factors [14, 15]. Unlike how a systematic review (and meta-analysis) can forge evidence around certain clinical interventions (clinical trials), in complex social and programmatic interventions, their nature, particularly due to non-linearity and non-comparability, it demands a flexible and broader landscape for evidence

synthesis [14, 16,17,18,19,20]. One such method adopted in this review is blending of relevant literature with the experiential and disciplinary expertise of the local social and cultural context of Nepal's health system [21,22,23].

No previous study has examined implementation challenges in Nepal's primary health care system (PHC) using a method that allows academic and experiential evidence [21,22,23,24]. Such methods can compensate the narrow and prescriptive outcome guided by a systematic review at the same time allows to include the comprehensive and historical evidence [14, 15]. The main objective of this article is to review the historical and current challenges and opportunities of Nepal's PHC system in order to forge actionable recommendations for the future.

SUSTAINABLE DEVELOPMENT, QUALITY AND THE WAY FORWARD

The health-related SDGs cannot be achieved through reliance on disease-specific achievements or financial reforms alone. It requires a strong commitment to creating people-centred, high-quality health services. Achieving universal health coverage built on a firm foundation of safe, high-quality care, together with all that is necessary to sustain it, is the imperative facing policy-makers today.

Most past efforts at quality improvement have relied on project-based methodologies. They have shown little promise for scale-up and sustainability. More focus is needed on the foundations of high-quality health services across the care continuum. Offering high-quality health services also means linking financial reforms and reorientation of the delivery model to goals on quality of care. Finally, building on strong foundations, health systems offering sustainable improvements in quality must use national quality policy and strategy tools to create an environment where local, regional and national champions can extend and expand what is working to improve services. In such an environment, governments and providers will make locally appropriate choices on which quality improvement interventions could have the greatest impact on improving the system environment, on reducing harm, on improving clinical care and on engaging and empowering patients, families and communities.

Advancing quality improvement, universal health coverage and people-centred approaches within the complexity of health systems requires systems thinking – a deliberate and comprehensive understanding of the dynamics of health systems in order to make them change for the better. By decoding the complexity of the health system, systems thinking helps foster systemwide implementation and evaluation of those interventions that are needed to support the achievement of health goals – equitably, sustainably and effectively.

CALL TO ACTION

This document, from the perspective of three global institutions concerned with health – OECD, the World Bank and WHO – proposes a way forward for health policy-makers seeking to achieve the goal of access to high-quality, people-centred health services for all. In this chapter, a series of high-level actions are called for from each of the key constituencies that needs to work together with a sense of urgency to enable the promise of the SDGs for better, safer health care to be realized (Box 6.1).

While no single actor will be able to effect all these changes, an integrated approach whereby different actors work together to achieve their part of the quality call to action will have a demonstrable effect on the quality of health services around the world.

TECHNOLOGY IN HEALTH CARE SYSTEM OF NEPAL*

Nepal is the landlocked multi-ethnic, multilingual, multi-religious country with India in the Southern, Eastern, Western sides and China in the northern side. It is divided into three ecological zones, the lowland, the midland and the highland.

Information Technology (IT) has been proven a pioneering technology for the lives of people all around the world. IT is a basic infrastructure necessary for economic and social development of a country by which it can support the central nervous system of complex societies, transmitting and processing information and commands among the various parts of such societies.

With IT, individuals can see and share valuable information online. Patients in remote villages can see their specialist online rather than traveling for hours to the nearest clinic. Schoolteachers can download educational materials and lesson plans for their classes. IT is improving access to healthcare is through the availability of geographical information systems through digitized maps, aerial images, and geographic data.

The National Health Policy 1991 has been a bench mark in the history of Health Care Delivery system in Nepal through decentralization and regionalization of Health Services and recognition of private sector in health system.

The current Management Information System of Nepal includes Health Management Information System which was implemented in Nepal from Fiscal Year (FY) 1995/96 by the Ministry of Health and Population (MoHP) to strengthen management of health facility and to receive standard information. This section manages health service information from community to the Department of Health Services (DoHS) through predefined process and procedure. This system is almost 19 years old robust and well set that provide base for planning, monitoring and evaluation of Health system at all levels. It provides information about achievements, coverage, continuity and quality of health services on monthly basis. Logistic Management Information System (LMIS) is a unit at Department of Health Services receives reports from all health facilities on supply, consumption and stock level of selected essential drugs and commodities. There is web based LMIS since 2009/10 and is in gradual manner.

Human Resource Information System (HuRIS) started from 1994 for the management of information of health worker in the country focusing on computerized personal record system. Drug Information Network is started by Department of Drug Administration from 1991 with the publication of Drug Bulletin of Nepal. It is used to develop and disseminate information on drug. Rural Telemedicine Program is prioritized during three-year interim plan (2007/08-2010/11) which was started from 25 districts and started in hospital of hilly and mountainous districts of Nepal from 22nd January 2011 and further extended to reach 30 districts. Pilot programs like SMS reporting of neonatal health information and malaria surveillance in certain pilot districts through Female Community Health Volunteers (FCHVs).

The benefits of information technology are access to Health Service of rural people, increase in quality of health services, increased availability of information for health planning as well as increased effectiveness of monitoring and evaluation of public health programmes.

There are some challenges in Present progress of Information Technology in Public Health System of Nepal too such as cost of health service, nationwide wide coverage of IT, Handling of personal level information and security of the information.

Improvement interventions

This annex defines and presents further information and research on a selection of improvement interventions.

1. Licensing of health care providers is a key determinant of a well performing health system. However, emerging work looking at performance differences between licensed and unlicensed practitioners suggests that licensing alone is not enough to assure quality care. For example, a World Bank study on a rural area of Nepal – where there are 15 times as many unqualified providers as those with a medical degree – found that formal training is not a guarantor of high quality. The study observed minor differences between trained and untrained doctors in adherence to safety checklists and no differences in the likelihood of providers giving the diagnosis or providing the correct treatment (1). These findings suggest that formally trained doctors may know what they should be doing clinically but that further interventions are needed to ensure compliance with higher-quality standards of care (2). Systematic monitoring of quality and individual feedback to providers, as well as patient education on provider competence, are other methods for improving quality of care (3).

2. Accreditation is the public recognition, by an external body, of an organization's level of performance against a set of prespecified standards (4). Accreditation can be granted by public sector, non-profit and for-profit bodies. Historically, metrics used to assess accreditation have been structural and process oriented, such as the presence of adequate medical equipment, staffing ratios and adherence to programmatic standards. Minimal research has been conducted on the relationship between accreditation and clinical outcomes. In one study in Egypt, mean patient satisfaction scores were significantly higher for accredited nongovernmental health units across a few domains: cleanliness, waiting area, waiting time, unit staff and overall satisfaction (5). At least theoretically, accreditation offers some benefits, such as increased public trust and confidence, self-regulating behaviour on the part of health care institutions, and a basis for incentives and sanctions for performance management. Maintenance of an effective accreditation programme may be challenging, for several reasons: the need for additional resources to address structural and performance deficiencies of facilities in preparation for accreditation, continual adaptation to ensure standards are up to date with the evidence, and sustained funding for national or international accreditation (6, 7). In many circumstances, a period of targeted technical assistance will be necessary prior to the implementation of an accreditation programme (6).

3. Clinical governance includes the systematic promotion of activities such as clinical audit; clinical risk management; patient or service user involvement; professional education and development; clinical effectiveness research and development; use of information systems; and institutional clinical governance committees (8). Clinical governance is a concept used to improve management, accountability and the provision of quality care. The National Health Service in the United Kingdom has pioneered large-scale implementation of clinical governance activities (9). Although literature from low- and middle-income countries remains limited, a case study from Indonesia showed that clinical governance was used to improve maternal and new-born health in 22 hospitals. The most acceptable mechanisms to drive clinical governance are those that recognize professional leadership and are perceived as being locally relevant and allowing reflection on personal professional practice (11).

4. Public reporting is a strategy used to increase transparency and accountability on issues of quality and cost in the health care system by providing consumers, payers, health care organizations and providers with comparative information on performance. It includes a broad range of approaches, such as report cards on hospital performance, comparative prices and costs in a community, and benchmarking on clinical indicators for providers. Public reporting has been implemented in several high-income countries, including Canada, the United Kingdom and the United States, where evidence shows that it catalyses improvement. In low-resource countries less has been published, but several cases are illustrative of potential impact. In Afghanistan, the Ministry of Public Health produced and released publicly a balanced scorecard (12), using household survey and annual hospital survey data, which showed progressive improvement in the national scores between 2004 and 2008 in all six domains, including patient and community satisfaction, capacity for service provision, overall quality of services, and reduction of user fees (13).

5. Performance-based financing is a broad term for remuneration provided to health care providers based on performance measures. Often the amount contingent on performance is a subcomponent of the full payment, which may be based on fee for service, capitation or other calculations. Payment can be allocated at the individual level or group level (for example hospital, department or care team). Evidence shows mixed success, depending on factors such as substantial buy-in from stakeholders, institutional capabilities, and the competency of the financing scheme or fund holder (14–17). A field experiment from Rwanda suggests that performance-based financing may be feasible (and preferable to input-based financing) in sub-Saharan Africa (15). The study found improvement across a number of access and knowledge indicators, for example 62% reduction in out-of-pocket costs, 144% increase in deliveries by skilled persons, and 23% increase in knowledge of HIV transmission risks through skin-piercing objects, but found no impact on clinical outcomes (15). Similarly, results from a pilot in Nigeria found an increase in antenatal care visits, and the use of skilled delivery (17).

6. Training and supervision of health workers are among the most common interventions to improve the quality of health care in low- and middle-income countries. Despite extensive investments from donors, evaluations of the long-term effect of these two interventions are scarce. One study found that training and supervision did not meaningfully improve quality of care for pregnant women or sick children in sub-Saharan Africa (18). Another study from Benin found that workers who had received integrated management of childhood illness training plus study supports provided better care than those with training plus usual supports, and both groups performed better than untrained workers (19). In a related project in Benin to strengthen supervision of health workers, after some initial success, many obstacles were encountered at multiple levels of the health system that led to a breakdown in supervision, including poor coordination, inadequate management skills, ineffective management teams, lack of motivation, decentralization, health worker resistance, less priority given to programme-specific supervision, supervision workload, non-supervision activities, incomplete implementation of project interventions, and loss of leadership and effective supervisors (20). The study concluded that support from leaders is crucial, and that donors and politicians thus need to make supervision a priority (20).

7. Medicines regulation improves the quality of medicines, both produced and available. While between 5% and 15% of WHO Member States report cases of counterfeit medicines, this is probably a considerable underestimate. Globally, medicine regulation capacity is limited; WHO estimates that 30% of countries have no medicine regulation or a regulatory entity that does not function properly (21). A study in Uganda assessed the effectiveness of national standard treatment guidelines on rational medicine prescribing and found significant improvement in the treatment of general cases, malaria and diarrhoea (22). Due to the extent to which medicine regulatory authorities are both financially and human resource intensive, it can be challenging to ensure that guidelines are followed. This is noted to be the case especially in poorer countries (21). It has been argued that resource-constrained countries should rely on the assessment of major medicine regulatory authorities, such as those in the United States and Europe, when assessing certain categories of medicines (23). This does not solve the problem of enforcement, and high-income country guidelines may not align with the attributes other countries identify as most important. Best-practice prescribing strategies that have had proven success in both developing and industrialized countries include standard treatment guidelines, essential medicine lists, pharmacy and therapeutic committees, professional training, and targeted in-service education (24).

8. Inspection of institutions for minimum safety standards can be used as a mechanism to ensure there is baseline capacity and resources to maintain a safe clinical environment. Although there is little formal literature on the inspection of institutions for minimum safety standards at the hospital or health centre level (25), inspection factors known to improve safety practices include consistency between standards, approval of standards by a country's ministry, and proper supervision to communicate standards and help practitioners use them in everyday practice (26). At the minimum, inspection standards can identify structural elements that are foundational for quality: a clean water source, reliable power and backup capacity, adequate coverage by skilled health care workers, clear management responsibility, complete medical records and accountability.

9. Safety protocols, such as those for hand hygiene, address many of the avoidable risks that threaten the well-being of patients and cause suffering and harm (27). Health care-associated infections are the most frequent adverse event in health care delivery worldwide (28), the most common being infections of surgical wounds, the blood stream, the urinary tract and the lower respiratory tract (29). Yet, hand hygiene is a worldwide problem, with compliance rates averaging less than 40% (30). Hand hygiene studies have shown an impact on hand hygiene rates ranging from 10% to almost 50% (31, 32). Twenty hospital-based studies published between 1997 and 2015 showed an association between improved hand hygiene practices and reduced infection (33). Additionally, hand hygiene programmes can be cost-effective: one study in Viet Nam calculated that for every health care-associated infection averted, the hospital

saved US\$ 1000 (32). Behaviour change requires multifaceted approaches focusing on system change, administrative support, motivation,

availability of alcohol-based hand sanitizers and safe, reliable water and soap, training and intensive education of health care workers, and reminders in the workplace (30, 34, 35). Compliance is a pervasive problem dependent on many structural factors, including professional position (doctor, nursing assistant, physiotherapist technician), department or type of care delivered, staffing ratios, and the presence of relevant safety equipment such as gloves (33). Moreover, programmes need to be context sensitive (for example, alcohol-based sanitizers should be used where clean water is not reliably available) (31, 35).

10. Safety checklists, such as surgical safety checklists, can have a positive impact on reducing both clinical complications and mortality. In one study performed in eight diverse hospitals in a mixture of high- and low-income settings, postoperative

complication rates fell on average by 36% and death rates fell by a similar amount following increased adherence to six core safety processes covered by a provided checklist (36). Moreover, if during the first year of instituting a checklist major complications are prevented, a hospital will realize a return on its investment (37). However, evidence suggests that the successful uptake of checklists requires education of clinical staff, material resources, and integration into broader institutional efforts and clinical context (38–40). These factors have been shown to be particularly relevant in low- and middle-income countries (38). Poor checklist implementation in low-income settings might not only fail to reduce patient safety risks, but may also introduce new risks such as gaming, disengagement and other behaviours harmful to patient care (38). Implementation of surgical checklists is more likely to be optimized in established, multifaceted patient safety programmes (38).

11. Adverse event reporting documents an adverse or unwanted medical occurrence resulting from specific health services or during a patient encounter (41). Reporting of adverse events is a strategy to raise awareness, increase transparency and foster accountability regarding unsafe care. Adverse events due to medical care represent a major source of morbidity and mortality globally. A study looking at the global burden of unsafe medical care estimated that there are 421 million hospitalizations in the world annually, with approximately 42.7 million adverse events occurring resulting in 23 million disability-adjusted life-years (DALYs) lost per year (42). Approximately two thirds of all adverse events occurred in low- and middle-income countries. Unsafe medical care may lead patients, especially in low-income countries, to opt out of using the formal health care system, thereby making unsafe care a significant barrier to access for many of the world's poor. Consumption of resources due to prolonged stay and extra care, as well as loss of wages and productivity, is a further consequence of unsafe care.

12. Clinical decision support (CDS) is the provision of knowledge and patient-specific information presented at appropriate times to enhance front-line health care delivery. CDS encompasses a variety of tools to enhance decision-making, such as clinical guidelines, condition-specific order sets, computerized alerts and reminders, documentation templates, and diagnostic support. CDS can be automated (embedded within electronic health records or mobile devices) or paper based. Although electronic CDS has many advantages, it does require ongoing technical assistance and may be subject to challenges of poor infrastructure, such as limited access to the Internet or unreliable power supply (43). A number of studies have examined the feasibility of implementing CDS in low- and middle-income countries, but there is only minimal evidence on its impact on health so far (43, 44). Studies note the need to balance CDS prompts that are in place to standardize care for better quality with the physician's autonomy to make decisions based on context, clinical expertise, and unique patient needs (43–45).

13. Clinical standards, pathways and protocols are tools to guide evidence-based health care that have been implemented internationally since the 1980s (46). In high-income settings, clinical pathways have been used to improve care for diverse conditions, including acute myocardial infarction and stroke. For example, a study from Australia showed that after introduction of a clinical pathway programme with checklists and reminders, an additional 48% of acute myocardial infarction patients received beta blockers within 24 hours of admission (47). Similarly, following introduction of a clinical pathway programme, an additional 55% of ischaemic stroke patients received aspirin or clopidogrel within 24 hours of admission (47). Another study from the United States incorporated “best of care” clinical protocols into clinician's workflow via care provider order entry and showed that the decision support tool significantly increased the number of patients receiving aspirin for acute myocardial infarction (48).

Clinical pathways and protocols are also used in low- and middle-income settings, where national guidelines are published periodically and serve as an important source of reference for clinicians and public health officials, particularly for vertical disease-focused programmes such as tuberculosis and HIV/AIDS (49, 50).

14. Clinical audit and feedback is a strategy to improve patient care through tracking adherence to explicit standards and guidelines coupled with provision of actionable feedback. A common usage worldwide is to foster implementation of clinical practice guidelines, whereby audit and feedback is used to identify unjustified variation and increase guideline adherence. Audit at both individual and hospital levels is a key part of the Catalonian Cancer Strategy (Spain) for promoting equity (51). Even in rural, resource-limited settings, for example in the United Republic of Tanzania, clinical audit has been associated with a decrease in maternal mortality and morbidity (52). Research in higher-income countries has demonstrated that higher-performing facilities tend to deliver more timely, individualized and non-punitive feedback to providers than lower-performing facilities (53). While most studies do not quantify the extent to

which audit and feedback concretely impacts adherence to standards, they do highlight the frequency of medical errors and provide a descriptive account of care quality in a given setting, helping clinical staff to identify and address areas for needed improvement. Noted challenges to successful implementation include resource availability, provider buy-in and leadership support for the process, consistency in understanding and implementation of guidelines, the accuracy of information in clinical records, and the effectiveness of continuing feedback mechanisms (51, 54).

15. Morbidity and mortality reviews provide a collaborative learning mechanism and transparent review process for clinicians to examine their practice and identify areas of improvement, such as patient outcomes and adverse events, without fear of blame (55). Morbidity and mortality reviews are used to bring together clinical staff to review, for learning purposes, what contributed to complications or a patient's death (55). As such, they promote active recognition of mistakes or errors, and are an opportunity to learn as well as to identify needed process improvements. They have been shown to improve collaboration and communication, aid team-based learning, and result in changes in record keeping and governance relevant to patient safety (55–57). Historically they have been popular in higher-resourced contexts, but studies are emerging that demonstrate potential in low- and middle-income countries. Descriptive work from Nepal suggests that they are feasible in rural, low-resource contexts (56). Research across geographical and economic contexts points to the importance of senior administrative participation, engagement of both clinical and non-clinical staff, clear identification of goals, selection of cases based on their potential for improvement and coordinated follow-up for improvement activities as key success factors (55–57).

16. Collaborative and team-based improvement cycles are a formalized method that brings together multiple teams from hospitals or clinics to work together on improvement around a focused topic area over a defined period of time. Several of the common features of collaboratives are the sharing of ideas for improvement, iterative testing of actions leading to improvement, and mutual learning across multiple health care organizations. Studies from high-income settings, such as the National Surgical Infection Prevention Collaborative or the collaborative to decrease caesarean delivery rates, have shown that collaboratives can be very effective, reducing infection rates from 27% to 1.7% and caesarean section rates by 30% in a matter of months (58–60). Collaboratives have also been used in low-income settings. For example, the Ethiopian Hospital Alliance for Quality was a national collaborative sponsored by Ethiopia's Federal Ministry of Health. It included 68 hospitals, of which 44 showed a 10% improvement in a 10-point measure of patient satisfaction from the beginning to the end of the study period (61).

USAID funded 54 collaboratives in 14 low- and middle-income countries during the period 1998–2008. A meta-analysis of 27 of these collaboratives in 12 low- and middle-income countries showed that high-level performance was maintained for an average of 13 months and the average time to reach 80% performance was 9.2 months, while the average time to reach 90% performance was 14.4 months (62).

17. Formalized community engagement and empowerment refers to the active and intentional contribution of community members to the health of a community's population and the performance of the health delivery system. Community involvement in health has many forms and approaches, including the adoption of behaviours to prevent and treat diseases; effective participation in disease control activities; contribution to the design, implementation and monitoring of health programmes; and provision of resources for health. Participation and input to health systems can occur through various means, such as needs analysis, high-level priority setting or participation on governing boards. Many case examples can be found; for example, in Eritrea and Senegal,

strengthened community participation in malaria control led to a decrease in severe malaria cases (63), and preliminary analysis of the Ebola outbreak indicates that more formalized community participation efforts resulted in a significant impact on the identification and tracing of cases and broader trust in local Ebola treatment units (64). Health system reform processes have increasingly recognized the essential contribution of communities; in Kenya, feasibility was tested in district-level annual health sector planning where community participation did influence target and priority setting. Challenges of formalized community involvement include building capacity to empower communities, providing tools and products to support community involvement, and appropriate follow-up and supervision by health professionals.

18. Health literacy is the capacity to obtain and understand basic health information required to make appropriate health decisions on the part of patients, families and wider communities (65). Poor health literacy is a challenge for health care quality; for example, patients with low literacy have difficulty following medical instructions, interacting with the health care system, and reading or complying with medicine prescriptions (65). Additionally, patients with low disease-specific knowledge report lower quality of life and have poorer health-related outcomes (65). Studies show educational interventions can have an impact on both knowledge improvement and clinical care seeking. For example, an intervention in Malawi led to a significant improvement in knowledge pertaining to mental health literacy (66), and a study in India found a positive association between health literacy programming and child vaccination rates (67). However, literacy gains lessen with time, so follow-up programming is key. Research suggests targeting influencers, such as teachers, to extend programmatic reach and ensure long-term impact (66, 67). Other considerations include the integration of health literacy curricula into required schooling, which is especially common with sexual health education (68).

19. Shared decision-making between providers and patients is often employed to tailor care to the patient's needs and preferences, with the goal of achieving better patient outcomes. There is considerable evidence that patients want more information and greater involvement (69), but few studies have evaluated the impact on clinical outcomes, particularly in low- and middle-income countries. Inadequate communication between providers can result in missed services (70). Barriers to patient activation, however, exist in many public health sector settings, such as in clinics, which are often congested and overstretched (71). One study on adherence to antiretroviral therapy and shared decision-making or "patient activation" found that after diagnosis, patients actually preferred provider-led decision-making, but as they gained comfort with their HIV diagnosis, they were more open to a shared decision-making approach

to HIV treatment (71). There is no evidence that shared decision-making negatively impacts clinical care, though there may be limitations to what can be addressed in a single clinical visit, given such factors as local concepts of illness or historically grounded distrust of "Western" medicine, which may motivate patients to seek traditional medicines (70).

20. Peer support and expert patient groups link people living with similar clinical conditions in order to share knowledge and experiences. The approach complements and enhances other health care services by creating the emotional, social and practical support necessary for managing health problems and staying as healthy as possible. The extensive literature supporting the effectiveness of peer support and patient groups in HIV-infected adults provides insight into what is both feasible and achievable as a strategy for improving quality of care. A systematic review of the impact of support groups on people living with HIV showed that support groups were associated with reduced mortality and morbidity, increased retention in care and improved quality of life (72). Group visits have shown promise in providing individual patients with a peer support network to maximize adherence, improve patient retention, provide patient education, monitor side effects, and achieve therapeutic gains (73). In a South African support group, participants were significantly more likely to have an undetectable viral load and a CD4 cell count greater than 200 cells/mL at 12 months than those who did not participate in a support group (72). Given the severe human resource challenges worldwide, specifically the shortage of trained health care providers, support groups can play a larger role in improving the effectiveness of models of care (72).

21. Patient feedback and experience of care as a strategy to better understand and improve health service quality has risen dramatically, primarily in high-income countries. In these contexts there is a growing body of evidence that self-reported experience correlates with other, more objective, measures of clinical quality (74). Patient-reported measures are associated with better patient experience, adherence to treatment, greater engagement with their care, and better outcomes (75, 76). A few studies in low- and middle-income countries have shown that patients can adequately judge certain aspects of their care. For example, a study based in the United Republic of Tanzania found that patients proactively sought care based on their clinical needs, as judged by the type and severity of symptoms, as well as the perceived value of previously received care (77). Audit-based evidence from primary care settings in India found that patients have a good idea of what they both want and need from doctors and are willing to pay for it (78). Some critics are concerned that the main determinants of patient experience may be driven by factors such as the attractiveness of the environment or amicability of staff; however, it has been shown that patients are able to differentiate superficial comforts from more meaningful engagement.

22. Patient self-management tools are technologies and techniques used by patients and families to manage their health issues outside formal medical institutions. They are increasingly studied as quality improvement tools in the context of growing empowerment of patients worldwide. Given the increasing prevalence of chronic disease globally, diabetes self-management serves as a good example. Diabetic patients involved with self-management education programmes demonstrated significant reductions in glycosylated haemoglobin levels; in Uganda, patient outcomes included decreases in HbA1c percentage and diastolic blood pressure, and in Honduras, reports of self-care demonstrated improvements in over 50% of patients in blood sugar levels, diet and medication adherence (79). One economic analysis of interventions for diabetes found that diabetes self-management training reduces medical costs in developing countries in the short term (80). Because mobile phones are widely available, mHealth interventions for self-management can be a cost-effective tool (79).

Challenges to widespread implementation include both geographical and financial access to such self-management programmes, trained human resources at central and peripheral levels, and access to education (81).

23. Health technology assessment (HTA) is conducted to find out how health care technologies help maintain and improve health. HTA is used to inform policy and clinical decision-making related to both the introduction and diffusion of a wide spectrum of health technologies (82, 83). Assessing whether HTA affects quality involves looking at the long-term pay-off of policies that have been implemented and demonstrated success. HTA has many different applications, such as policy-making for influenza vaccination of children, informing the development of reimbursement schemes in Sweden (which resulted in decreased annual costs), influencing characteristics of health benefit packages in Thailand or Chile (84–86), or defining the role of specific laparoscopic surgery techniques in Kazakhstan (87). Cohesion amongst and between stakeholders is necessary for the successful implementation of HTA with participation from health care professionals, patient advocacy groups, and the industry, such as medical technology or pharmaceutical firms (88). Transparency in analytics, costs and outcomes (real-life patient data) is key for HTA assessment to be successful (83).

Because timely and appropriate access to health care products, procedures and medicines can often impact patient outcomes, HTA represents an important mechanism for improving quality of care for both individuals and populations.

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