Universal Health Coverage (UHC) is an important part of the Sustainable Development Goals. One vital aspect of UHC is the services which are available within communities.

This discussion paper explores some of the main issues around community-based health services (CBHS). The main message emerging from the paper is the importance of planning for community-based services as a whole - a tier between primary facilities and communities - rather than as a number of piecemeal activities. Without this overview there will be gaps, duplications and inconsistencies in terms of services: opportunities to progress towards Universal Health Coverage will be missed.

The aim of this paper is to raise issues, not to make specific recommendations about CBHS – the discussion is not yet at that stage. There are many questions which can be asked about a community-based health sub-system. Thinking about these questions can be a useful way to structure ideas about how to make progress with Universal Health Coverage:

- What do community-based health services look like in my country/region at present? Is there a coherent picture of service provision, or are there gaps and duplications?
- Who provides CBHS? Is this a stable situation, or are there, for example, over-worked demotivated volunteers or professional posts which are difficult to fill?
- Is there potential to provide more services within communities? What is stopping this from happening?
- Which populations are currently poorly served (social groups of geographical areas)? How could CBHS be developed for these populations?
- What opportunities are there to use new technologies in CBHS? What would be the best way of managing this change?
- Are community-based health workers sufficiently involved in emergency preparedness?

This paper does not provide definitive answers to these questions, but it does describe relevant examples and points out the risks of leaving CBHS as an “invisible” tier in health service provision.
Universal Health Coverage (UHC) is an important part of the Sustainable Development Goals. One aspect of UHC is the services which are available within communities. Coverage is a challenge for South-East Asia: despite recent progress, it has been estimated that 120 million people in the region do not have access to one or more of seven essential health services.

Every country in South-East Asia has signed up to the Sustainable Development Goals (SDGs). Health is an important part of the SDG agenda; one of the targets for the SDG health goal is Universal Health Coverage (UHC). UHC is about increasing all people’s access to care that they need, and about protecting them from being impoverished as a result of health care. It includes a fundamental concern with reducing inequities in access.

Much of the attention in relation to UHC has focussed on financial risk protection: less has been said about coverage by effective services. Coverage can be achieved in many different ways, but will always include some community-based services as an essential link in the service delivery chain. (Derived from WHO and World Bank, 2015)

Achieving UHC in a country is a gradual process. Over time, provision can expand to include an evolving range of preventive, promotive and curative services, including palliative care and rehabilitation. Each country has a different starting point in terms of its disease profile, gaps in service coverage and level of health spending. However whatever the circumstances, community-based services have a vital role to play in providing universal coverage.

There is a long history of community-based services across priority programmes in South-East Asia from which to draw lessons for the future. Community-based services have been an important part of successful eradication programmes, and in improving access to maternal and child health care, TB and HIV treatment. There are shifts in what services are being offered within these programmes, for example new TB notifications or community–based HIV testing. More recently, community-based services have become part of the response to tackling non-communicable diseases (NCDs), with developments in community-based NCD detection, mental health care, palliative care and rehabilitation. Community-based services have also played a role in recent public health threats: for example community-based interventions were an important part of the response to H5N1.

Community-based health services (CBHS) will need to continue to adapt to a fast-changing world and the challenge of UHC. However one feature of community-based service delivery is that there is little documentation about the service as a whole. Whilst there is a myriad of papers about specific elements of community-based work and an extensive literature about other types of services such as hospitals or primary care facilities, there is little systematic documentation about the whole range of services now being provided by a variety of workers in the community. The aim of this discussion paper is to explore some of the main issues around community-based health services as one vital sub-system of an overall health system. The paper does not provide specific recommendations about CBHS – the discussion is not yet at that stage – but it does raise issues which need to be addressed if coverage is to be truly universal.
Community-based health services (CBHS) are best thought of as a sub-system of the overall health system, a tier between primary facilities and communities. Without this system-wide perspective, community-based services are likely to be inefficient, with gaps and duplications in provision. In practice CBHS are often an “invisible” tier because they lack the high profile and clear boundaries of, for example, hospital services.

Definitions in the area of “community health services” are confusing: there is no consistent global usage of the terms “community-based health-care services” and “community health services”. For the purposes of this discussion community-based health-care services (CBHS) is taken to mean:

“all services provided by people who spend a substantial part of their working time outside a health facility, discharging their services at the individual, family or community level, as well as primary health care services provided in small local health facilities. The exact boundaries of the definition will differ from country to country”. ¹

A particular feature of this definition is that it is about all services delivered in communities. In the same way as we think about “hospital services” as a whole and “primary health care services” we should regard “community-based health services” as a sub-system in its own right.

Thinking about community-based services as a sub-system (rather than as an ad hoc collection of activities provided by a variety of professional and volunteer health workers) has practical applications, as illustrated in the following example from India. The Figure below shows some of the community-based health services provided in Kerala. Management of these services is currently piecemeal, with no holistic view of how to provide an efficient service. As the range of community-based services expands to include NCDs, development disorders, care of the elderly, palliative care and community mental health, attention will need to be paid to the details of the job descriptions of different cadres, so that services are provided without overlaps or gaps.

**Figure 1: Community-based health services in Kerala**

<table>
<thead>
<tr>
<th>Facility/programme</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institution: sub-centers</td>
<td>Ante-natal clinic, NCDs, drug distribution</td>
</tr>
<tr>
<td>Treatment services at field level</td>
<td>Palliative care, DOTS, Mass Drug Administration</td>
</tr>
<tr>
<td>Maternal and Child Health Program</td>
<td>Ante-natal and post-natal care, immunization, family planning services</td>
</tr>
<tr>
<td>Population health – nutrition</td>
<td>Integrated Child Development Services, Iron and folic acid, vitamin A, mid-day meal</td>
</tr>
<tr>
<td>Surveillance of Communicable Diseases</td>
<td>Ward-level Sanitation and Nutrition Committee, syndromic surveillance, case reporting</td>
</tr>
</tbody>
</table>

Source: Strengthening Community-Based Health Care Services, Report of Technical Consultation New Delhi, June 2015.Courtesy Dr K Ellangovan, MOH, Kerala.

¹ This definition was agreed during the SEARO Technical Consultation on Strengthening Community-Based Health Care Services, New Delhi, June 2015.
This is not just an issue in Kerala: in general, a simple mapping of the range of services provided by the various kinds of health workers at the community level is useful for identifying overlaps and gaps in provision. (This is sometimes described as analyzing the “anatomy and physiology” of community-based services.)

It is useful to consider how community-based services are presented in National Health Strategies. Many National Health Strategies only feature CBHS as “the end of the line” for a variety of technical programmes. Moreover, one important part of CBHS, Community Health Worker programmes, are often discussed as a stand-alone component, because they are planned for, and managed, separately from technical programmes and health facilities. Taken together, this results in the community-based system being presented in a piecemeal, non-strategic way. A recent SEARO Technical Consultation talked about the “invisibility” of community-based systems to decision-makers, especially at the national level, with the associated risks of insufficient co-ordination and prioritisation for resources. The “invisibility” is because community-based services are a thin layer of varied activities, in contrast to the size and solidity of a hospital, for example.

Who provides community-based health-care services?

There are two distinct groups of community-based health workers, formally-trained health workers who spend a substantial portion of their time working in the community and community health workers. The variety of workers operating in communities can make it difficult to have a comprehensive picture of what services are being delivered.

One way of thinking about community-based health services and their future as part of UHC is to look at the very different types of health workers who provide the services. What are the topical issues for the different types of workers?

The definition of CBHS above includes the wording “people who spend a substantial part of their working time outside a health facility, discharging their services at the individual, family or community level, as well as primary health care services provided in small local health facilities”. These “people” fall into two distinct groups of providers: community health workers (who may or may not be volunteers) and formally-trained health professionals who focus on community work (nurses, midwives, public health inspectors, family health visitors, doctors etc.). The services can be run by government, NGOs or privately.

The Alma Ata definition of community health workers (CHWs) is still widely used: CHWs should be “members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization, and have shorter training than professional workers”. CHWs have traditionally worked in the areas of Maternal, Neo-natal and Child Health and in Communicable Diseases, but this is gradually broadening out into areas such as NCDs and mental health. It is generally agreed that CHWs need to have strong links to the wider health system if they are to be effective: these links include adequate clinical and managerial support; regular supplies; and the possibility to
make a referral to see a health professional, with a reasonable likelihood that the patient will actually be able to access that professional. The ability to provide effective links into the wider health system is a key part of community-based workers earning respect: if community-based services are only regarded as an inferior alternative to “better things”, they will not be used.

There may be broad agreement about the definition of CHW and what is needed for them to be effective, but there is great variety in what is actually happening with CHW programmes in South-East Asia:

- There are a number of different types of CHW in Nepal: the current focus is on expanding their role in relation to maternal, neo-natal and child health.
- ASHAs (Accredited Social Health Activists) are a relatively new cadre in India and there are already plans to extend their role beyond maternal health and communicable diseases to include non-communicable diseases (NCDs).
- In Sri Lanka, deliveries are now overwhelmingly conducted in higher-level health facilities, meaning that this is no longer a community-based activity. There is a growing focus on NCDs, palliative care, alcohol abuse, suicide and violence as part of community-based work, alongside “traditional” activities such as ante-natal support.
- Rather differently, the current emphasis in Bangladesh is on the importance of investing in Community Clinics to complement and support the work of CHWs. Issues debated in recent years have been whether CHW programmes are close to reaching the limits of what they can reasonably achieve (given their skill sets and status as volunteers) and whether their ongoing work is better complemented by very local Community Clinics or by more distant, better-resourced, facilities.

These examples illustrate some of the strategic issues surrounding CHWs and their role in CBHS: how much is it reasonable to expect from volunteers? When is an intervention too “difficult” to be delivered at the community level? How thinly spread should professional health workers be, given their cost?

In contrast to the sizeable literature about CHWs, much less is written about the formally-trained health workers who spend a substantial portion of their time working in the community. They are not generally discussed as a group: indeed it is not really clear what to call them collectively. However it seems reasonable to hypothesise that most of the work done by formally trained community-focussed health workers comes under at least one of the following categories:

- very high national (or global, or regional) priority (e.g. maternal and newborn care, family planning, immunisation)
- major infectious disease (e.g. HIV, TB)
- eradication (e.g. polio).

These three categories are all areas where there is an interest in having very high levels of coverage. For health issues that do not come under any of these categories, people are generally expected to take the initiative themselves and find their way to a health facility, though some community-based health workers do also provide basic curative treatments for a range of minor ailments.
Formally-trained community health workers clearly operate in a variety of ways:

- **Travelling relatively large distances to perform specific tasks.** These mobile services tend to be rather specialised, though there are many examples of teams being formed to provide a range of services. For example the WHO document *Sustainable Outreach Services* discusses how to reach unimmunized rural populations with a variety of services. In addition to immunization and Vitamin A, services which might also be included were in relation to malaria, scabies, soil-transmitted helminth infections, schistosomiasis, iodine and iron supplementation, lymphatic filariasis, guinea worm eradication, environmental management for disease vector control and onchocerciasis. (WHO, 2000).

- **Working in a smaller area in a broader way,** for example MCH nurses who do work related to pregnancy, family planning, immunisation, childhood illnesses etc. In Sri Lanka, Public Health Midwives (PHMs) have served for a long time as frontline workers providing community-based MCH care, but are now extending into promotive and preventive activities related to NCDs. To reflect this expansion, the average catchment population for a PHM is being reduced from 3,000 to 1,500.

- **Serving in a population-based role** (rather than for individual clients), for example health inspectors dealing with sanitation and food hygiene.

  There is also a hybrid type of health worker who spends most of their time working in a health facility but who travels to a community maybe once a week to provide various outreach services.

  Good descriptions of the totality of services provided by this mix of formally-trained health workers and CHWs would inform a number of important strategic issues such as whether or not community-based services as a whole provide all the most cost-effective, priority interventions, or whether opportunities are missed to make provision more efficient. The example above from Kerala illustrated the importance of being able to systematically map service provision to identify gaps and duplications. However the discussion of the “invisibility” of community-based health systems suggested that this kind of explicit mapping is often not done.

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**Community-based health systems need to adapt to changing circumstances**

South-East Asia is changing fast: the population is becoming older and more prone to NCDs. (Of all the WHO Regions, South-East Asia has the highest age standardized NCD mortality rate, at over 650 NCD deaths per 100,000 population, all ages.) The urban population more than doubled between 1990 and 2014, with the proportion of people who live in an urban area at 49% and increasing by 1.5% per year. More than two-thirds of births in the region are now attended by skilled health personnel. Communications have improved greatly: 87% of the population of India (as an example) lives where there is mobile network coverage; there are 762 million active mobile connections.

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2 United Nations, Department of Economic and Social Affairs, Population Division *World Urbanization Prospects: The 2014 Revision, Highlights.*
Given these changes, and the ambition of Universal Health Coverage, it is clear that community-based health systems need to be highly adaptable: the stereotypical view of “community health” as a lone-working volunteer, far from a health facility and with few options for communication, is now a long way from the norm in much of the region.

This paper discusses five aspects of the required adaptability of community-based health systems:

- the range of services provided
- the employment status of community-based workers and the extent to which they are formally included in the wider health system
- coverage of hard-to-reach populations
- the use of new technologies
- the role of community-based services in emergency preparedness.

**What services should be provided by a community-based system?**

There are many ways in which service provision can be expanded at the community level. This requires co-ordinated change in a number of areas, including training and drug supplies. As the role of community-based health workers evolves, attitudes of other health professionals also need to adapt.

A growing range of services is being provided at community level, especially services related to NCDs. This raises a number of issues, including what levels of health worker can be expected to safely provide which specific services; how to maintain a reasonable balance between promotive, preventive and curative/disease management activities; and how to ensure an effective continuum of care as a patient moves between different levels of the health system. The content and duration of training must match the skills to be mastered and there needs to be a realistic assessment about referrals and the extent to which patients can access higher-level services.

Introducing services in new clinical areas can involve more than simply learning a new skill – it can affect the way different cadres interact. For example, NCD services are different from the more traditional ones covering MCH and communicable diseases, because they often require a relatively complex series of events: identification at the community level, referral for formal diagnosis and initiating treatment, then long-term follow-up at community level, with intermittent medical consultations in a facility. An example of a new type of community worker comes from Sri Lanka, where a cadre of Community Health Nurse (CHN) will be piloted in the near future. Working under the direction of medical specialists, these nurses will be based in hospitals and provide domiciliary (home-based) care for people with NCDs. They will train family members on the care of patients and follow up defaulters and treatment failures. This model is radically different from an isolated community health worker far removed from medical specialists: the success of this new model depends on mutual trust between the specialist and
the CHN, who will have the opportunity to find out how patients are managing their conditions as part of their daily lives.

Changing the services provided by the community-based health system can be a complex business. Training needs to be organised for existing community-based workers and their supervisors; the pre-service curriculum also needs to be changed. The new services might require new medicines at the community level and this can trigger another chain of events related to medicine financing, distribution, prescription and dispensing, with perhaps even changes required to the Essential Drugs List. Sometimes policies or legislation have to changed, for example to alter who is allowed to handle certain medical equipment.

These kinds of changes require co-ordinated planning. However, as we have seen, community-based health services tend to be fragmented and even “invisible” meaning that change tends to happen by default (such as because of the availability of money, or dynamic individuals). Without pro-active management of what services are available in which communities, progress towards Universal Health Coverage is likely to be compromised.

What is the right balance between salaried, incentivized and purely voluntary health workers?

There is a trend in South-East Asia to “regularize” the employment of voluntary (or quasi-voluntary) providers. “Regularization” involves becoming more institutionalized, i.e. a recognized part of the overall health system.

Regularization is one of the perennial debates around community-based services, with many examples of the topicality of the debate in South-East Asia. In Timor Leste, for example, Community Health Volunteers, who are selected by their own community and registered by the Ministry of Health, participate in periodic trainings organized by the Ministry and help to deliver a basic package of services. Turnover of Volunteers is high because they want incentive payments and formal employment status and see other parts of the health service benefit from substantial donor funding. In India, the ASHA programme faces the challenge of balancing community embedded-ness with an expanded role for ASHAs and reasonable financial incentives. This balancing act is illustrated in Figure 2 - the challenge is to provide ASHAs with fair recompense when they are taken away from hours of paid employment, without making the system financially unsustainable. In Bhutan, Volunteer Village Health Workers (VVHWs) were demoralized and retention was poor: the response was to introduce a package of measures to
make the role more attractive, including remuneration, Royal awards and the provision of a VVHW kit and mobile phone vouchers.

Regularization is not an either/or decision – there are grades of regularization and over time a cadre can change its status. What experience does show is that a volunteer group which faces increasing demands on its time for little reward is not a stable resource. This discussion again shows the value of a system-wide perspective (i.e. across the whole community-based health system): how can the skills of Community Health Workers working for a well-funded programme, for example, be harnessed by the system as a whole and made more resilient to the changes in the finances of one particular programme?

Figure 2: Balancing expectations and volunteerism: the ASHA programme in India

What can community-based health services do for hard-to-reach populations?

There are many examples of how community-based health systems have adapted to meet the needs of specific hard-to-reach communities. However there is still a lot to learn for some groups, including the urban and peri-urban poor.

Hard-to-reach populations are an enduring problem: different approaches to community-based services are needed for different types of populations. Hard-to-reach populations include remote rural communities; poor urban and peri-urban populations; and a range of social groups which traditionally have limited contact with formal health services for a variety of reasons (e.g. migrants, commercial sex workers, injecting drug users). By definition, Universal Health Coverage includes finding models of effective coverage for all hard-to-reach populations.

Some hard-to-reach populations have had a lot written about them in terms of health service coverage; less is known about some other types of challenging groups. Much has been written about specific outreach programmes and the deployment of CHWs in rural areas; there is also good documentation of a variety
of models to reach specific social groups, such as commercial sex workers. It is generally recognized that in some circumstances, NGOs are better placed than government to develop services for some groups which may have an uneasy relationship with authority. In contrast, much less is known about how to provide effective community-based services for sub-populations in urban areas, including city-centre and peri-urban slums.

Experience related to HIV/AIDS is a useful source of ideas about services for hard-to-reach populations. A number of factors have combined to make community-based provision related to HIV/AIDS both desirable and feasible: high levels of activism from people living with HIV and AIDS; services were well-funded; and the stigma associated with HIV meant that it was not always reasonable to expect a client to visit a conventionally-managed health facility. This combination of circumstances means that there are a number of innovative models related to HIV services for hard-to-reach groups: for example peer support for vulnerable populations such as commercial sex workers and trans-gender people and close collaboration between professionals (who have the specialist medical knowledge) and community health workers (who know, and have access to, affected communities).

This combination of circumstances has meant that many services which were initially regarded as only suitable for delivery in an environment such as a hospital have developed into community-based services: examples are HIV testing and maintenance of clients on ART. Figure 3 provides food for thought: if the “standard” way of delivering services can be so flexible for one group, what possibilities are there for other hard-to-reach populations? The “shape” of community-based services will need to be as varied as the hard-to-reach populations themselves: for example a stigmatised population may want a discrete service separate from where they live, whereas women whose mobility is restricted by social norms will need services very close to their homes. There needs to be flexibility: for example it can be difficult to identify suitable CHWs from some very marginalised populations who have had little access to education, which may mean that there needs to be flexibility with selection criteria. Sustainability may be a challenge because costs are often high and not funded from the mainstream budget.

In contrast to the rich literature on community-based services in relation to HIV/AIDS, much less has been documented about appropriate models of community-based services for urban and peri-urban populations. Interestingly, many of the documented cases come from the United States, where there are many Community Health Workers working with particular groups according to language, disease or employment (for example Spanish-speaking populations, families with a diabetic member and illegal migrant workers). Models from elsewhere clearly have to be adapted to local circumstances – it is not just technical aspects of community-based services which are changing, the place of community-based services within the wider social system is also subject to change. When alternatives are available – for example private services which offer “desirable” treatments such as injections – communities may not be interested in using the government or volunteer community-based services. At the same time, if Community Health Workers provide more services and develop closer links with the formal system, they may become less embedded in their own communities. Perceptions and social position are important determinants of how services are accessed and their potential to be effective.
Figure 3: Community led and based service delivery for HIV

<table>
<thead>
<tr>
<th>Prevention</th>
<th>HIV testing</th>
<th>HIV treatment and care</th>
<th>Advocacy</th>
</tr>
</thead>
</table>
| • HIV testing and counselling  
• Linkage to harm reduction services  
• Health and psychosocial needs for risk reduction  
• Sexual and reproductive health issues  
• Condom distribution and counselling for consistent use  
• STI diagnosis and referral for management  
• Pre-exposure prophylaxis  
• Post exposure prophylaxis | • Community based testing  
• Peer led testing  
• Psycho-social support pre and post-test  
• Disclosure of testing results  
• Follow-up for repeat testing  
• Contact/partner tracing, notification and support  
• Prevention of mother to child transmission  
• Linkage to treatment, care and support | • Treatment readiness  
• Adherence  
• Retention in care  
• Nutritional support  
• Treatment literacy  
• ART maintenance  
• Peer support  
• Community based monitoring  
• Follow-up for side effects | • Access to services for marginalised communities  
• Access to affordable diagnostics and drugs  
• Reducing stigma and discrimination  
• Quality of service delivery  
• Access to ‘free’ services  
• Legal support and advocacy |

Source: Strengthening Community-Based Health Care Services, Report of Technical Consultation New Delhi, June 2015. Courtesy Dr Razia Pendse, WHO-SEARO

In what ways are new technologies relevant to CBHS?

New technologies offer many positive opportunities for CBHS, but it is important to have a systems perspective, given the potential for wasting money through unco-ordinated and poorly-managed expansion.

Changes in communication and medical technologies offer promising opportunities for community-based health systems, however the challenge of scaling up small pilots should not be under-estimated.

mHealth – the use of mobile devices such as mobile phones - offers a wide range of new opportunities for community-based health services. Table 1 lists some of the main uses. Each can apply to almost any type of service – TB, malaria, HIV/AIDS, MNCH, non-communicable diseases etc. Some uses are about new tasks, others are about performing existing tasks more efficiently and effectively.

mHealth has the potential to make a big difference to community-based health care. Whilst the location may be remote, there can be daily interaction with other health workers; information such as diagnosis and treatment protocols can be stored on one hand-held device; and health information can be transmitted through user-friendly applications in real time from the same device. Stocks can be monitored centrally and (in theory at least) replenishments can be sent out in good time. Some mobile devices can also measure a patient’s temperature, rate of breathing etc. ³

³ The variety of mHealth activities in South-East Asia is demonstrated by:
• USAID’s Integrating Mobiles into Development Projects (2014), which lists m-health platforms (mobile applications or services) currently used in South-East Asia and USAID-funded projects which use mobile applications in the region.
• The National Health Portal (NHP) of India, which lists apps and software in use in the Indian health sector. Examples include a Safe Pregnancy and Birth app which includes instructions for CHWs; and the Geochat-Collaboration tool mobile app which allows chatting, reporting and receiving alerts.
<table>
<thead>
<tr>
<th>Potential uses of mobile devices</th>
<th>Examples</th>
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<tbody>
<tr>
<td>Client education and behaviour change communication</td>
<td>Mobile messaging for client groups (e.g. for pregnant women). Apps to support education sessions on stopping smoking.</td>
</tr>
<tr>
<td>Point-of-care diagnostics</td>
<td>HIV: use of mobile phone to interpret CD4 count readings</td>
</tr>
<tr>
<td>Registries/vital events tracking</td>
<td>MomConnect is used in South Africa to enhance a national registry of pregnancies</td>
</tr>
<tr>
<td>Data collection and reporting</td>
<td>Household surveys conducted with tablets and data uploaded in real time</td>
</tr>
<tr>
<td>Electronic health records</td>
<td>An App in Australia tells parents about their child’s immunization status and reminds them when a vaccination is due</td>
</tr>
<tr>
<td>Electronic decision support</td>
<td>System to assist CHWs with the follow-up and management of high-risk cardiovascular patients (Ajay)</td>
</tr>
<tr>
<td></td>
<td>Thousands of Apps related to diabetes.</td>
</tr>
<tr>
<td>Provider-to-provider communication</td>
<td>E-referrals to hospitals for advice when patient travel not possible</td>
</tr>
<tr>
<td>Provider work-planning and scheduling</td>
<td>Scheduling of ante-natal appointments</td>
</tr>
<tr>
<td>Provider training and education</td>
<td>Voice messages to CHWs with reminders of key health promotion messages and relevant updates</td>
</tr>
<tr>
<td>Human resource management</td>
<td>Supervisors can regularly phone their supervisees, even when distances are large and face-to-face meetings difficult to arrange</td>
</tr>
<tr>
<td>Supply chain management</td>
<td>Alerts about stock-outs; identification of counterfeit drug packaging</td>
</tr>
<tr>
<td>Financial transactions and incentives</td>
<td>Transferring credit for incentive payments or to enable CHWs to use their mobile phones.</td>
</tr>
<tr>
<td>Hotlines or call centres</td>
<td>Hotlines enable clients to directly consult health professionals, sometimes 24 hours per day.</td>
</tr>
</tbody>
</table>

A systematic review of the literature on CHWs and mobile technology was conducted in 2013 (Braun). This concluded that in the right conditions CHWs find the technology acceptable and usable and it can improve reporting, help decision-making and enable more clients to be served. Not surprisingly, there are challenges related to battery life, network availability/phone coverage and maintenance. Some support measures are known to help, such as a help-line for users.

The rapid pace of change in mHealth poses challenges for Ministries of Health. For example the inSCALE Project observed in 2012 that “When working within a field that has a lot of momentum, the “crowding” of organisations working in this field - sometimes with competing/ similar objectives – can lead to challenges in getting buy-in and support from Ministries of Health to all project activities.” inSCALE gave the example of the proliferation of mHealth pilots in Uganda, where more than 60 projects were running simultaneously with little involvement of the Ministry of Health. It took time for a government-led process to get under way so that projects could be co-ordinated and government priorities addressed. In 2012 the Ugandan Ministry of Health imposed a moratorium on all m-health projects and developed an mHealth policy. If governments are to be convinced about timely investments in mHealth they need to be involved in innovations – arrangements such as national and local steering committees can be helpful. (Malaria Consortium, inSCALE)
The situation for medical technology is in some ways the same as, and related to, developments with mobile devices. There are numerous innovations in technologies to diagnose and treat diseases at the point-of-care which are suitable for use in rural and urban low-resource settings. For example, there are rapid diagnostic tests available for malaria and pneumonia which can extend the availability of good-quality treatment, but these tests are not as widely available as they could be.  

Regional examples help to illustrate some of the issues surrounding new technology. In Kerala, India progress is being made in using new technologies for information and communication (ICT) to contribute towards UHC. One example is the use of Geographic Information Systems (GIS) to develop detailed mappings of health needs, with opportunities for field workers to retain and analyse their own local health data. There is an active e-health programme in the state with the ultimate aim of a comprehensive health database of the population. Community-based health workers are central because they upload field-level data into the system. This provides important opportunities: it is hoped that a feeling of “owning” local data and the greater understanding of community needs will enhance community-based health workers’ confidence in responding to local needs. However it is also recognized that the opposite could happen, if interpretation of the data becomes too centralized.

In Nepal ICT is being used to improve quality and enhance UHC in a variety of somewhat ad hoc ways including:

- The use of texting and mobile voice calls to communicate with Female Community Health Volunteers, many of whom are geographically very isolated
- Training sessions provided remotely: much more affordable than conventional face-to-face training and uptake can be very high for a good quality session
- The use of Facebook by health workers to seek advice about individual patients or to send information about outbreaks.
- Information about health and health services sent by SMS to individuals.

ICT could bring substantial benefits given the many isolated communities and difficult topography of Nepal; moreover the current environment is conducive to this, in terms of high-level support and a growing number of users of mobile technologies. Learning from the many pilots to scale up the use of cost-effective technologies brings its own challenges:

- Not all policy-makers understand the potential benefits of greater ICT use
- There is a risk of fragmented implementation
- As well as procuring equipment and developing software, careful attention needs to be paid to capacity-building and procedures
- Equity is difficult when power grid and network coverage varies geographically
- High costs of new equipment, replacements and introduction of new technologies to health workers and managers.

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4 For example, the PATH website describes innovations in technologies to diagnose and treat diseases at the point-of-care for people living in rural and urban low-resource settings (http://sites.path.org/dx/)
As with many significant changes, the way in which the change is managed is crucial. The successful harnessing of ICT requires champions and focal points; developing adequate technical and management competency; scaling up with proper periodic evaluation; and considering sustainability. However the potential benefits are great in terms of improving service provision.

Yet again, the discussion about new technologies leads to the point about the importance of seeing community-based health services as a connected sub-system. New technologies offer many positive opportunities, but there is also great potential for inefficiencies and wasted money if expansion is unco-ordinated or poorly managed.

**Emergencies and disasters: Emergency preparedness as a part of community based services**

International benchmarks have been developed which show how community-based health workers can contribute to emergency preparedness and responses. Regular training to prepare health workers for emergencies is potentially an efficient way to enhance the effectiveness of the health system as a whole in terms of its response to emergencies and disasters. As well as health skills, community-based health workers have important local knowledge about their communities which is critical in emergencies.

Disasters are a regular occurrence in South-East Asia: 40% of global deaths in natural disasters in the past decade have been in the region. The community-based health sub-system can contribute to the issue of emergency preparedness in a country or local area. (WHO SEARO 2010)

The 2004 tsunami demonstrated that the effectiveness of country responses to the disaster was strongly correlated with their level of preparedness: the better prepared a country, the better the response. In 2005, WHO formulated twelve benchmarks for emergency response as a way of systematically assessing a country’s level of preparedness. (WHO SEARO, 2015a) At least five of the benchmarks include a role for community-based health services:

**Community preparedness and response**

- Community plan for mitigation, preparedness and response developed
- Community-based response and preparedness capacity developed and supported with training and regular simulations
- Local capacity for emergency provision of essential services and supplies developed (shelters, safe water, communication)

**Capacity-building**

- Capacity to identify risks and assess vulnerability at all levels established
- Human resource capabilities continuously updated and maintained.
It takes time and money to prepare health workers for emergencies – and to ensure that they remain prepared. However this is potentially an efficient way to enhance the effectiveness of the health system as a whole in terms of its response to emergencies and disasters. As well as health skills, community-based health workers have important local knowledge about their communities which is critical in emergencies. They can help, for example, to identify who should receive certain supplies and services, such as specific drugs or items for infants. A good-quality basic training will serve well in an emergency. This can be supplemented by training in emergency preparedness: topics can include basic first aid and Standard Operating Procedures so that different cadres know what is expected of them in an emergency. Training can be targeted according to local risk – e.g. focusing on the effects of floods in flood-prone areas.

Another aspect of emergency preparedness is the state of health facility buildings. Ideally they should be designed and built to withstand (to the extent possible) the hazards to which they are likely to be exposed, such as earthquakes. Unsuitable buildings can be retrofitted to improve their resilience.

**Conclusion**

This discussion paper set out to explore some of the main issues around community-based health services as one vital sub-system of an overall health system. The aim was to raise issues, not to make specific recommendations about CBHS. The main message emerging from the paper is the importance of planning for community-based services as a whole, rather than as a number of piecemeal activities. Without this overview there will be gaps, duplications and inconsistencies in terms of services: opportunities to progress towards Universal Health Coverage will be missed.

There are many questions which can be asked about a community-based health sub-system. Thinking about these questions can be a useful way to structure ideas about how to make progress with Universal Health Coverage:

- What do community-based health services look like in my country/region at present? Is there a coherent picture of service provision, or are there gaps and duplications?
- Who provides CBHS? Is this a stable situation, or are there, for example, overworked demotivated volunteers or professional posts which are difficult to fill?
- Is there potential to provide more services within communities? What is stopping this from happening?
- Which populations are currently poorly served (social groups of geographical areas)? How could CBHS be developed for these populations?
- What opportunities are there to use new technologies in CBHS? What would be the best way of managing this change?
- Are community-based health workers sufficiently involved in emergency preparedness?

This paper does not provide definitive answers to these questions, but it does describe relevant examples and points out the risks of leaving CBHS as an “invisible” tier in health service provision.
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