There are many examples of successful knowledge transfer from poorer to richer countries – as well as the other way round. Methods developed in Africa for treating conditions as different as HIV/AIDS and clubfoot are now being used world-wide. Lenses created for poor people in India are used in cataract operations around the world.

Mexico’s *Oportunidades* programme, which was designed to bring services to the poorest parts of its population, was explicitly copied by New York City in 2007.

I have entitled this paper *Turning the World Upside Down* because it makes three arguments which together turn on their head some of the most common assumptions about strengthening health systems in poorer or developing countries.

These three arguments are that:

1. There is a new set of approaches to health services and systems being developed in poorer countries which are every bit as important as the introduction of ideas and practices from richer countries.
2. There is a need for a process of co-development – and mutual learning between countries and their development partners – which recognises that richer countries themselves have substantial problems and can learn a great deal from poorer ones.
3. System strengthening without building in continuous improvement is a waste of money and effort.

This short paper does not attempt to cover all aspects of health systems strengthening but takes as its starting point the WHO analysis that there are six essential elements that need to be addressed – service delivery, financing, governance, health workforce, information systems and supply management. The paper deals with two of them: service delivery and health workforce. The same principles and arguments as are used here with these two can, however, be applied to the others.

The paper builds on this analysis to argue that successful implementation of effective system strengthening requires systems thinking and attention to the way that all the elements of the system work together. There are now tried and tested ways of doing this.

It uses examples relevant to each of the three health-related MDGs – on tackling HIV/AIDS, malaria and tuberculosis; childhood death; and maternal mortality – and makes reference to poverty and the empowerment of women.

The paper starts by looking at innovation in low-income countries and considers how the relationship between high-income and low-income countries affects health systems strengthening.

**The developing tradition in low-income countries**

Leaders in low-income countries, without either having the resources or being burdened by the established practices of the high-income countries, have created new approaches and new ways of dealing with old problems.

In countries as different as India and Uganda health leaders are using the natural strengths of their countries, the sense of community and family and the desire for self-determination, to promote health and provide healthcare. They are supporting their women as the natural health leaders, linking microfinance schemes and health insurance and finding ways to reconcile local traditional medicine and its practitioners with the western scientific tradition.

There is now a whole compendium of different approaches which need to be recognised and spelled out. We are beginning to see distinctively African and South Asian and Caribbean solutions and systems being developed. It is important that we do not just see these as temporary measures which will be replaced, once resources allow, with approaches and systems developed in richer countries.

Two specific examples of this innovation are given here, but as I have described in a recent book, *Turning the World Upside Down*, there are now many different approaches as the following table sets out.1

It is worth saying at the outset that these innovations do not mean that scientific development and more resources are not needed. Both are needed desperately: thousands of lives could be saved through the development of effective vaccines for HIV, TB and malaria and additional resources would undoubtedly improve outcomes. The central point is that, even today, we already have sufficient scientific knowledge and resources available in many low- and mid-income countries to save...
innovation in human resources
The first example of innovation in poorer countries comes from the field of human resources where many countries are developing their own approaches to training and employment in response to the well documented workforce crisis.
There is no shortage of ideas and examples to consider. In Mozambique, Pakistan and elsewhere governments are educating health workers to meet the needs of the country and not just of the professions. These workers fall broadly into two groups: mid-level workers doing technical tasks and community health workers who operate at the most local level and offer support and advice and simpler interventions.

These mid-level health workers, often called clinical officers in Africa, are trained in relatively short periods of time to deal with specific tasks such as undertaking caesarean sections or cataract operations, which require a full professional education elsewhere. Since 1984, for example, carefully selected health workers in Mozambique have been given training to become tecnicos de cirurgia (a surgically trained assistant medical officer) able to undertake obstetric and other surgery. These tecnicos have become the mainstay of the country’s obstetric service in rural areas.

International studies have shown that there are no clinically significant differences in the outcomes between surgeries undertaken by tecnicos and by physicians. Moreover, the tecnicos were very much more likely to stay in the area where they were recruited – not moving to the cities, the NGOs or abroad – and provided a much less expensive service than physicians.2,3

Other countries could tell similar stories. Many, like Pakistan with its Lady Health Workers and Malawi with Health Extension Workers, have also created cadres of community workers to be the most local point of contact with the health service, offer health promotion advice and provide some treatments. The specific arrangements vary from country to country. Some like India have different groups dealing with different problems; others, like Ghana, have recruited and provided training for traditional birth attendants and other traditional health workers. In all cases, however, this is about using the strength of the local community, and particularly local women, to promote health.

International studies have shown that under the right conditions – having, in particular, appropriate training and good links with and supervision from more skilled workers – these workers can make a very big contribution.4

In 2006 the Global Health Workforce Alliance (GHWA) set up a Task Force, chaired jointly by Commissioner Bience Gawanans of the African Union and myself, to review how best to scale up the education and training of health workers. We looked at successful practice around the world and drew out ten practical lessons from what had worked in these countries. We also showed how in a number of countries a new workforce model was being developed which made use of the different levels of health worker. Figure 1 shows in outline how by judicious development of the different cadres it is possible over time to build a robust workforce that addresses the needs of the three health MDGs.

Scaling up the health workforce The Task Force report - Scaling up, Saving Lives – was published in 2008 and fed into the Kampala Forum which produced the wider Kampala Declaration on health workers, which provides a template for developing a sustainable workforce.4–6

This simple diagram describes the creation of a distinctive model for the health workforce which is directly applicable to most low and middle income countries and which has been built up from experience in these countries.

All too often, there seems to be an assumption shared by country leaders and their international partners that when more resources are available countries should abandon this multi-layered approach and create a system dependent on the well established professions of the West. Given, however, that this system produces similar quality of treatment and care at a much lower cost I would argue that this needs to be turned upside down with richer countries instead moving to adopt a model more like that developing in poorer ones.

innovation across the whole health system
Some countries are also innovating across the whole of the health system. Bangladesh is a very good an example of this. A local organisation, BRAC, which is the largest NGO in the world, operates alongside Government to promote the development of the population with particular attention to the needs of the poorest citizens.

BRAC works with local women’s group to educate mothers, runs health services, provides more formal education, offers micro-credit to women to enable them to become traders or farm more effectively, has opened shops for the sale of their produce and has a university. It is, in effect, providing an entire support system for the poorest which enables them to stand on their own two feet and to take charge of their own futures.

In Africa and elsewhere governments embed their health policies within the wider framework of their policies to reduce poverty and
promote the development of their country and its citizens. They treat health as one contributor to the wider whole, recognising that improving health and reducing disability and dependency contribute to the economy and a healthier economy can be a major factor in tackling disease and premature death.

The result is that we can see very different health systems emerging than those in richer countries such as the United Kingdom, the United States or France. These health systems link health with everything else from education to the economy, use different incentives, involve the community and empower citizens rather than professionals. By contrast The United Kingdom, the United States and France segment health away from other related factors, use mainly commercial incentives and empower the professionals.

There is a danger here too that as countries get richer they may abandon this sort of approach and start to promote a more professionalised and commercial system with the characteristics, good and bad, of those seen in richer countries today.

Interdependence, co-development and mutual learning

Health systems strengthening takes place within the wider context of international relationships. We have begun to understand over the last few years how interdependent all countries now are in terms of health. A disease incubated in one country can be around the world in 24 hours. All of us, even the richest countries, are dependent on there being sound health surveillance systems in every country that can spot and isolate new diseases wherever they arise. We are also interdependent through sharing the same pool of health workers, using the same drugs and treatments and, increasingly, having similar regulatory and knowledge sharing arrangements.

We may be interdependent but richer countries are also more powerful and generally benefit more from every kind of international transaction from trade and direct foreign investment to the distribution of health workers and access to new therapies. There is an enormous imbalance in power which is reflected in the migration of health workers from poorer to richer countries. This makes a difficult situation in many countries enormously worse.

There is increasing pressure for new and fairer global arrangements for sharing health expertise and resources. The Commonwealth has been very active in this field with the development of the Commonwealth Code of Practice on migration in 2004 which has subsequently contributed to the Code of Practice to be debated at the World Health Assembly in May 2010. Whilst some issues such as these need to be addressed globally, others such as the development of plans and improvement of employment conditions need to be handled locally. There are both national and global responsibilities.

In richer countries the combination of a growing professionalism, universities and research institutes and commercial exploitation are driving a great deal of scientific and technological development – but failing to deal with the growing problems of non-communicable diseases, lifestyle epidemics and social change – none of which are dealt with effectively by current systems.

Poorer countries, precisely because they have so few resources, have had to learn how to engage patients and communities in their own care, how to prioritise promoting health over tackling illness, how to deploy new technologies effectively and how to manage the ever growing burden of costs. These are exactly the sorts of issues that need to be grasped in richer countries as they come to terms with the diseases and long-term conditions of the 21st century. There is much that they might learn from experience in these low-income countries.

Thinking in terms of co-development and mutual learning, rather than international development and one-way knowledge transfer, is very important in order to make development processes more genuinely respectful and country led. It means that low-income countries are less likely to repeat the mistakes of richer countries and more able to build on their own experiences and traditions – and to learn from others in a similar position to themselves. It will also help us to develop new ideas globally for the benefit of us all.

The future for global health

This mixing of learning from rich and poor is helping to create another way of thinking about health which is not so bound by professions, does not separate health from the rest of society and which understands and embraces the way that culture and social issues impact on health. Ill health and poverty go hand in hand with poor education and dangerous environments; whilst good health and economic growth are equally linked. Social conditions and structures influence health; with, for example, the empowerment or otherwise of women having a major influence on their chances of a healthy life.

This approach respects evidence and science, but wants to understand how things are achieved in practice and what role patients and the public play alongside scientists and clinicians. It does not start, as western medical education has traditionally done, by studying the science and then applying it to society but, rather, turns the world upside down and starts with understanding society and seeks to apply the findings from both the natural and the social sciences. It is a profound difference that influences the way that clinicians think and behave.

This approach of learning from the poor, the young and the excluded when combined with the new sciences and technologies – where the internet and the contraceptive pill have already turned our world upside down – will help us confront and tackle the challenges of the future.

The science of improvement

Another non-traditional way to think of health is in terms of health systems and not just in terms of the elements such as the professions, the scientific knowledge, the resources and the institutions that make them up.

There are three main points here. The first is simply the observation that adding resources of knowledge, money, staffing and equipment to existing poor systems is not enough; effort has to be put in simultaneously to improve practices, service design and efficiency. The danger is that a very small and badly operating system will be replaced by a bigger and more expensive but equally poorly operating system. The challenge is how to apply the knowledge and resources to have an impact. A functioning system is needed for this.

The second point is that it is important to think in systems terms about how all the elements of the system work together. Changes in one part of the health system will affect all the others. Adding extra workers, changing the way finances flow, introducing a new drug or treatment: each of these changes will affect other parts of the system for better or, sometimes, for worse.

This point is particularly important in systems which are growing and changing rapidly, as they are in many poorer countries. A doctor trained to work in the system today will have to change his or her practice to work in tomorrow's system where there will be more doctors, facilities and drugs. If he or she doesn't change they may make the whole system
actually worse with, for example, different doctors doing different things and failing to coordinate their activities. It is therefore important that the doctor can both learn and take a leading role in making improvements as the system grows and develops.

The third point is that there is a growing understanding of how to make health systems work effectively and a developing science of improvement which can be used to make changes systematically and at scale. These methods can be used as part of the implementation process of system strengthening so that the skills and the expectations of continuous improvement are built in from the start.

Whilst this thinking has developed in richer countries with their wealth of resources and their more hospital-based systems, it has now been adapted successfully for use in resource poor and more community based environments elsewhere.

Many countries have problems with their health systems due to poor planning and prioritisation, bad communication, multiple vertical programmes with poor integration, lack of coordination between national, regional and local levels and an absence of measurement and accountability. As a result their systems do not operate effectively. These issues can only be addressed by taking a whole system approach rather than simply trying to fix each of the component parts.

At its simplest the key to these systems based approaches is to start at the most local level by bringing together the health workers who share a particular goal – such as reducing child mortality – to look at their own systems, identify the barriers and decide what practical steps can be taken immediately to make an improvement. These practical steps might be as simple as changing the day on which supplies are delivered, introducing a new referral process or agreeing a new way of counting activity or measuring success. One such relatively simple change is implemented initially and the results reviewed – and amendments made as necessary – before another practical step is taken. This series of steps – or improvement cycles – continue and over time there is a cumulative improvement and progress is made towards the goal.

The practitioners who developed these approaches have also learned that change can be made at scale by linking or networking health workers from multiple different clinics and hospitals with the district managers to allow problems to be solved rapidly across large referral regions. This approach provides a mechanism for simultaneously sharing the learning between many levels of the system. At the same time lessons learned are fed back to the higher levels in the system and in this way local best practices can be rapidly spread to other areas of the country. Since this approach encourages close attention to the reporting and feedback of data, visible results from one area can quickly garner support for the changes in other areas. Action needs to be taken at the lowest and the highest levels together. Learning and improvement is accelerated where different groups and different levels are working together in this way.

A number of organisations are now assisting low and middle income countries to strengthen health systems and improve outcomes through application of these methods. For example, the Institute for Healthcare Improvement (IHI) has worked with local groups in Malawi, South Africa and Ghana to strengthen delivery of care for HIV and maternal and child health in this way. In the Western Cape Province in South Africa IHI worked with the Provincial and City Health Departments in two sub-districts with a population of 800,000 to find and treat everyone with HIV who required highly active antiretroviral treatment (HAART) and to decrease maternal-child HIV transmission to less than 5 per cent within two years. IHI worked with health workers in all the facilities in these sub-districts to run a series of improvement cycles with rapid improvement in district wide access to treatment for AIDS as shown in the following charts.

In this example the districts used a phased approach to scale-up rapidly the access to drugs for AIDS patients – initially testing ideas with one site, then spreading a few months later to a cluster of clinics and, finally, to all clinics in the sub-district. The learning from the initial test sites was incorporated into the rapid scale-up phase and allowed the district leaders to move decisively and confidently, knowing that they had a credible package of services, which had been developed locally, to improve care. In both sub-districts the goal of treating all the patients with AIDS who needed treatment was achieved within two years primarily through changing the way that care was delivered rather than through more staff and resources.

There are now many successful examples of the use of quality improvement methods to strengthen systems and improve health system effectiveness in richer and poorer countries around the world. Perhaps the most important point here is that these methods should be used as a central element to implement large scale health programmes and to strengthen health systems. They are not add-ons to implementation processes which introduce new financial systems, train more workers or build more facilities but a central part of making the change. There are many advantages in using improvement methodologies as the central mechanism for implementing system strengthening: they involve practitioners from the start in designing and ‘owning’ the change, engage all levels of the system, can be applied to any type of health programme and are flexible and adaptable to local culture and environment.

**Strengthening health systems for the MDGs**

A number of countries are now explicitly adopting quality strategies of this sort and it is encouraging to see that a recent publication from the Alliance for Health Policy and Systems Research and the WHO advocates systems thinking for health system thinking. There is now a good weight of both theory and practice to support implementation through improvement methodologies.
These arguments suggest that in order to implement the six WHO building blocks for health systems strengthening which were mentioned earlier it is important to make an explicit commitment to implementation through:

- Building on the emerging approach in low-income countries as well as the established traditions of high-income ones.
- Co-development and mutual learning between richer and poorer.
- Using a systems and quality improvement approach from the outset – which involves local practitioners as well as policy-makers and, in securing greater quality and efficiency, makes precious resources go further.

Recommendations

The Commonwealth, with its mix of countries and shared traditions is uniquely well placed to play a leadership role in these developments. I recommend that the Commonwealth should:

- Develop arrangements for sharing knowledge of system strengthening among its members based on their experience of successful implementation.
- Specifically, building on the work of GHWA and others, share experience and knowledge of the development and the role of midlevel and community health workers in an effort to identify appropriate mixes of cadres of health worker appropriate to the environments of mid- and low-income countries.
- Explicitly, adopt methods of quality improvement as the prime mechanisms for systems strengthening.

Mid- and low-income countries, which face the greatest health problems, should, as I have argued in the introductory paper, take the lead in tackling the MDGs with the active support of the high countries of the world.

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