



A report on the changing roles and skill mix of health workers globally
by the All-Party Parliamentary Group on Global Health and the
Africa All-Party Parliamentary Group

All the Talents

How new roles and better teamwork can release
potential and improve health services

Report

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Abbreviations and definitions

APPG	All-Party Parliamentary Group
Community health care worker	Any health worker carrying out functions related to health care delivery; trained in some way in the context of the intervention; and having no formal professional or paraprofessional certificated or degreed tertiary education. ¹
DfID	Department for International Development
DoH	Department of Health
HIV	Human Immunodeficiency Virus
LMIC	Lower and Middle Income Country
MDG	Millennium Development Goal
MoH	Ministry of Health
NCD	Non-Communicable Disease
NGO	Non-Governmental Organization
NHS	National Health Service
QIPP	Quality, Innovation, Productivity and Prevention Programme
RCT	Randomised Controlled Trial
Skill mix	The mix of posts in the establishment; the mix of employees in a post; the combination of skills available at a specific time; or the combinations of activities that comprise each role, rather than the combination of different job titles. ²
TB	Tuberculosis
TBA	Traditional Birth Attendant
WHO	World Health Organization

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Preface

This report has a very simple message. There is enormous scope to make far better use of the potential and talents of all the people working in healthcare – and we need to do so at a time of health worker shortages and financial constraints.

The Millennium Development Goals will not be met and improvements won't be made in the NHS without making much better use of the most valuable asset of all – people and their energy, skills and passion.

This report provides many examples from around the world where unqualified health workers have safely taken on wider roles in healthcare and performed them well, where nurses and other professionals have successfully taken on extended roles, and where patients and carers have become vital parts of the healthcare team. They have, depending on the particular example, improved access to services, improved quality or reduced costs – or sometimes all three.

We recognise that there are potential dangers and difficulties in this approach and that changing and extending roles, if done badly, can result in poor quality and, even, dangerous care. However as this report shows, there is now enough evidence to demonstrate what can be done and to identify the *success factors*. The keys to success are good leadership and planning, appropriate job design and recruitment, formal training and scope for progression, supervision and referral systems, and recognition for health workers and good teamwork.

We want this report to stimulate debate about what can be achieved and to encourage still more innovation and creativity.

Finally, we want to thank everyone who has contributed to this review and report, particularly the advisers and witnesses and the team of Oliver Johnson, Kate Mandeville, Kirsten Everett, Katie Macdonald, Helen Fry, Victoria Crawford, Tom Hird and Vanessa Halipi who supported members in their deliberations.



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1. Introduction

- 1.1 At a time of health worker shortages and financial constraints it is more important than ever to nurture and develop the talents of everyone working in healthcare – community workers, carers and the professionals – to help them achieve their full potential and thereby improve quality, reduce costs and increase access to health services.
- 1.2 This report reviews how health workers around the world are taking on new roles. Nurses perform tasks previously undertaken by doctors, community health workers and nursing assistants learn new skills, and patients are becoming part of the healthcare team. This skill mix change – or *task-shifting* or *task-sharing* – can have a major impact on services.
- 1.3 There is a critical shortage of health workers in many lower and middle income countries (LMICs). This has led to experimentation and innovations in the ways in which health workers are deployed and trained. Some of these are very successful in improving access, quality and costs – with nurses doing caesareans and cataract operations in Africa and community health workers in India, Africa and Brazil offering health advice, treating patients and undertaking surveillance. Others, however, have been much less successful.
- 1.4 In the UK, on the other hand, these changes have been driven by the aspirations of nurses and other professional groups to extend their roles; by legislation which has reduced doctors' working hours; and more recently, by the desire to reduce costs. Examples include nurses and others starting to prescribe and imaging technicians taking X rays.
- 1.5 Throughout the world it is patients and their families and informal carers who, of course, provide most healthcare. Whilst this study focuses on paid health workers, it is important to recognise that patients, families and carers can and do take on new roles and develop their skills as part of a wider team.
- 1.6 The All-Party Parliamentary Groups (APPGs) chose to review these issues because these changes have accelerated in recent years and because the increasing demand for healthcare worldwide and its rising cost means there is a greater need to scrutinise staffing arrangements. Health workers are not only the guarantors of quality in health services they are also the single highest cost. It is crucial that they work both effectively and efficiently.
- 1.7 The APPGs heard evidence from leading experts from around the world at two sessions in Parliament and through further oral and written advice and input from other experts and interested parties. These witnesses are listed in the acknowledgements at the end of the report. Transcripts of these sessions, as well as the written evidence, are available online.
- 1.8 Members of the APPGs suggested that the review should:
 - Describe the potential impacts of skill mix innovation on health services
 - Identify the success factors and right environment for skill mix innovation
 - Comment on the evidence base available and identify critical gaps
 - Illustrate the issues with a small number of case studies
 - Make recommendations to government and other key organisations

2. Beneficial impacts

- 2.1 Changes in skill mix – *when done well* – have the potential to improve access to health services, quality and costs.
- 2.2 Introducing a new type of health worker or shifting tasks to a different group can rapidly and significantly increase access, through expansion of health provision by individuals and their presence in local communities and areas. The following examples show this in action.
 - Improved Access**

Orthopaedic clinical officers in Malawi are seeing 153,000 patients and performing 33,000 bone manipulations and 37,000 minor operations each year.

Sightsavers have pioneered the use of community health workers to distribute a treatment for river blindness. This approach has resulted in an extension of treatment to over 75 million people in over 15 African countries, many in remote areas.³

Ethiopia is posting two health extension workers in every village, with nearly 35,000 trained so far. This has increased access to public health services from 61% to 87%.⁴
- 2.3 Groups of health workers with less training may be able to develop greater experience and better skills at doing a specific task, freeing up senior staff to provide supervision or undertake more difficult tasks and increasing the quality of care.
 - Improved Quality**

The introduction of nurse practitioners for same day consultations in primary care in the UK has increased patient satisfaction levels, with patients receiving more information about their illnesses and more time in their consultations.⁵

The introduction of Obstetric Surgical Officers at three health centres in Tanzania resulted in the number of institutional deliveries tripling, decreasing fresh stillbirth rates and reducing obstetric referrals.⁶
- 2.4 The cost of health services can also be reduced through skill mix innovation by shifting tasks and delegating responsibility and accountability to groups of health workers that receive shorter training and lower salaries.
 - Improved Cost**

Técnicos de cirurgia in Mozambique undertake 92% of caesarean sections in District Hospitals and do so to the same standards and at 1/3 of the cost of doctors, whilst producing similar clinical outcomes.⁷

In Ghana, antenatal care provided by a nurse or a medical assistant costs about 38% less than care provided by a doctor. Travel costs are also lower as medical assistants are based in rural centres rather than district hospitals.⁸
- 2.5 In reviewing these and other successful examples, the APPGs, were able to identify the factors which make for success – and the absence of which lead to failure.

3. Success factors

- 3.1 This review has identified that there are a number of factors which, in combination, create success when changing skill mix. Many LMICs cannot do all these things all the time – such as provide supervision in remote areas – simply due to lack of resources. The more of these factors that are in place at any time, the more likely any change is to be successful.
- 3.2 The upward spiral below illustrates how these factors can reinforce each other when they are all in place. It shows that a successful change will start from a foundation of good leadership and planning, continue with appropriate job design, include formal training and so on.



- 3.3 This report concentrates on releasing the potential for significant impacts in health care from changing roles and skill mix and improving team work across all groups of staff. As Dr Mubashar Sheikh says *“Achieving an optimal skill mix ... has the potential for the greatest impact in improved health outcomes”*.
- 3.4 However, attempts to make change without addressing these factors may well fail and can damage existing health services. Alongside the examples of success, there are as many cases where innovations have failed to achieve positive health outcomes or have not been sustainable because of poor design or an unsupportive environment. The APPGs heard of examples where health workers in Africa had not been trained properly, and in the UK where nursing assistants received little or no supervision when taking on new tasks. As Mike Farrar, Chief Executive of the NHS Confederation, said to us *“Throughout the NHS we see many examples of skill mix and substitution handled expertly ... but we also see occasions where change has occurred in a more reactive way, driven by short term financial expediency. Clearly the latter is not acceptable and potentially risks patient experience and outcomes being less than desired”*.



- 3.5 For an innovation in skill mix to be sustainable and safe, strong leadership and planning is essential. The introduction or change in role of a particular type of health worker is sometimes stimulated by the need for a rapid solution to a pressing shortage or problem. Professor Anne Mills noted however that *“one also needs to think not just about each individual cadre but also about the team they work within and indeed the support systems given to them. When we look at problems of health workforce management in these countries, a lot of the problems arise not just because of, for example the training of the individual cadre, but also of the system of support that they work within”*.
- 3.6 All groups of health worker, including new cadres, need clearly defined roles and responsibilities and attention must be paid to appropriate recruitment. These clearly defined roles are the building blocks of a team-based approach and need to articulate the specific tasks that each health worker is responsible for, and their role in the team.⁹

3. Success factors continued

- 3.7 Training programmes must be relevant and need to lead to some sort of formal qualifications necessary for recognition or promotion if they are to be sustainable. Dr Peter Carter, Chief Executive of the Royal College of Nursing, noted that *“you don’t need registered nurses to do all of the tasks that historically had been carried out by qualified nurses. Healthcare assistants can do many of those tasks, perfectly satisfactorily, providing they’ve had the proper induction, training, and education. And where it goes wrong, in some parts (and I do stress some parts of the NHS) is where there has been task shifting onto unqualified people who’ve not been given even the most rudimentary induction into the fundamentals of nursing care”*. Dr Hannah Faal described how her initially successful programme for ophthalmology health workers ultimately failed because the training was not recognised: *“When [the programme in Ghana] started the ophthalmologists were mainly in the capital in the teaching hospitals, and by the end of the period every region had an ophthalmologist and they were responsible for about 80% cataract surgeries in the country. But that programme has failed because the regulatory bodies were advised by professional bodies that this was not additional ‘qualifications’, it was additional ‘knowledge’, so the application for the course dropped dramatically ... we’re trying to correct that, we’re going back to the drawing board and changing the diploma to a membership programme”* which would lead to a qualification acceptable to the professional bodies with better prospects for recognition and remuneration.
- 3.8 When a health worker takes on a new task or responsibility, it is essential that they are effectively supervised and supported, with clear referral pathways. Professor Jim Buchan warned that *“it’s very easy to under-estimate the levels of supportive supervision required, and that it is intense. The more remote the location of the health workers undergoing the skills mix change process, the greater the level of supervision is required”*. Linda Doull had described what happens when this support is lacking, using the example of maternal health: *“It’s interesting to consider where their value lies in terms of skill mix in taking forward certain new activities – for example the potential role of health extension workers in providing misoprostal to address post-partum haemorrhage – where these health workers will be fundamental to ensuring women with limited or no access to health facilities receive this treatment. Weaknesses elsewhere in the health system, particularly referral systems up to a higher level of care, and the limited supportive supervision required for them to use that drug is actually preventing essential services being delivered by this significant cadre of health workers”*.
- 3.9 New cadres of health worker need incentives and recognition if they are to be expected to stay in these roles for the long term. Professor Jim Buchan gave an example of a successful innovation in the UK, noting that *“if you look at what’s been achieved in terms of nurses moving into more advanced roles within the NHS you can point to ... a new pay and career structure being implemented which has recognised those who were working at a higher level and encouraged nurses to move into those higher levels”*.
- 3.10 The following case study shows how nursing roles have developed in the UK over recent years and raises questions about the need for training and regulation in the future. Baroness Emerton, Mike Farrar of the NHS Confederation, Dr Peter Carter of the Royal College of Nursing and others all commented on this changing picture. They emphasised that these changes in nursing need to be coordinated with changes in the other health professions and in social care. This discussion led to some specific recommendations about the NHS in England.

Case Study 1: Nursing roles in the UK

Professor James Buchan, Queen Margaret University Edinburgh

Governments in the UK, as the main funder of education and training for health workers, and as the main employer of health workers, play a major role in determining the size and profile of the nursing workforce. In association with independent regulators, health professions and educators, government makes the key policy decisions on which types of nursing staff will be trained and deployed. There have been significant changes in the education and regulation of the nursing workforce in recent years which have altered the skill mix options.

There are now four main roles delineated within the UK’s broader nursing workforce:

- 1 **registered nurses (RNs)**, who are diploma or degree level educated;
- 2 **nursing assistants/auxiliaries**, who are trained ‘on the job’;
- 3 **health care assistants (HCAs)**, who complete a National Vocational Qualification (NVQ);
- 4 **assistant practitioners (APs)** are a recent development and are vocationally trained to a higher level than HCAs.

Of the four categories, only RNs are a regulated profession. The other three categories of worker are not regulated, but undertake work delegated by a registered professional who remains accountable for the work being done. Currently there are no set national standards for the HCA and AP roles, but ‘Skills for Health’, the UK sector skills council has been commissioned to develop national minimum training standards and a code of conduct.

The role of HCAs and APs are both relatively new to the nursing workforce; in particular, APs have only been trained in recent years and their numbers remain low, but growing. Significant policy emphasis in recent years, nationally and locally, has been supporting the development of HCA and AP roles. The traditional on-the-job trained assistant/auxiliary is reducing in numbers. The most rapidly growing part of the broader NHS nursing workforce has been health care assistants, which have almost doubled in number in the last years (see table).

NHS England: Nursing, midwifery and health visiting staff, 2001 and 2011¹⁰

(Full time equivalent)

Type	2001	2011	% change 2001-11
Registered nurses, midwives	256,218	306,346	+20%
Nursing Assistant/Auxiliary	79,272	59,456	-33%
Health Care Assistants	24,719	44,787	+81%
Assistant Practitioner	-	750	-

Core standards for the AP role have been determined by Skills for Health: *“An assistant practitioner is a worker who competently delivers health and social care to and for people. They have a required level of knowledge and skill beyond that of the traditional healthcare assistant or support worker. The assistant practitioner would be able to deliver elements of health and social care and undertake clinical work in domains that have previously only been within the remit of registered professionals. The assistant practitioner may transcend professional boundaries. They are accountable to themselves, their employer, and, more importantly, the people they serve”*.

As yet there is limited research evidence on the impact of the HCA and AP roles, and there is continued debate in relation to their supervision and regulation.¹¹⁻¹² In May 2012 the Health Select Committee of the UK Parliament advocated for the regulation of HCA role.

4. The right environment

- 4.1 There are many examples where inspirational leaders have created new roles for health workers or engaged the public and patients in treatment and care. Training medical assistants to undertake orthopaedic surgery in Malawi, for example, was started by a single surgeon and an organisation such as Mothers2Mothers involves lay people in supporting others – in this case HIV-positive mothers in supporting pregnant women with HIV in Africa.¹³
- 4.2 The last section looked at the success factors in individual projects. These projects will have bigger impact and be more sustainable if there is an enabling environment and, without this, promising innovations may be obstructed or undermined. The right environment is created by planning and flexibility from governments and national health systems, and leadership and engagement from health professionals and patients. The right environment will determine whether or not a project is on the upward spiral of success or the downward spiral of failure.
- 4.3 LMICs are often at a considerable disadvantage in creating the environment due to lack of resources and capacity. As a result the APPGs have made some specific recommendations about how to build this capacity and capability.

Governments and national health systems

- 4.4 Governments and national health systems can support change or make it more difficult. They have a critical role in achieving an effective skill mix because key enablers for innovation are: political priority; adequate financing; capacity for health workforce planning; responsive regulation; and interdepartmental collaboration. On the other hand government policies on employment and pay policy, regulation and the involvement of the private sector can create an environment which simply maintains the status quo. New technologies are creating many new opportunities for skill mix innovation which need greater consideration and support from governments and national health coordinators.
- 4.5 A lack of recognition of skill mix issues at the national policy level, or political will to effect change, can be barriers to successful innovation. It is important that governments acknowledge the health worker crisis and achieve consensus with other stakeholders over need for innovation. Dr Daghni Rajasingham noted that political will was a key reason for the success of the traditional birth attendant programme in Tamil Nadu in the 1980s. In Ethiopia, the introduction of health extension workers has enabled a basic package of essential life-saving services to be introduced for significant numbers of people, with Linda Doull commenting that “Merlin believe this programme has been successful largely because it’s seen as a national priority directly addressing MDG 4 and 5 and recognised at all levels within the health systems”.
- 4.6 Sufficient funding must be made available for all phases of skill mix innovation, including piloting, introduction, implementation of support mechanisms and evaluation. Changing the roles of health workers or introducing new cadres can lead to savings in the long term but will require investment in training programmes, regulatory bodies and support structures. Professor Cathy Warwick emphasised this point, stating that for midwives, “to get that appropriately educated workforce, you do need acceptance by government in policy that is backed by finances”.



Rapid Diagnostic Tests (RDTs) being administered by a Community Health Worker in Uganda. Tine Frank/Malaria Consortium.

- 4.7 Health workforce planning, that is comprehensive and based on robust evidence, is essential in a system where care is team based and changes to roles or training can have implications for decades into the future. Dr Mubashar Sheikh from the Global Health Workforce Alliance described this as “the institutional capacity to plan, manage and oversee an adequate health workforce response to [these] challenges”. Witnesses with experience working in sub-Saharan Africa found that a lack of planning was a major barrier to innovation, with Linda Doull saying on behalf of Merlin that “Our experience has identified not only quite limited understanding of skills mix per se, and what that can bring to workforce development and how to go about it, but also a lack of or very limited capacity, in the individuals who are responsible for undertaking this health workforce analysis and planning”. Dr Neil Squires from DfID added that “effective human resource planning ... is critically important to assess the correct balance of skills, to address some of the major constraints to effective service delivery”.
- 4.8 The roles or functions of health workers can be restricted by legislation or regulation; failure to reform these can obstruct reform, making a flexible regulatory or legislative environment essential. The introduction of nurse prescribing in the UK has been widely recognised as an important and successful innovation that has reduced costs and improved patient care. Professor Jim Buchan commented that “If you look at what’s been achieved in terms of nurses moving into more advanced roles within the NHS you can point to legislation to enable them to prescribe drugs as being one factor”.

4. The right environment continued

- 4.9 A number of different government departments and agencies can have a role in determining the health workforce, such as education and finance. These groups must be consulted and engaged in any attempt at skill mix innovation. Professor Jim Buchan strongly argued that *“skill mix has to be regarded as part of managing change – it’s not a narrow, professional, technical exercise, if it’s regarded that way it’s not going to get embedded and secured in the sort of change you’re looking for. It has to be addressed with a broad base involving education sector regulators, policy makers, funders, if you hope to change things at the national level”*.
- 4.10 New technologies are creating many opportunities for innovations in skill mix. Dr Mubashar Sheikh highlighted *“adequate availability of tools and technologies”* as key factors for success. Professor Jim Buchan noted that *“there is real scope with various types of technology to support this activity. Not just in terms of telemedicine, which is important, but also in terms of looking at technology to enable continuing access to education and CPD [continuing professional development]. Technology to support and grow peer networks so you continue to converse and be in touch with your counterparts. Very basically, but critically, technology to enable health workers to be paid on time”*.



Midwife performing antenatal care in Laos.
Anne Heslop/Health Poverty Action.

Professionals and Patients

- 4.11 Virtually all successful skill mix changes are led by health professionals, but professionals and their professional bodies can also be a significant barrier to innovation. More recently there has been recognition that health professionals have an important role in leading teams of professionals and non-professionals alike.¹⁴ Moreover, innovations need to also be acceptable and understood by patients if they are to become widespread and sustainable.
- 4.12 Professional bodies and associations have a central role in the health workforce but can be a significant barrier to innovation, particularly if they are not well consulted or feel that a change threatens the interests of their members. Professor Jim Buchan explained that *“It’s quite often the case that professions, individual health professions, can be resistant to change. And that’s understandable – they occupy a certain territory, they may have been there for centuries. When it comes to looking at changing mix within that territory, that has to be acknowledged as being a challenge. And one of the positive benefits in terms of nursing skill mix in the UK was that the medical profession generally speaking was not resistant to a lot of the skill mix changes that were occurring; in part this was because they were salaried rather than paid fee-for-service, so a transfer of tasks does not have the same direct threat on their pay rates”*. Dr Daghni Rajasingham said that *“around skill mix, professional identities and bureaucracies are unbelievably strong globally. We need to address those issues as a matter of urgency if we really want to get the most from skill mix ... Maternity support workers are not greeted with open arms by all midwives, and again that goes back to the professional identities and professional bureaucracies and the question: ‘are they threatening my professional space?’”*.
- 4.13 The public acceptability of a skill mix innovation can depend not only on effective communication and engagement in the process, but also on the history and culture of a particular country. Professor Anne Mills noted that a key enabler for the success of the medical assistants programme in Malawi was that *“it’s a very accepted approach. Some other countries might have similar experiences and others may not have them. That really shapes the acceptability of these sorts of approaches in different countries... There may be issues of whether these types of workers are acceptable to the population. I expect the evidence on that is that if people perceive them to be providing them with helpful services, as a useful group, acceptability is not such an issue”*.

There are many examples of successful skill mix change globally

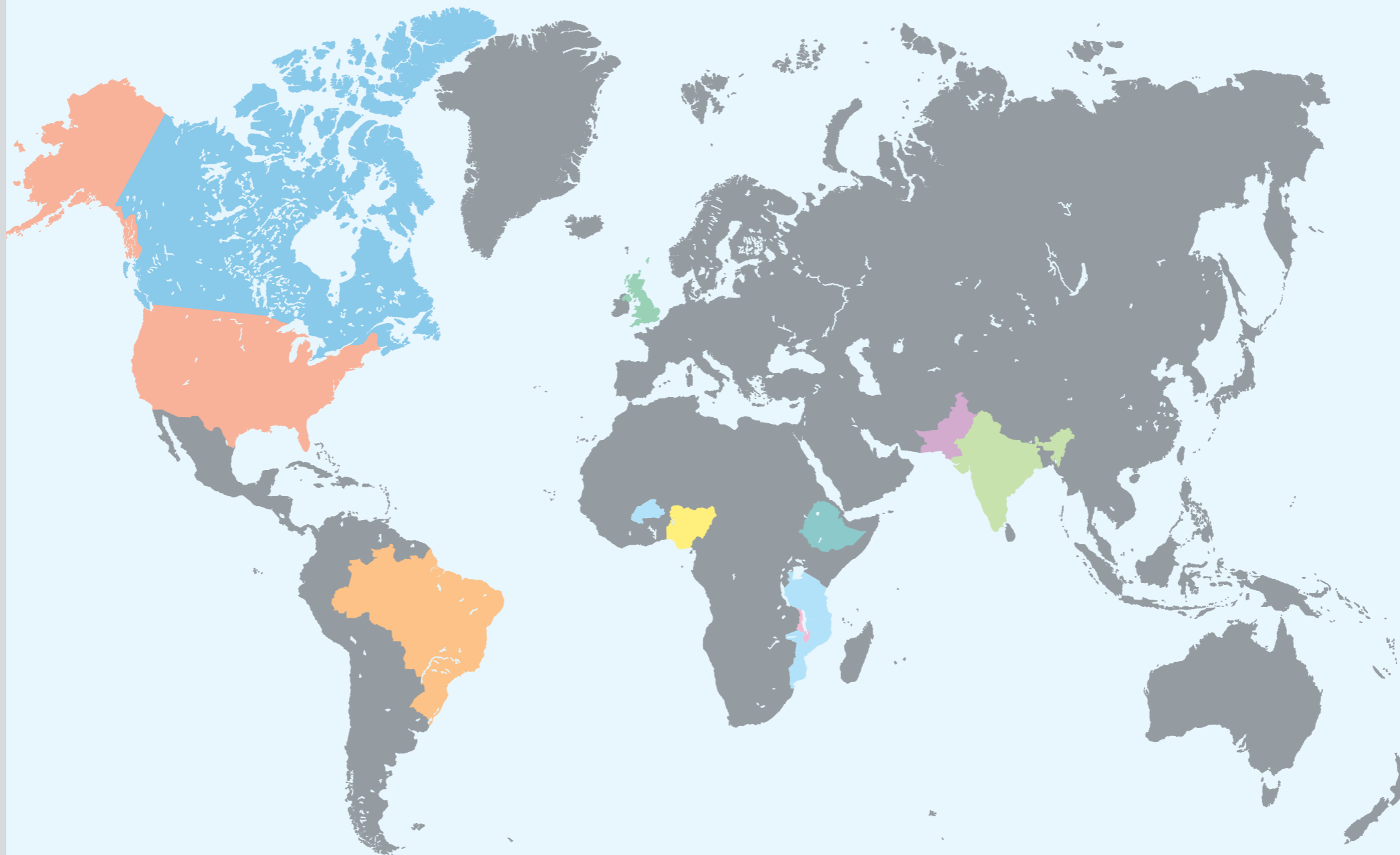
In the UK, prescribing by nurses in primary care is associated with higher patient satisfaction with similar health outcomes and number of prescriptions issued compared to general practitioners.

In Ontario, Canada, nurse practitioners see patients alongside general practitioners in primary care. Evaluations have shown they lead to improved chronic disease management and improved access to healthcare, especially in more remote areas.

In the USA, extended scope physiotherapists assess patients in the emergency department alongside doctors, administering treatments, prescribing drugs and referring to specialists as necessary. Evidence suggests that these physiotherapists have similar levels of diagnostic accuracy and patient satisfaction when compared to doctors.

In Nigeria, community health workers trained by Sightsavers have distributed a treatment for river blindness to nearly five and half million people. This approach has been replicated in over 15 African countries, resulting in an extension of treatment to over 75 million people.

The *Programa Saúde da Família* (Family Health Programme) in Brazil consists of multidisciplinary teams, including a doctor, nurse, nurse auxiliary, and four to six community health workers, who look after the health needs of residents within a geographically defined area. Since its introduction, primary care has become the usual source of care for 57% of Brazilians up from 40% in 1998. In areas with high enrolment in the program, hospitalisation rates for chronic diseases were 13% lower than those with low enrolment.



In Tanzania, Mozambique and Burkina Faso, mid-level health workers are trained to perform emergency obstetric surgery, particularly caesarean sections in rural areas. Studies found no significant differences in maternal or neonatal deaths compared to doctors.

In Tamil Nadu, India, the Multipurpose Workers Scheme gives school-leavers 18 months of basic primary care training. They are then designated as village health nurses and provide maternal and child health services through regular home visits to the villagers under their care. The maternal mortality ratio in Tamil Nadu is now half of India's average and under-five child mortality halved between 1992/3 and 2005/6.

Ethiopia is posting two health extension workers to every village, with nearly 35,000 trained so far. The workers have improved detection and treatment of TB and HIV and in just four years they increased access to public health services from 61% to 87%.

The government of Pakistan created the Lady Health Worker cadre in 1994 with the aim of providing essential primary health services in the community. Over 100,000 lady health workers have been trained so far. In Punjab province they have contributed to a reduction in the maternal mortality rate from 350 to 250 per 100,000 live births and in the infant mortality rate from 250 to 79 per 100,000 live births.

In Malawi, an innovative programme has been introduced to train clinical officers in orthopaedic care in a country with high rate of trauma but just a handful of orthopaedic surgeons. By the 10th year of programme, orthopaedic clinical officers were seeing 153,000 patients and performing 33,000 bone manipulations and 3,700 minor operations per year.

5. Evidence

- 5.1 A consistent theme that was presented in evidence to the enquiry was that, whilst there is adequate evidence to take action on some issues, there remain significant gaps which need to be addressed. Very little research funding is devoted to human resources issues, despite the fact that it is the predominant cost in healthcare. The review has looked at the evidence available and identified gaps.
- 5.2 The shortage of evidence on the value and impact of innovations in health worker skill mix is a symptom of a general lack of funding available for research on health systems, and on health workers in particular. Significantly more investment is made in drug research than human resources research, even though health workers account for a much greater proportion of costs. As Professor Mills commented, “...any investigation of the allocation of research relating to health indicates that the amount of money on research that is anything to do with service delivery, or strengthening the health system, is very small and, within that, human resources research is very small”.
- 5.3 Many skill mix innovations have been introduced or scaled up without evaluation of their quality or outcomes. This is not only due to the lack of funding for research and evaluation but also because of weak research capacity and an unsupportive environment. The urgency of the human resource crisis in many countries means that many innovations are poorly planned and rapidly introduced. Linda Doull elaborated on Merlin’s experiences, “The general feeling is that, although poorly documented, this approach [skill mix changes] does actually address some of the health workforce issues on an interim basis, particularly in post-conflict settings”.

Existing Evidence

- 5.4 A review of the existing research identifies a number of significant gaps in the evidence available to policymakers. According to Dr Mubashar Sheikh, “there is no proper understanding on what is critical for policymakers in discussing task shifting and skill mixing ... Policy makers need to demand more, and make more use of, research. If we want to invest more in these strategies, then we need more evidence”.
- 5.5 Reviews of the available research evidence have tended to focus on a particular skill-mix change or cadre, for example nurse prescribing or community health workers. These reviews can be synthesized in order to gain a high-level perspective on the impact of skill mix innovations.²¹ An analysis of evidence published in scientific journals and by international organisations identified twelve reviews, including those reviewing the evidence in general²²⁻²³ and those focusing on nurses in advanced roles (including nurse practitioners and nurse specialists)²⁴⁻²⁶, nurse prescribing²⁷, mid-level health workers²⁸⁻²⁹, advanced practice and extended scope physiotherapists³⁰, and community health workers.³¹⁻³³
- 5.6 The evidence was examined using six key dimensions of health service quality: access, equity, acceptability, efficiency, effectiveness, and economy.³⁴⁻³⁵

Case Study 2: Malawi’s innovative trauma care service

Professor Chris Lavy

Malawi has very few orthopaedic surgeons. Currently there are only seven (of whom only two are Malawian) for the whole country of around 14 million people. The UK by contrast has around one per 30,000 people.

The first medical school opened in 1990 and by 1996 the first students graduated, but it was clear that it would be many years before enough were trained as orthopaedic surgeons to cope with the enormous burden of fractures and injuries, including escalating numbers of road traffic accidents.

Malawi solved the problem another way, by establishing a non-medically qualified cadre of Orthopaedic Clinical Officers. The idea belongs to Dr Edward Blair, a Canadian who lived in Malawi in the 1980s and worked with the Ministry of Health to set up an 18 month training scheme for local medical assistants. Medical assistants are a group of clinicians who, having left school at around the GCSE level, do a two year course in basic clinical care, and run many of the country’s small health centres. These medical assistants were able to take the 18 month upgrade course in orthopaedics and become Orthopaedic Clinical Officers. The course was redeveloped by Prof Chris Lavy in 1998 with a grant from DFID and the Nuffield Foundation UK.



Orthopaedic clinical officer using Ponseti method for clubfoot

Orthopaedic Clinical Officers are not doctors but they develop sufficient skills to give good quality care to around 90% of all injuries. Since the start of the scheme, 117 OCOs have been trained. Sadly 22 have died and 13 have either retired or changed jobs, leaving 82 still in practice. Every district hospital in Malawi now has at least one OCO and it is estimated that they treat in excess of 30,000 fractures a year.

Primary competencies expected of an Orthopaedic Clinical Officer after training:

- Emergency resuscitation of severe injuries
- Manipulation and plaster of Paris casting of most common fractures
- Cleaning of open tibial and application of basic external fixators
- Treatment of burns and skin grafting
- Treatment of osteomyelitis and septic joints
- Treatment of club foot deformity

5. Evidence continued

Access

- 5.7 Access to health services refers to whether the public can receive treatment or services when they need them. Measures include the distribution of health services, waiting times, or access to specialist services or investigations. Innovations in skill mix have increased access to health services in a number of ways, such as by introducing new groups of workers to underserved rural areas in sub-Saharan Africa and by enabling health workers other than doctors to provide treatment in the UK and elsewhere. Nurses and allied health practitioners taking on extended roles can reduce waiting times, both for general patients and for those who need to see a medical specialist. For example, nurse practitioners working in primary care have led to shorter waiting times for patients.^{25,27}
- 5.8 An example of a skill mix innovation that increased access to health services is a programme pioneered by Sightsavers that has used community health workers to distribute a treatment for river blindness. Ivermectin is the drug used to treat onchocerciasis (river blindness), which is endemic in many African countries. The community-directed intervention approach for administering ivermectin (CDTI) relies on mass drug administration and an extensive network of volunteer community drug distributors to reach marginalised communities. This approach has resulted in an extension of treatment to over 75 million people in over 15 countries, many in remote areas.^{3,36}

Equity

- 5.9 Equity describes whether innovations in skill mix have made the distribution of healthcare fairer or more equal between patient or population groups. For example, a study in Brazil found that community health workers paid more frequent visits to children whose mothers had lower educational level or who belonged to the poorest families.³⁷ Another study in Brazil showed that an intervention with home visitors benefited all socio-economic groups, while a hospital-based intervention without home visitors preferentially benefited those who were better off.³⁸
- 5.10 While most studies recognised the potential of skill mixing to improve equity in health services, there was a lack of strong evidence. Further research is needed across a range of socio-economic groups and settings.³¹

Acceptability

- 5.11 Acceptability is the suitability of and satisfaction provided by innovative skill mix changes.²⁷ This can be from the perspective of those receiving the health service and those providing it or their colleagues. Measures could include patient satisfaction surveys or nurses' views on healthcare assistants. For example, evaluations of the work of nurse practitioners and nurse specialists have shown that patients are generally as or more satisfied with their services compared to those provided by doctors.^{24-25,39-40}
- 5.12 Whilst acceptability to patients has been studied extensively for nurse practitioners in high-income countries, there is less evidence for other cadres and in LMICs.⁴⁰ There has also been little research into the views of those health workers taking on these new roles, those who are losing their traditional role or tasks, or others involved in the change, e.g. those being asked to provide supervision. In addition, acceptability may vary with the health problem in question, with some patients preferring doctors for 'serious' illnesses, and other health workers for 'routine' complaints.

Efficiency

- 5.13 Efficiency is concerned with maximising output for given input, or put another way minimising input to achieve a desired output. The desire for increased efficiency is often a driver for skill mix innovation. If health workers with a shorter training can achieve the same outcomes as traditional cadres, then this is an efficiency gain for a health system, particularly where there is a dearth of higher trained health workers.
- 5.14 For example, orthopaedic clinical officers in Malawi handle 80-90% of the orthopaedic workload compared to orthopaedic surgeons. By the 10th year of the programme, around 100 orthopaedic clinical officers were seeing about 153,000 patients annually, which is highly efficient (see Case Study 2 on page 17).⁴¹
- 5.15 Not many studies have compared different types of health workers using common efficiency measures, such as consultation time or number of patients seen per day. One situation where this has been carried out is comparing nurse practitioners to doctors.^{25,39} This showed longer consultation times overall for nurse practitioners, and higher recall rates, which suggests decreased efficiency compared to doctors. Nurses tend to spend this giving information to patients about their treatment, however, so patients may go on to manage their illness better.^{25,27}

Effectiveness

- 5.16 Therefore, the key dimension in this debate is the effectiveness of a skill mix innovation. Effectiveness is defined as the overall results of an innovation: is the care or treatment provided the best possible? Results can be assessed through health outcomes such as mortality or morbidity rates; therapeutic outcomes such as whether best practice is followed; or safety outcomes such as complication rates. For example, clinical officers and medical doctors providing obstetric surgery in Malawian district hospitals performed similarly on a range of outcomes including wound infection rates and maternal deaths.⁴² The Sightsavers CDTI programme mentioned above has led to a 77% reduction in blindness compared to pre-CDTI levels.
- 5.17 In Malawi, orthopaedic clinical officers treated clubfoot effectively using a non-surgical technique. Clubfoot is a congenital deformity where the foot turns inwards and downwards and its incidence in Malawi is double that of Western Europe.⁴³ After a short training course in the Ponseti method, orthopaedic clinical officers were able to treat 98% of cases effectively, referring just two cases for surgical correction.⁴⁴
- 5.18 There are many gaps in the evidence and it is difficult to reach firm conclusions about the overall effectiveness of skill mix innovations. The most robust evidence came from high-income countries focused around nurses in advanced roles, whilst most evidence from LMICs has concentrated on community health worker programmes. Outcome data tends to focus on positive treatment results, with little follow-up to assess complications or adverse events. In many settings, the information systems are not strong enough to provide outcomes such as mortality at a population level. Most importantly, most evidence comes from small-scale studies which are dwarfed by the amount of funding put into health programmes using skill mix innovations or the proportion of health budgets spent on health worker salaries.

5. Evidence continued

5.19 Although efficiency and effectiveness can be assessed by comparison with treatment provided by doctors and nurses, this may not be a fair measure in LMICs. A better comparison may be outcomes associated with lack of care, rather than 'best care'. As Dr Mubashar Sheikh points out that "*[I]t is not necessarily fair to compare these categories of health workers, who are doing their job at the front line of health delivery under very challenging circumstances, with extremely limited systems support and a very low (or sometimes non-existent) remuneration, with doctors. [...] It might be more logical to compare their performance vis-à-vis what would happen in the absence or lack of care per se, rather than only comparing to the classical 'gold-standard' care rendered by doctors and nurses*".

Economy

5.20 Economy is the relationship of effectiveness to costs i.e. the cost-effectiveness of changes to skill mix. The need to make cost savings in an increasingly costly health system is often a trigger for skill mix innovations in high-income countries. In LMICs, making the best use of available resources is critical as healthcare spending can be as low as USD10 to 20 per capita. Dr Neil Squires of DfID felt there was an increasing demand for cost-effectiveness data in these settings and the priority was "*ensuring governments have [this] information and use it to inform policy choices [in order] to get effective use of limited resources*".

5.21 The evidence on cost-effectiveness is mixed.^{24-25, 40} In part the cost effectiveness of an intervention depends on what is trying to be achieved – is it about finding a cost effective solution or about improving quality or about reaching patients in the most effective way possible? Cost effectiveness may not be the principal desired outcome. The following two examples show this variation. In LMICs, care provided by mid-level cadres can cost between 30-40% less than that of doctors and nurses.⁷⁻⁸ In Burkina Faso, the average cost of a caesarean section was estimated as 513 international dollars when conducted by obstetricians but only 193 international dollars when performed by clinical officers.⁴⁵ However, changes are not necessarily cost-saving when factors other than salaries are taken into account. For example, a study from Canada which analysed two years of prescriptions by nurse practitioners reported that the number of prescriptions per nurse doubled and the cost per prescription increased by approximately 20%.⁴⁶ Overall, there has been less investigation of the cost-effectiveness of new interventions compared to other dimensions.^{24, 26, 30-31}

5.22 Future studies into cost-effectiveness should take into consideration the broader cost implications of an innovation. For example, studies on the substitution of traditional health workers by groups with less training rarely took into account the impacts of changes to training and supervision on costs, nor the original tasks that the lower cadre will no longer be able to perform.^{25, 47} Moreover, the lack of data on outcomes meant that cost impact of any reduction or increase in complications or referrals could not be incorporated into any analyses. For example, savings from nurse prescribing may be offset by nurses spending longer in consultations, referring more patients and ordering more tests.²⁵

5.23 It should not be assumed that all skill mix innovations will automatically reduce costs, especially if this is not considered during the planning and design stages – it depends, as we have seen, on what is trying to be achieved. Linda Doull from Merlin commented, "*... there's a triangle between quality, cost and supervision that really needs to be looked at in more depth to provide a greater understanding of the costs of skill mixing and the return on investment*".

Research Priorities

5.24 In conclusion, there is evidence that skill mix innovations increase access to healthcare and are acceptable to patients, but more evidence is needed on the effectiveness, particularly the cost-effectiveness, of these changes.

5.25 Future research priorities should include larger effectiveness studies with longer follow-up periods and concurrent cost-effective analyses assessing the full costs to the health service, including training and supervision. The reference point for comparisons should be appropriate for the setting, e.g. higher cadres of staff or no care at all.

5.26 Despite the need for more and better evidence, there is sufficient available to move forward with skill mix innovations. Professor Jim Buchan commented that, "*I would argue strongly that [a lack of evidence] shouldn't stop us moving forward*". Dr Mubushar Sheikh felt that "*there is enough evidence which shows that within a given parameter, within a framework, the strategy of task-shifting/task sharing does deliver positive results, and it does produce positive impact on health outcomes at population level*".

6. Conclusions

Countries around the world are struggling to deliver ambitious health plans at a time of global recession and health worker shortages. They may want to achieve the Millennium Development Goals, introduce universal health coverage or simply meet their population's demands for improved services. It is therefore essential that they nurture, develop and make the best use of all the talents available – from highly qualified health professionals to community health workers and patients themselves.

All the Talents shows that giving people extra skills, designing jobs that allow them to work up to the limit of their capability, providing better supervision and creating more effective teams *can* bring about enormous improvements. Under the right circumstances nurses *can* prescribe and take on additional roles; nursing assistants and community workers *can* treat common conditions; and patients *can* support one another.

This report describes examples where such changes have greatly increased a population's access to services, improved the quality of a service and reduced costs. It also identifies the features that need to be in place – the success factors – to achieve these benefits. Many different actors – from professionals to governments – can support or impede these changes and between them they need to give a much higher priority to these issues and to work together to create an enabling environment.

There are however also risks in making these changes. The changes will only bring improvement if they are planned carefully and implemented well. There have been as many failures as successes with examples of people taking on tasks beyond their competency and without adequate training and support and, as a result, providing poor quality and, even, dangerous care. This can be avoided if the lessons of *All the Talents* are learned.

There are examples of successful role and skill mix changes throughout the world. It is noticeable that countries in Africa, Latin America and South East Asia – without the Western world's resources, institutional history and vested interests – have often innovated further and faster.⁴⁸ There now needs to be more research and evaluation to strengthen evidence and establish and share best practice.

The most precious commodity in healthcare today is probably a health worker's time and it needs to be used well. This is not just about productivity – and quantity of activity – but about quality and the effective use of time. Doctors and nurses don't need to do things that can be done as well – or better – by others, whilst assistants and care workers of all kinds can take on new tasks and patients can become part of the team. This can often be enabled by appropriate technology.

7. Recommendations

The primary recommendation is that professionals, governments and institutions alike must give much higher priority to creating the right workforce and developing and supporting the talents of health workers and others so that they can achieve their potential and play their full part in healthcare.

In support of this we make the following recommendations to the different actors.

Health professionals and local health organisations need to lead the changes	<ul style="list-style-type: none"> Review their services to identify what role and skill mix changes can be made Plan and implement changes using the known success factors and established best practice Ensure all staff are part of effective teams
Governments and national health systems or institutions need to create the enabling environment	<ul style="list-style-type: none"> Set out a vision for the system and its services and the workforce needed to achieve it Establish or adapt regulatory and inspection systems to support the vision Ensure educational and training institutions offer programmes that address the vision and provide some national consistency Create a process or agency to identify best practice in service and workforce design
International bodies including the World Health Organization and development agencies such as the UK's DFID need to support countries	<ul style="list-style-type: none"> Assist national governments to develop their human resources and workforce planning capacity Ensure that workforce innovations are mapped and shared
Research funders and institutions need to provide the evidence needed to fill gaps and support further development	<ul style="list-style-type: none"> Invest more in workforce research and develop better metrics, in association with governments and international health bodies Undertake systematic analysis of the effectiveness of role and skill mix changes
Technology companies need to address the technology needed to support innovative roles	<ul style="list-style-type: none"> Develop technology and applications that support role and skill mix change

We also recognise that there is the opportunity, because of current changes in the NHS in England, to give much higher priority to developing the workforce and all its talents if:

- 1 Clinical Commissioning Groups give this a high priority in order to improve access, quality and costs.
- 2 Health Education England develops a far-sighted vision of the future workforce.
- 3 The UK Sectors Skills Council and other training bodies create programmes that support the vision and create national consistency in training for healthcare assistants and other developing roles across both health and social care.
- 4 The Care Quality Commission inspects the way healthcare assistants and others are trained and developed as part of its wider work.
- 5 The Quality, Innovation, Productivity and Prevention (QIPP) Programme gives greater emphasis to reviewing roles and skill mix.

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Further reading

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