Greater Manchester Primary Care Workforce Strategy:

Rapid Literature Review

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1. Introduction and Overview

This rapid scoping review examines the topic of skill-mix change (changing workforce roles or ways of working) in primary care. It has been undertaken to inform a service evaluation of general practice workforce initiatives being implemented in Greater Manchester (GM). The review presents the policy context for primary care workforce change and summarises the nature and scope of the existing primary care literature in relation to a number of wider non-medical roles aligned to new/emerging service models that may be developed locally[1]. Informed by a previously developed skill-mix classification framework[2], the review presents key insights gathered from the primary care skill-mix literature to date and concludes with key messages to underpin planning for future skill-mix change in the primary care workforce.

2. Background to Skill-Mix Change in Primary Care

2.1. Skill-mix defined

Skill-mix means the blend of posts, grades and jobs or the mixture of activities/skills needed for each job within an organisation[3]. In healthcare it relates to the different combinations of staff that are required to deliver appropriate care to patients[4]. Sibbald and colleagues[2] proposed that the term 'skill-mix' is generally used in one of three different ways to mean: 1) the range of competencies possessed by an individual healthcare worker; 2) the ratio of senior to junior staff within a particular discipline or; 3) the mix of different types of staff in a team/healthcare setting (p. 28). While skill-mix innovation is not a new phenomenon in the health field, it has become a major focus for primary care re-design in recent years[5]. Re-designing the workforce through skill-mix change is recognised as a considerable challenge for organisations but one that may bring benefits[6].

2.2. Primary care workforce change: the policy context

National workforce policy

In 2014 the Five Year Forward View set out a national vision for the NHS based around new models of care including workforce transformation in primary care with the promise of 5000 new non-medical staff posts over the next five years[7]. The Primary Care Workforce Commission[5] recommended a re-design of primary care in response to the challenges of an ageing population living with increasingly complex health needs and a corresponding shortage of GPs and nursing staff. The vision rested upon the development of a highly skilled workforce, with effective multi-disciplinary teams supported by appropriate technology and active collaboration within and across organisational boundaries. Key recommendations focused on the recruitment and retention of GPs and nurses, along with the integration of other health professionals into the primary care workforce. In recognition of the increasing demands on general practice and consequent workforce pressure, the General Practice Forward View[8] correspondingly described a new approach to specifically stabilise and transform general practice, with a key aspiration that 'wider members of the practice-based team will play an increasing role in providing day-to-day coordination and delivery of care with the creation of 5,000 new non-medical roles as a minimum (p.7). Consequently, a greater use of skill-mix in the general practice team is seeking to release the capacity of GPs[5], with NHS England,

Health Education England and the Clinical Commissioning Groups (CCGs) committed to supporting a series of workforce development and training initiatives to underpin this strategy. More recently, a House of Lords Select Committee report on the long-term sustainability of the NHS and social care has called for a more flexible approach to the inclusion of non-medical workforce to support neighbourhood working under new models of care[9].

Regional workforce policy and development

Regionally, the Greater Manchester Health and Social Care Partnership (GMHSCP) plan puts primary care at the heart of new neighbourhood based integrated care teams in the community. The plan argues that the primary care workforce needs to change to enable reform to happen at 'scale and pace' in a way that is sustainable for the future[10], with primary care as a key commissioning 'workstream'[11].

In particular the emerging GM Workforce Strategy recognises that 'place based' services across health and social care organisational boundaries will require changes in how the future workforce is developed and sustained, with a newly established GM Workforce Collaborative driving the re-design of roles across boundaries and professions[1,12].

'New roles' in development in primary care

A number of 'new' non-medical roles (including new types of professional and already established professionals working in new ways), are commonly being planned and/or implemented in English primary care settings and may form part of emerging GM workforce plans:

1) Advanced Practitioner (AP) – a non-medical, registered professional (with a nursing, physiotherapy or paramedical background) with advanced theoretical and clinical skills. There is no standard definition of the AP role, but these professionals are mainly nurses (though can come from a range of disciplines), have usually gained a Masters qualification in advanced practice. An AP will typically remain on their original professional register as there is currently no nationally regulated competence framework, with wide variation in both training programmes and the scope of the role[6]. In primary care, APs generally focus on the management of people with long-term conditions and minor illnesses[6].

2) Physician Associate (PA) – a professional who works to the medical model under the supervision of a GP seeing patients with acute minor illnesses. Most have a basic science degree before undergoing a two-year training programme that follows the medical model (e.g. history taking, performing examinations, making diagnoses, interpreting tests)[13]. In the UK PAs cannot independently prescribe and must carry out defined duties under supervision to support but not replace doctors[5]. These professionals may work in a variety of ways to provide care in general practice, but typically see patients with acute minor illness for same-day/urgent appointments [14,15].

3) Clinical Pharmacist (CP) – in general practice, CPs may carry out a range of tasks focused on optimal medicines management for patients with long-term conditions (e.g. medication review, monitoring and validation, prescribing, supporting adherence and providing advice on prescribing for

care home residents) and may also offer behavioural interventions such as weight management and smoking cessation[5].

4) Paramedic – a professional who typically works in emergency care but who could work as part of the primary care team, assessing and managing patients with minor conditions[5].

5) Physiotherapist - working in primary care in a range of ways, e.g. assessing, diagnosing or triaging musculoskeletal (MSK) problems, taking direct MSK referrals, offering support for particular issues such as falls or neurological/respiratory conditions and acting as a bridge between primary and secondary care. They are autonomous regulated professionals and since 2014, some have been qualified to prescribe independently and order tests[5].

6) Medical Assistant (MA) – a 'new' role which may largely entail administrative work to reduce the burden on other primary care staff and/or encompass patient-facing tasks similar to those carried out as part of the more established health care assistant role[5,16].

7) Mental Health Worker (MHW) – a professional who may provide low intensity mental health expertise in primary care settings for patients with less severe mental health problems.

8) Care Navigator (CN) - a new role which may include helping patients navigate their care across sectors and health/social care boundaries[6]

The review focuses on existing research in relation to skill-mix innovations in primary care settings for a number of the most common roles currently planned or implemented in primary care.

3. Methodological Approach

3.1. Search strategy

We searched the academic and grey literature for studies relating to skill-mix change in primary care, with a particular focus on research about the introduction of the following roles: AP; PA; CP; paramedic; physiotherapist; MA; MHW and CN. As a comprehensive review of reviews was published in 2004[2], searches spanned the period 2004 to the present. A broad range of databases was used to search the academic literature (e.g. health services, medical and social sciences). The grey literature was obtained from governmental, policy and health charity sources. Additionally 'snowball' searching enabled other relevant studies to be identified from the reference lists of captured papers and academic experts in employment and organisational studies advised on key texts. Appendix 1 outlines the search terms used, databases/sources searched and inclusion criteria. Relevant papers were reviewed for key insights about the impact and implementation of skill-mix innovations in primary care.

3.2. Overview of relevant literature

The literature found can broadly be grouped into two categories: 1) studies that aim to investigate outcomes associated with the introduction of single new roles into primary care; and 2) studies that focus on the process of implementing skill-mix changes in primary care to identify

constraining/enabling factors and wider consequences. Research that encompasses the study of both outcome and process is rare in this literature.

The 'outcomes' literature is methodologically diverse comprising: reviews (including reviews of reviews; systematic and narrative reviews) and single studies (randomised controlled trials [RCTs], before and after uncontrolled studies, surveys, mixed method case studies, observational and qualitative studies). While the reviews are generally international, the majority of the single studies are from the UK, with a smaller number from the USA, Sweden, the Netherlands, Canada and Germany and one inter-centre European study.

The 'process' literature is largely qualitative but also includes some mixed method and survey research as well as feasibility studies. Qualitative approaches used are diverse including: meta-syntheses and reviews, case studies, interview/focus group research, action research, ethnography, discourse analysis and Q methodology. Studies are also principally from the UK with several from the USA, Canada and the Netherlands and a smaller number from Germany, Australia, Sweden, New Zealand and Spain and one inter-centre European study.

All papers and reports were reviewed for key insights on skill-mix innovation in primary care, and these are now presented.

4. Key insights from the literature on skill-mix change in primary care

This section draws together research outlined in the previous section that has focused on 1) the impact/acceptability of skill-mix changes previously implemented in primary care (the 'outcomes' literature) for the roles being commonly piloted or planned in primary care settings currently: AP (which focuses wholly on ANP); PA; CP; paramedic; physiotherapist; MA; MHW; CN and; 2) how role changes have been implemented, including identification of factors that support or obstruct skill-mix change as well as the wider consequences of implementing new roles (the 'process' literature). The synthesis presented in this report is informed by a 'skill-mix classification framework' which is now outlined.

4.1. Skill-mix change: a classification framework

A comprehensive review of reviews[2] classified the ways in which skill-mix change can occur into four broad modifications at the *role* level and three at the *service interface* level. Role level changes were categorised as: enhancement; substitution; delegation and innovation, while service level changes comprised: transfer; relocation or liaison. Table 1 presents the model with examples for each skill-mix change at both the role and service interface levels.

The model encapsulates different ways of introducing new roles, some of which overlap at points, and which may have different potential contributions (e.g. better quality care, integration, work displacement, cost saving).

At the role level, an example of *enhancement* is a practice nurse in primary care who takes on an extended role that does not require supervision. Role *substitution* is when one type of worker (usually a less expensive worker) operates in another's domain and can substitute for that worker. In primary care substitution may be partial e.g. a prescribing pharmacist may expand their role into the

medical domain and enable substitution on occasion, but would not be able to wholly substitute for a GP. An example of role *delegation* in general practice is a GP handing over tasks to a PA under supervision, but crucially, with overall responsibility remaining with the GP.

Role *innovation* is the introduction of an entirely new type of worker e.g. a physiotherapist AP leading musculoskeletal clinics that provide a new/enhanced service in primary care. At the service interface level, an example of *transfer* might be the shifting of minor surgery to GP practices. *Relocation* might take the form of a dermatology consultant offering sessions in general practice and *liaison* the education of general practice staff by a specialist.

Table 1: Skill-mix change classification framework (after[2])

SKILL-MIX CHANGE	DESCRIPTION	EXAMPLE
Role level		
Enhancement	Increasing the depth of a job by extending the role or skills of a particular group of workers	**Nurse-led primary care clinics for asthma**
Substitution	Expanding the breadth of a job, in particular by working across professional divides or exchanging one type of worker for another	**GP-nurse substitution in general practice**
Delegation	Moving a task up or down a traditional uni-disciplinary ladder	**Specialist to non-specialist care**
Innovation	Creating new jobs by introducing a new type of worker	**Introduction of physician associate**
Service level		
Transfer	Moving the provision of a service from one health care sector to another	**Substitution of community care for hospital care**
Relocation	Shifting the venue from which a service is provided from one health care sector to another, without changing the people who deliver the service	**Hospital clinic in a primary care setting**
Liaison	Using specialists in one health care sector to educate and support staff working in another sector	**Hospital outreach workers in general practice**

There may be cost implications for the different role modifications, for example time/cost savings from substitution are possible only if the more expensive worker stops carrying out tasks delegated to the less expensive worker, or if the less expensive worker does not take significantly longer to carry out the tasks. This type of skill-mix change may supplement rather than substitute tasks leading to improvements in the quality of care (e.g. increased patient satisfaction) but duplication of work and no cost-saving. It is also possible that the new role may in effect extend the scope of general practice, generating additional work which may or may not be fully compensated. In addition there may be wider challenges in making skill-mix changes in terms of inter-professional relations, professional identities, complexity/extent of workload and pressure on wages.

The skill-mix classification outlined above has informed the synthesis of both the outcomes and process literature reviewed in this report.

4.2. Outcomes and impacts of single role skill-mix changes in primary care

Overview of objectives and outcomes targeted

Most outcomes-focused research in primary care skill-mix change has addressed the implementation of single roles in isolation from organisational arrangements. Underpinned by an assumption that shifts will offer better value for money through targeting resources more appropriately and effectively[17], improving access to services and raising the quality of care[17,18], the main objective of these interventions has been to improve the effectiveness and efficiency of healthcare[2,19].

In relation to the literature on the specific roles being implemented or planned in primary care settings (AP; PA; CP; paramedic; physiotherapist; MA; MHW and CN), a range of different outcomes has been targeted, categorised as follows:

1) *clinical* outcomes: morbidity; mortality; health status (physical and mental); biomedical measurements; physiological assessments including pain, disability and physical activity;
2) *patient* outcomes: quality of life, patient and carer satisfaction; access; adherence to recommendations; unmet needs; preferences and information;
3) *practitioner* outcomes: satisfaction, advice-giving, adherence to guidelines; workload and absenteeism;
4) *service* level outcomes: workflow; safety; consultation length, number of patient recalls, resource use (including tests/investigations requested, prescriptions, referrals to specialist care, A&E attendances and hospitalisations); staff training costs; quality of care and service delivery costs (direct and indirect).

The most commonly targeted outcomes in this body of research were: patient satisfaction, clinical outcomes and costs, though cost-effectiveness was in general poorly evaluated. Process evaluations of the wider impacts of implementing new roles at the individual, team, organisation and system level were rarely included alongside outcomes analysis.

The literature on the impact and acceptability of single skill-mix changes for the roles being implemented or planned is now summarised by role.

Advanced Practitioners (APs)

No literature was found on APs specifically; therefore the literature reviewed here pertains to ANPs only.

Advanced Nurse Practitioners (ANPs)

The ANP in primary care is a healthcare professional who can make autonomous decisions in relation to patient diagnosis and screening, ordering investigations and tests, referring to other services and may also prescribe, but who collaborates with other professionals in the primary care team to provide patient care[20].

Most of the literature on role level skill-mix change has to date focused on ANPs working in enhanced roles, as substitutes for doctors, or a blend of both[19,21-26]. Although results from different studies are mixed, it appears that appropriately trained and qualified ANPs can deliver quality of care and patient outcomes that are similar to or better than those of doctors[19,23,24] as well as care that is safe, clinically appropriate and acceptable to patients[19,22]. However, employing ANPs may not reduce GPs' workloads or service utilisation in the short-term[21,24,25], or make cost savings in every case[19,24,27].

The impact of utilising ANPs depends on the scope of the role (e.g. the ANP's particular skill-set, degree of autonomy, job description) and the particular context of care (e.g. ratio of doctors to nurses)[21,23-25]. Without proper planning, there may be unintended consequences of employing ANPs such as creating or increasing demand, or losing the cost-savings associated with a cheaper role through reduced productivity[24].

Conclusions from the literature on ANPs are that more robust evaluation of the longer-term economic impact of skill-mix change is needed, as is research on whether role changes are meeting patients' needs and what the optimal skill-mix for a particular context might be[19,21,23,25].

Physician Associates (PAs)

The PA role is well established in the USA but relatively new to the UK with numbers growing[6]. The small amount of evidence to date from the UK suggests that PAs may provide safe and effective care that is acceptable to patients[15,28-30] but that compared to care from a GP they may not reduce service utilisation e.g. return visits, tests/prescriptions ordered, referrals made[29].

The PA role is generally a form of role delegation, rather than substitution or enhancement because they cannot practice autonomously. In the UK PAs have no statutory but only voluntary regulation and this combined with a lack of prescribing rights may impact on successful implementation in general practice[13,29]. Indeed, in the USA it has recently been reported that more PAs are entering specialty positions because of a lack of opportunities to work in primary care[31].

Clinical Pharmacists (CPs)

In addition to patient-facing responsibilities, CPs may also conduct back-office medicines management reviews within a practice, or train practice staff in prescribing for particular

conditions[32]. CPs consequently span functions, substituting for doctors on specified tasks, working in enhanced roles, performing a mixture of the two or fulfilling a liaison role between services[23,33].

The sparse evidence to date suggests that CPs may provide effective and safe management of some long-term conditions, deliver patient outcomes and health promotion at comparable levels to doctors that is acceptable to patients, but may not reduce service utilisation or costs[22,23,32,34]. It is therefore not yet known whether employing CPs will relieve some of the demand for care from general practices or create additional demand[5]. The literature cautions that when CPs are used as substitutes for other health professionals there is a need to make roles complementary to avoid duplication[34].

Paramedics

In recent years the paramedic role has expanded from provision of basic first aid and patient transportation to the more autonomous role of conducting rapid assessments, initiating treatments according to clinical guidelines and fast-tracking patients to appropriate destinations[35]. However these professionals cannot yet prescribe independently.

The potential for paramedics to substitute for GPs in responding to and assessing urgent requests for care, particularly for home visits has been recognised as needing piloting and evaluation[5]. There is some evidence to suggest that paramedics in emergency care can safely identify health and social problems in patients, particularly those over 60 years of age, and that they can also be trained to assess and manage patients with acute minor conditions[36]. However, evidence about impacts on service utilisation and cost-benefit analyses are so far lacking[5].

Physiotherapists

The primary care-based literature to date has focused on physiotherapists as substitutes for standard GP care of MSK problems. Prompt access (i.e. self-referral) to physiotherapy consultations appears to be safe and comparable to care delivered by a GP[37] and is valued by patients[38-40] as well as primary care staff[41-43]. Patient satisfaction with seeing a physiotherapist in primary care is particularly high due to reduced waiting times[39] and improved information/communication[39,44,45]. There is also evidence to suggest that prompt access may be less costly than conventional GP management[39,40], with patients needing fewer visits and referrals to secondary care[40,44,46]. A social return on investment cost-benefit analysis of physiotherapist-led management of osteoarthritis also found reductions in service utilisation as well as wider benefits to patients in the form of increased levels of physical activity and health, both physical and mental[47].

However, studies have not generally looked at the overall impact on general practice workload[5] and there are concerns about the extent of training for the role and whether there are sufficient numbers of physiotherapists to allow for national coverage[40,43]. The cost-effectiveness of physiotherapy skill-mix changes is likely to depend on whether they substitute for, or are additional to, standard GP care which in turn is linked to their prescribing status[5].

Medical Assistants (MAs)

In the USA the MA role is one of fastest growing occupations and includes a wide variety of tasks, both patient-facing and administrative[48,49]. It is broadly similar to the existing healthcare assistant

(HCA) role in the UK[16]. Training is varied and the role is largely unregulated meaning that not all MAs have the same skill-set and ability to carry out the same duties[50]. The role could be broadly categorised as a form of delegation, depending on how it is deployed and the tasks involved. Robust evaluation of the role, even in the USA, is lacking[49].

A small amount of literature, mainly from the USA suggests that in primary care MAs may be effective clinic 'flow managers' promoting patient satisfaction[51] and that although the role is perceived as relatively low-status, these healthcare workers can experience the work as personally fulfilling through interactions with other team members and patients[52]. A case study to identify and describe the tasks of MAs found a wide diversity, categorised into four aspects: 'relational', involving health coaching, patient navigation, community health work, care coordination and translation; 'IT and documentation' involving medical scribing, quality improvement and electronic health record management; 'cross-trained flexible' involving phlebotomy, radiology/pharmacy support, reception/greeting work and referral coordination and finally; 'leadership/supervisory' including supervision, mentoring and training of other staff as well as clinic coordination[53]. In Germany where MAs can manage patients with long-term conditions against set protocols, a study compared MA assessment, action planning and monitoring of patients who may be at risk of hospitalisation compared to usual care[54]. The intervention did not reduce hospitalisation but showed positive effects on quality of life at reasonable costs.

In the UK the role is new and the scope relatively unclear. Indications are that it may be primarily intended as an administrative role to reduce the burden on other healthcare professionals[5]. However it is possible that it may include some of the patient-facing tasks described above that map to the more traditional HCA role[16]. Unsurprisingly, given its early stage of development, published evaluations of MAs in UK primary care settings are so far lacking.

Mental Health Workers (MHWs)

It is recognised that general practice needs access to mental health expertise such as a primary care MHW as a result of the range and extent of psychological problems that present in this setting[5]. This role is not new, having been proposed and created via the NHS Plan almost 20 years ago[55] with the remit of supporting low-intensity, high volume interventions and including client-facing work (e.g. brief therapy), practice team work (e.g. audit and registers) and networking (liaison with statutory and non-statutory agencies)[56].

Several UK-based studies evaluated the primary care MHW role. A postal survey found that while two thirds of these workers managed patients, direct access was restricted as a result of patients having to be screened first by a more specialist mental health professional[57]. Qualitative work with patients, GPs and practice managers found that each group perceived ways in which the MHW role was making a difference in primary care e.g. increasing access to care and broadening the range of services offered[58]. However the findings also suggested that GPs may have been inappropriately referring patients to MHWs and that the interventions provided by the new professionals might be too limited for those patients with moderate to severe mental health issues. The results of trials

comparing outcomes in general practices with and without MHWs suggest that these workers might be effective at increasing patient satisfaction[18], but there appears to be no effect on mental health symptoms or use of voluntary sector agencies, and costs were similar though not investigated robustly[18,59]. A Cochrane review assessing the effects of primary care MHWs found that they can

significantly reduce GP consultations, prescribing and associated prescribing costs, as well as referral for more specialist mental health input, however these effects held only for the patients seen and not to the wider practice population[57].

While the initiative from the early 2000s has ended, the role continues and warrants current evaluation of how it is being used in particular care contexts, as well as its impacts and consequences.

Care Navigators (CNs)

The CN is a new role not traditionally part of the primary care team in the UK thus far. The general purpose of the role is to 'bridge the gap between sectors and professional boundaries' to reduce fragmentation of care[6] (p.21). Beyond this broad description, there is no formal definition of how this role is intended to be used in English primary care settings and no literature in this context was found.

The role (sometimes known as 'patient' or 'health' navigator) originated in the USA to support socially disadvantaged groups to access cancer services and has since evolved to encompass a range of different professionals (social workers, nurses and 'lay' people), delivering care for a variety of patient groups and health conditions, with a reported lack of clarity in relation to the scope of the role[60]. Literature from the USA and New Zealand sees care navigators in primary care settings acting variously as: facilitators of access to wider health and social care for disadvantaged groups[60]; guides helping patients with complex conditions use fragmented health systems more effectively/efficiently[61]; conduits between emergency psychiatric services and primary care[62] and; potential providers of lifestyle behaviour change interventions[63]. The single outcomes-focused study that was found in this body of literature suggests that CNs may be effective in increasing access to primary care for patients following psychiatric crisis[62].

It is probable that the role of CN in UK settings will operate differently in different primary care contexts. As such it requires evaluation of how it is currently being implemented at the local level and any associated impacts.

Summary

In summary, outcomes focused research on skill-mix change in primary care has focused on APs (here reviewed as ANPs), PAs, CPs, paramedics, physiotherapists, MAs; MHWs and CNs as single roles in isolation rather than as part of the evaluation of wider organisational changes. Most research in primary care has focused on ANPs with much less on physiotherapists, CPs, and MHWs and little or no research on paramedic, MA and CN roles in UK settings. The studies are methodologically diverse and hail from a range of different health service contexts with roles intended to be used in a wide variety of ways – as enhancement, substitution, delegation, innovation or a mixture of these. This outcomes-focussed literature broadly suggests that skill-mix change in primary care can support care that is appropriate, safe and satisfactory to patients, but may not necessarily reduce GP workload or costs in all settings, at least in the short-term, and may potentially increase both.

The next section reviews literature focusing on the process of implementing skill-mix changes in primary care settings to highlight factors that may promote or constrain role implementation.

4.3. Process factors in skill-mix change in primary care

In addition to research on the outcomes of skill-mix change, literature has also focused on the process of implementing role changes in primary care. This body of work offers learning to highlight the challenges and wider consequences (including unintended consequences) that can ensue from introducing new roles or ways of working. These issues crosscut particular roles and contexts in primary care and are consequently synthesised here as broad organisational factors that may promote or obstruct skill-mix change.

Relevance of skill-mix change

The literature suggests that there is a need to identify and articulate particular workforce-related problems according to organisational context, question whether skill-mix change is always a fitting solution and delineate the objectives of any planned changes prior to implementation[2,64,65]. Skill-mix change may be a solution to workforce shortages but this goal is challenging to achieve and may bring unintended consequences such as increased workload, higher costs, lower staff morale and productivity and reduced continuity of care for patients[26]. Different skill-mixes will be needed in different contexts[3], and introducing new roles or ways of working may not be the optimal way to address particular problems at all[64]. Identifying the healthcare needs of a particular population and matching the organisation's workforce skill-set appropriately has been suggested as a potential enabler of optimal skill-mix decision-making[3].

Human resources (HR) planning

Making appropriate skill-mix changes in healthcare requires an ability to firstly analyse the service context[3]. However workforce decisions in primary care have traditionally not been based on understanding how such changes might impact service utilisation, workflow, revenue and expenditure or on the recognition that introducing new roles may in itself affect demand[66-68]. Indeed 'skill-mix is both a determinant of, and determined by, organisational and system context'[3] (p. 578). One way to assist HR planning is through the use of workforce analysis tools and models. In the USA and in the Netherlands skill-mix analysis tools specifically for primary care are being developed to better match patient need with workforce skills to achieve more balance and relevance in supply and demand[66,68]. Testing is at an early stage and the tools need further development and evaluation, but their use in primary care settings appears to be feasible.

Workforce change implementation strategy

Research on integration of MHW and MA roles in primary care suggests that a clear implementation strategy may help embed roles in practice[53,69]. The use of guidelines and protocols may facilitate implementation, with governance to support changes[26,65].

Function and scope of roles

A single role title may involve a wide diversity of tasks which may vary in different primary care contexts[65,70] and ambiguity about the function and scope of a new role is a common challenge that has been highlighted in the literature.

Clarification in relation to the *function* of any skill-mix change (e.g. is the change intended as a form of substitution, enhancement, delegation, innovation or a mixture?) is a key challenge in appropriate workforce related decision-making[2,4]. Where the purpose/function of a new role is blurred, integration of the workers into the primary care setting can be hindered[71]. For example, when doctors' expectations that APs and PAs would substitute for them are not met, they may be less inclined to accept these new professionals as part of the primary care team[72]. Doctors have reported positive views of the CN role, but see this worker as an addition to the general practice team because tasks carried out (helping patients find resources and co-ordinating care beyond referral administration) were not provided previously[61]. Ambiguity in relation to role function may be compounded because new ways of working can involve more than one function or be context-dependent, making clear cut classification difficult[73].

The need to more clearly define the *scope* of newly introduced roles is also highlighted in the literature. For example research suggests that primary care practice staff may not fully understand the remit of newly introduced roles which can contribute to inappropriate use of the worker[74,75] and inter-professional tensions. The sociology of professions literature has long highlighted the issue of inter-professional competition and professionals' attempts to protect occupational jurisdiction in the course of their work[76]. Competition within and between professions encompasses the negotiation both of identity and differing bodies of knowledge, which affect new roles in health care settings[77-80] Notably this was a key issue in the literature on integration into primary care of all the roles of interest (except in the case of paramedics where research was lacking).

Tensions between staff relating to authority, legitimacy and expertise were identified in the introduction of MHWs into general practice in terms of the overlap with other mental health professional roles such as psychologists or counsellors[56]. The efforts of nurses to establish themselves in ANP roles and gain professional recognition from doctors in relation to issues of trust, responsibility and accountability have been well documented[71,81-83]. Primary care staff and particularly doctors have reported a lack of clarity in expectations about other new roles and underpinning concerns about role boundaries. This spans research on all of the roles of interest here: PAs[13,72,84], physiotherapists[85], MAs[48,53,86], CPs[87,88] and CNs[60], and in other research, also pertains to the HCA role[16]. Drennan and colleagues found that the role of PA was conceptualised in different ways by different professionals in the primary care team and correspondingly accepted to different degrees[84]. Hazen and colleagues suggest that a 'paradigm shift' (p. 1250) is needed among primary care staff to accept pharmacists extending their role beyond dispensing[89]. Physiotherapists have been shown to negotiate their place in the primary care team through multiple roles at different layers of the system according to the service mandate[42].

Defining the scope of practice for new roles[71,89], creating space for inter-professional learning, face-to-face contact and skill-sharing to build trust[33,85,87,88] may enable integration of new roles. For example, building trust between GPs and clinical pharmacists enabled GPs to refer patients appropriately and share patient records[33] and when doctors champion professionals working in new roles in primary care, patients are more likely to accept them[70,83].

Active management of workforce change

Skill-mix change needs active change management to implement and maintain[2,26]. Leadership buy-in for changes seems to be an important enabler of embedding roles[65,69,90] as is having the backing of commissioners and managers[75].

An organisational culture that supports the change is a key element in successful implementation[65] involving collaborative working with engagement of stakeholders from the beginning of the process[65,67,75]. A 'horizontal' style of implementation that involves regular stakeholder interaction to achieve agreement has been proposed as one way to manage skill-mix change[69].

In particular, strong management and good coordination are needed to ensure that duplication of work from skill-mix change is avoided, as well to deal with the potential inefficiencies that may arise from 'transaction costs' associated with work in a larger team of individuals[26]. Moreover, there is a probable need for both care navigation and care coordination to maintain continuity and avoid any potential fragmentation of care due to the involvement of multiple professionals[91].

Outcomes and process evaluation is needed to identify which skill-mix changes are most appropriate to organisational goals in different contexts[4] so that review and adjustment of skill-mix becomes part of management approaches and enables sustained change within the system[3,65].

Management and accountability of staff

Skill-mix change has implications for management and accountability[73]. Clear lines of accountability between workers in new roles and a senior individual in the practice team may enable successful implementation[69]. Lester and colleagues[69] found conflicting conceptions relating to ownership of the MHW role in a primary care setting. There was a lack of clarity in whether individual general practices or the Primary Care Trust (PCT) 'owned' the role and a corresponding ambiguity about whether workers were accountable to the PCT that managed them or the general practice team into which they were expected to integrate. This research highlighted the need for balancing the management and accountability of MHWs in primary care settings such that they are enabled to retain a degree of autonomy and avoid working in isolation.

Education and training

Requirements for education and training in relation to new roles will affect the feasibility of skill-mix change and vice versa[26,73]. Training and education for staff in new roles must be appropriate and adequate but can be costly[2,53]. Although GPs perceived benefits of the PA role and were willing in theory to delegate tasks to this type of professional, the cost of training was a barrier to actually employing a PA in practice[74]. Similar findings pertain to MAs[48,90].

Regulatory provisions

Fletcher and colleagues found that integration of MHWs into primary care teams was hindered by the role's lack of professional status or link to any professional body[75]. Regulatory provisions therefore affect the feasibility of skill-mix change and must support changes being made[2,26]. Lack of regulation for prescribing in the PA role has been a particular drawback to integration of this professional in primary care[13] and it is recognised that the legal position needs to be clearer to

support role scope[84]. Removing unhelpful regulatory restrictions however may be challenging and costly[26].

Payment systems and remuneration

Skill-mix change of different types has implications both for reimbursement of costs to organisations[92] and for the remuneration of individuals[73]. If services delivered by non-medical professionals are less billable/eligible for reimbursement, there is reduced financial incentive for the organisation and skill-mix changes are unlikely to be implemented successfully[2,53,92]. At the individual worker level, remuneration for non-medical roles is generally lower than for physicians[73,92] and inadequate/undetermined remuneration can be a barrier to successful skill-mix changes[53,73,92,93].

Summary

Literature on the process of implementing role changes in primary care highlights several organisational/operational issues that are important in reshaping the workforce. These include adequate and appropriate workforce planning and deployment with attention to the match between skill-mix and population needs; consideration of role expectations and professional boundaries; training and education; legal issues and management of change. Contextual influences such as healthcare organisation and relationships with local partners may also help to explain research outcomes, and why anticipated objectives may or may not be achieved. Notably, research on the importance of organisational context/arrangements[77] and the inter-dependent wider system effects of skill-mix change[94] is largely absent from this body of work and represents an important gap in knowledge.

5. Conclusions

This rapid scoping review has presented the national and regional policy context for workforce re-design in primary care and insights from the international outcomes and process literature on the introduction of seven non-medical roles using an established skill-mix classification framework. Literature was methodologically diverse and focused on roles being used in a number of different ways but rarely included the study of outcomes and process together.

Though improving the efficiency and effectiveness of healthcare is the underpinning driver of skill-mix change, a multiplicity of clinical, patient, practitioner and service outcomes has been measured in this literature with cost-effectiveness poorly evaluated in the main. The review suggests that skill-mix change can bring about care that is appropriate, safe and satisfactory to patients, but may not necessarily reduce workload or costs in all settings, at least in the short-term. Better economic evaluation of workforce re-design in primary care is needed.

The process literature highlights organisation/operational issues that are important in skill-mix change including: the need to match any skill-mix changes with population needs as part of appropriate workforce planning and deployment; attention to role expectations, professional boundaries, training, education and legal issues as well as active management of change. Research on the importance of organisational context/arrangements and wider system effects involved in workforce re-design is lacking.

In particular, it is important to recognise that introducing new roles and ways of working in primary care may not achieve the intended aims. Without proper planning and implementation, the replacement of more expensive workers (typically GPs) with cheaper ones (usually non-medical professionals) may result in supplementation rather than substitution, leading to a range of unintended consequences. These include reduced productivity, increased demand and costs and reduced continuity of care. For substitution to be successful in primary care, GPs need to stop doing the work they hand over to non-medical personnel to avoid duplication. There is also a need to recognise that substitution will always be partial because non-medical staff cannot provide the full range of care delivered by GPs.

Workforce re-design may cross traditional primary care boundaries and needs to be considered in wider system design and governance arrangements. This has particular resonance in light of the shift to primary care at scale and neighbourhood working under new models of care.

5.1. Limitations

Skill-mix change is covered by a range of possible search terms and some relevant publications may not have been captured. This review was intended to rapidly present the scope of the literature on skill mix and is therefore not a systematic review. The papers were reviewed for relevance and quality but have not been systematically appraised using formal checklists.

6. Key messages

Several key messages arise from this rapid review of skill-mix change in primary care. It is important for policy makers and workforce planners who are implementing this type of workforce re-design to recognise that:

- in primary care, substitution may be partial as non-medical professionals cannot wholly substitute for a GP;
- skill-mix change may supplement rather than substitute tasks leading to improvements in the quality of care (e.g. increased patient satisfaction) but duplication of work and no cost-saving;
- time and cost savings from substitution are possible only if the more expensive worker stops carrying out tasks delegated to the less expensive worker, or if the less expensive worker does not take significantly longer to carry out the tasks;
- introduction of new roles may extend the scope of general practice, generating additional work which may or may not be fully compensated;
- there are wider considerations in making skill-mix changes in relation to education and training, regulatory provisions, accountability and pressure on wages. There may also be unintended consequences in terms of professional identities and inter-professional relations, complexity/extent of workload and fragmentation of care.

Finally, skill-mix change in primary care under new models of care should encompass consideration of wider system design and governance arrangements.

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Appendix 1 – Search Strategy

DATABASE	SEARCH TERMS
Academic sources	
Pubmed/MEDLINE	'skill mix' OR 'role substitute*' OR 'new role*' OR 'role change' OR 'workforce change' OR 'advanced practit*' OR 'advanced nurse practit*' OR 'physician* assoc*' OR 'physician* assistant*' OR 'physiother*' OR 'paramedic*' OR 'clinical pharmac*' OR 'pharmac*' OR 'medical assistant*' OR 'mental health assistant*' OR 'care navigator*' OR 'patient navigator*' AND 'primary care' OR 'general practice'
PsychINFO;	
PROSPERO	
ASSIA;	
CINAHL	
Cochrane Library	
Scopus	
HMIC	
AMED	
Web of Science	
EMBASE	
NICE – NHS Evidence Search	
Google Scholar	
Grey sources	
NIHR	As above
Policy-national	
Policy-regional Greater Manchester	
King's Fund	
Nuffield Trust	
Health Foundation	
Inclusion criteria	
Language	English
Published	2004-2017