11 *Change management in health care settings: organizational strategies to foster skill-mix changes*

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11.1 Introduction

The implementation of innovations in health care organizations is a complex process that is affected by many factors, positively or negatively (Fleuren, Wiefferink & Paulussen, 2004). Skill-mix innovation is particularly challenging, conceptually, technically and politically (Kernick & Scott, 2002). It is essential to identify the factors and strategies that influence the uptake of skill-mix interventions in organizations, in order to better inform policy and decision-making. In theory, stimulating or enabling factors give (in)direct but unintended encouragement to a skill-mix intervention, whereas drivers are objective-oriented. Barriers, on the other hand, are passive factors to be overcome, whereas impeding factors deliberately attempt to stop a skill-mix intervention. In practice, this division is hard to make, and the terms are used interchangeably. In this chapter, where a factor stimulates or expands skill-mix change in health care settings (whether intended or not), we speak of a facilitator. Any factor that limits or restricts skill-mix change in health care settings (whether intended or not), is considered a barrier. In keeping with the literature, this chapter applies the following framework in analysing the most important factors influencing the implementation of skill-mix innovations in health care settings:

- characteristics of the skill-mix innovation, such as whether the skill-mix is perceived to be imposed or not, whether there is evidence that it is safe and effective;
- institutional factors, such as the legal framework, the policy and regulatory environment, financing strategies, the influence of stakeholders such as professional councils, unions, population needs;

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- organizational factors, such as organization structure and culture, remuneration mechanisms, incentives, staff volume and composition;
- individual factors, such as staff knowledge and beliefs, relationships and collaboration;
- process factors, such as the planning of the skill-mix before implementation, monitoring and evaluation.

The evidence from 21 systematic reviews, identified by an overview of systematic reviews presented in Chapter 1, shows that organizational factors and individual factors are often discussed in the literature on the implementation of skill-mix interventions at organizational level. Process factors and characteristics of the skill-mix intervention seem to play a less important role, while the institutional environment mainly seems to have a hampering effect. In most cases, the identified barriers are the 'mirror opposite' of facilitators. A final observation is that very little attention is paid to more structural approaches – such as models or frameworks for organizational change – in relation to skill-mix implementation.

When looking at the trends of the last years in how organizations try to overcome the barriers to the implementation of skill-mix innovations, and how they attempt to strengthen and implement facilitating factors, common strategies are presented in Section 11.3 and illustrated by four case studies. By providing insight into factors that may facilitate or impede implementation, the chapter concludes with recommendations on an appropriate strategy for implementing skill innovations at the organizational level (Fleuren, Wiefferink & Paulussen, 2004).

11.2 Overview of the evidence on implementation at organizational level

Characteristics of systematic reviews

The overview of systematic reviews identified 21 reviews on organizational-level factors related to the implementation of skill-mix innovations (Table 11.1). In terms of types of intervention, 11 reviews focused on the introduction of new teamwork modalities (Aquino et al., 2016; Carmont et al., 2017; Gardiner, Gott & Ingleton, 2012; Hoeft et al., 2018; Mapp, Hutchinson & Estcourt, 2015; Sangaleti et al., 2017; Savic et al., 2017; Schadewaldt et al., 2013; Supper et al., 2015; Wood, Ohlsen & Ricketts, 2017), seven focused on re-allocation of

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Table 11.1 *Characteristics of the 21 systematic reviews on implementation at organizational level*

Authors	Year	Skill-mix intervention type	Description of intervention	Country coverage	No. of studies included
Dennis et al. (2012)	2012	Adding new tasks	Primary care providers developing patients' health literacy	USA, UK, AU, NZ, SE, CH, NL, CA, JP	52
Gardiner et al. (2012)	2012	(Newly) introducing teamwork	Collaborative working in palliative care	UK, AU, CA, NZ	22
Hillis et al. (2016)	2016	Adding new tasks	Role of care coordinator	USA, UK, AU, CA, IT	37
Mapp et al. (2015)	2015	(Newly) introducing teamwork	HIV shared care	AU, CH, DE, CA, UK	8
Savic et al. (2017)	2017	(Newly) introducing teamwork	Coordination in alcohol and other drug (AOD) and non-AOD services	USA, AU, CA, BE	14
Schadewaldt et al. (2013)	2013	(Newly) introducing teamwork	Collaborative practice between nurse practitioners and medical practitioners	USA, CA, UK, NL, SE, IE, NZ	27
Supper et al. (2015)	2015	(Newly) introducing teamwork	Interprofessional collaboration in primary care	UK, AU, USA, NZ, ES, CA, NL, BR	44
Wood et al. (2017)	2017	(Newly) introducing teamwork	Collaborative depression care	USA, UK, DE, CA	18

Table 11.1 *(cont.)*

Authors	Year	Skill-mix intervention type	Description of intervention	Country coverage	No. of studies included
Joo and Huber (2017)	2017	Adding new tasks	Case management	USA, SE, UK, AU, DK, BE	10
Hoeft et al. (2018)	2018	(Newly) introducing teamwork	Teamwork in mental health care	USA, AU, UK, NZ	55
Halter et al. (2013)	2013	Re-allocating tasks	Physician assistants in primary care	USA, UK, NL, AU	49
Farris et al. (2010)	2010	Re-allocating tasks	Pharmacists' roles in reducing unintended pregnancy	USA	38
Colvin et al. (2013)	2013	Re-allocating tasks	Task-shifting involving midwives	AU, CA, USA, SE, UK, AO, DO, GT, JO, KE, ID, MX, ZA	37
Aquino et al. (2016)	2016	(Newly) introducing teamwork	Collaboration between midwives and health visitors	AU, UK, SE, NO, CA	16
Abuzour et al. (2017)	2017	Re-allocating tasks	Non-medical independent prescribing by (student) nurses and pharmacists	UK	34
Carmont et al. (2017)	2017	(Newly) introducing teamwork	GP engagement in integrated palliative care	AU, CA, DK, NZ, UK, NL, no country reported	17

Sangaleti et al. (2017)	2017	(Newly) introducing teamwork / changing teamwork	Teamwork and interprofessional collaboration in primary care	BR, Canada, USA, IE, NZ, SE, LT, AU	21
Andregård and Jangland (2015)	2015	(Newly) introducing teamwork	Interprofessional collaboration with the introduction of the nurse practitioner	Seven countries (not specified which)	26
Meiklejohn et al. (2016)	2016	Adding new tasks	GP role in treatment, follow up or palliative cancer care	AU (7), CA (7), Europe (19), Middle East (1), UK (9), USA (15)	58
Overbeck et al. (2016)	2016	(Newly) introducing teamwork	Collaborative care for anxiety and depression	CA (1), UK (5), USA (11)	17
Khanassov et al. (2014)	2014	(Newly) introducing teamwork	Case management for dementia in primary health care	AU (1), BE (1), CN (1), IN (1), NL (4), UK (5), USA (10)	23

Abbreviations: GP: general practitioner.

Country abbreviations: AO: Angola; AU: Australia; BE: Belgium; BR: Brazil; CA: Canada; CH: Switzerland; CN: China; DE: Germany; DK: Denmark; DO: Dominican Republic; GT: Guatemala; IE: Ireland; ID: Indonesia; IN: India; IT: Italy; JO: Jordan; JP: Japan; KE: Kenya; LT: Lithuania; MX: Mexico; NL: the Netherlands; NO: Norway; NZ: New Zealand; SE: Sweden; UK: the United Kingdom; USA: the United States of America; ZA: South Africa.

Sources: Abuzour, Lewis & Tully (2017); Andregård & Jangland (2015); Aquino et al. (2016); Carmont et al. (2017); Colvin et al. (2013); Dennis et al. (2012); Farris et al. (2010); Gardiner, Gott & Ingleton (2012); Halter et al. (2013); Hillis et al. (2016); Hoeft et al. (2018); Joo & Huber (2017); Khanassov, Vefel & Pluye (2014); Mapp, Hutchinson & Estcourt (2015); Meiklejohn et al. (2016); Overbeck, Davidsen & Kousgaard (2016); Sangaleti et al. (2017); Savic et al. (2017); Schadewaldt et al. (2013); Supper et al. (2015); Wood, Ohlsen & Ricketts (2017).

tasks (Colvin et al., 2013; Farris et al., 2010; Halter et al., 2013) or the introduction of new tasks (Dennis et al., 2012; Hillis et al., 2016; Joo & Huber, 2017) and one review additionally paid attention to changing existing teamwork approaches (Sangaleti et al., 2017). Some interventions were broad and focused on general interprofessional collaboration in primary care (Supper et al., 2015), whereas others were confined to specific health professionals and conditions, such as pharmacists' role in reducing unintended pregnancy (Farris et al., 2010). Most reviews included a majority of studies from Anglophone OECD countries and northern and western European countries.

Evidence on implementation at the organizational level

In most reviews, the implementation of skill-mix interventions at organizational level was approached by focusing on specific facilitators and barriers to introduce an intervention. In many cases, the barriers were the mirror opposite of facilitators. Little attention was paid to structural approaches such as models or frameworks for organizational change. In line with the reviews, we discuss the evidence on implementation at organizational level by focusing on facilitators and barriers. The evidence is categorized according to the five categories of the framework introduced in Section 11.1: organizational factors, as they are of most importance for this chapter, followed by individual factors, characteristics of the skill-mix intervention, process and institutional factors. Organizational and individual factors are more often discussed in the systematic reviews than the other three categories (Table 11.2). This does not necessarily reflect the relative importance of each of these factors in the implementation process, but may (partly) be an indication of the convenience or the difficulty with which these aspects can be measured. Finally, it should be noted that because of the relatively small number of included reviews, the evidence for the facilitators and barriers is often limited, which has implications for generalizability.

Organizational factors

Organizations can fulfil an important facilitating role in the implementation of skill-mix interventions by making sure that practical issues are optimally addressed, such as the co-location or physical proximity of services involved in the skill-mix (Aquino et al., 2016; Overbeck, Davidsen & Kousgaard, 2016; Sangaleti et al., 2017; Savic et al., 2017;

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Table 11.2 *Overview of conclusions on factors related to skill-mix implementation at organizational level in systematic reviews included*

Factor	Facilitators	Barriers
Organizational factors	• Co-location of services / proximity (Aquino et al., 2016; Overbeck et al., 2016; Sangaleti et al., 2017; Savic et al., 2017; Schadewaldt et al., 2013; Supper et al., 2015; Wood et al., 2017) • Information systems (including telemedicine) (Dennis et al., 2012; Hoeft et al., 2018; Meiklejohn et al., 2016; Schadewaldt et al., 2013; Wood et al., 2017) • Clear definition and recognition of roles and responsibilities (Carmont et al., 2017, Gardiner et al., 2012; Khanassov et al., 2014; Schadewaldt et al., 2013; Wood et al., 2017) • Practice-based education and training (Gardiner et al., 2012; Hoeft et al., 2018; Supper et al., 2015) • Strong leadership / management support (Hillis et al., 2016; Sangaleti et al., 2017; Supper et al., 2015) • Good communication (Khanassov et al., 2014; Mapp et al., 2015; Meiklejohn et al., 2016; Sangaleti et al., 2017; Schadewaldt et al., 2013) • Regular meetings (Abuzour et al., 2017; Khanassov et al., 2014; Sangaleti et al., 2017; Schadewaldt et al., 2013)	• Lack of time and financial resources (Aquino et al., 2016; Farris et al., 2010; Hoeft et al., 2018; Khanassov et al., 2014; Meiklejohn et al., 2016; Overbeck et al., 2016; Sangaleti et al., 2017; Supper et al., 2015; Wood et al., 2017) • Lack of clarity over roles and responsibilities (Andregård & Jangland, 2015; Carmont et al., 2017; Colvin et al., 2013; Gardiner et al., 2012; Joo & Huber, 2017; Meiklejohn et al., 2016; Schadewaldt et al., 2013) • Lack of clarity over scope of practice (Abuzour et al., 2017; Joo & Huber, 2017; Schadewaldt et al., 2013) • Professional territorialism / silos (Carmont et al., 2017; Colvin et al., 2013; Gardiner et al., 2012; Hoeft et al., 2018; Sangaleti et al., 2017) • Divergent models of care (Aquino et al., 2016; Colvin et al., 2013) • Inadequate information transfer (Abuzour et al., 2017; Aquino et al., 2016; Carmont et al., 2017; Overbeck et al., 2016) • Lack of communication (Colvin et al., 2013; Gardiner et al., 2012; Wood et al., 2017)

Table 11.2 *(cont.)*

Factor	Facilitators	Barriers
	• Partnership working (Mapp et al., 2015) / strong interagency relationships (Farris et al., 2010; Savic et al., 2017) / joint working (Aquino et al., 2016) • Shared organizational goals and values (Savic et al., 2017) • Culture receptive to change (Wood et al., 2017) • 'Age' of the organization in which intervention is implemented (Hillis et al., 2016)	• Organizational culture not receptive to change (Abuzour et al., 2017; Wood et al., 2017) • Little involvement with leadership (Joo and Huber, 2017) • Increased administration (Halter et al., 2013) • Physical distance (Aquino et al., 2016; Khanassov et al., 2014; Overbeck et al., 2016)
Individual factors	• Having the necessary knowledge and skills (Abuzour et al., 2017; Dennis et al., 2012; Hillis et al., 2016; Khanassov et al., 2014; Wood et al., 2017) • Good communication (Andregård & Jangland, 2015; Aquino et al., 2016; Carmont et al., 2017; Dennis et al., 2012; Gardiner et al., 2012) • Positive attitude (Andregård & Jangland, 2015; Farris et al., 2010; Overbeck et al., 2016; Schadewaldt et al., 2013) • Mutual trust and respect (Aquino et al., 2016; Schadewaldt et al., 2013) • Recognition of each other's role (Sangaleti et al., 2017; Supper et al., 2015) • Peer learning (Wood et al., 2017)	• Variable or lack of skills (Abuzour et al., 2017; Supper et al., 2015; Wood et al., 2017) • Poor communication (Aquino et al., 2016; Carmont et al., 2017; Sangaleti et al., 2017) • Attitudes (Colvin et al., 2013; Dennis et al., 2012; Farris et al., 2010; Khanassov et al., 2014) • Lack of confidence, trust and respect (Andregård & Jangland, 2015; Colvin et al., 2013; Hoeft et al., 2018; Schadewaldt et al., 2013; Supper et al., 2015) • Feeling threatened (Colvin et al., 2013; Schadewaldt et al., 2013) • Professional turf issues / divergent ideologies (Hoeft et al., 2018; Overbeck et al., 2016; Schadewaldt et al., 2013)
Intervention characteristics	• Perceived benefits for professional (Andregård & Jangland, 2015; Halter et al., 2013; Schadewaldt et al., 2013; Supper et al., 2015)	• Complexity (Joo & Huber, 2017; Wood et al., 2017) • Perceived disadvantages for patients (Dennis et al., 2012; Halter et al., 2013)

	• Perceived benefits for patients (Halter et al., 2013; Khanassov et al., 2014; Overbeck et al., 2016; Wood et al., 2017) • Strong evidence for positive outcomes intervention (Wood et al., 2017) • Sufficient duration of intervention (Khanassov et al., 2014)	• Expected challenges in patient relationship (Halter et al., 2013; Joo & Huber, 2017) • Lack of clarity of purpose (Carmont et al., 2017)
Process factors	• Access to ongoing support (Abuzour et al., 2017; Gardiner et al., 2012; Hoeft et al., 2018; Savic et al., 2017; Supper et al., 2015; Wood et al., 2017) • Formalized relationships (Hoeft et al., 2018; Savic et al., 2017) • Care protocols and guidelines (Abuzour et al., 2017; Mapp et al., 2015) • Clear expectations and goals at outset (Savic et al., 2017) • Compatible IT infrastructures between partners (Savic et al., 2017) • Engagement period (Khanassov et al., 2014)	• Lack of support (Abuzour et al., 2017; Colvin et al., 2013; Wood et al., 2017) • Lack of monitoring (Supper et al., 2015) • Participants being unprepared (Carmont et al., 2017) • Lack of guidelines (Joo & Huber, 2017)
Institutional factors	• Appropriate staff training (Dennis et al., 2012; Khanassov et al., 2014; Mapp et al., 2015; Overbeck et al., 2016; Sangaleti et al., 2017) • Supportive policies and laws (Dennis et al., 2012; Farris et al., 2010) • Funding for education (Dennis et al., 2012)	• No reimbursement model for skill-mix innovation (Carmont et al., 2017; Farris et al., 2010; Halter et al., 2013; Hoeft et al., 2018; Meiklejohn et al., 2016; Supper et al., 2015) • Lack of (long-term) funding (Mapp et al., 2015; Schadewaldt et al., 2013; Supper et al., 2015; Wood et al., 2017) • Legal liability / licensing (Colvin et al., 2013; Farris et al., 2010; Hoeft et al., 2018; Schadewaldt et al., 2013) • Insufficient training / lack of staff skills (Joo & Huber, 2017; Khanassov et al., 2014; Mapp et al., 2015; Meiklejohn et al., 2016; Sangaleti et al., 2017; Wood et al., 2017) • Federal regulations / laws / policies (Farris et al., 2010; Halter et al., 2013) • Bureaucratic processes / administration (Carmont et al., 2017)

Schadewaldt et al., 2013; Supper et al., 2015; Wood, Ohlsen & Ricketts, 2017), which offers increased opportunities for face-to-face contact, and having well-functioning information systems in place (Dennis et al., 2012; Hoeft et al., 2018; Meiklejohn et al., 2016; Schadewaldt et al., 2013; Wood, Ohlsen & Ricketts, 2017). While these relatively 'simple' practical issues can be highly beneficial, the evidence suggests that more structural issues, such as lack of time and financial resources (Aquino et al., 2016; Farris et al., 2010; Hoeft et al., 2018; Sangaleti et al., 2017; Supper et al., 2015; Wood, Ohlsen & Ricketts, 2017) and professional silos (Carmont et al., 2017; Colvin et al., 2013; Gardiner, Gott & Ingleton, 2012; Hoeft et al., 2018; Sangaleti et al., 2017) are important hampering factors. Two other important factors, acting as both facilitator and barrier, are the (lack of) clarity over roles, responsibilities and scope of practice (Abuzour, Lewis & Tully, 2017; Andregård & Jangland, 2015; Carmont et al., 2017; Colvin et al., 2013; Gardiner, Gott & Ingleton, 2012; Joo & Huber, 2017; Meiklejohn et al., 2016; Schadewaldt et al., 2013; Wood, Ohlsen & Ricketts, 2017) and the (lack of adequate) communication, including for example (no) involvement in multidisciplinary meetings or a lack of processes to establish communication between different providers (Colvin et al., 2013; Gardiner, Gott & Ingleton, 2012; Mapp, Hutchinson & Estcourt, 2015; Sangaleti et al., 2017; Schadewaldt et al., 2013; Wood, Ohlsen & Ricketts, 2017).

Individual factors

Almost all individual factors that influence the implementation of skill-mix interventions in health care organizations mirror each other, acting both as barrier and facilitator. This is the case for (a lack of) required knowledge and skills (Abuzour, Lewis & Tully, 2017; Dennis et al., 2012; Hillis et al., 2016; Khanassov, Vedel & Pluye, 2014; Supper et al., 2015; Wood, Ohlsen & Ricketts, 2017), a (lack of good) communication (Andregård & Jangland, 2015; Aquino et al., 2016; Carmont et al., 2017; Dennis et al., 2012; Gardiner, Gott & Ingleton, 2012; Khanassov, Vedel & Pluye, 2014; Sangaleti et al., 2017), attitudes, such as (lack of) a pioneering spirit (Andregård & Jangland, 2015; Colvin et al., 2013; Dennis et al., 2012; Farris et al., 2010; Overbeck, Davidsen & Kousgaard, 2016; Schadewaldt et al., 2013), and (a lack of) trust and respect, for example where one profession feels it is controlled too much, whereas the other profession feels supervision takes too much of its time (Andregård & Jangland, 2015; Aquino et al., 2016; Colvin

et al., 2013; Hoeft et al., 2018; Overbeck, Davidsen & Kousgaard, 2016; Schadewaldt et al., 2013; Supper et al., 2015).

Characteristics of skill-mix interventions

The evidence suggests that interventions can be facilitators to skill-mix changes if they are perceived as having benefits for professionals, including the promise of reduced workloads, using one's skills to the fullest, developing complementary skills and increased continuity in clinical work (Andregård & Jangland, 2015; Halter et al., 2013; Schadewaldt et al., 2013; Supper et al., 2015). The expected effects on patients also influence its uptake at organizational level, especially if a change in the quality of care is expected, either positive (Halter et al., 2013; Overbeck, Davidsen & Kousgaard, 2016; Wood, Ohlsen & Ricketts, 2017) or negative (Halter et al., 2013), or if the quality of the patient-relationship is perceived to be at risk (Halter et al., 2013; Joo & Huber, 2017).

Process factors

To facilitate the uptake of skill-mix innovations at organizational level, the evidence suggests that it may be beneficial to formalize the intervention to the extent possible, among others by formalizing relationships (Hoeft et al., 2018; Savic et al., 2017) and by using protocols and guidelines (Abuzour, Lewis & Tully, 2017; Mapp, Hutchinson & Estcourt, 2015). This gives people something to hold on to. In addition, investments in ongoing coaching and support to the professionals involved seem to facilitate the implementation process as well (Gardiner, Gott & Ingleton, 2012; Hoeft et al., 2018; Savic et al., 2017; Supper et al., 2015; Wood, Ohlsen & Ricketts, 2017).

Institutional factors

Institutional factors seem to act more as barriers for skill-mix interventions than as facilitators. The positive influence of institutional factors occurs in two main ways: through appropriate staff training (for example, teamwork being part of undergraduate training) and via supportive policies and regulations (Dennis et al., 2012; Farris et al., 2010; Mapp, Hutchinson & Estcourt, 2015; Overbeck, Davidsen & Kousgaard, 2016; Sangaleti et al., 2017), both of which can also act as barriers (Farris et al., 2010; Halter et al., 2013; Joo & Huber, 2017; Mapp, Hutchinson & Estcourt, 2015; Meiklejohn et al., 2016; Sangaleti et al., 2017; Wood, Ohlsen & Ricketts, 2017). Yet the most important

barrier is related to financing. Often, no reimbursement is available for skill-mix innovations (Carmont et al., 2017; Farris et al., 2010; Halter et al., 2013; Hoeft et al., 2018; Meiklejohn et al., 2016; Supper et al., 2015) or there is a general lack of funding (Mapp, Hutchinson & Estcourt, 2015; Schadewaldt et al., 2013; Supper et al., 2015; Wood et al., 2017). Another important barrier is related to concrete or perceived fears of liability and to licensing issues, for example in the USA where new tasks may post a challenge as roles vary widely among states of licensure (Colvin et al., 2013; Farris et al., 2010; Hoeft et al., 2018; Schadewaldt et al., 2013).

11.3 Trends in implementation at the organizational level

The evidence from the systematic reviews provides a good overview of the factors that commonly play a role in the implementation of skill-mix interventions at organizational level, acting either as barrier or facilitator. To enhance the understanding of *how* these factors influence the implementation at organizational level, the next section discusses some of the strategies that organizations can apply to overcome the most commonly identified barriers and what approaches can be taken to strengthen the identified facilitators. Subsequently, four case studies are presented, which exemplify the influence of these factors, and the complex interactions between them, in everyday health care practice.

Overcoming barriers and strengthening facilitators

Organizational factors

The overview of reviews showed that a lack of financial resources is one of the main barriers for the implementation of skill-mix innovations at organizational level. Among the organizational adjustments that the introduction of skill-mix innovations requires, payment methods of individual providers are often ignored even though their influence can be a key facilitator for the success or failure of the implementation of skill-mix interventions. Various payment methods have different impacts on the behaviour of providers and must therefore be designed in a way to facilitate the adoption of skill-mix changes.

Fee-for-service payment is known as an incentive to increase clinical activity and to induce demand for the most remunerating services. It is not likely to encourage the delegation of tasks which correspond to a

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source of income. However, this depends on how fee-for-service payments are structured. Even in the classic fee-for-service system, there are numerous examples of delegation of tasks to nurses or other health professionals who work under medical supervision, and so allow the doctor to charge a fee-for-service. Capitation payments can have the reverse effect by encouraging providers to delegate tasks in order to keep their workload lighter and eventually to limit their costs. This is often feared to have a negative impact on the quality of care provision, but there is no good evidence that this is an issue in practice.

More recently, linking payment to performance has been adopted by a number of countries in some form, like add-on payments in France and Germany, or pay-for-performance in Norway, Portugal and the United Kingdom (OECD, 2016). Pay-for-performance is typically used to complement other methods of remuneration, is normally an organizationally based or unit-based contract approach, and is principally used in primary care. It is usually designed to encourage teamwork – which is being promoted at all levels of care to improve effectiveness and efficiency of services – and to reward the achievement of predefined objectives such as a better follow up of (chronic) patients and more cost-effective use of medicines, such as in Family Health Units in Portugal (World Health Organization, 2018) (see also Box 11.1). Even though pay-for-performance is not explicitly used to facilitate

Box 11.1 Skill-mix in primary care services in Portugal: barriers to change and potential facilitators

In Portugal, since 2005, self-managed Family Health Units (FHUs), composed on average of 20 professionals (family physicians and nurses in equal numbers, plus administrative officers), serve a geographically defined population of 1500–1900 persons per physician, with service coverage and performance objectives. FHUs are characterized by teamwork, community orientation, administrative autonomy and flexibility, and evaluation of performance. Decisions are made collectively. The delivery of services is linked to **pay-for-performance**, and a mix of individual and institutional incentives. Indicators of accessibility, quality of care, user satisfaction and efficiency determine the amount of these incentives. This creates a favourable environment for reviewing the skill-mix for the provision of primary care, for instance through the expansion of the role of nurses. This has not happened, due mostly to important **institutional barriers**.

Box 11.1 (cont.)

Barriers to changing the skill-mix

- Legal definitions of scopes of practice are vague, and the Medical Council has historically claimed authority over what other health professionals are legally authorized to do, an example of **professional territorialism**, by including in its Code of Ethics a prohibition to delegate any act relating to diagnosis, prescription and clinical management (**Temido & Dussault, 2014**). Any significant change in the scopes-of-practice therefore requires amendment of existing laws, a highly demanding process.
- This position is not seriously challenged by the nursing profession, which is divided on the issue of expanded scopes-of-practice. In 2014, the Nursing Council formally adopted a statement in favour on this issue. Trade unions however did not support it, arguing that task-shifting would add to already heavy workloads and a negative perception of **characteristics of skill-mix interventions**, without the guarantee of better pay.
- Other professional groups have little voice in the political debate: nutritionists, pharmacists and psychologists mostly work in the private sector. Hence, from the perspective of **individual factors**, there is a lack of strong advocates who could influence public opinion and bring the issue to the policy agenda.
- As a result, there is little political willingness for making the skill-mix more efficient in primary care.

However, there are factors that can facilitate the process of change in the near future. There is already recognition that the present division of labour is not efficient (**World Health Organization, 2010**).

- Informal delegation by family doctors to nurses is happening, even if only informally: in some Family Health Units, nurses monitor normal pregnancies or perform cytology tests (**Temido**, Craveiro & Dussault, **2015**). Even though their professional council opposes any form of delegation, many individual practitioners are open to this (Buchan et al., 2013, Temido & Dussault, 2014).
- In FHUs, an **organizational culture** of teamwork and of results-oriented management, including rewards for good performance, is a positive environment for developing a more efficient skill-mix. The dominant payment mechanisms, for example salary plus performance-based incentives are an incentive to delegation.
- Finally, nursing education institutions and programmes are of high quality and can respond rapidly to prepare nurses to perform expanded functions.

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the adoption of skill-mix innovations, it can have this effect when well designed. Moreover, it is usually accepted by providers. When applied to teams, pay-for-performance should apply to the whole team and the distribution of rewards must be transparent and acceptable to all. If applied to individuals, it may generate individualistic behaviours and competition, in which case the introduction of skill-mix innovations will likely be resisted.

Individual factors

Many factors at the individual level are related to opinions and attitudes, and less so to individuals' knowledge, skills or experiences. Opinions and attitudes can be tribal and be strongly linked to the health profession and education of an individual. This is in line with earlier findings; psychological professional barriers among health care professionals have been reported as one of the most persistent barriers to the uptake of skill-mix changes in practice (Kroezen et al., 2014a; Niezen & Mathijssen, 2014), whereas more supportive views among health care professionals have been shown to positively influence the uptake of skill-mix innovations (French, Bilton & Camplbell, 2003; Jones, Edwards & While, 2011; Travers, 2005). In other words, the barriers often result from a lack of confidence and trust in other professionals involved in the skill-mix, feelings of being threatened, for example in terms of professional autonomy, and related to that, professional turf issues. However, there are many examples where these barriers were overcome. In the Netherlands and the United Kingdom, it was observed that the more experience people have with nurse prescribing, which is being introduced in an increasing number of countries (Fernández-Ortega et al., 2016), the more positive their views become (Latter et al., 2011) (see also Box 11.2). Similar results were found in comparative studies in Europe (Köppen et al., 2018, Kuhlmann et al., 2018). Hence, for hospitals or other health care institutions thinking about introducing nurse prescribing, it is beneficial to start with a pilot project. In this way, experience can be gained, and a workable mode can be found by all health care professionals involved, before the final introduction of nurses' prescriptive authority (Kroezen et al., 2014b). Naturally, to secure change, the skill-mix intervention will subsequently have to be implemented system-wide. Another proven successful approach to overcome professional barriers is by organizing information sessions

Box 11.2 The implementation of prescribing by nurse specialists in the Netherlands

In the Netherlands, nurse specialists – registered nurses who have successfully completed a 2-year Master's programme in Advanced Nursing Practice and have subsequently registered themselves in the national Nurse Specialists Register – are legally allowed to prescribe medicines. In January 2012, they received independent prescriptive authority for any medicine within their competence and specialist area. One year after the introduction, however, a great variation was visible in the extent to which and way in which nurse specialists' legal prescriptive authority had been implemented in primary care (**Laurant et al., 2018**) as well as across hospitals (**Kroezen et al., 2014a**). This variation could be explained to a large extent by individual factors, such as the attitude of the physician with whom nurse specialists worked daily. Although some nurse specialists prescribed for up to 16 patients a day, others only wrote a prescription three times a week on average. Also, while most nurse specialists could independently prescribe both initial and repeat prescriptions, some were required to check their initial prescriptions with their medical specialist. In terms of the medicines that nurse specialists prescribed at hospital ward level, it was found that they hardly ever independently prescribed all medicines within their specialism and competence, as their legal authority allowed them to do. They were often only allowed to prescribe a relatively limited number of medicines, as set out in ward-level protocols or (personal) formularies drawn up in collaboration with physicians (**Kroezen et al., 2014a**). In general, the less familiar physicians were with nurse specialists, the less the support for their prescriptive authority (**de Bruijn-Geraets et al., 2015**). Apart from individual factors, there were also process factors, which acted as a barrier for nurse specialists to use their prescriptive authority. For example, on some hospital wards nurse specialists' prescriptive authority was not fully institutionalized. Nurse specialists would still be waiting for their own personal prescription paper or access to the digital prescription system. This prevented them from (independently) prescribing (**Kroezen et al., 2014a**). Finally, at organizational level the extent to which higher management levels were (un)aware of the role of nurse specialists and their prescriptive authority strongly influenced the way nurse specialists could work in practice, for example by (not) having a specific policy for nurse specialists in place (de Bruijn-Geraets et al., 2015).

with all actors expected to be involved in a skill-mix intervention. For example, in South-East England, when there was the possibility of support workers starting to use ionizing radiation, initial reservations by other health workers concerning professional boundaries were only overcome after meetings about the legislative, professional and practical implications took place (Ford, 2004).

The implementation of skill-mix interventions at organizational level may also be facilitated by a shared goal among health professions of providing good care for patients. For example, in Denmark gynaecologists, midwives and nurses involved in reorganized stroke rehabilitation shared a positive view on this intervention. This was driven by a shared goal of providing needs-based care for patients. In this particular skill-mix intervention, individual team members for example screened patients on behalf of members from the other professions, driven by the feeling of working independently as well as on behalf of the team (Burau et al., 2017). In a similar vein, a shared goal of improving women's health facilitated skill-mix change and collaboration between gynaecologists, midwives and nurses (Kuhlmann, 2006). Thus, people-centred care and skill-mix changes may create new forms of more integrated professionalism/professional ethics and culture (Kuhlmann, 2006; Strategic Advisory Board Well-being Health Family, 2015), which in turn facilitate implementation and sustainability of skill-mix changes.

Skill-mix intervention characteristics

When examining skill-mix innovations, which are successfully implemented into routine practice, a number of common characteristics stand out. The (perceived) improvement that a skill-mix innovation will offer, in terms of accessibility and quality of care and of responding to unmet care needs, is an important characteristic that enables its uptake in practice (Halter et al., 2013; Wood, Ohlsen & Ricketts, 2017) (see also Box 11.3). Changes in scopes of practice, for example, are more widely accepted when the health professionals transferring tasks accept that their profession does not have the capacity to continue to provide these tasks, while the skill-mix innovation makes it possible (Leggat, 2015). A study from the Netherlands showed that a high workload and increasing demand for glaucoma care, made glaucoma specialists highly interested in delegating some of their tasks. However, once care needs were fulfilled

Box 11.3 Community specialist nurses in neurology in the United Kingdom

With one neurologist per 233 600 inhabitants in 1995, the United Kingdom had one of the lowest numbers of neurologists per population in Europe (**Stevens, 1997**). This led to long waiting times for patients, shortcomings in the provision of care and proved an incentive to develop alternative solutions, including a skill-mix intervention using specialist nurses. Developed for the first time in Edinburgh in the 1990s, the advantages of a new epilepsy specialist nurse service were soon evident to all involved; the pressure on consultant-led specialist clinics was reduced and the gap between primary and tertiary services became smaller (Hosking, Duncan & Sander, 2002). So the characteristics of the skill-mix intervention acted as a facilitator for its implementation, and the model has since been adopted by several hospital trusts in the NHS and has been widened to other chronic neurological conditions (Lloyd & Evans, 2016). Looking more closely at the process of the implementation at organizational level, the following barriers and facilitators can be discerned:

Barriers to implementation of the skill-mix intervention

- Lack of streamlined NHS funding: probably the most important barrier **at institutional level** to a system-wide implementation of the neurology specialist nurse model. As this is a truly integrated care service between primary and tertiary care, in theory such a service requires co-funding between hospitals and clinical commissioning groups. Currently, most neurology specialist nurse services are funded by hospital trusts alone.
- Lack of standardized training for specialist nurses: this means varying standards from one hospital to another and reduced transferable skills for specialist nurses compared with an ideal training with clearly defined roles and standardized training curricula throughout the country.
- Perception of inferior quality care: substitution of medical specialist clinic appointments by nurse-led clinic appointments is seen by some medical specialists as inferior to the traditional model of care, a hampering **individual factor**.

Facilitators of implementation

- Dearth of neurologists: there is still a relative scarcity of neurologists compared with the burden of neurological disorders, which has

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Box 11.3 (cont.)

been and still is a key factor for the use of the neurology specialist nurse model.

- Clinical champions: because of the lack of streamlined funding, the implementation of a neurology specialist nurse service is often due to **individual factors**, such as the commitment of an individual neurologist or a neurology department.
- National guidelines: in 2004, the national guideline for epilepsy in children and adolescents for the first time included the recommendation, that "epilepsy specialist nurses should be an integral part of the network of care of individuals with epilepsy" (**National Institute for Clinical Excellence, 2012**). This recommendation can now be used by neurology departments to negotiate funding for a specialist nurse service in their hospitals.

and workloads became more acceptable, there was a strong reduction in specialists' interest for task delegation (Holtzer-Goor et al., 2013). It has also been reported that one of the main reasons for GPs to employ a physician assistant or a nurse practitioner was the expectation that this would improve the quality of care provided within their practice, in particular by ensuring continuity of care. Also, some GPs considered this particular skill-mix innovation as an opportunity to expand the supply of new services (Van der Biezen et al., 2017).

Another factor that influences the uptake of a skill-mix innovation in practice is the extent to which it is perceived as a disruption of routine care. For example, in the delegation of tasks from dentists to dental hygiene therapists, it was found that tasks and patient groups that fitted closely with the accepted and traditional role of the dental hygiene therapist were more often delegated than tasks and patient groups whose delegation would bring about a larger change to usual care provision and division of labour (Wanyonyi, Radford & Gallagher, 2014).

Process factors

A lack of support for staff involved in skill-mix change can severely hamper its implementation at organizational level. Hence, access to ongoing support is one of the most important facilitators for effective skill-mix implementation. There are various ways in which health care

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organizations can facilitate this. Supervision or mentorship programmes seem to be one of the most frequently used instruments, and are deemed helpful by professionals in terms of peer learning (Deller et al., 2015; Supper et al., 2015; Wood, Ohlsen & Ricketts, 2017). However, if mentorship schemes are to be effective, sufficient time and resources need to be made available for this and there needs to be financial, logistical and educational support and incentives for mentors or supervisors. Another way in which organizations can support professionals involved in a skill-mix intervention, is by formalizing the newly created relationships. One example of this is by introducing explicit policies that encompass a demarcation of the new roles. This has repeatedly been found to facilitate task reallocation from doctors to nurse practitioners (Niezen & Mathijssen, 2014; Schadewaldt et al., 2016).

Institutional factors

If organizations are able to optimize staff training and can use policies and regulations to their benefit, this may contribute to the successful introduction of skill-mix innovations in health care practice. Research suggests that health professionals who have trained together have a better understanding of each other's scope of practice and are therefore better equipped for teamwork (Wanyonyi, Radford & Gallagher, 2014). Hence, where there is a lack of training integration in regular curricula, offering training in teamwork can improve staff abilities to participate in skill-mix interventions. Training in a particular health care setting can make this learning even more applicable to the local context (Lemer, Allwood & Foley, 2012).

In Germany, the establishment of dental hygienists provides an example of how regulations can act as a key facilitator for skill-mix implementation at organizational level. Changes in the legal reimbursement schemes of sickness funds supported the establishment of dental hygienists (Theobald, 2004). Since the provision of preventive/hygiene services by a dentist or a hygienist (the latter costing less) became a legal requirement for reimbursement in Germany, dentists welcomed task-shifting and training of dental hygienists to increase the economic efficiency of their surgeries. This catalysed the establishment of new training programmes for dental hygienists and the improvement of employment conditions for this professional group. It is important to emphasize in this regard, that different health care systems and contexts

may have different pay systems, pay outcomes and pay differentials. This has consequences for skill-mix implementation. For example, where pay differences between professions are bigger, the scope for task substitution on cost criteria is greater (at least in theory).

Box 11.4 Health workforce change in Germany in the shadow of organizational reform

The 'organizational path' of workforce transformations in Germany, including skill-mix innovations, must be seen in the context of its **institutional conditions**. The German health care system can be characterized as a corporatist governance model, with the medical associations and sickness funds as the two key stakeholders, and an overall marginality of other health care providers in the regulatory bodies (**Blank, Burau & Kuhlmann, 2018; Busse et al., 2017**). Hence, transformations in the health workforce and skill-mix innovations must inevitably be negotiated with the medical profession. Organizational change, however, does not directly intervene in these professional silo politics and in the hierarchical order of professions. As a result, in this specific national context, the processes of skill-mix change become more incremental, focus more on lower-qualified groups of the health workforce (rather than on the professional development of nurses) and become more diverse and local, shaped by the *Länder* politics. Health workforce transformations and skill-mix innovations are primarily targeted at medical providers – integration of generalist and specialist care – and aimed at an expansion of the role of health care assistants (in a few cases also of community nurses).

The processes of workforce change and skill-mix innovations can be illustrated when looking at pilot projects that have flagship character in the German context: the new organizational model of Integrated Care Healthy Kinzigtal (*Integrierte Versorgung Gesundes Kinzigtal*) as an example of integrated primary care provision (**Groene et al., 2016**), a directive on piloting task-shifting from physicians to nurses (Federal Joint Committee, 2011) and several pilot and small-scale programmes to expand the tasks of health care assistants (*Medizinische Assistenten*) (Advisory Council on the Assessment of Developments in the Health Care System, 2014) (for a European overview, see (Kroezen et al., 2018 (forthcoming))). The most prominent example is AGnES (*Arztentlastende, Gemeindenahe, E-Health-gestützte, Systemische Intervention*), a pilot project to train medical assistants (also open to nurses) for new tasks in four formerly eastern German federal states between 2005 and 2008.

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Box 11.4 (cont.)

Following successful evaluation, AGnES has been integrated into routine care and renamed as nonmedical surgery assistant. These reforms have created positive individual attitudes among health professionals. As a result, other federal states established similar programmes and a number of training programmes are now provided by Physician Chambers or the organizations of family physicians. Recently, Rhineland Palatine has introduced a further pilot programme called Community Nurse Plus (*Gemeindeschwester*^{PLUS}), exclusively for nurses. This programme aims to fill the gap between existing social care services, rather than providing classic nursing care or taking over medical tasks (MSAGD, 2015).

11.4 Conclusions

In this chapter, we identified factors and strategies that facilitate or impede the uptake of skill-mix interventions in organizations. Based on a conceptual framework that analyses the most important factors that influence implementation, and on evidence from an overview of 21 systematic reviews, we identified various factors that foster or impede the implementation of skill-mix changes. In many cases, the barriers for implementing skill-mix interventions in organizations turned out to be the mirror opposite of facilitators. Organizational and individual factors were most often mentioned – most notably (a lack of) time and financial resources, clarity over roles and responsibilities, information systems, knowledge and skills, good communication and professional and personal attitudes. Characteristics of the skill-mix intervention, institutional factors and process factors were mentioned less frequently. Yet (a lack of) perceived benefits for health care professionals and patients, supportive laws and regulations, reimbursement and institutional support also play an important role in the implementation of skill-mix innovations in organizations. Because of the relatively small amount of identified reviews, and the fact that the majority of included studies in the reviews was from Anglophone OECD countries and northern and western European countries, the generalizability of these findings is somewhat restricted.

Skill-mix change in practice is a complex challenge, involving interdependent changes in a number of factors, as illustrated by the mini case studies presented in the previous sections. This means that there

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is no single appropriate strategy for implementing skill innovations that will fit all organizations. Managers must adopt an optimal strategy when implementing skill-mix, usually involving a combination of approaches best suited to local factors, to their organization and to individuals involved (Antwi & Kale, 2014). Which factors are decisive, and which change management model is most suitable, is to a large extent dependent on the specific organizational context. For example, to answer the question of which is the best payment method to optimize the utilization of all skills within an organization – an important factor when implementing a skill-mix innovation – each organization must find its own answer. What can be said is that changing the skill-mix entails changing the method of remuneration, and both are very sensitive: engaging stakeholders from the start of the process and keeping them engaged is the best advice that can be given to managers and policy-makers.

In general, the technical aspects of skill-mix analysis are more easily transferable than their application in context. Based on a comparison of change management models that are applicable to – or specifically emerged from – a health care context, Antwi & Kale (2014) have established important basic principles that are useful to all managers and policy-makers who aim to implement skill-mix changes in their organization. First, managers need to be aware of the various stages of an implementation process, and that each stage requires specific actions: from preparing for change, to implementing change and finally sustaining change. Furthermore, Antwi & Kale (2014) were able to show that the following components should always be taken into account when implementing skill-mix innovations: governance and leadership, stakeholder engagement, communication, workflow analysis and integration, education, and monitoring and evaluation. Apart from these, environmental circumstances, organizational harmony, organizational capacity, power dynamics, the nature of change and process for change can play an important facilitating or inhibiting role.

Overall, the results presented in this chapter underline the complexity of factors that either support or constrain the implementation of skill-mix innovation at the organizational level. Combined with the variety of change management models available and the complex challenge to align actions to a specific organizational context, this highlights the need for more comprehensive research on this topic.

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