The Role of

Health Profession Regulation

In Health Services Improvement

by

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ABSTRACT

This research investigates the role of health practitioner regulation in health service improvement. Over the last 25 years, service improvement has included management reforms, quality and redesign programmes, multidisciplinary teamwork, the integration of clinical information systems, and new roles for health professionals. Yet despite sustained effort, improvements tend to be localised rather than organisation or system-wide. Remedies have included attention to leadership, change management and service culture. Through the same period, there have been changes to expand and strengthen health practitioner regulation, but scant attention to whether this regulation could contribute to difficulties with health service improvement. A critical realist methodology was used to build an explanation of how regulatory policies could condition health professionals and health service organisations in ways that limit the progress of service improvement. A multilevel approach was used to discover the mechanisms that could operate among policy-makers and the health workforce, generating effects in health service organisations. The study concluded that this explanation contributes new insights to explain persistent difficulties in health service improvement.

The research began with the 19th century to understand the social conditions in the construction of the health workforce and health service organisations. Next, it identified the network of modern regulatory stakeholders in healthcare, along with the potential for their policies to operate in conflict or concert depending on the circumstances. Deficiencies were identified in the traditional accounts of health practitioner regulation, which assumes a single profession and sole practice. 'Regulatory privilege' was developed as an alternative theory that describes the operation of nine historically constructed regulatory levers among the multiple health professions employed in health service organisations. This theory linked the regulatory and practice levels, to observe the interactions between health practitioner regulation and policies for health service improvement. Drawing on the recent history of health reforms, eight elements were identified that characterise directions for service improvement in healthcare. Investigation of interactions between these nine levers and eight elements identified sources for policy interactions through six sector levels. Interactive effects were identified in: policy design influenced by health practitioner regulation; the leadership and management capability in health service organisations, the design options for delivery of services, the means

available to coordinate services, the role opportunities and practice arrangements for health professionals, and the experience of service fragmentation by consumers.

This multilevel explanation shows how health practitioner regulation could contribute to difficulties with service improvement, even when health services have adopted best practice in their implementations. It shows how poor alignment between the regulatory and practice levels makes it unlikely that health service organisations could address certain difficulties in the ways suggested by some scholars. Given the sustained directions for health service improvement, these findings could contribute to policy thinking around how to better align the regulatory and practice levels to realise organisation or system-wide improvements in the delivery of healthcare.

ACKNOWLEDGEMENTS

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LIST OF ABBREVIATIONS

BRI	Bristol Royal Infirmary (UK)
CHRE	Council for Health care Regulatory Excellence (UK)
CMHTs	Community mental health teams
CWP	Changing Workforce Programme (UK)
DH	Department of Health (UK)
DHS	Department of Human Services (Australian State of Victoria)
ED	Emergency department
GMC	General Medical Council (UK)
HDC	Health and Disability Commissioner (New Zealand)
HPRAC	Health Professions Regulatory Advisory Council (Ontario, Canada)
NHS Institute	NHS Institute for Innovation and Improvement (UK)
IHI	Institute for Health Improvement (US)
IoM	Institute of Medicine (US)
LRI	Leicester Royal Infirmary (UK)
MoH	Ministry of Health (New Zealand)
NCAS	National Clinical Assessment Agency (UK)
NHS	National Health Service (UK)
NPM	New public management
NPs	Nurse practitioners
PAs	Physician assistants
PFC	Patient Focused Care – A brand of hospital re-engineering

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INTRODUCTION

Over recent decades, policy-makers have sought to improve health service delivery, but have often met with disappointing results. This research looks at whether health practitioner regulation could contribute to difficulties in any significant or systemic way. In this chapter, the scene for investigation is set in New Zealand and other English-speaking developed economies where there have been repeated attempts to improve health service delivery amid anxieties about service failures associated with health practitioner regulation. An overview of current knowledge reveals a thin literature base with a focus on single professions rather than the health workforce, and scant attention to health practitioner regulation as a factor in health service improvement. Other explanations for disappointing outcomes in health reform have been offered, but they leave room to ask my main research question: 'could health practitioner regulation have systemic effects that contribute to difficulties with policies for health service improvement?'

Section 1.1 sets the scene for the research question and provides an overview of current knowledge. The following three sections review the international context for health reform in Section 1.2, the explanations for disappointing outcomes in health service improvement in Section 1.3, and an overview of healthcare's regulated workforce in Section 1.4. Section 1.5 overviews the research strategy, the thesis outline and contribution to research.

1.1 SCENE SETTING, RESEARCH QUESTION AND CURRENT KNOWLEDGE

This section sets the scene for the research question with an outline of the last 25 years of health reforms and changes to health practitioner regulation. It sets out the underlying research questions and explains selected terminology associated with the topics of health practitioners, health services, regulation, and health service improvement. There is a

thin literature base around the research question and the section concludes with an overview of the interdisciplinary nature of this literature and the contributing topics.

Health reforms and regulatory barriers

Over the past 25 years, there have been many and successive changes to the regulation of health practitioners and the organisation of health services, each directed at improving the delivery of healthcare. New Zealand has sought service improvement through competition policies, reorganisation of health services, management reforms and policies to improve service quality (Cumming, 2011; Gauld, 2009). It has also amended health practitioner regulation to strengthen consumer protection and to encourage flexibility in the healthcare workforce (Ministry of Health, 2009; Paterson, 2002). This picture is not unique to New Zealand. Across English-speaking developed economies, there are common themes in health policy around how best to improve service quality and efficiency, strengthen consumer protection, and ensure that the health workforce can meet changing demands for health services (Allsop & Jones, 2005; Duckett, 2005a; OECD, 2011).

There have also been numerous advances in diagnostic and treatment technologies in healthcare. However, integrating innovative components of care at the consumer interface has proved difficult, and has been unfavourably compared to transformations in other industries. For example, while banks and retailers have used computer and internet technologies to offer convenient personalised services, repeated attempts to introduce portable integrated patient records has met with far less success (Hillestad et al., 2005). As another example of the difficulties with new clinical technologies, Christensen and colleagues point to the failure of a new X-ray machine designed for use in doctors' offices. This portable low-intensity machine offered consumers the convenience of receiving an X-ray, diagnosis and treatment decisions at a single consultation, thus avoiding multiple appointments, delays, and additional costs arising from referrals between the doctor and a radiology service. Despite these advantages, when a United States (US) company attempted to introduce this machine, they were unable to sell it. Despite the machine costing just 10% of conventional imaging technology, the regulatory barriers to using it were overwhelming (Christensen, Bohmer, & Kenagy, 2000).

'Regulatory barriers' can refer to an array of rules, and variously inter-related relationships governing regulated health professionals and other industry stakeholders. In the case of the new X-ray machine, the medical specialists and hospital emergency departments had vested interests in maintaining the existing business model. The new technology threatened this model because patients with simple injuries might turn to the nearest doctor's office, rather than an emergency department for care (Christensen et al., 2000). Some scholars think that if single innovations like the new X-ray machine are too disruptive for existing players, the way forward may involve more incremental improvements. Cost reduction and quality improvement might still come from a combination of many small innovations, such as new or generic drugs, self-administered tests, devices that are cheaper to manufacture, use of less expensive health practitioners for some work, and relocation of care from hospitals to community-based clinics or self-care at home (Robinson & Smith, 2008). Indeed, despite the rhetoric about service transformation, most service improvement programmes tend to have incremental effects on service delivery (Locock, 2003).

In general, health service improvement has proved challenging, and scholars have pointed to difficulties with the management of change and service culture. Consequently, there has been a focus on leadership and service culture as the means to progress health service improvement (Braithwaite, Iedema, & Jorm, 2007; Degeling & Carr, 2004; Ferlie, 1997). Regardless of whether change is considered to be disruptive or incremental, scholars have also identified an 'Augean stable' of regulatory obstacles to service improvement such as methods of provider payments, the power of incumbent service providers, consumer advocacy around specific diseases, and legislation concerning patient injury (Herzlinger, 2006; Robinson & Smith, 2008). Yet, there has been little attention paid to the role of health practitioner regulation, which appears to be closely entwined with these other sources of difficulties with service improvement.

Health practitioner regulation entails rules about 'who may perform what work' among registered health professionals. These rules weave through the fabric of other arrangements governing healthcare providers such as payments for services, access to indemnity insurance, use of technologies or procedures, and the accreditation of health service organisations (Jost, 1995). In English-speaking developed economies it is generally held that health practitioners should be regulated to enforce clinical practice

standards that can protect consumers from harm, and that while this may serve the interests of the regulated health professions it also serves the public interest overall (Baggott, 2002; Healy, 2012). Yet health practitioner regulation could also be linked to higher costs for healthcare, inconsistent effects on the quality of care, problems with flexibility in the health workforce, and difficulties with the service innovations (Duckett, 2005b; Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004; Kleiner, 2006; Safriet, 2002).

There is a consensus that health practitioner regulation is essential to ensure that health practitioners are competent, so that consumers are protected from poor practice. Yet it seems plausible that health practitioner regulation could also contribute to service fragmentation that the US Institute of Medicine (IoM, 2001) has identified as the primary source of poor quality in healthcare. Inquiries into major service failures have identified problems with inter-professional collaboration as contributing to patient injury, such as at the United Kingdom's (UK's) Bristol Royal Infirmary (Kennedy, 2001). While each professional may act competently and ethically, it is possible that in some cases the process of inter-professional referrals could compromise the overall quality and efficiency of care. Pauly (2008) alerts us to the possibility that a new vocabulary is needed to overcome a confusion around an analogous discourse, in which cheaper technology is assumed to be incompatible with an acceptable quality of clinical care. In the case of health practitioner regulation, it might prove useful to consider whether some of the activities or policies of registration authorities could compromise inter-professional collaboration and the quality of services. It is timely to delve deeper to find out exactly how health practitioner regulation protects consumers and how it could contribute to difficulties with service improvement.

Research question and terminology

The main research question is: could health practitioner regulation have systemic effects that contribute to difficulties with policies for health service improvement? To answer this question, it is necessary to investigate the following underlying questions:

First, what are the linkages between the health professions and health service delivery in the organisation of modern healthcare?

Second, what are the intended mechanisms of health practitioner regulation? How are the mechanisms of health practitioner regulation related to other arrangements for the governance and improvement of health services?

Third, what other mechanisms could be associated with health practitioner regulation? How might these be transmitted from registration authorities and leveraged in the multidisciplinary healthcare workplace?

Fourth, how are management reforms and quality improvement programmes intended to change service delivery? In the light of recent management reforms, what do we know of the organisational context and capability for the implementation of these improvement policies?

Fifth, could mechanisms in health practitioner regulation contribute to explaining difficulties with the implementation of management reforms and quality improvement programmes?

'Health practitioner' is a broad term referring to 'a person who helps in identifying, preventing or treating illness or disability'. Alternative names for members of the healthcare workforce include 'caregiver', 'health care provider', 'health professional' or 'primary care provider' (The Free Dictionary, 2012b). In legislation, it is common to define a 'health professional' or 'regulated health practitioner' in terms of their registration status, such as 'a person who is, or is deemed to be, registered with an authority as a practitioner of a particular profession' (New Zealand Health Practitioners Competency Assurance Act, 2003). The term 'allied health professional' has been used variously to refer to all or just a few health professionals who are not medical practitioners. I use this term to refer to all non-medical and non-nursing professionals, such as pharmacists, laboratory scientists, radiographers, physiotherapists etc.

Most people have some understanding of 'health services' through visits to the doctor or hospital. Terms like 'doctor', 'nurse', 'emergency department' or 'pharmacy' are in common usage and often referred to without further definition in scholarship about health services. Another way of thinking about health services is to categorize them into 'primary', 'secondary' or 'tertiary' levels of care, terms that suggest differences in service intensity or delivery locations. We expect primary care to be delivered in the local

community, and secondary or tertiary services to be delivered in hospitals by specialists. While these terms are convenient, they suggest degrees of difference between services that might not be present on closer analysis. For instance, renal dialysis for kidney failure involves specialist equipment and skills but these services can be performed either in hospitals as part of a secondary care service, or by patients at home supported by primary care practitioners (McFarlane, Bayoumi, Perratos, & Redelmeier, 2003). In many cases, health practitioners from the same health professions may perform similar services in either hospital or community care locations.

Regulation is commonly used in public policy to refer to 'the rules of behaviour that may be used to reconcile the conflicting rights and interests of citizens (and are) supported by the courts and enforcement agencies' (Carmichael & Pomerisano, 2002, p. 21). In this thesis 'regulation' is used in three ways to refer to the rules of behaviour intended to guide the practice of health professionals or to govern health services, the sources of authority for sets of rules, and the activities of the agencies that prescribe and enforce these rules.

Different types of regulation draw on different sources of regulatory authority. 'Self-regulation' refers to control 'of a process or activity by the people or organizations that are involved in it, rather than by an outside organization such as the government' (English Collins Dictionary, 2012). This involves codes of practice established by industry associations, or codes-of-conduct and complaints-handling procedures established by professional associations (Taskforce on Industry Self Regulation, 2000). 'Self-regulation' is contrasted with 'statutory regulation' in which rules are specified and enforced by the state. When 'self-regulation' is backed by statute, it may be more accurately described as co-regulation. 'Co-regulation' refers to a shared source of regulatory authority between the people or organizations involved in an activity and the agencies of the state (Bartle & Vass, 2005), in which the industry or professional association 'develops and administers a code of practice and the government provides the ability to enforce it through legislative backing (Taskforce on Industry Self Regulation, 2000). The majority of health professionals are partly self-regulating and partly regulated by the state, which is referred to as 'statutorily underpinned' or 'statutorily supported' self-regulation (Bartle & Vass, 2005). Over the past 20 years, the international trend has been for governments to intervene and adjust the balance of co-regulatory interests in health practitioner regulation

to improve public transparency and strengthen the oversight of health practitioners' competency (McDonald, 2012).

'Regulation' has also been described as 'sustained and focused control exercised by a public agency over activities that are valued by the community' (Selznick, 1985, p. 363). This definition directs attention to the 'regulators' or 'regulatory agencies' that exercise the authority to prescribe and enforce the rules of behaviour, operating at arms-length from the people whose activities are regulated (Chinitz, 2002; Hood & Scott, 2000). In health practitioner regulation, registration authorities operate at arms length to the health practitioners and their places of work. In this thesis, 'registration authority' refers to a government-supported agency that oversees the standards of clinical practice for the health professionals under its jurisdiction. These authorities are commonly described as 'boards' in the United States, 'councils' in the United Kingdom, and 'colleges' in Canada. Each of these terms appears in the discourse in Australia and New Zealand. Registration authorities are responsible for accreditation of training institutions, approval of curricula for training, registration of health practitioners, and investigation of complaints about practice. They have some of the features of courts, being responsible for the conduct of investigations, adjudication at disciplinary hearings, and the sanctioning of health practitioners (Jost, Mulcahy, Strasser, & Sachs, 1993; Paterson, 2002; Stacey, 1995). These registration authorities do not operate in isolation because they participate in a network of regulatory stakeholders engaged in the oversight of various aspects of health service delivery, which means to understand the operation of health practitioner regulation, it is important to include relationships between these stakeholders (Braithwaite, Healy, & Dwan, 2005; Jost, 1995).

'Linkages' is used in two senses. First, is the notion of linkage as 'a system of interconnected machine elements used to transmit power or motion' (The Free Dictionary, 2012a). In this case, linkages consist of relationships between regulatory agencies and other stakeholders in healthcare. 'Power' refers to 'political, social or economic control' (The Free Dictionary, 2012c), which could be associated with the health professions or other regulatory stakeholders and may be underpinned by statutory support. Second, is the sense of 'linkage' as 'a negotiating policy of making agreement on one issue dependent on progress toward another objective' (The Free Dictionary, 2012a). This is relevant because the rules of behaviour for professional practice are thought to

reconcile or balance the potentially conflicting interests of policy-makers, health professionals, and consumers.

The term 'interactions' is used to draw attention to the potential for bi-directional transmission of ideas, influence, and power associated with rule making and enforcement, between healthcare stakeholders at both the governance and service delivery levels. While the main focus of the thesis is on how the design of health practitioner regulation can affect health service delivery, it does not preclude multiple pathways and directions for the flow of influence.

'Health service improvement' refers to policies intended to improve the delivery of health services to increase efficiency, improve quality, ensure safety, or make services more accessible for consumers. While the particular policy mix and governance arrangements vary, these goals and the associated interventions are common across English-speaking OECD economies (Docteur & Oxley, 2003). This involves large-scale change in health service organisations, as indicated by the US Institute of Medicine (IoM)'s 2001 report 'Crossing the quality chasm: Shaping the future for health':

> In its current form, habits, and environment, American health care is incapable of providing the public with the quality health care it expects and deserves (as cited in Berwick, 2002, p. 83).

Crossing the Quality Chasm (2001) identifies service fragmentation as the primary source of quality problems in service delivery. The range of changes it recommends includes: organisation-based standards for best practice rather than historically protected models of care; better use of electronic patient records; investment in human resources; more effective teamwork between health practitioners; better coordination of care through redesign of service delivery; and more sophisticated measurement of performance (Berwick, 2002).

My definition is similar to, but broader than the 'systems approach' of considering human error and organisational factors in adverse events (Reason, 2004). The incidence of seminal and adverse events is commonly monitored to alert health service organisations to system weaknesses, such as: surgery performed on the wrong side of the patient or the wrong patient; the wrong medications, wrong dose or wrong combination of medication

given to patients; or care processes that contribute to patients' becoming injured through falling (Health Quality and Safety Commission New Zealand, 2014). While 'service fragmentation' could contribute to an adverse event, I am mostly interested in the general effects of fragmentation on the cost and quality of service delivery.

Much of the service improvement recommended by the IoM depends on more effective collaboration among health professionals. In relation to service improvement, I use the terms 'inter-professional' or 'multidisciplinary' to refer to situations where health practitioners from different health professions are expected to work closely together to care for particular groups of patients. 'Multidisciplinary teams' are those constructed to replace or improve services that are otherwise coordinated among specialist departments such as in mental health services, and not those traditional teams convened for session work, such as in operating theatres (Brown, Crawford, & Darongkamas, 2000; Manser, 2009). I include 'near patient technologies' as an aspect of service improvement, which refers to small portable machines or single use disposable kits that can enable services to be delivered to patients at one single, rather than several separate appointments (Crook, 2000; Yager et al., 2006).

'Organisational capability' refers to the:

> 'ability and capacity of an organization expressed in terms of its (1) Human resources: their number, quality, skills, and experience, (2) Physical and material resources: machines, land, buildings, (3) Financial resources: money and credit, (4) Information resources: pool of knowledge, databases, and (5) Intellectual resources: copyrights, designs, patents, etc.' (Business Dictionary.com, 2014).

In health service organisations this might include capability in: leadership, financial management, service design, human resource management, organisational policies and procedures, information communication systems, inter-professional collaboration, and teamwork.

Overview of current knowledge

There is a thin literature base around the main research question. This section introduces the interdisciplinary nature of the topics contributing to this literature. The literature of health policy can be divided into two overlapping groups, 'health reforms' and 'health services research'. Topics within 'health reforms' are mostly concerned with health sector governance and with questions about: the merits of different approaches to funding healthcare; how best to prioritise expenditure on diseases, populations or particular services; the application of competition or regulatory policies to health services; and the design of institutional arrangements for governance. An overlap with 'health services research' occurs in the effects of policies on health service organisations and patient outcomes. 'Health services research' extends analysis into health service organisations and the work of health practitioners with topics including: the performance of health service organisations; factors influencing the cost, quality or safety of service delivery; the design and leadership of health service organisations; and a growing body of research on inter-professional collaboration in clinical practice settings. Health policy is an interdisciplinary literature with contributions from public policy, public administration, law, politics, sociology, and economics.

The small body of scholarship around the 'regulation of the health professions' includes historical accounts of the evolution of medical regulation (Berlant, 1975) and contemporary reviews of legislative change (Allsop & Jones, 2005; McDonald, 2012). In New Zealand, Australia and the United Kingdom, there is grey literature associated with changes including, government discussion papers and responses from the professional organisations of the health professions, along with commentaries from health professions in their professional journals. Overall, there has been a tendency for separate treatment of health practitioner regulation and the governance of health service organisations, and for the focus of scholarship to be on international comparisons around specific topics. Apposite illustrations include a comparative study of US and UK healthcare regulation that excluded the regulation of health practitioners (Walshe, 2003), and edited books that canvass a range of international topics in the regulation of selected health professions (Allsop & Saks, 2002; Freckelton, 2006; Johnson, Larkin, & Saks, 1995; Jost, 1997b). There are a few notable exceptions. In the context of US health reform, Jost (1995)

evaluates the merits of the market, management or regulatory interventions to improve healthcare quality. More recently, Australian scholars have included the regulation of health practitioners as part of a network of regulatory stakeholders and strategies for the governance of health services (Braithwaite et al., 2005).

Within health services research there has been scholarship around the progress of management reforms, for instance the implications for health practitioners (Harrison & Pollitt, 1994) and the progress of quality improvement programmes as a means to improve services (Bate, Mendel, & Glenn, 2008; Ferlie, 1997). However, to date, there has been a dearth of attention to health practitioner regulation in relation to difficulties with the implementation of management reforms or service improvement. Notable exceptions are a Canadian government commissioned report that points to health practitioner regulation and profession-specific industrial agreements as a source of difficulties in multidisciplinary teamwork (Oandasan et al., 2006), and research evidence that regulated scopes-of-practice contribute to difficulties in primary healthcare teams (Brown et al., 2011). More commonly, difficulties in the implementation of health reforms are related to questions about leadership, change management, diffusion of innovation, and professional or organisational cultures (Bate, 2004; Braithwaite et al., 2007; Degeling & Carr, 2004; Ferlie, Fitzgerald, Wood, & Hawkins, 2005; Ham, Kipping, & McLeod, 2003). Although health practitioner regulation is not the focus of these studies, tensions between different health professions might be indicative of its presence as a contributing factor.

Historical accounts of the health professions and their regulation tend to focus on a single health profession, such as medicine (Berlant, 1975) or nursing (Dingwall, Rafferty, & Webster, 1988). Some contemporary scholarship is more inclusive, particularly edited volumes that discuss developments for several different health professions (Davies, 2003; Davies, Finlay, & Bullman, 2000). An unusual contribution was Begun and Lippincott's (1993) strategic analysis of how the regulated health professions could use their professional networks to gain competitive advantage in healthcare. More generally the focus of scholarship appears to be shifting from analysis of the relationship between 'medicine and the state' (Moran & Wood, 1993; Saks, 1995) to edited volumes organised around the themes of 'regulating the health professions' (Allsop & Saks, 2002), 'regulating health practitioners' (Freckelton, 2006) 'professional governance' (Kuhlmann

& Saks, 2008), and most recently 'healthcare workforce governance' (Short & McDonald, 2012). Yet, so far these treatments fall short of examining how health practitioner regulation operates among a workforce comprised of many separately regulated health professions.

Figure 1 below, illustrates the relationships between the topics health practitioner regulation, health services governance, and health service improvement discussed above. The topic groups are depicted as interactive cogs. At the governance-level are health practitioner regulation depicted as the red cog and health services governance depicted as the blue cog, which are both directed to oversight of health service quality improvement depicted as the orange cog. The black arrow locates the research question and the potential for important interactions in the gap between these three topic groups.

Figure 1: Topic groups around the research question
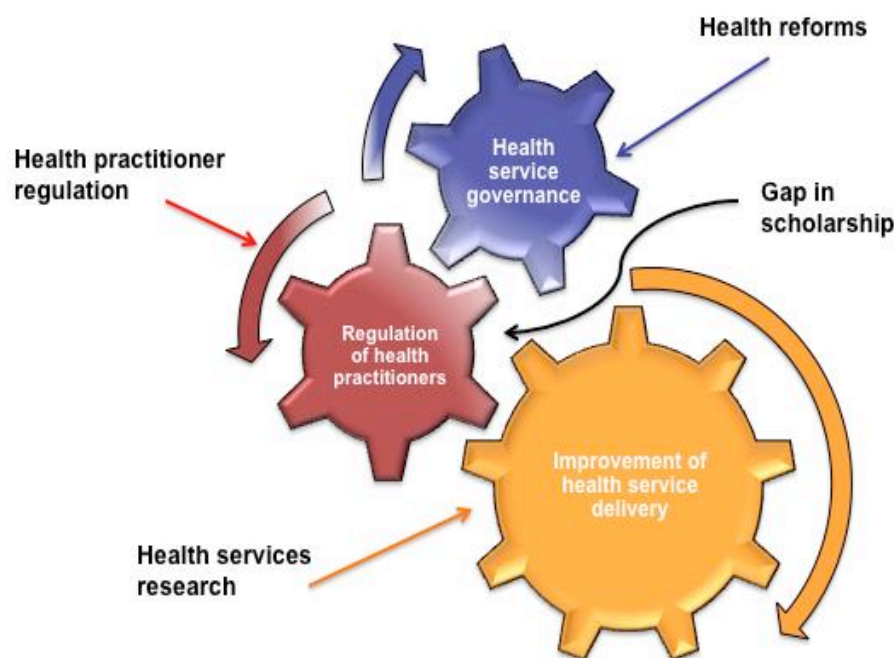
The next three sections proceed through three focused reviews to establish what is known of the: international context for health reform and changes to health practitioner regulation; some scholarly explanations for difficulties with health service improvement; and an overview of discourse around the health professions, health practitioner regulation and contemporary concerns about the sustainability of the health workforce.

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1.2 INTERNATIONAL CONTEXT FOR HEALTH REFORM

There are similar patterns of reform to health practitioner regulation and health service delivery organisations across English-speaking developed economies. Reforms often originate in the United States, are adapted for government-led health systems in the United Kingdom, and subsequently influence changes in countries such as New Zealand and Australia. This section provides an overview of these patterns with a focus on New Zealand, Australia and the United Kingdom, and with attention to the United States as a key source of policy ideas.

Reforms to health practitioner regulation

Traditionally each health profession lobbied government to secure statutory support for its own self-regulation. For instance in New Zealand prior to 2004, there were 11 separate Acts governing 14 health professions, such as the Physiotherapists Act 1949, Medical Auxiliaries Act 1966, Pharmacy Act 1970, Nurses Act 1977, Dental Act 1988, Medical Practitioners Act 1995 etc. (Statistics New Zealand, 2000). Since the early 1990s, there has been a trend for governments in New Zealand, Australia, the United Kingdom, the United States and elsewhere to initiate changes to health practitioner regulation in response to highly publicised failures of healthcare delivery (Walshe & Shortell, 2004). The direction of change has been for greater public accountability and transparency concerning the operations of registration authorities, and more standardisation of legislation across different health professions. An authoritative source for this reform agenda is the US Pew Health Commission (1998; 1995), which recommended: simplified and standardised legislation; lay membership of, and greater public accountability for registration authorities; consistency around the entry-to-practice criteria and conduct of disciplinary proceedings for health practitioners; continuous oversight of health practitioner competency by registration authorities; and reciprocal recognition of registration status across jurisdictions to facilitate the migration of health practitioners.

While this agenda is common to English-speaking developed economies, there are some variations in the paths to implementation. In New Zealand, changes began following public controversy surrounding the treatment for cervical cancer at the New Zealand National Women's Hospital (Paterson, 2002). In 1994, an independent consumer watchdog, the Health and Disability Commissioner (HDC), was established to

independently investigate complaints about health practitioners, refer consumer complaints to professional conduct committees, or to prosecute health professionals if warranted (Paterson, 2002). By 2004, there was one legislative framework applied to all the regulated health professions in New Zealand, which included: standardised legislation, ministerial appointments to registration authorities, inclusion of lay members, an independent court to oversee health practitioner disciplinary hearings, and a requirement for registration authorities to manage the ongoing competency of health practitioners. For health practitioners, it became mandatory to report concerns about the competency of colleagues, and to participate in workplace quality assurance programmes (MoH 2009; Paterson, 2002).

In Australia, there was a similar process of change at state level, with health complaints watchdogs first established in Victoria in 1988 and New South Wales in 1993 (Commonwealth Ombudsman, n.d.). Impetus for change, from a state-based to a national system of registration for health practitioners, emerged following a 2003 review by the Victorian State government, a 2005 report by the Australian Productivity Commission, and a scandal around patient deaths in Queensland in 2005 (Pacey, Harley, Veitch, & Short, 2012). From 2011, a national scheme was implemented, including: standardised legislation, transparency of information to the public; accountability of registration authorities to the federal government; ministerial appointment of registration authority board members; a national office that hosts 14 registration authorities and manages performance contracts for these authorities; and ongoing management of health practitioner competency (Carlton, 2006; Pacey et al., 2012).

In the United Kingdom, lay members on the General Medical Council (GMC) date from the 1950s, and an independent health complaints investigator was introduced in 1993 (Commonwealth Ombudsman, n.d.; Stacey, 1995). From 2000, following the Bristol Royal Infirmary deaths and the murder of patients by Dr Shipman, a new agency the Council for Healthcare Regulatory Excellence (CHRE) was introduced. CHRE was responsible for monitoring the performance of nine registration authorities that govern 32 health professions[1]. Other changes included: mandatory reporting of concerns about the competency of colleagues by health practitioners; and ongoing oversight of health practitioner competency by registration authorities (CHRE 2012; Kennedy, 2001).

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[1] CHRE is now the Professional Standards Authority (The Authority, 2012)

In the United States, there is a longer tradition of lay membership on registration authorities. Licensing of health professionals is governed by each state and can be closely linked to the governance of state universities. In New York for example, the Office of the Professions is housed within the University of the State of New York, and is responsible for hosting registration authorities for 48 professions, provision of policy advice to the state government, and has been introducing changes consistent with the Pew Health Commission's agenda (Jost, 1997a; Office of Professions, 2000, 2012) [2].

While the focus of reform internationally has been mostly directed to strengthening consumer protection, there have also been some changes intended to enable flexibility in the healthcare workforce. In the United States the concept of scopes-of-practice has emerged in the course of boundary disputes between health professions, as nurse practitioners and physician assistants began to perform work previously restricted to medical practitioners (Bertness, 2009; Safriet, 2002). In 1991, the first comprehensive regulatory scheme that provides for overlaps in scopes-of-practice among the health workforce was introduced in Ontario, Canada. Similar regimes have been introduced in other Canadian states, the Netherlands in 1997 and New Zealand in 2004 (de Bie, Cuperas-Bosma, Gevers, & van der Wal, 2004; MoH 2009).

Through the 2000s, extension of regulatory regimes to include more health professions was common (Carlton & Bensoussan, 2002; Cooper & Stoflet, 1996; MoH 2011; NHS Executive, 2000). In the 2010s, there is some evidence of a change in direction with consideration of lighter alternatives to statutorily supported self-regulation, such as employer codes of practice, and the introduction of voluntary registers in the United Kingdom (Birch & Martin, 2009; CHRE 2011; The Law Commissions, 2012), developments that are discussed further in chapter four.

Reorganising health systems

The story of reforms to health service organisations follows a similar pattern of internationally adapted policy ideas. The use of competition policies in the United States to contain hospital cost growth influenced UK policy-makers to organise healthcare into purchaser and provider organisations (Enthoven, 1985; Le Grand, 1999). Instituting quasi markets for health services was emulated to varying degrees in New Zealand and by

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[2] See Appendix 1: Selected health profession regulators

Australian state governments (Bloom, 2000). Common strategies to improve accountability, resource allocation and efficiency in health service organisations, included: the introduction of private-sector style management structures and techniques; reorganisation to separate purchasing from service provision and to encourage competition; and, transfer of services from hospitals to community-care settings (Scott, 2001).

From the 1980s, New Zealand hospitals were grouped into larger organisations, funding linked to geographical populations, and general management structures introduced. In 1990, these changes were still being bedded in when the health sector was reorganised to create purchasing organisations separate from service providers, and patients were transferred from long-term mental health or aged-care institutions into community-based care (Cumming & Mays, 2002; Gauld, 2001; Hobbs, Newton, Tennant, Rosen, & Tribe, 2002). After 2000, the policy emphasis shifted to collaboration between service providers, quality improvement, the strengthening of primary care, and efforts to realise more integration of delivery among service providers (Cumming, 2011; Cumming & Mays, 2002; Gauld, 2009).

This pattern of change in New Zealand has tended to reflect the direction of change elsewhere. In the 1980s, UK regional and district health authorities were reorganised, funding based on performance contracts, and general management structures introduced. In the 1990s, an internal market was established with greater independence for some service providers, and a charter of patients' rights. By 2000, the policy emphasis shifted to cooperation and quality improvement, the development of primary care, the patient's right to choose their provider, and improving the integration of service delivery to consumers (Cumming & Mays, 2002; Curry & Ham, 2010; Harrison, 1997; Oliver, 2005). From 2013, in the wake of the global financial crisis and a change of government, the English National Health Service (NHS) has been reorganised with renewed emphasis on cost containment, and decentralised, general practitioner-led purchasing of health services, echoing aspects of policies from the 1990s (Imison et al., 2013; Roland & Rosen, 2011).

Similarly, Australian state governments have repeatedly reorganised hospital services around geographical boundaries or networks of providers, and used some contestable

funding and contracts to improve service delivery (Bloom, 2000; Dwyer, 2004). Health sector reorganisations often occur following a change to government, such as those in the United Kingdom and New Zealand (Cumming & Mays, 2010); yet despite this association with changes to political leadership, reorganisations have tended to reflect international developments with similar patterns evident in the United Kingdom, Australian states and Canadian provinces. While there are variations in the detail of implementation, there have been similar policy agendas and interventions to improve the delivery of health services (Contandriopoulos, Denis, & Langley, 2001; Cumming & Mays, 2002; Oliver, 2005).

The United States stands apart in having the highest proportion of GDP spent on healthcare and the greatest reliance on private insurance schemes to fund services. Despite this, it has been an important reservoir for policy ideas about how to improve health service delivery. For instance, UK competition policies were influenced by changes in the United States; following the rapid expansion of health technologies and expenditure from the 1970s, state governments and purchasers introduced competition policies to contain costs (Enthoven, 1985; Weisbrod, 1991).

Health service improvement

Interventions to improve the quality or organisation of care inside health service organisations have also been US-led. Regulation of health service organisations evolved organically through the development of voluntary accreditation systems associated with health profession organisations and hospital associations (Scrivens, 1995). Over time, accreditation has become a mandatory pre-requisite for a health service to qualify for service contracts or to operate as a training institution. The US Joint Commission is a non-governmental organisation (NGO) that provides accreditation services, investigates complaints about US healthcare, and provides consultancy services internationally (The Joint Commission, 2012; Walshe, 2003). From the 1970s multidisciplinary teamwork evolved as part of the redesign of mental health and aged care; as patients were transferred from hospital to community accommodation and health practitioners moved from specialist hospital departments to teams comprised of practitioners from different health professions (Bishop, 1999; Mechanic, 1998). From the late 1980s, business process re-engineering (BPR) was used to contain costs in US hospitals (Brider, 1992), and

subsequently management consultancy companies and NGOs such as the US Institute for Health Improvement (IHI) have promoted total quality management (TQM) and various brands for quality improvement in healthcare (Blumenthal & Kilo, 1998). Hospital use of information communication technologies (ICT) first developed in the United States for patient billing followed by systems for clinical departments, and today integration of clinical systems is important for service improvement (Hillestad et al., 2005).

The use of service accreditation and quality improvement programmes is widespread. Accreditation has spread across 70 countries since the 1970s, and it appears to be evolving from its clinical roots to incorporate some management ideas (Greenfield & Braithwaite, 2008, 2009). The UK's NHS Plan (2000) introduced government agencies to oversee quality improvement in health service organisations, a move emulated with the Australian Commission for Quality and Safety in Health Care established in 2006, and the New Zealand Health Quality and Safety Commission established in 2010 (ACSQHC 2012; HQSC 2012a). The IHI has promoted quality improvement programmes to improve service designs and the quality of care in the United States worldwide including Sweden (Ovretveit & Staines, 2007), the United Kingdom (Smith, 2001), Australia (Ben-Tovim et al., 2007) and New Zealand (Health Quality and Safety Commission New Zealand, 2012b). Similarly the UK government's Institute for Innovation and Improvement has promoted Toyota's Lean Thinking or Lean-six Sigma in Australia and New Zealand (Ben-Tovim, Dougherty, O'Connell, & McGrath, 2008; Counties Manukau Health, 2011). Effective teamwork has become important internationally as part of strategies for service improvement, for instance to avoid mistakes in surgical procedures in the United States, the United Kingdom and elsewhere (Edmondson, Bohmer, & Pisano, 2003; 2001), and to facilitate more integrated delivery of primary care (Imison, Naylor, & Maybin, 2008). Greater use of ICT and integrated patient records is a staple of service improvement in the Australia (National Electronic Records Taskforce, 2000), the United Kingdom (Wanless & Health Care Review Team, 2002), New Zealand (Ministerial Review Group, 2009) and various reviews in many European countries (Aarts & Koppel, 2009).

Cost containment in health service delivery remains a pressing concern for governments, particularly as healthcare expenditure commands an increasing proportion of GDP (Reinhardt, Hussey, & Anderson, 2004). Re-engineering and quality improvement programmes were first directed to cost containment, and subsequently continued with the

rhetoric changed to improvement of quality and reduction of waste. Regardless of the rhetoric, they each contain elements of service redesign. At the same time, the separate project of changes to health practitioner regulation is also ongoing.

1.3 EXPLANATIONS FOR DISAPPOINTING OUTCOMES

Despite repeated efforts to improve health service delivery from reorganisations, management reforms, and quality improvement programmes, in many cases the outcomes have fallen short of expectations (Degeling et al., 2006; Oliver, 2005). This section considers some scholarly accounts of the difficulties, beginning with the use of contracts to improve service delivery, then at efforts to reorganise service delivery and finally at the issues of leadership and culture that have been associated with the quality improvement programmes and ICT implementations. In each case, there are some reasons to look more closely at health practitioner regulation to better understand the difficulties in health service improvement.

Contracts and incentives

Since the 1980s service contracts with varying degrees of competition between service providers have been used to shift the focus of providers to goals favoured by governments or purchasers. Such goals may be directed to: redistribution of healthcare resources, targeting of particular diseases, reduction of variations in clinical practice, improvement of access to services, or shifting hospital-based services into the community (Light, 2000; Scott, 2001). A comparison between the English and Scottish health services demonstrated the effectiveness of contracts to improve selected aspects of performance. From 2000, the English NHS successfully used contract targets to reduce patients' waiting times for services using contracts, while these improvements were not realised in Scotland where competitive contracting had been dismantled in favour of policies for collaboration among service providers (Propper, Sutton, Whitnail, & Windmeijer, 2010).

Contracts could be less effective for encouraging innovation when many service inputs are controlled by dominant service providers and regulatory agencies (Christensen et al., 2000; Herzlinger, 2006). In the US, retail health clinics emerged precisely because they avoided competition with dominant providers and initially sought reimbursement directly from consumers (Laws & Scott, 2008). Healthcare is a labour intensive industry, and

health reforms have sometimes been characterised in terms of 'controlling health professionals' (Harrison & Pollitt, 1994) whose interests can be different to those of purchasers (Le Grand, 2003). The majority of the health workforce is subject to health practitioner regulation, for instance around 80% of the New Zealand health workforce (Health Workforce Advisory Committee, 2002). Resistance among networks of influential health professionals has been identified as a limiting factor in the diffusion of innovations (Greenhalgh et al., 2010), and could be particularly problematic where one health profession is expected to relinquish control over work to a different health profession (Ferlie et al., 2005). Understanding the role of health practitioner regulation, if any, in these difficulties could contribute to the future design of service contracts.

Efficiency and health workforce flexibility

Through the 1990s, US hospitals responded to competition policies with mergers and acquisitions, to reduce competition, afford new technologies, and retain ownership of services as they were transferred into community settings (Vogt & Town, 2006). Elsewhere, governments have used similar consolidation to gain efficiencies through centralisation of some hospital services and transfer of other services into the community, in the UK (Oliver, 2005), Australia (Dwyer, 2004), and New Zealand (Cumming & Mays, 2002). Yet, larger hospitals are not necessarily more efficient, and nor are high volumes necessary for most specialist services (Halm, Lee, & Chassin, 2002). There has been a persistence of optimal economies of scale operating around 200-300 beds, with diseconomies apparent in both smaller and larger hospitals (Vassilis, Jones, & Sheldon, 1997). It is plausible that the economy of scale achieved by medium sized hospitals is related to the organisation of work in healthcare. If so, a better understanding of the organisation of healthcare work could contribute to optimal economies of scale in both community and hospital-based services.

An alternative response to US competition policies was for smaller hospitals to gain efficiency by cross training health professionals. The 'multi-skilling movement' was a natural extension of traditional on-the-job training, where employers could respond to changes in demand for services or the availability of health practitioners by training existing personnel to perform some work outside of their usual scope-of-practice (Blayney, Wilson, Bamberg, & Vaughan, 1989). A 1991 survey found that 25% of US

hospitals still employed multi-skilled practitioners with 63% of these practitioners located in small hospitals and physician clinics. The most common reasons to cross-train practitioners in both the United States and United Kingdom were to address labour shortages, improve flexibility of work practice and job satisfaction, and to achieve efficiencies in the face of competitive pressure (Bamberg & Blayney, 1993; Hurst, 1997). For large hospitals, mergers and acquisitions were an effective means to reduce price competition (Propper, 1993). In the United Kingdom, cross-training of health professionals was seen as a means to align services to patient needs and enable more clinically integrated or 'one stop shop' services in the community (Hurst, 1997). However, multi-skilling appears to have been overtaken by social trends favouring tertiary education over employer-based training, degree and post-graduate qualifications for health professionals, and expansion of state sponsored schemes for health practitioner regulation (Collier, 2008). Subsequently, there has been little attention to the implications of these trends for the organisation of healthcare work or the opportunities to improve health service delivery.

Leadership and culture

Results from over two decades of management reforms and quality improvement programmes tend to be disappointing (Degeling & Carr, 2004; Ham, 2003). Studies in Europe that attempt to assess outcomes from re-engineering and quality improvement programmes suggest it makes little difference, and that gains may not be sustainable (Bowns & McNulty, 1999; Ovretveit & Staines, 2007). In the United States, researchers have found that re-engineering and quality improvement programmes could be associated with worse performance on both financial and clinical measures (Walston, Burns, & Kimberly, 2000; Walston, Urden, & Sullivan, 2001; Weiner, Alexander, Baker, Shortell, & Becker, 2006; Weiner et al., 2005). More generally, the research on Total Quality Management and NHS Lean Thinking points to a pattern of implementation that produces localised rather organisation-wide improvement (De Souza, 2009; Joss, 1994; Nwabueze & Kanji, 1997; Radnor, Holweg, & Waring, 2012; Young & McClean, 2008). Early criticisms focused on the quality of implementations, but while well-managed implementations do perform better, this is a necessary rather than a sufficient explanation for difficulties (Powell, Rushmer, & Davies, 2009; Walston et al., 2000).

Other explanations have focused on the quality of leadership, engagement of clinical leaders, and the culture of health service organisations (Bate, 2004; Braithwaite et al., 2004; Ham et al., 2003; Ovretveit & Staines, 2007). There is some evidence for a link between organisation culture and performance. Researchers have observed differences in the work environment of hospitals that have embraced changes compared to those that have not (Braithwaite et al., 2004; Callen, Braithwaite, & Westbrook, 2007), and senior management teams who value and focus on external performance targets have led higher performing hospitals (Davies, Mannion, Jacobs, Powell, & Marshall, 2007; Mannion, Davies, & Marshall, 2005). However, so far there is scant evidence that strategies directed to improving culture within health service organisations are effective (Parmelli et al., 2011). One difficulty arises from the relationship between the concepts of organisation culture and performance, which could be different lenses for understanding the same underlying phenomena (Scott, Mannion, Marshall, & Davies, 2003). If so, there could be other mechanisms that influence both culture and performance in health service delivery.

Cultures of individualism, tribalism and conservatism among the health professions have been identified as an obstacle to the information sharing or collaboration important for service improvement (Bate, 2000; Braithwaite et al., 2007; Currie & Suhomlinova, 2006; Walshe & Shortell, 2004). Research in the United Kingdom, Australia and New Zealand indicates that health professionals are likely to respond differently to service improvement initiatives, depending on the implications for their respective health profession, and that institutional factors limit the authority that health service leaders, whether general managers or senior clinicians, can exercise to implement health service improvement (Degeling & Carr, 2004; Degeling, Maxwell, Kennedy, & Coyle, 2003). In discussing the localised success with continuous quality improvement (CQI) in US hospitals, Shortell, Bennett, and Byck (1998) observed that health practitioner regulation could be philosophically incompatible with CQI because it controls the means rather than the ends of the care process. While quality improvement programmes call for improvement of all inputs contributing to care outcomes, the policies of registration authorities could restrict the inputs that may be changed to improve services.

Over this 25-year period of contracts, regulatory oversight of service quality, the implementation of successive 'brands' of quality improvement and industry learning, it

seems implausible that most disappointing outcomes could be adequately accounted for by deficiencies in management and implementation. According to Degeling and Carr (2004) difficulties cannot be overcome through transformational leadership or training in quality improvement for health professionals, and they recommend attention to the regulatory ideals of health professionals.

1.4 HEALTHCARE'S REGULATED WORKFORCE

This section overviews the scholarship on the health professions, health practitioner regulation, and the health workforce. It looks at 'social closure' and 'regulatory capture' as explanations for professional power, and concludes with an outline of contemporary concerns about the sustainability of the health workforce.

Health professions

The professions have become a 'natural' part of the modern state, evolving with the state to provide the expertise it required to classify, organize, and control its citizens (Moran, 1999). They gain power through controlling access to specialized knowledge and skills, who may perform professional work, and securing state recognition for the right to self-governance (MacDonald, 1985). The balance of interests between self-regulating professions, the state, and consumers is the subject of ongoing debate (Roberts & Dietrich, 1999).

Through the 20th century, the medical profession has used its self-regulatory authority to restrict the numbers of medical practitioners, producing a scarcity of practitioners that enables them to retain autonomy over their work (Freidson, 1994; Savage, 2004). Traditionally, medicine has also controlled the organisation of healthcare work, restricted the authority of health service managers, and ensured that practitioners from other health professions remain in subordinate roles (Freidson, 1994; Safriet, 2002). Medical autonomy has declined since the 1980s, as health reform has altered its control over healthcare work and its relationship with the state (Harrison & Ahmad, 2000). These changes have provoked questions about whether management reforms could go 'too far' or damage aspects of professionalism integral to the expert judgment or ethical conduct necessary for delivery of care to consumers (Freidson, 1994; Southon & Braithwaite, 1998). However, management has a long history of being closely entwined with

medicine, as private benefactors or governments have sought to control the expenditure of medical practitioners (Abel-Smith, 1964; Dingwall et al., 1988). An alternative view depicts health reforms as part of an ongoing adjustment in power relations between medicine, consumers, and the state (Harrison & Ahmad, 2000; Salter, 2003). However, the focus on medicine and management leaves little room for considering the implications of an expanding and diverse professional workforce in healthcare.

Another perspective sees all professions within a system of competing jurisdictional claims over work related to human problems. In this picture, the professions compete for control of their work at the boundaries of their knowledge or for shared clientele, and are vulnerable to developments in knowledge and technology that could threaten their claims (Abbott, 1988). The generation of new knowledge has shifted from production by health professionals, as part of clinical practice, to the work of multidisciplinary research institutes. New knowledge can now be widely disseminated through information technologies, although professionals can still retain significant control over tacit knowledge acquired in clinical practice (Johnson, 1995). Higher education and regulatory status for other health professions could erode the power of medicine (Cooper & Aiken, 2003). Many of the difficulties in service improvement relate to inter-professional knowledge sharing and collaboration in clinical practice (Currie & White, 2012; Reeves, MacMillan, & Van Soeren, 2010). To gain a better understanding of these difficulties, it is important to understand more about health practitioner regulation and its application to the health workforce.

Health practitioner regulation

Self-regulation is a widely used regulatory instrument, and there is a consensus that it is a more efficient way to regulate professionals than oversight by a government agency. It is held to be less costly because it uses the expertise of professional associations to set standards, and through professional associations professionals are motivated to maintain the profession's reputation by monitoring the quality of their own work and that of colleagues (Ogus, 1995; Roberts & Dietrich, 1999). However, critics have been concerned that while self-regulation can reduce uncertainties about the quality of services for consumers, a profession can also use its regulatory status to advance its own interests in ways that are not beneficial for consumers. For instance, if a profession restricts the

numbers of practitioners, then services could be more expensive for consumers (Cox & Foster, 1990). Empirical research in the United States and the United Kingdom lends some support to this scenario with findings that regulated occupations command higher earnings (of around 13 to 15 percent), but that regulation has had inconsistent outcomes for the quality of care (Humphris, Kleiner, & Koumenta, 2010). Even so, most policy-makers support the regulation of health professionals on the basis that it is necessary to protect consumers from poor practice (McDonald, 2010; Roberts & Dietrich, 1999). Governments have recognised deficiencies in health practitioner regulation and strengthened their oversight of the registration authorities (Allsop, Jones, Meerabeau, Mulcahy, & Price, 2004; McDonald, 2012).

Another trend is for the expansion of regulatory coverage to include many different health professions. Health professions typically lobby legislatures for inclusion in regulatory schemes, in order to increase their status or access to funding for services (Cox & Foster, 1990; Fels, 2007). Nursing has led the way in moving to degree-based training, and subsequently sought regulatory approval to perform work previously restricted to medical practitioners, a move emulated by professions such as pharmacy and physiotherapy (Safriet, 2002). Policy-makers have supported these agendas, although they have tended to stop short of agreeing to equivalent practice rights with medicine (Bertness, 2009; Safriet, 2002). Governments have seen advanced practitioners from non-medical professions as useful to fill shortages among medical professionals or to lower the fees for services. However, it is not clear that these strategies have been effective in reducing the cost of care (Cooper & Aiken, 2003; Cooper & Stoflet, 2004). Why governments have expanded regulatory schemes for health practitioners is less clear, and more recently this appetite for expansion seems to have waned (Council for Healthcare Regulatory Excellence (CHRE), 2011; Department of Human Services (DHS), 2003).

While governments have strengthened the oversight of registration authorities, there has been little scholarly attention to the operations of these agencies. Stacey (1995) describes the organisation of the UK's General Medical Council. A report on the UK Health Professions Council explains how operations could be reorganised into multidisciplinary committees overseeing 12 health professions, although work would still be delegated to panels of experts from each profession (NHS Executive, 2000). There has been more attention to the way complaints about health practitioners are handled. A US study

appears to be unique in investigating all sources of complaints (including those from health professionals) to a registration authority governing medical and allied health professionals (Jost et al., 1993). Other studies have focused on complaints from consumers, such as in New Zealand (Paterson, 2002) and the United Kingdom (Lloyd-Bostock & Mulcahy, 1994).

Some Australian scholars have included health practitioner regulation as part of a wider network of regulatory stakeholders in healthcare (Braithwaite et al., 2005). This draws attention to how health practitioner regulation can interact with other institutional arrangements, and could shed light on how health practitioner regulation could interact with policies for health service improvement. To date, there does not seem to have been specific research attention to how health practitioner regulation might play out amongst health professions to condition responses to service improvement, although regulated scopes-of-practice have been found to contribute to difficulties with teamwork in primary care (Brown et al., 2011).

Health workforce

Over recent decades, policy-makers have been interested in how to improve health workforce planning to avoid the cycles of over, or under supply of health professionals (Bloor & Maynard, 2003). This includes management of the international migration of health professionals (OECD, 2010; Zurn & Dumont, 2008). There have been debates around the impending over or under-supply of medical practitioners (Cooper, Getzen, McKee, & Laud, 2002), the best methods for attracting and retaining nurses (Bartram, Joiner, & Stanton, 2004), and the merits of different approaches to workforce planning (Bloor & Maynard, 2003; Segal & Bolton, 2009; Zurn, Dal Poz, Stilwell, & Adams, 2004).

There has also been some attention to questions about the productivity of the health workforce. Skill-mix has been observed to vary widely across jurisdictions, although research has mostly focused on the proportion of qualified nurses to unregistered nursing assistants, and how hospital management policies around skill-mix and professional development affect nurses' work experience or the quality of care (Aiken et al., 2011; Buchan & Calman, 2004). There is a growing literature about inter-professional practice,

which focuses on how well health professionals from different health professions work together, such as multidisciplinary teams (Lemieux-Charles & McGuire, 2006; Reeves et al., 2010). There are also questions about whether increased numbers of health professionals produce a commensurate increase in healthcare outputs (Appleby, Ham, Imison, & Jennings, 2010; Bloor & Maynard, 2001). If productivity is to be improved, policy-makers could need to consider new roles that mix skills from different health professions (Australian Productivity Commission, 2005; Sibbald, Shen, & Anne, 2004).

Since 2000, there has been more attention to whether the design of the health workforce is adequate to meet service demand. This has been prompted by concerns about aging populations, care of patients with chronic health conditions, new clinical technologies or models of care, retirement of health professionals, and how to shift from profession-centred to consumer-focused services (Bodenheimer, Chen, & Bennett, 2009; Duckett, 2005a; Pruitt & Epping-Jordan, 2005). In 2011, Health Workforce New Zealand tried a new approach to identifying future health workforce requirements. In the context of changing social conditions, calls for patient self-care, teamwork and information technologies, it commissioned 13 workforce reports. In a departure from the traditional approach of focusing on individual health professions, each report focused around an area of consumer need, such as diabetes care, aged care and rehabilitation care (Health Workforce New Zealand, 2011). This stopped short of considering changes to institutional arrangements that could facilitate different ways of working among health professionals to facilitate new services.

Some scholars have offered opinions about the need for adjustments in the design of the health workforce. Mullan (2002) anticipates the need for more 'generalist health practitioners' to link the work of specialists, Masys (2002) foresees new 'knowledge workers' to manage an explosion of clinical information and disseminate it to health professionals and consumers, while Duckett (2005b) advocates a common foundation for health practitioner training and flexible pathways for entry to training. Yet there has been little attention to the institutional arrangements that could be necessary to align the health workforce to the needs of service delivery rather than to the strategies of the regulated health professions (Segal & Bolton, 2009; Willis & King, 2010). There is a gap in knowledge around the institutional oversight of the health professions and health services,

and how these arrangements could enhance or impede progress toward improving services for 21st century consumers.

1.5   RESEARCH STRATEGY, OUTLINE AND CONTRIBUTION

Research strategy

The overview of current knowledge, set out above, reveals the scholarly attention to developing the health workforce and improving service delivery, but reveals scant attention to how health practitioner regulation could be linked to these topics. This called for a research strategy that could shed light on how health practitioner regulation could relate to policies for health service improvement, and whether it could contribute to difficulties with the implementation of certain improvement policies. According to Crotty (1998):

> 'In a very real sense, every piece of research is unique and calls for a unique methodology. We as the researcher have to develop it' (pp. 11-12).

The overview of current knowledge contained themes of historically conditioned power struggles, a perspective consistent with critical inquiry (Crotty, 1998). This included picturing health reforms in terms of struggles between medicine and the state, or managers and health professionals. There were also themes consistent with the way critical theory has been applied in management research (Alvesson & Deetz, 2000), including the general consensus around technical reasoning that health practitioner regulation is effective for consumer protection, and that quality improvement programmes can improve health service delivery.

The main research question is concerned with how health practitioner regulation could contribute to explaining difficulties with policies for health service improvement. To answer this question it is necessary to discover mechanisms that can generate events at the macro-level of health policy, the meso-level of health service organisations, and the micro-level of health professionals and managers in service delivery (Ackroyd, 2009). I adopted a critical realist methodology in which entities at each of these levels are treated as real and capable of generating events (Reed, 2005). I decided to continue to work with

the literature to explain the linkages between health practitioner regulation, the health workforce, and health service organisations, and to build an explanation of how health practitioner regulation could influence the course of health service improvement. This methodology is explained in Chapter Two.

Thesis Outline

Chapter Three describes the main health profession groups that comprise the health workforce and the health service organisations that deliver healthcare. The description draws on the historical construction of health services, and explains the networks or supply chains that form around specialist groups of health professionals in the modern health industry. It shows that the arrangement of health professions and health services, familiar today, originated in response to 19th-century social conditions. Importantly, 19th-century social restrictions, knowledge and technologies were pivotal in the emergence of particular health professions. This chapter establishes a foundation for explanation building in Chapters Four, Five, and Six.

Chapter Four begins explanation building at the macro-level of policy-makers. It critically overviews health practitioner regulation, depicts the network of regulatory stakeholders, and outlines the potential for independent policy making among regulators to have effects in health service organisations. The chapter reprises the historical debates about medical regulation that continue to influence thinking about the regulation of the health workforce. It outlines the trends for governments to strengthen the oversight of registration authorities, and shows there are reasons to doubt these mechanisms for strengthening consumer protection and increasing the flexibility of the health workforce. The chapter overviews the policies for health service improvement that have mostly been directed to shaping inputs to service delivery. It identifies the potential for policy interactions among the many registration authorities and other agencies overseeing improvements in health service organisations.

Chapter Five continues explanation building at the micro-level of the health workforce. It shows that when health practitioner regulation is viewed from the perspective of a workforce comprised of many health professions employed in health service organisations, there could be many regulatory levers in play. Drawing on the historical construction of the health professions and contemporary legislation, eight regulatory

levers are identified and investigated. In addition to traditional levers around expertise and training, health professionals appear to be able to leverage 'regulatory privilege' to control resources, such as clinical and information technologies, special language and role definition, and the systems of referrals and inter-professional complaints important in the organisation of their work. This establishes authority for control over certain resources as the focus for interactions between health practitioner regulation and health service improvement.

Chapter Six concludes explanation building at the meso-level of health service organisations. It shows how health practitioner regulation appears poorly aligned to certain directions for service improvement and could also undermine the organisational capability essential for implementing improvement policies. The first part of the chapter shows that while service improvement tends to be incremental, the directions for change are significant and entail changes to the organisation of work. This includes separation of routine and complex care, use of cross-functional or multidisciplinary teams, and changes to the deployment of clinical technologies and personnel. Success also depends on changes to leadership, training or engagement of personnel, organisation-based clinical policies, policies for role development and supervision, and improved information sharing and management of ICT. The second part of the chapter shows how regulatory privilege could contribute to a lack of organisational capability in health service organisations. This includes contested leadership, weak human resource management, difficulties integrating clinical information systems, and problems with the design and operation of multidisciplinary teams. This combination of effects could contribute to explaining difficulties with realising inter-departmental and organisation-wide service improvement.

Chapter Seven investigates the plausibility of the explanation. It shows how regulatory privilege could contribute to explaining difficulties in illustrations of service improvement. The chapter examines three different types of service improvement. These include: options for service designs, including clinical directorates, Patient Focused Care (PFC), and multidisciplinary teams; the use of process improvement and ICT to improve the coordination of care; and, the changes affecting health practitioners, including continuous oversight of competency by registration authorities, the introduction of overlapped scopes-of-practice, and the introduction of role redesign in health service

organisations. The chapter concludes that regulatory privilege could contribute to explaining certain difficulties in health service improvement, evident in the illustrations.

Chapter Eight concludes this thesis by summarising the research findings and presenting some concluding propositions for consideration by researchers and policy-makers. It outlines some implications of the research findings, the limitations of the findings, and the contribution of the research.

Contribution to research

This research investigates a question that does not appear to have received previous attention in the health policy and health services research literature. It contributes to knowledge about health practitioner regulation by identifying deficiencies in traditional accounts, and building a fresh lens for understanding its operation among the many professions that comprise the health workforce. The research shows how health practitioner regulation could contribute to explaining the difficulties with management reforms and quality improvement programmes in health service organisations. This explanation could contribute to further research, and to the policy discourse around the regulation and improvement of health services, and the development of the health workforce.

2

RESEARCH METHODOLOGY AND DESIGN

Following Crotty (1998), I developed a specific methodology to enable me to research how health practitioner regulation could relate to health service improvement, and whether it could impede the progress of service improvement. I began by adopting a critical theory perspective, which reflected themes evident in my initial work with the literature. The main research question called for discovery of the mechanisms that could explain interactions between health practitioner regulation and health service improvement, a task consistent with a critical realist research methodology (Ackroyd, 2009). The lack of previous attention to the research question meant a lack of concepts or material linking health practitioner regulation to health service improvement. On the other hand, there was some literature around health practitioner regulation and a substantial literature concerning aspects of health service improvement. I decided to continue to work with the literature to find conceptual links and evidence, and build an explanation of how health practitioner regulation could contribute to difficulties in health service improvement. I used Reed's (2005) critical realist epistemology and three phases of retroductive reasoning to inform my research design.

This chapter is divided into two main sections. Section 2.1 explains the critical realist methodology, and Section 2.2 sets out the three phases of the research design.

2.1 A CRITICAL REALIST METHODOLOGY

This section begins by outlining the goals and themes common in critical management research and their relevance to this study. It continues by explaining the critical realist methodology, the emphasis is on conceptual reasoning in this research project, and the attention to multiple industry levels in the research design. Next, the section outlines the critical realists' approach to ontology and epistemology and how retroductive reasoning leads to a three-phase research design. The section concludes with an outline of the methods used to implement the research design.

Goals and themes in critical management inquiry

Critical researchers seek to understand, explain, and question existing social arrangements to inform us about how these systems could be changed, particularly for the benefit of those who are disadvantaged by these arrangements (Crotty, 1998). My experience in health service organisations led me to question whether health practitioner regulation could impede changes that might otherwise improve the quality of services for consumers. Most professionals and managers in health service organisations are likely to support quality improvement, but could be placed in situations of conflict if quality improvement does not align with the policies of particular registration authorities.

Critical theory as it has been applied in management studies informed this research project. It directed attention to the dominant ideas or theories at the source of existing arrangements, how these could play out in organisational structures, processes or among actors, and how fresh insights or perspectives could contribute to knowledge that enables actors to improve their organisational life or the services they provide to consumers (Alvesson & Deetz, 2000; Reed, 2011).

In their review of critical management research Alvesson and Deetz (2000), identified four recurring themes in published research reports. I found congruence between these four themes and those in the literature around my main research question. First, there is a tendency for arrangements that are historically or socially constructed to be viewed as 'natural' over time, and therefore to go largely unnoticed or unchallenged. In this research, health professions are seen as 'natural' rather than as historically constructed groups that could be subject to reconstruction. Second, the interests of dominant groups tend to become 'universalised' as though the interests of these few also serve the many. The traditional claim of the medical profession to lead health services in the interests of consumers and taxpayers has been the subject of debate in health reform (Salter, 2002), and continues as a tension in questions around the leadership of health service improvement (Degeling & Carr, 2004). Third, there is a tendency for technical reasoning to dominate over other perspectives. With respect to health practitioner regulation, the accounts of economists and sociologists dominate in the discourse concerning particular health professions, often medicine. Yet, alternative accounts could emerge if theories were directed to the regulation of a workforce comprised of many health professions.

With respect to difficulties with health service improvement, there has been a focus on leadership, change management and organisation culture as contributing to difficulties (Degeling & Carr, 2004). There has been scant attention to the implications of healthcare's regulated workforce. The fourth theme is concerned with hegemony in the way consent to social arrangements is orchestrated, as dominant groups influence the common sense ways of viewing the world. In this research, the idea that state sponsored self-regulation for each health profession is the most effective means to protect consumers from harm has mostly been promoted by the self-regulating health professions (Fels, 2007). This view is widely shared among health professionals, policy-makers and consumers alike, but there is scant attention to whether this regulation could also contribute to the fragmentation of services for consumers. The congruity of these themes to those evident in my initial work with the literature encouraged me to investigate the methods used in critical management research.

A conceptually focused and multi-level research project

Work with the literature revealed common origins for the health professions, and a consensus that health practitioner regulation protects consumers in New Zealand, Australia, the United Kingdom, and the United States. Despite theoretical claims that licensure and certification regimes for health professionals operate differently, a close reading of the literature suggested they have similar mechanisms and issues. There were also similar approaches to health service improvement in New Zealand, Australia and the United Kingdom, including service contracts, management reforms, and quality improvement programmes. I confirmed this assessment of the similarities, evident in the literature, through informal discussions with officials from government agencies in the United Kingdom (Council for Healthcare Regulatory Excellence, Department of Health, NHS Confederation), Australia (Australian Productivity Commission, Victorian Department of Human Services), and New Zealand (Ministry of Health). These similarities in the origins of health services, the operation of health practitioner regulation, and policies for improving health service delivery precluded a comparative case study design.

At the same time, these similarities can establish constancy in the context for research, which is useful for discovery of the mechanisms in social arrangements that could

generate events in organisations (Ackroyd, 2009). In this research, similarities across English-speaking and some other developed economies provided a relatively consistent context for the discovery of mechanisms that could link health practitioner regulation to health service improvement. Ackroyd (2009) draws a distinction between two different types of realist research: the first is more conceptually focused on discovery of the mechanisms that could explain certain events in organisations; while the second is more empirically focused on refining the knowledge about mechanisms (already identified) through understanding how differences in organisation contexts could alter events or outcomes. This research project belongs to the first type of realist research because it is primarily focused on discovering how health practitioner regulation could generate effects in health service organisations and whether these could impede health service improvement. This task of discovering explanatory mechanisms and reasons for thinking that discoveries are significant, depends on both conceptual reasoning and empirical evidence for the mechanisms identified and their effects (Ackroyd, 2009). Even so, as the focus of this research has been on discovery of the mechanisms rather than the refinement of understanding, there has been an emphasis on conceptual reasoning (Ackroyd, 2009). The implication of this is that refining the understanding of the mechanisms and how specific contexts could modify outcomes is a task for further research.

To understand the mechanisms that shape behaviour in organisations, it is necessary to consider these mechanisms at the macro, meso and micro levels of an industry (Smith, Schneider, & Dickson, 2006). Following Smith et al. (2006): the macro-level refers to the stakeholders that govern health professions and health service organisations, or participate in industry supply chains; the meso-level refers to the health service organisations that are conditioned by arrangements at the macro level; and the micro-level refers to the health professionals, managers and consumers engaged in service delivery.

Figure 2 below depicts the scope of the inquiry: in the white rectangle is the historical conditioning of the health professions and health service organisations; in the brown rectangle is the macro-level of inquiry that includes industry supply chains and the policies for health practitioner regulation and health service improvement; in the green rectangle is the meso-level that includes the health service organisations, the organisational capability for service improvement, and the options for service designs and

coordination of service delivery; in the blue rectangle is the micro-level that includes the health workforce employed in health service organisations.

Figure 2: Scope of inquiry and levels of investigation
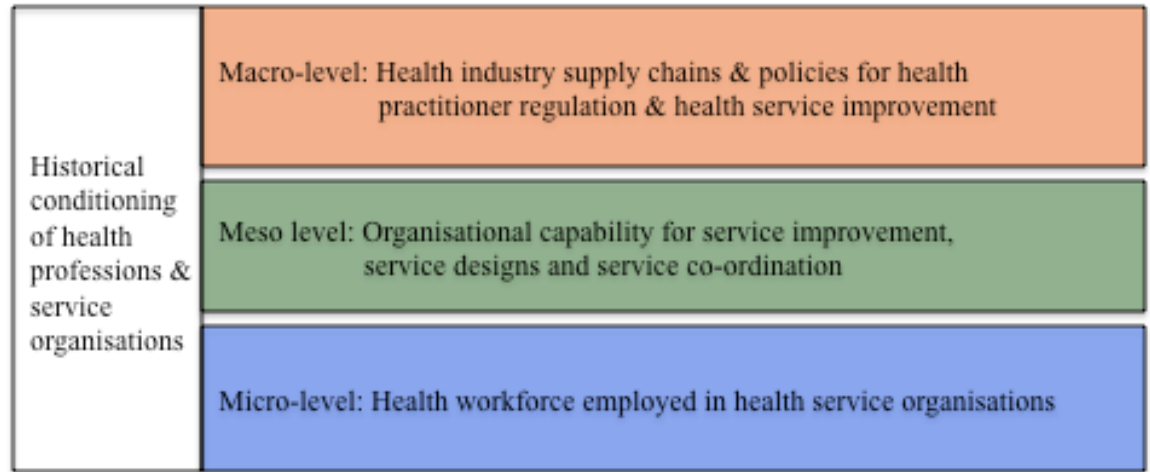
The potential for interactive effects depends on the design of policies, the historical construction of health services and the health workforce, and the organisational capability that health service organisations may bring to service improvement. There is potential for interactions at the macro, meso, and micro levels, and for influence to travel in either direction across these levels. For a single researcher, it was impractical to attempt new empirical research through surveys, interviews, or observations. The investigation of any one aspect of health service improvement, across multiple levels, would require the resources of a research team. I therefore decided to continue to work with the literature and published empirical studies of improvement interventions.

Ontology and epistemology

This research follows a critical realist epistemology, which recognises the importance of mechanisms such as those inherent in health practitioner regulation and health service improvement, the operation of such mechanisms within and across different levels of analysis, the potential for mechanisms to generate events such as in health service organisations, and to influence the behaviours or experiences of personnel engaged in service improvement. Critical realist research methods include retroductive reasoning that supported my goal of explaining mechanisms in order to understand how they might be

changed to address difficulties in service improvement.

> 'Retroductive inference is built on the premise that social reality consists of structures and internally related objects but that we can only attain knowledge of this social reality if we go beyond what is empirically observable by asking questions about and developing concepts that are fundamental to the phenomena under study' (Meyer & Lunnay, 2013).

As these authors explain, retroduction inference makes use of other forms of reasoning, including deductive logic, inductive reasoning from observed events, and abductive reasoning in which the researcher formulates new ideas from observed events. Additionally in retroductive reasoning, the researcher must bring assumptions into the research (Meyer & Lunnay, 2013). In this case, the central assumption is that health practitioner regulation could link to health service improvement in ways that contributes to certain difficulties. My task in this study is to discover whether there are mechanisms that could explain the link and the potential effects.

Critical realists maintain an ontological dualism that treats social structures, organisations, events, and actors as real objects, and also recognises the subjective and socially mediated experience of the actors (Reed, 2005). In this research, the social arrangements and practices associated with health practitioner regulation and health service improvement, and the structures and events in health service organisations have been taken to be real entities. While these entities change over time, there is significant continuity in the legally enforceable oversight of health practitioners by regulatory authorities, the persistence of organisational forms like hospitals or community practices, and the range of health professions offering services. Within regulatory agencies and health service organisations, the health practitioners, managers, and policy-makers are real persons who may act to reinforce or change arrangements, while also having subjective experiences of events such as changes to regulation or to the management of healthcare. Individuals' subjective experience of events is shaped by their education, socialisation into their roles, contemporary organisational contexts, and the opinions or behaviours of people around them.

For the critical realist, knowledge is produced by identifying the social and power mechanisms inherent in social structures, how these mechanisms may create conditions

for the existence of organisations that operate as intermediate social structures, and how this combination of mechanisms and structures influences events among the individual actors, or the actors' experience of those events. Power exists within enduring social structures, and is also exercised among actors engaged in contests for control over resources in particular circumstances. Accordingly, causality exists in the mechanisms and powers inherent in social structures that create the conditions for organisations and individuals to generate certain events or outcomes depending on the particular social or organisational context. Knowledge produced by the critical realist is in the form of explanations that account for the interactions between certain organisational entities at different levels of analysis (Reed, 2005).

Research methods

A critical realist methodology has three key research tasks. First, it is necessary to discover the mechanisms inherent in social structures and how these could create the conditions for organisations. Next, the researcher builds an explanation for how these mechanisms could generate events with consideration of the actors and contingencies that could be involved. Finally, the plausibility of the explanation must be evaluated as part of theory building (Reed, 2005).

A broadly based research design enhances the task of discovering and explaining mechanisms, rather than predicting outcomes (Reed, 2005). Multiple sources of material are essential to create rich descriptions that incorporate various stakeholder perspectives that could contribute to fresh insights, even where the significance of any particular material might not be immediately evident (Kelsey, 1999). I used a broadly scoped research design to capture material that could reveal linkages, power, assumptions, and practices in health practitioner regulation and health service improvement, and the operation of these mechanisms in health service organisations.

Only through a wide range of sources was I able to locate material that could assist me to develop insights and evidence around an association between health practitioner regulation and health service improvement for which there appeared to be no previous research and only a thin literature base. Additionally, initial work with the literature suggested a similar pattern of policy making in my jurisdictions of interest. Ensuring that this was in fact the case, involved extensive searching for both grey literature and

associated scholarship for each of the important policy developments in many jurisdictions, particularly New Zealand, Australia, and the United Kingdom. In many case, some of the best sources around reasons for policy developments came from North America, as the United States and Canada have both tended to lead in certain polices that were subsequently adapted for the United Kingdom, Australia, New Zealand and certain European countries, notably the Netherlands and Sweden. Similarly, there were a wealth of sources for changes in particular health professions, but scant sources for whether such changes were occurring more generally in the health workforce. To address this problem, I searched for material related to each of the main health profession groups I described, and checked to see that the changes observed were also occurring in each jurisdiction of interest. Again with quality improvement programmes, several brands have been implemented successively, so I checked for scholarship on the use of each brand in healthcare, in each jurisdiction of interest.

On some occasions, there was an authoritative source that reduced the need to use several references for effects on the health workforce or the similarity of policies internationally. These sources were useful to reduce the number of references used and improve the readability of the thesis. Examples include: Moran's (1999) study that shows the mid 20th century change from UK to US leadership in health technologies and the health workforce, Locock's (2003) study that demonstrated the similar way that different quality improvement brands have been implemented in health service organisations, and Nancarrow's (2005) study about dynamic changes in the health workforce that included a number of different health professions and inter-professional boundaries.

In critical realist research, explanations are produced by means of retroductive reasoning. Analysis begins from observed events for which explanations are sought through discovery of the mechanisms in social structures (Reed, 2005). This thesis began from the observation that in many cases health service improvement appears to fall short of achieving the anticipated outcomes. Explanations have been offered concerning a lack of continuity of leadership, poor management of implementations, or difficulties with organisational and professional cultures. However, there are many illustrations of attention to effective leadership, well-managed implementation, and engagement of health professionals in service improvement, so these explanations might not provide a sufficient account of the difficulties. This left room to investigate the role of health

practitioner regulation as a contributing factor in difficulties with health service improvement.

The development of understanding and insights about the historical construction of social arrangements, and then questioning or critically analysing the mechanisms in these arrangements can generate fresh perspectives (Alvesson & Deetz, 2000; Reed, 2005). Investigation of the social construction of health professions and health service organisations in the 19th century, revealed mechanisms that endure as regulatory levers and arrangements in modern institutions. This led to a question of whether these levers optimally serve the different social conditions and technologies of the 21st century. Similar doubts about the potential efficacy of service improvement emerged from a comparison between the institutional arrangements that inform health service organisations and those assumed in policies for management reforms and quality improvement programmes. Bringing these two sets of insights and empirical evidence together made it possible to construct a conceptual explanation that showed how these mechanisms originating from the macro-level of regulators and policy-makers could interact in ways that account for difficulties with certain illustrations of service improvements at the meso-level in health service organisations and micro-level of health practitioners and managers.

Critical realist explanations are concerned with how macro-level social mechanisms persist through time, influencing organisations that are intermediary or meso-level structures, and contribute to interactions between social structures, intermediate entities, and actors at the micro-level (Reed, 2005). Research designs that trace the operation of mechanisms through these three levels can be used to strengthen conceptual analysis (Smith et al., 2006). Illustrations drawn from published studies can be used as secondary data sources to develop explanations for how social structures evolve or endure over long timeframes and generate events among actors in particular circumstances (Ackroyd, 2009). Building an explanation and evaluating its plausibility for explaining observable events, including comparison of the explanation with other competing explanations, contributes to theory development (Reed, 2005).

2.3 THE RESEARCH DESIGN

This section sets out the three-phase research design. Phase One 'Foundations' shows how insights concerning the historical construction of healthcare were used to enhance a description of the modern health workforce and health service organisations. Phase Two 'Explanations' sets out how investigations of the macro, micro and meso-levels of the health industry were used to build an explanation of how health practitioner regulation could interact with health service improvement. Phase Three 'Plausibility' investigated whether this explanation could contribute to explaining events in illustrations of health service improvement. The research concluded by considering the implications for researchers and policy-makers.

The main research question is: could health practitioner regulation have systemic effects that contribute to difficulties with policies for health service improvement? The research proceeded by answering five sets of underlying questions: the first in Phase One, the second to fourth in Phase Two, and the fifth in Phase Three.

Phase One: Foundations

Phase one established the foundation for inquiry through investigation of the first question:

First, what are the linkages between the health professions and health service delivery in the organisation of modern healthcare?

I began by investigating how 19th-century social conditions such as poor medical knowledge, mechanical technologies, and social class and gender shaped the construction of the regulated health professions and health service organisations. These insights contributed to describing the modern health industry. This description highlighted the enduring workforce divisions and organisations that have continued into the 21st century, despite significant changes to social conditions. The concept of supply chains was used to show how health industry stakeholders are also organised around the health professions.

Social histories were invaluable for understanding the social construction of the health professions, including Dingwall et al. (1988), Abel-Smith (1964), Weisz (2006),

Carruthers and Carruthers (2005). The overlapping material in these studies was useful for cross checking events. These sources were supplemented with more detailed accounts about the discovery of medical knowledge and clinical technologies shaped particular health professions. Literature searches were complicated by an absence of relevant subject terms in the indexing of scholarly databases, which tended to generate clinical histories or topics around the regulation of biomedical systems rather than the material sought. A wide range of sources was used to remedy this problem and to check for consistency around dates, events, and interpretations in the construction of the health workforce and service delivery organisations. Sources included library catalogues, journals, websites of research institutes and media organisations, along with visits to London museums and the London libraries of professional associations. Australian, New Zealand, and UK sources for workforce data were used to illustrate the proportional contribution of different health professions to the modern health workforce.

Phase Two: Explanations

Phase two 'explanations' investigated the mechanisms of health practitioner regulation and policies for health service improvement to understand how they could shape events in health service organisations and impede the progress of service improvement. This progressed through the macro-level of policy-making, the micro-level of the health workforce and meso-level of health service organisations.

'Explanations' began at the macro-level of the health industry with the second set of questions:

> Second, what are the intended mechanisms of health practitioner regulation? How are the mechanisms of health practitioner regulation related to other arrangements for the governance and improvement of health services?

I began at the macro-level by investigating the mechanisms of health practitioner regulation, and the logic associated with policies for health service improvement. This revealed the potential for interactive effects to arise from independent policy-making among the many registration authorities and the network of healthcare regulatory stakeholders. Historical debates around the regulation of medical practitioners contributed to insights about the regulation of the modern health workforce. Grey literature from

particular English-speaking jurisdictions and international comparative scholarship were used to trace the last three decades of changes to health practitioner regulation and the introduction of policies for health service improvement. This was strengthened by attention to the scholarly accounts that often include comparison of changes in English-speaking and some other developed economies such as the Netherlands and Sweden. The literature on policies for health service improvement was variable, for example, there was more material on service contracts and evidence based medicine than on accreditation programmes or health workforce policies. The extensive literature on management reforms and the quality improvement programmes in health service organisations contributed to the decision to focus further inquiry on the effects of these policies.

Of the recent changes to health practitioner regulation, the recognition of overlapped scopes-of-practice and continuing oversight of competency by registration authorities seemed most likely to have effects on the health workforce and health service organisations. Among health service improvement policies, there was the potential to observe the effects of health practitioner regulation in management reforms and quality improvement programmes. A critical review of the goals of health practitioner regulation and policies for service improvement was used to identify conflicting philosophies about consumer protection, service quality or improving the efficiency of service delivery. This revealed a focus on different inputs or outputs of health services, but also the potential for alignment of thinking around goals for quality improvement.

The traditional account of health practitioner regulation is that it protects consumers by setting standards for the training of health professionals and adjudicating in consumer complaints about professional practice. Yet these regulatory levers seemed insufficient to account for the persistence of historical divisions in the health workforce despite the significant changes in 21st-century social conditions, knowledge, and technology. This led to a third set of questions directed to understanding how health practitioner regulation could shape events at the meso-level of health service organisations:

> Third, what other mechanisms could be associated with health practitioner regulation? How might these be transmitted from registration authorities and leveraged in the multidisciplinary healthcare workplace?

I revisited the scholarly accounts of the social, knowledge and technology conditions in

the 19th century construction of the health professions. In addition to the traditional levers of health practitioner regulation, there appeared to be other levers that were pivotal in evolution of the health professions. These levers could enable professions to control a range of resources important to professional work, and to shape inter-professional relationships in the health workforce. The networked character of the professional associations of the health professions could provide both formal and informal conduits for the operation of health practitioner regulation. There were eight levers that could contribute to effects in health service improvement. These were: control of expertise, training, clinical technologies, clinical information and ICT, special language, role definition, the referral system, and inter-professional complaints. This established control over resources and sources of authority for that control as the lens for considering the potential for interactions between health practitioner regulation and health service improvement. These levers could influence arrangements in the health workforce in ways that do not align with directions for health service improvement.

Sources for these mechanisms of health practitioner regulation were similar to those used for phase one to understand the historical construction of health services. Additionally, I searched in scholarly databases, Google Scholar, and health profession journals, to assess whether these levers were present in the contemporary discourse concerning the development of the health professions. Search terms included variants of: 'advanced practitioner', 'inter-disciplinary', 'inter-professional', 'technology', 'information systems', 'human resource management' combined with specific health professions and health service organisations such as 'hospital' or 'community practice'. Key authors, references, and citations were searched intensively until no new material or alternative accounts were evident.

Next, I considered the organisational context for health service improvement. This concluded the explanation-building phase by focusing on the meso-level of health service organisations, and investigation of the fourth set of questions:

Fourth, how are management reforms and quality improvement programmes intended to change service delivery? In the light of recent management reforms, what do we know of the organisational context and capability for the implementation of these improvement policies?

I began by identifying the directions for health service improvement. Changing social conditions have been influencing organisational change from functionally focused designs of the 19th century to more consumer-focused services for the 21st century. There is some evidence that health professionals, clinical leaders, and managers have different attitudes to certain redesign elements in management reforms and quality improvement programmes. Next, I investigated how these service improvement policies have changed health service organisations since the 1980s. The picture that emerged was of organisations that appear to be in transition from functionally focused to consumer-focused designs. However, there were reasons to doubt health services' capability for realising the organisation-wide improvement anticipated in quality improvement programmes. Some levers of health practitioner regulation appeared to contribute to a lack of organisational capability. This suggested that ongoing improvement could depend on changes to both the regulatory and service delivery levels. This completed the explanation-building phase of the research design by showing that health practitioner regulation could impede the progress of health service improvement because it tends to reinforce the traditional organisation of healthcare work and limits organisational capability to implement new arrangements in service delivery.

I drew on the literature on general management reforms and quality improvement programmes to identify the elements of redesign in these policies, the recent history of these improvement policies health service organisations, and the responses of different groups of actors. Search terms included combinations of 'hospitals', 'health services', 'healthcare', 'team', 'redesign', 'ICT', 'clinical technologies', 'clinical policies' with each quality improvement 'brand', each English-speaking or similar jurisdiction, and each health profession. Google Scholar was useful for its ability to progressively produce more relevant material. This overcame a problem, noted by Elkhuizen, Limburg, Bakker, and Klazinga (2006) of the lack of search terms in scholarly databases, for quality improvement programmes in health services.

Phase Three: Plausibility

The third phase, assesses the plausibility of the explanation built in phase two. This involved answering a fifth question:

> Could mechanisms in health practitioner regulation contribute to explaining difficulties with the implementation of management reforms and quality improvement programmes?

I began with the explanation, developed so far. This showed that particular levers and design elements were likely to account for certain interactive effects. Next, I selected illustrations of these service improvements from published research reports. At the meso-level of health service organisations, I grouped these illustrations into those related to service design, including clinical directorates, patient-focused care units, and multidisciplinary teams; and those related to improving service coordination through clinical ICT and quality improvement programmes. The third group of illustrations related to the micro-level, and included changes to overlapped scopes-of-practice, continuing oversight of competency by registration authorities, and government-led changes to roles for health practitioners.

I began by producing a summary of these research reports, focusing on the aims of the research, the organisational context and nature of the improvement, the improvement outcomes, and the conclusions of the researchers. These three groups of summaries are set out in Appendices B, C and D of this research report. I condensed these summaries to produce vignettes that are included in Chapter Seven. The research that informed these vignettes had not been designed to identify the effects of health practitioner regulation on health service improvement. I used these vignettes to consider whether an explanation centred on health practitioner regulation could contribute to explaining events, and add to the authors' explanations.

Overall, there were six criteria for the selection of illustrations. In the initial selection three criteria were important. First, service improvements needed to involve health professionals or unregistered health practitioners as described in Chapter Three. For improvements to service design and the coordination of care, at least three or more professions in each illustration were preferred. This criterion proved challenging due to

the many papers that focus on single professions with less attention to the other personnel in the practice setting. Second, illustrations needed to come from jurisdictions with similar groups of health professions and a similar history of management reforms, regulatory change and interventions for service improvement. Third, papers had to include sufficient description of the intervention, the organisational context for the intervention and the participants or researchers views on the sources of difficulties encountered. This is consistent with the critical realist methodology that seeks explanations for events through understanding how social structures create conditions for interactions involving organisation structures and actors. Illustrations in which authors had offered explanations for the observed events were useful in assessing whether the explanation of regulatory privilege contributed additional insights to these accounts.

In the final selection, three further criteria were important. Fourth, the interventions needed to be representative of those introduced in developed economies as part of management reforms to change health practitioner regulation and improve health service delivery. Fifth, I looked for at least two illustrations of each type of intervention, although this proved too difficult in the case of interventions for role redesign. Sixth, the quality of the material was important with fifteen illustrations sourced from research in scholarly publications, and two from studies published by UK government agencies. Systematic reviews were useful for locating a range of material and ensuring that it had been assessed to be of good quality by researchers and for identifying illustrations from an international perspective.

These criteria proved demanding. I found that many studies focus on a single health profession, or lack detail about the organisational context, the events, or the experiences of the actors. There have been few studies that consider the impact of regulatory changes on health services. To confine the scope of the study, it would have been preferable to restrict illustrations to New Zealand, Australia, and the United Kingdom that have a common history and sharing of recent policy initiatives. This produced 11 illustrations from the United Kingdom, one from Australia and none from New Zealand. To provide adequate coverage of service improvement at the meso-level, I included one US illustration of process improvement, along with one Canadian and one Danish illustration of using ICT for service coordination. There was less material available to illustrate the micro-level of individual health practitioners. Two Dutch studies that appear to be unique

in evaluating the effects of regulatory changes at the practice-level, complemented three studies from the United Kingdom.

Having selected the illustrations based on the above criteria, I prepared the vignettes set out in chapter seven. Next, I assessed whether the material in the illustrations adequately explained the progress of each intervention and whether there was any evidence for an explanation based on health practitioner regulation. For each of these illustrations, an explanation centred on how health practitioner regulation added to other explanations concerning the progress of the improvement interventions. This showed how health practitioner regulation could contribute to explaining difficulties with health service improvement. The selection of illustrations, the material available for inclusion and the preparation of vignettes are discussed in more detail in section 7.1.

3

ORGANISATION OF THE HEALTH WORKFORCE AND SERVICE DELIVERY

INTRODUCTION

This chapter establishes a descriptive foundation for investigating the role of health practitioner regulation in health service improvement. It shows how the historical construction of the health workforce informs the modern organisation of the health sector. Nineteenth-century knowledge, technologies and social conditions each contributed to the emergence of the health professions, and organisations such as hospitals or community practices. Medicine established the pattern of founding professional organisations and training programmes, then lobbying government for recognition of self-regulation. Other professions followed, in many cases to establish professional work for educated women. While medicine and nursing tend to dominate in descriptions of healthcare work, the chapter highlights the contribution of the allied health professions to the design of modern health services. Health professions have evolved in groups of dominant and assistant practitioners, and these groups have endured even as subordinate practitioners have secured self-regulatory status. The chapter concludes by showing how these groups form the specialist departments or practices that inform the organisation of modern health services and the pattern of supply chains in the health sector.

Section 3.1 provides an account of how medical discoveries and social conditions combined to shape modern medicine, establishing hospitals at the centre of service delivery. Roles were needed for educated women, and section 3.2 traces the evolution of nursing, social work and other health professions that met this need. Section 3.3 describes the importance of new technologies or shortages of medical practitioners in the rise of some other health professions such as pharmacists or physician assistants. Finally, section 3.4 shows how enduring professional divisions in the health workforce inform structures throughout the health sector.

3.1   MEDICAL DISCOVERIES AND THE EMERGENCE OF MEDICINE

This section focuses on the emergence of medical specialties in 19th-century London, which was at that time the world's largest city and highly influential in the development of healthcare in new-world English-speaking societies. This influence waned as the United States gradually became more influential in the development of the health professions (Moran, 1999, 2002).

Social conditions and medical discoveries

Economic and social developments in the 18th century set the scene for the expansion of health care through the 19th century. Improvements in agriculture (Allen, 1999) and sanitation (Razzell, 1993) contributed to population growth (Wrigley, 1983) and more reliable systems for transport of food and materials enabled the growth of factories and urban centres, creating new wealth (Szostak, 1988; Szreter, 1999). Rapid industrialisation increased the need for healthcare for three reasons: centralisation of factory work disrupted labour markets, contributing to unemployment and poverty; unplanned urban growth produced slum conditions with endemic infectious disease; and the new mechanised factories and transport systems were associated with increased accidents and injuries (Szreter & Mooney, 1998). The modern state emerged as the government created new institutions to control these social problems, through gathering population statistics and administering health and welfare services (Moran, 1999).

Through this period, there were also many important medical discoveries, including a smallpox vaccine in 1796, anaesthetics from 1846, antiseptics from 1848, the link between cholera and contaminated water in 1854, evolution of germ theory from the 1860s, the diphtheria anti-toxin in 1890, identification of viruses in 1892, and recognition of the link between mosquito viruses and yellow fever in 1900 (Greene, 1971; Lederberg, 2000). However, while these discoveries advanced medical knowledge and shaped the development of the healthcare work (Weisz, 2006), they did little to advance the contribution of medical science to health outcomes until the development in treatments through the 20th century (McKeown & Record, 1962).

In the early 1800s, most health care was provided in the home. Dingwall et al. (1988) described a range of different practitioners offering services largely on a class basis, with few possessing formal qualifications. Poor households managed their own care, perhaps supported by a local herbalist or nurse to provide medicine, or a bonesetter to stabilise an injury. The lower middle classes might afford the services of lower-class medical practitioners such as surgeons or apothecaries. Physicians cared for the wealthy, and frequently delegated the performance of treatments to an apothecary or surgeon. Apothecary treatments included bleeding, purging, and the use of various metal-based medicines, followed by doses of opiates to mitigate the adverse effects (Dingwall et al., 1988). Surgeries ranged from tooth extractions and toenail removals to cutting out tumours and the amputation of limbs, and a surgeon's speed was prized as a means of pain reduction. Surgery was generally restricted to life-threatening circumstances because there was a 50% death rate associated with major operations, and in 80% of hospital surgeries the patients had to survive gangrene (Alexander, 1985). Yet by the end of the 19th century, hospitals emerged as centres of medical knowledge with service delivery organised around a new range of specialised departments and health practitioners (Carruthers & Carruthers, 2005).

Specialisation in medicine

Five factors associated with 19th-century conditions contributed to the development of specialisation in medicine. First, there were practical obstacles to acquiring medical knowledge, and the solution was for doctors to specialise in the treatment of patients who appeared to have similar conditions so that they could accumulate sufficient experience to create new knowledge. Specialisation in medicine was closely related to this quest for new medical knowledge, and also patterned on the new specialties emerging in French and German universities (Weisz, 2003). These specialist divisions evolved to accommodate an era in which practitioners had to be both clinicians and researchers; whereas, today; research is mostly conducted in research institutes that are separate from clinical practice (Johnson, 1995).

Second, the new social arrangements for welfare also influenced medical specialisation and the creation of distinctive types of healthcare organisations. From 1834 changes in government funding for paupers gradually saw the mentally ill removed from prisons to

asylums for the insane, and those suffering from infectious diseases shifted from poor houses into fever hospitals (Carruthers & Carruthers, 2005). Psychiatry emerged in 1845, when Parliament required local governments to establish asylums for the insane (Dingwall et al., 1988).

Third, the wealth from benefactors and subscription income allowed the London private hospitals to become centres for medical research and teaching. Medical specialists were concentrated in London, where they could maximise their earnings from a mix of teaching medicine and servicing wealthy clients (Gorsky, Mohan, & Powell, 1999).

Fourth, the unification of medical training between 1858 and 1872 established conditions for new specialities to emerge. As training was integrated, the old divisions between physicians, surgeons and apothecaries, disappeared and new divisions between hospital specialists and general practitioners (GPs) were established (Weisz, 2006). The modern specialty of general practice began as community-based doctors completed dual training as surgeon-apothecaries, a combination facilitated by the historical association of both these occupations with the treatment of the lower classes (Lawrence, 1985; Waddington, 1974).

Fifth, in contrast to the United States, upper-class control of the London private hospitals contributed to the persistence of a strong separation between hospital-based specialists and community-based GPs in Britain and many former British colonies. In London, medical specialties were developed by foreign and lower-class medical practitioners, creating a proliferation of specialist hospitals for a range of ailments like tuberculosis, chest diseases, eye diseases, skin diseases and orthopaedics, because the physicians' ideal of gentlemen practitioner did not fit with the labour-intensive work of accumulating specialist knowledge through the treatment of many patients. Additionally, physicians had long associated specialisation with the work of the lower-class practitioners they supervised, including: apothecaries, surgeons, dentists, eye specialists, and midwives. However, by the end of the century the physicians had realised the importance of specialisation and brought this under their own control by establishing specialist departments in the private hospitals, and leaving community-based practice as the domain of GPs (Abel-Smith, 1964; Weisz, 2003).

Rise of hospitals

Until around 1850 the private hospitals admitted only the 'curable cases' and routinely declined admissions for chronic complaints, infectious diseases, cancer, and child cases (Abel-Smith, 1964). As McKeown and Record (1962) explain the 19th-century decline in population mortality was mostly related to changes to living conditions rather than to medical treatment. First, between 1770 and 1900, 50% of the mortality decline is attributable to improvements in living standards, particularly diet, and 25% relates to the impact of sanitary or hygiene reforms from the 1880s. Second, much of the remainder of mortality decline relates to changes in disease organisms, the work of the sanitation campaigners that led to hospitals separating different infectious diseases, and the public funding which enabled the transfer of these patients to fever asylums from 1867. Finally, while surgery expanded following the introduction of anaesthetics, operating conditions remained crude. There was little concern about the cleanliness of instruments, operating personnel or the spectators admitted to operating 'theatres'. Death from post-surgical infection only improved from the 1880s when surgeons began to understand the central importance of aseptic techniques (McKeown & Record, 1962).

Through the first half of the 20th century, mortality from infectious diseases that largely afflicted the young continued to decline, due to increased economic wealth, nutrition and sanitation. From the 1930s, sulpha drugs, penicillin, and antibiotics proved effective against death from pneumonia, influenza, and tuberculosis. Subsequently diseases of aging such as cardiovascular disease and cancer have emerged as major causes of death (Cutler & Meara, 2001).

The expansion of the London private hospitals had begun 100 years before the development of effective medical treatments and was very much related to the demands of research and experimentation in the 19th century. Despite the lack of effective medical treatments, wealth and demand for healthcare underpinned the rise of hospitals as facilities: to accommodate the patients, operate the outpatient clinics useful for recruiting interesting cases, and as sources of funding for the equipment related to the new medical procedures (Abel-Smith, 1964; Weisz, 2003). By the mid-19th century these private hospitals had departments for: outpatients, mortuaries, operating theatres, dispensaries, and electrical stimulation treatments. By 1900, they had various medical speciality

departments and had begun to include facilities for X-ray, medical laboratories, and radium treatments (Carruthers & Carruthers, 2005).

It appears that the organisation of healthcare developed well ahead of effective medical treatments that only date from the mid-20th century (Cutler & Meara, 2001). The historical divisions in medical work and the central importance of hospitals as centres for patient care continues today, even though this organisation relates to the research, technologies and social institutions of 19th century; conditions that are no longer in evidence in the 21st century. It is worth asking in the light of differences in modern diseases, technologies and their treatment, whether these divisions remain optimal for the delivery of health services in the 21st century?

3.2   ROLES FOR EDUCATED WOMEN

In 19th century Britain and the United States, roles in healthcare were important to women because women had difficulty gaining admission to jobs in the new industrial economy and in professional work. A few women became doctors, particularly in obstetrics, gynaecology, and psychiatry, which were specialties that were seen as relating to women's health problems and where treatment by a female doctor was seen as necessary to protect the 'innate modesty and virtue' ascribed to female patients (Theriot, 1993). Indeed during this period, all kinds of ailments in women were commonly linked to their reproductive functions. In Britain, opportunities for working class women were in domestic services, untrained nursing positions, and in the factory jobs that had evolved from women's work in the cottage industries. Skilled jobs in new industries such as steel and railways were closed to women (Jordan, 1989) and as with medicine there were few openings for women in engineering, law or the church (Brumberg & Tomes, 1982). These difficulties for women in gaining admission to education and to medicine were influential in the development of nursing, midwifery, social work, physiotherapy, and occupational therapy.

Until the late 19th century, there was a general lack of education especially for women (Howarth & Curthoys, 1987). From the 1870s, attendance at elementary school became compulsory for both sexes in England, but there was little support for women's access to higher education. As Dyhouse (1976) points out, opponents insisted that the education

curriculum for girls must include compulsory home economics because of fears that education in other subjects would dissuade women from becoming mothers, or even render them infertile. By the end of the 19th century, compulsory elementary education had removed children from the factories, and opened up more jobs for poor women (Jordan, 1989). Educated women began to find work in the new welfare institutions, the schools and the printing industry, as teachers, nurses, librarians, and social workers (Brumberg & Tomes, 1982).

Medical social work

Medical social work developed into a health profession when it became central to resolving a dispute over patients between hospital specialists and GPs. Hospital physicians ran free outpatient clinics to find interesting cases for research, to enhance their appeal to fee-paying medical students, and to establish their reputation amongst wealthy clients. State-funded healthcare was restricted to the inmates of the poorhouses, because policy-makers believed that if community-based clinics were funded, then those who did not qualify for welfare would also receive services. The combined effect of free outpatient clinics and restricted welfare payments meant that as the numbers of GPs grew, competition for the fee-paying community patients reached a crisis, and the GPs accused hospital physicians of poaching their fee-paying clientele. This dispute was settled in 1895 with the introduction of a formal system of referral between physicians and GPs. While the private hospitals already used early social workers known as 'almoners' to determine whether a patient met criteria for admission as a charity case, it was now necessary to appoint formally qualified social workers to means-test patients for acceptance into the free outpatient clinics. By 1912 the qualification for medical social work required a university certificate in sociology (Abel-Smith, 1964). Today medical social workers can be found in a range of settings, such as family therapy, mental health, rehabilitation, and care of the aged (Brown et al., 2000; Long, Kneafsey, & Ryan, 2003; Reeves & Lewin, 2004).

Nursing

The transformation of nursing from unskilled labouring work to a recognised professional occupation proved difficult, and was first achieved by midwives. This began in England, in 1858 when an Obstetrical Society was formed, followed by a diploma in 1872, and state registration in 1902. Initially most registrations were on the basis of experience rather than formal qualifications, and many midwives were illiterate (Carruthers & Carruthers, 2005).

Due to the physicians' practice of delegating work to midwives, the General Medical Council (GMC) supported the new diploma for midwives (Dingwall et al., 1988). However, implementation of this diploma was delayed by a dispute within nursing and objections from GPs. Amongst nurses, midwifery training was initially supported by a group lobbying for women's access to medical training, and by Florence Nightingale who saw an opportunity for midwives to provide obstetrics services to the lower classes. However, Mrs Fenwick (who led the British Nurses Association) wanted training and registration of midwifes as a first step toward securing registration status for general nurses. GPs viewed both training for midwives and registration for general nurses as a competitive threat (Dingwall et al., 1988). As Carruthers and Carruthers (2005) point out, by the time training had become established for midwives, obstetrics had also been included in medical training for GPs.

The GMC also supported training and recognition for asylum nurses, who they saw as assistants to the medical superintendent of the asylum (Dingwall et al., 1988). There were gradual reforms to asylums including: removal of criminals to prisons, improved accommodation, less use of chains for restraint, and the creation of programmes to support patients to transition into the community. By 1885 a Medico-Psychological Association was formed under the GMC along with training for a certificate of psychological medicine, which evolved into a two year training course for mental health nurses (Carruthers & Carruthers, 2005), establishing a physician assistant workforce in mental health. Divisions between general nurses, midwives, and mental health nurses persisted through the 20th century (Francis & Humphreys, 1999a).

The path to professional recognition for general nurses was dogged by objections from the male-dominated medical profession, and by disputes between nursing leaders with different social agendas. In 1840, the Institute of Nursing Sisters offered a few months of training at Guy's or The London Hospital, to literate women of good character (Carruthers & Carruthers, 2005). Twenty years later, in 1860, the first Nightingale school for nurses opened with a curriculum that emphasised both technical and moral training. Technical training included expertise in the cleanliness and ventilation of hospital wards, clinical observation of the sick, application of treatments such as bandages, poultices, leeches, and enemas, preparation of food for the sick, and assistance with surgical procedures. The Nightingale school's moral training was essentially about deference to medical authority, a strategy to appease those doctors opposed to training for nurses. In these trained nurses, hospitals found a skilled low-cost labour force, and a source of income from hiring out nurses to the wealthy for home nursing. Florence Nightingale also promoted home nursing for the poor, as a preferred alternative to the 'morally corrupting' practice of grouping them together in hospitals. These home-nursing traditions evolved into the modern roles of nurse visitor or district nurse (Dingwall et al., 1988).

The availability of trained nurses led to further divisions in hospital labour, with the appointment of servants or 'scrubbers' for cleaning and domestic duties under the supervision of nurses (Carruthers & Carruthers, 2005). Today there are generally three levels of training in nursing: enrolled or licensed practical nurse, registered nurse and nurse practitioner (NP) (Nursing Council of New Zealand, 2013). The shift to degree-based training for nurses has increased the distinction between nurses, and their assistants. Training of healthcare assistants who work with nurses has shifted to employers (Thornley, 2000). As with other health professions, the work of nurses has become more technical with an international trend to recognise more advanced practice (de Bie, Cuperas-Bosma, van der Jagt, Gevers, & van der Wal, 2005).

In the 19th century, the spread of formal training for nurses was slow, and partly reflected a class-related struggle between two nursing factions: the upper-class Nightingale faction that favoured the development of nursing into an occupation for respectable middle-class women; and the Fenwick faction that supported both women's suffrage and entry to nursing based on merit regardless of class (Carruthers & Carruthers, 2005). Despite the rhetoric around class and respectability, an important difference appears to be the level of

education favoured. The Nightingale schools promoted apprenticeship-style training for a range of trainees including married women and widows, while Fenwick campaigned for a higher standard of training as a basis for nurses to challenge the authority of the medical profession (Dingwall et al., 1988). The UK parliament also had mixed agendas, with a desire to remedy exploitation of nurses evident in low wages balanced by an equally strong desire to avoid the unionisation of nurses. This dispute over nursing education was partly resolved in 1919, when the government intervened introducing separate registration for general nurses and mental health nurses as well as hospital-based training (Dingwall et al., 1988). However, debates around the merits of on-the-job training, certificate or degree courses, and advanced practice roles continued into the late 20th century (Francis & Humphreys, 1999a; Safriet, 2002).

There has been a powerful link between the feminist movement and nursing since the 19th century. Earlier than the United Kingdom, in 1893 New Zealand women secured the right to vote in parliamentary elections, and this was soon followed by the registration of nurses in 1901 (Sargison, 1997). Women's suffrage was closely entwined with the achievement of professional status for nurses in the 19th century, and feminism influenced the development of degree courses and recognition of advanced practice roles for nurses from the 1960s (Nichols, 2000).

Physical and occupational therapists

Physiotherapy began as a new profession for respectable, educated women, partly in response to scandals over the practice of massage in the 1880s. In late nineteenth century London, massage services were offered by a range of practitioners, including nurses, midwives, Swedish masseurs and medical practitioners. In 1894 the British Medical Journal attacked the practice of massage, on the basis that it was largely a front for loose morals and prostitution. In response, three midwives and one other woman formed the chartered Society of Physiotherapy to regulate the education, training, registration and practice of massage therapy. These women secured social and scientific respectability for this new profession by forging an alliance with the medical profession, and by 1912 had enlisted 79 medical men as patrons. Physiotherapists were required to wear uniforms and perform physical rehabilitation for female patients on referral from a medical practitioner. Massage of male patients was not permitted, unless urgently requested by a medical

practitioner (Nicholls & Cheek, 2006). Today, physiotherapists can be employed in specialised hospital departments and rehabilitation units, in community practice, or in sports medicine, and are known as physical therapists in the United States. The link between midwifery and physiotherapy persists today where both professions are engaged in the delivery of antenatal care (Schmied, Myors, Wills, & Cooke, 2002).

Occupational therapy also offered new opportunities for educated women, building on the manual or occupational training found in schools (Friedland & Silva, 2008), the more enlightened asylum programmes (Carruthers & Carruthers, 2005) in the United Kingdom, in convalescent care of tuberculosis patients, and in welfare programmes in Chicago (Schwartz, 2009). Occupational therapy became particularly important in the rehabilitation of soldiers in World War I, and in 1917 a diverse group of social reformers founded the American Occupational Therapy Association (AOTA). These founders had diverse backgrounds including: manual training, rehabilitation of Canadian soldiers, care of tuberculosis patients and the mentally and physically disabled, and welfare reform. Like nursing and physiotherapy, some founders were motivated by a desire to establish a career for educated women (Schwartz, 2009).

One of these founders was Thomas Bessall Kidner, who constructed a medical basis for occupational therapy by analysing craftwork and mapping this analysis onto different stages of rehabilitation care. Originally from England, Kidner had a background in technical and vocational education, and made the transition to healthcare when he was engaged in the rehabilitation of World War I soldiers in Canada and the United States. From 1917, he was active in building the AOTA, forging alliances with both medicine and the American Hospitals Association (Friedland & Davids-Brumer, 2007). Part of Kidner's strategy was to build a disciplinary foundation for occupational therapy that differentiated it from the claims of other professions, namely the physical work of physiotherapists, the mental-health work of psychologists, the manual training offered by teachers, and the organisation of social assistance provided by social workers (Friedland & Silva, 2008). Today, occupational therapists are employed in specialised hospital departments and rehabilitation units, and are also found in community-care settings, notably community mental health teams (Long et al., 2003).

3.3   OTHER HEALTH PROFESSIONS
ALLIED TO MEDICINE

Weisz emphasises the importance of the development of new medical knowledge and social institutions as pivotal to the development of medical specialties and suggests that radiology, which does not seem to fit this picture, is a 'marginal' specialty (2006, p. 171). Yet, taking a wider perspective across the health professions, technology does appear to be important to divisions in the health workforce, particularly in radiology and medical imaging, pathology and laboratory sciences, and in pharmacy. This section looks at how 19th-century innovations in technologies as well as social forces shaped these health professions.

Pharmacists

The influence of new knowledge, social factors and technology are each evident in the separation between pharmacy and medicine. First, during the 18th century there was a dramatic change in the knowledge around medicines, with ingredients such as animal parts being removed from the pharmacopeia, and replaced with metal-based medicines that required more skill to formulate. By the 19th century discoveries in botany and chemistry had further expanded the range of medicinal agents, with even more knowledge and skill necessary for synthesis and formulation (Carruthers & Carruthers, 2005).

Second, the influence of social factors can be traced from 1815 when the Society of Apothecaries received its royal charter (Crellin, 1967). Physicians used their influence to make the award of this charter conditional on the apothecaries agreeing to an apprenticeship-style training associated with lower class occupations, rather than the degree-based training favoured by physicians (Berlant, 1975). The irony, as Crellin (1967) points out, is that given this rigorous training it was subsequently natural to include apothecaries as medical practitioners under the Medical Act of 1858. In the years leading up to 1858, the apothecaries were more engaged in medical work and had less time to devote to their traditional activity of making medicines. This opened the way for a group of chemists and druggists to found the Pharmaceutical Society of Great Britain in 1841 and a School of Pharmacy in 1842.

Third, the importance of new technologies is evident in the London pharmacy shops of this period. Capital was required to fit these shops with their extensive laboratories, furnaces, stills, steam apparatus, refrigerators and presses. During this period, pharmacists invented new devices such as the infusion jug, measures for volumes, an ether inhaler, production of medicines in single doses, and different formulations such as pills, suppositories and cachets, along with the compressed tablet patented in 1843 (Crellin, 1967). Thus a combination of new technical skills and equipment was required to standardise the production of medicines. As the apothecaries were absorbed into the profession of medicine, it was more difficult for them to maintain their role in the compounding of medicines, and this left room for pharmacists to emerge as a profession separate from both the retailers who sold drugs and groceries, and from the apothecaries and dispensing doctors (Berlant, 1975).

The path to professional recognition for pharmacists was different in new world societies that relied on medicines imported from England and the rest of Europe. In the new world, the responsibilities of pharmacists were similar to modern pharmacy practice. Early US pharmacists focused on the importation and distribution of medicines, testing medicines for quality, advising on dosages, checking doctors' prescriptions, and dispensing to patients. As the industrial production of medicines developed through the 20th century, and rules for labelling of medicines became more stringent, small scale manufacturing or formulary largely disappeared from pharmacy retail shops (Savage, 1994). Today the majority of pharmacists are employed in community pharmacy dispensing and retailing. They are also found in hospitals in the purchase, distribution and management of medicines, and in policy and regulatory roles that oversee the use of medicines and the conduct of audits (Chaffee, 2010; Pederson & Gumpper, 2008; Roberts et al., 2005).

Medical imaging professions

There was rapid diffusion of X-ray tube photography following its discovery in Germany in 1895, and by early 1896 the first experiments with X-rays were already underway in England. The first practitioners were often photographers but also included house surgeons, nurses and hospital porters, with X-ray dermatitis and death from skin cancer or leukaemia common amongst both patients and practitioners (Guy, 1995). Even so, there was significant demand for and rapid transfer of this new technology. An English pioneer,

Sir John Hall-Edwards, sold his general practice to specialise in radio-diagnosis, radium and electrotherapy, and also demonstrated the usefulness of portable X-ray equipment for diagnosis in the second Boer War (1899-1902) (Guy, 1995). There was a similarly rapid diffusion of radiation treatments for cancer in Europe, America and elsewhere, with the use of X-ray tubes for cancer treatment from 1896, surgical insertion of radium from 1900, and the Radium Institute established in London in 1911 (Hayter, 1998). By World War I the British military standards for hospitals included X-ray facilities and a radiographer (Abel-Smith, 1964, p. 260).

In 1920, the Society of Radiographers was established to advance the training, certification and professional status of non-medical X-ray practitioners. Price (2009) describes the struggle for ownership of X-ray work, which dominated the early years, and from which the medical profession triumphed by claiming ownership over the interpretation of X-ray plates. X-ray technologies gradually improved, but the complexity of the technology meant that training for radiographers continued to include the calibration, fault diagnosis and maintenance of equipment as well as the production of images and management of procedures (Nixon, 2001). Today the medical practitioners specialising in these areas include radiologists and oncologists. Since the 1970s diagnostic and therapeutic radiographers (the latter are engaged in cancer treatment) have been trained separately (Rominger & Browning, 1977).

Diagnostic radiology now incorporates a range of specialties from surgery-like medical procedures to the use of ultrasound, computerised axial tomography (CAT) scanning and magnetic resonance imaging (MRI). Radiographers are also called radiologic or imaging technologists. They have traditionally performed advanced practice work, when there are shortages of medically trained radiologists, and in the late 20th century persistent shortages have contributed to formal recognition of advanced practice roles (Bate et al., 2008). While the potential for portable X-ray was demonstrated in the Boer War (Guy, 1995), radiology has successfully limited the use of most imaging examinations to radiology departments or practices (Christensen et al., 2000).

Medical laboratory professions

Laboratory science evolved from simple blood and urine tests in the 18th century (Shinton, 1992; Winsten, 1969), to rapid development from 1800 on due to new technologies such as microscopes, photography, chemicals, and tissue cutting techniques (Gal, 2001). By the mid-19th century, it was common for medical practitioners to investigate body fluids and tissues as part of medical diagnosis and treatment (Winsten, 1969), and to autopsy their own patients (Gal, 2001). There were small areas adjacent to the hospital wards for performance of tests, and some specialist pathologists offered tests and vaccines from private consulting rooms (Shinton, 1992). Dedicated hospital laboratory departments date from the 1890s (Carruthers & Carruthers, 2005).

Many developments in laboratory science came in the 20th century, such as electron microscopes in the 1930s, identification of DNA in 1944, and new antibiotics in the 1950s (Lederberg, 2000; Shinton, 1992). By the 1970s, the main specialties of biochemistry, haematology, microbiology, virology, histopathology, immunology and genetics had emerged (Shinton, 1992).

Along with developments in science and technology, social factors related to first and second World Wars, and gender shaped laboratory work. From the 19th century, laboratory assistants were often female. US training programmes for medical laboratory work proliferated during World War I to educate the largely female laboratory workforce. In 1926, the American College of Surgeons required all hospital laboratories to meet accreditation standards, and by 1928 the first US national accreditation organisation began to certify training and recognise graduates in laboratory technology (Delwiche, 2003). In Britain, fear of biological warfare led to the development of a national system of laboratories during World War II (Shinton, 1992).

Similar to other non-medical professions, there have been protracted struggles to establish recognition for new health professions independent from medical oversight. In 1937, a dispute around control of the training curricula led the laboratory technologists to establish the American Society of Medical Technologists in 1933. Forty years later, in 1973, this dispute was finally concluded in favour of the technologists, with a new

national organisation for accreditation of training and certification of graduates (Delwiche, 2003).

Today, there is extensive automation in some laboratory work, and a range of personnel with different roles is employed. In the United Kingdom, Australia and New Zealand, there are five main groups of personnel including: pathologists, medical laboratory scientists, medical laboratory technologists, medical laboratory technicians, and assistants. Pathologists are medical specialists who are primarily involved in providing interpretation and expert advice to medical colleagues. In the case of histopathology, their work can include performing autopsies and tissue examinations. Medical-laboratory scientists and technologists are not medical practitioners but can have equivalent laboratory expertise, particularly in specialty areas like chemistry, haematology or microbiology. They are more likely to perform laboratory management roles than pathologists. Technicians generally require a health science degree and laboratory experience. They perform and oversee routine tests, often supervising medical-laboratory assistants. Assistants may also perform 'phlebotomy' or drawing blood samples from patients. Dramatic changes in technology contributed to the expansion in the range of laboratory services and personnel in the 1960s and 1970s (Price & Barnes, 1999; Shinton, 1992).

Since the 1980s continued advances in automation mean that more work is performed by technicians and assistants; pathologists have reoriented toward work with patients in clinical practice; and new laboratory instruments or analysers can reshape the divisions within laboratories (Shinton, 1992). For instance, if some chemistry and virology tests can be performed on the same machine, it may be cost-effective to co-locate specialists or separate the performance of some tasks. Many divisions in laboratory science have been enabled by 20th century technology, and regulation of laboratory professionals dates from the late 20th century. Despite this delay in achieving regulatory coverage, laboratory professionals have been largely successful in resisting the transfer of laboratory work to other health professionals despite the development of near patient testing technologies that are relatively cheap and easy for less specialised personnel to use (Lee-Lewandrowski et al., 2003).

Physician Assistants

In the latter half of the 20th century, physician assistants (PAs) (who have been a traditional feature of the military health workforce and perform work that would otherwise require medical practitioners) were introduced into US healthcare (Jolly, 2008). Following the Korean War, returning military PAs were retrained for civilian healthcare to address shortages of medical practitioners, particularly in rural and poor communities (Cooper & Stoflet, 2004). PAs are often described in comparative terms with nurse practitioners (NPs), because both these health professions can work with significant independence from medical practitioners, caring for their own patients in hospital and community settings. Training for NPs involves completion of a master's degree after experience as a registered nurse, while PAs complete a four or five year degree, and then undertake a clinical internship.

The most influential difference appears to be the philosophical foundation of these health professions. Consistent with its feminist influence, nursing has sought independent practice rights for NPs and collegial relationships with medical practitioners. In contrast, PAs acknowledge an inter-dependent relationship with medical practitioners, which is consistent with their roots in the command structure of the military. However, these distinctions around independent versus assistant status can be misleading. In most US jurisdictions, PAs may practise within a 50-mile or one hour drive from a supervising physician, as long as telephone contact is maintained (Cooper & Stoflet, 2004). Civilian PAs are overwhelmingly located in the US with a few in Canada (Jolly, 2008). However, the numbers training in this profession have been increasing rapidly, and trials have been undertaken in the United Kingdom, Australia and New Zealand as a means to address shortages in the medical workforce (Health Workforce New Zealand, 2010; Jolly, 2008).

3.4 THE STRUCTURE OF THE HEALTH SECTOR

The focus of this investigation is the organisation of professional work and how this may inform the design of health services. This section shows how this perspective places emphasis on how health services are organised, rather than their place of delivery. It begins by depicting the distribution of health professions in the health workforce, and then shows how these workforce divisions inform the organisation of health services. It

concludes by depicting the patterns of supply chains in healthcare that link health industry stakeholders to particular groups of health professionals and the specialist departments they occupy in health service organisations.

Enduring workforce divisions

In the tables below, Australian and New Zealand health workforce data is used to illustrate the continuity of the professional divisions in the health workforce, and the distribution of health professionals in hospital and community settings. Table 1 illustrates the proportions of the main health professions in the Australian health workforce drawing on a study by the Australian Productivity Commission (2005). It shows that medical practitioners, who are trained to oversee the widest range of illness and injury, form just 11.5% of the regulated workforce. Nursing is the largest group at 43%, along with nursing assistants or carers at 11.2%. However, taken together, other non-medical and non-nursing health professions form a significant proportion of the workforce with pharmacists, allied health (therapists and others), medical laboratory and imaging technologists, paramedics, and others comprising around 27% of the Australian healthcare workforce. Allied health professions (non-medical and non-nursing) have the highest growth rates, ranging from 12.5 to 30.2% between 1996 and 2001.

Other research shows that 45% of Australian medical practitioners are located in primary care practices, 35% are specialists, 10% are trainee specialists, and 10% are employed in non-specialist hospital roles (Duckett, 2000). Hospital specialists and their trainees comprise 45% of the medical workforce and just 5.2% of the overall health workforce. A review of the UK's health workforce shows similar growth in the health workforce and faster growth for those health practitioners described as 'technical and professional' compared to nurses or medical practitioners (Bloor & Maynard, 2001).

Table 1: Main health profession divisions in the Australian health workforce

Australian health professions 2001	Proportion of health workforce %	Rate of growth 1996-2001 %
Registered nurses/midwives	38.7	7.3
Enrolled nurses	4.3	2.7
Nursing assistants/ personal carers	11.2	18.8
Medical practitioners	11.5	12.6
Dentists	8	1.9
Dental technicians/assistants	3.9	12.5
Pharmacists	3.0	13.0
Allied health workers[3]	8.8	26.6
Complementary health workers	1.9	29.6
Medical imaging workers	1.8	25.0
Medical scientists	2.6	16.8
Ambulance Officers and paramedics	1.5	12.5
Other	9.1	30.2
Total & average growth	100	11.6

(see Australian Productivity Commission, 2005, p. xvi)

Table 2 below uses New Zealand health workforce stocktake (2002) that describes the proportion of different health professions in hospital compared to community-based practice. The New Zealand study shows that at 23% the proportion of nurses employed in community settings is small, when compared to the distribution of other health professions such as medical practitioners of whom 39% are employed in community-based practice. The necessity for around-the-clock care for hospital inpatients explains this concentration of general nurses in hospital settings. In the community, there is a strong presence of dentists at 83%, pharmacists at 60%, and physiotherapists at 51%.

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[3] Note: the use of 'allied health' in this thesis is broader and includes all non-medical and non-nursing health professionals.

Other health professions are also present in the community, with the proportions for midwives, medical imaging and laboratory technologists, and others ranging from 25 to 47%[4].

Table 2: Practice locations for New Zealand health workforce

New Zealand health professions 2001	% Employed in community settings
Registered nurses	23
Midwives	47
Medical practitioners	39
Dentists	83
Dental technicians/assistants	100
Pharmacists	60
Medical imaging workers	38
Medical laboratory technologists	25
Physiotherapists	51
Podiatrists	83
Registered psychologists	32
Informal support workers	100

(extracted from Health Workforce Advisory Committee, 2002, p. 64)

Since the middle of the 20th century, new health professions have originated in the United States (Moran, 2002). In 1977, a US study identified 181 primary or unique health practitioner titles legally protected by state legislatures (Begun & Lippincott, 1993). Despite this growth, there has been continuity in the health professions and the organisation of healthcare work through the 20th century, as many new roles form as specialties within regulated health professions or as previously unregulated health practitioners have successfully lobbied for inclusion in regulatory regimes.

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[4] This New Zealand study includes an estimate of community-based support workers at 30% of the New Zealand health workforce, which means that the proportions of health professions in this study are not directly comparable to those in the Australian study depicted in Table 1.

The organisation of health services

Descriptions of the health sector are important since they may entail assumptions or emphasis that directs the process of investigation. It is common to distinguish between hospital and community-based locations for service delivery, yet this could distract attention from the similarities among the health professionals and services provided in these locations. There are some exceptions; for instance, many types of surgery are likely to be delivered in hospital settings. Yet, most health professionals such as general practitioners (GPs), medical specialists, pharmacists, nurses, laboratory scientists, radiographers, physiotherapists and occupational therapists can each offer services in hospitals, in the community, or in both settings (see Table 2). Another descriptive focus is to distinguish between 'primary', 'secondary' and 'tertiary' care. This may also be problematic, since 'tertiary' hospitals in the United Kingdom and Canada deliver a wide range of services, with tertiary-level work that could only be delivered in specialised hospital departments, comprising as little as 15 % of the total. Most of the work comprised primary care, secondary care, or teaching (Mintzberg, 1997). Thus primary, secondary or tertiary care could reflect the intensity of particular services or the specialist nature of the skills involved, but does not necessarily denote the location for service delivery.

Community general practices are mostly organised around medical practitioners, their patient lists and their requirements for nurses and clerical personnel. There has been some development of nurse-led clinics, and in this case, the work of clerical and assistant nursing staff is similarly organised around the needs of these practitioners (Britt et al., 2010; Checkland et al., 2008). Other specialised practices include pharmacists in pharmacy retail stores, radiologists and radiographers in community-based radiology practices, laboratory specialists in community laboratories, physiotherapists in physiotherapy practices etc. Within these practices, the work of clerical and assistant personnel is also led by the senior health professionals and organised around the practice's patient lists or bookings. Managers may be employed to assist in the management of facilities, employment of personnel, and the management of contracts with suppliers of specialised equipment, materials and services (Feletto, Wilson, Roberts, & Shalom, 2010; Van Akkeren & Rowlands, 2007).

The process of community-based service delivery commonly begins with a consumer visit to a general practice where the GP completes a medical assessment and may refer their patient or allocate work to other health professionals. To receive these other services, a consumer generally has to visit and engage with practitioners in each specialist practice. An episode of care may be concluded once all the referred work is completed, or following a further visit to the GP. Figure 3 below illustrates this general pattern of service delivery: the consumer in the white circle, and the general medical practitioner in the red crescent. Other health professionals are depicted in the diamonds and linked to their suppliers in the rectangles. The colours are used to distinguish different health profession groups with: pharmacy in purple, laboratories in yellow, therapies in green, and a white rectangle for general suppliers. The solid arrows depict the pattern of referrals from a medical practitioner to other health professionals, and the dashed lines show how this fragments care for consumers.

Figure 3: Organisation of work in community-based services
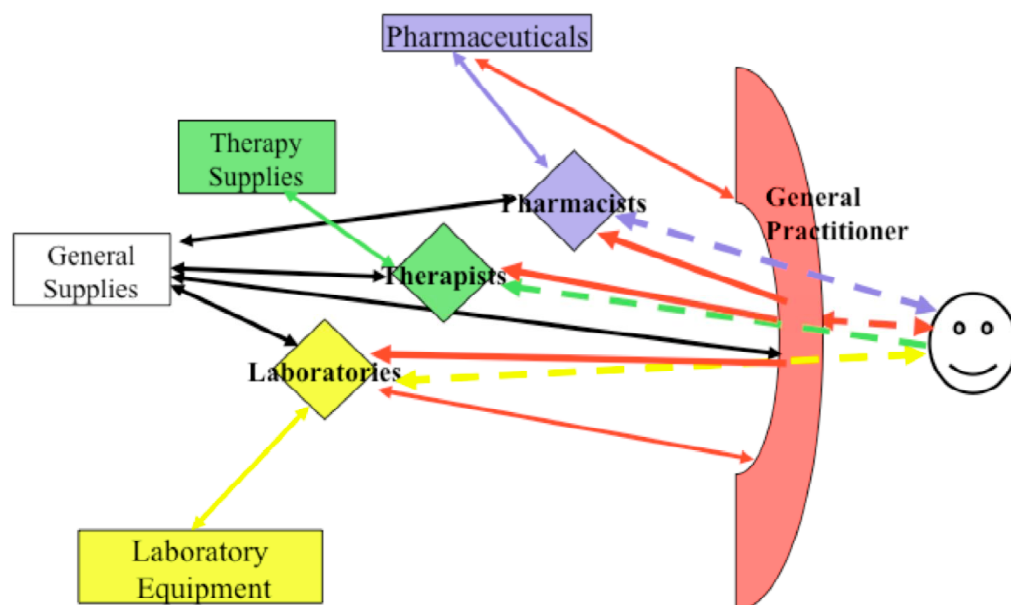
Descriptions of hospitals commonly focus on the number of beds and the treatment of inpatients. Yet more patients generally receive hospital care through outpatient clinics or day case units. Auckland hospital, for example, is a New Zealand tertiary level institution, with annual services comprising 120,000 inpatient stays, 700,000 outpatient visits, 90,000

emergency department visits, 250,000 radiology examinations and 3.1 million laboratory tests (A. Arulambalam, Adult Services Manager, Planning & Funding, Auckland District Health Board, personal communication May, 2010). Another illustration is the UK's Leicester Royal Infirmary (LRI), which in the mid-1990s had 103,000 inpatient episodes, 400,000 outpatient visits and 120,000 emergency attendances (Bowns & McNulty, 1999). Thus, while the terms community and hospital care denote the place of service delivery, the services provided could also be seen as part of the continuum of community-based care.

Hospitals are typified by the co-location of different medical specialties and groups of health professionals. Generally each group is located together in its own department or work unit and organises much of its own work practice (Braithwaite, 1995; Doolin, 2004). For instance a group of orthopaedic specialists are likely to be co-located and either directly control or influence the management of many assets like wards and equipment, relationships with specialised suppliers, and groups of assistant personnel. Communications between health practitioners proceed through a system of assessments by medical specialists and trainees, and referrals or delegations to other health practitioners (Reeves & Lewin, 2004).

Figure 4 below illustrates the typical organisation of work in hospitals: the consumer is depicted in the white circle; general practitioners and medical specialists in the red crescents; and suppliers in the rectangles. The different health professions or their suppliers are distinguished by colours with: pharmacy in purple, laboratories in yellow, therapists in green, nurses in blue, general suppliers in white, and other technical specialists or their suppliers in brown. The solid arrows represent referrals or supply contracts, and the dashed lines show the movement of consumers around the specialist health professionals. The boundaries of the hospital organisation are depicted by the purple rectangle, with dotted lines to indicate the porous nature of this organisational boundary through which referrals may proceed directly from a medical practitioner to other service providers.

An image common in traditional analysis of health practitioner regulation is that of a sole health practitioner engaged in an ongoing confidential and trust-based relationship with a consumer (Arrow, 1963; Roberts & Dietrich, 1999). While this type of consultation does occur, it is important to notice that this is mostly within the structure of a health service organisation, where many other people in different roles contribute to scheduling, record-keeping, diagnosis, treatment and follow-up (Hartswood, Procter, Rouncefield, & Slack, 2003). The involvement of many different practitioners has implications for consumers, who may experience fragmentation in service delivery, as they encounter different practitioners for different aspects of a service within the same organisation or through referrals to different organisations (Bodenheimer, 2008; Bomba & Prakash, 2005).

Supply chains in the health sector

Profession-centric patterns of organisation characterise the health sector more generally. These patterns or supply chains are formed by a range of firms and agencies that specialise in the provision of equipment, materials, and services to particular groups of health professionals. I illustrate the range of organisations involved in a supply chain for a typical radiology practice.

A 'supply chain' denotes the relationships between a manufacturing or service delivery organisation and the other firms or organisations it depends on to manufacture, supply, transport or warehouse materials, components or products, and the activities related to managing relationships with customers like taking orders and tracking payments (Tan, 2001). Supply chains are also networks of actors, resources or activities, that extend both inside and outside a focal organisation, and which taken together may have their own identity and shared strategic interests (Chen & Paulraj, 2004). Supply chains may form around health service organisations, such as for the supply of general inventory, legal or audit services, or sub-contractors that deliver some services for patients. There are also highly specialised supply chains that form around specialist groups regardless of whether these groups are located in the community practices or in the specialist departments of hospitals. On the supply-side, these profession-centric supply chains can include: regulatory-agencies, educators, research organisations, and technology and materials companies. On the consumer or demand-side they may include: consumers, insurers, and patient complaints investigation agencies (Begun & Lippincott, 1993).

Figure 5 below illustrates the notion of a healthcare supply chain using the example of a radiology practice, which might be located in either the community or in a hospital department. Each of the orange boxes depicts a type of healthcare stakeholder organisation that may contribute to the supply chain, including: education institutions, health profession regulatory agencies, and health profession organisations, healthcare technology suppliers, health services providers, consumers and their purchasing agents, and organisations tasked with regulatory oversight of health services. Listed inside each box are examples of these stakeholders. The boxes on the left of the service providers are engaged in supply-side activities, while the boxes on the right indicate those on the demand side. While this figure places these stakeholders in a horizontal plane, the blue arrows indicate that communications and relationships can be multi-directional. The diagram also shows the range of regulatory authorities that could be engaged in overseeing a health profession. Governments may award statutory authority to entry-to-practice regulators such as for medical practitioners or radiographers. Over time the

picture may become more complex as specialist colleges form to set standards for specialist training and gradually secure recognition from their respective registration authority, such as for medical practitioners specialising in radiology or radiographers specialising in sonography.

Figure 5: Supply chain relationships around radiology services

Profession Education Institutions

Medical schools

Profession departments for diplomas and bachelor degrees

Schools for PhDs Research Institutes

Profession Regulators

Medical Council

College Radiology

College Radiographers

College Sonography

Materials Suppliers

Film

Chemicals

Contrast Agents

Film recovery

Patient care supplies

Technology Suppliers

Xray Equipment

Ultrasound Scanners

CT Scanners

MRI Scanners

Digital & Manual Displays

Computer systems

Independent or Corporate Technology Research Centres

Provider Organisations

Private Radiology Practices

Public Hospital Radiology Departments

Private Hospital Radiology Departments

Consumers

Government Purchasers

Health Insurers

Referring Professions

Service Regulators

Radiology Accreditation Providers

Equipment Licensing & Radiation Monitoring Agencies

Medicines Licensing Agencies

Public Hospital Auditors

Private Hospital Auditors

Patient Complaints Commissioners

Profession Meta-Regulators e.g. CHRE

This picture of healthcare stakeholders forming supply chains around a group of health professions has implications for service improvement. Following Chen and Paulraj (2004) it is important to recognise that profession-centric supply chains may become conduits for advancing the interests of each respective health profession. If the health profession does well, then its suppliers are also likely to benefit. While a profession-centric supply chain is likely to be interested in sharing the success of a specialist department, it might have little interest in the health service organisation overall. Health service organisations have porous boundaries due to the pattern of referrals between medical practitioners and groups of health professionals, both inside and outside the organisation. Thus, health service organisations can also be pictured as a co-location for the intersection of many profession-centric supply chains in which strategic objectives could differ from those of

the health service leadership. Given the regulatory authority that health professions may command, this could have important implications for service improvement that affect the organisation of work among the health workforce. As leading authors in quality improvement, Womack and Jones (1994) point out that success with quality improvement programmes could involve changes to both the specialist departments of an organisation and the supply chains that service that organisation.

CONCLUSION

This chapter has begun the task of uncovering the mechanisms inherent in health practitioner regulation and health service improvement by understanding the historical construction of the health workforce and how this creates linkages through profession-based departments or practices in hospitals and community practices, and in supply chain organisation of firms and agencies across the health sector. These descriptions have generated important insights that deserve further investigation in the next four chapters.

First, the social conditions, knowledge, and technologies that were pivotal in the construction of the health professions and service delivery organisations in the 19th century have each changed significantly. In the 21st century women generally have access to higher education and careers, evidence-based curative medicine is the norm, the public has both a higher level of education and significant access to healthcare knowledge, technologies are much more sophisticated and reliable, and computerisation of many work processes could enable new ways of organising clinical work. The extent of these changes suggests that there could be opportunities to improve health service delivery through the reorganisation of work in the health workforce.

Second, the non-medical health professions secured their position in the social organisation of healthcare by agreeing to the terms of the 19th-century physicians. Since then, there has continued to be boundary struggles both within medicine and at its boundaries with other health professions, notably around delegation or referral of clinical work. From a political and policy perspective, it could be important to have a better understanding of these struggles to identify opportunities for stakeholder engagement and improvement. However, it is equally important that the subject of conflict at the inter-professional boundaries not obscure the bigger picture. There could be important insights from a broadly based investigation of how to organise work to meet the needs of

patients, rather than directing too much attention to the merits of inter-professional skirmishes around pre-existing boundaries in the health workforce. At the same time, there are likely to be implications for health professionals.

Third, consumers seem to have had little voice in this historic division of work, for reasons that may relate to the historic lack of cures, the concentration of power amongst the physicians, or the limited participation of the general population in the governments of the 19th century. Today, health workforce divisions mean that consumers can be required to negotiate appointments or relationships with various specialist health practitioners to complete a single episode of healthcare. This could be contrasted with developments in other industries, where new designs make services more accessible and convenient for consumers, such as in the reorganisation of work that has created choices in retail, from shops to supermarkets, malls, and most recently to the internet.

Fourth, the boundaries of health service organisations appear porous, and are intersected by supply chains that could place professional interests above those of the organisation, and they are also penetrated by the referral system that operates between professionals, regardless of their community or hospital locations. In particular, the hospital could be seen as an artefact of the co-location of health professionals and their respective supply chains. This suggests that any programme directed to improvement of service quality or efficiency could have to negotiate changes among both specialist departments and their associated supply chains.

Finally, there could be implications for policy-makers. While traditional descriptions have focused on the ideal of a sole medical practitioner, and the location or intensity of service delivery, progress in health service improvement might also be served through attention to the profession-based structure of health services and the organisation of agencies throughout the health sector.

The next chapter begins building an explanation about how health practitioner regulation could affect health service improvement, with a critical review of mechanisms in health practitioner regulation, an overview of health service improvement, and an outline of how unintended interactions could occur in health service organisations from independent policy making.

4

A CRITICAL OVERVIEW
OF HEALTH PRACTITIONER REGULATION AND
HEALTH SERVICE IMPROVEMENT

INTRODUCTION

This chapter focuses at the macro-level of the health industry as the first step in discovering mechanisms and builds an explanation of how health practitioner regulation could contribute to difficulties with health service improvement. The chapter begins with the historical construction of medical regulation and its enduring influence in the regulation of the modern health workforce. It then overviews recent international trends for the expansion of regulatory regimes for health professionals and intensified government oversight of registration authorities. This suggests that there are reasons to doubt that the mechanisms available at the regulatory level could deliver the intended policy objectives to strengthen consumer protection and increase health workforce flexibility. The chapter then overviews health service improvement policies and the network of regulatory agencies directed to improving safety, quality, and efficiency in health service organisations. This leads to a consideration of the potential for differing goals among the many registration authorities and other regulatory stakeholders to have unintended interactive effects in health service organisations. Yet the narrow focus of policy reviews of health practitioner regulation appears to preclude consideration of this potential. Regulatory changes around health practitioner competency and scopes-of-practice, along with policies for management reforms and quality improvement programmes are selected for further investigation. The chapter concludes that it is necessary to look beyond traditional accounts to discover the mechanisms that could link health practitioner regulation to health service improvement,

The chapter draws on grey literature, which uses acronyms for certain government agencies. Among these: MoH refers to the New Zealand Ministry of Health; HDC refers

to the New Zealand Health and Disability Commissioner; the Treasury refers to the New Zealand Treasury; DHS refers to the Victorian Department of Human Services in Australia; AHPRA refers to the Australian Health Practitioners Regulation Agency; DH refers to the Department of Health in England; CHRE refers to the UK Council for Regulatory Excellence in Healthcare, which became the Professional Standards Authority in 2013; Office of the Professions refers to the agency governing the health professions in the US State of New York.

Section 4.1 begins with the historical legacy of medical regulation in policy thinking about health practitioner regulation. Section 4.2 overviews contemporary international trends in the regulation of the health workforce. Section 4.3 overviews health service improvement policies and the network of regulatory stakeholders governing healthcare. It suggests that separate policy making among regulatory stakeholders could contribute to difficulties with health service improvement.

4.1 HEALTH PRACTITIONER REGULATION: THE HISTORICAL LEGACY

This section overviews the 19th-century construction of regulation for medical practitioners, and its legacy in the regulation of the health workforce. This shows there are reasons to doubt traditional accounts of occupational regulation, in the context of a regulated workforce and policy levers available to modern governments.

Traditional levers of medical regulation

The modern form of health practitioner regulation dates from 1858 when the UK government established the General Medical Council (GMC) authorising physicians to manage a register of all medical practitioners. This replaced former arrangements whereby the church, the universities, or the monarch determined who was permitted to practice medicine, with parliamentary support for self-regulation by medical practitioners (Berlant, 1975). Today, this system is applied to many health professions that comprise the modern health workforce.

Traditional levers of medical regulation continue in modern legislation, including: control of protected titles, approval of training curricula, accreditation of training institutions,

maintenance of a register of approved practitioners, and prosecution of non-complying practitioners (Stacey, 1995). Protected titles have evolved from 'apothecary', 'surgeon' or 'physician' to 'medical practitioner' (Berlant, 1975). The use of titles associated with other health professions such as 'registered nurse' is also restricted. Modern registration authorities register newly qualified health practitioners, and accredit the training programmes provided by both tertiary education institutions and health service organisations (Fels, 2007; Stacey, 1995). Prosecution of non-complying practitioners was a feature of the early royal charters, and this continues in the private courts of modern registration authorities (Berlant, 1975; Bertness, 2009; Paterson, 2002). Each of these levers may be found in contemporary legislation for all regulated health professions, such as in the New Zealand Health Practitioners' Competency Assurance Act 2004, or the Australian Health Practitioners National Law Act 2009.

Control over training was central to securing a unified medical profession. In the United Kingdom, the physicians first persuaded parliament to establish the GMC, and within just 14 years they had used this statutory authority to amalgamate training for physicians, apothecaries, and surgeons (Berlant, 1975; Weisz, 2006). In the United States, state legislatures were reluctant to award control over medicine to the medical profession. They preferred to maintain competition by appointing non-medical personnel to medical licensure boards, certifying a range of different training institutions, and having negligible penalties for unlicensed practice. In response, US medical practitioners progressively amalgamated state medical associations to form the American Medical Association (AMA), and then secured control over training by awarding 'accreditation' status only to those medical schools and hospitals that recognised the authority of the AMA (Berlant, 1975). Common to both the UK and US strategies is control over the training of medical practitioners, which is essential to ensure that power is centralised within the profession, rather than distributed across small groups of practitioners with the potential for divergent views.

The system of separate 'colleges' governing post-graduate or specialist qualifications also dates from this period. The GMC and its equivalents in Australia and New Zealand govern basic medical training, while specialist training begins after registration as a medical practitioner under the supervision of colleges like the Royal Australasian College of Surgeons (Medical Council of New Zealand, 2013a). In the United States and some

European jurisdictions, insurance companies were instrumental in formally recognising similar colleges that oversee post-graduate qualifications for medical specialists (Jost, 1995). Other health professions have emulated this system of additional self-regulatory authorities for post-graduate qualifications. For instance, in New Zealand the College of Mental Health Nurses sets standards for nursing practice in mental healthcare (New Zealand College of Mental Health Nurses, 2013). The effect is to create various elite self-regulatory specialties within each regulated health profession.

The regulated health professions, particularly medicine, may use a range of strategies to maintain control over their work (Begun & Lippincott, 1993). Historically physicians prosecuted competitors who infringed on their clients, and more recently complaints about professional practice have been made against competitors (Berlant, 1975; Jost et al., 1993). As the first registered health profession, medicine has been able to wield its influence in the development of other health professions, approving or sheltering those who agreed to perform services only when work was 'referred' from or 'delegated' by a medical practitioner. It has also been common to enforce these agreements through the appointment of medical practitioners to the registration authorities that oversee other health professions (Gardner & McCoppin, 1994; Nicholls & Cheek, 2006; Price, 2009; Savage, 1994; Schwartz, 2009).

Power has also been exercised over a range of other industry stakeholders. In the United States, the AMA has used its power to adopt regulatory authority similar to that of the GMC, to restrict the number of training places in medical schools and hospitals, influence nominations to state licensure boards, and lobby against non-medical appointments to roles of strategic importance to the medical profession (Berlant, 1975; Friedman, 1962). As nurse practitioners (NPs) have performed work previously reserved to medical practitioners, the AMA has used its authority over hospital-based training to censure hospitals that allowed NPs to admit patients (Bertness, 2009). Similar tactics have been evident in the United Kingdom where the GMC refused to allow the government appointed Chief Medical Officers of England, Wales, Scotland or Northern Ireland to participate in GMC business (Stacey, 1995). These tactics tend to occur away from public scrutiny, and registration authorities are sensitive about public perceptions that their activities could involve the pursuit of self-interest. For instance, the Australian Pharmacy Council accredits training and internship programmes for pharmacists in Australia and

New Zealand, but it makes a public disclaimer that it 'does not collaborate with pharmacy schools or organisations in the development of curricula or programs' (Australian Pharmacy Council, 2013). However, it is not clear how activities that involve control or influence over other stakeholders can be either separated from or unrelated to professional interests.

In policy reviews, occupational regulation has been viewed as lighter or stronger depending on its location on the continuum of registration, certification, and licensure (Cox & Foster, 1990). Under 'registration' practitioners must file their name and business details with a government-held register. Quality is enforced by the removal of a practitioner from the register in cases of criminal or unethical behaviour, or poor quality work. 'Certification' is a stronger scheme because it delegates the tasks of setting standards that inform the maintenance of a register or the investigation of complaints about practitioners to the professional association of each respective health profession. At the same time, it is held to be a more flexible regime than licensure because any person may perform the work, and it is only the use of titles such as 'medical practitioner' or 'registered nurse' that is restricted. Under 'licensure' it is unlawful for a health practitioner or any other person to perform the specified work unless they hold a current licence to do so, and licences are awarded only to those with the requisite qualifications. 'Negative licensure' is a variation on registration where a 'black list' is published that names any persons who have criminal convictions, or have otherwise been found unfit to offer services as a health practitioner (Cox & Foster, 1990; DHS, 2003; Fels, 2007). Since licensure is less common in New Zealand, Australia, and the United Kingdom, it may be simpler to think of 'negative licensure' as 'reverse registration' in these jurisdictions.

The case for the regulation of medicine

This section takes a critical look at the arguments in favour of regulating medical practitioners. From the late 1700s, the College of Physicians claimed exclusive knowledge, that consumers lacked judgement, and that physicians were not engaged in commerce (Berlant, 1975). It used these arguments in a struggle with universities for control of medical training and to stop the award of medical degrees to applicants from the lower social classes (Waddington, 1974). Subsequently, other professions have used similar claims in seeking statutory support for self-regulation (Fels, 2007; Kleiner, 2006).

The claim to exclusive knowledge underpins arguments for health practitioner regulation (Roberts & Dietrich, 1999), but today there are some reasons to question the strength of this claim. In the 19th century the population was largely uneducated, there were few cures, and doctors were developing knowledge through practice (Weisz, 2006). In the 21st century the health workforce is highly educated and while it is important for practitioners to have appropriate expertise, knowledge generation mostly occurs in multi-disciplinary research institutes (Johnson, 1995). Governments have also used independent research to establish standards or guidelines for clinical decision-making amongst medical practitioners (Harrison, 1998). In the modern health workforce, the idea of knowledge being 'owned by' a particular health profession has been associated with underutilisation of skilled professionals, where a health practitioner is educated to perform work but legally restricted from doing so (Safriet, 2002).

Health practitioner regulation provides for protected titles like 'medical practitioner', which was originally intended to assist consumers to select a trained practitioner from among many untrained practitioners (Abel-Smith, 1964; Dingwall et al., 1988). Through the 20th century, there has been a proliferation of protected titles associated with the health professions, counted at 717 in the United States, which may be confusing rather than informative for consumers (Begun & Lippincott, 1993). The general qualification denoted by a protected title does not necessarily indicate whether a health practitioner is suitably skilled and experienced to offer services. The modern consumer is more likely to rely on the assessment of employers as to the capability of a health practitioner to offer particular services (Jost, 1995).

To counter advocates of free trade the physicians argued that rather than engaging in competition or trade they provide services for a fee, and that surgeons and apothecaries were simply 'the instruments' of a physician's practice and not competitors (Berlant, 1975; Waddington, 1974). These arguments continue today when medical practitioners claim that nurses and other health professionals are assistants, performing work only on referral or as delegated (Reinhardt et al., 2004; Safriet, 2002). Yet, as the health professions have become subject to competition laws, there has been evidence that they can use their registration status to exploit monopoly power. In Australia, the United Kingdom and the United States, medical specialists have been found to engage in anti-

competitive behaviour such as establishing price floors or boycotting of other service providers (Fels, 2007; Miller, 1992).

There are reasons to doubt these traditional arguments about exclusive knowledge, protected titles, and services rather than trade, when applied to the modern health workforce. In the workforce context, the proliferation of professional titles and claims to exclusive knowledge might reinforce intra-professional identity, but contribute little to inter-professional collaboration in the care of consumers (Hall, 2005; Wackerhausen, 2009). In addition to the evidence of anti-competitive practices among medical specialists, similar behaviour that disadvantages consumers has been noted more generally, for instance in dentistry, pharmacy, or optometry (OECD, 2005).

Arguments against the regulation of medicine

Traditional arguments against the regulation of medicine have focused on the way regulation could limit consumer choice, and how regulated professionals may exploit their registration status at the expense of consumers. These arguments have been advanced by economists, including Adam Smith in the late 18th century and Milton Freidman in the late 20th century, and appear to have had some influence on policy-makers.

Smith argued that a qualification does not necessarily guarantee the quality of a medical practitioner's services, and that consumers should be free to choose a physician based on their reputation for service delivery (as cited in Berlant, 1975, p. 148). Smith's concerns about the limitations of qualifications appear to have been borne out as governments have intervened in the investigation of consumer complaints and mandated ongoing training for health practitioners (Allsop & Jones, 2005). The task of providing consumers with more information to support choice appears to be more difficult as professional associations may enforce rules among their members that suppress advertising to consumers, criticism of peers, or price competition (Fels, 2007). Consumers have been increasingly turning to the Internet for information about symptoms, tests, and treatment options, which is changing the nature of their relationship with health professionals (Ahmad, Hudak, Levinson, Bercovitz, & Hollenberg, 2006). Some governments have strengthened consumer rights, for instance in New Zealand consumers are entitled to ask

service providers to provide them with copies of their test or assessment results in addition to informing their general practitioner. Other strategies have been to substitute proprietary medicines or products with less expensive alternatives; permit direct advertising or sales to the public, without a prescription, for medicines or devices like eyeglasses; and allowing some non-medical professionals to offer services previously restricted to medical practitioners or dentists (Fels, 2007; OECD, 2005). However, interventions tend to be piecemeal and discrete, reflecting the high cost of investigating healthcare practices, and the power of professional associations to keep their policies private to their membership (OECD, 2005).

Friedman (1962) accused medicine of controlling entry to training to restrict the supply of practitioners and increase medical incomes, making services more expensive and less accessible for consumers. He based these claims on evidence that in the early 20th century when US medical practitioners gained licensure, their incomes grew at a rate 32% higher than that of dentists who were not licensed (Friedman & Kuznets, 1945). Focusing on this same period, other researchers have shown that licensure did not necessarily improve the quality of care, for example mortality reduced for appendicitis but not for diabetes (Law & Kim, 2005). There are similar findings from contemporary research that shows an income benefit of 10-12% for regulated occupations in the United States and 13% in the United Kingdom, but inconsistent associations to service quality in both these jurisdictions (Humphris et al., 2010; Kleiner, 2006; Kleiner & Krueger, 2010). Modern governments have intervened to increase or restrict training places, to shorten the length of training, and have used purchasing or employment policies to influence the remuneration of medical practitioners. For instance, in Australia competition laws have been used to increase training places for medical specialists (Fels, 2007), while in the United States legislatures have also restricted training places for medical specialists on the basis that more specialists would generate more tests or treatments and thereby increase the overall cost of healthcare (Cooper & Aiken, 2003).

Longer training may also be used as a barrier to entry into medicine. The length of US medical training is much longer than that of comparable economies, yet there is scant evidence that this improves the quality of US medical care (Emanuel & Fuchs, 2012). This observation has fuelled proposals to reduce the length of US training by 30% to make it more responsive to service demand (Emanuel & Fuchs, 2012). In the United

Kingdom, Australia, and New Zealand, governments are interested in shortening the time to train medical specialists (Dowton, Stokes, Rawstron, Pogson, & Brown, 2005). Internationally, there are concerns about whether medical training is sufficiently flexible to respond to changing demands in healthcare. However, finding solutions is complex because it depends on engaging a network of stakeholders including governments, tertiary training institutions, health service organisations, and registration authorities governing medicine or various post-graduate specialties (Dowton et al., 2005; Paltridge, 2006)

While governments may intervene, these interventions appear to have occurred on a piecemeal basis, with new professions, advanced practice roles, or reviews of medical training occurring in response to particular concerns about shortages in the medical workforce (Cooper & Aiken, 2003). There are now varying degrees of centralised planning for the health workforce in countries such as New Zealand, Australia, and the United Kingdom. Critics point to the weakness of this planning, which tends to focus on individual health professions, with little attention to the health workforce overall, or the skill needs in service delivery (Bloor & Maynard, 2003; Segal & Bolton, 2009; Zurn et al., 2004). There have also been recommendations for government intervention to improve the flexibility and productivity of the health workforce (Australian Productivity Commission, 2005; Duckett, 2005b; Kirby & Keon, 2004), which has led to some changes to regulation discussed in the next section.

4.2   REGULATION OF THE HEALTH WORKFORCE

This section critically overviews the recent changes to health practitioner regulation, including the expansion of regulatory regimes and the intensified oversight of registration authorities. It concludes with a critical look at how the regulatory levers of referrals, inter-professional complaints, and scopes-of-practice could be used to control the organisation of work in healthcare.

Expansion of regulatory regimes

Since the late 20th century, there has been a significant increase in the range of health professions or specialties recognised within regulatory regimes, which has been justified as a means to protect consumers. US policies are important, as this country tends to lead in the development of new health professions and technologies (Moran, 2002).

The expansion of regulatory regimes is evident in the US State of New York, where licensure first began for medical practitioners in 1890 and has progressively expanded to include many health professions: 22 by 1970, 38 by 2001, and 48 by 2010.[5] According to the New York Office of the Professions (2001) around 80% of newly regulated professions are engaged in healthcare, and the distinctions between these and other health professions may be subtle. The situation is similar in the United Kingdom, where the Council for Healthcare Regulatory Excellence (CHRE) lists nine health profession councils, with oversight of 32 health profession groups, which does not include the colleges governing medical specialities or the sub-divisions within non-medical health professions (CHRE, 2010a). The proliferation of recognised sub-divisions in the health workforce is evident in the UK Health Professions Council (HPC), which oversees fifteen different health profession registers amongst which there are 33 protected titles (HPC, 2010; NHS Executive, 2000).

There could be several reasons for this expansion of regulatory regimes. First, when professional associations lobby for inclusion in regulatory regimes, they claim that without regulatory oversight their members can pose a risk to consumers. Policy-makers can err on the side of caution in assessing these claims (DHS, 2003; Office of Professions, 2001). Second, it is plausible that governments could increase their leverage over the health professions by including more professions in self-regulatory regimes, for instance, by holding each health profession accountable for the quality of practice, or by requiring that information is regularly supplied to enhance health workforce planning (Tuohy, 2003). Third, some regulators could be predisposed to recognise new health professions. For example, the New York Regents are responsible for education policy for the State of New York as well as for occupational regulation (University of the State of New York, 2011); and, the recognition of new courses of study, new disciplines, and ultimately new regulated health professions is entirely consistent with progressing the interests of a tertiary education institution. In the United Kingdom, the Health Professions Council was specifically tasked with recognising and regulating new health professions (NHS Executive, 2000). Fourth, in an internationally competitive market for health practitioners, the expansion of health professions under regulation may be necessary to

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[5] These figures do not include all of the divisions in healthcare work because the New York Office of the Professions is not responsible for the regulation of many post-graduate specialties (Office of Professions, 2001, 2010).

attract migrants with healthcare qualifications, or to utilise the skills of migrants who have trained for health professions recognised in other jurisdictions (MoH, 2010; Zurn & Dumont).

In the United Kingdom, there are signs that enthusiasm for the expansion of health practitioner regulation may be waning, with some experimentation with employer-based regulation for healthcare assistants, and proposals for 'voluntary registers' for new health professions seeking regulatory status (CHRE, Birch & Martin, 2009; 2011; The Law Commissions, 2012).

Increased government oversight

Since the end of the 20th century, amendments to health practitioner regulation have been linked to high profile failures in service delivery, and social expectations for safe and effective healthcare (Walshe & Shortell, 2004). It is now common for governments to appoint members of registration authorities, use independent agencies to investigate consumer complaints, standardise legislation governing the health professions, use contracts to monitor the performance of registration authorities, and require that registration authorities continuously monitor the competence of health practitioners. Despite these many changes, there appears to be little change to the way registration authorities delegate policy-making to professional associations, for instance, by employing advisory committees of expert professionals (NHS Executive, 2000; Tuohy, 2003).

Consumer representation on registration authorities originated in the United States (Berlant, 1975) and is now common in the United Kingdom, Australia, and New Zealand. It is intended to improve the public accountability and transparency of registration authorities, but its effectiveness has been questioned. In the United States consumer representation has been referred to as a 'token gesture' (Jost, 1997a); UK research shows that the effectiveness of consumer representatives depends on the skills of the appointees (Stacey, 1995); and a Canadian review found that consumer representatives were not performing well and required training (Health Professions Regulatory Advisory Council (HPRAC), 2009). In New Zealand the potential for consumer representatives to become subject to regulatory capture by a health profession was apparent when two consumer representatives on the NZ Physiotherapy Board advocated in an inter-profession turf

battle, publicly criticising nurses for the performance of respiratory aspiration therapy (MoH, 2004). Yet, both these health professions may perform this work and this seems to be an inappropriate subject for consumer representatives.

Consumer watchdogs have been introduced in Australian states, New Zealand, and the United Kingdom, to independently investigate consumer complaints about health practitioners. These agencies alter the balance of power, by increasing the consumer voice and subjecting registration boards to greater scrutiny. However, this may not be an efficient means to identify incompetence. A study of the Ohio State Medical Board shows that just 2.5% of consumer complaints yield matters of clinical incompetence (Jost et al, 1993); and, there is similar evidence from New Zealand where independent investigation of consumer complaints resulted in increased complaints about medical practitioners, but fewer cases that merited referral to their disciplinary tribunal (Paterson 2002). While complaints may concern matters of service quality, they seldom involve cases of clinical incompetence; and, eventually surveillance programmes that apply meta-analysis to clinical data may prove more effective for identifying questionable patterns of diagnosis and treatment, such as unusual prescribing or claims to funders (Jost, 1995).

There is a trend to standardise the legislation governing the health professions. In part this reflects a tidying up of legislation. The NZ Health Practitioners Competency Assurance Act came into effect in 2004, replacing 11 separate pieces of legislation that dated from different decades (Statistics New Zealand, 2000). In Australia, the focus was on a single national scheme to replace and removal disparities between separate state-based regulatory regimes (Pacey et al., 2012).

There is also a trend to use agreements and audits to monitor the performance of registration authorities, and to reorganise some of the functions within these agencies. From 2000, following the death of children in surgery in Bristol, the UK government created the Council for Healthcare Regulatory Excellence (CHRE) to monitor the performance of its nine registration authorities (Department of Health (DH), 2000). One UK registration authority was reorganised, changing from 12 boards that governed one or more health professions to four joint committees responsible for investigation of complaints, conduct and disciplinary hearings, management of practitioners with personal health problems, and the determination of training requirements (NHS Executive, 2000).

Since 2009, following the death of surgical patients at Bundaberg, the Australian Health Practitioners Regulatory Agency (AHPRA) has been responsible for hosting 12 national registration authorities, negotiating performance agreements with each authority, and managing their shared corporate resources (Pacey et al., 2012). In New Zealand, the government has been encouraging its 16 registration authorities to consolidate their operations into a single secretariat (Health Workforce New Zealand, 2013b).

Continuous monitoring of health practitioner competency by registration authorities began in the United States, influenced by pressure for quality improvement from the public, purchasers, and health service regulators, as well as those interested in reform of health practitioner regulation; and this is now common practice across international jurisdictions (Allsop & Jones, 2005; Grossman, 1998; Pew Health Commissions, 1998; 1995). While health professions and education providers have led the development of competencies for initial or specialist training, legislative requirements for continuing competency have been controversial among the health professions (Conlon, 2004; Grossman, 1998). There appears to be a mix of implementation difficulties and potentially conflicting agendas among the stakeholders.

There is a range of implementation difficulties related to the specification and assessment of competencies. For professional associations, ongoing competencies appear to lie somewhere between entry-level training and the narrow focus of established specialties, which poses conceptual problems around how to specify or assess these competencies, and how to account for expertise acquired on-the-job (Conlon, 2004; Grossman, 1998; Lysaghta & Altschuld, 2000). Registration authorities have favoured self-assessment by health practitioners as the least costly method of implementation, and this is common in Australia and New Zealand. Yet, evidence available from New Zealand, Australia, the United Kingdom, and the United States suggests that health practitioners have limited ability to assess their own practice when compared with assessments by independent observers (Davis et al., 2006). Alternatively, in the United Kingdom some employers may complete competency assessments of non-medical practitioners using criteria set by the registration authorities (DHS, 2003; MoH, 2009; Secretary of State for Health, 2007). Among health professionals, there are concerns that ongoing assessments may burden conscientious practitioners who have little access to resources for ongoing training, but fail to engage those who most need to improve their practice, and that competencies may

lack relevance to the practice environment (Conlon, 2004; Grossman, 1998; Lysaghta & Altschuld, 2000).

There may be a confusion of objectives for competency assessment among employers, registration authorities, and health practitioners, such as, between professional development, assessing performance in clinical practice, or managing situations of gross incompetence (Conlon, 2004). Problems with a health practitioner's competence may originate from injury, illness, substance abuse, unethical behaviour, stress, or poor behaviour towards other health service personnel (Grossman, 1998). However, in the face of an employment investigation, a health practitioner could use an appeal to the regulatory level to conflate the nature of the performance issue or delay procedures, even where the matter may not be related to clinical competency. US research shows that employers can find such protracted proceedings too costly to manage the performance of health practitioners in such circumstances (Jost, 1995, 1997a). Yet, most complaints about health practitioners do not appear to involve matters of clinical competency (Jost, 1995; Paterson, 2002), and may therefore not warrant adjudication at the regulatory level. These are contentious issues and some commentators have suggested that thresholds be established to avoid unnecessary appeals to the regulatory level (Baker, 2006).

The overarching mechanism in health practitioner regulation is the delegation of the management of expertise or professional practice rules to each professional association (Tuohy, 2003). To date, moves to strengthen the oversight of registration authorities stop short of disrupting this mechanism, or even making its operation more transparent to outside observers.

Levers to organise work among the health professions

This section looks at the traditional levers of referral agreements, inter-professional complaints, and the more recent emergence of scopes-of-practice as a means to recognise overlaps in roles among the health professions. The focus is on how these levers may be used to control the organisation of work among the health professions.

The system of referrals was first introduced to settle disputes within medicine over the ownership of patients. Hospital specialists were permitted to offer outpatient services provided they returned the patient to the care of their general practitioner (Abel-Smith,

1964). Similar arrangements were struck between medicine and other health professions, which reserved the right to clinical decision-making and the allocation of clinical work to medical practitioners (Safriet, 2002). From the 1960s nurse practitioners and other non-medical practitioners have sought similar referral rights to medical practitioners, to diagnose patient conditions, take responsibility for treatments, and allocate work to other practitioners by ordering tests, treatments, or writing prescriptions. Generally, advanced non-medical practitioners such as pharmacists, nurse practitioners, physician assistants or physiotherapists have secured restricted rights that only partially overlap those of medical practitioners (Bertness, 2009; Cooper & Stoflet, 2004; Safriet, 1992).

Health practitioners may use inter-professional complaints to shape practitioner behaviour around inter-professional boundaries, or to manage rivals (Jost, 1995; Jost et al., 1993). Until 1840 the UK physicians prosecuted and even imprisoned competitors such as apothecaries, or surgeons, when they encroached on the physicians' clientele. The legal profession disapproved of these private courts, and today registration authorities are restricted to adjudications over the practice of their own registrants (Berlant, 1975; Bertness, 2009). However, US research shows that health practitioners may still make complaints to registration authorities as a means of taking action against a competitor in their own or another health profession. This strategy is useful for inter-professional boundary management because it invokes the legal obligation of registration authorities to investigate and enforce rules around the permitted scopes-of-practice for its own registrants, regardless of whether there is any risk to consumers (Jost, 1995; Jost et al., 1993). Breaches may be reported from clinical settings and communicated through letters of complaint between registration authorities; for instance, an Australian podiatrists' registration authority complained to a nurses' registration authority about nurses performing foot care in contravention of podiatry regulations (Nurses Registration Board of New South Wales, 2003).

The concept of a 'scope-of-practice' rather than a 'protected title' became necessary as a means to legally enable overlaps in 'who may perform what work', as nurse practitioners and physician assistants took on work previously restricted to medical practitioners (Jost, 1997b; Safriet, 2002). In jurisdictions that use this concept, registration authorities are required to develop and publish specifications for both generalist and specialist scopes-of-practice (Bertness, 2009; MoH, 2009). Some jurisdictions have constructed legislative

frameworks to encourage overlaps in scopes-of-practice as a means to improve the flexibility of the health workforce (Beardwood, 1999). This involves certification of health practitioners for their scope-of-practice with licensure applied to 'restrict' the performance of specific procedures (MoH, 2009; Safriet, 2002). These schemes originated in Ontario in 1991 and were subsequently introduced in other jurisdictions; for instance, the Netherlands in 1997, and New Zealand in 2004 (Beardwood, 1999; de Bie et al., 2004; MoH, 2009). In theory, overlapped scopes-of-practice solve the problem of non-medical practitioners who are educated to perform work but face legal obstacles to practice, and may increase the supply of primary care practitioners like Nurse Practitioners (Institute of Medicine, 2010).

There are reasons to doubt that overlaps in scopes-of-practice improve workforce flexibility. Traditionally medical practitioners have been permitted to perform, allocate or supervise all work in the domain of medical practice (Safriet, 2002). This enabled adjustments around the supply of medical practitioners, because medical practitioners could delegate or refer less desirable work to non-medical practitioners in situations of shortage, and reclaim the work as the numbers of medical practitioners increased (McGregor, 2010; Witz, 1994). For instance, orthopaedic surgeons have shed work to emergency specialists, physiotherapists, and podiatrists when there has been an abundance of interesting orthopaedic work; however, if these referrals occur over protracted periods the work may become part of the scopes-of-practice of other professions, leading to conflict if surgeons seek to regain this work (Nancarrow, 2005). The Canadian experience suggests that a legislative framework that encourages overlaps in scopes-of-practice may not increase collaborative behaviour among the health professions; to the contrary, it appears to draw attention to inter-professional boundaries and intensify demarcation activity (DHS, 2003; Health Professions Regulatory Advisory Council (HPRAC), 2001, 2009).

Scopes-of-practice may also be used to demarcate hierarchies within each health profession. In the case of nursing, there may be separate scopes-of-practice between nurse practitioners, advanced practitioners, registered nurses, second tier nurses, or nursing assistants (Sarah Robinson & Peter Griffiths, 2007); while pharmacy regulators may distinguish between pharmacists, pharmacy technicians, and assistants (Noyce, 2006; Wick, 2008). As the scopes-of-practice proliferate, there is a risk that this may exacerbate

complexity around 'who may perform what' or 'delegate what to whom' both within as well as between the health professions.

Regulation tends to lag practice and regulatory regimes may contain inherent inconsistencies, particularly between different health professions. In the United States, licensure rules lag the requirements of practice settings, with breaches of regulations by nurse practitioners and other non-medical practitioners both common and seldom prosecuted (Bertness, 2009; Cooper & Stoflet, 2004). In New Zealand, health professions such as ambulance officers, army medics or physicians' assistants are not included under the NZ regulatory regime and commonly work under delegation from a medical practitioner (Ayling, 2004). The New Zealand Medical Council sets policies for relationships between medical practitioners and consumers, or between medical colleagues, but has limited jurisdiction in inter-professional delegation (Medical Council of New Zealand, 2013b). If a surgeon employs an enrolled nurse to perform some surgery, then unless there are complaints regarding the competence of the surgeon this matter falls outside of the jurisdictional interests of the Medical Council. Yet surgical work is outside the scope-of-practice for an enrolled nurse. In an analogous supervisory arrangement between a nurse practitioner and an enrolled nurse, both practitioners might be subject to censure from the New Zealand Nursing Council (Nursing Council of New Zealand, 2011, 2013). Thus regulatory regimes may entail significant inconsistencies in the treatment of similar work by different health professions despite the overall claims that such regimes are designed to protect consumers.

While governments have strengthened their oversight of health practitioner regulation, some changes may generate complexity in service delivery. The trend to define scopes-of-practice within health professions and encourage overlaps between different health professions is intended to enable workforce flexibility, but may generate ambiguity and complexity around 'who may perform or delegate what work' in the multidisciplinary workplace. Difficulties may also arise from conflicting objectives and complexity associated with regulators defining and overseeing competencies that may or may not usefully support developments to improve the practice environment.

4.3 REGULATORY STAKEHOLDERS IN HEALTHCARE

This section overviews the policies for service improvement and the network of regulatory stakeholders governing healthcare. It concludes with a critical look at whether goals could be aligned among regulatory stakeholders and the isolated treatment of health practitioner regulation in policy reviews.

Policies and agencies in service improvement

Governments in New Zealand, Australia and the United Kingdom have used a range of policies to improve service delivery. Service contracts have been used to motivate service providers, to increase services for targeted diseases or populations, reduce variations in clinical practice, or increase efficiency (Bloom, 2000; Cumming & Mays, 2002; Oliver, 2005). Service guidelines and technology evaluations have encouraged medical practitioners to consider current evidence in decision-making, rather than to rely solely on their professional training or experience (Chalkidou et al., 2009; Cumming & Mays, 2010; Rogers, 2000). Service providers may now be expected to reach accreditation standards for specialist departments such as laboratories, or for facilities, bed numbers, equipment etc. (Bohigas et al., 1996; Burnett et al., 2002). Since 2000, there has been more attention to workforce planning due to concerns about the sustainability of the health workforce and the skill-mix needed to meet the demands of aging populations (Duckett, 2000). Since the 1980s, management reforms and quality improvement programmes have been ongoing to improve leadership, teamwork, and clinical processes, along with leveraging ICT to improve service delivery (Degeling & Carr, 2004; Powell, 1995).

Accreditation programmes, management reforms and quality improvement programmes have each been directed to improving a range of inputs in health service organisations. Health practitioner regulation also controls inputs to service delivery by governing the work of many health professions, which means that interactive effects could arise if improvement policies are directed to the control of similar inputs. This might occur in accreditation programmes, for instance in prescriptions around the qualifications of health professionals, management of clinical technologies, or use of quality indicators in reporting systems (Greenfield & Braithwaite, 2008). However, while accreditation has

evolved into a multi-million dollar industry, there is only a small literature around these programmes, with research underway to improve the evidence base (Braithwaite et al., 2011; Ovretveit, 2005).

In contrast to accreditation programmes, there is an established literature around management reforms and quality improvement programmes both in healthcare and in other industries. While these improvement policies have been directed to improving service inputs, such as leadership structures, financial management, ICT and work processes; they are also concerned with how best to organise these inputs to realise improvements in service efficiency, quality or safety (Ben-Tovim et al., 2008; Hunter, 1996). Further, these policies have engaged registered health professionals to change aspects of their practice environment and work processes. While improving patient care is a goal shared among health professionals and managers alike, management techniques for quality improvement focus on the overall service to consumers and not the priorities of each health profession (Shortell et al., 1998). Thus, studies of management reforms and quality improvement programmes could reveal interactions between health practitioner regulation and health service improvement.

As part of implementing improvement policies, governments have moved functions that were once part of government-owned health services into new regulatory agencies (Hood & Scott, 2000). As these authors point out, the new regulators could act in concert or in conflict depending on the circumstances. The combination of many registration authorities and other regulatory agencies governing health services has been referred to as a 'network of regulatory stakeholders' (Braithwaite et al., 2005). As the New Zealand Productivity Commission has observed, this reorganisation of government services and creation of arms-length agencies can impose significant costs on service delivery. This may occur where there has been inadequate consideration of regulatory objectives, design of regulatory arrangements, as well as in the implementation of regulations (New Zealand Productivity Commission, 2014).

Figure 6 below illustrates the network of healthcare regulators that may be found in jurisdictions like New Zealand, Australia, and the United Kingdom. In the two blue boxes are the health service organisations and health practitioners who are the targets of various interventions. The red boxes depict the registration agencies, professional associations,

and health profession educators that generate or enforce standards for regulated health practitioners; in the dashed red box are the regulators tasked with independent investigation of consumer complaints, such as the New Zealand HDC, or to review the performance of registration authorities, such as Australia's AHPRA. In the pink ovals are the organisations that perform accreditation surveys or quality audits for health service organisations, such as the UK's Care Quality Commission, or the agencies tasked to assess health technologies such as New Zealand's Pharmaceutical Management Agency (PHARMAC); the agencies responsible for specification or negotiation of contracts with service providers; and the agencies that develop policies around the supply of the health workforce, such as the UK's Skills for Health, Health Workforce Australia and Health Workforce New Zealand. In the dark blue box are the agencies that enforce general laws such as those for financial audit, competition, or employment; and in the dark blue oval are the agencies engaged in health service redesign, such as the NHS Institute or in some cases, private consultancy companies. The black arrows depict the focus of regulatory oversight, with registration authorities focused on health practitioners or educators, and the complaints regulators focused on registration authorities. Other agencies are focused on health service organisations with service redesign that is targeted to each level within a health service organisation. The area of blue crosshatch on either side of the health service organisation draws attention to the opportunities for interventions to interact with health practitioner regulation at the levels of the organisations, teams, and health practitioners.

Figure 6 The network of regulatory stakeholders in healthcare
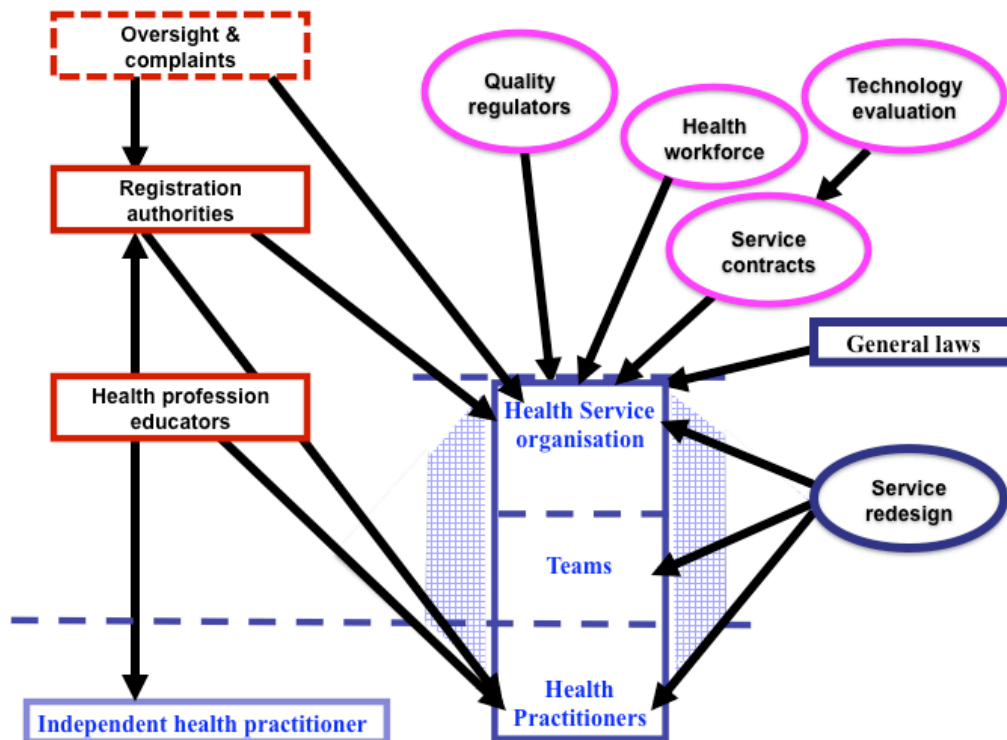
Health service organisations are the subject of direct or indirect oversight from these regulatory agencies, and consumers are the intended beneficiaries. Yet, there appears to be relatively less representation of the interests of consumers or health service organisations within the network. Consumers may complain to registration authorities, independent complaints investigators, or health service organisations about the quality of services (Paterson, 2002). However, they are generally not presented with any choice around the design of service delivery; for instance, whether they would prefer to receive tests and treatments at a single visit, or to make separate appointments with different service providers. Health service organisations are subject to many improvement policies and are likely to face significant complexity in decision-making generated by competing agendas among this network of regulators (Hood & Scott, 2000).

Policy goals and the potential for interactions

Regulatory networks in healthcare are complex with an absence of 'super-regulators' to draw regulatory functions together (Lewis, Rosete, & Mays, 2006). Different regulators could independently develop policies (Hood & Scott, 2000), such as professional scopes-of-practice, accreditation for a particular type of service, or performance targets for an aspect of service delivery. Differing goals for service improvement or differences in focus among regulators could generate unanticipated interactive effects in service delivery.

The goal of health practitioner regulation is to protect consumers by focusing on the competence of professionals in each health profession (McDonald, 2010). In contrast, the goals of service improvement include improving the quality, safety or efficiency of health service operations overall (McDonald, 2010; Powell et al., 2009). There is some evidence that management ideas about quality improvement have influenced health professionals, with medical leaders stressing the importance of environmental and systemic factors in the maintenance of safe, high-quality services (Leape, Berwick, & Bates, 2002; Reason, 2004). There has also been some attention to how health practitioner regulation could influence the progress of service improvement through its effect on job design or the flexibility of the health workforce (Australian Productivity Commission, 2005). The US Institute of Medicine (IoM, 2001) has identified service fragmentation as the major source of quality problems, and recommends general management techniques such as teamwork, inter-professional communication, and clinical ICT to improve the coordination and quality of care. These management techniques are central to quality improvement programmes that have been led by both general managers and clinical leaders (Powell et al., 2009).

These developments suggest some convergence of thinking about health service improvement. There could be a case for focusing the efforts of regulatory stakeholders around a combined goal, such as to improve both quality and efficiency, and enable innovation as long as it is consistent with consumer safety. However, the focus of registration agencies is on professionals within a specific health profession, while management reforms and quality improvement programmes are directed to the overall delivery of care.

Two areas for potential interactions could reveal much about the effect of health practitioner regulation on health service improvement. First, there could be interactive effects from differing policies among registration authorities. The independent creation of separately regulated scopes-of-practice could contribute to demarcation activities as health professions police their boundaries, generating complexity in inter-professional practice. If differing policies contribute to the fragmentation of care, then this could exacerbate quality problems in service delivery. Second, the policies of registration authorities could interact with those of other stakeholders, notably employers. Registration authorities, professional associations, and health profession educators are primarily engaged in the implementation of clinical training and practice standards among registered health professionals (Jost, 1997b; Price, 2002). There are overlaps in responsibilities between registration agencies and employers around the verification of qualifications and experience, and the management of performance (MoH, 2012). Weak cohesion between health practitioner training and the practice needs of service delivery could generate difficulties around the integration of new graduates into practice, or the matching of practitioner skills to new service designs. Changes to require registration authorities to oversee scopes-of-practice or competency could produce interactive effects, such as ambiguity around the roles of health practitioners, the authority of regulators and employers, permitted inter-professional supervisory arrangements, or accountabilities in clinical practice. These overlaps could operate synergistically, be a source of duplication or inefficiency, or generate conflict.

Policy reviews of health practitioner regulation

I now return to the subject of health practitioner regulation in the context of policies for service improvement. Policy reviews tend to draw on traditional axioms about occupational regulation, with little consideration of the potential for interactions in the health workforce or with service improvement policies. I offer the tentative suggestion that it could be possible to proceed differently as has been illustrated in the case of the financial services sector in Australia.

First, policy reviews tend to assume the traditional options of registration, certification, and licensure, although the lightest option of registration has been rarely used. A lighter feature of the New Zealand scheme is that consumers may complain to a consumer

watchdog about any person offering a healthcare service, and the practitioner's actions may be assessed according to a charter of patients' rights (MoH, 2009). Generally, registration schemes have been rare because they offer limited standards or expertise to support investigations of poor practice. It has been more common to adopt certification or licensure in which the tasks of setting standards and monitoring the performance of professionals have been delegated to professional associations (DHS, 2003; Ogus, 1995; Safriet, 2002). However, the differences between licensure and certification appear to be difficult to distinguish in healthcare. Licensure is common in the United States, where it is unlawful for persons who are not registered under a health profession scope-of-practice to perform health services (Bertness, 2009). In other English-speaking jurisdictions like the United Kingdom, Australia and New Zealand certification has been preferred (Kings Fund, 2007; McDonald, 2010). Certification is held to be a lighter scheme than licensure because it does not prohibit individuals who are not 'certified' from performing services. Yet, under certification registered health practitioners must apply annually for practising certificates and report their areas of competency to their registration authority. Failure to do so could risk censure or deregistration by the respective registration authority (Allsop & Jones, 2005; Fels, 2007). Health professionals are also required by their registration authorities to perform work within their scope-of-practice or competencies (Medical Council of New Zealand, 2013b). While in theory there is no prohibition against unregistered persons providing health services in certification schemes, it is not clear that this is any more likely to occur than under licensure.

Second, policy-makers have been guided by generic principles for regulatory best practice; for instance, the principles of the UK Better Regulation Taskforce (2003) have informed policy reviews in the United Kingdom, Australia and New Zealand (Department of Health Extending Professional Regulation Working Group, 2009; von Tigerstrom & Ellena, 2005). According to these principles regulation should be proportional to the risks to be managed, have consistent rules and standards, be transparent to stakeholders, and target the problem with minimal side effects. Some of these principles are evident in recent changes to standardise regulation across the health professions, and in measures to improve the transparency and performance of registration authorities. However, it may not be possible to satisfy all principles equally and change is likely to be tempered by politics (Salter, 1999).

Third, in the context of the progressive expansion of regulatory regimes, it could be timely to reassess the implications for management of risk and the cost of this regulatory option. Inconsistent outcomes for the management of risk are evident in New Zealand, which has 16 registration authorities responsible for certification of health practitioners and five activities restricted due to their potential risk to consumers. However, these restrictions do not apply to over 35 health professions that are not included within this legislation (MoH, 2013a; 2013b). In both Australia and New Zealand, there are health professionals who practice outside of certification schemes and may perform these restricted activities, including defence force medics, physician assistants, and emergency medical technicians (Jolly, 2008; MoH. 2009; Williams, Brown, & Onsman, 2012). Risks could also arise when professional practice rules contribute to ambiguity or conflict around roles, authority, or accountability in health services (Brown et al., 2000; Brown et al., 2011). If the policies of independent registration authorities tend to fragment care around the inter-professional boundaries, this could have implications for quality improvement in health services. Given that these inconsistencies or conflicts could contribute to risks for consumers, the effectiveness of health practitioner regulation in consumer protection deserves more scrutiny.

Self-regulation is considered cost effective for governments (Fels, 2007; Ogus, 1995), but extensive regulation of the health workforce and intensified government oversight suggest that this axiom deserves scrutiny. Registration requirements for longer training have increased both the cost of training and the remuneration for registered professionals (Fels, 2007; Humphris et al., 2010). Direct costs tend to fall on employers who pay registration fees for health professionals in accordance with industrial agreements, or for these fees to be passed on to purchasers. There is also potential for indirect costs in the clinical workplace (The Treasury, 2012), such as those associated with meeting requirements for professional development that may or may not relate to an organisations' priorities for improving service delivery. In New Zealand, employers have complained about increased costs for annual practising certificates, following legislation for registration authorities to continuously monitor the competency of health practitioners. Government has responded by attempting to persuade the 16 registration authorities to make efficiencies by sharing their administrative resources (Health Workforce New Zealand, 2013b). As governments have expanded regulatory regimes or intensified their oversight, they have invested more public resources to monitor

registration authorities, investigate complaints, or operate health practitioner courts. Recent expansion of coverage and increased government oversight could have eroded the anticipated cost effectiveness of self-regulation by each health profession.

Fourth, there could be potential for suppression of service innovation or improvement if such changes do not fit within professional practice rules. An Australian review pointed to difficulties for innovation around job design, while in the United States professional practice rules have been found to block new models of service delivery (Australian Productivity Commission, 2005; Christensen et al., 2000). These difficulties may not be unique to healthcare regulation. In the Australian financial services industry, regulatory oversight had been divided between specialist agencies for particular types of financial institutions like banks or insurance companies, and oversight of industry-wide issues like maintenance of a competitive environment. The limitations of this approach were apparent as innovations produced conglomerates offering both banking and insurance services. From 1998, Australia reorganised the regulatory agencies, tasking them to work together to achieve an optimal balance between competing regulatory objectives, strengthen their oversight of the sources of market failure, minimise the cost of regulation, and enable innovation as long as consumer protection is not compromised (Carmichael & Pomerisano, 2002).

An analogous approach in healthcare might align regulatory objectives or rebalance authority among registration authorities and other healthcare regulators. Collaboration among the network of regulatory stakeholders (Braithwaite et al., 2005) might improve the design of training programmes for health practitioners, find consensus on policies to address difficulties in inter-professional practice, or create shelter arrangements to trial new models for service delivery. However, advancing these or similar agendas seems unlikely without further research to identify how health practitioner regulation could impede service improvement, along with political consensus as to the potential benefits of rethinking regulatory design in healthcare.

CONCLUSION

This chapter has provided an overview of the mechanisms in health practitioner regulation and improvement policies for health service organisations. It has revealed similar arrangements in English-speaking and similar developed economies, with policy directions for the inclusion of more health professions in regulatory regimes, increased government oversight of registration authorities, and policies to improve the performance of health service organisations. It has indicated that independent policy making among the network of regulatory stakeholders in healthcare might have unintended effects in health service organisations. Management reforms and quality improvement programmes have been identified as offering the best lens for observation of policy interactions with health practitioner regulation. For these policies, there is a well-developed literature and these changes engage the health workforce in their implementation. Therefore the effects of health practitioner regulation might be observable in published accounts of service improvement.

The chapter also found reasons to doubt the usefulness of traditional accounts of health practitioner regulation. Historically, the regulation of medicine established a justification for self-regulation that has now been applied to most of the health workforce. This historical justification assumed a single health profession with practitioners mostly operating as sole traders in their relationships with consumers. In the context of many regulated health professions and most practitioners employed in health service organisations, this justification deserves scrutiny. Yet, there has been scant attention to how regulation focused on individual health professions could play out in a multidisciplinary workforce. Scholars have suggested that control of training may be used to progress a health profession's self-interest, and there is some evidence for self-interest in the use of referral rights and inter-professional complaints. Yet this could be the tip of an iceberg if registration status could be used to control various resources in the multidisciplinary workplace.

Of the recent changes to health practitioner regulation, two were selected for further investigation. First, overlaps in scopes-of-practice appear to erode the authority of medical practitioners to organise healthcare work, to encourage independent elaboration of professional subdivisions and intra-professional practice rules by registration

authorities. Second, the continuing oversight of competency by registration authorities appears to extend their remit into the realm of health service management. The combined effects of these changes could be to exacerbate complexity and ambiguity around 'who may perform what work', 'what work may be delegated', or 'who may supervise whom' among the health workforce. There is also the question of whether employers who appear to have little representation among the network of regulatory stakeholders have sufficient authority to resolve questions concerning rules generated from the regulatory level.

Management reforms and quality improvement programmes in health service organisations were also selected for further investigation. These policies include changes to leadership, teamwork, electronic record keeping, streamlining of workflow, and more integrated models of service delivery. Practitioners from different health professions could be grouped together in multidisciplinary teams, technologies traditionally controlled by particular professions could be redistributed to others, or new roles could be created by mixing skills from different health professions. Changes of this sort could be difficult unless improvement policies align to professional practice rules for each health profession. Therefore these policies offer a promising lens through which to observe interactive effects between health practitioner regulation and health service improvement.

This chapter has highlighted the importance of health service organisations and inter-professional practice in contributing to patient safety and the quality of care. It also questioned whether independent policy-making by registration authorities would enhance or detract from inter-professional collaboration. To understand how health practitioner regulation could interact with health service improvement, it is necessary to delve deeper into the mechanisms of health practitioner regulation and how these could play out among the many professions in the health workforce.

5

REGULATORY PRIVILEGE AND LEVERAGE IN THE HEALTH WORKFORCE

INTRODUCTION

This chapter builds on the macro-level understanding of the mechanisms of health practitioner regulation, to trace the effects at the micro-level in the health workforce. It investigates the levers enabled by health practitioner regulation, constructing a lens that could link the regulatory level to events in health services. This includes the 'visible levers' of health practitioner regulation that are commonly specified in legislation, and other levers that emerged in the 19th century construction of the health workforce. The focus is on how these levers enable the health professions to control a range of resources in both supply chains and service delivery organisations. 'Resources' refers to both tangible assets like clinical equipment or ICT, or 'near patient' technologies that shift work from particular professions to other professionals or consumers, and intangible assets like specialist or generic expertise that enable a health service organisation to deliver services. These levers, which I refer to as 'regulatory privilege', could enable professional associations to leverage state sponsored self-regulation to control resources in their own interests. The visible levers of health practitioner regulation may be likened to flags erected on the surface of an iceberg, and as with the iceberg, the bulk of regulatory privilege could be less visible existing below the waterline in the application of professional practice rules in the realm of clinical practice. Contemporary discourse about the health professions is used to investigate how regulatory privilege could be used to control resources, and to consider some implications for the professions themselves and for the improvement of health services.

Section 5.1 explains how regulatory privilege enables the health professions to communicate their strategies throughout the health sector. Section 5.2 begins the survey of regulatory privilege looking 'above the waterline' at control over expertise, training, or titles, and the implied quality guarantee to consumers. Section 5.3 takes this survey

below the waterline, to the control of clinical technologies and ICT. It shows how laboratories, medical imaging practices, and pharmacists have shaped technologies in directions that strengthen their services. Section 5.4 looks at the use of less tangible levers, at how special language and profession-led role definition may be used to demarcate work and impede inter-professional collaborative practice, drawing on illustrations from medicine, nursing, pharmacy, and therapy professions. Section 5.5 explains the importance of the referral and inter-professional complaints systems to the maintenance of traditional divisions in the health workforce.

5.1 CONDUITS FOR REGULATORY PRIVILEGE

This section explains how linkages in the health industry enable the transmission of strategies from professional associations both to members of the respective health profession, and to other stakeholders in the health industry. It defines a health profession, revisits the traditional notion that professional power is vested in unique knowledge, and concludes by outlining the range of resources that could be subject to control by the health professions.

Before surveying the range of resources that health professions may control, it is necessary to explain how an occupation, social group, or individual health practitioner may exercise control over assets that are owned by health service organisations. Savage's definition of a profession 'as a network of strategic alliances' assists by showing how a health profession may operate collectively to progress matters of common interest to its members and at the same time enable those members to operate independently for other purposes:

> A profession is a network of strategic alliances across ownership boundaries among practitioners who share a core competence (Savage, 1994, p. 131)

According to Savage, professions are distinguished by knowledge and skills, explicit or tacit, which are either unique to the profession or too costly for another profession to acquire. The profession network is comprised of a group or community of practitioners in which individuals operate separately for many purposes, but depend on the network to develop and maintain the core competencies that enable them to generate income. Members of the network are able to engage in an exchange of knowledge and services or

create production routines in support of their common interests, independently of the organisations in which they are employed. Individuals may contribute to the group through the development of new knowledge or techniques, and by ensuring that their own practice and that of colleagues is consistent with the group's reputation for service quality (Savage, 1994). This definition is important because it draws attention to the networked nature of the health professions, and their capacity to operate across or within the boundaries of various stakeholder organisations.

Similarly Begun and Lippincott (1993) explain health professions as 'communities' that are led by an elite network of senior practitioners who may occupy positions of influence in health sector organisations, and simultaneously contribute to the leadership of their professional association, for instance in: education institutions, materials and technology suppliers, regulatory agencies, health services, and healthcare purchasers. This explanation is useful because it draws attention to the potential similarity of health professions to organisations engaged in strategic supply chains, in which a network of leaders may act in concert to pursue their common strategic interests (Chen & Paulraj, 2004).

While the networked character of health professions may explain their capacity to pursue strategies through many conduits for influence, it does seem sufficient to explain the persistence of the health professions or their authorities to exercise control over resources owned by others. Savage (1994) traces this authority to the ownership of unique knowledge assets within the profession network, i.e. because professions may leverage knowledge and skills that are either unique to a profession or too costly for others to acquire. Thus, if the production of an X-ray or checking of a prescription medicine requires knowledge uniquely held by a particular health profession, then only members of the respective profession can perform these tasks. However, unique knowledge assets seem implausible as a sufficient explanation for the persistence of historic divisions in the health workforce or the control over resources owned by others. While new knowledge and technologies may contribute to building health professions or creating new specialties, it does not explain why advances in education, clinical technologies, and information communication technologies (ICT) have not led to changes that supplant the 19th century divisions in the health workforce.

Rather than rely on unique knowledge assets, health professions have successfully lobbied governments for statutory authority for self-regulation, which confers authority to both generate and enforce professional practice rules. Even when health practitioner regulation stops short of the licensure that restricts the performance of work to the members of particular health professions, regulation still enables professional practice rules to be enforced in ways that may control both health practitioners and resources. In an industry characterised by many regulated health professions, control over patient referrals and inter-professional complaints may be used to control both colleagues and members of competing health professions. Registration status may also be reinforced by other regulatory agencies, which have used it as a basis to define, assess or ration aspects of health service delivery. Therefore, the capacity for regulated health professions to exercise control over resources they do not own may in some instances relate to unique knowledge assets, but could also relate to their right to generate or enforce professional practice rules that restrict the use of various resources. This could have effect on organisations engaged in either supply chains or in service delivery.

If health professions control expertise and specialised resources, this could be useful to health service organisations, enabling a division of labour in which managers focus on securing contracts, or managing the procurement of facilities, equipment and materials, while the health professions oversee the use of these resources in clinical practice. It seems plausible to imagine a harmonious arrangement of this sort, under conditions of generous resources or uncritical acceptance of service quality. Since the 1980s healthcare has become the focus of policies to contain expenditure, and public expectations for better quality of care. Governments have both strengthened health practitioner regulation and implemented quality improvement programmes in health service organisations. Quality improvement programmes call for managers to engage health professionals in reorganising resources to improve the overall quality of services for consumers. In this context 'who may control these resources' could be important, and conflicts could arise where the reorganisation of resources in health service organisations is inconsistent with the policies of the many independent registration authorities.

Figure 7 below depicts four groups of resources that could be subject to regulatory privilege. In the red oval is the quality guarantee and control of titles at the heart of health practitioner regulation, and in the red rectangles are expertise and training. In the purple

rectangles are clinical technologies, clinical information and ICT; in the pink rectangles are the less tangible levers of special language and role definition; and in the blue rectangles, the referral agreements and inter-professional complaints that have implications for the coordination of work in healthcare.

Figure 7: Levers in the exercise of regulatory privilege
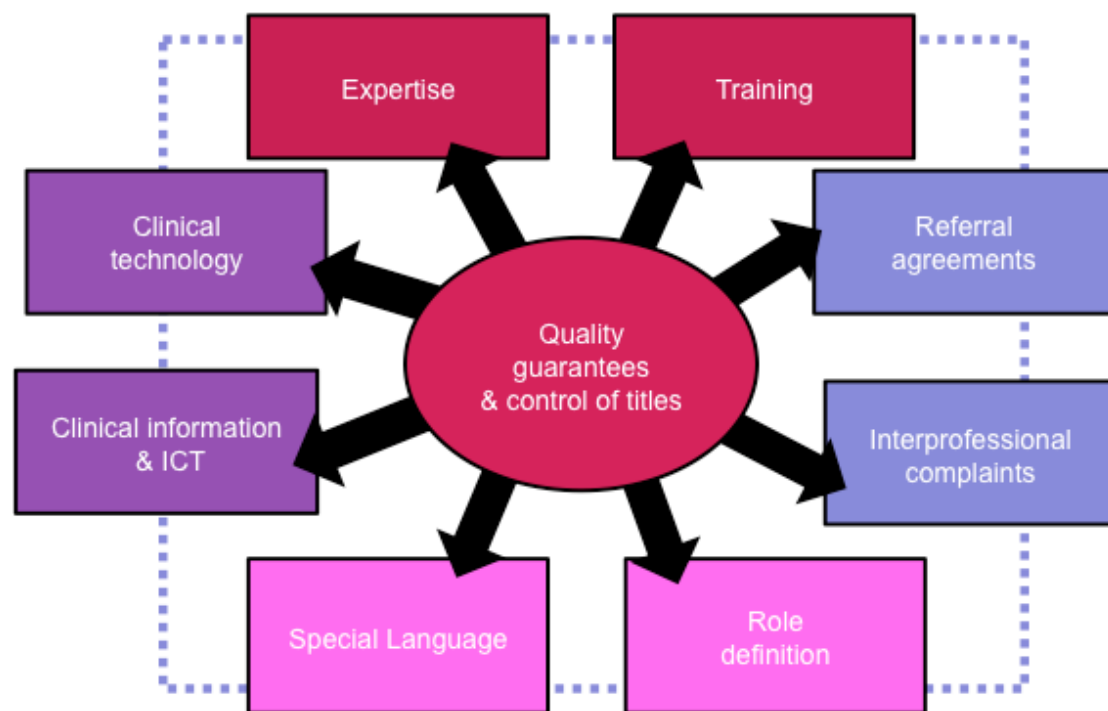
I use these four groups of levers to assist the narrative. The first group of regulatory levers are 'above the waterline' in the sense that they are commonly included in legislation and scholarly discourse on health practitioner regulation. These include expertise, training, quality guarantees and titles. The other three groups of regulatory levers are below the waterline because they involve the less obvious application of professional practice rules to control resources in clinical practice, and have received scant attention in the scholarly discourse. The second group of levers includes clinical technologies and ICT that are tangible resources, and the third group includes the less tangible resources of special languages and role definition. The fourth group includes the use of inter-profession referrals and complaints that contribute to maintaining the traditional divisions in the health workforce.

It is possible that health professions use these levers in various combinations to control resources, limit the clinical practice of other professions in the health workforce or shape the use of resources in health service organisations, depending on the opportunities or political circumstances. Light (2000) coins the term 'countervailing powers' to explain shifts in the relationship between the health professions and the state over time, and points out that dominant behaviour by the health professions can lead to excesses that inevitably provoke the exercise of counter-measures from other social, political, or economic groups. Given these risks, the less visible the levers of regulatory privilege, the more valuable they may be. If regulatory privilege is pursued in everyday clinical practice, then it may be important to identify how this occurs, particularly if the effect of this regulation on health services appears to be difficult for policy-makers to assess (The Treasury, 2012).

In the next four sections, I draw on illustrations from medicine, nursing, pharmacy, physiotherapy, laboratory science, and medical imaging to investigate how these levers that were evident in the emergence of the health professions may be reinforced by health practitioner regulation and continue to shape the use of resources in modern healthcare.

5.2   ABOVE THE WATERLINE: TRADITIONAL REGULATORY LEVERS

This section considers some traditional levers of health practitioner regulation that lie above the waterline in the sense that they are commonly evident in legislation. These include the implicit control over expertise, the explicit control over training and titles, and the quality guarantee implicit in the regulatory objective of consumer protection. In each case there could be reasons to rethink the importance of these levers for consumer protection in the 21st century. Of particular interest is how these levers may relate to problems around flexibility in the health workforce or fragmentation in service delivery.

Expertise

There were historical reasons for a tight coupling of expertise, specialisation, and the regulation of professions, because few citizens were educated, and knowledge was difficult to generate or communicate. Thus educated professionals were important

resources to governments as they built the apparatus of the modern state to provide education, healthcare, and social welfare services (Berlant, 1975; Weisz, 2006). Today, research is less likely to be tightly coupled with clinical practice, and there is evidence that it is difficult to disseminate knowledge across boundaries between the health professions (Currie & Suhomlinova, 2006). If the health professions exercise their regulatory privilege to resist sharing expertise across inter-professional boundaries and these difficulties are widespread, this is likely to impede the progress of service improvement that depends on collaborative practice and knowledge sharing among members of different health professions.

Claims to unique expertise have characterised the development of the health professions. Health professions typically have foundation stories, in which early practitioners are celebrated for their role in contributing to the knowledge base of the profession, such as the work of Joseph Lister in developing aseptic techniques in surgery, Florence Nightingale in ensuring that nurses had the skills for accurate clinical observation, or Thomas Bessell Kidner's mapping of occupational activities to rehabilitation for occupational therapists (Alexander, 1985; Dingwall et al., 1988; Friedland & Silva, 2008). Through the 19th century, relatively few people were literate or educated, so state sanctioned self-regulation appears to have performed an important service for consumers, by identifying those practitioners who had a legitimate claim to knowledge and practice in the delivery of healthcare (Berlant, 1975).

Today, social conditions have changed and expertise is no longer uniquely vested in bodies of knowledge developed or maintained solely by particular health professions (Johnson, 1995). While trained health professionals may be engaged in research, there has been a separation between those who make a career in research and those who are in clinical practice (Currie & Suhomlinova, 2006). The process of clinical research has vastly expanded with multidisciplinary research teams engaged in translating new scientific knowledge into clinical applications, or in efforts to implement new knowledge into clinical practice (Woolf, 2008). Institutions, such as the Cochrane Collaboration, have evolved to assemble and synthesize the complex array of research findings so that they may be disseminated into clinical practice (Harrison, 1998). A health practitioner may have specialist expertise relevant to particular clinical circumstances, but the idea of

a health profession as the cradle for unique knowledge became outdated through the late 20th century (Johnson, 1995).

In the 21st century, the problem of how to translate clinical research into practice appears to have overtaken the historical need to nurture and protect a health profession's capacity to develop new knowledge. Even where research findings have been synthesized so that they may be useful to health practitioners, there appear to be difficulties with translation into clinical practice. Depending on the circumstances, these difficulties could relate to the practice environment, the professional, health practitioner regulation, the patient, or the quality of the guideline (Davis & Taylor-Vaisey, 1997). Consequently, policy-makers have begun to look for ways to improve collaboration between researchers, health professionals, and health service organisations (Greenhalgh et al., 2004; Sussman, Valente, Rohrbach, Skara, & Pentz, 2006). In contrast to the claims about unique expertise being vested in each health profession, the modern challenge appears to be how best to communicate expertise from multidisciplinary research institutes into practice settings, and across inter-professional boundaries (Currie & Suhomlinova, 2006; Ferlie et al., 2005). This task could be complicated by the persistence of historically constructed divisions and scopes-of-practice in the health workforce.

As new knowledge emerges from multidisciplinary research, it is likely to generate opportunities to redistribute expertise in the health workforce. Instead of different tests or treatments being performed by practitioners from different health professions, new technologies could enable a range of tests or treatments to be delivered by a single health practitioner. While this could create an integrated service experience for consumers, the association of unique expertise with particular scopes-of-practice could slow, or even obstruct, the knowledge sharing required for such a redistribution of tasks.

Training

It is important that health practitioners acquire the appropriate clinical knowledge and skills for their roles, which is likely to involve teaching or supervision by experienced practitioners. Traditionally each professional association and registration authority has the authority to govern this training. However, this might not be the best way to prepare a

flexible workforce, where roles could need to adapt rapidly to accommodate fluctuations in patient demand, or to enable new service designs.

In the 19th century the teaching or university hospital was an integrated cradle for research, teaching and clinical practice, with the medical profession in charge of each of these activities (Abel-Smith, 1964; Dingwall et al., 1988; Francis & Humphreys, 1999b). Since the late 20th century, the teaching hospital as a solution for training has come under pressure. Many health professions have shifted the locus of their training to education institutions in order to develop advanced practitioner roles and secure independence from medicine, as has occurred in nursing, radiography, physiotherapy and pharmacy (Desmeules et al., 2012; Furlong & Smith, 2005; Hardy & Snaith, 2009; Tonna, Stewart, West, & McCaig, 2007). In government-owned health services, there have also been policies for unbundling of the activities of research and teaching from clinical practice, as a means to focus hospitals on more efficient delivery of clinical services (Mintzberg, 1997). The sustained policies for more community, or home-based services create a range of additional practice settings to integrate into training programmes (Epping-Jordon, Pruitt, Bengoa, & Wagner, 2004).

Criticisms of hospital-led training were that the demands of service delivery took precedence over the needs of students, with students missing out on opportunities to learn or expected to work beyond their capability (Francis & Humphreys, 1999b). In the shift to combined profession and education-led training, students became surplus to the staffing needs of health services. This has its own difficulties as educators must find suitable placements with appropriate supervisors for students in both hospital and community settings (Budgena & Gamrothb, 2008; Collins, 2010; Lewkonia, 2002; Rodger et al., 2008; The College of Radiographers, 2004).

There is some evidence of strain between regulators, education providers, and health service organisations. Governments have intervened to retain certificate level training for nurses in the United Kingdom and New Zealand, and to address employer concerns about the competency of nurse graduates in the United Kingdom (Farrand, McMullan, Jowett, & Humphreys, 2006; Francis & Humphreys, 1999a; Meek, 2009). Some universities have responded to calls for more collaborative practice among the health professions by introducing inter-disciplinary training experiences. So far, there is a lack of clarity as to

the effectiveness of these developments for improving inter-professional collaboration (Reeves et al., 2009). In the United States, there have been conflicts between the requirements of professional associations for doctorate-level training, the capacity of universities to offer clinical doctorates, and employers' interests in shorter qualifications to contain the cost growth of salaries (Collier, 2008). In the United Kingdom, the Council for Regulatory Excellence in Healthcare (CHRE) has begun to ask registration authorities why it is necessary for them to accredit training courses given that universities are already subject to other accreditation programmes (Harry Cayton, Chief Executive CHRE, personal communication, April, 2012).

Health practitioner regulation could be an obstacle to more integrated training or flexible career paths for the health workforce. In theory, tertiary educators might develop training that enables different pathways into practice by enabling both registered and assistant practitioners to train for tasks that are not part of their present scope-of-practice (Duckett, 2005a; Sibbald et al., 2004). The structure of university degrees could allow for major and minor subjects, cross crediting of courses, or progression through certificate, degree, and post-graduate qualifications to create a flexible framework for training or career paths. There seem to be at least three difficulties, however, in achieving such changes. First, the health professions occupy disciplinary positions in the structures of universities, and universities are also struggling with how to accommodate inter-disciplinary ways of working (Abbott, 2001; Sá, 2008). Second, each health profession school must meet the accreditation standards of their respective registration authority (Duckett, 2005a; Price, 2002). Third, as Willis and King (2010) observed in the Australian setting, there does not appear to be a forum for regulators, educators, employers, or health workforce agencies to communicate around directions for workforce development. The situation is similar in New Zealand, while in the United Kingdom CHRE has instituted informal stakeholder conferences to discuss some issues such as the accreditation of health practitioner training (Harry Cayton, Chief Executive CHRE, personal communication, April, 2012). These are each significant challenges but the most powerful obstacle appears to be the legally sanctioned authority of each health profession to independently determine its own training.

The oversight of training by registration authorities depends on the independent policy making by many registration authorities, each focusing narrowly on particular health

professions. This system may not produce sufficient adjustment in the preparation of the health workforce to meet the evolving needs of service delivery (Collier, 2008; Willis & King, 2010). It could be necessary to develop more responsive arrangements, with closer working between research institutes, registration authorities, educators, policy-makers and employers, along with loosening of the reigns held by registration authorities.

Quality guarantees

The promise that care will meet quality standards and consumers will be protected from harm underpins the statutory recognition of self-regulation for health practitioners (Roberts & Dietrich, 1999). However, this promise may prove difficult to keep given the complexity of modern health services. For example, in New Zealand a Ministerial Task Group (2009) reported that health professionals, particularly those practising medicine, feel accountable for the quality of their clinical decisions, but also feel increasingly less able to influence decisions at various levels of the health system that could affect patient outcomes. Most health practitioners appear to be competent, and the major source of quality problems appears to relate to service fragmentation in which patients are transferred between different health practitioners creating disruptions to communication or delays in service delivery (Institute of Medicine, 2001; Jost, 1997a; Leape et al., 2009; Paterson, 2002). Ongoing development of subspecialties within the existing health professions could exacerbate the problem of fragmentation by making it more difficult to match health practitioners to patient needs (Dubois & Singh, 2009). Rather than relying on health practitioner regulation, contemporary interventions to improve service quality or patient safety are focused on the design of practice environments, development of clinical leadership and communication skills necessary for inter-professional collaborative practice, organisational learning from monitoring of adverse events, workplace training for all personnel around patient safety, and some development of functional flexibility among health professionals (Baker, Jeffs, Law, & Norton, 2005; Baker & Norton, 2004; Desombre, Kelliherw, Macfarlane, & Ozbilginz, 2006). The competency of health practitioners is one contributing factor in patient safety, but it could also be counter-productive if scopes-of-practice are poorly aligned to other interventions designed to improve practice environments and inter-professional collaboration.

Control of titles

Title protection was originally designed to inform consumers about a health practitioner's qualifications, but there is now a proliferation of protected titles that could be confusing (Begun & Lippincott, 1993; Berlant, 1975). There is also a proliferation of workplace titles that provide information about an individual's role or work area, but may not reveal whether they are a registered health professional, or which qualification they hold; for example, titles like 'coordinator rehabilitation', 'community care organiser', 'quality leader', 'unit manager' etc. 'Dr' is a title that may no longer be restricted to medical practitioners (Collier, 2008), and titles such as 'clinician', 'Dr nurse', 'nurse practitioner', or 'physician assistant' may not clarify matters for consumers. Today, protected titles do not seem to be necessary as a means to determine that a health practitioner is trained, as employers, purchasers and insurers verify a practitioner's qualifications and assess their experience (Bertness, 2009).

Protected titles seem anachronistic in the 21st century, but they remain important to the regulated health professions (McDonald, 2010; Office of Professions, 2001). Some protected titles could operate more like brands that associate particular health professions to images of quality, authority or integrity, which could be useful to attract patients, influence political decisions around funding of particular services or technologies, or win public sympathy in industrial negotiations (de Chernatony & Dall'Olmo Riley, 1998). Among health professionals, advocacy to influence policy-makers or to shape consumer behaviour has been identified as a core competency useful for improving population health (International Council of Nurses, 2008). However, it could be difficult to separate professional expertise, professional self-interest, and the public interest when health professionals and consumer groups seek to influence health policy, for example, where midwives campaign for funding of home births, or when medical specialists publicly support the funding of new medicines (Gabe et al., 2012; Reiger, 2000). As Salter (2003) points out, there is a delicate balancing act in which policy-makers depend on the health professions to implement policies such as the rationing of health services, and consumer acceptance of service rationing depends on maintaining public trust in the health professions.

Health profession control of expertise, training, and titles was important in the 19th century world of knowledge generation and skills transfer among the few medical practitioners who had access to education, capital, and new technologies. The teaching hospital emerged as a cradle for the integration of research, training and clinical practice under the oversight of medicine. In contrast, there are quite different challenges in the 21st century to bring new knowledge and technologies into a range of practice locations, and to overcome the fragmentation associated with historically based workforce divisions through redistributing skills among the health workforce. In these circumstances, there could need to be changes to health practitioner regulation and new mechanisms for aligning research, training, and clinical practice to the needs of consumers.

5.3 BELOW THE WATERLINE ONE: CONTROL OF TECHNOLOGIES

This section looks at the how innovations in clinical technologies or clinical information communication technologies (ICT) could be welcomed by a regulated health profession as a means to build their scope-of-practice, but resisted if the innovation erodes their control over their work. It begins by drawing attention to how computer professionals have had to adapt to technology innovations that disrupted their work. In contrast the health professionals could use their registration status to exercise more control over technologies integral to their scopes-of-practice, and this could be essential for the survival of a particular health profession. The section draws on illustrations from laboratory medicine, radiology, and pharmacy. It concludes by outlining how this use of regulatory privilege could be a limiting factor in the evolution of new business models in healthcare.

Clinical technologies have been integral to the work of some health professions since the 19th century (Carruthers & Carruthers, 2005). However, modern communication technologies and miniaturised components mean it is now possible: for patients to manage their own tests or treatments at home, for conditions like pain management or renal dialysis; for portable laboratory or imaging devices to be used by generalist health practitioners in clinical settings; for services to be delivered via telemedicine in which video links enable specialists to guide generalists through diagnostic or treatment procedures; and for wireless broadband to be used to monitor clinical data from

devices attached to a patient's wrist, or embedded in clothing (Goldsmith, 2004; Mowatt, Vale, & MacLeod, 2004; Oncel, Sencan, Yildiz, & Kurt, 2002; Skeil & Thorpe, 2001; Wang, 2002).

The challenge facing some health professions could be compared to the introduction of personal computers (PCs) and localised printers on the centralised ICT departments of the 1980s. ICT professionals resisted these new technologies claiming that users lacked the skills to manage their own computing; there were risks for the security or integrity of corporate data; and distributed computing would be more expensive than centralised services (Benson, 1983). The question of whether end-user computing would prevail over the business model of centralised ICT departments was not decided by ICT department personnel, but among the technology companies that established standards for PCs, remote computerised devices, or software, and the consumers who purchased these new products or services (Morris & Ferguson, 1993). This contrasts with healthcare, in which companies could develop technologies but may not be able to implement these in clinical practice. This situation can arise because the standards around the use of clinical technologies, or who may use them, are largely shaped by professional associations and reinforced by other stakeholders such as education providers, equipment or materials suppliers who collaborate with particular health professions, and agencies that regulate the funding or quality of health services (Hwang & Christensen, 2008).

As the next three illustrations show, unlike the ICT professionals, members of regulated health professions may leverage their regulatory authority to capture or shape the direction of technology development, and government intervention may be necessary to circumvent this.

Medical laboratory technologies

The trend in laboratories has been towards large, centralised services to improve the productivity of laboratory operations (Smellie & Roy, 2005). Like the centralised ICT departments of the 1980s that entered data and produced reports, high-volume laboratories are engaged in batch-style processing that depends on efficient systems to coordinate the collection and transport of specimens for testing, and the communication of results back to each referring health practitioner (Guidi & Lippi, 2006).

The advantage of large centralised laboratories for different types of clinical practice is difficult to assess, because this business model has developed around labour savings or process improvements in laboratories, rather than on the particular needs of referring health practitioners (Whittock & Leonard, 2003). Laboratories have been criticised for generating higher income by performing additional tests, which the referring medical practitioner may then need to investigate although these results could be unrelated to the patients' symptoms (Zinn, Zalokowski, & Hunter, 2001). Additionally, it is usual for a proportion of test results to be erroneous, with repeat testing necessary to determine whether results that deviate from norms are accurate or even relevant to the clinical condition of interest (Plebani, 2006). Coordination problems may be exacerbated as consumers need to be notified to attend additional specimen collection appointments, and the physical and temporal separation between laboratory specialists and their physician clients can hamper collegial communications (Guidi & Lippi, 2006). Typically, there is a delay between the timing of the patient consultation that generates the test request, and the opportunity to discuss results with patients. When this is combined with the presence of erroneous or irrelevant results that necessitate repeated testing, this may delay or complicate the progress of an episode of care (Plebani, 2006).

Given these problems, it is not surprising that treating physicians have expressed interest in 'near patient' testing, such as small analysers located in clinical practice settings or single use disposable test kits. Some studies show advantages of these technologies for monitoring of patients in clinical locations such as cardiology and emergency departments, or for rapid diagnosis in general practice (Blattner, Nixon, Dovey, Jaye, & Wigglesworth, 2010; Jones, Phillips, Fellix, & Tait, 1997; Nichols et al., 2000; Singer, Viccellio, Thode, Bock, & Henry, 2008). Laboratories have resisted requests for near patient test devices, pointing to the potential for personnel in clinical settings to compromise patient safety through errors related to specimen handling or the calibration of small analysers that are remote from the laboratory, and some have suggested that near patient testing ought to be subject to statutory regulation (Kost, 2001). Hospital laboratories have advocated for pneumatic tube systems to transport specimens for critical areas like emergency or neonatal departments. Yet, while this may improve transport, it is expensive and does little to address criticisms of sample handling in patient treatment

locations, or problems with the quality of communications between laboratory specialists and referring medical practitioners (Hawkins, 2007; Lee-Lewandrowski et al., 2003).

The trend for centralised laboratory services creates economies of scale for the processing of tests, but has also stimulated interest in 'near patient' testing to improve the availability of diagnostic information in various clinical settings (Price, 2001). While health services have been slow to adopt 'near patient' testing, development of this technology is being funded by the US military and agencies looking for reliable, easy to use, and inexpensive devices or test kits for healthcare in developing countries (Yager et al., 2006). The sophisticated computer controlled analysers that are now used in laboratory services have simplified work processes, and generated more work for laboratory technicians rather than for more highly qualified laboratory personnel. 'Near patient testing' may bring further change with healthcare or medical assistants now performing tests in community-based medical practices in some US states (Collier, 2008).

Medical imaging technologies

There are similar issues around the control of technology in medical imaging. Large, expensive scanners create a significant barrier-to-entry in medical imaging and contribute to high incomes for specialists who produce diagnostic reports (Gill, Ondalegui-Parra, Nathanson, Seiferth, & Pablo, 2005). At the same time, automated exposure settings, patient positioning guides and digital imaging have made examinations easier to perform or communicate to stakeholders (Woodford, 2006). The development of sophisticated automated equipment make it possible to delegate the performance of some radiographs to assistant practitioners (Tache & Chapman, 2006). Despite these technology enhancements the business model of centralised imaging departments has persisted, with radiology practices resisting generalised use of portable X-ray or screening machines and raising concerns about radiation safety, the availability or cost of registered technologists to attend remote locations, and the superiority of centrally produced images (Snow, Bergin, & Horrigan, 1990).

As Christensen and colleagues (2000) explain, portable, low-cost, and low-intensity scanners are now available as a by-product of US military research. However, their use in healthcare has been blocked by radiology practices and hospital emergency departments,

which have a vested interest in the existing business model. However, there are also signs of change in some US states where physicians in community practice are permitted to employ assistants who are not licensed health practitioners to perform some X-rays, along with other tasks such as scheduling patient appointments, taking electrocardiograms or giving injections (Tache & Chapman, 2006).

Medical laboratories and medical imaging departments are characterised by a range of sub-specialities and technologies. Thus, technology development could enable some work to be performed in clinical practice settings, while other work requires the resources of a specialist department. Even so, it is important to notice that ICT professionals could not exploit regulatory privilege to retain centralised computer services or block development of technologies for use by consumers, and left manufacturers free to develop distributed technologies and for computer users to influence this process. In contrast, as illustrated above for medical laboratories and imaging departments, referring medical practitioners and consumers may have little voice when the professional associations of regulated health professions determine who may use clinical technologies or where they may be used. This situation could be reinforced when healthcare purchasers seek savings from centralised services without considering how this could affect the overall cost or efficiency of services for referring practitioners and consumers (Lee & Lansky, 2008).

Regulatory privilege and technology development

As these illustrations from laboratory and radiology show, the regulated health professions may resist changes in the use of technologies by claiming that other health professions lack sufficient expertise, that quality will be compromised, or that decentralised solutions will drive up the cost of services. Regulatory privilege may also be used as a lever in the development of new technologies. In Figure 8 below, the rectangles depict stakeholders in the development of clinical technologies: a technology company in green, a technology regulator in pink, a university medical faculty and a clinical department in red, and a teaching hospital outlined in blue. The arrows indicate the pathway for taking new technologies from ideas to implementation in clinical practice. Technology companies must demonstrate the safety and efficacy of a new technology, so that the technology may receive the requisite licensing or funding approvals for use in clinical practice. To assess safety and efficacy, it is necessary to find

a safe and ethical way to conduct trials with patients. This, in turn, depends on securing the cooperation of a specialist clinical department for the conduct of these trials. Such cooperation may not be forthcoming if the new technology poses a threat to the specialist department's preferred business model or the control the department's professional staff may exercise over their work.

Figure 8: Pathways for development of new clinical technologies
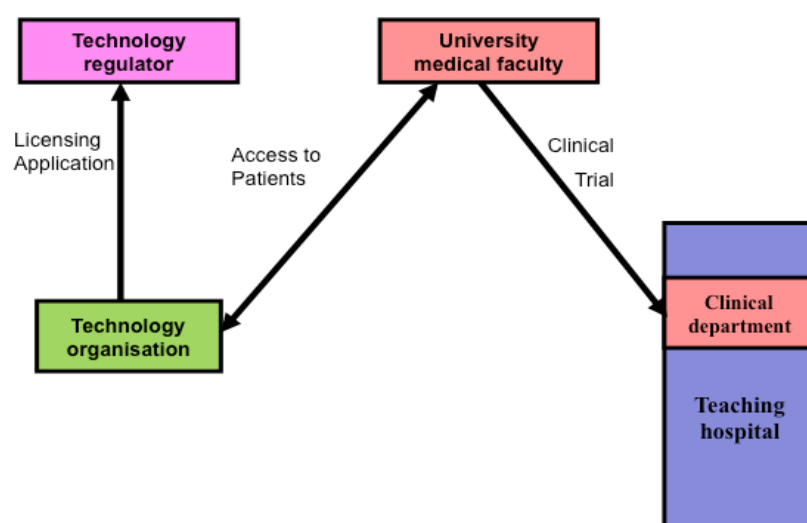
This process is best known in the field of clinical trials and licensure for pharmaceuticals where the mutual alignment of self-interest between pharmaceutical companies and medical specialists has been noted by researchers (Gafni & Birch, 2003). There appears to be scant attention to the way regulated health professions may block other technologies that could contribute to service improvement. Realising the benefits from technologies that might disrupt traditional workforce arrangements could require adjustments to health practitioner regulation.

Clinical information and ICT

The 'medical record' was a management innovation of the 19th century (Gorsky et al., 1999). It continued as a system of paper records maintained separately in each hospital department with some information held centrally through most of the 20th century (Reichertz, 2006). From the 1970s, hospitals began to computerise the administrative and billing aspects of patient records and clinical departments began to implement their own systems (Reichertz, 2006). However, integrated electronic records have been less

welcome among the health professions as practitioners have had to adjust to standardised data entry and information sharing among colleagues or other health professionals, with the risk that this could support performance assessments or the redistribution of some work. This section shows how policies to reduce medication errors using ICT has and could continue to redistribute work from pharmacists to other personnel.

Traditionally hospital pharmacists managed the purchasing of medicines and the operation of a central medicines store, maintained smaller inventories in each ward or patient treatment area, answered phone inquiries about medications, and prepared and delivered special medication orders for particular patients (Zaki, 1989). Nurses or medical practitioners accessed their local inventory for medicines, recorded or 'charted' the medication in a patient's medical record and 'administered' it to patients, and phoned the pharmacy for special prescriptions or urgent replenishment of the local inventory (Zaki, 1989). Since the 1970s, hospital pharmacists have led in the introduction of computers to improve medicines purchasing and inventory management and to monitor the use of medicines. This has led to new roles for pharmacists in managing pharmacy ICT, providing sophisticated medication advisory services, and conducting audits of medication use (Pederson & Gumpper, 2008).

Through the 1990s, US regulators led in encouraging the use of ICT to reduce the incidence of patient injury or death from medication errors (Davis et al., 2002; Leape et al., 1991). There is now computerised support for prescribing, dispensing, and administration of medicines.

First, prescriptions may be entered directly into computerised patient records in patient care units, avoiding the need to make phone requests or transport paper prescriptions to the pharmacy. Capture of information at the point of prescribing means that local inventories can be smaller with most medicines supplied for each patient directly from the pharmacy. If pharmacists continue their traditional practice of checking each prescription and entering it into a pharmacy system, this involves large volumes of data-entry for medicines that were previously dispensed from local inventories by nurses or other health professionals. There has been a trend for pharmacy technicians to take on some of this repetitive data entry work. Another more contentious option is for prescriptions to be transferred directly into an electronic pharmacy system for supply to a patient care unit,

with perhaps random checking of prescriptions by a pharmacist. As systems for computerised prescribing become more sophisticated, prescribing practitioners could rely on this immediate electronic source of drug information rather than seek a pharmacist's advice (Bomba & Land, 2006; Pederson & Gumpper, 2008).

Second, in the pharmacy, automation means that medicines may now be picked from inventories by robotic systems and transported on computerised carts to the patient care unit; and, the routine tasks of supervising the robotic equipment and filling carts for transport to the care unit has been taken up by pharmacy technicians (Pederson & Gumpper, 2008).

Third, computerised medication carts and infusion pumps can store information about prescriptions and track the dispensing of medicines to individual patients, automatically generating data on the use of medicines. This may support the role of the pharmacist in the analysis of medication use, but it is also possible that new personnel who specialise in clinical knowledge management could perform this work (Masys, 2002; Pederson & Gumpper, 2008).

As these technologies enable improved management of medications, there are pressures to redistribute clinical work. Daily electronic prescribing generates more data entry, which can be taken on by pharmacy technicians, who may now receive longer training and be included under health practitioner regulation (Noyce, 2006). At the same time, some of the work of pharmacy technicians who once replenished local medicine inventories can be transferred to clerks or nurses who transfer medicines into care unit medication carts (Summerfield, Seagull, Vaidya, & Xiao, 2011). At present, electronic prescribing systems are unsophisticated, generating unnecessary and distracting alerts, but as these systems become easier to use, they could reduce the need for pharmacists to review prescriptions (Chaffee, 2010). This might not be a welcome development for pharmacists, since the task of reviewing prescriptions appears to help them to maintain a sophisticated knowledge of the medications important to their role as advisors to prescribing practitioners (Novek, 2000). Pharmacists have used ICT to reduce the mundane tasks in inventory management and to generate new work in clinical audit and advisory roles. However, government-backed efforts to reduce patient injury from medication errors have dramatically accelerated automation in directions that appear to

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squeeze the work of pharmacists between the growing roles for pharmacy technicians and opportunities for clinical work at the patient's bedside that is also claimed by medicine and nursing (Weiss & Sutton, 2009).

Changes to robotic and computerised systems involve significant investments and champions for change (Bomba & Land, 2006). Yet, pharmacists could be reluctant to champion changes. It appears that scope-of-practice rules mean that pharmacists may feel legally obligated to check every prescription before dispensing a medicine from a pharmacy inventory (American Society of Health Systems Pharmacists, 2009). Pharmacists are also likely to be anxious about changes that involve the transfer of their work to technicians, or place them in a competitive situation with medical practitioners and nurses in their relationships with patients.

In Figure 9 below: the blue boxes depict the overall workflow between a central pharmacy on the left and a hospital ward on the right; the green boxes depict the potential for automated systems to be introduced into this workflow: the brown boxes indicate how each of the options for automation depicted in the green boxes affects pharmacists, technicians and ward personnel. The brown arrows locate two areas of difficulty for pharmacists. The arrow on the left, points to pressure for pharmacists to either devote their time to extensive data entry or hand some of this work to pharmacy technicians. This data entry work has increased as ward personnel order medicines from the pharmacy instead of taking them from ward-based inventories, which increases the daily dispensing work in the pharmacy. The arrow on the right, points to the opportunities that could be available for pharmacists to use their clinical knowledge to prescribe medicines for patients on the wards. However, this work lies within the traditional domain of medicine and is also subject to claims by nursing.

Figure 9: Progressive pharmacy automation and pressure on pharmacists
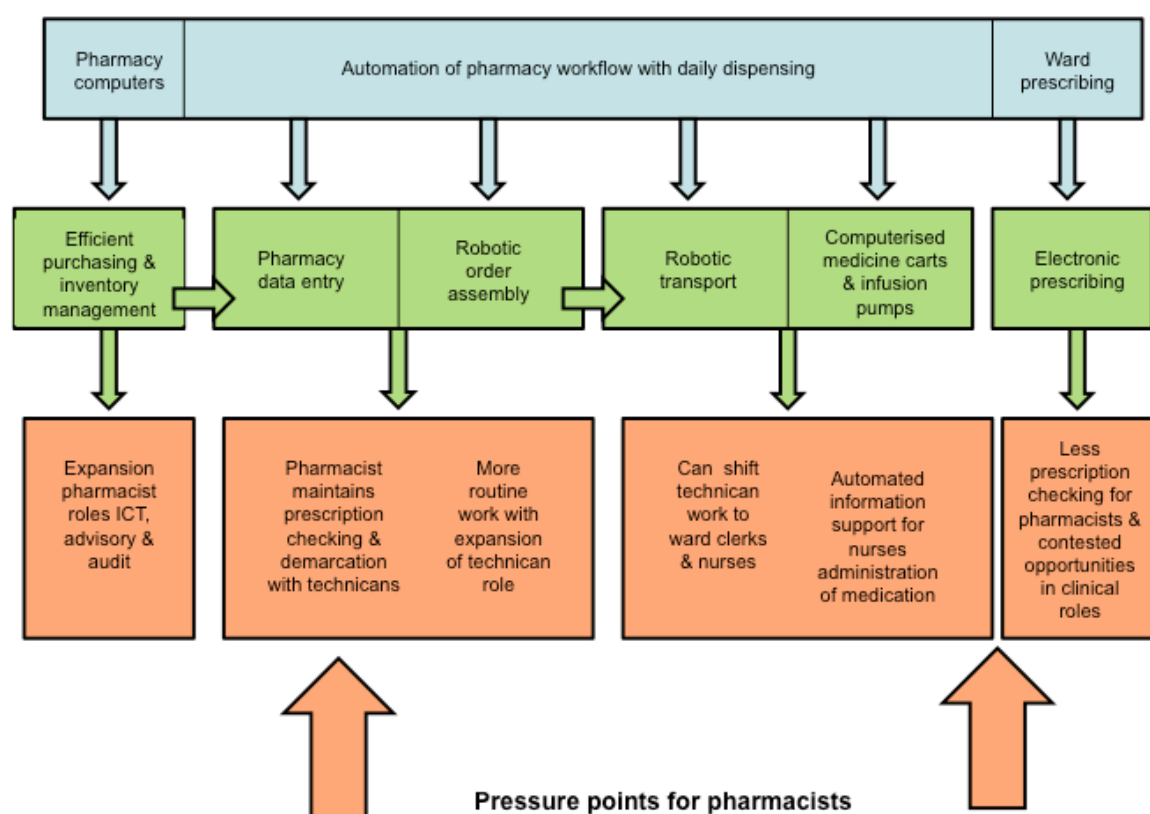
Pharmacists are not alone in facing a mix of opportunities and challenges from increased use of ICT and robotics in clinical work. In radiology, managers can use the Internet to outsource reporting of images to countries with lower labour costs for reading digital images, and computerised analysis of digital images is being developed for diagnosis of some illnesses (Hadjiiski et al., 2004; Yu & Levy, 2010). Radiologists have protected their work by developing ways to use medical imaging technologies in minimally invasive procedures, such as improving blood flow to the heart; thus, shifting some work from operating theatres to radiology departments (Jolesz, 1997). When there is sufficient new work, there could be few obstacles to transferring work to new technologies and other health professions. However, new technologies could displace work for a health profession without there being new work for them to adopt. In these circumstances, health practitioner regulation could also prove inflexible, impeding improvements and risking the loss of some skills, perhaps those of some pharmacists, from the health workforce.

Some technology innovations might be combined to form a new business model for primary care. For instance, if scope-of-practice regulations were loosened, personnel such

as medical assistants might make it possible for consumers to receive a common range of laboratory or imaging tests with results provided at the same appointment. If regulations around the ownership or operation of pharmacies were loosened, then consumers might also receive their medications at the completion of the appointment or subsequently by courier from a centralised pharmacy warehouse. New supply chain organisations are likely to be required to train these new health practitioners, calibrate equipment, provide quality audits, or warehouse the medicines and other supplies required by such a clinic. As Robinson and Smith (2008) point out, a new business model like this is unlikely to emerge without changes to scopes-of-practice, licensing of providers, or the way services are defined and purchased (Robinson & Smith, 2008).

5.4 BELOW THE WATERLINE TWO: LESS TANGIBLE LEVERS

For other health professions where work is not so readily associated with the control of particular technologies, control of other resources could be important to differentiating their work. In the 19th century opportunities for women were mostly confined to the 'hands-on' work of caring for the sick. The challenge for nurses was to redefine the nursing role as 'professional work' (Dingwall et al., 1988); while, for occupational therapists, it was to establish a philosophy and language to differentiate their work from that of psychologists or physiotherapists (Friedland & Silva, 2008). This section looks at how regulatory privilege may be used to maintain special languages, or to define the direction of role development in the interests of particular health professions. It draws on illustrations from medicine, nursing, occupational therapy, and pharmacy.

Use of special language

The growth of profession-specific terminology has paralleled the growth of the health professions (Hall, 2005; Rosenbloom, Miller, Johnson, Elkin, & Brown, 2006). Special language or 'jargon' is used to define a patient's problem, make inferences and determine interventions in accordance with the profession's claim to unique knowledge (Abbott, 1988; Hall, 2005). Difficulties with special language have been observed in inter-professional communication, multidisciplinary teamwork, and in the implementation of shared electronic patient records.

Health professions may have distinctive terms for seemingly similar tasks. Selecting medication and providing it to a patient may be described in medicine as 'prescribing and administration', in pharmacy as 'dispensing', or in nursing as 'administration' (Thornton, Simon, & Mathew, 1999). Terms like 'deprivation', 'adjustment', or 'behaviour' may be in common use, but have different meanings from a biomedical, psychosocial, or sociological perspective (Currie & White, 2012; Irvine, Kerridge, McPhee, & Freeman, 2002). Special language can also be associated with legal obligations such as the notion that 'dispensing' entails checking of each prescription by a pharmacist (American Society of Health Systems Pharmacists, 2009), or when medical practitioners feel obligated to direct other professionals' work due to perceptions about the legal precedence of a 'medical assessment' (Gilbert, 2005).

The importance of special language is evident in nursing strategies to improve their professional status. From the 1960s, the 'nursing process' was introduced as part of a strategy to professionalise nursing, develop critical thinking skills among nurses, and establish a philosophical and language base for degree-based training and advanced practitioner roles (Furlong & Smith, 2005; Johnson, 1974). In contrast to traditional team-based nursing where work was organised by a nurse manager, the nursing process paralleled medical practice by assigning an individual nurse to each patient with responsibility for generating a 'nursing diagnosis' and a 'nursing care plan', to create a consistent standardised approach to nursing documentation (McCallin, 2001; Tiedeman & Lookinland, 2004; Witz, 1994). This system also sought to change the relationship between medicine and nursing, by insisting that the medical practitioner assigned to a patient must communicate directly with the primary care nurse assigned to the patient (Reeves & Lewin, 2004; Witz, 1994).

While special language appears to be integral to a profession's development and communication strategies (Abbott, 1988), it may create difficulties for inter-professional collaboration. In the case of the nursing process, this initiative disrupted the traditional system whereby doctors relayed information via the nurse manager, and doctors resisted this change due in part to the geographical and time constraints involved in trying to identify and locate a particular nurse to communicate with (Reeves & Lewin, 2004). Establishing separate nursing records was not conducive to collaborative record keeping

among the health professions (Leonard, Graham, & Bonacum, 2004; Urquhart, Currell, Grant, & Hardiker, 2010).

In order to communicate effectively it is necessary for a team to develop a shared language. Yet the process of unpacking and comparing special languages entails risks, since this could increase transparency around 'unique' professional knowledge, risking inter-professional criticism or generating feelings of disloyalty to a health practitioner's own health profession (Irvine et al., 2002). For an individual health practitioner, the task of adopting a shared language for work within the multidisciplinary team could be burdensome since their right to ongoing employment depends on remaining conversant with the language and concepts within their own health profession along with their registration status (Sheehan, Robertson, & Ormond, 2007). When special language denotes unique knowledge, regulatory status legitimises these claims, and career progression is structured within each health profession, there might be little recognition for individual practitioners who gain fluency in shared languages or skills in inter-professional collaboration (Willis & King, 2010).

Special language also contributes to difficulties with the implementation of shared electronic patient records. Slow progress has been attributed to difficulties with interoperability around technology standards, and the willingness of vendors or purchasers to invest in interfaces that enable communication between different clinical systems (Brailer, 2005). The development of either interfaces or integrated databases is necessary to underpin sharing of information generated in various community or hospital locations and stored in a range of formats such as coded data, images, sound, scans of hand written notes, or electronic text (McDonald, 1997). At the heart of technical difficulties with bringing this information together is the task of developing inclusive clinical vocabularies, securing inter-professional agreement around the meanings of terminology and levels of detail to be captured, and determining how to present clinical information in forms suitable for use by different specialties or professions (Humphreys & Lindberg, 1998; Rosenbloom et al., 2006).

This task is further complicated by the prevalence of individually constructed text in clinical records that is difficult to manipulate within computers, and cumbersome for health practitioners to enter or retrieve (Rector, 1999; Rosenbloom et al., 2006).

Overcoming these challenges involves optimally exploiting available standards, development of coding systems for representing clinical information, and agreed conventions for translating it into forms that are suited to different health professions. Yet, this is also likely to require changes to the practice of health professionals, particularly if they are required to use coding systems, or to adopt terminology or meanings that are different from those of their own profession (van Ginneken, 2002).

There are partial solutions to the challenge of developing shared languages for clinical ICT. Standardised coding systems exist for some areas of healthcare practice. The SNOMED system has its origins in pathology, the ICD10 system has been primarily used to record diseases, procedures, or mortality information for hospital patients, and READ codes have been developed to describe some interventions in outpatient or community care. There are also internationally accepted standards for the development of interfaces between clinical computer systems, like HL7 or Internet protocols (Lusignan & van Weel, 2006; McDonald, 1997).

There are also other developments towards shared language and communication. The World Health Organisation's ICF coding system has been adapted to create tools for communication in inter-professional teamwork across biomedical and psychosocial models of care, particularly in rehabilitation services (Cerniauskaite et al., 2011). Over the last ten years, education institutions have begun to offer inter-professional education in jurisdictions such as Australia, New Zealand, and the United Kingdom; although, this is mostly limited to orientation of students to the roles of other health professionals, general communication skills, and an understanding of the importance of teamwork (McKimm et al., 2010; Thistlethwaite, Moran, & WHO, 2010).

Special language has been an essential feature of a health profession's claim to unique knowledge and is reinforced by health practitioner regulation. Efforts to develop standardised and shared languages across the health professions are ongoing as part of implementing inter-professional collaborative practice and shared record keeping. As with any substantial change, investment is required to progress these developments in education institutions and in health service organisations. However, the interests of each health profession in maintaining its claim to unique professional knowledge could limit

their capacity to contribute to policy-directions for shared languages or inter-professional collaboration (Travaglia, Nugus, Greenfield, Westbrook, & Braithwaite, 2011).

Role definition

Role definition refers to the process through which regulated health professions evolve their scopes-of-practice within the historically constructed divisions of the health workforce. This process seems invariably to involve securing more specialised or higher status work and shedding lower-status work to assistants or other occupational groups (Doyal & Cameron, 2000; McKenna, Hasson, & Keeney, 2004; Safriet, 2002). These developments are consistent with the struggle of non-medical professions to move beyond the class and gender divides of the 19th century, to establish career paths that are better aligned to the educational opportunities and expectations for social mobility in the 21st century (Safriet, 2002). However, profession-led role definition determines the parameters of healthcare jobs, and may contribute to difficulties in inter-professional teamwork, clinical leadership, and service management. It also has implications for service improvement, particularly if meeting changing demands in service delivery conflicts with the professional ideals about roles or practice boundaries.

Profession-led role definition has generated shifts across the health workforce as general practitioners move into medical specialist work, non-medical advanced practitioners claim aspects of medical work, and lower status work is transferred to unregulated practitioners (Cooper & Aiken, 2003). Health profession leaders develop new areas of practice that are subsequently ratified by regulators, such as prescribing roles for nurses, independent practice roles for physiotherapists, or clinical advisory and prescribing roles for pharmacists (Benrimoj & Frommer, 2004; Courtenay, Carey, & Burke, 2007; Desmeules et al., 2012; Gardner & McCoppin, 1994; Pearson, 2007). The picture is similar in radiography where radiographers have sought formal recognition for the interpretation of radiographic images, and laboratories where scientists have taken up the work of providing advice about test results to referring medical practitioners (Hardy & Snaith, 2009; Wood, 2002).

Policy-makers have encouraged the development of advanced practice roles for non-medical health practitioners to overcome shortages in the medical workforce, often in

economically deprived communities (Cooper & Aiken, 2003). To create a basis for more flexible work practice, health professionals' have been encouraged to 'work to the top of their scope-of-practice' or to develop advanced or overlapping scopes-of-practice (Duckett, 2005a; Nancarrow, 2005). This means that some work may transfer or be shared across inter-professional boundaries, but these boundaries endure and restrict the range of work and career opportunities for each health profession. While professional associations and registration authorities have developed new roles that improve career prospects for some registered health practitioners, the overall effect has been a pattern of 'role shifts' that also preserve the historical divisions or silos of the health workforce (Doyal & Cameron, 2000; Duckett, 2005a; McKenna et al., 2006).

As new work has been claimed by advanced or specialist practitioners, other work has been shifted to less qualified practitioners. One effect is to create new points of fragmentation in care processes that might not align well to the demands of the practice environment, such as, when experienced assistants are required to seek approval from registered nurses before completing work they may have performed for years (McKenna, Keeney, & Bradley, 2003). As advanced practitioners change from accepting work delegated by medical practitioners to acting on their own initiative, this could generate conflict about who is entitled to make decisions and who is accountable for patient care (Brown et al., 2011). If health practitioners avoid potential conflict by not discussing decision-making authority or near misses occurring in collaborative practice, this could contribute to an environment of weak accountability for patient safety (Jeffs, Lingard, Berta, & Baker, 2012; Leape et al., 2009). These difficulties with points of fragmentation, authority and accountability could be expected, since profession-led role definition is naturally focused on securing opportunities within the historically defined hierarchy of healthcare work, rather than on how best to organise the health workforce to improve service delivery.

Historically medical practitioners led in clinical decision-making, the allocation of healthcare work to assistants, and played a dominant role in the management of health services (Abel-Smith, 1964). From the 1980s, general management has been introduced to contain costs and align service delivery to population needs in New Zealand, Australia, and the United Kingdom (Bloom, 2000; Cumming & Mays, 2002). The complexity of modern health services, policy directions toward standardisation of service operations,

and the focus on fiscal constraint requires specialised management skills. Yet, the change to general management has been hampered by role confusion and different conceptions of leadership authority and decision-making processes (Degeling & Carr, 2004; Hunter, 1994). Medical leaders and other specialist health practitioners mostly conceive decision-making as being autonomous and related to treating particular patients, while general managers are more likely to think in terms of collaborative efforts to standardise management systems for the benefits of many patients (Degeling, Kennedy, & Hill, 2001; Degeling et al., 2003).

Over the last decade health practitioners have been trained in quality improvement techniques and there have been calls for management training for medical practitioners to equip them to apply systems thinking to the improvement of service delivery (Bohmer, 2010b; Braithwaite, Westbrook, Mallock, Travaglia, & Iedema, 2006b). The term 'leadership' has also been applied widely to front-line clinical personnel as well as to those with formal management authority, apparently in a bid to align the thinking of health practitioners to policy directions (Martin & Learmonth, 2010). Despite these efforts, service improvement is likely to require rethinking of the design of the health workforce and models of service delivery (Bohmer, 2010b; Hwang & Christensen, 2008). It is not clear how individual health professionals may transcend the roles defined by their professional organisations and respective regulatory authorities to conceive or effect such change.

Profession-led role definition also impedes other developments in the health workforce. As employers have introduced new roles to address workforce gaps (Hyde, McBride, Young, & Walshe, 2005), professional associations have responded with policies that limit how registered health practitioners are permitted to work with other occupational groups. For instance, New Zealand, UK, and US nursing organisations restrict the tasks that may be delegated from registered nurses to lesser qualified nurses or healthcare assistants (McKenna et al., 2004; Nursing Council of New Zealand, 2011; Parkman, 1996); pharmacist associations in Australia and the United Kingdom have issued policies differentiating 'professional', 'semi-professional', and 'non-professional' work, although in practice the differences may be difficult to discern (Hattingh, King, & Smith, 2009; McCann, Hughes, & Adair, 2010); and, UK, Australian, and New Zealand medical organisations have limited the accountability of medical practitioners in multidisciplinary

teamwork (General Medical Council, 2005; Mental Health Commission, 1998). Similarly, in response to changes to the management structure of health services, professional associations successfully lobbied for the introduction of new clinical leadership roles that sit alongside and are additional to general management roles (Fitzgerald & Ferlie, 2000; Millward & Bryan, 2005). The difficulty for service improvement is that these profession-centric tactics generate rules from the regulatory level about 'who may perform what work' and 'who may work with whom' that may not be aligned to various service delivery environments.

Scholars have advocated for health workforce planning based on patient needs rather than on estimates that relate the numbers of particular health professions to the general population (Hurst, 2006; Segal & Bolton, 2009). However, as Willis and King (2010) explain this is difficult because profession-led role definition is not focused on patient needs. Their illustration concerns the treatment of gynaecological cancers in Australia, where medical specialists in oncology or pathology may be identified as having particular expertise in gynaecological cancer care, but the general practitioners, nurses, psychologists, etc. who contribute to this care do not. This means that there is a lack of workforce data to support planning for these services, and no system of recognition for many health professionals who develop expertise in gynaecological cancers (Willis & King, 2010). Other scholars have observed that there is little evidence of profession-led role definition delivering new skill-mixes that mix traditional silo specific work and might support new delivery models or reduce service fragmentation for consumers (Bohmer & Lawrence, 2008; Mullan, 2002; Sibbald et al., 2004). Solving these problems is likely to involve changes to the profession-led role definition and training enshrined in health practitioner regulation, as well as to the management of human resources in health service organisations (Dubois & Singh, 2009).

5.5 BELOW THE WATERLINE THREE: ORGANISING WORK

The systems of referrals and inter-professional complaints operate below the waterline because they have received little attention in the discourse around health practitioner regulation. Skirmishes around some aspects of referral rights have bubbled to the surface in the late 20th century, for instance in overlapped scopes-of-practice between medical

and nurse practitioners (Safriet, 2002). There has also been some scholarly attention to the way health practitioners may use complaints against competitors (Jost, 1995). Overall, there has been scant attention to how these aspects of health practitioner regulation may operate to maintain historical divisions in the health workforce, or how they could be contributing to fragmentation of services for consumers.

The referral system

Historically, the referral system has been a decentralised way of organising healthcare work that placed the medical profession at the centre of decision-making (Berlant, 1975; Dingwall et al., 1988). It emerged along with specialist divisions in the health workforce at a time when treatment was combined with research, reflecting the complexity of healthcare due to the lack of knowledge and the paucity of treatment options (Bohmer, 2010a; Weisz, 2006). In contrast, the modern challenge is how best to organise care for patients with chronic health conditions, where known treatments range from self-care, to medications or procedures involving various healthcare providers (Bohmer, 2010a; Epping-Jordon et al., 2004). Referral rights have bubbled to the surface of regulatory policy in the protracted struggles of nurse practitioners and others to take responsibility for the diagnosis and treatment of their own patients (Cooper & Aiken, 2001; Safriet, 2002). Yet, regardless of which health profession holds particular referral rights, this system assumes individualised and complex decision-making around each patient, and these assumptions could conflict with the increasing standardisation of clinical practice and directions for separation of complex and routine clinical work (Bohmer, 2010a; Harrison, 1998).

Referral agreements were integral to the historical construction of divisions in the health workforce, enabling medical practitioners to refer their patients to specialist colleagues or other health practitioners without fear that these practitioners would 'take over' the ongoing care of the patient. These agreements were predicated on the assumption that each patient is unique and that only a medical practitioner has the expertise to diagnose illness or determine treatment. Agreeing to referral arrangements with medicine enabled professions such as pharmacy, social work, physiotherapy, or occupational therapy to develop through the flow of patient referrals from medical practitioners (Abel-Smith, 1964; Friedland & Davids-Brumer, 2007; Nicholls & Cheek, 2006; Savage, 1994).

As non-medical professions have developed advanced practitioner roles, they have sought to unilaterally amend referral agreements. Progress has been hard-won, as these professions have had to forge alliances with purchasers, overcome resistance from the medical profession, and withstand scrutiny of their practice. An illustration occurred in the direct access of patients to physiotherapy, which began as physiotherapists successfully argued that medical practitioners did not have a sufficient understanding of physical therapy to make appropriate referral judgements (Gardner & McCoppin, 1994). Australian physiotherapists were first to adopt this strategy when they decided that there would no longer be medical representatives on their registration authority, a move that was subsequently endorsed by their international organisation (Gardner & McCoppin, 1994). In 1999, New Zealand's Accident Compensation Corporation (ACC) awarded self-referral rights to physiotherapists, and in the following eight years, there was a 60% growth in treatment volumes, a 214% increase in costs, but no commensurate improvement in the speed of recovery for consumers. Subsequently, reimbursements for self-referred patients were restricted (Copeland, 2009; ACC, 2009). It seems that physiotherapists also lack information or they may be over-optimistic about their treatments (Feine & Lund, 1997), and ultimately the purchaser (ACC) questioned the evidence base for some of the physiotherapy treatment (ACC, 2009).

The award of referral rights to non-medical health professionals could improve access to care for routine health conditions, as could occur in nurse-led clinics for management of childhood eczema or diabetes care, or direct access to appropriate physical therapy to speed treatment (Copeland, 2009; Moore, Williams, Manias, & Varigos, 2006; Wong & Chung, 2006). However, consumers might still experience fragmentation in service delivery if non-medical professionals have only partial rights and the consumer needs doctors' appointments to review the progress of their treatment with other health professionals, or to secure a referral for a different but related service. Recent government-led trials in Australia and New Zealand have shown that it could be possible to design roles and referral arrangements that reduce the fragmented experience of consumers. In these trials, pharmacists performed blood tests and adjusted doses for patients on blood thinning medications as part of dispensing repeat prescriptions (Stafford, Peterson, Luke, & Jackson, 2011). In this case, the patient must attend the pharmacy to receive refills of their prescription, so the innovation avoids two or three

appointments that would otherwise be required for laboratory tests and for a doctor to review results and amend the prescription before the pharmacist dispenses the medication. This is a micro-level innovation focused on a single medication, but a combination of many such innovations might ultimately reduce the numbers of separate appointments and contribute to a more integrated experience of care for consumers. However, care that is designed around groups of patients with similar needs is likely to involve changes to the system of individual assessments and referrals because it would enable an individual health practitioner or small team to undertake a wider range of routine work for a particular patient. While work on complex cases could proceed on this basis, routine care could proceed on the basis of well-constructed teamwork, service protocols, shared record-keeping, appropriate delegations and audit (Bohmer & Lawrence, 2008; Gouberman & Mintzberg, 2001).

Fragmentation in service delivery is a significant problem for consumers, contributing to complexity and delays, in organising and attending appointments and ensuring that results are communicated between service providers (Bodenheimer, 2008). The US Institute of Medicine (2001) has identified service fragmentation as the primary source of problems with the quality of healthcare, and has recommended improvements through health service organisation-based policies for clinical work, investment in health resources, multidisciplinary teamwork, and use of information communication technologies (Berwick, 2002). There has been scant attention to how the decentralised process of role definition by each health profession could reduce, or exacerbate difficulties with service fragmentation. Policy-makers have tended to award parts of the referral system to advanced non-medical practitioners to address shortages in the medical workforce (Cooper & Aiken, 2003). However, this relies on profession-led role definition in historically constructed workforce divisions that could yet prove too inflexible to produce the skill combinations required to offer consumers a more integrated clinical service in a single appointment.

The historical system of demarcated roles and semi-formal referral arrangements among the health workforce appears to generate significant complexity and transaction costs in modern healthcare. While each registered health practitioner may be accountable for his or her segment of this care story, there does not appear to be any one person or entity responsible for coordination. Ultimately, it could be necessary to reduce the extent of

inter-professional referrals through redistribution of work among the health workforce so that it aligns better to the needs of particular patient groups (Bohmer & Lawrence, 2008). This is likely to also involve other strategies for organising work, including greater use of organisational clinical policies, inter-professional work-sharing in multidisciplinary teams, clinical supervisory roles with delegation rights, and the use of clinical audits for management of quality (Gouberman & Mintzberg, 2001). However, this is likely to involve a departure from some aspects of health practitioner regulation in which each health profession defines roles and seeks inter-professional referral rights.

Inter-professional complaints

The referral system appears to have operated as a positive force in the development of new health professions and advanced practitioner roles. In contrast, inter-professional complaints may act as a constraint on role development, particularly in the inter-professional practice environment.

The right of a consumer to complain about services provided by a registered health practitioner is a central pillar of health practitioner regulation. It is intended to ensure that health practitioners maintain their competence and ethical conduct in their dealings with their patients (Roberts & Dietrich, 1999). Yet complaints may originate from professional colleagues as well as patients. A widely accepted advantage of self-regulation is the motivation of health professionals to monitor their own and their colleagues practice (Ogus, 1995). There appears to be support for this claim in a study of the sources of complaints to a large US registration authority, responsible for medicine and several other health professions. This study revealed a range of sources for complaints, including half from patients, their relatives or friends, and other health professionals involved in their care; with the remainder being reports or referrals from hospitals, insurers, or other registration authorities (Jost et al., 1993). Inter-professional struggles over boundaries are likely to occur away from public scrutiny due to the risk that the reputations of the health professions' involved could be damaged. As Jost et al. (1993) noted, research into the operations of registration authorities is difficult due to confidentiality applying to both health professionals and consumers. Two illustrations of inter-professional struggles over boundaries were discussed in Chapter Four, including that between nurses and podiatrists in Australia, and between physiotherapists and nurses in New Zealand, and difficulties

between medicine and non-medical professions were also noted in section 5.4 of this chapter.

In New Zealand, Australia and the United Kingdom, registered health professionals are legally obligated to report concerns about the practice of colleagues (Department of Human Services (DHS), 2003; Kennedy, 2001; Paterson, 2002). This means that health professionals work in environments where confidential complaints could be made by a patient, colleague or some other person with an interest in the care process, or even used as a means to control competitors (Berlant, 1975; Bertness, 2009; Jost et al., 1993). There is also evidence that the complaints system has a powerful and potentially negative effect on competent and conscientious health practitioners, who may practise conservatively through fear of being publicly blamed or unfairly punished for mistakes (Runciman, Merry, & Tito, 2003; Waring, 2005). Thus conservative practice could include a reluctance to take on work around the inter-professional boundary due to the risk of attracting criticism or complaints from other health practitioners. These risks are particularly onerous for those individuals who pioneer advanced practice roles, and face obstacles at both service delivery and regulatory levels (Bertness, 2009; Brown & Draye, 2003). Thus inter-professional complaints may reinforce inter-professional barriers to the development of new roles or innovative work practice in the health workforce.

CONCLUSION

This chapter has investigated how health professions may use levers associated with their regulatory status to control resources in health service organisations. I have referred to this process as 'exercising regulatory privilege'. If the exercise of regulatory privilege is applied to resources owned by health service organisations, then this could have implications for the implementation of management reforms or quality improvement programmes intended to improve health service delivery. I suggest that to assess the role of health practitioner regulation in health service improvement, it is important to understand the operation of each of these levers by each regulated health profession.

The chapter began with an explanation of how the policies of registration authorities could influence stakeholders in healthcare. The primary linkage for policy development and communication is between professional associations, registration authorities, and registered health practitioners. However, influence could also operate indirectly through

the network of health professionals who hold influential positions in various healthcare stakeholder organisations, and contribute to policy-making within their respective professional organisations. I liken the regulatory privilege associated with health practitioner regulation to an iceberg with the traditional levers located visibly on its surface at the level of registration agencies, and the bulk of levers operating below the waterline in the realm of inter-professional practice.

The first group of levers are those apparent in legislation and the discourse around health practitioner regulation. These include protected titles, custodianship of unique expertise, control of health practitioner training, the authority to deregister a practitioner in cases of poor practice, and the associated quality guarantee to consumers. The handling of consumer complaints has been strengthened, and protected titles do not appear to contribute to consumer protection in modern service delivery. While development of expertise has largely shifted to multidisciplinary research institutes, beliefs about unique expertise could present a barrier to the redistribution of knowledge among the health workforce or to the spread of innovations in clinical practice. In this context, the independent oversight of health professions by many registration authorities could prove too decentralised to deliver the flexible workforce called for by policy-makers. The quality guarantee is effective to the extent that the vast majority of health practitioners appear to be competent. However, regulatory privilege could also contribute to difficulties with the fragmentation of services for consumers, impeding changes directed to reduction of fragmentation, where these involve redistribution of work among the health professions.

The second group of levers takes the survey below the waterline to the way health professions may control the development or deployment of clinical technologies and clinical ICT. This is evident in the way medical laboratories and radiology practices have focused on large-scale centralised technologies that reinforce the organisation of services around existing specialist departments, and resisted the development of distributed technologies that might otherwise transfer some of their work to other health practitioners in certain clinical settings. Health professionals have also led ICT developments to strengthen their clinical services, but used regulatory privilege to resist ICT-related change that risks too much information sharing or redistribution of their work. For both clinical and ICT technologies, the collaboration of the health professionals could be

limited to developments that retain profession-centric service models. Thus regulatory privilege could impede progress with some technology innovations that might otherwise enable more consumer-focused service models. While government intervention could be necessary to enable some technologies, as occurred in pharmacy, it could lead to the loss of particular professional expertise from the health sector. There appears to be a lack of policy attention to this mix of technology and health workforce questions in considering directions for service improvement.

The third group of levers include the use of special language and profession-led role definition. Special language is strategically important to the health professions, but is associated with barriers to inter-professional teamwork and shared electronic patient records. There has been some progress with inter-professional coding systems directed to particular purposes, such as in rehabilitation care. Yet further progress depends on the willingness of the health professions to adopt coded forms of record keeping as well as terminology or meanings associated with other health professions. Profession-led role definition has led to advanced practitioner roles including work previously reserved to medicine and transfer of other work to assistants. It has been associated with role confusions such as conflicts over decision-making authority or accountability in inter-professional clinical practice or service management. Special languages and role definition have been important to the health profession strategies to redress historical injustices in career opportunities. However, these levers tend to produce a degree of role substitution, while also reinforcing traditional divisions in the health workforce. There do not appear to be any mechanisms to produce consumer or service-related data for health workforce planning, or to generate roles that mix skills from different health professions to meet patient needs. Yet, new roles to straddle points of fragmentation in service delivery could be important to improving service quality.

The fourth group of levers includes the referral system and inter-professional complaints. These levers may be used to reinforce the other levers that control the behaviours of health practitioners in clinical practice. Referral agreements have been important for the emergence of many non-medical professions, and amending or rescinding these agreements has been central to securing non-medical advanced practice roles. Health practitioners may use the complaints system against competitors. This leverages a health practitioner's anxiety around the potential for blame or regulatory censure to limit

unwanted practice change particularly around inter-professional boundaries, which creates risks for those engaged in practice innovations. It is plausible that the potential for criticism to be backed by inter-professional complaints acts as a powerful limiting force on individuals moving into new roles that might otherwise be beneficial to certain practice situations. Thus referrals and inter-professional complaints appear to be the twin levers that may be used to reinforce traditional boundaries in the health workforce.

The referrals system has other implications that could be important in service improvement. Each referral follows a medical or advanced non-medical practitioner's assessment of a patient and is commonly predicated on the patient's return for further assessments or decisions. In this highly decentralised way of organising healthcare, there is potential for fragmentation of services at each point of referral or return of a patient. In many cases, patients could have to negotiate the progress of referrals and sharing of clinical information in order to expedite their own care. Policies for service improvement could need to consider a range of solutions including more standardised models of care, and novel skill combinations that reduce fragmentation of services by enabling more care activities to be delivered at a single appointment.

While there is a consensus that health practitioner regulation protects consumers, it has been historically constructed and could be subject to change as social or technology conditions evolve. Regulatory privilege deserves attention because it appears to be an artefact of the historical construction around individual health professions. It could act powerfully to shape the progress of service improvement, so the question is whether the overall effect impedes service improvement or whether there could be sufficient incremental change to realise the intended benefits of management reforms and quality improvement programmes. Before considering this question, it is necessary to understand more about the environment of health service organisations and how management reforms and quality improvement programmes could be expected to deliver service improvement. Chapter Six examines the environment of health service organisations, the elements of redesign in these service improvement policies, and the potential for interactions with the levers of health practitioner regulation.

6

REGULATORY PRIVILEGE AND
HEALTH SERVICE CAPABILITY

INTRODUCTION

This chapter completes the explanation of how health practitioner regulation could affect health service improvement by focusing on the meso-level of health service organisations. The first half of the chapter traces the progress with management reforms and quality improvement programmes, which have tended to produce many localised improvements, but not the expected organisation or system-wide improvements. It identifies the redesign elements in these improvement policies and the implications for health professionals, clinical leaders and general managers. The chapter shows that a comprehensive implementation of improvement policies could depend on changes to the organisation of work among the health professions, and some new roles and career paths for health professionals. Yet it is not clear how this could proceed without changes to the policies of registration authorities. In the second half, the chapter investigates the organisational capability in health services for successful implementation of health service improvement. It shows how the exercise of regulatory privilege among the regulated health workforce could contribute to contested leadership, weak human resource management, poorly integrated information communication technology, and difficulties with the design and operation of multidisciplinary teams in health service organisations. Health practitioner regulation appears to limit both the options for reorganising healthcare work to support new service arrangements, and the organisational capability to implement such change.

This chapter draws on material that makes extensive use of acronyms. This includes several brands of quality improvement programmes, including Continuous Quality Improvement (CQI), Total Quality Management (TQM), Business Process Re-engineering (BPR), Toyota's Lean Thinking, often referred to as 'Lean Thinking' and Motorola's Six Sigma. Patient Focused Care (PFC) was a form of BPR particular to

health services. Other acronyms include information communication technology (ICT), human resource management (HRM), and new public management (NPM). I use the expression 'organisation-based clinical policies and procedures', which are also referred to in the literature as clinical guidelines and clinical protocols.

Section 6.1 traces the progress with management reforms and quality improvement, and considers some implications for the organisation of healthcare work. Section 6.2 investigates the strength of four health service management capabilities important to service improvement – clarity of leadership, use of HRM for workforce development, integration of ICT, and the design of multidisciplinary teams.

6.1 THE LIMITS TO SERVICE IMPROVEMENT IN HEALTHCARE

The rapid growth of industries in the 19th century produced organisations focused around function specialisation. From the late 20th century, a more educated workforce and the increased expectations of consumers have led to more consumer-focused designs for organisations (Adler, 1997). This section traces the progress with improvement policies in healthcare, the redesign elements in these policies, and the differing attitudes of some professional and management groups. It concludes that achieving organisation or system-wide improvements could depend on addressing the regulatory sources of difficulties for stakeholders.

Progress with service improvement

Health reforms in New Zealand, Australia, and the United Kingdom have been largely directed to concerns about the rising costs of healthcare and service quality (Degeling, Maxwell, Iedema, & Hunter, 2004; Degeling, Sage, Kennedy, Perkins, & Zhang, 1999). These reforms may be divided into three phases: the introduction of general management from the 1980s, the focus on re-engineering for quality improvement and cost containment in the 1990s, and the engagement of health professionals in quality improvement programmes since 2000.

From the 1980s, management changes strengthened the capability for service improvement. Chief executives replaced the traditional leadership committees governing

hospitals to improve organisations' responsiveness to policy directions for change. This displaced but did not remove health profession leadership structures (Ashton, 1993; Bloom, 2000; Harrison & Ahmad, 2000). Capability was strengthened through new accounting systems and ICT to improve management and monitoring of service delivery (Currie & Guah, 2007; Doolin, 1999; Soliman, Soar, Van der Weegen, & Ayres, 1997). There was some experimentation with devolution of industrial negotiations to strengthen the role of HRM in the design of remuneration and working conditions (Barnett, Patrickson, & Maddern, 1996; Buchan, 2000).

From the 1990s, there have been policies for reorganising health service delivery, including shifting services for some patients, such as in mental health and aged care, from hospitals to community-based care, and the implementation of ICT and quality improvement programmes to improve the quality and efficiency of hospitals (Bloom, 2000; Braithwaite, 1995; Ferlie & Shortell, 2001; Leutz, 1999). Specialist hospital departments were grouped into 'clinical directorates' to encourage managers and health professionals to focus on the care of particular groups of patients (Boyce, 2001). Some health professionals had to adapt to working in multidisciplinary teams, rather than in their specialist departments (Lemieux-Charles & McGuire, 2006). ICT systems were implemented in specialist hospital departments improving the availability of information to clinicians and managers, although there was less progress with sharing of clinical information between these departmental systems (Hillestad et al., 2005). Through this period, quality improvement programmes introduced to health service organisations included CQI, TQM, and BPR, along with PFC that was a brand specific to the health industry.

Since the 1990s, clinical directorates have become enduring structures in New Zealand, Australian and UK hospitals. Clinical directorates bring together specialist departments, wards and outpatient clinics to care for groups of patients, often around medical specialties, such as medicine, surgery, psychiatry, obstetrics and gynaecology, or paediatrics, with allied health departments grouped in a clinical support directorate (Braithwaite, 1995; Doolin, 2001; McNulty & Ferlie, 2002). Less commonly, clinical directorates have diverged from traditional specialties, for instance in grouping patients around mental states, difficulty with breathing, complex intravenous treatment, or the need for further tests (Lega & DePietro, 2005).

In contrast to clinical directorates, PFC units were a short-lived experiment that attempted to fully implement business re-engineering. Booz Allen Hamilton had developed PFC as a form of BPR for healthcare (Lathrop, 1993). It included: co-location of patients with similar clinical or resource requirements; clinical pathways that map care for routine cases; policies for non-medical personnel to initiate care without waiting for a medical assessment; redeployment of technologies and personnel from laboratory, radiology, therapies, or pharmacy to care units to minimise delays around routine tests or treatments; and, role redesign through cross-training of nurses with other non-medical professionals to enable integrated delivery of routine tests, treatments, and nursing care (Hurst, 1996; Lathrop, 1993). Accordingly, PFC was met with opposition from the regulated health professions. It demonstrated the complexity in wrapping routine care around patients at the bedside, outpatient clinic, or in community-based care. It highlighted the dependence on specialist departments, and regulated health professionals who stood to lose their power, professional identity and traditional career paths (Brider, 1992; Garside, 1993; Hurst, 1999).

From 2000, quality improvement programmes emphasised improving quality and reducing waste, and the importance of engaging health professionals in the implementation. This included training health professionals in quality improvement techniques such as 'Lean Thinking' and 'Six Sigma' to incrementally improve patients' journeys or referrals among specialist clinical departments (O'Connell, Ben-Tovim, McCaughan, Szwarcbord, & McGrath, 2008b; Proudlove, Moxham, & Boaden, 2008). Much of the focus has been on alleviating the growing congestion in emergency departments, which involves redesign of acute admissions, expediting patients' discharge from hospital, and strengthening community capability to support patients after discharge (Forero et al., 2010; Holden, 2011), Quality improvement programmes have also been applied in specialist departments like radiology, pharmacy or laboratories with the delegation of routine work to non-medical specialists and improved response times to service areas such as emergency department (ED) (Bate et al., 2008; De Souza, 2009; Young & McClean, 2008). Elements of redesign have been evident in initiatives to group patients around their complexity or resource needs in ED, matching patients' needs to wards, some use of clinical pathways, efforts to delegate routine work to non-medical

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health practitioners, care delivery through multidisciplinary teams, and some role redesign (Ben-Tovim et al., 2008; Fillingham, 2007).

Through the 2000s, there has also been some attention to quality improvement for ambulatory patients with chronic illnesses such as depression, diabetes, musculoskeletal problems, respiratory illness, rehabilitation, and aged care. Changes included grouping patients with similar conditions, use of multidisciplinary teams to deliver care, inter-professional sharing of electronic medical records, liaison between generalist teams and specialist departments, clinical policies to guide routine care, and case managers to oversee engagement with patients (Epping-Jordon et al., 2004; Wagner, 2000). Institutional barriers have been identified, including poor alignment of service contracts, and narrowly focused performance measures for health services (Goodwin et al., 2012). Along with these issues, there have been concerns about whether the skill-mix in the health workforce is optimal for the care of chronic rather than acute illness (Bodenheimer et al., 2009).

Since 2000, in the United Kingdom, Australia and New Zealand, there has also been some attention to the development of new roles in the health workforce. The most ambitious was the UK's Changing Workforce Programme (CWP) that sought to break down demarcations in the health workforce to enable services to be wrapped around consumers (Bridges & Meyer, 2007). Among the health professions, there were concerns that this could erode professionalism (Copnell, 2010). However, the new roles appeared similar to traditional role definition among the health professions with role extensions for nurses and some other health professionals, and an increased use of unregistered healthcare assistants (Hyde et al., 2005). It is possible that the overall effect has been to increase the complexity of the health workforce, while also reinforcing its organisation around the traditional health professions (Martin, Currie, & Finn, 2009).

Through three decades of successive brands of quality improvement programmes, there is a pattern of localised successes that may be hard to sustain (Elkhuizen et al., 2006; Holden, 2011; Radnor et al., 2012). Some organisations have implemented some improvements, such as decision-making protocols for 90% of patients at the US's Intermountain Healthcare, or nurse-led units for routine care for heart failure at the US's Duke University Medical Center (Bohmer, 2010a). More commonly, it appears that

organisations have difficulties with implementation. A US study of nearly 2000 hospitals found that the more hospital departments that engaged in a quality improvement programme, the worse the hospital's performance on quality or safety measures (Weiner et al., 2006; Weiner et al., 2005). The authors suggested that this could be related to the management of implementation. Another possibility could be that confining service improvements within existing specialist departments engaged health professionals, but intensified pre-existing difficulties with the coordination of care across these specialist departments.

Elements of redesign in service improvement

In the 21st century, many illnesses and injuries can be prevented or cured, and there is increased demand for support of consumers with chronic health conditions (Pruitt & Epping-Jordan, 2005). Anticipated changes to health services include separation of complex and routine cases, organisation-based clinical policies and standardised procedures for delivery of routine care, new delivery structures emphasising multidisciplinary teams, increased reliance on information sharing through ICT, and role changes for health professionals.

Streamlined treatment for routine cases requires a departure from treating all patient visits as complex with each requiring a medical assessment, an approach that was appropriate to 19th century knowledge (Weisz, 2006). The traditional process of medical assessments followed by successive referrals to specialist departments for diagnostic or treatment has been associated with service fragmentation, and likened to patients 'wending their way through a series of specialised job shops' (Bohmer, 2010a). Instead, redesign calls for routine cases to be identified, separated from more complex work, and cared for by multidisciplinary teams working to organisation-based clinical and delegation policies (Bohmer, 2010b; Grumbach & Bodenheimer, 2004). This could mean fewer services delivered by specialists in hospital departments, and more services delivered by multidisciplinary teams in ambulatory care settings with coordination of specialist expertise as necessary (Bodenheimer, 2008; Bohmer, 2010b).

There are well-known management capabilities for quality improvement programmes and ICT implementation. These include leadership, influential champions for change, project

management and resources, communication and training to engage personnel, inter-

departmental cooperation, and an organisation culture receptive to change (Ngai, Law, & Wat, 2008; Trkman, 2010). Health service organisations would need to apply these capabilities to establish clinical policies and procedures for the separation of routine and more complex cases, diagnostic and treatment standards for routine care, and inter-professional delegation of care. They would also need to provide resources such as repositories of clinical information, electronic patient records, clinical supervisory support, and clinical audit procedures (Bohmer, 2010a; McGrath et al., 2008). In New Zealand, Australia and the United Kingdom, government agencies and NGOs have publicised the quality improvement lessons of leading healthcare organisations, and offered training or consultancy services to health service organisations (Berwick, Hackbarth, & McCannon, 2006; Counties Manukau Health, 2011; Jones & Mitchell, 2006; NHS Institute for Innovation and Improvement, 2011; O'Connell et al., 2008b).

These elements of redesign in policies for service improvement are set out in Figure 10 below. In yellow are elements linked to HRM capability, including: in the yellow oval is leadership authority; in the yellow rectangles are training and engagement of personnel, and roles and supervisory policies. In the green rectangles are elements related to the design of services, including, separation of routine and complex cases, organisation-based clinical policies and procedures, and multidisciplinary teams. In the blue rectangles are elements linked to technologies, including the management of information and ICT, and the deployment of clinical technology and personnel.

Figure 10: Elements of redesign in service improvement
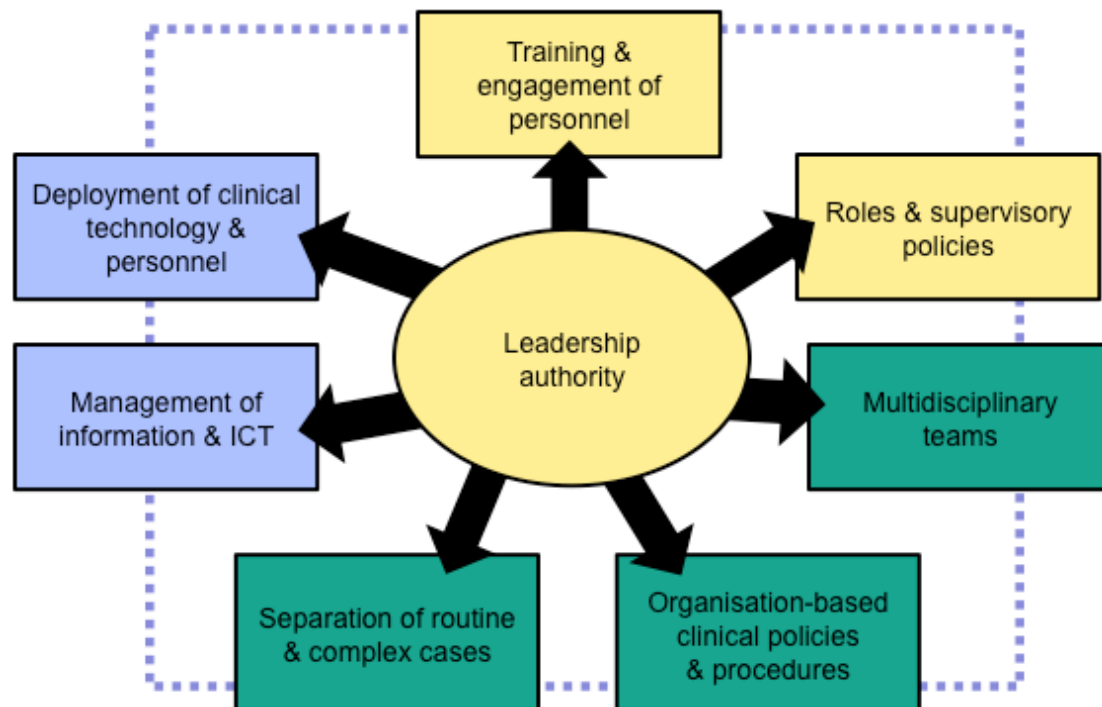
Difficulties with stakeholder engagement

Critics have questioned the appropriateness of applying certain management reforms to healthcare. Fillingham (2008) refutes this criticism, advocating the benefits of Lean Thinking for health service organisations. He points out that: demand for healthcare is predictable by season and day of the week; medical care can be improved by meeting standards for clinical best practice; while patients do differ, 6% of common conditions account for 60% of the work in a clinical care setting; and caring for patients involves processes, which can be improved.

Even so, health service organisations could lack the authority to engage important stakeholders in service improvement, such as health professionals, registration authorities, tertiary educators, consumers or technology suppliers. Health professionals have been described as tribal, and may resist change they perceive as inconsistent with the interests of their respective health profession (Bate, 2004; Braithwaite et al., 2007). When considering particular change proposals, they are likely to refer to the policies of their health profession leaders or registration authority, and may refuse requests from

managers where they perceive conflicts with their regulatory ideals (Degeling & Carr, 2004; Hurst, 1997).

In New Zealand, Australia and the United Kingdom, there is evidence that health professionals have differing attitudes to the elements of redesign in service improvement policies. Medical specialists have tended to oppose the implementation of clinical policies to standardise routine clinical work or delegate this work to multidisciplinary teams (Degeling et al., 2001; Degeling et al., 1999). The standardisation of clinical work has the potential to reduce the number of occasions that medical practitioners would complete medical assessments or make referrals for patients with routine health conditions. It would subject medical assessments to scrutiny by members of other health professions or managers, and this could facilitate transfer of control over routine work from medical practitioners to members of other health professions (Bohmer, 2010a; Degeling et al., 2004). Registered nurses have also been reluctant to have their independence and quality of work subject to the scrutiny of managers or other health professionals. However, they differ from their medical colleagues in their support of clinical policies that establish standards for routine work, and in their support for the delivery of care through multidisciplinary teams (Degeling et al., 2001; Degeling et al., 1999). Among the allied health professions, many have viewed management changes favourably, as through the 1990s, when new hospital structures gave them greater representation at the senior management level (Boyce, 1993, 2001).

Among health professionals, attitudes to redesign elements could depend on the particular circumstances. In hospital wards, clinical policies to standardise care could strengthen the role of nurses as coordinators of the work of specialist departments (Degeling, Hill, Kennedy, Coyle, & Maxwell, 2000). However, nurses and allied health professionals could have to jostle for authority in multidisciplinary teams, in either outpatient or community settings (Nugus, Greenfield, Travaglia, Westbrook, & Braithwaite, 2010; Reeves et al., 2010). A comprehensive implementation of the elements of redesign could intensify these issues, requiring medical, nursing and allied health professionals to blend clinical autonomy with accountability to organisation leaders, and to support transparency in work practice to contribute to multidisciplinary learning around clinical standards (Degeling et al., 2004).

Service improvement is intended to wrap services around consumers and reduce fragmentation in their experience of service delivery (Berwick, 2002). Yet, consumers have seldom been consulted about their preferences for service delivery. There is some evidence that they would favour designs that provide a range of services and an accessible, authoritative point of care, as occurs in a visit to ED (Bechtel & Ness, 2010; Cleary, Horsfall, & Happell, 2009; Lowthian, 2013). However, recent experience suggests that in the absence of other sources of information, lobbying by the regulated health professions and engagement with the media could shape consumers' perceptions about the redesign of services (Gabe et al., 2012). Specialist hospital departments could align with manufacturers of technologies that enable their business models to resist moving some work to other professionals or locations. Safety concerns could be raised, particularly as such changes take time to become established and routine.

Since 2000 Lean Thinking assisted by some techniques from Six Sigma have been accepted as the means to realise health service improvements in New Zealand, Australia and the United Kingdom. Womack and Jones have been the leading experts on Lean Thinking and Jones has contributed to its adaptation to healthcare (Jones & Mitchell, 2006). It is worth considering the difficulties anticipated for this quality improvement programme. According to Womack and Jones (1994), separation of routine work from specialist departments is likely to be resisted by departments that stand to lose power, and professionals whose roles, identity, or career paths could be threatened. Given the links between the regulators, health professions and industry suppliers such as tertiary education institutions or technology suppliers, it could be difficult to secure support from these stakeholders. The transformation of health service organisations from dominance by specialist departments to cross-departmental processes tailored to consumers could depend on whether dominant power coalitions among the health professions recognise that change is necessary, and whether health practitioner regulation enables managers and health practitioners to implement change (Degeling & Carr, 2004; Ferlie & Shortell, 2001; McNulty & Ferlie, 2004).

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6.2 EFFECTS OF REGULATORY PRIVILEGE ON ORGANISATIONAL CAPABILITY

This section investigates the organisational capability important to implementing policies for service improvement. These include leadership, HRM, integration of ICT, and design of multidisciplinary teams. There are reasons to doubt this capability due to the operation of regulatory privilege. Fragmentation in regulatory authority appears to contribute to contested authority among health service leaders. Regulatory control of health practitioner training, competency, and career paths appears to leave little room for the HRM interventions. ICT capability may be limited by the influence of health professions among vendors and the attitudes of health professionals to information sharing in particular practice settings. The siloed development of competencies and career hierarchies among the health professions also poses difficulties for the design or operation of multidisciplinary teams.

Health service leadership

In the United Kingdom, Australia, and New Zealand, governments have intervened in the leadership of health service organisations with the expectation that having the right leaders was essential for service improvement (Degeling et al., 1999). In the 1980s, hospital chief executives were appointed to replace traditional leadership committees comprised of a medical superintendent, a principal nurse, and a general manager (Ashton, 1993; Dedman, 2008; Harrison & Ahmad, 2000). Under the committee system, the medical superintendent was responsible for all medical and non-nursing health professionals, the principal nurse for all nurses and nursing assistants, and the general manager for corporate services such as finance, payroll, facilities, and kitchens (Boyce, 1993). By the 1990s, services offered by hospital specialists and associated wards or clinics were grouped into clinical directorates to service groups of patients, such as for surgical services or children's health, while diagnostic and therapy departments like laboratories or physiotherapy were commonly grouped to form a clinical support directorate (Ashburner, Ferlie, & Fitzgerald, 1996; Boyce, 1993; Braithwaite, 1995).

These new structures are a blend of old and new elements with varying implications for the leaders of each professional group. It was common to retain senior roles for

directors of medicine and nursing, but for these roles to become advisory with no direct accountability for resource management in the clinical units (Ashburner et al., 1996; Braithwaite, 2004). The changes appeared to significantly affect medical specialists, who shifted from being accountable to the medical superintendent to an organisational accountability alongside nurse managers to a directorate leader (Braithwaite, 1995). The effect for nurses was to break up their large centralised management structure within hospitals, with ward or clinic managers now responsible to a directorate leader, titles such as 'ward sister' changed to 'ward manager', and new responsibilities for the management of budgets and personnel (Bolton, 2003; Sambrook, 2007). The grouping of wards and specialist departments into clinical directorates was new in its consumer and resource focus. However, while this removed committee-style leadership at the executive level, committee-style leadership structures were replicated, less visibly, in each clinical directorate.

There are both compromises and opportunities for diagnostic and therapy professions in a clinical support directorate. Generally, these departments gained independence through no longer reporting to a medical superintendent, and formal recognition in the new management structure (Boyce, 1993). For diagnostic departments like laboratories or radiology, split leadership arrangements could continue; for instance, with pathologists more likely to lead in networking among their medical specialist clients, and medical laboratory scientists more likely to take responsibility for the management of personnel, clinical technologies, and budgets (Price & Barnes, 1999). In some cases, smaller departments like physiotherapy, occupational therapy, or dieticians can be grouped together as 'therapy services' (Boyce, 1993). Boyce (2001) explains that a group structure means competition among these health professions for the overall leadership role, but compared to being dispersed among clinical directorates it tends to protect their independence to organise their own work and professional development.

Generally, multiple leadership accountabilities are replicated through levels and functions within health service organisations. Clinical directorates retain both the profession leadership roles that can link with professional organisations and facilitate the interpretation of professional standards into an organisation's design of clinical work (Mintzberg, 1993), and the responsibilities for the implementation of government policies for service improvement. However, when incumbents are also clinically qualified they are

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likely to carry dual accountability for improving performance and for upholding the policies of their professional association (Braithwaite, 2004; Fitzgerald & Ferlie, 2000). Multiple accountabilities to government policy-makers and to many registration authorities make decision-making continuously subject to potential contests, creating stress for managers whether they have a general management or a health professional background (Degeling & Carr, 2004).

Faced with scant evidence of improvement following NPM-inspired restructures, policy-makers in New Zealand, the United Kingdom, and Australia replaced directorate general managers with medically qualified leaders (Degeling et al., 2001; Degeling et al., 1999). Yet, as an Australian study showed, changing the disciplinary background of leaders was not effective for improving hospital performance (Braithwaite, Westbrook, Hindle, Iedema, & Black, 2006a). Indeed, research in New Zealand, Australia, and the United Kingdom has found that managers with a medical background are most likely to oppose redesign, particularly the standardisation of clinical work, transparency in clinical decision-making, and multidisciplinary delivery (Degeling et al., 2001; Degeling et al., 1999), while leaders from non-medical professions tend to support these changes (Boyce, 1993, 2001; Degeling et al., 2000; Degeling et al., 2001; Degeling et al., 1999). Yet, regardless of their disciplinary background, health service leaders are likely to encounter similar resistance to redesign from medical specialists and some other clinical personnel. Multidisciplinary teams can be even more complex as multiple lines of accountability to management and to many registration authorities play out in contests over leadership decisions, backed by the ever present potential to appeal to profession leaders within the organisation, professional associations or registration authorities, or to politicians (Reeves et al., 2010).

Human resource management (HRM)

Sophisticated training, performance management, and development of teams has been identified as important for improving quality and patient safety in healthcare. Yet, health services' HRM does not appear to emphasise these elements or align employee development to organisational goals (Leggat & Dwyer, 2005). This lack of attention to organisation development has been linked to the definition of health professionals' roles,

competencies, training and career paths by registration authorities (Lega & DePietro, 2005).

Health profession leaders in professional associations and educational institutions have influenced registration authorities in specifying roles and training for health professionals. Yet health profession agendas for role definition may or may not align to the demands of HRM or redesign in particular practice settings (Oandasan et al., 2006). Health service organisations have trained health professionals in techniques to improve clinical care, but many health professionals may find this knowledge difficult to apply (Braithwaite et al., 2006b; Ovretveit et al., 2002). It seems paradoxical to have offered training in quality improvement, when there could be a lack of training to strengthen skills relevant to the clinical practice environment or career opportunities within particular health services. Generally, role development has been fragmented with new roles evolving through scopes-of-practice, expertise gained on-the-job, or the introduction of new practitioners such as emergency medical technicians or healthcare assistants. In many cases, practitioners in new roles have reported the need to justify their expertise to colleagues, a lack of managerial or professional support, and they may struggle to gain career recognition for skills not recognised by registration authorities (Bridges, Fitzgerald, & Meyer, 2007; Currie, Finn, & Martin, 2010; Sanders & Harrison, 2008; Willis & King, 2010).

The continuous oversight of competency by registration authorities could also undermine the role of HRM. First, standards set by registration authorities may or may not align to the mix of practice requirements for organisational roles (Conlon, 2004; Grossman, 1998; Lysaghta & Altschuld, 2000). The common reliance of registration authorities on self-reported competency and professional development is likely to reinforce notions of professional autonomy that conflict with redesign elements for teamwork and organisational alignment of practice standards. It is a practice that is also inconsistent with international research that suggests that health practitioners find it difficult to assess their own competency or that of their colleagues (Davis et al., 2006; Reason, 2000). The precedence of attention to regulatory competencies may also distort the use of any professional development resources in health services (Sambrook, 2007). While 'management' of competency from the regulatory level is intended to protect consumers,

it is focused on competency within predefined silos and not on inter-professional collaborative practice (Reeves et al., 2010).

Equitable remuneration for similar work is an important element in changing the basic unit of work for routine care, from loosely constructed inter-departmental collaboration to dedicated multidisciplinary teams. However, the role of HRM in designing remuneration policies important for teamwork is often minimal due to the practice of negotiating industrial agreements between governments and health profession unions in the United Kingdom, Australia and New Zealand (Buchan, 2000; Powell, 2004; Stanton, Bartram, & Harbridge, 2004). These negotiations proceed within the professional boundaries established by the registration authorities, which makes it difficult for employers to secure recognition for new roles or skill combinations that could be important to new career paths or service designs (Doyal & Cameron, 2000; Willis & King, 2010). Thus pay inequalities could exacerbate other inter-professional difficulties in multidisciplinary teamwork.

In this context of profession-led control of role definition, training, career paths, and competencies, government efforts to redesign roles have met with limited success. In the United Kingdom and Australia role redesign has been identified as essential for productivity improvement in healthcare (Australian Productivity Commission, 2005; Hyde et al., 2005), and New Zealand has followed in establishing a health workforce agency to assist employers to introduce new roles (Health Workforce New Zealand, 2013a). However, the UK's CWP programme showed how the role of health services' HRM could be 'crowded out', as health professionals led role design within each specialist department and government-led wage bargaining established the parameters for remuneration (McBride & Mustchin, 2013). In Australia, difficulties with workforce development to inform new service designs have been linked to a lack of HRM capability, but it is anticipated that strengthening HRM will depend on wider health system reform and restructure of the health workforce (Australian Productivity Commission, 2005; Conway, McMillan, & Becker, 2006). This scenario seems unlikely to progress without some rethinking around the design of health practitioner regulation.

Information communication technologies (ICT)

Internationally, there has been slow progress with integrating clinical information systems to enable new service designs (Institute of Medicine, 2001; Kuziemsky & Reeves, 2012), and governments in New Zealand, Australia, and the United Kingdom have each attempted to address this problem (Morrison, Robertson, Cresswell, Crowe, & Sheikh, 2011). At the heart of many technical problems lie difficulties related to regulatory ideals, which is problematic because to design computer systems it is necessary to have transparency around 'who actually performs what work', rather than rely on ideals about 'who ought to perform what work'.

Since the 1980s, governments in New Zealand, Australia, the United Kingdom and elsewhere have set policies for strengthening ICT use in healthcare, at first to secure data for monitoring health service performance (Currie & Guah, 2007; Doolin, 1999; Soliman et al., 1997). More recently, the focus has shifted to sharing of patients' clinical information to improve the coordination of services to consumers; for instance, see the Australian National Electronic Records Taskforce (2000), or the UK's Wanless Inquiry (2002). In the United States, a Rand Corporation study has estimated that industry-wide adoption of shared electronic patient records and the order entry systems that computerise inter-professional referrals would enable health service productivity and safety gains of around 4% a year over 15 years (Hillestad et al., 2005).

In many cases local networks of hospitals and community practices have been able to link administrative and clinical systems so that patients' demographic information and key diagnoses are shared, and health practitioners are able to access reports such as laboratory or radiology tests and hospital discharge summaries (Brennan, 2007; Kuhn & Giuse, 2001; Southon, Sauer, & Dampney, 1997). This involves work with specialist departments and vendors to determine what information to share, how to format, transfer or exchange it, and how to rapidly update information so that it remains consistent across different clinical systems (Kuhn & Giuse, 2001). Internationally, New Zealand, Scotland, and Sweden appear to have the most advanced systems of connectivity between hospitals and general practices (Greenhalgh et al., 2010).

Figure 11 below depicts ICT systems common in healthcare: in the green boxes are systems for specialist services like radiology, laboratories, pharmacy, theatre, medical specialists, and therapies; in the blue boxes are systems for patient care areas like outpatients, emergency, general practice, and inpatient wards; in the red area are systems for order entry including result reporting, and decision support that may improve the coordination and flow of work by providing computerised support for clinical decision-making and the referral system; in the orange area is the shared electronic patient record that generally operates at the level of local networks of hospitals and community practices; and in the brown area a patient's summary record that may operate at a national level.

Figure 11: Departments and interfaces in a hospital information system
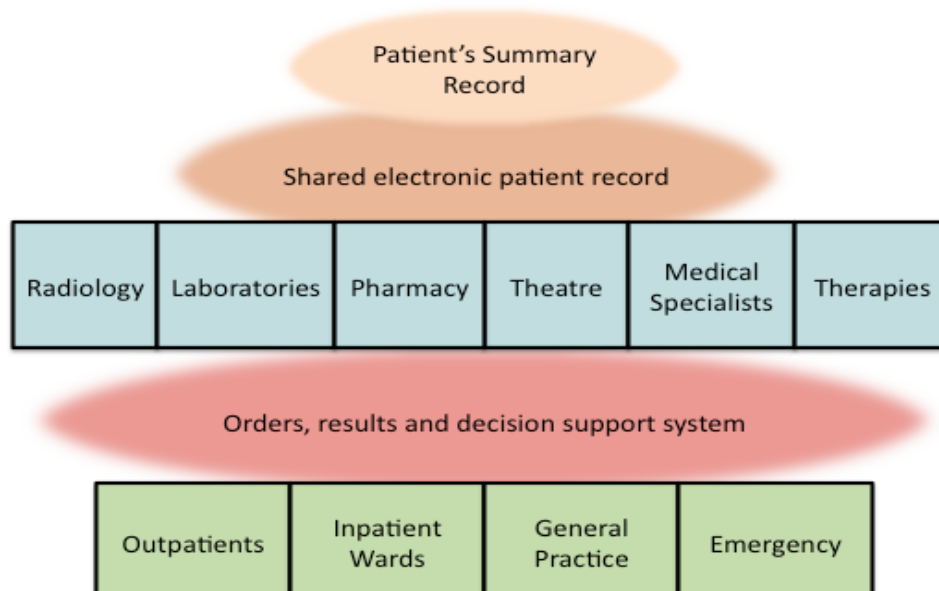
Information sharing may not be a priority among the health professions, and ongoing negotiation with various stakeholders is necessary to maintain links or interfaces between specialist systems. Specialist departments may be reluctant to interface their systems if they perceive this to involve compromises around system functionality, sharing clinical information regarded as too sensitive, or relinquishing control of their information technology to management (Kuhn & Giuse, 2001). New acquisitions of clinical equipment or software may require additional interfaces or repetitive data entry by health practitioners or clerical administrators. It appears to be common for ICT departments to

receive unplanned requests for interfaces that relate to computer programmes introduced by professionals often for profession-led audit or research; for instance, free software promoted for intensive care units by the Australia New Zealand Intensive Care Society (ANZICS, 2013). Success with managing health service ICT may also vary in accordance with local organisation cultures, particularly the attitudes of local health profession leaders who may be highly influential in the course of negotiations around interfaces or system implementation (Callen et al., 2007).

Profession-centric supply chains are influential in the development of clinical ICT systems, because vendors build their reputations through the recommendations of health profession leaders and prioritise their system development through consultation with their health practitioner user groups (Mclaughlin & Webster, 1998). Differences in priorities between ICT user groups and government policies were evident in a failed attempt to introduce shared patient records in the English NHS, while vendors servicing after-hours clinics whose users benefit from sharing patient records built the necessary interfaces, but vendors for primary care providers gave this work a low priority consistent with the interests of their customers (Greenhalgh et al., 2010). Interfacing to support information sharing is a resource intensive task with ongoing maintenance to accommodate new software releases, vendor changes, changes to service requirements, or to remedy errors (van Ginneken, 2002). These technical complexities may be challenging enough without the additional complication of having to reconcile ongoing differences in inter-professional priorities around information sharing.

While maintenance of interfaces may be complex, it is even more complex to implement the order entry systems that computerise inter-professional referrals with their components for results reporting or decision support. These systems operate best when clinical departmental systems are more closely meshed or integrated than when they exchange messages or interface to update information, which may mean that health professionals need to agree to shared clinical terminologies, integrated data storage, and a common basis for presentation of clinical information (Kuhn & Giuse, 2001; van Ginneken, 2002). Order entry systems also involve practice change since they generally include protocols, or alerts to assist health practitioners to choose best practice options, and health professionals may resist using these systems if they slow work down, include guidance viewed as irrelevant or incorrect, or are perceived to be interfering with clinical

autonomy (Bates et al., 2003; Berg, Aarts, & van der Lei, 2003). A related problem is the preference of health professionals to record their clinical assessment or working diagnosis in their own text rather than using coded descriptions, but while this may preserve their clinical autonomy around record keeping it limits the usefulness of their clinical observations for information sharing, integrated multidisciplinary presentation of clinical information, or for performance reporting (Bates et al., 2003; Harrison, Koppel, & Bar-Lev, 2007; van Ginneken, 2002; Walter & Lopez, 2008).

There have been difficulties with reconciling regulatory ideals to local practice realities in the implementation of information systems that might otherwise improve the coordination of work between specialist departments. For instance, physician electronic prescribing systems may sideline nurses from their informal but important role in medication decisions or impose unanticipated work burdens on both pharmacists and nurses (Novek, 2000). Similarly ward-based ordering of laboratory tests has been observed to interfere with informal practical arrangements around 'who does what work' among referring medical practitioners, laboratory scientists, and pathologists (Mclaughlin & Webster, 1998). These illustrations are not merely mistakes in system design that might be easily remedied. Ambiguity around 'who may perform what work' appears to serve the interests of dominant groups, as they relinquish or reclaim work to manage environmental change (Nancarrow, 2005). However, ambiguity is the antithesis of the clarity required to transfer work processes onto computer systems, and at the heart of many technical difficulties is the potential for information sharing to disrupt the traditional working arrangements among the health professions (Aarts & Koppel, 2009; Berg et al., 2003).

The design of multidisciplinary teams

Teamwork has been important for improving the coordination of care, such as to plan hospital care prior to patients' discharge, increase the range of services in primary care, or for review of patients in specialist cancer networks (Brown et al., 2011; Fleissig, Jenkins, Catt, & Fallowfield, 2006; Shepperd et al., 2013). Generally, loosely structured collaborative arrangements may find it difficult to focus members on team objectives (Hackman, 2002). In healthcare, dedicated multidisciplinary teams have also been used to reduce fragmentation in care by bringing together professionals who previously delivered care through their specialist departments (Iedema, Meyerkort, & White, 2005). The

longest experience with these teams appears to be in mental health services following the transfer of patients from large institutions to community-based care, and dedicated teams appear to be common in aged care or rehabilitation services (Lemieux-Charles & McGuire, 2006).

Research that has compared services provided by multidisciplinary teams to that of well-coordinated specialist departments suggests that teamwork might not be associated with service improvement (Lemieux-Charles & McGuire, 2006). In healthcare, it appears to be difficult for health service organisations to design effective multidisciplinary teams. Effective team design has been linked to: a shared team goal, clarity around team membership; a team size of four to seven to enable timely consensus in decision-making; a mix of technical and interpersonal skills with sufficient skill overlap for sharing of core work; an appropriate distribution of authority among the organisation, the team, and team members to develop and sustain effective work processes; and, a supportive organisation context including training, shared information systems, and rewards that recognise team efforts (Hackman, Wageman, Ruddy, & Ray, 2000; Ovretveit, 1996). Yet it appears to be difficult to establish shared goals, optimal team sizes, effectively distribute authority, or provide sufficient organisational support for multidisciplinary healthcare teams.

In order to collaborate toward a shared goal, healthcare teams need to transcend their differing philosophies and languages to agree the goals of treatment including the criteria for accepting or discharging patients (Irvine et al., 2002; Sheehan et al., 2007). This task may be further complicated as team boundaries and membership are often unclear, so teams may create special categories of membership (part-time or advisory) to accommodate members who only partly contribute to the teams main work task. This ambiguity around membership status exacerbates difficulties in reconciling interdisciplinary differences concerning the team task (Lemieux-Charles & McGuire, 2006; Ovretveit, 1996).

Multidisciplinary healthcare teams tend to be large (Xyrichis & Lowton, 2008). It could be difficult to design an optimal team size when representatives of multiple disciplines are included, along with additional members from those professions whose scope-of-practice most closely maps to the team's core task. For instance, a community mental health team may include psychiatrists, nurses, social workers, psychologists, and

occupational therapists, and a UK survey found these teams had a mean size of 15 members (Onyett & Heppleston, 1994). Effective work sharing may prove difficult either through restrictive scopes-of-practice or the exercise of regulatory privilege among team members. For instance, in mental health teams scopes-of-practice mean that medication management is likely to be restricted to nurses, while other health professionals dominate counselling or psychotherapy work, yet this squeezes nurses out of the psychotherapy work they may prefer (Clinton & Hazelton, 2000; Singh, 2000). This lack of task reciprocity has been linked to work related stress, and reported among nurses and therapists in rehabilitation care as well as mental health (Coyle, Edwards, Hannigan, Fothergill, & Burnard, 2005; Long et al., 2003). Limits around task reciprocity and work sharing have implications for patients who may experience interruptions, delays, or errors in the process of delivering care when the skill-mix limits handover of work between health professionals.

It is difficult to establish an effective distribution of leadership authority, when professionals draw on their separate regulatory authority for their decisions (Bourgeault & Mulvale, 2006). It is common for medical practitioners to assume authority for decisions consistent with their historical dominance (Herrman, Trauer, & Warnock, 2002; McCallin, 2003; Nugus et al., 2010). In some cases medical control over decisions can create delays or make poor use of the team's skills; in others cases team members may each emulate medicine by making their own assessments and completing work based on independent understandings of their professional competencies (Iedema, Degeling, White, & Braithwaite, 2004; Reeves et al., 2010). Medical practitioners are more commonly held to account for their work than other health practitioners, so registration authorities have announced that psychiatrists will not be held accountable for the work of other members of their multidisciplinary team (General Medical Council, 2005; Mental Health Commission, 1998). A common response to leadership problems is to use two leadership roles with medical leadership around clinical decisions, and a coordinator to organise work (Long et al., 2003; Ovretveit, 1996). Yet even where two leaders work well together, differences around regulatory ideals or scopes-of-practice can mean a lack of task reciprocity that undermines efforts to agree care goals or the criteria for patient intake or discharge (Brown et al., 2011; Edwards et al., 2006). The result can look more

like the traditional practice of parallel working in accordance with the referral system than teamwork (Boon, Verhoef, O'Hara, & Findlay, 2004; Ovretveit, 1996).

The support that healthcare organisations may bring to multidisciplinary teams appears to be limited. Managers may organise appropriate team facilities and equipment, but registration authority control over scopes-of-practice, inter-professional delegation, or the maintenance of competencies may rule out organisation-based team training that might otherwise prepare health professionals for reciprocal sharing of the team's core work (Kavanagh & Cowan, 2004; Oandasan et al., 2006). Profession-specific industrial awards also make it difficult to establish appropriately equitable remuneration or even to ensure that work is fairly distributed among team members (Clinton & Hazelton, 2000; Kavanagh & Cowan, 2004; Oandasan et al., 2006).

This range of difficulties with team size, contested authority, and the tendency to revert to parallel working has been widely reported in the literature (Lemieux-Charles & McGuire, 2006). Some health professionals have suggested new hybrid roles designed around the team's core work, such as a combinations of nursing and social work in mental health, or therapy and nursing in rehabilitation care (Brown et al., 2000; Long et al., 2003). Such role blurring to enable collaboration could be easier under conditions of fewer health professions or staff shortages (Hannigan & Allen, 2011; Nancarrow, 2005). Some researchers have drawn an association between larger teams and more innovation in services, although it is not clear how innovation affects outcomes or the overall effectiveness of teams (Xyrichis & Lowton, 2008). A larger range of specialists could be relevant to complex, rather than routine care. Overall, the research shows that it is not sufficient to simply co-locate health practitioners in the expectation that shared work practice will evolve or be a more effective means to coordinate services for consumers, particularly when health professionals report to different independent registration authorities (Lahey & Currie, 2005; Reeves et al., 2010; San Martin-Rodriguez, Beaulieu, D'Amour, & Ferrada-Videla, 2005).

CONCLUSION

The challenge of health service improvement is similar to that of other industries in seeking to take advantage of new technologies, and focus the contribution of specialists around the needs of patients. This calls for inter-related changes affecting leadership, the separation of routine and complex work, organisation-based clinical policies and procedures, multidisciplinary teamwork, some redeployment of personnel or technologies, the management of shared clinical information and ICT, new roles and supervisory arrangements, and the training and engagement of health professionals. Large-scale organisational change is hard and likely to entail years of sustained effort. To this end, governments have maintained consistent policy directions and invested in health service capability, including changes to leadership, organisation structures, financial management, teamwork and ICT. Despite this, there are reasons to doubt whether there are adequate mechanisms linking the regulatory and service delivery levels to support change, or that health service organisations have the capability necessary for implementation.

Health practitioner regulation could effect health service improvement through the direct activities of registration authorities, the influence of professional associations in health service supply chains, and in the localised leverage of regulatory privilege by health professionals. Health service organisations have attempted to engage health practitioners in organisational transformation through recruiting clinically qualified personnel to leadership roles, training health practitioners in quality improvement, and collaborating in government initiatives for new clinical roles. Yet, the prevailing institutional arrangements do not appear to permit health practitioners to fully engage in service improvement. Indeed, to expect health practitioners to commit to changes that have uncertain implications for their security of employment, career paths, or professional identity seems implausible. Nor is it clear that health service organisations could readily trial new service arrangements without mechanisms to establish industry consensus around the directions for change, and to secure support from the regulatory level. New institutional arrangements could be required to address issues around roles, career paths, and professional identity, alongside mechanisms to enable workforce alignment to new arrangements for service delivery.

Health service organisations appear to be in transition from functional specialisation to new organisational forms, but at present, they remain closely tethered to professional structures both in service delivery and at the regulatory level. This appears to undermine the management capabilities necessary for the implementation of service improvement. This is evident in the uncertainty around leadership authority, with decision-making continually subject to contest or appeal to the regulatory level, and no evident means for resolution of these difficulties. In relation to HRM, the combined activities of professional associations, registration authorities, and tertiary educators leave little room for HRM to contribute to workforce development, the design of multidisciplinary teams, or to reward systems to encourage inter-professional collaboration. In ICT, progress has been slow as vendors rely on the endorsement of health profession leaders who tend to prioritise specialist clinical systems over the more integrated systems that improve service coordination. Given these limits in organisational capability and management authority, progress with service improvement is also likely to be limited.

Over the last three decades, there has been significant progress with improving healthcare management and service delivery systems, although success has mostly been localised within specialist departments with less evidence of organisation-wide improvement. Health practitioner regulation could contribute in two ways. First, regulatory privilege permeates multiple levels in the health industry, reinforcing traditional ways of organising healthcare work. The absence of mechanisms, at both the regulatory and service delivery levels, to secure consensus around the directions for service improvement is likely to limit progress to localised improvements permitted by registration authorities. Second, even where directions for change are understood, regulatory privilege appears to undermine the management capabilities necessary for implementation. Thus regulatory privilege could contribute to explaining persistent difficulties with service improvement, despite sustained efforts, and attention to critical success factors in implementations.

The next chapter investigates illustrations of service improvement to assess whether regulatory privilege contributes to explaining the events.

7

REGULATORY PRIVILEGE
AS AN EXPLANATION IN SERVICE IMPROVEMENT

INTRODUCTION

Chapter Six completed an explanation of how regulatory privilege could contribute to difficulties with health service improvement by limiting the options for reorganising clinical work, and undermining the capability for change in health service organisations. Using illustrations, this chapter looks at whether regulatory privilege contributes to explaining events in health service improvement. Illustrations include options for service designs to focus care around patients, changes to improve the coordination of care within health services, and changes that directly affect the roles of health practitioners. In these illustrations, many improvements are evident and also some difficulties that appear to limit progress. As the review in chapter one shows, difficulties with management reforms, and quality improvement programmes have mostly been explained as deficiencies at the organisational level in the management of implementations. These have included aspects of organisational culture, leadership, management of change, and cultures of tribalism among the health professions. Yet the literature suggests that difficulties have been evident, even where health service organisations have adopted best practice in their implementations. This left room for additional explanations, and the account of the effects of health practitioner regulation developed in this thesis. This chapter assesses the plausibility of this explanation by considering whether it contributes to explaining the limitations with, or difficulties in, implementing the improvements sought in these illustrations.

This chapter uses description, developed in chapter three, of how healthcare work is organised. 'Specialist departments' refers to the hospital departments or community practices that have been formed around medical specialties, combinations of medical specialists and non-medical professionals as occurs in laboratories or radiology, or groups of allied health professionals such as pharmacists, or therapists. 'Multidisciplinary

teams' include members of different health professions, co-located, and tasked to work together to provide routine care for particular groups of patients.

Section 7.1 explains the selection of the illustrations used in this chapter and reprises the explanation built through chapters three to six. Section 7.2 begins at the meso-level with service designs, including clinical directorates, Patient Focused Care (PFC) units, and multidisciplinary teams. Continuing at this level, section 7.3 considers changes to improve service coordination, including inter-department information communication technology (ICT) and quality improvement programmes. Section 7.4 shifts to the micro-level and considers regulatory changes for overlapped scopes-of-practice, continuing oversight of competency by registration authorities, and management-led design of roles for health practitioners.

7.1 THE ILLUSTRATIONS AND POTENTIAL EFFECTS OF REGULATORY PRIVILEGE

This section overviews the criteria for, selection, and preparation of the illustrations used in this chapter. It concludes with a brief summary of what has been learnt so far about the effects of regulatory privilege, and how this could be expected to contribute to explaining events in the illustrations.

Selection of illustrations

Seventeen illustrations were selected from the health services research literature and presented in sections 7.2 to 7.4 of this chapter. These include illustrations of service designs and improvements to the coordination of care, and changes affecting health professionals.

There was relatively little material that met all the selection criteria. Recapping the explanation in Section 2.3, illustrations needed to concern health professionals or unregistered health practitioners described in Chapter Three. To identify effects that could relate to regulatory privilege, illustrations involving changes to service design and the coordination of care needed to include health practitioners from at least three different health professions. To contain the scope of the research, I focused initially on New Zealand, Australia and the United Kingdom, followed by other jurisdictions with a

similar history of health service improvement. Papers needed to provide enough description of the health professions, the intervention, the organisational context and the experiences of the actors to support an explanation for the events. Authors' explanations for the observed events were useful to assess whether the explanation of regulatory privilege contributed additional insights to account for these events. Finally, it was important to know whether the events observed were generally consistent with the literature, and that studies met scholarly standards.

These criteria proved demanding. I found that many studies focus on a single health profession, or lack detail about the organisational context, the events, or the experiences of the actors. There have been few studies that consider the impact of regulatory changes on health services. Eleven of the illustrations come from the United Kingdom, which reflects the UK's larger population and resources for research. With just one study from Australia and none from New Zealand that met the selection criteria, five studies were included from other countries. The reasons for selection of particular illustrations are discussed in more detail below.

In several cases, promising illustrations were located, but ultimately not selected, as they did not adequately meet the selection criteria. One New Zealand study of a clinical directorate (Doolin, 2002) was located, but it focused on medical specialists and managers rather than on clinical practice arrangements. One Australian study on PFC (Braithwaite, 1995) was located, but it focused on changes to the organisation structure rather than on the effects in inter-professional practice. There was more choice among studies on multidisciplinary teams, but despite the numbers of these studies, few provide specific information on the teams' membership, work sharing arrangements, or the experiences of the team members. One UK study considered relevant subjects, such as inter-professional boundaries, scopes-of-practice and professional accountability (Brown et al., 2011). However, it did not include the detail sought about the teams' composition or work sharing.

Relatively few of the studies on quality improvement programmes were suitable for inclusion due to a lack of specific detail on the implementation and the actors. An example is a book of case studies by Bate et al. (2008) in which findings are presented thematically, focusing on the organisational contexts rather than on the work of the health

professionals. There were few choices for illustrations of clinical ICT. Doolin's (2004) New Zealand study involved a clinical accounting system rather than a system to enable inter-professional collaboration. I also considered an Australian study that compared the implementation of clinical systems linking wards to radiology and laboratory departments in two hospitals (Callen et al., 2007). However, the focus is the organisation culture and the attitudes of medical professionals, rather than on changes to work practice among the health professionals.

Similarly, there was limited choice of material concerning the effects of changes to health practitioner regulation. Despite the international trends for overlapped scopes-practice, it appears that evaluative research has only been commissioned in the Netherlands. While educators have produced research on defining and assessing competency standards for the training of health professionals, there has been scant attention to how competencies set by registration authorities relate to clinical practice environments. Management-led role change was equally problematic due to the tendency for papers to focus on single professions or roles.

The selected illustrations of service designs included: two of UK clinical directorates; two of PFC units, one from the United States and one from the United Kingdom; and three of multidisciplinary mental health teams in the United Kingdom. The choice of mental health teams reflects the sustained policy directions and funding for evaluation studies in these services. Selected illustrations of improvements to the coordination of care included two of quality improvement programmes, one of re-engineering from the United Kingdom, and one of Lean Thinking from Australia. These studies captured the similarities in quality improvement programmes, despite a decade of separation. Also selected were three illustrations of interdepartmental or cross-functional clinical ICT systems, one concerning laboratories and wards from the United Kingdom, one about medication management from Canada, and one from Sweden that linked hospital and community providers for maternity care. Selected illustrations for changes directly affecting health practitioners included: two for overlapped scopes-of practice, the first an evaluation study from the Netherlands and the second a regulatory review from the United Kingdom; two for continuous oversight of competency, one from the Netherlands and one from the United Kingdom; and one of management-led role change from the United Kingdom.

Among these illustrations, there were many instances of improvements. Indeed, there appears to be a publication bias in favouring the reporting of successes, particularly in re-engineering and lean thinking (Elkhuizen et al., 2006; Mazzocato, Savage, Brommels, Aronsson, & Thor, 2010). Overall, the research suggests little evidence of organisation or system-wide improvements. The few studies that attempt to assess effects on costs, or measures of service quality and patient safety suggest little difference (Bowns & McNulty, 1999) or higher costs (Walston et al., 2000; Walston et al., 2001). Other researchers have noted that gains might not be sustainable, even where the health service makes a sustained effort (Ovretveit & Staines, 2007). Some authors suggest that successes might only be sustained when quality improvement is applied across specialist departments in healthcare (Mazzocato et al., 2010) and throughout the health system (Joosten, Bongers, & Janssen, 2009). As explained in the introduction to this thesis, the evidence of difficulties or limitations to improvements, even where health services have adopted best practice in the management of implementations, leaves room for considering an explanation related to health practitioner regulation.

Preparation of illustrations

Most of the selected illustrations come from papers published in scholarly journals. I began by summarising these papers with attention to the purpose of the research, the improvement policy being implemented, the health professionals involved, the reported events, the experiences of the health professionals, and the research findings. One difficulty was that these published accounts had not been designed to identify the levers of regulatory privilege or elements of redesign identified in this thesis. In some cases particular levers appeared to be present, in other cases the presence of some levers could be inferred from the events. Two of the illustrations in Section 7.4 came from reports published by UK government agencies, and these were prepared in the same way. Two illustrations of quality improvement programmes were included. The first came from a scholarly book on the re-engineering of a UK hospital and the second from four papers describing the use of 'lean thinking' in 60 hospitals in New South Wales, Australia. For these summaries, I focused on the common areas of process improvement, including emergency departments, emergency admissions, planned surgeries, and discharges. Once completed, the summaries were condensed to create the brief summaries or vignettes presented in Sections 7.2, 7.3, and 7.4 of this chapter. For fifteen of the seventeen

illustrations, summaries are longer than the vignettes and these are included in Appendices B, C and D.

Regulatory levers and effects in service improvement

Before considering the events in the vignettes, I briefly reiterate the explanation built through Chapters Three to Six. I then outline how regulatory privilege could be expected to affect service improvement in the selected illustrations.

Chapter Three showed that the organisation of modern health services owes much to the 19th-century construction of the health professions, medical regulation, hospitals and community services. This intertwined construction means that changes to improve health services could involve changes to the health workforce and its regulation, as well as to health service organisations. Much of the discourse about changes concerns medicine and nursing, but taken together the allied health professions comprise a significant and growing proportion of the health workforce. Each of these groups contributes to shaping the options for organising healthcare.

Chapter Four showed that policies for health practitioner regulation and health service improvement appear to have been developed in isolation. The trends to bring more health professions into regulatory regimes and encourage non-medical advanced practitioners could intensify the potential for unintended policy interactions among the many registration authorities. There could also be interactions between the policies of registration authorities and regulatory agencies encouraging health service improvement. Unintended interactions could be evident in health service organisations, and observable in illustrations of service improvement.

In Chapter Five, an explanatory lens, referred to as regulatory privilege, was developed to show the ways in which registration status could be leveraged with effects on the health workforce, and the control of certain resources in health service organisations. The levers of regulatory privilege were identified as emerging in the historical construction of the health workforce and subsequently being reinforced through health practitioner regulation. These levers included control of training, clinical technologies, clinical information and ICT, special languages, role definition, referral agreements, and the potential for inter-professional complaints to registration authorities. Levers could be

used in various combinations, depending on the health profession and the circumstances. The exercise of regulatory privilege by health professionals could present barriers to embracing service improvements otherwise made possible through 21st-century changes to social conditions, particularly in education, knowledge, and technology.

Chapter six traced the progress with service improvement, which revealed a pattern of many localised improvements with less evidence of organisation-wide improvements to safety, quality or cost. The chapter showed that the redesign elements in service improvement could be poorly aligned to the present organisation of work among the health professions. These included inter-related changes affecting leadership, separation of routine and more complex work, organisation-based clinical policies and procedures, multidisciplinary teamwork, some redeployment of personnel or technologies, management of shared clinical information and ICT, new roles and supervisory arrangements, and training and engagement of health professionals. Management capability for service improvement also appeared to be weakened by regulatory privilege. This included contested leadership, weak human resource management (HRM), competing professional agendas in ICT, and obstacles to the design of effective multidisciplinary teams. The poor alignment of redesign to healthcare work and the lack of organisational capability could explain why improvements tend to be localised to specialist departments in traditional service structures. These localised improvements might not lead to organisation-wide improvements, due to the differing priorities accorded patient cases among specialist departments, or among health professionals in inter-professional practice.

This explanation of how regulatory privilege could limit service improvement could be expected to contribute to explaining events in the selected illustrations. The levers of role definition and control of training were linked to a lack of HRM capability in health service organisations. This capability is important for new service designs, aligning roles to the needs of patients, inter-professional work sharing, training to support practice, developing new career structures, and establishing policies for supervision and professional accountability for practice. These levers could contribute to explaining the events in Section 7.2, on multidisciplinary teams, Section 7.3 on quality improvement programmes, and Section 7.4 on overlapped scopes-of-practice, oversight of competency, and new roles in health services.

The lever of control of clinical technologies was linked to the historical development of particular health professions. Specialisation around certain technologies has produced advances in patient care, such as in laboratory testing, medical imaging, and medication management. Health professions tend to favour retaining control of important technologies within their respective specialist departments or practices. This could undermine the evolution of technologies that enable the routine work of specialist departments to be delivered in different locations or by practitioners from other health professions. This lever could contribute to explaining the events in the vignettes on PFC in Section 7.2, and the inter-departmental ICT illustrations in Section 7.3.

The lever of control over special languages was linked to difficulties with communication in inter-professional practice and multidisciplinary teams. Difficulties with integration of electronic patient records have been linked to inter-professional language differences and reluctance to use standardised, abbreviated text that can contribute to integrated electronic patient records. This lever could contribute to explaining events in Section 7.2 on PFC and Section 7.3 on ICT.

The lever of control over clinical information and ICT has implications for information sharing, clinical record keeping, and the coordination of work. These levers could explain the difficulties experienced with ICT systems enabling order entry and results reporting between wards and departments, and in designing integrated electronic health records for consumers. The ICT vignettes in Section 7.3 include material related to these issues.

The lever of referral agreements is the primary means of organising work among the health professions. These agreements mostly reserve the right to determine and allocate work to medical practitioners. Referral agreements could obstruct efforts to separate routine and complex work, and to use organisation-based clinical policies and procedures to guide non-medical practitioners to deliver routine work. This lever could contribute to explaining events in Section 7.2 on clinical directorates, PFC units and multidisciplinary teams, Section 7.3 on quality improvement programmes, and Section 7.4 on government-led efforts to redesign roles for health practitioners.

To observe the lever of inter-professional complaints, vignettes would have had to include events either inside registration authorities or the human resource departments of

health service organisations. Even in the absence of this information, events in Sections 7.2 about PFC units and 7.4 could suggest the presence of this lever.

7.2 OPTIONS FOR SERVICE DESIGNS

This section looks at how well three different service designs align routine inter-professional care to patient groups. To varying degrees, each design shifts service delivery from a focus on specialist departments toward inter-professional care of patient groups. Drawing on the experience of Lean Thinking in other industries, resistance could be expected from specialist departments that stand to lose power and individuals who need new career paths to recognise their inter-professional work around particular groups of patients (Womack & Jones, 1994). For each design, I assess the plausibility that regulatory privilege could contribute to explaining the limits or difficulties with these service designs.

The section begins with two vignettes about clinical directorates, which are a common structure for organising hospital care in New Zealand, Australia, and the United Kingdom. The next two vignettes describe PFC units that were piloted in early efforts to re-engineer health services. The final three vignettes describe dedicated multidisciplinary teams, which are a common service design to care for mental health patients in community settings.

Clinical directorates

An important step in service improvement is to create an organisation structure that focuses care around similar patient groups to minimise delays in routine care. Clinical directorates have become a common way of organising hospital services since the management reforms of the late 20th century (Boyce, 2001). The clinical directorate vignettes (below) illustrate the complexity of aligning inter-professional care to patients in clinical directorate structures. (For longer summaries of these studies, see Appendix B, pages 283-284).

In a UK clinical directorate, there were 10 nurses on each ward, and other health professionals attached to wards, including up to 15 medical practitioners from five or six different medical specialist teams, three to four therapists (physical and occupational),

two social workers, two pharmacists, and two care coordinators. Inter-professional work was coordinated through weekly multidisciplinary meetings for the patients of each medical specialist team, with each meeting to be led by the respective medical team leader. However, there was inconsistent attendance among medical practitioners and nurses. Meetings were often cancelled when medical specialists did not attend, so most information sharing occurred in profession-specific meetings. Some health professionals attempted to glean information from reading ward notes, although the social workers reported that this was unsatisfactory. Nurses attempted to communicate directly with medical practitioners about particular patients, but medical practitioners preferred a more centralised system of communication. Inter-professional communication tended to occur in brief or terse corridor conversations, often initiated by medical practitioners who treated non-medical practitioners as representatives of their respective health professions, rather than as team members. Messages were also relayed through care coordinators or nurses. These opportunistic verbal exchanges were problematic for the continuity of care when the health practitioners were interrupted or forgot messages. Medical practitioners viewed collaboration as an activity within medicine, while nurses expressed views more inclusive of other health professionals. The authors concluded that the care coordinator role was a useful development, but that difficulties with practice locations, hours of work and differing views about collaboration among the health professions limited inter-professional care on these hospital wards (Reeves & Lewin, 2004).

Another UK study focused on the inter-professional collaboration between nurses, therapists (speech language, physical and occupational) podiatrists, dieticians, and social workers in the delivery of rehabilitation care. Nurses remained in the wards or clinics, while the other health professionals moved between these areas and their respective clinical department. This study followed the progress of patients recovering from hip fractures, rheumatoid arthritis, or stroke as they transferred from acute care wards to rehabilitation wards and outpatient clinics. While there were instances of highly collaborative work between the nurses and the therapists, there was widespread confusion around roles or responsibilities, leading to contests for control over patients' assessments, coordination of care, and the incorporation of therapy treatments into daily nursing care. These contests contributed to fragmented care, repetition of work, and delayed recovery for patients. Nurses complained that the therapists failed to recognise nurses' skills in rehabilitation, or to communicate their therapy instructions; while therapists

complained that nurses undermined patients' progress by not reading or adhering to therapy instructions. Nurses were divided over whether their role should be to co-ordinate the therapists' work or to perform therapy work. Some nurses expressed a desire for recognition and training in rehabilitation care. The authors concluded that there is a need for more transparency in the skills required for rehabilitation care, and recognition of this need by health service organisations, educators, and the registration authorities (Long et al.,2003).

In both of these vignettes, the service designs focus the work of specialist departments around particular groups of patients and try to bring inter-professional care to the patient's bedside or clinic appointment. The allocation of particular health professionals to groups of wards is likely to increase the opportunities for inter-professional collaboration for the patients' benefit. In both vignettes, a combination of logistical and inter-professional difficulties was evident.

In the first vignette, Reeves and Lewin (2004) point out the logistical difficulties, including differing departmental locations and hours of work for the specialist medical teams, nurses and allied health professions. While nurses are located on particular wards, the medical specialists and allied health professionals work across different medical wards. Underlying these clinical directorates is the traditional organisation of the healthcare workforce, in which the various levers of regulatory privilege may be applied to maintain the independence of each group of health professionals. While allied health departments may allocate professionals to particular clinical directorates, they are also likely to utilise all their staff to meet demand organisation-wide. If the allied health professionals were permanently dedicated to each clinical directorate and expected to provide services through evenings or weekends, larger numbers of these professionals would be required. However, there is unlikely to be enough specialist work to occupy increased numbers of allied health professionals, unless they begin to share work with the nurses on the wards. Such changes could be difficult due to the control over role definition and training by registration authorities. Usually, the numbers of specialist health professionals remain the same, and demand is managed by delaying routine work where there are conflicting demands, which contribute to logistical difficulties in inter-professional practice. In the first vignette, the new co-ordinator roles were introduced to improve inter-professional co-ordination of care.

Logistical difficulties make it easier for the medical, nursing and allied health professionals to largely operate in their own teams, with most information sharing in their respective team meetings. Reeves and Lewin (2004) also describe difficulties with inter-professional collaboration that could relate to the regulatory levers of control of information, and referrals. Medical practitioners appeared to treat their communications with other health professionals as 'referrals' or 'delegated instructions' and not as opportunities for collegial discussion of the patient's health condition. There is also some evidence of control of information because the patients' notes do not appear to function as a record that supports the contribution of all the health professionals.

The second vignette above shows similar difficulties to the first vignette, even though care coordinators are in place. There are logistical problems due to the differing work locations, hours of work, separate record keeping, and differing ideas about collaboration among the health professions. Long et al. (2003) observed that the difficulties between nurses and therapists around inter-professional work had negative effects on patients' progress, and recommended changes to health practitioner training at both the organisational and regulatory levels. This would seem to be a call for a simple change to training, so that both nurses and therapists have clarity about their shared skills, helping them to trust one another's judgement and share work. However, the explanation developed in this thesis suggests that such changes would not be simple. The pattern of role definition in the health workforce has been for advanced practice work within professional silos, with new competencies including work previously reserved to medical practitioners. There is scant evidence of registration authorities prioritising recognition of shared competencies in clinical work for particular patient groups, such as for those requiring rehabilitation care. While the World Health Organisation (2005) has made recommendations for training of health professionals in communication and teamwork, these are general skills and there is scant evidence of educators including shared clinical competencies in training. Thus, progressing the authors' recommendations is likely to depend on changes at the regulatory level.

The resolution of difficulties with logistics and inter-professional practice observed in these clinical directorates might involve post-registration training open to interested health professionals, organisation-based policies to guide practices in specialist departments and multidisciplinary teams, and organisation-based training to orient health

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professionals to work sharing in particular inter-professional practice settings. However, this is likely to involve changes to the operation of registration authorities, the organisation of training in health science faculties, and an increased role in training for health service organisations.

Patient Focused Care (PFC)

The case for PFC units was premised on the idea that routine work could be designed around patients and that this could deliver gains in service quality and efficiency. It was informed by US studies showing that as little as 16 cents of every dollar spent on labour went to direct patient care, and that the 'sea of faces' caring for a single patient could compromise the quality of care (Hurst, 1996; Lathrop, 1993). In the United Kingdom, similar studies showed that a routine procedure such as a chest X-ray could involve up to 11 staff and more than two-hours of staff time (Heymann & Culling, 1996). The remedy was to shift routine work from the specialist departments to the patient's bedside, to be performed by teams of cross-trained health practitioners in accordance with organisation-based clinical policies (Lathrop, 1991). The next two vignettes show the progress with PFC pilots at Lakeland Regional Medical Center (LRMC) in the United States, and Leicester Royal Infirmary (LRI) in the United Kingdom. (For longer summaries of these studies, see Appendix B, pages 285-287).

At LRMC, a PFC unit was established with 35 surgical beds and facilities for some laboratory, radiology and pharmacy work to be performed in the unit. In-house training prepared a two-person team of a registered nurse and a multi-skilled health practitioner to perform preadmission assessments, admissions, ECGs, respiratory treatments, basic physical therapy treatments, phlebotomy (taking blood for analysis), most dietary functions, equipment care, cleaning rooms, transporting patients, charging patient accounts and completing medical records. Post-implementation evaluations showed routine laboratory tests were completed 70% faster, measures for patient satisfaction, length of stay, mortality, quality of care or complications were similar or better than on the traditional units, and there were cost savings of 9.2% per occupied bed day. The time taken for X-rays was improved, although health practitioner regulation restricted the taking of X-rays to radiographers. Health professionals reported improved engagement with medical specialists or managers, but felt that some work involved reduced

autonomy, or was 'demeaning' for their profession. The 15 surgeons were unanimous that patient care had improved, but some preferred to maintain their own medical notes, separate from the unit's record of patient care (Watson, Shortridge, Jones, Rees, & Stephens, 1991).

At LRI, a PFC unit for performance of routine tests for outpatients was set up at the Balmoral Outpatients Centre. This was part of a strategy to change from three or four separate appointments for patients to a single appointment that integrated tests and consultations. The laboratory, radiology and cardiology departments monitored the quality of tests, and the human resources department assessed staff satisfaction in the clinic. Outpatients generated 66,000 tests per year. Prior to the implementation of the Balmoral PFC unit, 43% of test results were not available at the start of a clinic, and 28% of tests were repeated due to delays or missing results. In 1995, testing equipment was installed to service eight clinics, with a team of four cross-trained health practitioners, who reduced patients' waiting times for tests from 90 to 10 minutes. The clinical personnel reported satisfaction from delivering a comprehensive service to patients, but experienced censure from professional colleagues due to anxieties about limited career paths, and being seen to perform the 'lower-status' or routine work from the scopes-of-practice of other health professions (Newman, 1997). An evaluation of organisation-wide re-engineering at LRI (undertaken at the same time) showed that it was the PFC-inspired change in outpatient services that contributed most to cost savings as well as quality improvement (Bowns & McNulty, 1999).

The authors' accounts of these PFC pilots were positive. At LMRC there were significant cost and quality improvements for surgical patients. At LRI, the experience for outpatients was transformative, with a single appointment replacing three or four previously required. Yet, PFC was a short-lived experiment rather than the beginning of a service improvement programme, and some reasons related to health practitioner regulation.

At LMRC, there were limits to the design of routine work on the unit. Each two-person team had to include a registered nurse, and only a licensed radiographer could take X-rays. Brider (1992) explains that US nursing organisations objected to an allied health professional completing a patient assessment because this involves 'a nursing diagnosis',

and the US Joint Commission on the Accreditation of Healthcare Organisations warned hospitals that their continuing accreditation would be contingent on cross-training 'tasks', not 'professional work' such as 'nursing assessments' or 'nursing diagnoses'. The PFC pilots coincided with the shift to general management. Management roles were to become 'generalist' rather than reserved to members of particular health professions (Walston & Bogue, 1999). However, US nurses' organisations insisted that the PFC unit manager should be a member of the nursing profession (Brider, 1992). In the United States, the regulatory levers related to control of clinical technologies, control of special languages, and role definition appear to have constrained the options for PFC-style service improvement.

The PFC-style reorganisation at LRI appeared modest in comparison to that at LMRC and some other UK sites. The laboratory, radiology and cardiology departments appeared to take on their new roles of monitoring the quality of services provided by the generalist health practitioners in the Balmoral Test Centre. However, it is not clear whether the tests offered at this test centre were subject to regulatory restrictions, or if so, how this was accommodated. In a review of seven UK pilots, Garside (1993) found health services introduced cross training of health professionals, for routine work, without sufficient attention to the effect on the specialist departments that had contributed some of their health professionals and clinical technologies to the PFC units. While a PFC pilot could appear modest, this type of service improvement could ultimately require organisation-wide redesign of healthcare work and services. Such reorganisation could depend on changes at the regulatory level.

As the largest health profession affected by PFC pilots, nursing organisations appeared to lead the protest against PFC-style service improvement. In the United Kingdom, there were legal difficulties and fears about the loss of professional identity. Nurses were required to decline work that was outside their scope-of-practice, there was uncertainty around the quality of on-the-job training, the accountability of employers for training and work practice, and there were questions about whether the legally protected title 'nurse' could be used by a cross-trained health professional (Hurst, 1997).

At both LMRC and LRI, the health professionals involved in the pilots reported that they enjoyed the work, but were anxious about performing the 'lower-status' or routine work

from the scopes-of-practice of other health professions (Newman, 1997; Watson et al., 1991). These anxieties could be expected in the context of role definition by registration authorities, which has favoured uplifting work previously restricted to medicine over combining competencies from different non-medical health professions to serve particular patient groups. Progressing PFC-style service improvement would depend on the construction of career paths for health professionals to move between specialist roles focused on complex cases, and multidisciplinary teams or units focused on routine care of particular groups of patients.

The evaluation studies from these PFC pilots suggested that rethinking the design of clinical work could deliver cost and quality improvements in health services. Given this potential, it is plausible to think that further experimentation could have refined the issues around role design, or that rotations through routine and complex work could have addressed career or competency concerns. However, these pilots also demonstrated that the redesign of health services might not be possible without changes to health practitioner regulation.

Multidisciplinary teams

Multidisciplinary teams dedicated to providing routine services for particular groups of patients are a common design for service improvement. These teams were originally constructed through recruiting or redeploying health professionals from their specialist departments to care for a particular group of patients, such as those with a chronic health condition (Lemieux-Charles & McGuire, 2006). In mental health services, it is common for multidisciplinary teams to provide routine care for community-based clients, and for specialist services to provide services for more complex problems or acute episodes of illness (Thornicroft & Tansella, 2004). The next two vignettes are of community mental health teams (CMHTs) in the English Midlands, and the south of England. In the third vignette, a Scottish CMHT is in the process of implementing an electronic record keeping system to improve sharing of patient information. (For summaries of these studies, see Appendix B, pages 287-290).

Three teams in the English Midlands provided mental health services for patients in particular geographical areas. A steering group of stakeholders met monthly to oversee

these services. Each team held weekly meetings chaired on a democratic basis. Two teams delivered services from distributed office locations. There were difficulties agreeing the teams' goals, including ensuring that team members only treated clients from the team's geographical catchment. Some professionals began to complete a range of tasks at a single appointment because this was efficient and convenient for the client, and advocated a new multi-skilled role for mental health professionals. Others objected to combined roles as 'meddling' across inter-professional boundaries, and a third group tried to steer a middle line. Many professionals expressed positive attitudes to teamwork, but most retained links with their specialist departments, and overall the professionals felt abandoned by management. The authors concluded that multidisciplinary team structures could have the unintended effect of encouraging health professionals to focus on their inter-professional boundaries (Brown et al., 2000).

In the south of England, three CMHTs were introduced to improve the coordination of care between hospitals and general practices. Health service managers had appointed leaders, co-located the health professionals with their team members in the same premises, required that care plans be developed for each patient, and adopted a language of collaboration. Leadership was shared between a psychiatrist responsible for treatment plans and a nurse coordinating care. Two of the teams had difficulties agreeing to a team goal for patient care. After two years, the professionals still looked to their specialist department for direction or support, and were confused about their responsibilities or decision-making rights within the team. The third team was responsible for psychotherapy services. It rapidly agreed its goals for patient care, established team-based training and support for its members. The authors concluded that further management intervention was required to resolve difficulties around priorities, tasks, and core work for the other two teams (Gulliver, Peck, & Towell, 2002).

In Scotland, three CMHTs were implementing an electronic patient record system. Each team had a designated leader, a lead practitioner for each patient, and inter-professional care plans for each patient. The teams tried to organise their work on a democratic basis. They solicited opinions from each team member on each patient case, to establish a group consensus around the assessments or referrals for each patient discussed. Team membership status varied, which meant that the authority accorded individual practitioners varied or was renegotiated depending on the extent of that

practitioner's participation in team activities. Uncertainty about roles and responsibilities was evident in the management of client records. Policies for records management were not enforced, particularly concerning their removal from the office. Generally, there was a pattern of both informal and formal record keeping with drafts of assessments, reports, or referrals held back until consensus was secured with other team members. Sometimes amendments were made to drafts, which were then filed in the patient's record. The introduction of the electronic records system meant that records were immediately available to other health practitioners, changes to records were tracked, and it was more difficult for management to ignore policy breaches, such as the removal of client files from the office. Thus team members delayed entering records into the system. For instance, a nurse assessed a patient and verbally reported this assessment to the psychiatrist, but did not record it until after she had checked the consistency of her assessment with the psychiatrist's report. The researchers doubted the electronic system would accommodate the collaborative style of working in these multidisciplinary teams and changes would be required (Hardstone, Proctor, Voss, & Rees, 2004).

Regulatory control of role definition, by each health profession, contributes to a lack of management capability to construct effective multidisciplinary teams. In the first vignette, confusion around work sharing and accountability was evident in the differing opinions about 'role blurring'. This reflected the health professionals' differing emphasis on, or interpretation of their clients' clinical and social needs, and their own understanding of their respective health profession's role, expertise and regulatory responsibilities. Uncertainty or even contests around professional expertise and responsibility would have undermined the capability for work sharing. A further difficulty was that the teams ranged from eight to 11 members, which is larger than the four to seven members recommended for team designs to enable effective real-time communication and decision making (Hackman et al., 2000). The number of team members in the other vignettes was not reported. However, these teams are likely to have similar communication difficulties related to team size, because they include representatives from the same range of health professions.

In the second and third vignettes, there was more management attention to formalising leadership and policies for inter-professional care plans. However, in all the vignettes the democratically styled team meetings demonstrate the uncertainty around roles and

accountabilities for team members. There were differing opinions around role blurring, difficulties agreeing to a team goal, changing team membership status among the health professionals, and difficulties aligning the work of team members to the team's list of clients. The exception was the psychotherapy team in the second vignette, which organised well around its task. This could be explained because there were no regulatory restrictions about which professions were permitted to perform this work (Professional Standards Authority, 2014), and therefore no regulatory roles or responsibilities to interpret and potentially disagree about. While the authors recommended management intervention to resolve difficulties with priorities, tasks and core work in the other two teams, it is not clear that managers would have the authority to resolve matters arising from differing interpretations over regulatory obligations among health practitioners in an inter-professional work setting.

The third vignette shows how the lack of clarity about professional roles evident in the teams also leads to uncertainties about clinical accountability and record keeping. The lack of management authority concerning roles extends to the management of clinical information. Organisation policies relate to the movement of records from the teams' offices, but not to accountability for their production or clinical content. In the absence of an authoritative solution for record keeping, the health professionals delay recording their observations, and invest time in extensive co-production. In some cases consultations over assessments or referrals could be important. However, delaying the production of clinical notes could mean they do not accurately capture the actual observations made. Additionally, there is no record of the episode of care in cases where the client attends another service, such as the emergency department, while joint productions of clinical records are in progress. These delays are also likely to breach professional or legal standards that require prompt recording of observations or information provided by patients, particularly in chronic care where important clinical information may only become evident over time, and through several consultations with different health practitioners (Cowan, 2000). Hardstone et al. (2004) conclude that the electronic record system should be redesigned to accommodate the co-production style of record keeping in these teams. However, it could be useful to also address role clarification, work sharing, and accountabilities as an equally important part of designing a shared electronic records system. However, the lack of organisational authority to address these matters,

and the absence of arrangements at the regulatory level to facilitate policies for inter-professional practice in multidisciplinary teams suggests this could prove difficult.

7.3 COORDINATION OF SERVICES

Communication and patient flow in services can be improved through information sharing and better coordination of care. This section begins with three vignettes about the use of ICT to focus the work of specialist departments around patients. In the second half of this section, two vignettes show how quality improvement programmes have been used to improve patients' journeys through hospital services.

ICT to coordinate care

Health ICT evolved in specialist departments from the 1970s, but there has been slow progress with linking these clinical systems together to improve the coordination of care (Hillestad et al., 2005). Regardless of these difficulties in hospitals, this agenda has expanded with policies for computerised sharing of clinical information among hospital and community providers (Bodenheimer, 2008). When implemented, there has often been insufficient attention to how computerised communication of referrals or 'orders' can change work practice among health professionals (Callen, Westbrook, Braithwaite, & Mir, 2006). The first vignette is set in a microbiology laboratory with a new laboratory system that enables communication across the laboratory and with the wards. The second vignette shows the implications for pharmacists and nurses of a system to improve the management of medications. In the third vignette a web portal links pregnant women with hospitals and community practices. (For longer summaries of these studies, see Appendix C, pages 291-294).

In the United Kingdom, a new laboratory system introduced transparency between the clinical departments of the laboratory, and allowed medical practitioners on the wards to order from a standardised list of laboratory tests and view results. Eighteen months of work was necessary to build agreements for this system among the laboratory departments. In the microbiology department, the system tracked the performance of the tests by the laboratory scientists, quality reviews of the test results by either the scientists or the pathologists, and the release of results to the wards. This new system challenged

the roles of laboratory scientists who saw themselves as deciding on, performing, and inventing new tests. It also challenged the pathologists' claim to supervise all the laboratory work. Each group negotiated changes. The scientists retained the right to change the tests ordered by the wards and to control how the tests were performed. However, they lost their test development work, which they saw as compromising their career options, because tests became standardised in accordance with hospital policies. The pathologists leveraged their regulatory authority over 'the diagnosis' to retain control for 'approving' each test result for release, by instituting a manual 'workaround' so the scientists could highlight which tests needed a pathologist's review. The pathologists also threatened that if certain changes were not made, they would discredit the system to pathologists in other health services. The managers negotiated changes with a view to securing improvements to information sharing, transparency around laboratory service delivery, and more standardised work practice (Mclaughlin & Webster, 1998).

In a Canadian hospital, a medication administration system was introduced to reduce errors and improve efficiency. Pharmacists expected to enhance their roles in quality control and clinical advisory services, and nursing leaders expected that nurses could save time on medications and gain time for other clinical work with patients. There were unanticipated effects for both health professions. The replacement of ward inventories with daily supplies in medication carts generated an intolerable volume of data entry work for pharmacists. The medication advisory service, planned for wards by the pharmacists, failed, because when they shifted to the wards, the pharmacists found themselves isolated from the knowledge they had previously acquired through performing prescription reviews. The system's two-hour window for medication administration had been agreed by hospital managers who were higher degree trained nurses. However, rather than free nurses for more time with patients, these rules restricted the nurses' discretion to exercise their judgement around competing work demands. To resist changes, pharmacists stressed their professional accountability for prescription reviews, and nurses their professional accountability for the administration of medicines. While the system was intended to enhance professional roles, it introduced standardisation of work that reduced each profession's opportunities to exercise their professional discretion and control their work. This implementation occurred in the context of a pharmacy department that was relatively weak compared to nursing, and health service changes that

had already stressed many of the nursing staff. This system was ultimately rejected, and replaced with one that enabled more flexible practice. Implementation of physician order entry was planned (Novek, 2002).

In Denmark, a web portal was introduced to share clinical summaries, medications, test results, and appointment times among pregnant women, hospital specialists, midwifery clinics, and community general practices. The expectation was that access to information would be educational for the pregnant women and this would improve the women's contribution to, or compliance with, care regimes. The study showed that the women were neither 'passive' nor 'forgetful' recipients of care. To the contrary, these women used the information in the web portal to demand information sharing among the health professionals, and to insist that health professionals remedy errors or omissions in the web record. Thus it became apparent that poor information sharing among the health professionals rather than patient compliance was the key problem in the delivery of care. One general practice and one hospital department withdrew before the four-year pilot concluded (Winthereik, 2008).

Organisational context contributes to explaining events in each vignette. In the first, the purchase of a laboratory-wide system meant each laboratory department had to compromise; in the second, there was low trust among the health professionals due to recent hospital changes; and in the third, there appeared to be little incentive for providers to sustain commitment to information sharing for the pregnant women. Even so, each vignette demonstrated progress toward implementation of shared electronic records and coordination of care across providers. The health professionals resisted certain changes, and this could have been important, for changes did not improve services. However, resistance could also relate to anxieties that automation meant work could become less desirable or be lost to a health profession.

In the first two vignettes, the authors describe events consistent with each health profession leveraging regulatory privilege to control their respective clinical technologies, the management of clinical information and ICT, and their directions for role and career development.

In the first vignette, the laboratory scientists were partially successful in retaining control over the performance of tests. However, the range of tests was standardised, and they lost

control over work important to their career aspirations. The pathologists were more successful, as they used the new system to both retain and expand control over their work, and over ICT. The new laboratory system introduced transparency around 'who performs what work'. This meant professionals on the wards had to enter test requests by a particular time, tests had to be performed promptly, and the time it took to return test results was visible to the referring wards and clinics. To visibly maintain their claim to overall control of laboratory work, the pathologists introduced a paper-based workaround to be completed by the laboratory scientists. A manual system like this undermines the intended operational efficiencies of the new pathology system, and could also be problematic for auditing if errors in the manual system are not traceable through the electronic system. Ultimately, it is possible that the pathologists could tire of their repetitive data entry work, and the system could eventually be implemented as originally intended, with laboratory scientists reviewing routine test results.

In the second vignette, the pharmacists and nurses each used claims about their legally defined roles to resist changes around checking prescriptions and the administration of medicines. The medication management system also introduced transparency around closely inter-related work that had previously been subject to the discretionary control of different groups of health professionals. Decisions about which medications to prescribe, checking whether doses and combinations are safe and effective, and the timeliness of administration are inter-related work. As the second vignette showed, in the medication management system work became more integrated with standardised coproduction of medication charts and requirements to both pharmacists and nurses to meet standardised timeframes. This led to protracted disagreements between these groups that mostly work in separate locations, and previously had the discretion to work more independently. The pharmacists' efforts to realise the benefits of quality control over all medications also generated substantial repetitive data entry work in the pharmacy. The planned addition of physician order entry for medication added further work to the medication management system, and reopened questions about 'who performs what' among the medical practitioners, nurses, and pharmacists.

In the third vignette, the web-based electronic record did not produce the comprehensive patient record desired by the pregnant women. This could be explained through attention to the referral system. Following receipt of a referral, each health professional was

accountable for the performance of services and record keeping according to their own scope-of-practice. Particular information was shared through formal referrals and reports, and is likely to be a subset of the information generated by the health professionals. Contributing a record to, or reading material from the web portal created additional tasks for the health professionals. This led to questions about the relationship between the web record and the usual record keeping used to support practice. Questions included what information should be uploaded, and whether each health professional was expected to read this material. Shared records have implications for the record-keeping practices of contributing health professionals, which could include agreeing to standardised terminology to make content more accessible. Further work to establish integrated electronic records among providers could ultimately generate dilemmas for the health professionals such as those in the first two vignettes.

Quality improvement programmes

In the United Kingdom, Australia, and elsewhere, governments have used quality improvement programmes to reduce patient waiting times in emergency departments (ED)s and for elective surgery, and the length of patients' stays in hospital (Forero et al., 2010; Powell et al., 2009). The next two vignettes depict efforts to improve the coordination of hospital care focusing on EDs, emergency and elective admissions, and expediting discharges. In the first vignette, the UK's Leicester Royal Infirmary (LRI) undertook re-engineering in a policy climate of cost containment, concerns about waiting times, and reductions to bed numbers, in this case for the Obstetrics and Gynaecology services (McNulty & Ferlie, 2002). A decade later, in the second vignette, the Australian State of New South Wales (NSW) used NHS Lean Thinking to improve these same processes, in a policy climate of concerns about waiting times in ED, changes to require surgery patients to receive bookings or be returned to the care of their general practitioner, and a decision to increase the numbers of hospital beds. (For a longer summary of the LRI study, see Appendix C, pages 294-295).

One of the UK's pilot sites for Business Process Re-engineering (BPR) was at LRI. There was extensive programme planning and evaluation, with implementation teams comprised of LRI personnel and management consultants. Emergency department patients were separated into routine cases to be assessed and treated by nurses, and more

complex cases to be managed by the medical practitioners. However, emergency specialists refused to hand work over to nurses. A strategy to reduce ED congestion by admitting hip-fracture patients directly to orthopaedic wards was scuttled by the emergency specialists. This was despite the orthopaedic specialists' desire for these patients to be directly admitted following an assessment by a nurse and a radiographer. Pre-admission clinics for day surgery cases in Ear, Nose and Throat were streamlined with the surgeons agreeing to policies for an administrator to order tests, and nurses to conduct pre-operative assessments with the anaesthetist. This led to the introduction of nurse-led clinics for routine endoscopy examinations, although few nurses were willing to take on this responsibility. Planning of pre-discharge care by a multidisciplinary team was used to expedite discharges, but few consultants agreed to delegate the discharge decisions to nurses. The orthopaedic wards were reorganised into acute and rehabilitation care with a multidisciplinary team responsible for timely organisation of the pre-discharge tasks, although this depended on the therapists working on weekends to get patients discharged. While the Ear Nose and Throat surgeons refused to delegate discharge decisions to nurses, the Obstetrics and Gynaecology specialists agreed to nurses discharging patients and following these patients at home (McNulty & Ferlie, 2002).

A decade later, Lean Thinking techniques were used in NSW to relieve ED congestion and surgical waiting times. This followed the introduction of Lean Thinking at Bolton Hospital Trust in the United Kingdom and overlapped a similar programme at the Flinders Clinic in South Australia. There was information sharing among the experts involved in these programmes at Bolton, Flinders and in NSW (McGrath et al., 2008). In NSW, a programme office was established. At this time, 40% of inpatients were admitted through EDs and patients often had several different health conditions. Sixty hospitals adopted criteria to separate routine from more complex cases in ED, with medical supervision of all cases. Emergency specialists retained control of all ED work, and to varying degrees senior non-medical professionals were permitted to manage some cases. Recommendations for reducing congestion included direct admission of well-known patients to wards, use of ED observation wards for 12-24 hours, and short-stay wards for admissions of up to 72 hours. In NSW, hospitals also authorised admissions managers to match complex cases to particular medical teams and wards (O'Connell et al., 2008a).

Ten to fifteen percent of surgery was cancelled due to the arrival of emergency cases; so separate day surgery units were established at 96 hospitals. Other initiatives included more accurate categorisation of waiting list patients and better distribution of patients across the available surgeons. There were recommendations to improve services by moving patients to the optimal ward or care team as soon as possible, pre-planning of pre-discharge care, and timely forwarding of discharge summaries to community service providers (MacLellan, Cregan, McCaughan, O'Connell, & McGrath, 2008; O'Connell et al., 2008a). In many instances, hospitals experienced difficulties with various initiatives, primarily because medical specialists refused to transfer or delegate work to other health professionals (MacLellan et al., 2008). A further difficulty was that once patients were assessed, their referrals followed traditional service designs, entering the competing stream of referrals to the specialist departments (McGrath et al., 2008).

The programme teams in NSW and at Flinders reported similar root causes of difficulties with these quality improvement programmes. They found poor alignment of resources to patient needs, which was evident in the limited operating hours of specialist departments, and the differing priorities given to referrals concerning the same patient cases by the specialist departments, ED and wards (O'Connell et al., 2008b). They also explained that there was no common understanding among the health professionals about the expected clinical pathway for each patient, and that quality problems arose at the inter-departmental or inter-professional interfaces, including differences of opinion between various medical specialist teams and the ED. These were difficulties compounded by the lack of authority accorded to registrars (trainee medical specialists), nurses or multidisciplinary teams to undertake routine work such as ordering tests or assessments, writing prescriptions for discharge, or accessing community services to support discharge (O'Connell et al., 2008b).

Many localised improvements were achieved in these quality improvement programmes. At LRI and in NSW, the management of emergency departments improved. Access to elective surgery was improved by separating the management of these patients from the emergency patients who needed surgery. In both vignettes efforts were made to expedite the pre-discharge care and arrange for post-discharge follow-ups, so that patients could be discharged. At LRI, an evaluation study found that despite these localised successes there was no organisation-wide improvement, and the authors concluded that LRI was already

a high-performing organisation (Bowns & McNulty, 1999). In New South Wales, the implementation of quality improvement programmes across 60 hospitals, along with increases to bed numbers, produced state wide reductions in waiting times for emergency care and planned surgeries (MacLellan et al., 2008; O'Connell et al., 2008a).

In both vignettes, despite the intervening decade, the problems with maximising the benefits from quality improvement programmes appear similar. There were similar differences of opinion among medical specialists about whether to directly admit patients or provide preliminary treatment in ED, and similar reluctance among some medical specialists to delegate work to trainee medical practitioners or non-medical professionals, both in ED and on the wards. This suggests a lack of organisational authority to develop organisation-based policies to guide inter-professional or even intra-professional delegation. Another problem, also evident in the vignettes about clinical directorates, were the difficulties with matching resources to patients, due to limited hours of operation of medical specialist and allied health departments leading to patients waiting in ED wards for tests or consultations, and in inpatient wards for clinical work to be completed before hospital discharges could be effected.

These problems are not new. In the early 1990s, PFC units sought to address similar problems with poor alignment of specialist departments to patient needs by establishing units to perform routine work and authorising non-medical practitioners to expedite this work. The explanation developed in this thesis directs attention to the historical construction of healthcare work and the ongoing control of this work by many independent registration authorities. Specialist departments focus their work during 'business hours' and prioritise the requests they receive to efficiently manage their resources. At LRI and in NSW, there were changes to reduce congestion through the separation of routine and complex work in ED, through separate theatres for day surgeries, and by matching emergency patients to particular medical teams and wards at admission. However, each patient's journey could still be delayed as they competed with other patients for each assessment and referral to a specialist service. Delegation of routine tasks to registrars or non-medical practitioners could reduce delays, although this depends on each medical specialist's understanding of their accountability to their respective registration authority or specialist college. Among the health professionals, it was hard to establish a shared understanding of a patient's clinical pathway due to the

involvement of large numbers of professionals from different departments, working through different hours of work, and the effects of competing priorities around work requests. The constraint on achieving organisation-wide quality improvement lies in the organisation of the health workforce and the lack of flexibility among the many registration authorities to permit experimentation that could reorganise work.

A key difficulty in improving patient journeys has been how to improve quality or efficiency in care processes without disrupting the claims to professional expertise or authority, or the inter-departmental boundaries among the health professions. These limitations are evident in assurances provided to health professionals at the Flinders Clinic in South Australia, where quality improvement was described as:

> … 'using Lean Thinking to improve flow and reduce waste in core clinical and support processes across the hospital. It is not, however, concerned with attempting to influence the professional content of clinical encounters. That is deemed to be outside the scope of the program, which is primarily concerned with flow and logistics' (Ben-Tovim et al., 2007, p. 11).

It seems plausible that to realise organisation-wide improvement from quality improvement programmes, it will be necessary to include consideration of the policies for health practitioner regulation as well as those for improving delivery in health service organisations.

7.4 REGULATION OR MANAGEMENT FOR ROLE DESIGN

This section considers the micro-level effects of regulatory and government-led changes affecting the roles of health practitioners. The first two vignettes look at regulatory changes to encourage overlapped scopes-of-practice among health professionals. The second two vignettes concern the management of competency from the regulatory and the health service perspectives. The final vignette presents a government-led programme for role redesign in health services.

Overlapped scopes-of-practice

As discussed in Chapter Four, there has been an international trend for recognition of overlapped scopes-of-practice among health professionals. The first vignette comes from an evaluation study of legislation encouraging overlapped scopes-of-practice in the Netherlands, while the second is drawn from stakeholder consultation about the options for regulation of overlapped scopes-of-practice in the United Kingdom. (For longer summaries of these studies, see Appendix D, pages 297-99).

From 1997, the Netherlands followed the Canadian State of Ontario in establishing a legislative framework to accommodate overlapped scopes-of-practice and inter-professional delegation. There was a legislative requirement for an evaluation study within five years of the change. Two thousand gynaecologists, trainee medical practitioners and nurses were asked about their experiences following the change to regulations. For around 75% of the health professionals, the changes were seen as making little difference to their clinical practice. For others, there were confusions about who may perform what work, how to engage in inter-professional delegation, or how accountability for delegated work would be managed. The new regulations encouraged the development of advanced practitioner roles and most saw this as an improvement over previous legislation. Some observed that the new regulations did not relate to the reality of the care environment. These regulations assumed a one-to-one supervisory relationship between medical practitioners and nurses, written communication of clinical instructions, and that health practitioners could assess their own and others competence. None of these assumptions corresponded to the reality of inter-professional practice. Older or more experienced nurses stated that they performed restricted work on their own initiative, and the researchers concluded this contravened Dutch law. Further conclusions were that more education was required, and that health service organisations should introduce policies to clarify the permitted work practice and the arrangements for inter-professional delegation (de Bie et al., 2004; de Bie et al., 2005).

In the United Kingdom, the Council for Healthcare Regulatory Excellence (CHRE) consulted stakeholders about how best to regulate overlapped scopes-of-practice. They considered the introduction of 'distributed regulation' in which registration authorities would be required to consult with other registration authorities to oversee practitioners

with overlapped scopes-of-practice. CHRE saw advantages in establishing a single authoritative source of registration standards for health professionals' training and work practice, when clinical work is common to different scopes-of-practice. However, they acknowledged the complexity of requiring the registration authorities to engage in the consultation necessary to produce common standards. CHRE concluded that each registration authority would continue to independently set standards for their own registrants (CHRE, 2010b)[6].

In the first vignette, the authors' concluded that organisation-based clinical and supervisory policies are necessary to clarify the permitted practice for health professionals. However, there are reasons to doubt that such a solution would be easy to implement, since registration authorities are responsible for role definition, training and the use of specific technologies or procedures for each scope-of-practice. The Dutch medical specialists had personal preferences about what they delegated, and appeared to have little interest in the new regulations. Among the nurses, practice varied from some who worked independently in contravention of the regulations to others who were reluctant to perform work now legally permitted, and some who were reluctant to perform work that was already in their scope-of-practice. It was evident that registered health professionals had different understandings of the regulations in relation to both their own practice and the requirements around inter-professional practice. In these circumstances, managers might lack the authority to establish or enforce the policies that could otherwise improve patient safety and service delivery.

In the second vignette, the CHRE consultation demonstrates the difficulty of securing common policies among the registration authorities. The UK registration authorities were in the process of developing extended scopes-of-practice, but reluctant to adopt shared practice standards. This reluctance is understandable. It seems plausible that one registration authority could use its prior claim to an area of work as a means to set standards that are difficult for another registration authority to emulate. Thus, registration authorities have independently introduced new areas of work into extended scopes-of-practice for their advanced practitioner roles. However, as long as there is no system for sharing standards for training and practice, there may be little foundation for health

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[6] CHRE became the UK Professional Standards Authority in 2012

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service organisations to develop policies to improve the local implementation of inter-professional practice.

Health practitioner regulation tends to lag behind practice. In the first vignette, the Dutch regulations adopt an idealistic picture in which a medical practitioner supervised each nurse performing certain procedures, a picture not evident in the practice setting. This disjuncture between the regulations and the practice environment could be expected to contribute to confusion. Confusion was evident in the way health professionals cited various sources of authority for their practice, including the new regulations, their own training, their respective registration authority, a health service certificate, or clinical policies applying in their department or ward. It is also plausible that on-the-job learning prepared the more experienced nurses to independently perform restricted procedures. It seems reasonable that a responsible employer would ensure that relevant policies, training, and appraisal systems are in place. However, organisation-based policies could be problematic if the organisation relies on clinical practice that varies from that permitted by one or more registration authorities, or if senior health professionals refuse to comply – thus demonstrating management's lack of authority. Given the legal precedence of the regulatory level, changes to improve collaboration among registration authorities and to redistribute some authority between the regulatory level and health service organisations could have the potential to address the difficulties evident in these vignettes.

Management of competency

Legislation requiring registration authorities to continuously oversee the competency of health practitioners is now common internationally. This requirement extends the responsibilities of registration authorities from oversight of entry-to-practice and complaints about practice to ongoing oversight of health practitioners' competency (Allsop & Jones, 2005). The next two vignettes are drawn from studies of the management of competency in the Netherlands and the United Kingdom. (For longer summaries of these articles, see Appendix D, pages 300-301).

A Dutch study investigated how nurse competency was determined in practice settings, following legislative changes to continuous oversight of competency by registration authorities. There was a variety of opinions among medical specialists,

trainee medical practitioners, and nurses as to how to determine competency, and whether the responsibility for competency rested with an individual practitioner, the registration authority, or the health service organisation. One third of nurses indicated they were unclear about how to determine their own competency, and most said they had not received instructions about how to perform a risky procedure from a supervisor. Similar numbers of nurses cited either their nursing training or a health service certificate of proficiency as evidence of competency. The researchers concluded that issues around proficiency could be cleared up if health service organisations were to play a greater role in determining competency (de Bie et al., 2005).

In the United Kingdom, a study by the UK's National Clinical Assessment Service (NCAS) showed that health service employers identified around 2% of medical practitioners annually whom they viewed as having difficulties that could affect their employment relationship or clinical competence. Difficulties that occurred in the workplace included theft or fraud, sexual misconduct with patients, deteriorating personal health, and substance abuse committed by the medical practitioners. Poor practice was evident through investigation of critical incidents; in audits of diagnoses, record keeping, consultations, or treatments; and in the observation of poor interpersonal behaviour toward patients, carers and other health service staff (NCAS, 2009).

It is essential that health practitioners are appropriately trained and have ongoing opportunities to develop or maintain their competence. Traditionally, registration authorities have focused on entry-to-practice training for generalist or specialist roles, and adjudication of complaints about the practice of a registered health professional. Recent changes to require continuing oversight by registration authorities has mostly been implemented through self-reports of education activities by health professionals to their respective registration authorities. Yet the Dutch health practitioners are unclear about how to determine a nurse's competency in the practice setting. This is similar to evidence that suggests that medical practitioners have limited ability to assess their own competence (Davis et al., 2006). It is also plausible that in reporting their competence to the registration authority, health professionals could focus on education courses that do not relate to their practice environments. Registration authorities rely on fees for annual practising certificates to fund their policy development. It seems unrealistic that these fees could generate the income required for registration authorities to define and maintain a

mix of competencies relevant to particular practice settings, or to assess each practitioner's competence.

Organisational policies and support appear to be equally important for the maintenance of competence. An individual's competence could depend on whether work is performed routinely or infrequently; the opportunities for practitioners to maintain or develop their skills; and the range of skills, experience or attitudes among the personnel who work together or of their supervisors. In the second vignette, the NCAS study showed that UK health service organisations had a range of ways to identify behavioural or competency issues. However, while disruptive behaviours could affect workplace performance (Martin, 2008), they might not meet criteria for competency issues as defined in scopes-of-practice (Conlon, 2004). In these circumstances, recourse to a registration authority could be counter-productive. The issues could fail to meet thresholds for concerns about clinical competence, while still involving behaviours that undermine the effective operation of the health service. In order to balance authority for oversight of competency between the regulatory and practice levels, health service organisations should be accountable for establishing and enforcing appropriate workplace policies. It is plausible, in theory, that health service organisations could make progress with establishing policies through consultation with regulators. However, in the context of many registration authorities, for both generalist and specialist scopes-of-practice, and the fragmented sources of authority in each case, this seems impractical.

Role redesign in health services

Role redesign in healthcare has been controversial. In the 1990s it was associated with re-engineering and criticised for being focused on de-skilling or cost savings. Since 2000, role design has been associated with more resources for the health workforce, and extending roles for health practitioners to improve the quality of care (Hyde et al., 2005). The following vignette comes from a study of the UK's Changing Workforce Programme (CWP). (For a more detailed list of the roles created through the CWP, see Appendix D, pages 301-303).

From 2000, the Changing Workforce Programme (CWP) developed new roles at 13 pilot sites in the English National Health Service. A national programme office provided support and liaison with registration authorities and health service organisations. New

roles were developed with each health service and information about these roles was included in a national repository to assist with implementation elsewhere. By the end of 2003, 40 new roles were established and 51 roles were still in development. Of the new roles, 29% involved extension of nursing roles and 31% involved work for unregistered health care workers. The remainder involved extended roles for therapists, pharmacists, scientists, administrators, unregistered social care workers, paramedics and doctors. There was resistance to implementing roles seen as being 'imposed' through the national CWP repository rather than developed locally (Hyde et al., 2005).

Three types of 'employee relations' problems were evident when roles crossed professional boundaries. First, increased or unequal remuneration could be a disincentive, such as the increased cost of home support staff performing 'healthcare', or the pay disparities between nurses and ambulance officers entering the new emergency care roles. Second, there were supervisory and accountability difficulties, such as who would be accountable when a doctor delegates the responsibility for taking a patient's consent to a nurse. In this case, the health service agreed to be accountable for any adverse events in cases where a nurse obtained the patient's consent. Third, some health professionals resisted the transfer of work to unregistered health practitioners, such as when radiographers insisted that their assistants complete two years of training at a tertiary institution before being permitted to perform some plain X-rays. In contrast, pharmacists designed roles for pharmacy technicians as part of extending their services into mental health care (Hyde et al., 2005).

Training varied from being conducted on-the-job to packages provided by tertiary educators. Some organisations readily implemented in-house training, which was associated with the health professionals having previous experience of hospital-based training. Training progressed better where health professionals were prepared to hand over work to other personnel. Managers preferred in-house training due to their concerns that educators were too inclined to make courses into diplomas, or to include skills that contributed little to particular roles. The authors noted that qualifications-based training was more portable for the health practitioners, and concluded that CWP had developed local capacity for role redesign that was previously unthinkable (Hyde et al., 2005). However, health service human resource management departments were 'crowded out' of new role development by the collaboration between the CWP programme, profession-led

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specialist departments, and the registration authorities (McBride & Mustchin, 2013).

The roles delivered through CWP are consistent with the general pattern of role development in the health workforce. Professional silos are stratified as advanced scopes-of-practice are developed and routine work is delegated to assistants. Advanced scopes-of-practice tend to include work previously restricted to medical practitioners. This process is easier when there are shortages of specialists or unmet demand, such as the increase of diabetes in the population, which led to nurses taking on some of this work. This outcome could be expected since, from its inception, the CWP liaised with registration authorities. While this may have removed the difficulty of complaints about new roles, it could also explain the traditional pattern of role development that emerged.

The case where taking a patient's consent was delegated from a medical practitioner to a nurse highlights another difficulty. While some health professionals could agree that the health service would be accountable for instances where work is delegated, there is no guarantee that registration authorities will agree with this interpretation. It is health professionals, not health service organisations that are accountable to registration authorities. Inconsistent interpretations of regulatory obligations concerning delegation, among health professionals, are likely to undermine efforts to develop organisational policies.

Different perspectives around training highlight another imbalance in the design of the regulatory system. The health professionals need skills that are both recognised nationally, and relevant to particular specialisations in the workplace. A compromise could be helpful, such as having professional qualifications in accordance with registration authorities and shorter training packages open to entrants from different health professions and endorsed by employers.

The CWP sought to break down inter-professional demarcations, but did not appear to seek engagement with human resource departments. A focus on inter-professional roles could have complemented the policies for management reforms and quality improvement programmes in health services. Yet, there was no attention to defining core work and accountabilities in multidisciplinary teams, or to roles that combine routine competencies from nursing and allied health for particular types of patients. Consumers who could be expected to benefit from new service designs and roles also appear to have little voice in

these matters. Role development seems unlikely to escape traditional professional silos to align with patient needs, unless there are mechanisms to bring the many registration authorities together with other stakeholders to achieve this goal.

CONCLUSION

This chapter looked at how regulatory privilege could contribute to explaining events in particular illustrations of service improvement. The illustrations provided glimpses of the many improvements that have been made to health services in recent years. In many cases there were recommendations for further improvement through organisation-based policies for clinical practice and on-the-job training for roles or teamwork. These remedies mostly involved organisation-led change, and difficulties with implementation could be explained as problems with leadership, the management of change, or the engagement of health professionals. However, regulatory privilege directs attention to the lack of mechanisms for consensus building among the many registration authorities and how this could explain the lack of organisation-led initiatives to govern inter-professional practice.

In the papers from which the illustrations were drawn, there was no reference to the elements of redesign in service improvement, or the levers of regulatory privilege identified in this thesis. Even so, there was evidence for their presence in the events described. The separation of routine and more complex work occurred in the PFC units, multidisciplinary teams, and quality improvement programmes. There were also glimpses of this separation as ICT could be progressively used to standardise work, meaning that some work could be transferred to assistant health practitioners. Overall health practitioners appeared to be adequately engaged in the changes.

Two types of difficulties were evident in inter-professional work. First, there were problems aligning the organisation's resources to patient needs. This could be explained by the way regulatory privilege informs the organisation of healthcare work. Specialist departments could use various levers of regulatory privilege to control their work, such as centralising specialist technologies and health professionals to a departmental location, limiting the hours that services were offered, prioritising work according to their own resources, and restricting the services available at the patients' bedsides or clinic appointments. This means that patients can be repeatedly assessed and referrals sent to specialist departments, but there are no means to establish shared priorities for particular

patient cases. Health professionals could respond by escalating referrals, but this tends to create a cascade of unintended effects across specialist departments, wards or clinics. These features of service delivery could explain the tendency for localised, rather than organisation-wide improvement. Moving health professionals out of their specialist departments could address logistical difficulties with coordination of inter-professional work. However, regulatory privilege plays out among team members, who do their best to interpret their respective contributions and regulatory obligations in these settings that can be remote from the support of their specialist department. Regulatory privilege could explain difficulties with the alignment of resources to patient needs, whether between specialist departments or among members of multidisciplinary teams.

The second type of problem occurred in inter-professional practice, where professionals had difficulties with competency, inter-professional delegation, accountability, and work sharing. Recommendations included clarifying leadership roles, and using organisation-based policies and training to guide routine work, assessment of competence, delegation, and accountability in inter-professional practice. These recommendations occurred in illustrations of clinical directorates, multidisciplinary teams, quality improvement programmes, and management of competence and overlapped scopes-of-practice.

From the illustrations, it is not clear why organisation-based policies and training around competency and inter-professional practice were not already in place, but the presence of regulatory privilege could explain this. Each health professional is accountable to their respective registration authority for their practice. They are expected to conform to the role definition, training, use of technologies, and rules around delegation within their scope-of-practice. While clarity in leadership, and organisation-based policies could assist in guiding inter-professional practice, there is no source of authority for this in the distributed arrangement of registration authorities, and it is unlikely that managers have the authority to introduce or enforce such policies.

The most disruptive improvement attempts appeared to be Patient Focused Care that incorporated all the elements of redesign. In these illustrations, organisation-led efforts to align resources to patient needs were not backed by mechanisms at the regulatory level. The second most disruptive improvement appears to ICT that shares clinical information among specialist departments and community practices. When ICT is used to share inter-

disciplinary clinical information, disruption is subtle since this technology innovation has tended to receive support from both managers and health professionals alike. Yet system implementation demands some agreement to policies for inter-professional practice. When well-managed, this can be an incremental step towards integration, but otherwise manual 'workarounds' could undermine improvements. A common problem with PFC units and ICT is that as work is standardised, it could be transferred to assistants, or even incorporated into new inter-professional roles. However, there has been a lack of mechanisms for introducing training packages or career paths to support such developments.

The limitations of the regulatory levers for role definition and training were evident in the illustrations around overlapped scopes-of-practice and government-led role development. These levers have produced role extensions and advanced practitioner roles enabling some substitution of non-medical practitioners for medical practitioners. While these roles could be seen as formalizing a certain degree of flexibility around inter-professional boundaries, they also tend to conform to the traditional organisation of work among the health professions. What these initiatives have not done is to create new roles that involve new combinations of skills from different health professions or sufficient overlaps in core skills to address difficulties in multidisciplinary teams, or to find new work for highly trained professionals whose traditional work is reduced through automation. Overall, these illustrations indicate many incremental improvements, but also that service improvement remains closely tethered to the organisation of healthcare work by means of regulatory privilege. If new organisational forms are to emerge that wrap services more effectively around patients, then new mechanisms are likely to be required at both the regulatory and organisational levels.

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CONCLUSION

This research began from the observation that the progress of health service improvement appears difficult. Many improvements have produced localised rather than organisation or system-wide improvements. Explanations have mostly focused on leadership, the management of change, and the organisational cultures in health services. A few US scholars have noted an 'Augean stable' of regulatory barriers (Herzlinger, 2006). However, there has been little attention to health practitioner regulation as a contributing factor in health service improvement. Nor was there literature around the notion of a regulated health workforce, rather than the regulation of particular health professions.

This chapter concludes this thesis. Section 8.1 summarises the research methodology and main findings. Section 8.2 presents a new theoretical framework and other contributions to theory. Contributions to health policy are set out in Section 8.3 and contributions to health services research are in Section 8.4. Section 8.5 concludes with some implications for stakeholders and by explaining the limitations of the research findings.

8.1 SUMMARY OF RESEARCH

This section begins by reprising the main research question, the gap addressed in the literature, and the methodology. Next it summarises the main research findings that emerged through Chapters Three to Seven. Lastly, the section offers a set of concluding propositions for the consideration of researchers and policy-makers.

Research question and methodology

Initial work with the literature showed that the explanations for difficulties with health service improvement are consistent with knowledge about organisational change. However, difficulties have been observed even when health service organisations adopt best practice in the management of change. This leaves room for a contribution to

difficulties from health practitioner regulation, and the main research question:

> Could health practitioner regulation have systemic effects that contribute to difficulties with policies for health service improvement?

Due to the thin literature around this research question, I decided to undertake a primarily conceptual thesis project. Adopting a critical realist methodology enabled me to focus on identifying the mechanisms in health practitioner regulation and health service improvement, and understanding how these mechanisms could have effects that impede the progress of service improvement. The objective of the research was to establish a plausible explanation about how health practitioner regulation could contribute to difficulties with health service improvement. This involved identifying mechanisms inherent in institutional arrangements to explain the gap depicted in the figure below.

Figure 12 shows the separation between key topics in the literature, with the topic groups depicted as interactive cogs. At the governance-level are health practitioner regulation depicted as the red cog and health services governance depicted as the blue cog, which are both directed to oversight of health service improvement depicted as the orange cog. The black arrow points to the explanation developed in this research that links these otherwise separate topics.

Figure 12 The knowledge gap revisited
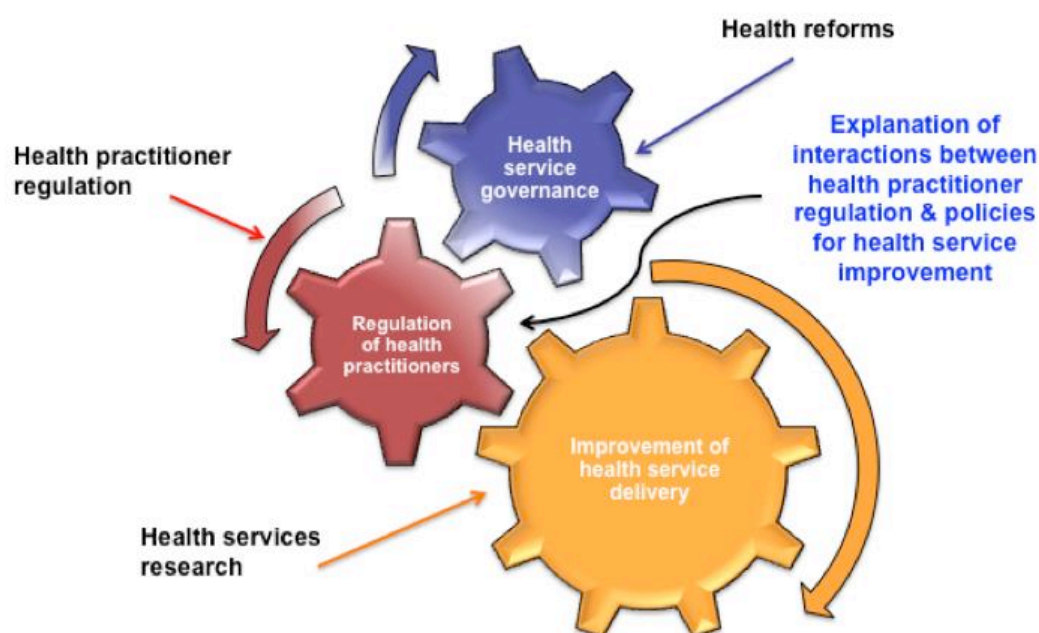
There were similar arrangements for health practitioner regulation and health service improvement in the jurisdictions of interest, including New Zealand, Australia and the United Kingdom. These similar arrangements established a context for discovery of the mechanisms at play. Four sets of underlying questions guided the investigation as reported in Chapters Three to Seven. This began with a description of the health sector drawing on an understanding of its historical construction in Chapter Three. Next, I investigated the mechanisms in regulatory arrangements and the potential for interactive effects from separate policy making in Chapter Four. Chapter Five showed how the separate regulation of many health professions appears to play out as regulatory privilege among the health workforce, reinforcing the historically constructed work arrangements. Chapter Six outlined the directions for service improvement in healthcare, showing how regulatory privilege seems to undermine the management capability necessary to realise such change in health service organisations. In Chapter Seven, I assessed the plausibility of this explanation, about how health practitioner regulation could interact with and impede health service improvement, by showing how the explanation contributes to explaining events in selected illustrations of health service improvement.

Main research findings

Specialist groups of health professionals that date from this historical construction continue to shape the pattern of specialist hospital departments and community practices in modern healthcare. Professional divisions in the health workforce emerged as a response to 19th century social conditions, including a paucity of medical knowledge, restrictions around the work permitted for women, and the limitations of electrical and mechanical technologies. The persistence of the main health workforce divisions, from around 1900 to the present, has been a testament to their capability to adapt to new knowledge and technologies. Late 20th century changes to expand regulatory regimes and tertiary education also contributed, blocking the moves of employers to experiment with multi-skilled health practitioners.

There are reasons to question whether the present organisation of healthcare work could be sustained in the face of further social change. Through the 20th century, medical knowledge evolved so that many illnesses and injuries can be prevented or cured, information technologies have made healthcare knowledge more accessible, clinical

technologies have made routine care easier to deliver, and there is growing attention to how best to organise health services to support consumers with chronic health conditions. In relation to service improvement, there is a need for more attention to the way specialisation among the medical and allied health professions contributes to fragmentation in service delivery. Consumers are faced with managing many consultations with many different health professionals and providers, which contributes to delays, information loss, and repeated work. There is significant potential to make quality and efficiency gains through wrapping routine care around particular groups of consumers. However, this is likely to alter some of the work of specialist departments and community practices, have implications for health industry supply chains, and involve new career paths for health professionals.

At the regulatory level, there is a complex picture of independent policy making with the potential for unintended interactive effects in health service organisations. The levers of health practitioner regulation were established for medical practitioners in the 19th century, and subsequently applied to other health professions. This produced a regulatory system in which the mechanisms of governance are directed to particular health professions and individual health practitioners, rather than to the oversight of a multidisciplinary workforce engaged in organisation-based service delivery. Further, I found reasons to doubt the efficacy of recent changes to strengthen consumer protection through continuously overseeing health practitioner competency from the regulatory level, and to increase workforce flexibility through overlapped scopes-of-practice.

There are independent regulatory agencies overseeing improvement in health service organisations. Many improvement policies have focused on health service inputs, such as leadership, management systems, clinical guidelines, facilities, equipment, workforce planning, and process improvement. I selected management reforms and quality improvement programmes for further attention because these policies have engaged health professionals in reorganising service delivery and have attracted attention in research. This enabled me to consider the evidence for unintended interactions between health practitioner regulation and policies for service improvement in studies of their implementation in health service organisations.

The traditional account of health practitioner regulation did not appear adequate to explain the enduring historical divisions in the health workforce. Significant social change including the separation between clinical research and practice, and access to knowledge through higher education and information technologies, called into question the picture of the health professions as custodians of unique knowledge. Health practitioner regulation could itself have become a more powerful asset used to reinforce profession-centric policies, service design and supply chains throughout the health sector.

The concept of 'regulatory privilege' showed how levers important in the evolution of the health professions could enable health professionals to exercise significant control over the organisation of work and the use of resources in health services. Control of professional titles, training, and registration status appear 'above the water line' in the sense that these levers are specified in legislation. Three other groups were identified 'below the waterline' because, like the bulk of an iceberg, they are less visible and play out in the realm of clinical practice. These included control of tangible assets like clinical technologies and information communication technology (ICT), less tangible assets like special languages and role definition, and lastly, the systems of inter-professional referrals and complaints important for organising work among the health professions. In combination, these levers could enable health professionals to achieve a degree of control over health service resources unlikely to occur in industries that are not similarly subject to occupational regulation. Regulatory privilege provided a lens that links the regulatory and practice levels to observe how health practitioner regulation could interact with health service improvement.

In health service organisations, regulatory privilege could affect service improvement in two ways. First, it appears to shape healthcare work in ways that are poorly aligned to certain directions for service improvement. The mix of regulatory obligations and ideals creates barriers, making it difficult to secure consensus around directions for service improvement. These directions include separation of routine from more complex patient cases, delivery of routine care by multidisciplinary teams, organisation-based policies to guide inter-professional practice, redeployment of some specialist technologies and personnel, and integration of electronic record keeping. With regulatory authority distributed among many registration authorities, there appeared to be limited options for

achieving sufficient workforce alignment and organisational consensus around these directions for improvement.

Second, health service improvement depends on management capability in health service organisations. Yet, regulatory privilege undermines the leadership, human resource management (HRM), ICT, and team building capabilities important for organisation-wide management of change. Leadership authority is characterised by contests among medical specialists, between specialist departments, and with general managers. Professional associations, registration authorities, and tertiary educators control role definition and training, which leaves little room for HRM to contribute to the development of roles or career paths. Information technology vendors depend on endorsements from specialist departments, which tend to prioritise enhancements to their specialist clinical systems, rather than the integration of systems to improve work arrangements and sharing of patient information. Design of effective multidisciplinary teams is equally problematic, since each registration authority is independently focused on the competencies for each health profession, leaving a void in the recognition of the shared clinical competencies important for inter-professional clinical leadership and team-based work sharing.

Many improvements are evident in service designs, the coordination of care, and new roles for health professionals. Even so, these improvements tend to be localised within existing specialist departments, with less evidence of organisation-wide improvements. Organisation-wide improvement is likely to involve some redesign of healthcare work across the boundaries of specialist departments, to reduce the mismatch of priorities among these departments and the related problems with the quality and efficiency of care. This is likely to involve changed roles for specialist hospital departments and community practices, and new career paths that enable health professionals to shift between being specialists and completing cross training for shared work in multidisciplinary teams. However, there is a vacuum of regulatory and organisational mechanisms to support the evolution of such service changes, or to establish the inter-professional accountability and delegation arrangements, which could otherwise benefit consumers. Further progress seems to require new mechanisms to link the regulatory and organisational levels and align regulatory privilege to service improvement.

The final step was to assess the plausibility of this explanation, by considering whether it contributed to explaining the events observed in illustrations of health service improvement. The selected illustrations included: using clinical directorates, Patient Focused Care units and multidisciplinary teams to better align clinical work to patient care; the use of inter-departmental ICT and redesign programmes to improve the coordination of service delivery; and changes around competency regulations and new roles for health professionals. In each illustration regulatory privilege contributed additional insights to explain events. By directing attention to the lack of mechanisms at both the regulatory and organisational levels, the explanation of regulatory privilege revealed why remedies so far recommended for health service organisations could prove difficult to develop, implement or sustain.

Concluding propositions

The research objective was to discover the mechanisms in social arrangements, and explain how health practitioner regulation could contribute to difficulties with, or limitations to health service improvement. Drawing on the research findings, I offer six propositions for consideration by researchers and policy-makers.

As described in Chapter Three, there are historically constructed linkages in the health sector around specialist groups of health professions, health industry supply chains and inter-professional arrangements in modern health service organisations. Specialist groups have proved adept at incorporating new clinical and information technologies, often forming new sub-specialties. Yet, the historically informed design of this specialisation has emerged as a primary source of quality problems in modern healthcare. This leads to the first proposition that:

> the historically constructed organisation of healthcare work contributes to contemporary difficulties with service quality and efficiency.

From the late 20th century, there have been changes to health practitioner regulation and policies to improve health service delivery. Yet as discussed in Chapter Four, there has been scant attention to the potential for unintended policy interactions to occur in health service organisations. This leads to the second proposition that:

in healthcare, there are unintended policy interactions that are likely to continue unless policy-makers consider new mechanisms to align the goals of registration authorities and other regulatory agencies to improve quality and efficiency in health services, and to enable innovation as long as consumers are protected.

Traditional accounts of health practitioner regulation are based on assumptions of a single regulated profession and discussed in Chapters Four and Five. These accounts turn on the assumptions that each profession is the custodian of unique knowledge and that a social contract is necessary to ensure that individual practitioners apply this knowledge in the interests of consumers. However, changes to social conditions have made clinical knowledge available among the health professions and consumers. This leads to the third proposition that:

> health practitioner regulation is now a more important force in maintaining the organisation of the health workforce than unique knowledge assets.

Chapters Five, Six and Seven identified and investigated eight levers of 'regulatory privilege' associated with health practitioner regulation, which appear to enable the regulated health professions to control resources important in the design of work and service arrangements in healthcare. Regulatory privilege appears to conflict with certain directions for service improvement and to undermine the management capability for implementing new service arrangements in healthcare. This led to two further propositions. The fourth proposition is that:

> improving the effectiveness of management in health services depends on addressing the sources of conflict around authority, work arrangements and control of resources that arise from health practitioner regulation.

The fifth proposition is that:

> in healthcare, an explanation based on 'regulatory privilege' offers a more comprehensive and useful account to assess the effects of regulation and identify opportunities to mitigate these effects than traditional accounts of statutorily supported self-regulation.

Drawing these five propositions together leads to the sixth and final proposition that:

> by reinforcing the traditional organisation of healthcare work and compromising management capability in service delivery, health practitioner regulation exacerbates problems with quality and efficiency that arise from the organisation of services and limits the effectiveness of interventions to improve service delivery. Ironically, regulation designed to protect consumers from harm has an unintended effect of constraining opportunities to use advances in knowledge and technologies to improve services for consumers, in cases where such improvement would significantly change the organisation of healthcare work.

8.2 CONTRIBUTION TO THEORY

Contributions to theory emerged through the research. This section begins the relationship between social conditions and service arrangements in healthcare. Next, it presents a theoretical framework depicting how health practitioner regulation could interact with directions for service improvement through six sector levels. It then shows how the research can strengthen theory concerning the design options for occupational regulation. The section concludes with implications for Mintzberg's profession bureaucracies and Hackman's criteria for effective work teams, when these theories are applied in healthcare.

Social construction of health services

This research brings together material on the social construction and future directions for health services to explain how social conditions could inform health service arrangements. Table 4 below depicts changes in social conditions and service arrangements between the 19th and 21st centuries. Social conditions in the two upper quadrants include knowledge, research methods, technologies, education and resources. The service arrangements in the two lower quadrants include health professions, regulation, leadership of services, and coordination of services. Conflicts are evident in the lower right quadrant because service arrangements remain tethered to their 19th century origins despite changes in social conditions.

Table 3: Social conditions and service arrangements

		19th Century	21st Century
Social conditions	Knowledge	Focus on discovery, no cures	Prevention, cure & management of chronic health conditions
	Research methods	Hospitals enable research, teaching & clinical practice	Separation of research, teaching & clinical practice
	Technologies	Unreliable, difficult to use clinical technologies	Highly reliable, use friendly clinical technologies
	Education	Education mostly for upper class men	Educated population with increasing Internet access to clinical information
	Resources	Limited with hospitals central to organising	Distributed capability enables community & consumer-led care
Service arrangements	Health professions	Controlled by upper class men with others restricted to assistant roles	Development of workforce roles captured in professional silos
	Regulation	Self-regulation for medical practitioners	Regulation of many professions reinforces silos & service fragmentation
	Leadership of services	Medical practitioners lead with support of nursing leaders & general managers.	Contest among all health professions and with management produces authority vacuums in health services.
	Coordination of services	Referral system is central with some delegation to assistants.	Struggles around referrals, inter-professional delegation & accountability

Several social histories were useful, including Weisz's (2006) account of the emergence of medical specialties, Abel Smith's (1964) history of the administrative development of the British hospitals, Carruther's and Carruther's (2005) description of the growth of specialist departments in hospitals, Berlant's (1975) comparative analysis of medical regulation in Britain and the United States, and Dingwall et al.'s (1988) account of the professionalisation of nursing. Useful sources concerning recent health reforms included Harrison and Pollit's (1994) account of the effects on health services and health professionals, Safriet's (2002) discussion of the regulatory barriers to advanced practice for non-medical professionals, Degeling and colleagues' research on the differing implications of changes for medical practitioners, nurses and managers (Degeling et al.,

2000; Degeling et al., 2001; Degeling et al., 1999), Christensen and colleagues work on how innovations could change the management of chronic health conditions (Christensen, Grossman, & Hwang, 2009; Christensen et al., 2000), and Bohmer's work on organisation-based protocols for care teams (Bohmer, 2010a, 2010b).

A new theoretical framework

I present a new theoretical framework that brings together four sets of research findings as depicted in Figure 13 below. At the top moving from left to right, the black arrow depicts the context of changes in social conditions between the 19th and 21st centuries. The white rectangle in the centre depicts the six levels through which effects from interactions between regulatory privilege and service improvement could occur. At the bottom from left to right, the green arrow depicts the eight elements of service improvement impacting modern health services. The vertical red arrow depicts the nine levers of regulatory privilege that interact with service improvement through each sector level.

This framework has four theory components. First, the overall context is the socially constructed nature of health services outlined above. Second, regulatory privilege differs from existing theories in recognising that healthcare work involves many regulated health professions working together in health services organisations. In contrast, traditional theories assume a single profession and a relationship between an individual practitioner and a consumer. As Roberts and Dietrich (1999) explain traditional accounts call for a social contract between the profession and society in order to ensure that professionals act consistently with the consumer's interests. Critics have shown how professions can exploit their regulatory status in ways that do not serve consumers and that regulation does not necessarily improve service quality (Kleiner, 2006). Regulatory privilege differs by showing how within health services, occupational regulation can enable professionals to exercise a degree of control over health service resources unlikely to occur in industries that are not similarly regulated. Third, the eight elements of service improvement emerged from a synthesis of the insights concerning changing social conditions, the recent history of health reform, and the scholarship on the future of health services that are discussed in more detail in Section 8.4. Fourth, the framework has six sector levels through which interactions occur, which has some similarity to Ferlie and

Shortell's (2001) four levels for quality improvement that included the 'health system and environment', 'organisation', 'group and team', and the 'individual health professional'. The levels developed in this framework differ by including teams and groups as part of 'service design options', adding 'service coordination' to capture ICT and quality improvement, including individual health professionals with 'roles and practices', and by adding the 'consumers' who experience the fragmentation of services.

Figure 13: Framework of factors in health service improvement
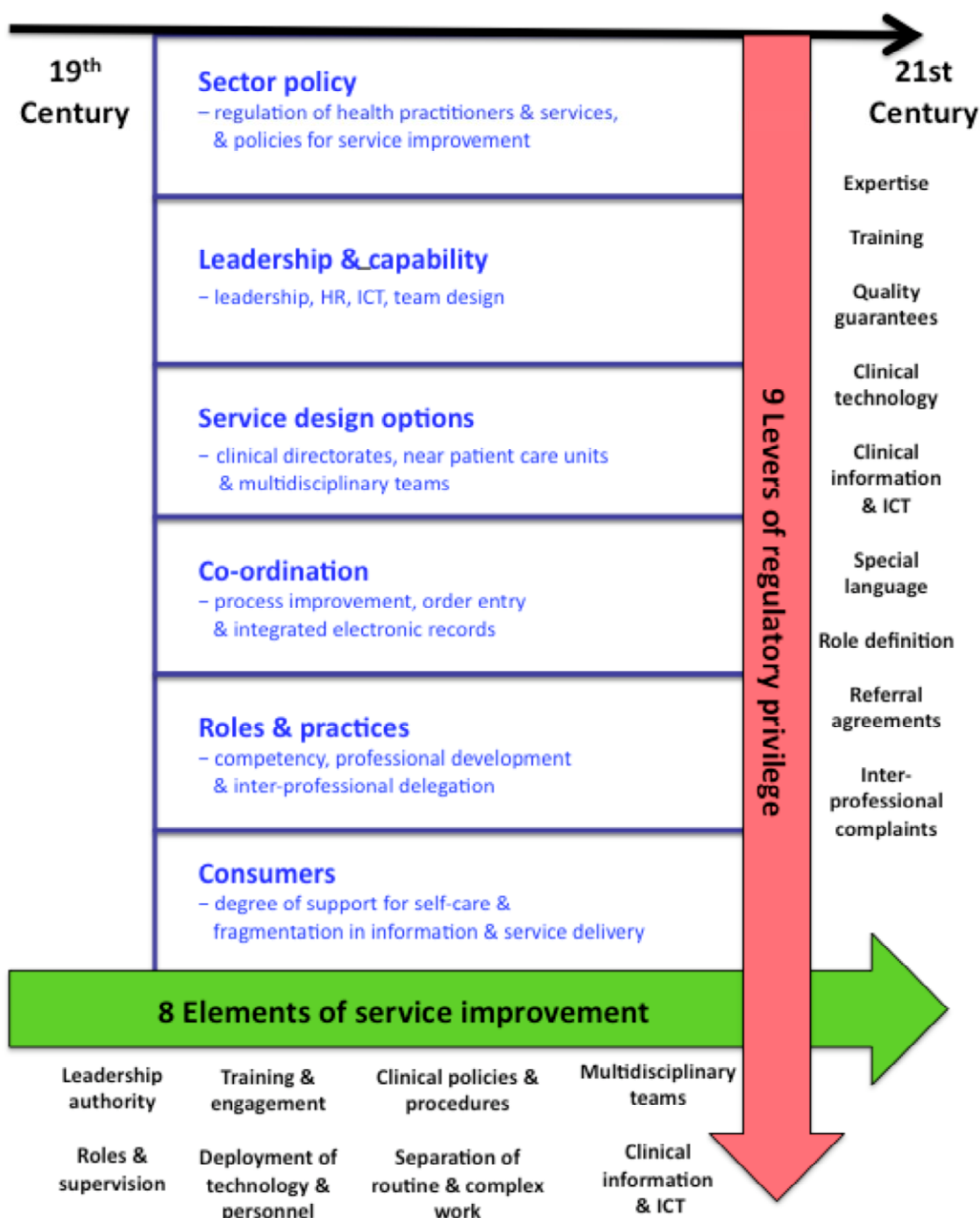
Design options for occupational regulation

This research contributes to the institutional design options for occupational regulation, by showing the similarities between certification and licensure and the overlaps with employer responsibilities. Options for occupational regulation have been held to lie on a continuum from light to strong regimes. The lightest regimes are registration or reverse registration in which a government agency respectively maintains a register of qualified practitioners or a black list of those banned from practice. The middle choice is certification that has been preferred since it makes use of self-regulation by each health profession, but is not as strong as licensure. Under licensure only those practitioners holding a valid license may offer particular services.

Figure 14 below depicts the overlapping functions in regulatory regimes. In the horizontal plane are the options for occupational regulation, including employers in black, reverse registration in orange, registration in green, certification in blue, and licensure in red. Depicted in the vertical plane is text describing the functional elements related to each option. Looking down this list of functions, the orange text appears once indicating just one function for reverse registration that is shared with the other regulatory regimes but not with employers. The black text indicates the functions that must be performed by employers and may also be common to registration, certification, and licensure regimes. The two green functions characterise registration regimes, adding the blue functions creates certification schemes, and adding the red functions establishes a licensure regime.

Baker (2006) makes a case for the introduction of a threshold to guide when a competency matter qualifies for attention at the regulatory rather than the employer level. This research contributes by revealing the extent of the overlapping functions between registration authorities and employers and how these overlaps could contribute to explaining authority conflicts in health services. It includes the design and coordination of services in the list of functions, since the presence of multiple registration authorities leaves little room for organisations to lead in improving service arrangements. Finally, it shows how close certification is to licensure, particularly when scopes-of-practice and restricted acts are added to certification regimes. The research also found that the

distinction between regulatory regimes loses force in circumstances where institutional arrangements, employers and suppliers reinforce the divisions in a multiple profession workforce.

Figure 14: Design options for occupational regulation
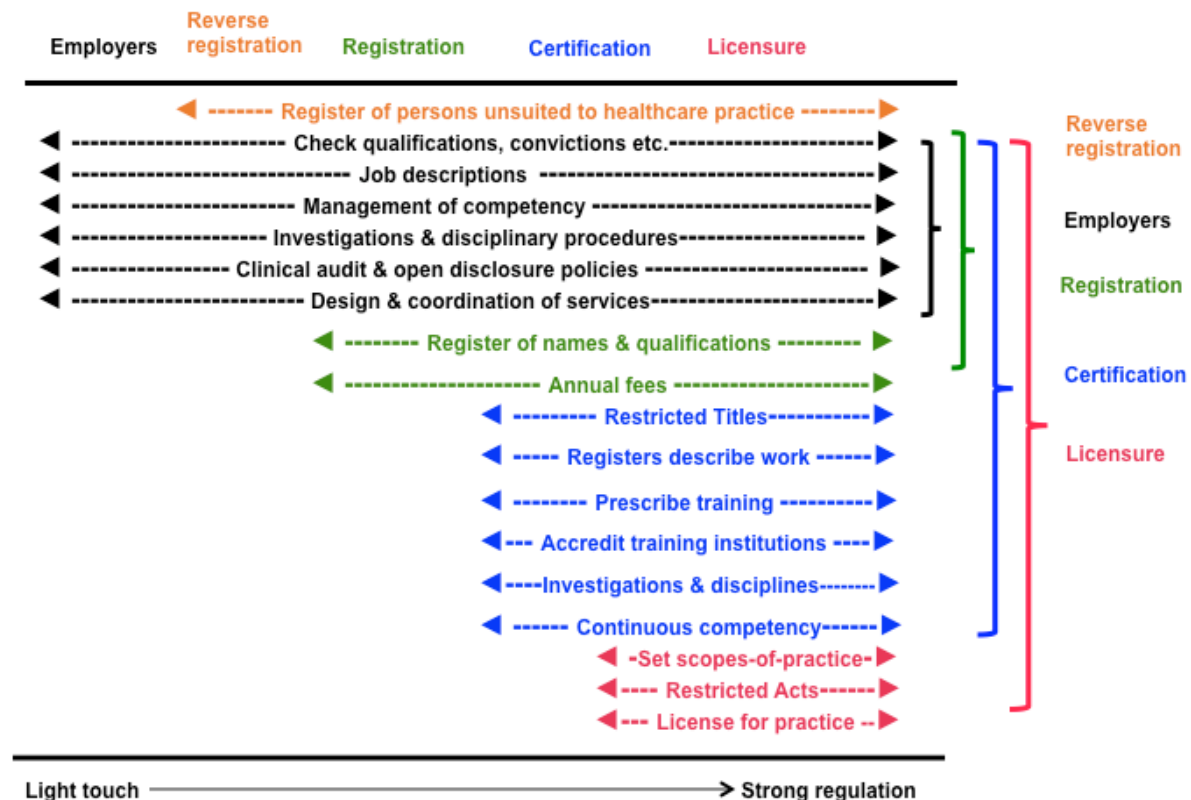
Profession bureaucracies and effective work teams

The research shows how Mintzberg's (1980) theory concerning profession bureaucracies could be adapted to explain difficulties with health service improvement. According to this theory, the performance of work in a profession bureaucracy is coordinated through the standardisation of knowledge and skills, a process that occurs outside the organisation in the professional association. In contrast, work in a machine bureaucracy is coordinated through the standardisation of tasks and work processes carried out by a corporate group within the organisation (Mintzberg, 1980). Gouberman and Mintzberg (2001) have explained that in healthcare, communication and cooperation needs to be improved due to the different cultures among groups of health professionals and their poor understanding

of each other's work. This research adopts the perspective of a 'multiple profession' bureaucracy, which draws attention to the separate regulatory agencies that independently set standards for each health profession. This points to the need for a mechanism to coordinate inter-professional work that could include overarching regulatory arrangements and the introduction of some of the corporate design mechanisms of the machine bureaucracy.

The research findings show how Hackman's (1987) theory could be adapted for the design of effective multidisciplinary teams in healthcare. The design criteria include: a shared team goal, clarity around team membership; a team size of four to seven to enable timely consensus in decision-making; a mix of technical and interpersonal skills; an appropriate distribution of authority among the organisation, the team, and team members to develop and sustain effective work processes; and, a supportive organisation context including training, shared information systems, and rewards that recognise team efforts. In work with Hewlett Packard, Hackman et al. (2000) discovered that reciprocity in work sharing was also important for team members to contribute to team goals. Role definition is part of the regulatory privilege of the health professions, so employers need adequate authority to train health professionals so they can reciprocally share the team's core work. In these circumstances, design of roles to fit the team's task would be an additional design criterion.

8.3 CONTRIBUTION TO HEALTH POLICY

This section shows how this research contributes to topics in the grey and scholarly literature in health policy. These topics include regulation for consumer protection, the health workforce, and the unintended policy interactions.

Regulation for consumer protection

Health practitioner regulation has received relatively little attention by scholars, and many sources come from government documents prepared to consult on amendments to regulatory regimes. Examples of such regulatory reviews include the New Zealand Ministry of Health (2009, 2012), the Victorian Department of Human Services (2003) in Australia, and the UK Law Commissions (2012). Self-regulation is generally considered

cost effective since it encourages the health professions to set and monitor their own practice standards (Ogus, 1995; Taskforce on Industry Self Regulation, 2000). A few scholars have traced recent developments, such as the international trend to strengthen oversight of medical competence (Allsop & Jones, 2008), employer-based regulation for support workers (Birch & Martin, 2009; Saks & Allsop, 2007), shifts from legalistic to responsive management of patient complaints (Beaupert et al., 2014; McDonald, 2012; Paterson, 2002), changes in policy thinking from siloed management of the health professions to encouraging inter-professional collaboration (Lahey, 2012; Saks, 2010), and the emerging picture of co-regulation amid a network of regulatory stakeholders (Braithwaite et al., 2005; Healy, 2012).

There have also been criticisms that health practitioner regulation enables professionals to pursue self-interest in ways that disadvantage consumers. Studies of the development of medical regulation in the United States showed how it significantly increased costs for consumers but had equivocal effects on quality (Friedman & Kuznets, 1945; Law & Kim, 2005) and there have been similar patterns for recent research in the United Kingdom and United States (Bryson & Kleiner, 2010; Humphris et al., 2010; Kleiner & Krueger, 2010).

This research introduces a different perspective. This involves understanding the intertwined construction of the health professions, their regulation and health services in the 19th century and how this relates to efforts to improve modern health services. The picture that emerges is of a regulatory system that favours improvements that can be incorporated into existing professional silos rather than those that might disrupt traditional workforce arrangements. This research produced three findings for consumer protection. First, the trend for continuous oversight of health practitioner competency from the regulatory level appears counter-productive, unless practitioners are working in relative isolation. Consumers could be better served by mechanisms to align practitioner competencies to the demands and opportunities of their workplace. Second, social conditions have changed such that professional self-regulation is not the only option for addressing information imbalances between professionals and consumers. Medical knowledge has advanced so that many common conditions are well understood, consumers are well educated and policy-makers could do more to enhance websites that assist consumers to access reliable and relevant clinical information. Third, fragmentation in service delivery that arises as consumers are referred between health practitioners is

now a major source of quality and safety problems. There needs to be more policy attention to ensuring that health practitioner regulation does not block improvements that could otherwise reduce this fragmentation. The theory of regulatory privilege developed in this research has identified nine levers for consideration.

Health workforce

The literature has mostly focused on shortages among particular health professions, and the complexity of health workforce planning (Bloor & Maynard, 2003; Zurn et al., 2004), the importance of understanding skill mix rather than the mix of health professions in the workforce (Buchan & Calman, 2004; Dubois & Singh, 2009), and the need for planning that relates skills to the needs of particular patient groups (Health Workforce New Zealand, 2014; Segal & Bolton, 2009; Willis & King, 2010). Governments have encouraged the development of advanced practitioner roles and overlapped scopes-of-practice to improve the flexibility of the health workforce (Bertness, 2009; Hyde et al., 2005). Role substitution, among medical and non-medical practitioners, and new roles have been expected to generate efficiencies (Safriet, 2002), but there is evidence that these strategies often increases costs and create different standards for performance of the same work (Bohmer & Imison, 2013; Cooper & Stoflet, 2004).

A few authors recommend a different approach involving changes affecting regulation, the tertiary education sector and health service organisations. Duckett (2005b) points out that there are many opportunities for role substitution across the Australian health workforce, but progress depends on policy-makers identifying opportunities, adjusting regulation and payment systems, and making universities more accountable to health service organisations. Health service managers and educators also need to consider new workforce configurations, flexible career paths for health professionals, multi-skilled practitioner roles, teamwork and workplace training (Duckett, 2005a). However in the 1990s, UK attempts to introduce new work configurations and multi-skilled roles failed, as health professionals and regulators feared loss of identity, jobs, career paths, confused accountability, and pay disparities (Hurst, 1999). Imison and Bohmer (2013) highlight the productivity potential from realigning policies, since: labour costs account for around 70% of UK expenditure in health and social care; 60% of training budgets are spent on medical practitioners who comprise just 12% of the workforce; and the policies for more

community, multidisciplinary and home-based care depend on the non-medical and unregistered health practitioners. Yet, in the 2000s UK efforts to introduce new roles failed to deliver productivity gains or to reduce service fragmentation. Bohmer and Imison (2013) concluded that the lessons were to: redesign work ahead of workforce change; clarify new roles and responsibilities; deliver the potential of teamwork; provide statutory support for changes; and focus on the existing health workforce.

This research contributes both regulatory and service improvement perspectives to developing a health workforce for the 21st century. It explains how policies for overlapped scopes-of-practice import aspects of licensure arrangements, have no mechanisms for flexibility in inter-professional practice, and can reduce rather than improve workforce flexibility. While advanced practitioner roles can be useful, they need to be properly integrated into service delivery. These roles are not a sufficient strategy for workforce development, since they tend to converge on medical work and increase the stratification in health profession silos. The result tends to be incremental boundary shifts but little overall change in workforce arrangements. The research contributes nine levers related to health practitioner regulation and eight elements of service redesign that could assist policy-makers and health service managers with workforce change to reduce service fragmentation. It identifies the health service management capabilities necessary to support workforce development and realise new service designs in healthcare. Importantly, this research shows how lack of management attention to health professional roles and work arrangements has limited the effectiveness of new service designs including: clinical directorates, greater use of outpatients and day procedures, multidisciplinary teams, efforts to shift care from hospitals to community-based delivery, and to encourage patient self-care. A key lesson is to focus on skill-mixes and role enhancements to improve the performance of these existing service designs.

Policy interactions

There is a small, mostly grey-literature concerning the potential for unintended consequences from policy interactions, including Hood and Scott's (2000) prediction that the UK's new regulatory agencies could act in concert or in conflict depending on the circumstances, Braithwaite et al.'s (2005) description of a complex network of regulatory stakeholders governing health services in Australia, and Lewis et al.'s (2006) observation

that there is an absence of a 'super-regulator' to draw together the complex network of regulators governing UK healthcare. In a cross industry review of regulation, the New Zealand Productivity Commission (2014) has found that inadequate consideration of regulatory objectives, and the design and implementation of regulatory arrangements can generate significant costs in service delivery.

This research contributes an in depth analysis of the effects of certain policy interactions in healthcare. It identifies systemic effects from the current design of health practitioner regulation, showing how it creates barriers to health service improvement through six sector levels. The intention is that this analysis proves useful to stakeholders given the continuing cost and population pressures to improve the delivery of health services.

8.4 CONTRIBUTION TO HEALTH SERVICES RESEARCH

This research contributes to several topics in health services research. The literature is patchy, as research attention tends to follow health reforms. The section outlines the effects of health practitioner regulation on management capability, hospital directorates, multidisciplinary teams, service redesign programmes, and integrated patient information systems. The section concludes with the research's contribution to explaining the persistent difficulties with service improvement.

Management capability

There has been some attention to difficulties with leadership and HRM, but otherwise scant consideration of management capability in health service organisations. Leadership training in the United Kingdom and Australia has been criticised for failing to relate to the collectivist and distributed reality of decision-making in healthcare (Fulop & Day, 2010). Scholars point to a contested leadership environment in health services, due to: the regulatory ideals of health professionals (Degeling & Carr, 2004), the continuation of positions for profession leaders alongside general managers (Braithwaite, 2004), and the separate lines of accountability to different registration authorities (Reeves et al., 2010a). HRM capability has been neglected internationally, despite policy goals to improve work practice and productivity (Bartram & Dowling, 2013). In Australia researchers have found HRM departments support organisational hierarchies that have little relationship to the work of health professionals (Leggat, Bartram, & Stanton, 2011). In the United

Kingdom plans for HRM to lead work practice change failed, due to a lack of technical capability in HRM departments and the competing claims to manage the health workforce from state sector policy-makers, professional associations, unions and centralised wage bargaining, and clinical leaders in health services (McBride & Mustchin, 2013). A New Zealand and Australian study captured similar themes as health managers described an environment of constant, politically driven change and contested roles, and a preference for policy attention to workforce change rather than further restructures (Briggs, Cruickshank, & Paliadelis, 2012).

This research adds to this thin literature, showing how regulatory privilege occupies much of the decision-making space sought by leaders. A wide range of resource decisions are largely controlled or limited by the health professions, including the use and location of clinical technologies and procedures, the language and design of record keeping, the use and design of clinical ICT systems, job designs, the construction of multidisciplinary teams, the rules for inter-professional referrals and delegation, the development of policies to guide clinical practice, and the limited scope of on-the-job training. While health professionals' prize 'autonomy', this autonomy is restricted within the regulatory policies for each health profession. This limits the capability of both generalist and clinical leaders to draw health professionals together and address the strategic issues affecting service delivery. Martin and Learmonth (2010) remind us that health reform was supposed to replace the consensus style of 'administrators' with strong 'leaders'. Yet, as this research shows, consensus seems to be a rational approach given the systemic effects of regulatory privilege that permit only incremental change within the traditional workforce arrangements governing healthcare.

Directorate structures

The international trend has been for hospitals to move from profession-based hierarchies to clinical directorates that bring together medical teams, wards and clinics to focus on particular groups of patients (Lega & DePietro, 2005). Yet Australian research has shown that directorate structures: deliver scant evidence of improvements in financial performance (Braithwaite et al., 2006a), show little performance difference from changes between general and clinically qualified managers (Braithwaite, 2004), and fail to engage with or have relevance for health professionals (Braithwaite & Westbrook, 2005). In

Australia, the United Kingdom, and Canada, research reveals communication difficulties: as health professionals engage in brief exchanges, often dominated by medical practitioners, and occurring in corridors when professionals move between their departments and the patient care areas (Iedema, Long, & Carroll, 2010; Reeves & Lewin, 2004; Reeves et al., 2009a); role confusion occurs among nurses and allied health professionals as they engage in collaborative practice (Caldwell & Atwal, 2003; Long et al., 2003); and health professionals use of knowledge brokering and power in negotiations concerning their contributions to inter-professional care (Currie & White, 2012; Nugus et al., 2010),

This research explains the logistical difficulties for professionals in clinical directorates. These structures attempt to align resources with patient needs, but this tends to be limited to senior management teams and financial reports, with clinical work being little affected. The diagnostic and therapy departments continue to manage their workloads by prioritising referrals received from care units and clinics, regardless of the directorates. Nurses and junior doctors in the care units and clinics are continuously engaged in securing specialist resources for their patients from across the hospital. This fails to align the performance of clinical work to patients. In the early 1990s, some health services trialled solutions in the form of Patient Focussed Care (PFC) units that delivered routine work in the patients' care unit and clinic. These pilots demonstrated improvements to quality and reductions in cost and service fragmentation, but professional associations and regulators successfully protested the new multi-skilled roles and the hospital-based training. The changes attempted in PFC were complex with significant implications for the overall design of health services. This research has shown that progress with reducing service fragmentation depends on new institutional arrangements to facilitate collaboration at both the policy and practice levels, and building on lessons rather than abandoning attempts.

Multidisciplinary teams

Multidisciplinary teams have been at the heart of policies to improve health service delivery. This research has focused on the use of teams to shift services from inpatient to community-based care, rather than efforts to improve traditional hospital teams such as in surgery or clinical handover meetings. Illustrations include multidisciplinary teams

dedicated to the care of consumers with chronic health conditions, such as in mental health, rehabilitation, and aged care, and policies to add non-medical professionals to general medical practices.

In theory co-location should overcome many of the difficulties observed in hospital directorate structures. Yet, a review of the research has found that a dedicated multidisciplinary team may be no more effective for service delivery than well-coordinated care provided by separate profession-based departments (Lemieux-Charles & McGuire, 2006). Literature reviews have also found that multidisciplinary teams experience difficulties with organising team processes, agreeing team membership and decision rights, and that members' experience role confusion about how to contribute to a team task (Lemieux-Charles & McGuire, 2006; Xyrichis & Lowton, 2008). Some authors have identified institutional difficulties related to conflicts around training, scopes-of-practice, leadership and accountability to different registration authorities (Brown et al., 2011; Lahey & Currie, 2005; Reeves et al., 2010a). There have been calls for training to prepare health professionals for teamwork (Thistlethwaite et al., 2010), but so far there is little evidence that training directed to understanding roles and improving communication improves inter-professional collaboration (Braithwaite et al., 2012; Reeves et al., 2010b).

This research explains why the co-location of team members and communication training fails to overcome the difficulties observed in hospital directorates. Teams need clear goals that all members can contribute to, team-based rewards, organisational support and training, an appropriate mix of technical and coordination skills, sufficient shared skills for reciprocal work sharing, and four to seven members so that teams can achieve consensus decisions in the process of delivering their work (Hackman et al., 2000). Generally, multidisciplinary healthcare teams: are too large due to including representatives from each contributing profession and additional members from the professions most engaged in the team's core work; have members who contribute little to the team's goals and maintain their caseloads by performing work for other clinical areas; and lack clarity about team membership which leads to different speaking and voting rights among members. Regulatory privilege explains the powerful forces operating on teams that: encourage vigilance around professional boundaries and identity, lead members to seek professional support from outside the team, and require lengthy meetings to establish consensus around diagnoses, treatment and record keeping. The

recommended remedies are for health service organisations to: define core work; establish practice guidelines; determine team accountabilities, provide on-the-job-training for leaders, team training to enable sharing of core clinical work, establish formal recognition for this training, and communicate these arrangements to regulators.

Redesign programmes

This research contributes to understanding the limited gains from investments in hospital redesign programmes that had been expected to streamline the patients' journeys through hospitals. Since the 1990s, researchers have found localised rather than organisation-wide gains from successive brands of service redesign, including Continuous Quality Improvement (Shortell et al., 1998) and Lean Thinking (Holden, 2011; MacLellan et al., 2008; Radnor et al., 2012). There is some evidence that better outcomes are associated with persistence (Walston et al., 2001), and well managed implementations that engage clinical leaders (Ham et al., 2003; Weiner et al., 2005). There are also cautionary findings from large studies that hospitals engaging in Business Process Re-engineering had higher costs than those not re-engineering over a six year period, and that Total Quality Management has produced poorer outcomes on safety and quality indicators (Weiner et al., 2006; Weiner et al., 2005).

This research contributes to explaining these localised gains and the lack of organisation-wide improvement, despite over two decades of effort. Generally, redesign programmes can improve patients' journeys by increasing the resources needed to coordinate work, such as creating separate services for elective surgery or patients requiring short stays, and introducing multidisciplinary meetings to plan care. However, these strategies do not change the traditional work arrangements that govern service delivery. While patients' care is prioritised in emergency and admission departments, it is continually and independently reprioritised as referrals enter a competing stream for the attention of medical specialist teams, and the diagnostic and treatment departments. Ultimately, this is likely to intensify the traditional workarounds used to escalate priorities for particular patients. Based on their experience with Lean Thinking at Toyota, Womack and Jones (1994) warned that the two main barriers to redesign include: resistance from specialist departments that fear loss of work and prestige, and the need for staff to embrace new career paths involving moves between specialist and generalist roles. Regulatory privilege

shows how health service organisations have little capability to move routine work from traditional departments and to establish new career paths for health professionals. Yet, given ongoing pressure for cost containment, it is likely that organisations will need to tackle these issues in order to align workforce arrangements to patient needs.

Integrated ICT

There is a consensus that more integrated ICT will improve the coordination of healthcare (Morrison et al., 2011). Explanations for difficulties have tended to focus on implementation costs, problems with vendors, and a lack of interoperability between systems (Christensen & Remler, 2009). However, a review of progress in five countries found that strategic, organisational and human issues are more significant than the technical aspects of ICT (Deutsch, Duftschmid, & Dorda, 2010). Strategic difficulties include a lack of clarity about the purpose of a nationally transferable patient record, and how these records relate to business cases that favour improving systems in local provider networks (Brennan, 2007; Greenhalgh, Potts, Wong, Bark, & Swinglehurst, 2009; Sheikh et al., 2011). There has been slow progress with order entry systems to link clinical departments, including their poor fit to the complexity of clinical practice and contribution to medical errors; and health professionals' fears about loss of autonomy, de-skilling, confused accountabilities, problems with confidentiality, inadequate training, and disruptions to traditional work arrangements (Aarts, Ash, & Berg, 2007; Aarts & Koppel, 2009; Georgiou, Ampt, Creswick, Westbrook, & Braithwaite, 2009; Lluch, 2011). In seven countries Aarts and Koppel (2009) found low levels of integration between the clinical departmental and practice systems necessary to underpin effective order entry systems. Investigations at the micro-level have shown that integration of clinical ICT depends on agreements among health professionals concerning shared clinical terminologies, common data repositories, and how clinical information is accessed, presented and updated (Kuhn & Giuse, 2001; van Ginneken, 2002). Health systems appear to be immature with significant effort and learning required to overcome the difficulties (Coiera, Aarts, & Kulikowski, 2011).

This research has revealed that the levers of regulatory privilege enable the health professions to control clinical language, clinical technologies, information sharing and record keeping in ways that could explain the socio-technical difficulties at the heart of

clinical ICT. Record keeping is primarily a health professional's record of their work, designed to support subsequent work with a patient for members of the same health profession. Clinical information sharing is different and narrowly constructed to follow referral agreements among the health professions. The concept of an integrated record, shared among health professionals and patients, does not fit with these traditional record-keeping arrangements. Consequently, the requirements for such records need to be specified and are unlikely to be met by interfacing existing clinical systems without also changing record-keeping practices. Indeed, poor design could mean that information is not presented in a manner useful to different users and that health professionals are required to maintain similar information in different systems for different purposes. Further, it is important to consider new career paths for health professionals as part of ICT implementation, since information sharing affects the work boundaries among the health professions. While ICT is a powerful tool that could contribute to the transformation of health services, it is not possible to realise this potential by simply replicating existing workforce arrangements in electronic systems.

Explanations for difficulties

There have been several explanations for difficulties with health service improvement, including the top down and political character of health reform (Le Grand, 2003), the political challenges of re-negotiating bargains between the state, the consumer and the medical profession (Salter, 2003), the coupling of vertically focused performance management with weak customer pressure and the complexities of change in large professionalised organisations (McNulty & Ferlie, 2004), and the deep seated tribalism among the health professions (Braithwaite et al., 2007). Observers have called for more effective leaders and culture change. However, scholars have questioned these solutions, pointing out that health service leaders lack the authority for change (Degeling & Carr, 2004), and that there are conceptual difficulties around which aspects of culture would need to change (Davies et al., 2007). There have been calls for restructuring or redeveloping the health workforce (Duckett, 2005b; Imison & Bohmer, 2013), but this relates to meeting increased demand from an aging population, and does not appear to have been previously linked to the persistent difficulties with health service improvement.

This research has examined the difficulties with health service improvement from a

regulatory perspective, which reveals the systemic role of health practitioner regulation in limiting improvements that could otherwise contribute to more effective and efficient service delivery. It identified the directions for change, and provided detailed explanations for unintended interactive effects in hospital directorates, multidisciplinary teams, service redesign programmes, integrated clinical ICT, and in the inter-professional clinical practice environment.

8.5 IMPLICATIONS AND LIMITATIONS

This section outlines some implications from a New Zealand perspective. New Zealand has generally followed international trends for both health practitioner regulation and health service improvement. To stimulate discussion, this section briefly addresses some implications for policy-makers, district health boards (DHBs), and consumers. The changes contemplated are complex, DHBs face variations in population needs and workforce opportunities, and some new institutional arrangements are indicated. A brief discussion of how a facilitated consumer network could encourage more self-care is included, as it demonstrates possibilities that are limited by institutional arrangements rather than the capabilities of existing knowledge and technology. The section concludes with the implications for researchers and the limitations of the research.

Policy-makers

Like other developed countries, New Zealand has a range of regulatory and other agencies with policy and monitoring responsibilities for both the health professions and health service organisations (Cumming, 2011; Cumming & Mays, 2010). The environment for service improvement is similar, including: registration authorities responsible for oversight of health practitioner training, continuing practitioner competency, and overlapped scopes-of-practice; DHBs with hospital directorates, multidisciplinary teams, redesign programmes, and efforts to shift work from hospitals to community practices and to integrate clinical ICT; and, a workforce characterised by centralised industrial bargaining, shortages of particular specialists, and increasing use of unregistered health practitioners. The implementation of service improvement is costly and this research has linked limited success internationally to unintended policy interactions. New Zealand is subject to international trends in healthcare, yet its small size

could be advantageous for developing new institutional arrangements to produce better outcomes from policies for service improvement.

There is public and political sensitivity around health reform in New Zealand. It is therefore important to socialise possible directions for health services, focusing on the ways to reduce service fragmentation for consumers and new career opportunities for health professionals. A first step would be to establish a policy forum to facilitate the development of new service arrangements. The forum would require sufficient authority and resources to engage a range of regulatory and policy agencies, registration authorities, DHBs, and consumer representatives. DHBs should be supported to lead in new service designs and workforce arrangements for their populations. Policy change is likely to include: adjustments between registration authorities, tertiary educators and health services, appropriate authority and accountability for DHBs and health service organisations, funding for organisation-based training, guidance concerning delegation among health professionals, incentives for universities to rethink degree structures in the health sciences, and some changes to health practitioner regulation.

There are implications for health workforce planning and ICT. First, it is challenging to focus on new workforce arrangements while managing immediate risks around workforce shortages. Health Workforce New Zealand has made an impressive start with the plans around patient groups produced in 2011. Drawing on this research, it seems timely to focus on a smaller range of patient groups and to develop and socialise design scenarios that reduce service fragmentation. Priorities could include groups with health conditions related to social deprivation and aging, those in remote areas, and arrangements to enable more self-management for consumers' with stable well-understood chronic health conditions. Second, New Zealand has performed well in health ICT, including national consumer identifiers and repositories of summary data, nationwide infrastructure, and programmes for consumers' to access their records. A recommendation from this research is that there is more focus on the socio-technical issues. This is likely to include: distinguishing between system requirements for integration of departmental clinical records, order entry systems, support of teamwork, and to enable consumer self-management. This work needs to be undertaken regardless of the life cycle stage of a patient information system, because both new and existing systems generally permit substantial user definition in their implementation and use. Thus DHBs should be

encouraged to focus on integrating work practices and adapting their use of their local information systems to reflect new work designs.

District Health Boards

New Zealand DHBs are responsible for the effective and efficient delivery of health services to regional populations, including the integration of community and hospital-based services (Ministry of Health, 2013). This is a complex task that involves straddling the agendas of multiple stakeholders and being bounded by national policy settings. The opportunities to reduce service fragmentation in DHBs are likely to vary according to their respective geographical, population service configuration and workforce profiles. While some changes are likely to depend on the support of policy-makers, DHBs appear best placed to identify the opportunities to reduce fragmentation in their clinical micro-systems. As this research has explained, traditional work arrangements tend to prevail regardless of the co-location of service providers and health professionals. Thus, aspects of these arrangements detract from improvements that DHBs might otherwise realise through their clinical directorates, multidisciplinary teams, and integrated family health centres. Transfer of work from medicine to non-medical professions and assistants is likely to continue, but this can increase rather than reduce service fragmentation. DHB leaders can be fully engaged with immediate demands to address shortages among particular specialists, contain cost growth, and manage restructures. Even so, room must be made for planning and organisational development to reduce fragmentation in clinical micro-systems, and align resources to consumers to improve service quality and efficiency.

Service fragmentation is common in routine healthcare. An adult with mild asthma is likely to have been tethered to three monthly doctors' visits and prescription requests, and monthly visits to a pharmacy for several decades. When their pharmacy is closed, a consumer may not be able to fill a repeat prescription without an additional doctor's visit. Those with more complex conditions may be required to complete the same blood tests, prescription requests and pharmacy visits for many years. While a clinic nurse could perform some services, a consumer might find they are also required to visit the doctor due to various service restrictions. When consumers with chronic health conditions require adjustments to diagnoses and medications, this often depends on accessing

services restricted to hospitals and specialists with repeated tests and assessments. Consumers who attend an emergency clinic can be referred to the hospital due to restrictions around the performance of simple X-rays. A visit to the emergency department could be a rationale decision since in a few hours it could achieve the tests and specialist consultations that could otherwise take months. Appointing coordinators to improve service integration does little to change this pattern of repeated assessments, reviews and referrals related to workforce arrangements and policies that restrict the use of certain technologies. Each transfer of care also entails opportunities for error and additional costs for DHBs, consumers, and taxpayers.

To reduce service fragmentation, it is necessary to: select a service for focus, define routine work, establish policies for clinical practice, make use of near patient testing or treatment equipment, train team members to perform the routine work, and adapt existing ICT to reflect the new way of working. This could begin with existing multidisciplinary teams that care for particular groups of patients, such as in rehabilitation, mental health and aged care. There are many other possibilities, such as in services for musculo-skeletal problems, pain management, diabetes etc. This approach calls for changes to the roles of specialists, so that they perform a few less direct patient consultations and spend some time in supporting community-based general practices and multidisciplinary teams. For example, a few specialists have begun to visit some general practices to conduct case reviews and transfer knowledge to the clinical staff. Other specialist support for community providers could include: remote calibration for equipment, periodic training in some routine diagnostic and therapy procedures, and multidisciplinary service audits. Leadership training would be important and include differentiating general management from clinical leadership, and clinical supervision from responsibilities to organise clinical work. These changes depend on the development of management capability to design teams, establish training and recognition for health professionals, make better use of their local clinical ICT systems, and ensure that health professionals are able to maintain both their traditional and their new skills for shared clinical work.

Some of these recommendations will not be new to DHBs or service providers, since there have been many national and localised innovations to address workforce shortages and population needs over the years. However, localised changes can be overturned and even forgotten as key personnel move on, shortages are redressed and traditional work

arrangements restored, and through the loss of institutional knowledge following restructures. It is therefore important that DHBs are able to engage in discourse with a national policy forum, and that useful innovations can receive policy backing to be systematised nationally as appropriate. It is hoped that the framework of factors in service improvement, developed in this research, could prove useful in the systematisation of innovations.

Consumers

There is now a well-educated aging population, familiar with mobile phones, computers and the Internet. They are likely to have already adapted to electronic systems and self-service changes in banking and retail. When these consumers have a stable chronic health condition, they are more likely to have expertise in the management of their condition. Traditional health services involve consumers in one-to-one consultations many times. Yet, it is difficult for consumers to make sense of the clinical and care information available through verbal exchanges with each health professional (Honey, Roy, Bycroft, & Boyd, 2014). There are opportunities to use new service designs and ICT to reduce the number of these consultations by enabling consumers to both individually and collectively manage more of their own care.

There are current policies to provide consumers with Internet access to their clinical information including diagnoses and medications. An implication of this research is that these systems need to be relevant to consumers, rather than simply providing access to existing records. While a working diagnosis, individual test results and trends, medications and referral reports could be useful; health practitioner accounts of patients' narratives that could be dated or not verified by consumers and therefore less useful. More relevant would be access to reliable and relevant information about their respective condition, enhanced transparency around consultations with health professionals, and applications that support self-management of tests and prescriptions. More sophisticated websites for patient associations, such as for arthritis and asthma, could also contribute. These organisations can bring together highly motivated consumers to learn from experts and each other, but tend to rely on the voluntary time of health professionals and organisers. These organisations could be more effective if they had resources to offer

online information and video presentations, links to other service providers and a moderated chat room for members to ask questions and exchange information.

We could imagine a future service that involved a facilitated patient network to support consumer self-management. Each consumer would have a web account to hold information on his or her diagnosis and protocols for care, along with access to clinical information about their condition. In this scenario, a consumer could arrange their own tests through suppliers or home-based equipment, and track the results and trends recorded on their web account. They could order their own medications, receiving supplies by courier from a pharmacy warehouse. At a face-to-face consultation, the health professional could highlight particular web pages or add instructions so patients could review and consider this information in their own time. Service providers could moderate a condition-related chat room for enrolled consumers, as well as organising real world group meetings or events. Advantages could include: ongoing access to educational material for consumers to engage with at their own pace, transparency around the information offered by health professionals, periodic surveys to check patients' understanding of symptoms and medications, and applications that automate the monitoring of patients progress. This could release scarce face-to-face healthcare resources for consumers whose conditions are less stable or periods where more intensive help is required. Such a system could also make use of a little used regulatory tool in healthcare by directly addressing the information imbalance between consumers and health professionals, as well as among the professionals engaged in service delivery. While this scenario is plausible given existing knowledge and technology, implementation would depend on new institutional arrangements to facilitate changes to a range of health profession-related regulatory restrictions on the use of medicines, technologies, and the ownership of pharmacies and general practices, and developing new information-management related roles for some health professionals.

Researchers

This research has scoped out a major gap in the literature concerning the links between health practitioner regulation and health service improvement. I hope the theoretical framework and other theory contributions could be of interest to researchers. The framework needs to be further researched to test its explanatory power in particular

circumstances. Some of the levers of regulatory privilege and elements for service improvement could prove more relevant than others. Researchers could consider testing some of the criteria in relation to studies of service improvement at any of the six health sector levels. My use of a critical realist methodology could also be of interest to scholars researching this methodology.

Limitations of the research

There are limits to the research findings. Multi-level analysis suggests that the effects of health practitioner regulation could be systemic. However, this research has been focused on the development of a conceptual explanation. While it shows how regulatory privilege could add to other explanations about difficulties with health service improvement, this applied to particular illustrations. Further research would be required to refine the lens of regulatory privilege and to understand more about the regulatory levers and the circumstances for effects on service improvement. The research does not attempt to assess the relative strength of other theories that might also contribute to explaining persistent difficulties with health service improvement.

The thin literature base and critical realist methodology called for a broadly based research design. This placed demands on the researcher to engage in extensive searching for, and sifting of, material to assess its relevance to the research question. Literature reviews were consulted to assist in understanding the available research, and also to mitigate the risk of inadvertently missing important material. However, it is possible that I missed material that could have influenced findings in a different direction.

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APPENDIX A: HEALTH PROFESSION REGULATORS

New York State Licensed Professions

Acupuncture	Mental health practitioners
Audiology	- Creative arts therapists
Chiropractic	- Marriage and family therapists
Clinical laboratory technology	- Mental health counsellors
- Clinical laboratory technologists	- Psychoanalysts
- Cytotechnologists	Nursing
- Clinical laboratory technicians	- Registered professional nurses
- Certified Histological technicians	- Nurse practitioners
Dentistry	- Licensed practical nurses
- Dentists	Occupational Therapy
- Dental anaesthesia/ sedation	- Occupational therapists
- Dental hygienists	- Occupational therapy assistants
- Certified dental assistants	Pharmacy
Dietetics – nutrition	- Pharmacists
Massage therapy	- Pharmacy establishments
Medical Physics	Physical therapy
Medicine	- Physical therapists
- Physicians	- Physical therapy technicians
- Physicians 3 year limited license	Podiatry
- Physician assistants	Psychology
- Specialist assistants	Social Work
Midwifery	- Licensed master social worker
Ophthalmic Dispensing	- Licensed clinical social worker
Optometry	(Office of Professions, 2010)

General chiropractic council	- Chiropodists/ podiatrists
- Chiropractors	- Clinical scientists
General dental council	- Dieticians
- Dentists	- Hearing aid dispensers
- Dental nurses	- Occupational therapists
- Dental technicians	- Operating department practitioners
- Dental hygienists	- Orthoptists
- Clinical dental technicians	- Paramedics
- Orthodontic therapists	- Physiotherapists
General medical council (GMC)	- Practitioner psychologists
- Doctors	- Prosthetics/ orthotists
General optical council	- Radiographers
- Optometrists	- Speech and language technologists
- Dispensing opticians	Nursing and midwifery council
- Student opticians	- Nurses
- Optical businesses	- Midwives
General osteopathic council	Pharmaceutical society of Nth Ireland
- Osteopaths	- Pharmacists in Northern Ireland
Health professions council	Pharmaceutical society of Great Britain
- Arts therapists	- Pharmacists in England, Wales & Scotland
- Biomedical scientists	

(CHRE, 2010b)

Australian Health Practitioners Regulatory Agency (AHPRA)

From 1 July 2010	Pharmacists
Chiropractors	Physiotherapists
Dental practitioners	Podiatrists
- Dentists	Psychologists
- Dental hygienists	
- Dental prosthetists	From 1 July 2012
- Dental therapists	Chinese medicine practitioners
Medical practitioners	Medical radiation practitioners
Nurses & Midwives	Occupational therapists
Optometrists	Aboriginal & Torres Strait Island health practitioners

(AHPRA, 2011)

APPENDIX B: SERVICE DESIGNS

A UK medical directorate

Reeves and Lewin (2004) observed the behaviour and experience of health professionals working within a UK medical directorate. The environment was characterised by large numbers of personnel organised according to their professions including medical specialists and trainee medical practitioners, nurses, pharmacists, physiotherapists, occupational therapists and social workers, and working with patients across dispersed clinical locations. The personnel attached to any one ward could include 10 nurses located on the ward, up to 15 medical practitioners from five to six different medical teams, three to four therapists, two social workers and two care coordinators. Formal information sharing was meant to occur in weekly multidisciplinary meetings led by each medical specialist team, but differences in the work of different health professions compromised participation. Medical practitioners often prioritised other work leading to cancellations of multidisciplinary meetings, and nurses complained that meetings occurred when they had to continue working on the wards. For social workers, it was apparent that this meeting and the ward notes were an inefficient means to acquire information about the patients who could benefit from their services, for instance to facilitate arrangements for discharge or community care. Inter-professional communication tended to be opportunistic, brief and terse, with doctors mostly initiating communication to allocate work or referrals and inclined to strip out the social niceties like greetings, and reduce other practitioners to representatives of their respective health professions. 'Care coordinators' or nurses who were present for longer periods on the ward were used as 'go-betweens' for delivery of messages between professionals. Verbal exchanges often occurred in corridors, which was problematic due to the potential for health practitioners to be interrupted and forget these messages. The design and maintenance of patient's records made it difficult and time-consuming to glean interdisciplinary information from this source. There were also tensions around work practice with nurses attempting to implement nurse-led communication around each patient and doctors preferring to communicate with the ward personnel via the charge nurse. The clinical directorate structure is intended to encourage inter-professional collaboration around particular groups of patients. However, the authors concluded that

temporospatial issues in the organisation of work and differing views of collaboration among the health professions acted as a constraint on inter-professional collaboration on hospital wards (Reeves & Lewin, 2004).

UK multidisciplinary rehabilitation care

In another UK study, Long, Kneafsey, and Ryan (2003) focused on multidisciplinary interactions between nurses, speech language therapists, physiotherapists, occupational therapists, dieticians, social workers and podiatrists engaged in rehabilitation care. The researchers followed the care provided to patients for up six months following hip fractures, rheumatoid arthritis or stroke, and following the progress of selected patients through general medical wards, specialist rehabilitation wards, and outpatient clinics. Nurses on the general wards treated patients through the acute phases of their care, and complained about a lack of access to rehabilitation resources. A variety of work practice was evident with some examples of high functioning integration of work where nurses decided to incorporate therapy treatments (physical, occupational or speech language) into ongoing nursing care, performed some therapy work where there were staff shortages among the therapists, and were open to care coordination being performed by either a nurse or a therapist. However, there was also widespread confusion around roles with contests for control over key tasks such as assessments, care coordination, or integration of therapy into nursing care, and these conflicts contributed to fragmentation of care, repetition of work, and delays to the progress of rehabilitation. Patients complained about the repeated assessments, nurses complained about therapists' failure to recognise nursing skills in rehabilitation or coordination of care or to adequately document their assessments, and therapists complained that nurses undermined patients' progress by not reading or adhering to therapists' instructions. Profession-centric decisions around the priorities of patient cases, restrictions around the numbers of therapists, the Monday to Friday daytime working hours of the therapists, separate documentation of clinical notes among the professions, and ideals about roles each contributed to fragmentation of care, difficulties attending multidisciplinary meetings, multiple repetitive handovers, lack of reciprocity in task sharing and delays to patients' progress. The study concluded that health practitioner training was not adequate to enable team-based clinical work, and that transparent skill sets, policies to support inter-professional work and audits could overcome tensions associated with role blurring. This would require recognition and

facilitation from health service organisations, educators and registration authorities (Long et al., 2003).

PFC at Lakeland Regional Medical Center

As executive leaders Watson, Shortridge, Jones, Rees, and Stephens (1991) were inspired to develop a PFC pilot to address problems with service fragmentation, cost and quality of care, at Lakeland Regional Medical Center (LRMC). Their pre-implementation analysis pinpointed the hospital's design around specialised clinical departments rather than the preferences of the hospital's medical specialists or the fluctuations in patient demand as the key source of these difficulties. Consequently, they concluded that the increased costs, delays and duplication of work associated with specialist departments outstripped the advantages of specialisation at LRMC. In 1989 a general surgical ward was remodelled to accommodate 35 beds, some radiology, laboratory and pharmacy functions, and new workstations with patient medication drawers and computers. A two-person team of health practitioners or a 'care pair' comprised of a registered nurse and a cross-trained multi-skilled practitioner performed a range of services including: preadmission workups, admission procedures, ECGs, respiratory treatments, basic physical therapy treatments, phlebotomy (taking blood for analysis), most dietary functions, equipment care, cleaning rooms, transporting patients, charging patient accounts and completing medical records at discharge. Training for personnel on the PFC unit was provided in-house and included theoretical instruction, simulated performance of new clinical tasks, and completion of supervised competency tests with patients. By 1990, all pre and post-operative work for elective, urgent, and acute general surgery patients was carried out on this unit. Post implementation evaluations were positive with: routine laboratory tests completed 70% faster; significant improvement in the performance of radiographs despite the limitation that only a registered radiographer was permitted to perform these; measures of quality equal to or improved for patient satisfaction, continuity of care, length of stay, mortality, hospital acquired infection rates, complications and occurrence of temperature spikes; an overwhelmingly positive response from patients thought to be associated with improved continuity of care; and an external audit found cost savings of 9.2% per occupied bed day (Watson et al., 1991).

However, the perceptions of health professionals on the LMRC PFC pilot unit were mixed. While overall measure of staff satisfaction and experience of stress improved, this related to some aspects of PFC organisation and not to others. Stress related to work with senior medical practitioners, managers and other health practitioners improved, but stress increased around performance of 'demeaning tasks'. Quality of work life improved in relation to perceptions of opportunities for personal growth, but reduced in relation to perceptions of autonomy and complexity of work. The 15 surgeons were unanimous that patient care had improved and clinical policies and workflow sheets reduced the time they had to spend on the unit, but some surgeons still preferred to maintain their own medical progress notes, separate from the nurses' documentation of patient care (Watson et al., 1991).

A PFC test centre at the UK's Leicester Royal Infirmary (Newman, 1997)

In the United Kingdom, executives at Leicester Royal Infirmary (LRI) were also inspired by the opportunities to improve services using PFC, in this case an out patients' clinic. Newman (1997) explained that pre-implementation analysis showed that outpatient appointments comprised 49% of LRI's patient visits and generated 66,000 diagnostic tests per year. The complexity of patient's having to visit specialist departments for routine tests meant it was common for outpatients services to be spread over three appointments; for instance for a blood test, electrocardiogram and a simple X-ray, and for delays of weeks to occur due to waiting for results and scheduling of subsequent appointments. Furthermore, 43% of test results were not available at the start of a clinic, 28% of tests had to be repeated due to missing results and delays, and consequently there were clinic personnel dedicated to chasing up test results. In 1995, testing equipment was installed to service eight clinics at the Balmoral Outpatients Centre through normal business hours, Monday to Friday. This created a one-stop-shop service where patients received their tests, results and a specialist consultation at a single outpatient appointment. A four-person team of cross-trained health practitioners performed routine tests and reduced the waiting time for patients from 90 to 10 minutes. The laboratory, radiology and cardiology departments monitored the quality of tests, and the human resources department assessed staff satisfaction in the clinic. The LRI personnel involved the PFC testing service reported satisfaction from delivering a comprehensive service to

patients, but experienced censure from professional colleagues due to anxieties about limited career paths, and being seen to perform the 'lower-status' or routine work from the scopes-of-practice of other health professions (Newman, 1997). An evaluation of organisation-wide service redesign at LRI showed that it was the PFC inspired change at outpatients that generated cost savings as well as quality improvement (Bowns & McNulty, 1999).

Community mental health teams (CMHTs) in the English Midlands

A study by Brown, Crawford, and Darongkamas (2000) observed three CMHTs constructed when health professionals were moved from hospital departments to care for patients in defined geographical areas. The teams had 8, 10 and 11 members with health professionals from nursing, occupational therapy, psychology, psychiatry, social work and support workers. A steering committee of stakeholders met monthly to oversee the operation of these services, while team members took turns to chair the weekly meeting of their team. Two teams worked from distributed locations. While many health practitioners were positive about teamwork, there were difficulties agreeing to the teams' goals including aligning the work of the health professionals to the teams' geographical boundaries. There were also different approaches to reconciling professional differences. One group saw professional boundaries, as a relic of the past that reflected self-interest and that role blurring or development of a generic mental health worker to replace the separate roles of nurses and social workers would be in the interests of clients. A second group thought professional boundaries should be reinforced because role blurring was not in the client's interests and would confuse lines of accountability within the team. A third perspective was to take a middle line on role blurring by trying to be self-aware to ensure that role blurring did not progress too far. These differences affected work practice with some practitioners completing a range of tasks at a single appointment because if was efficient and convenient for the client, while others objected to such combined practice as 'meddling' across inter-professional boundaries. There were also perceptions of abandonment by management, so teams tried to establish their own democratically styled team meetings, but found it difficult to agree to team goals or to stop team members from continuing to service their own client lists even where this included clients from outside the team's designated population. Most professionals retained links to their specialist departments, which could have affected their commitment to their multidisciplinary team.

The authors concluded multidisciplinary team structures could encourage boundary marking among the health professions (Brown et al., 2000).

Community mental health teams (CMHTs) in the south of England

Gulliver, Peck, and Towell (2002) studied three CMHTs in the south of England that were introduced to reduce the fragmentation of care between general practice and hospitals. The professionals were drawn from social work, psychiatry, nursing, occupational therapy and support workers. Leadership was shared with psychiatrists responsible for treatment plans, for liaison with the GPs, or representing the team to management or funders, while nurses coordinated care within mental health services. The health services encouraged teamwork through: co-location of team members, appointment of team leaders, policies for patient's to have an inter-professional care plan, and by attention to the language of collaboration. After a year professionals appeared to be intensively patrolling their inter-professional boundaries. After two years, nurses and social workers reported that they were now taking on a wider range of duties, but felt that they had insufficient training to do this. Team leaders had gained in authority due to use of clinical audits, although many staff still looked to the medical senior psychiatrist as the overall decision-maker. One team that specialised in psychological therapy appeared to function best with a clear team goal, team-based training and support activities, and a higher reported satisfaction with teamwork. This contrasted with the other teams, where there was still confusion around team tasks and priorities, the role of managers, and the distribution of authority among team members to take on clients, and concerns about a lack of training in interdisciplinary working, uncertainty about how to document or manage inter-professional care, and ongoing attachment to professional departments. The success of the psychological therapies team, with its clear task focus, augers well for the service, but health service intervention appeared to be necessary to resolve uncertainty around tasks or priorities, and to specify core tasks in the other teams (Gulliver et al., 2002).

Record-keeping in Scottish community mental health teams (CMHTs)

A study by Hardstone, Proctor, Voss, and Rees (2004) investigated the response of three Scottish CMHTs to the introduction of a shared electronic record-keeping system. Each

team had a designated manager, included nurses, social workers, occupational therapists, and psychologists, and were required to have a lead practitioner and an integrated inter-professional care plan for each patient. Team meetings operated democratically with efforts to elicit and reinforce the 'unique' disciplinary perspectives of members for each client. In the CMHT office, there was an almost constant informal exchange of information and experiences among team members, concerning patients, medications, team administration, and the health service organisation. Engagement in teamwork depended on each practitioner's team membership status, which was subject to negotiation around his or her contribution to the team's routine daily activities. Formal patient records included referral letters, assessments and reports about a patient's diagnosis and treatment, but there were also informal records of 'to do' lists, notes on meetings, phone calls or patient assessments, and drafts or referral letters (typed by the secretaries) that could be discussed informally with other team members and revised. Some sensitive issues were discussed informally, and not included in clinical records due to concerns that individual practitioners may be held to account if they were ultimately available to a wider audience. This use of manual and informal records enabled pencil text to be erased and the record to be completed in pen, and over time this supported reification of clinical decisions and the management of patients with text in pencil erased and the record completed in pen. Physical forms could be worked on by individuals and reviewed by others as a co-production, before being reinserted into the clinical records, thus the time to 'publish' assessments and decisions could be delayed to develop consensus. On other occasions, time was saved when a health practitioner inserted their notepad record into the formal clinical record (Hardstone et al., 2004).

As Hardstone et al. (2004) explain the computerised patient-record has limited support for provisional notes or co-production due to electronic tracking of authorship and changes to records. The health professionals sought to manage this problem by delaying data entry or update of records until consensus concerning the patient was finalized. In one instance a psychiatric nurse verbally briefed a psychiatrist but entered only the patient's contact information to the database for the psychiatrist concerning a patient, but delayed the data entry of her assessment, until she could read the psychiatrist's report to ensure her account was consistent. The introduction of electronic patient records left the team leaders with less discretion to ignore the breaches of clinical policy in the form of the informal record-keeping practices or removal of the patients' records from the CMHT

office to reduce the travel time around visits to see patients. An advantage to the health service of the electronic system was that records could be immediately available to other parts of the health service, including the legal assessments of the patient's mental state, and this led to the teams' becoming concerned about who may view their work. The authors conclude that while outsiders might misinterpret the practice of doing some healthcare work 'in the rough' and then again 'in the neat', it appears to be a characteristic of multidisciplinary working, and that the electronic system may need to be adapted to the practice of the professionals (Hardstone et al., 2004).

APPENDIX C: COORDINATION OF CARE

A UK laboratory system with ward order entry

Mclaughlin and Webster (1998) studied the introduction of a new laboratory system to enable sharing of patient information and computerised communications between the different laboratory departments with wards in a UK hospital. The system was designed to introduce standardisation around which test to perform or antibiotic to prescribe, and the study followed the responses of laboratory scientists and pathologists in the microbiology laboratory. Instead of sending a specimen and inquiry about organisms present, the system provided the ward's medical practitioners and nurses with information around tests that may be ordered, removing a decision previously made by the scientists and enforcing a more standardised range of tests. It also standardised laboratory procedures, with sub-tests performed by different scientists, guided by policies about sub-tests to perform and entry of results each stage. Laboratory scientists felt particularly aggrieved that their roles were being 'deskilled'. Previously they had decided the tests to perform, performed whole tests, and also developed new test techniques, skills they viewed as important to their professional status and career opportunities. Managers viewed the system as simply enforcing the standards that had always existed and that the key skill of the scientists was to read the tests. The objections from scientists led to redesign of some aspects of the system and work practice, and allowed them to override the test selections made by medical practitioners or nurses on the wards. For pathologists, it was important that the system supported their claim to oversight of the work of the scientists and quality of test results supplied to wards. The new system treated review

of tests as a routine task that could be performed by either scientists or pathologists. It also held the clinical information that had previously been held in paper form by the pathologists. The pathologists employed four strategies to retain their claim to overall clinical authority in the laboratory, maintaining their claim to legal authority for diagnosis, using a threat to discredit the system to other pathologists as leverage to persuade the vendor to change the way the system presented tests for review, introducing a paper-based 'workaround' for scientists to identify the tests that required a pathologist's review, and leveraging their clinical information held in the system to strengthen their advisory work outside of the laboratory. Yet the transparency introduced by the system meant that in order to maintain their claim to oversight of the laboratory work, the pathologists had to dedicate time each morning to reviewing test results to meet the expectations of ward personnel for timely access to results. Managers utilised the pathologists' criticisms in their negotiations with the system vendors, but had to work hard to persuade specialist personnel to share clinical information within the laboratory (Mclaughlin & Webster, 1998).

A Canadian pharmacy system with ward functions

This study focused on the implementation of automated medication management in a Canadian hospital. As Novek (2002) explains, hospital administrators who had higher degree qualifications in nursing wished to introduce more standardisation in medication administration on the wards to reduce errors and enable nurses to spend more time with their patients. Part of this strategy was the coproduction of electronic medication charts through pharmacists entering the prescription and nurses completing the chart as they administered medication. The system had been originally designed by a pharmacist, and was intended to enhance pharmacists' engagement in quality control and clinical advisory services. The leadership team decided to improve medication management by allowing a two-hour window of time for prescribed medications to be administered, but the system had unacceptable effects on work practice for both pharmacists and nurses. First, the replacement of ward inventories with daily supply of individualised prescriptions in medication carts involved the pharmacists in significant work as they checked and entered prescriptions to the system for each patient. Second, the pharmacists' plans to introduce a medication advisory service failed because the pharmacists that had been deployed to the wards were too isolated from access to the clinical and medication

profiles previously reviewed as part of the process of checking prescriptions, so nurses made inquiries to the central pharmacy. Third, nurses found the two-hour timeframes for medication administration restricted their capacity to use their own clinical judgement to organise their work to according to circumstances on the wards. Thus the system reduced rather than enabled opportunities for both pharmacists and nurses to develop their professional practice or exercise professional judgement. It also led to acrimonious negotiations between nurses and pharmacists over data entry, and accountability for errors. In resisting the changes imposed through the ICT system, pharmacists referred to their responsibility to review prescriptions, and nurses emphasised their accountability for the administration of medications. The system was ultimately rejected and replaced by one that had more sophisticated administration cabinets and flexible options for administration of medicines. This implementation occurred in the context of a pharmacy department that was relatively weak compared to nursing, and health service changes that had already posed threats to the work of the health professionals. (Novek, 2002).

Shared maternity records in Denmark

This Danish study followed the progress of a four-year ICT pilot to enhance state provided maternity services. An existing web portal provided patients with summarises of clinical information and records of their medications. This portal was upgraded to support information sharing among pregnant women and their healthcare providers in hospitals, midwifery clinics, and community-based general practice. The project team anticipated that the coordination of care would improve if the women were encouraged to participate more in their own care through access to clinical notes, scans and test results. The women were also expected to become less 'forgetful' about bringing their own 'client record' to appointments. However, the study showed that the women were not the passive recipients of care and used their web-based access to records to identify and attempt to remedy problems with information sharing among the health professionals. Various information sharing problems became evident, and one general practice and one hospital department withdrew before the pilot concluded. Some health practitioners did not know how to access information on the web-based record, some records of events were available through the web portal, had not been shared between the systems used by the health professionals, some information was simply absence, and some records were erroneous or incomplete. The women began to bring their own copies of records or provide verbal

accounts of events, and to insist that health practitioners update or address the errors in the web record. At the outset, the project had conceived the relationship between health professionals and patients as the key boundary to be addressed, but the implementation demonstrated that the problematic boundary issues were between the hospital specialists, midwives and general practitioners providing care. This challenged the health professionals' perception about or construction of communication problems as 'problems with patients' understanding or compliance' (Winthereik, 2008).

Re-engineering at the UK's Leicester Royal Infirmary

Re-engineering at Leicester Royal Infirmary (LRI) was undertaken through a period of policies for cost containment, bed reduction and the movement of services from hospitals to community settings. As McNulty and Ferlie (2002) explain, LRI planned to redesign hospital processes from admission to discharge, beginning with reducing the waiting time for patients in the emergency department (ED). The transformation team initially tried to use a system of triage by nurses to order tests such as X-rays and to separate patients into two queues, the first referred to as the 'walking wounded' were to be treated and discharged by nurses, and the second the patients lying on trolleys were to be treated by the doctors. However, the emergency medical specialists did not want their work taken over by nurses and argued instead that delays in ED were related to the 20% of complex cases and a lack of resources to treat these cases. After two years this inter-jurisdictional contest was settled in favour of the doctors, the vacancies among nursing staff had been filled but nurse-led clinics did not proceed and there was limited scope for nurses to order tests such as X-rays. A second strategy to remove congestion in the ED was also scuttled this time due to a contest between the emergency and orthopaedic medical specialists. The transformation team and the orthopaedic specialists wanted patients with hip fractures X-rayed and transferred directly from X-ray to an orthopaedic ward based on the decisions of an ED nurse and radiographer. This initiative failed due to disputes both within medicine, between medicine and nursing, and a reluctance of radiographers to take responsibility for X-ray diagnosis that is traditionally reserved to medical specialists in radiology.

Another strategy to reduce congestion at LRI was to separate the simple elective surgical procedures that could be performed in a single day of admission from other more

complex cases that involved overnight hospital stays. This began with streamlining the tests and assessments at the ear, nose and throat (ENT) clinic and access to operating theatres. The clinic initiative proved successful with ENT surgeons willing to agree to clinical policies that enabled an administrator to arrange the standard tests and nurses to conduct the preoperative assessment with the anaesthetist. The streamlining of theatre and recovery work was less successful. Other surgical specialists resented the streamlined access to theatres for ENT patients and an intra-jurisdictional dispute erupted over control of post-surgical care between the nurses who worked in theatre recovery with the anaesthetists and the nurses on the ENT unit. After two years there was still some resistance to sharing information concerning theatre bookings and to transfer of bookings onto a computer. The success of streamlined access to day procedures was replicated with endoscopy clinics where medical specialists agreed to policies that enabled some work to be delegated to nurses, although few nurses were willing to take on their own endoscopy clinics.

Two strategies were developed to expedite patient discharge from the hospital, the first involved using a multidisciplinary team to plan the pre-discharge work when the patient is admitted, and the second is to delegate decisions that a patient is ready for discharge to nurses on the wards. These strategies met with both success and resistance. The orthopaedic wards were reorganised into acute care and rehabilitation with a multidisciplinary team of nurses and therapists responsible for timely organisation of the pre-discharge rehabilitation assessments, although it took some time to persuade the therapists to change from their traditional Monday to Friday hours to complete this work on weekends. In the case of ENT, the surgeons refused to delegate discharge decisions to nurses. In contrast, on the obstetrics and gynaecology (O & G) wards medical consultants and nurses formed teams with nurses discharged patients according to agreed protocols and also made a follow-up visit to the patients' homes. This teamwork approach had been agreed as part of the commissioning of a new building for O&G services that had fewer beds, and it also freed consultants to concentrate on surgery (McNulty & Ferlie, 2002).

APPENDIX D: ROLE DEVELOPMENT

Overlapped scopes-of-practice in the Netherlands

From 1997, following some Canadian states, the Netherlands changed from a licensure for health professionals to certification with some restricted activities. This permitted medical practitioners to delegate 15 different types of reserved or restricted procedures to nurses. An evaluation study was required within five years of the new regulation taking effect, and the study was reported in de Bie and colleagues (2004; 2005). Survey questions were used to assess the knowledge of the regulations and the associated practice experience of 2000 health professionals, including gynaecologists, trainee medical practitioners, and nurses. Over 75% of medical practitioners and nurses reported no difficulties with either giving or receiving clinical orders for these procedures. However, the researchers found some of these professionals knowledge or clinical practice did not comply with the regulations concerning 'what work may be performed by which professions' (de Bie et al., 2004).

While 75% of the practitioners surveyed knew which procedures required authorisation by medical practitioners, fewer at 50% knew how instructions should be communicated, or accountability ascribed between medical practitioners and nurses, and 60% were unclear as to how medical practitioners could supervise nurses. Orders for injections were usually given or received in writing, while orders for bladder catheterisations were usually verbal. In both cases, a single order could imply multiple performances of the procedure, and medical specialists expected nurses to use their judgement as to when or how often to perform these procedures. Among nurses, 34% believed orders were consistent with an organisational policy or a clinical protocol, and 50% said they received orders verbally through other nurses. Orders were generally not accompanied by guidance concerning their performance or potential complications. Access to assistance depended on whether a supervisor was nearby, and 75% of nurses said that they had seldom received any instruction from a supervisor. Most of the health professionals viewed the new regulations as an improvement over the old regulations, particularly for nurses. A small proportion of the professionals were critical or uncertain about the practicality of the new regulations. The problems reported included lack of clarity in the regulations, receipt of verbal or telephoned orders with subsequent written confirmation, difficulties

determining the proficiency of nurses or providing supervision or intervention, lack of one-to-one relationships among nurses and medical practitioners, and the pressure of the work environment (de Bie et al., 2004).

Refusal by nurses to perform orders was reported in de Bie et al. (2005). Among the respondents 11-30 % reported difficulties with inter-professional delegation in the previous year. When nurses refused orders, most medical practitioners believed that this occurred because nurses believed they lacked the authorisation or proficiency to carry out the work. Among nurses, 63% agreed they had concerns about their own authorisation, and 41% about their own proficiency. However, when asked about their most recent problem with an order, 34% of nurses stated that they disagreed with the use of the particular medication or the dose to be given, and they sought to resolve these difficulties by consulting a colleague, getting a colleague to perform the procedure, or through discussion with the medical specialist. When asked for opinions about whether nurses could perform a range of procedures (some permitted under regulation and some not) on their own initiative, opinions varied considerably among both nurses and medical practitioners. The authors noted the relatively low frequency of these difficulties (de Bie et al., 2005).

The researchers observed that regulation tends to lag practice and drew three main conclusions. First, more training was required concerning the regulation. Second, the nurses who disagreed with medication policies were working outside of their legal scope-of-practice within the Netherlands, and had probably been influenced by developments in the United States. Third, the health service organisations should provide adequate safeguards for quality and safety, such as written guidelines or protocols (de Bie et al., 2004; de Bie et al., 2005).

Regulation of overlapped scopes-of-practice in the United Kingdom

In 2010, the UK's Council for Healthcare Regulatory Excellence (CHRE) responded to a government request to assess whether there was a need for 'distributed regulation' where a registration authority would be required to consult with another registration authority to set standards for or oversee roles where the scopes-of-practice extend into work already governed by another registration authority (CHRE, 2010c; Department of Health, 2006). CHRE posed the case of a podiatrist surgeon, where a health professional is registered

as a podiatrist with the Health Practitioners Council (HPC), but uses skills that are part of a surgeon's scope-of-practice that is regulated by the General Medical Council (GMC) and the Royal College of Surgery. Under 'distributed regulation', the HPC would continue to regulate the podiatrist and would consult with the GMC or Royal College of Surgery about the surgical standards involved.

The advantages of distributed regulation include:

- Enabling comparable conduct standards to be developed across registration authorities.
- Preventing cases of double jeopardy, where different health professionals, doing the same work, would be held to different standards by different health profession regulators.
- Improving coordination among registration authorities.
- Retaining single registration, avoiding the cost of registration with two different registration authorities.

The disadvantages of distributed regulation include:

- Confusion about which registration authority to appeal to when raising a concern about the practice of a health professional.
- Undermining of public confidence if two health professionals, in similar roles and registered by two different registration authorities, are subject to different fitness-to-practise standards.
- Individual registration authorities being unable to understand the competencies of a role that is traditionally overseen by another registration authority.
- Adding a layer of complexity to the regulation of health professionals (CHRE, 2010a)

After consulting registration authorities, CHRE concluded that the broad areas of risk to patients can be managed by the existing arrangements, because registration authorities are already equipped to regulate advanced practitioner roles for their own health professions (CHRE, 2010c).

Management of nurse competency in the Netherlands

Following the 1997 changes to regulations in the Netherlands, de Bie and colleagues (2004) investigated how health practitioners determined competency in the process of inter-professional delegation of intra-muscular injections and bladder catheterisations between medical practitioners and nurses. Most gynaecologists reported that they expected nurses to perform restricted procedures just as well as gynaecologists could, while 50% of the trainee doctors thought nurses performed these procedures better than trainee medical practitioners.

There were differing opinions about how to determine competency. Some medical practitioners thought that each health practitioner was responsible for his or her own competency. Around 50% of the gynaecologists and 42% of nurses said that the change to regulations made no difference to their practice. Yet, when asked about competency, 70% of the medical practitioners indicated that they were unclear about how to determine the competency of a nurse, with some assuming the health service ensured that nurses were competent, and others assuming that nurses' training would make them competent. Some medical practitioners said that they seldom gave instructions when delegating these restricted procedures. For nurses, 33% indicated they were unclear about how to determine their own competence. Among those nurses who performed the reserved procedures, most said that they determined their own competence for each procedure. Half said their competency derived from nursing training, and half said they had a certificate of proficiency from the health service organisation.

The majority of nurses said they performed reserved procedures on the orders of a medical practitioner. However, a substantial number also said they performed these procedures on their own initiative without orders from a medical practitioner, although this is illegal in the Netherlands. These nurses were more likely to be males, in full-time employment, or older than 45 years. It was apparent that some nurses assumed they had delegated authority for these practices due to working under clinical policy guidelines or protocols.

Most of the health professionals surveyed thought the new regulations were an improvement on the previous regulations, particularly for nurses. However, the

researchers concluded that more education was required, and that confusion around the determination of proficiency could be cleared up if hospital management were to play a greater role in the process of determining competency (de Bie et al., 2004).

Management of medical competency in the United Kingdom

From 2001 the UK's National Competency Assessment Service (NCAS) provided expert support to the National Health Service (NHS) in the management of the conduct or competency of medical practitioners. While the NCAS service has been used at least once by all NHS organisations, most annual inquiries relate to just 2% of UK medical practitioners. NCAS considers a sample of 1,475 cases occurring between December 2007 and March 2008 to be representative of their first eight years of operation (NCAS, 2009). This sample reveals the following sources of competency issues concerning medical practitioners in the NHS organisations:

- Criminal or conduct issues for 33% of cases, mostly related to theft, fraud or financial matters, and some cases of sexual or aggressive misconduct.

- Poor behaviour in 40% of cases, mainly involving poor communications with colleagues, within teams, with managers, or with patients.

- Matters of individual clinical competency present in 54% of cases, and relate to a critical incident, diagnostic, record keeping, consultation, or prescribing skills.

- Personal health concerns in 24% of cases that contribute to mood changes, anxiety, depression, stress, and alcohol abuse.

- Governance and safety concerns in 36% of cases, related to risk management and quality assurance.

- Issues that relate to the workplace environment in 11% of cases, mostly related to inadequate support for teamwork, or to workload (NCAS, 2009).

Government-led changes to health practitioner roles in the United Kingdom

From 2000, the UK's Changing Workforce Programme (CWP) developed new roles at 13 pilot sites within English NHS organisations. A national programme office provided support and liaised with stakeholders including registration authorities. New roles were developed collaboratively with each health service with information about the roles contributing to a national repository to assist implementation elsewhere. By the end of

2003, 40 new roles had been implemented and were to be supported with 12 months of funding, while 51 were still in development. Many new roles involved additional tasks for nurses (31%), or for unregistered support workers 29%), and there were some extended roles for therapists, pharmacists, scientists, administrators, or medical practitioners. Researchers had difficulty classifying the new roles, as roles that were new to one area of healthcare could already exist in another area, and different job titles did not necessarily denote different job content. For instance, an 'Asian support worker' for stroke patients was similar to other 'support worker' roles. New roles were developed and trialled locally, but there was resistance to implementing roles seen as being 'imposed' through the national CWP repository (Hyde, McBride, Young, & Walshe, 2005).

There were three types of 'employee relations' problems with roles that crossed professional boundaries. First, increased or unequal remuneration could be a disincentive, with significant wage increases when home support staff performed some healthcare tasks, or the pay disparities between the nurses and the ambulance officers entering the new emergency care roles. Second, there were supervisory and accountability difficulties, such as who would be accountable when a doctor delegates the work of taking a patient's consent to a nurse. This illustration was solved when the health service agreed to be accountable for any adverse events that occurred in cases where a nurse obtained the patient's consent. Third, some health professionals resisted the transfer of work to unregistered health practitioners. For instance, when radiographers demanded that assistants complete two years training at a tertiary institution before being permitted to perform some plain X-rays. In contrast, pharmacists designed roles for pharmacy technicians as part of extending their medication audit service for mental health patients (Hyde et al., 2005).

Training ranged from on-the-job training through supervision by a health professional to training packages provided by tertiary educators. Some organisations were able to establish in-house training and some participants suggested that this was related to having personnel with experience in hospital-based training of health professionals. Training progressed better where health professionals were prepared to hand over work to other personnel. Managers were concerned that educators were too inclined to make courses into diplomas, or to include skills that contributed little to particular roles, and therefore they preferred to conduct the training for new roles in-house. The authors noted that

qualifications based training was more portable for the health practitioners, and concluded that CWP had developed local capacity for role redesign that was previously unthinkable (Hyde et al., 2005).

New roles in the UK's Changing Workforce Programme

Table 4: New health practitioner roles developed through the CWP

SERVICE AREA	NUMBER OF NEW ROLES	ILLUSTRATIONS
Advanced health practitioners	8	Consultant podiatrist, education health worker
Anaesthesia, critical care, pain management	8	Recovery support worker, extended role for image intensifier operator
Care for older persons	9	Nurse consultant, extension for home help role
Diabetes care	15	Diabetes care technician, extended role for senior diabetes nurse
Access and diagnostic services	7	New role for booking clerk, extended role for district care manager
Emergency care	10	New role for emergency care worker, extended role for emergency physiotherapists
Generalist and specialist care	9	New role for care coordinator, extended role for nurse practitioner in A&E
Mental health	20	New roles for support, time and recovery workers, occupational facilitator, extended role for pharmacy technicians
Primary care	13	New role for expert patient, extended role for healthcare worker
Scientists	14	Extended roles for laboratory assistants and pharmacy assistants
Senior house officers (medical practitioners)	22	New role for consultant pharmacist, extended roles for nurses and technicians
Stroke care	13	New role for consultant pharmacist, extended roles for nurses and technicians*
Wider healthcare team	5	New roles for housekeeper and support team worker.

* These roles are designed to free up the time of doctors, to meet European working time regulations.

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