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**Towards a systemic understanding of
a hospital waiting list:
boundaries, meaning and power**

A thesis presented in partial fulfilment
of the requirements
for the degree of Doctor of Philosophy
in Management Systems
at Massey University

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For Dawn

Abstract

Hospital waiting lists are a feature of public health care services that result when demand appears to exceed supply, and serve as mechanisms to ration health care resources. While waiting lists are usually conceptualised as rational queues, the dynamics of waiting lists, especially radiology waiting lists, are more complex and still poorly understood. The present study has attempted to better understand a problematic waiting list by adopting a systems approach known as boundary critique. A case study of an ultrasound waiting list was undertaken in which in-depth and semi-structured interviews were conducted with a variety of stakeholders.

Viewing the ultrasound waiting list systemically highlighted the role that a radiologist boundary surrounding the detection and confirmation of abnormal pathology played in constructing the ultrasound waiting list as a problem. This boundary was enacted through the process of double scanning, a symbol of radiologist expertise. General practitioners and patients employed a wider boundary, which focused on the management of clinical uncertainty. When the system in focus was widened to include this boundary, the process of double scanning became problematic. Double scanning contributed to the growth of the ultrasound waiting list and exacerbated the difficulty faced by general practitioners and waiting patients in managing diagnostic uncertainty.

To manage the tension created between radiologist and general practice boundaries, non-radiologist stakeholders undertook unrecognised and under-valued work that helped maintain the radiologist-centred systems of process and structure. Radiologists also employed a discourse of inappropriateness that downplayed the significance of delayed general practitioner referrals, which served to reinforce the primacy of the radiologist boundary. Conflicting boundaries highlighted that the ultrasound waiting list was managed in a way that did not act in the interests of non-radiologist stakeholders such as general practitioners and waiting patients.

Stakeholders proposed a number of interventions to manage the growing ultrasound waiting list. However, these primarily served to further strengthen the radiologist boundary and viewed as such represented a narrow improvement in terms of the interests of non-radiologist stakeholders.

The process of boundary critique helped to reframe the ultrasound waiting list in terms of radiologist dominance. Interventions based on the boundary judgements of general practitioners, waiting patients and sonographers were developed. The present study argues that the ultrasound waiting list can be better understood in terms of the role that boundary judgements play in constructing notions such as expertise, illness and appropriateness, which underlie a common-sense understanding of need, demand and supply.

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We continually find it important to realize that the way we have been brought up to perceive our world is not the only way and that it is possible to see beyond the “truths” of our culture. But metaphors are not merely things to be seen beyond. In fact, one can see beyond them only using other metaphors.

(Lakoff and Johnston, 1980, p. 239)

Glossary

TERM

ACC	Accident Compensation Corporation. ACC is a crown entity that funds private and public health care services such as rescue helicopters and physiotherapy with the purpose of covering the cost of personal injury to New Zealanders.
Community-referred contracts	Community-referred contracts are a legal agreement between the Health Funding Authority and the ultrasound service to scan patients who have been referred by general practitioners and community-based specialists for a given number of dollars. Contracts such as this operationalised the purchaser/provider split on which the New Zealand health was funded between 1993 and 2000. As well as specifying contractual volumes, contracts could also be based on quality and timeliness.
Demand	Demand refers to a non-legitimatised claim on scarce resources, although it may also refer to all claims regardless of legitimacy in an aggregated sense. When legitimised by a general practitioner's referral or specialist prioritisation, demand is converted into need. Both demand and need are problematic concepts, which depend on the situational notion of appropriateness. Demand is influenced by a multitude of factors ranging from increased public expectations to epidemiology transitions to the availability of health care services. Continuing problems associated with the growing gap between supply and demand has led to the adoption of a variety of demand reduction strategies including encouraging healthy life-styles and patient co-payments for health care services.

Double scanning	Double scanning is formally known as second look sonography and occurs when a radiologist rescans the patient in order to confirm to the sonographer's original findings. The stated aim of double scanning is to increase diagnostic accuracy through minimising the probability of missing abnormal pathology.
General practice	In New Zealand, a general practice setting is where general practitioners and practice nurses deliver primary health care to patients and their families in the community. General practices are mostly privately owned by general practitioners but publicly subsidised. Larger general practices may offer plain film radiography, physiotherapy and counselling services as well as health care services traditionally offered in smaller practice settings.
Health systems management	Health systems management is a term widely used to refer to the management of health care services and health care organisations. It is an applied field, in which organisational and management theories are applied to the planning, resourcing, organisation and delivery of individual and population health care services.
HFA	Health Funding Authority. At the time of data collection, the HFA was charged with the responsibility of allocating health funding via contracts to different geographical, priority and clinical areas. On 1 January 2001 the HFA merged with the Ministry of Health and the District Health Boards took on the combined role of purchaser/provider.
Inpatient	An inpatient is a patient who is admitted to hospital for

treatment.

Outpatient	In contrast to an inpatient, an outpatient is a patient who is not admitted but nevertheless undergoes diagnosis/short-term treatment at hospital.
Primary care	Primary care is health care delivered to patients and their families in a community setting. Primary care aims to comprehensively manage a variety of common illness and injuries drawing on the expertise of general practitioners, nurses, physiotherapists, counsellors and other health professionals. In New Zealand, primary health care services are usually delivered in the general practice setting. Primary care has traditionally been seen as fulfilling a gatekeeper role for secondary care services. However, increasing health care costs and declining health gains have seen initiatives to strengthen primary health care services. This has led to a broader view of health and a shift away from the medical model, which equates health with the absence of disease, to an understanding that views health as embedded in sociocultural, economic and political contexts.
Rational queue	A commonly adopted framework for understanding and managing waiting lists, which views a waiting list as an imbalance between supply and demand.
Secondary care	Secondary care refers to specialist health care services not offered in a primary care setting. Secondary care is usually associated with hospital-based medicine.
Supply	Supply is a catchall expression that refers to the capacity of a health care service to fulfil legitimate demand or need. While

supply is quantified in terms of people-hours and machine-hours, operations management philosophies such as TOC have brought a more sophisticated understanding, and highlight the importance of the bottleneck in limiting the output or the ability of a health care service to fulfil need. Sociologically, supply is a problematic concept that is contested by clinicians, policy makers and other health professionals. As well as calls for increased funding, the growing gap between supply and demand has seen increasing plays for autonomy by other non-medical health professionals such as nurses and radiographers, as typified by nurse prescribing.

TOC

Theory of Constraints. TOC is an operations management philosophy that regards the performance of an organisation determined by a bottleneck or a constraint.

TSI

Total Systems Intervention. TSI is a meta-methodology that employs a variety of systems methodologies in an appropriate and systemic manner to resolve complex organisational problems.

Chapter 1

Introduction

This thesis aims to better understand how diagnostic waiting lists are managed by drawing on recent developments in systems thinking to uncover novel understandings of why such waiting lists are intractable policy problems. This chapter provides the background information needed to appreciate the purpose of the present study, the significance of ultrasound waiting lists and the possible biases introduced into the present study by the researcher. The research approach and methodology is briefly outlined and this chapter concludes by detailing the structure of the thesis.

Background to the present study

It is a truism to say that health systems differ and that comparisons between health systems are problematic at best. Yet it is generally accepted that health systems world-wide are facing a number of common difficulties¹.

First, the costs of health care have risen continuously as demand has been swelled by demographic trends, epidemiological changes, technological development, and higher public expectations. Second, broad economic and political trends have served to restrict the supply of resources which governments and individuals have felt able and willing to make available. Third, health care services have apparently failed to produce a real, overall improvement in the health status of populations. (Hall, 1996, p. 1)

A range of supply and demand management strategies have been employed to manage the growing imbalance between supply and demand for scarce health care resources. Rationing – the process governing the distribution of scarce health care resources – has become a focal point for health management initiatives in the 1980s and 1990s. While in New

¹ Hay (1989) has noted that New Zealand decision makers have continually grappled with these issues since the 1800s.

Zealand² waiting lists have been extensively used as rationing mechanisms, it is generally accepted that waiting lists are unacceptably long and create a number of problems for policy makers, clinicians, and waiting patients (see Davis and Ashton (2000) for a review of the New Zealand health system). Despite general agreement that a problem of some description exists, there is little agreement between researchers and policy makers over the nature, magnitude or severity of the hospital waiting problem³ (Foote, Houston and North, 1999a).

A variety of interventions have been proposed to reduce or eliminate problem waiting lists. These have included: calls for increasing resource levels (for example, Heron and Boddie, 1993); priority guidelines to encourage appropriate referrals and help in managing existing backlogs (for example, Culyer and Cullis, 1976; Hardon and Holmes, 1997a); and improved operations management techniques such as the Theory of Constraints (for example, Foote, Houston and North, 1999b; Phipps, 1999). Problem hospital waiting lists have proven remarkably resistant to interventions, including increasing funding through targeted waiting list funds (Mullen, 1994; Cooper, 1995).

Some have used the apparent intractability of the hospital waiting list issue as evidence that health care is best rationed through the market mechanism, and it is commonly believed that growing waiting lists have resulted in the undermining of public confidence in the public health system. Partly in response to unacceptable waiting lists,⁴ the New Zealand health system was restructured along the lines of a purchaser/provider split in an attempt to make the rationing process more explicit. Again in 2000, waiting lists were used to justify a further restructuring of the health sector (Minister of Health, 2000).

² Waiting lists are similarly employed as rationing mechanisms in other countries with high levels of state financed health care expenditure such as the United Kingdom, Australia and Sweden.

³ As Chapter 2 will highlight, it also should be noted that there is no agreement even on whether waiting lists are undesirable or unavoidable. While undesirable politically, some wait is needed to ensure the efficient utilisation of scarce health care resources (Iversen, 1993). However, most researchers agree that waiting lists are larger than are necessary for scheduling purposes (Culyer and Cullis, 1976; Yates, 1987; Mullen, 1994).

⁴ New Zealand surgical waiting lists grew in size by 61 percent between 1981 and 1991 (Scott, 1994).

Cooper (1995) noted that since the 1991 – 1993 health reforms waiting list totals disappointingly grew by 50 percent. In an attempt to resolve the continuing and worsening waiting list issue and address the related lack of public confidence in the New Zealand health system, elective services waiting lists have been replaced with booking systems (Hefford and Holmes, 1999). The intention of the booking system is to give patients certainty of when and under what circumstances they can reasonably expect to receive elective services. In particular, the booking system claims to offer patients a guarantee that they will receive such services within six months of being assessed as likely to benefit according to clinical priority assessment criteria. Chapter 2 makes the case that the booking system is likely to behave as traditional waiting lists and suffer from similar problems such as manipulation and inadequate levels of funding.

Much of what is known about waiting lists is based on quantitative studies and commentaries of surgical waiting lists that conceptualise waiting lists as rational queues. The rational queue, however, is a poor fit with what is empirically known about waiting lists and most research and policy accounts take an overly simplistic view of waiting lists (Pope, 1991). A significant limitation of the rational queue, and the other waiting list metaphors reviewed in Chapter 2, is that they downplay the significance of stakeholder perspectives on how waiting lists are managed (labelling such perspectives as irrational). This leads to waiting lists being decontextualised from the cultural, political, professional, organisational and personal factors that govern waiting list dynamics. Alternative ways of conceptualising waiting lists that take into account stakeholder viewpoints are needed.

Purpose and significance of the present study

While surgical waiting lists have been extensively researched – albeit in a limited way - little is known about diagnostic waiting lists, which is curious given that rational treatment, and indeed the medical profession’s claim to expertise, rests on establishing a diagnosis that explains patient symptomology. Diagnostic waiting lists are also a significant area of research since the rationing dilemmas posed by growing public expectations, epidemiological and demographic transitions are particularly acute in specialities such as

radiology as demand is supplier induced driven by rapid technological development. Lentle and Aldrich (1997) see radiology as an expanding speciality, commenting:

While the history of radiology is rooted in Rontgen's discovery, subsequently most if not all of the known physical energies have been explored for potential use in diagnosis and treatment. (p. 282)

Today, radiologists produce ever increasingly accurate diagnoses employing a variety of imaging technologies and techniques⁵. Increasing technological sophistication has generally meant that more can be done and Dixon (1997) has declared "radiology... [as] the most rapidly evolving speciality in medicine" (p. 509). Technological developments increase the range of indications⁶ with the result that ultrasound-based diagnoses are playing an increasingly important part in primary and secondary care^{7,8}. Pickuth, Grover, Chiara et al. (1995) note that ultrasound examinations are often the first imaging studies carried out to confirm or exclude abnormal pathology. With international and national policy initiatives to strengthen primary health care services⁹, managing access to ultrasound services is likely to become increasingly important. Ironically, the New Zealand booking system (intended to control elective service waiting lists) is likely to further increase the demand for ultrasound examinations and consequently lengthen ultrasound waiting lists. Indeed, as Hillman (1997) notes, "[while] imaging has been one of the success stories of the 20th century medicine ... it is [now] under pressure from tight health-care budgets" (p. 731).

Durham and McLeod (1999a, 199b) and the New Zealand Health Review (1998) have examined the issue of access to radiology services in New Zealand. Durham and McLeod (1999a, 199b) examined how general practitioners (GPs) used rationed diagnostic imaging services in the central North Island. They did not, however, include the views of other essential stakeholders, notably those of waiting patients and radiologists. The New Zealand

⁵ See Kevles (1997) for an examination of the history of medical imaging.

⁶ An indication is evidence to suggest that a treatment, test or examination is justifiable and desirable.

⁷ Other developments in radiology of note include telemedicine ("radiology at a distance": see Wootton, 1996), interventional radiology (see Thomson, 1997) and increasing calls for evidence-based radiological practice (see Dixon, 1997; Lentle and Aldrich, 1997).

⁸ For an overview of ultrasound technology and its clinical applications see Appendix A.

⁹ The growing importance of primary care is due to a number of factors including fewer inpatient admissions, shorter inpatient stays, more day case surgery and the integration of long stay patients into the community (Sweeny, 1994).

Health Review (1998) considered only ultrasound waiting times for maternity services and one indication for an abdominal scan: the survey indicated that waiting for these indications for ultrasound is fairly widespread and an issue for some regions particularly given the undesirability of delaying diagnoses¹⁰.

While little is known about diagnostic waiting lists, it is unclear to what extent what is known about surgical waiting lists is applicable to diagnostic waiting lists. For example, in the case of surgical waiting lists patients are only notionally offered treatment (Evans and Price, 1999). Frankel (1993) has observed that waiting is limited to a small range of surgical procedures rather than being a widespread problem of delay throughout the health system. However, it might reasonably be assumed that all waiting imaging requests would be actioned given the importance of establishing a diagnosis.

The purpose of the present research was to better understand a diagnostic waiting list by conducting a case study of a growing (and seemingly intractable problem) ultrasound waiting list in a New Zealand regional hospital by sweeping in the (ir)rationality excluded by the waiting list metaphors such as the rational queue. The analysis of the case study data aimed to critique the notion of the rational queue, suggest alternative ways of conceptualising the waiting list and help shed light on why waiting lists are an intractable policy problem that are immune to solution.

Researcher's note

This section addresses an issue raised by Fox (1991) in his surgical ethnography:

And of course this paper is itself a text to be deconstructed: nothing has been said about the interests of Fox, the author. Who is he, and how did he come to be studying surgery? How did he select his extracts from his field notes? Why are there no patients' views in his ethnography? How does this paper fit into his career plans? (p. 742)

¹⁰ While statistics are kept for surgical inpatient waiting lists in New Zealand and may be accessed through various Ministry of Health publications (for example, Ministry of Health, 2001), information about the number of patients waiting for an ultrasound diagnosis is not available.

I feel it is important that the reader has an appreciation of my background as a researcher and how this has potentially influenced the adoption of particular methodologies and indeed the research findings. I am a manufacturing technologist with an interest in managing production bottlenecks. My interest in health systems began as an undergraduate student when as part of a final year research project I attempted to improve an outpatient appointment system using the Theory of Constraints (TOC), a structured approach to managing bottlenecks (Goldratt and Fox, 1986; Goldratt, 1990).

At the start of the PhD I saw TOC as a potential solution to the hospital waiting list problem. This approach was dismissed as unsuitable as TOC presupposes a particular image of waiting lists, which is inconsistent with known dynamics reported in the literature. Rather the interventionist meta-methodology Total Systems Intervention (TSI) (Flood and Jackson, 1991a; Flood, 1995a) and Ulrich's (1983) Critical Systems Heuristics (CSH) were chosen. This choice reflects a belief that research should go beyond reflection and critique, and a desire to work with the hospital service to improve how the ultrasound waiting list was managed. Given subsequent problems in contracting for an emancipatory intervention, these interventionist methodologies have been primarily used as research tools to satisfy the requirements of doctoral study, although following Midgley and Ocha-Arias (2001) they have been employed with the intent to intervene in health service management and health policy discourse.

Despite abandoning TOC it is perhaps unsurprising that I use manufacturing metaphors in this study to make sense of the case study data and these regularly appear in the findings. These are listed to give the reader an appreciation of a potential source of bias in the present research. As detailed in Chapters 5, 6 and 7 waiting patients are thought of as work-in-progress in order to overcome the problem of diagnostic hindsight. Radiologists are seen as problematic bottlenecks that employ various discourses to protect themselves from attempts by sonographers and other non-radiologist specialists to exploit or elevate the capacity of the bottleneck. Manufacturing type concepts such as buffering and decoupling have also been used to analyse case study data.

Methodology

While waiting lists have been depicted by researchers as bus queues (Yates, 1987), rational queues (Worthington, 1987), mortlakes (Frankel, 1989), and shops (Pope, 1991), this present research has adopted a systems approach which suggests that waiting lists are better conceptualised as messes, or sets of interacting issues (Ackoff, 1991). In problem situations involving different stakeholders with different purposes there are many possible competing images or metaphors, which Edelman (2001) regards as having the potential to become “the currency in which we think about and mutually negotiate changes in the world we inhabit” (p. 12). A critical interpretive understanding that reflects on the partiality of accepted understandings is essential. To this end, the systems approach of boundary critique was adopted that sought to ground an understanding of a particular ultrasound waiting list by sweeping in the subjective understandings of stakeholders that are excluded by current images of waiting lists, challenging current understandings of the hospital waiting list problem.

The present study is primarily structured around the creativity phase of TSI’s problem solving mode, which aims to surface a variety of perspectives in recognition of West Churchman’s insight that “[t]he systems approach ... discover[s] that every world-view is terribly restricted” (Flood, 1999a, p. 63). The creativity phase of TSI was enacted by conducting in-depth and semi-structured interviews with stakeholders involved or affected by the day-to-day management of the ultrasound waiting list. Stakeholder accounts were then analysed using grounded theory procedures of open and axial coding, and through the theoretical lenses of Flood’s (1999a) four systemic windows.

A key finding from the creativity phase was that many of the problems associated with the management of the ultrasound waiting list were due to the way in which radiologist expertise was enacted, structuring problems of access in ways that enhanced radiologist control over the diffusion of ultrasound technology. CSH was employed with the intent to demonstrate to health managers and policy makers that the radiologist-centred systems of process and structure were not objective givens but rather based on contestable

assumptions, and that alternative ways of organising the systems of access that were better attuned to the needs of waiting patients and GPs were possible.

Thesis structure

Chapter 2 reviews the hospital waiting list literature and reveals two gaps in the literature. First, most of the literature is dominated by accounts of surgical inpatient waiting lists and little is known about radiology waiting lists despite the importance of a diagnosis in biomedicine. Second, most research accounts assume that waiting lists can be conceptualised as rational queues yet empirically waiting lists behave in counterintuitive ways. Consequently, waiting lists and in particular radiology waiting lists are poorly understood. Chapter 3 details the purpose of the present research by utilising Frankel's (1993) observation that waiting lists can be better understood if the interplay between the rationality of the health system and the (ir)rationalities of stakeholders is examined. Using the systems approach of boundary critique, a case study of an ultrasound waiting list is proposed based on the creativity phase of TSI. Methodological issues are examined in Chapter 4.

Chapters 5 to 8 present the case study findings employing Flood's (1999a) four systemic windows of process, structure, meaning and knowledge-power. While Flood (1999a) affords equal importance to all systemic windows Chapter 5, which looks at the ultrasound waiting list in terms of process and structure, serves to contextualise the case study findings based on meaning and knowledge-power in order to understand the interplay between the (ir)rationalities of key stakeholders and the health system. In keeping with Flood's (1999a) typology the later chapters focus on the systems of meaning and knowledge-power. In Chapter 6 external stakeholder – GPs and waiting patients - accounts of the ultrasound waiting list are presented. Chapter 7 presents radiologist, sonographer and departmental managers viewpoints, which together represent internal stakeholder accounts. A number of key themes emerge, themes that are then critically examined in Chapter 8, which looks at the ultrasound waiting list through the systemic window of knowledge-power.

Chapter 9 explores what various stakeholders view as solutions to the ultrasound waiting list and based on the case study findings critiques the image of the rational queue. Chapter 10, employing CSH in its “is” mode examines and discusses the importance yet partiality of boundary judgements surrounding the management of the ultrasound waiting list. As a counterpoint CSH is employed in an “ought” mode. GP and patient interests and values are privileged and developed into systemic interventions with the intention to emancipate stakeholders including waiting patients and GPs from what is perceived as coercive aspects of the radiologist-centred ultrasound service. Chapter 11 concludes the present research by summarising the research problem, and presenting the main findings and recommendations for future research, policy makers and finally the ultrasound service.

Chapter 2

The hospital waiting list problem

This chapter reviews the recent literature on waiting lists as rationing mechanisms for health care services. First, the health care rationing debate within which the hospital waiting list problem is situated is considered. Second, prevailing views on why waiting lists exist, what is an acceptable wait, and metaphors describing waiting lists are discussed. In particular, the nature of the hospital waiting list problem¹¹, the techniques used to try to determine the extent of the problem and the responses that have been developed to try to solve the problem are reviewed. The metaphor underlying most waiting list research – the rational queue – is challenged as being too mechanistic and oversimplified to account for what some researchers have described as a multifarious (Harvey, 1993) and complex phenomena (Fraser, 1991).

Rationing health care services

Evans and Price (1999) contend that the rationing of health care is an economic necessity given that “the latter half of this century has seen a steady rise in the demand for health care that has outstripped the growth of economies, world-wide” driven by “the increased effectiveness of medicine” (p. 1). Although Evans and Price (1999) note that some view rationing as morally reprehensible, it is generally accepted that rationing in practice is inevitable.

The broad thrust of the health economist argument – that rational grounds must be sought for allocating finite resources in the face of the overwhelming demand – is now broadly accepted. The current debate is concerned almost exclusively with how to make choices in resource allocation, rather than whether choices should be made. (Frankel, 1993, p. 1)

¹¹ Herein referred to as the waiting list problem or waiting list issue.

Thus the need to ration health care resources is rarely questioned. Health economists tend to presuppose that the demand for health care is effectively infinite (the so called iceberg model of morbidity¹²) given the triple, and Weale (1998) argues inconsistent, aims of providing comprehensive, high quality and free health care. West (1993), however, has argued that the pessimistic view that demand is infinite is a logical absurdity and Frankel, Ebrahim and Davey-Smith (2000) recently have suggested that health managers may rather be facing a scenario of finite demand but infinite supply. For Frankel et al. (2000), “[m]isunderstanding, vested interests, and parsimony are greater problems than the potential level of demand” (p. 44). Illich (1975) also offers caution about what he sees as medical imperialism and the growing clinical, social, cultural and political iatrogenic influences on health.

Rationing frameworks centre on addressing what is rationed, who makes what rationing decisions and how health care is rationed. There are potentially many answers but it is generally accepted that the rationing process “according to the perspective of the commentator, [is] most likely to enhance effectiveness; be efficient, equitable, ethical or ... be politically feasible” (Frankel et al., 2000, p. 40). Rationing discourse supports only those interventions with proven efficacy and cost effectiveness, excluding interventions of questionable utility. According to this argument, it is therefore unethical not to ration as a decision to offer an unproven treatment is likely to divert scarce resources from treatments with proven benefits and may pose clinical risks to patients. This is a point of significance: Klein, Day and Redmayne (1996) have noted that a number of medical interventions are of unproved efficacy if results of randomised controlled trials are taken as the measure of acceptable evidence. The growing emphasis on evidence-based treatment has reinforced the notion that clinicians and researchers are best positioned to make rationing decisions.

There is some acceptance that health care services provided should conform or be consistent with the values and cultural beliefs in which the health system is embedded. Public or patient involvement in deciding under what circumstances health care services will be provided, however, is seen as problematic for the simple reason that patients lack

¹² See Donaldson and Donaldson (1993) for an explanation of the iceberg model of morbidity.

the necessary expertise to make rationing decisions. Dicker and Armstrong (1995) have attempted to explore patient positions on rationing and concluded “consumers’ views on health care priorities probably do not elicit the personal ideas of respondents but tap into a more general ideological position closer to an earlier collectivist notion of health care” (p. 1137). Attempts in New Zealand to establish public priorities for health care (under the core services approach) found that while the public agreed with the necessity of rationing it had difficulties in deciding what trade-offs between existing services should be made (Honigsbaum, Calltrop, Ham et al., 1995). Frankel (1989) in particular has been critical of the lack of organised patient interest in the waiting list issue.

Health care can be rationed using a variety of mechanisms, which are grouped according to the five D’s of rationing: deterrence, deflection, dilution, denial and delay (Klein et al., 1996). Rationing by deterrence discourages potential users from accessing health care resources, such as by travel times, patient part charges or co-payments, poor service encounters with health professionals and other barriers such as lack of information. Strategies that employ rationing by deflection attempt to divert the demand for a given health care resource to other resource centres, such as in the case of closed radiological tests, which result in increased outpatient referrals. Rationing by dilution refers to the ability of health professionals to offer more or less of a health care resource to patients including time and quality. Expertise may also be diluted such as in the case where patients see a nurse practitioner instead of a doctor, or house surgeon instead of a consultant. Rationing by denial occurs when treatment is withheld as in the dramatic case of Child B (Maxwell, 1995).

The waiting list problem

Rationing by delay offers the prospect of treatment notionally to those who are prepared to wait. This form of rationing has been criticised for creating “dumping grounds” where some waiting patients, particularly those to whom clinicians afford little priority, entertain little prospect in receiving timely treatment (Evans and Price, 1999). Waiting lists are perhaps the most widely debated means of rationing health care in New Zealand. As with

other countries such as the United Kingdom and Australia, waiting lists have grown in size and attempts to reduce or eliminate problem waiting lists have been largely ineffective (Morris, 1984; Cooper, 1995).

With the introduction of the New Zealand booking system to replace elective services waiting lists, the issue has been shifted to a wait for a specialist consultation in order to be booked. This has resulted in what some regard as invisible or “virtual” waiting lists. However, it should be noted that the implementation of the booking systems has seen the use of residual waiting lists for patients who have yet to receive a specialist assessment. In June 2000 some 37,133 New Zealanders were still waiting on residual waiting lists (Ministry of Health, 2001). An unknown but likely significant number of patients were also waiting for diagnostic procedures and community services where booking systems had yet to be introduced. A conspicuous lack of literature considering diagnostic and other waiting lists has meant that any literature review must draw principally on the surgical waiting list literature.

Researchers have studied waiting lists from a variety of disciplinary viewpoints, which have spanned philosophical, epidemiological, political and economic accounts (Frankel, 1993). Much has been written about three broad questions considered by researchers: what is an acceptable wait; what causes waiting lists; and what should be done with the waiting list problem? While there is some agreement about these questions, there is little agreement about the nature of the waiting list problem or potential solutions. The waiting list problem defies easy definition. Waiting lists can mean many things to many different people. The public may see waiting lists as evidence of inefficiency and inadequate funding. Managers worry about the viability of the service and the inability to close the gap between supply and demand. Politicians have commonly voiced concerns about waiting lists and used the waiting list problem as an indication of health care system failure and to justify health reform (for example, Minister of Health, 1991). However, it is patients who bear the brunt of the waiting list problem: some suffer from worry, others from pain and for a few death is a possibility (see Cropp, 1998).

There are three commonly used methods for assessing the extent of the waiting list problem: clinician-led medical audits, economic studies of waiting and waiting list statistics. Clinician-led medical audits have attempted to quantify the waiting experience in terms of longevity, morbidity and symptomology (Bloom and Fendrick, 1987). However, many waiting patients suffer from chronic conditions such as osteoarthritis of the hip or the knee, which tend to deteriorate at a slow rate and in some cases may self-correct (Tomlinson and Cullen, 1992). As West (1993) notes determining the extent of the waiting list problem from a medical perspective is problematic as each “condition may cause some pain, without being intolerable, and may cause some limitation of activity, without preventing essential activities of daily living” (p. 49). Indeed, Globerman (1991) has suggested that because a patient has waited it is indicative of the patient’s ability to wait longer still.

Most medical audits have focused on assessing the health status of patients waiting for cardiac bypass operations (see Mulgan and Logan, 1990; German, Nuwahid, Matthews et al., 1993; Agnew, Whitlock, Neutze et al., 1994; Naylor, Sykora, Jaglal et al., 1995; Derrett, 1997; Doogue, Brett and Elliott, 1997). Doogue et al. (1997) found that of 88 patients waiting on a coronary bypass waiting list, one patient had died, one had suffered a myocardial infarction and seventeen were re-admitted to hospital with unstable angina. Clinicians have rarely audited outpatient waiting lists. One of the few studies to examine the health status of outpatient department patients is that by German et al. (1993). After examining 55 patients with symptoms of bladder outflow obstruction and diagnosing seven new cases of prostate cancer, German et al. (1993) conclude that “a long wait for a patient with bladder outflow obstruction for a specialist opinion is both undesirable and unacceptable” (p. 429).

Because medical audits have drawn on case-notes, clinical assessments and highly structured survey tools, patients have seldom been asked opened-ended or broader questions about waiting. Day-to-day concerns of waiting patients have rarely been considered. Consequently, little is known about patient concerns other than what is described in the media (Martin, Elliot and Hart, 1995).

The size of the waiting list problem

Waiting list statistics have been used by researchers to quantify the waiting list problem in terms of how many people wait, how long they wait and what type of care they wait for (Bloom and Fendrick, 1987). While waiting list statistics are extensively used by policy makers, it is generally accepted that waiting list statistics are difficult to interpret due to difficulties in deriving analytical expressions to measure waiting times (see Cottrel, 1980 cited by Harvey, 1993), sampling biases produced by survey tools (see Don, Lee and Goldacre, 1987; Gillet and Katauskas, 1993), the failure to account for the dependency that exists between inpatient and outpatient systems (see Smith, 1994), and debate over whether waiting lists are over-inflated or under-inflated (see Yates, 1987).

For the purposes of this review, the disagreement in the literature on whether waiting lists are over-inflated or under-inflated is discussed. Most recently, clinicians and opposition politicians have taken issue with the introduction in New Zealand of a booking system where patients who are unlikely to benefit from treatment have been removed from waiting lists resulting in what many regard as a hidden queue. This under-inflates the waiting list length. Other commentators content that waiting list lengths are over-inflated because sizeable proportions of waiting patients are unavailable or unsuitable for treatment. Other arguments for over-inflation include poor record keeping practices where patients may be double counted or not removed from the waiting list after treatment (Elywn, Williams, Barry et al., 1993) and GPs who refer patients to consultants well before the patient may need treatment (Yates, 1987).

This uncertainty over over-inflated or under-inflated numbers has provoked three responses. First, the over-inflation view appears to have been whole-heartedly embraced by managers and politicians who are keen to reduce waiting lists by eliminating from the waiting list patients who are either unavailable or unsuitable for treatment. This approach, despite its promise, is problematic. Reviews are difficult to carry out in practice and more seriously, waiting list audits are conceptually flawed because they fail to address the core

problem: the lengthy waiting list. A second response, which also does nothing to reduce waiting lists, is to call for the accuracy of waiting list statistics to be improved using standardised definitions and regular audits (for example, Gilley and Katauskas, 1993). This approach is expensive and the benefit derived from standardised definitions is unclear simply because there is no agreement over what waiting list statistics measure (Fraser, 1991).

A third response is to do nothing. Ignoring waiting list statistics, however, is unsatisfactory because of the intuitive link between long waiting lists and patient suffering which, while rarely discussed in the literature, is commonly reported by the media. Economic studies of waiting lists have discussed the notion of the time-cost relationship¹³ (Lindsay and Feigenbaum, 1984; Cullis and Jones, 1986). However, Lindsay and Feigenbaum (1984) have dismissed the notion that a patient accrues time costs because patients do not “stand in line.” In other words, there is no opportunity cost for patients because they are free to do what they please until they are called up for treatment. This notion that a waiting list is not a queue raises the question about what framework policy makers should be using to understand what effect waiting has, and how the effectiveness of waiting list proposals such as the booking system should be assessed.

A patient perspective highlights one of the key difficulties if the waiting list problem is assessed in terms of longevity, morbidity and symptomology. Of equal importance is how do patients cope with waiting on a day-to-day basis, which might include whether patients receive support from relatives and friends (Martin et al., 1995). Without understanding patient viewpoints it becomes difficult to understand the extent of the waiting list problem.

Proponents of the over-inflation view have failed to realise that the large number of patients unavailable or unsuitable for treatment are the direct result of inappropriately long waiting lists. However, the under-inflation view is equally deficient as it fails to define which patients should be treated. It should be noted that the over-inflation debate illustrates the

¹³ Queuing models also implicitly use the time cost concept when implications of balking and renegeing are discussed.

mission-challenged nature of health care systems. With no identifiable goal it becomes hard at the operational level to manage scarce resources effectively. Likewise, researchers are unclear about what function waiting lists perform. In a resource scarce context without a common currency to compare the utility of different services, decisions using delay as a rationing mechanism become arbitrary.

Although descriptive accounts quantifying the waiting list problem suffer from conceptual and methodological difficulties, they have produced a number of insights. Waiting time distributions are heavily skewed by a few patients who wait an inordinate length of time (Buttery and Snaith, 1979; Pope, Roberts and Black, 1991). This has led some researchers to suggest that waiting lists resemble “dumping grounds” for patients for whom all hope of receiving timely treatment is gone: waiting patients are in limbo.

Problem waiting lists, defined by the number of patients who wait for surgery, appear to be confined to a small number of surgical specialities rather than reflecting a widespread problem. A review of the United Kingdom’s National Health Service (NHS) waiting lists by Davidge, Harley, Vickerstaff et al. (1987) found that 75 percent of waiting patients belonged to general surgery, trauma and orthopaedic, ear nose and throat, gynaecology and ophthalmology services. In New Zealand, Fraser, Alley and Morris (1993) noted that most patients waited for procedures such as cataracts, tonsils and adenoids, cardiac artery bypass grafting, varicose veins and hernias.

For researchers the suggestion that delay is not a general problem but is highly specific is difficult to explain. Why do patients suffering from chronic conditions that are easily treatable share an uneven burden of waiting? A number of possible answers to this question ranging from resource inadequacies to clinical mismanagement have been presented in the literature and will be reviewed in a later section.

What is an acceptable wait?

Interest in the question “what is an acceptable wait?” is relatively recent and marks a change in strategy from eliminating to managing waiting lists (see Hemmingway and Jacobson, 1995; Kigma, 1995). Although Edwards (1996) has noted “this has served to deflect attention away from the role of waiting lists as a rationing mechanism” (p. 558), studies have generally accepted that waiting lists or some other form of rationing is needed. While researchers readily give opinions on what they consider as an acceptable wait¹⁴, no analytical framework or heuristic advice has been proposed.

The acceptability debate currently centres on clinical considerations that determine sequencing and the waiting times of individual patients. Interestingly, research has noted that other factors influence sequencing decisions. West (1993) has noted that waiting list clerks never follow to the letter the rules given to them by consultants. Pope (1991) even found that patients with notable circumstances were more likely to be selected for treatment. Pope’s (1991) account highlights the importance of what happens during the hustle and bustle of a typical day, or when the system is stressed. Researchers have recently polled patients on what they consider as an acceptable wait (Derrett, 1997; Dunn, Black, Alonso et al., 1997). The usefulness of the results is limited, as it does not consider the trade-offs that patients may be willing to make between public services and with other patients.

Other researchers have suggested that the extent to which a patient can benefit from treatment should be used to define an acceptable wait. This has resulted in a number of proposed selection criteria. Culyer and Cullis (1976) suggest that patients should be ranked according to medical urgency; time already spent on the waiting list; social productivity; number of economic dependents; and other social factors. In New Zealand selection criteria have been developed by clinicians for cataract surgery, coronary artery bypass grafting, hip and knee replacement, cholecystectomy and tympanostomy tubes for otitis media with

¹⁴ Frankel (1993), for example, believes that no patient should wait more than one year before they receive surgery.

effusion (Hardon and Holmes, 1997a). Important selection factors include clinical urgency; age; threat to independence; care of dependents; and ability to work. Hardon and Holmes (1997b) note a strong correlation between clinician defined acceptable waiting times and the selection criteria.

Cost is another potential way of defining an acceptable wait, although few studies have attempted to empirically quantify the financial cost of waiting. Derrett (1997) examined a number of costs incurred by patients and the hospital but failed to account for administration costs, which are likely to be significant (Iversen, 1993). Little is known about the impact of cost shifting to the community, in particular to employers and to unwaged caregivers.

A rarely considered factor in the acceptability debate is that a pool of patients is needed for scheduling purposes and some wait is necessary to maintain the treatment output rate (Iversen, 1993). Scheduling considerations include: an acceptable level of theatre utilisation; an appropriate balance between major and minor surgical procedures; and a good mix of surgical procedures for teaching or research. Moreover, certain conditions such as cataracts need time to “ripen” before the patient is suitable for surgery (Newton, Henderson and Goldacre, 1995). Iversen (1993) has argued that too large a wait can result in a reduction of the throughput rate. As the waiting list grows in size, the resources needed to manage it also increase, diverting scarce resources from treatment to administration. Further, patients whose conditions deteriorate may have to be admitted to hospital and may cancel elective surgery sessions (Doogue et al., 1997). Other inefficiencies resulting from lengthy waiting lists, such as increased numbers of unavailable or unsuitable patients, can result in cancelled theatre sessions, further reducing the output rate.

While from an operations management viewpoint it is clear that an optimally sized waiting list exists, it is perplexing that some clinicians justify the need for longer waiting lists (Yates, 1987). As waiting lists include large numbers of unavailable or unsuitable patients, each unavailable or unsuitable patient reduces the effective size of the scheduling pool, and so reinforces the perceived need for a larger scheduling pool. Yet, most researchers agreed

that waiting lists are larger than are necessary for scheduling purposes (Culyer and Cullis, 1976; Yates, 1987; Worthington, 1991; Mullen, 1994) and this may explain why scheduling is rarely considered in the acceptability debate. Few researchers have attempted to quantify the optimal size of the scheduling pool although Yates (1987) has suggested that waiting lists should contain somewhere between 50 to 100 patients.

While it generally accepted that waiting lists are a problem, there is little agreement over the severity and extent of the problem. Even so called objective methods such as waiting list statistics and medical audits are problematic. Much of what is known about waiting lists is contentious and subject to interpretation: the situation is messy. The size is uncertain and issues interact.

What causes waiting lists?

One answer to the question what causes waiting lists dates back to the inception of the NHS in the United Kingdom. In 1948 the NHS was founded on the assumption that the demand for health care resources would decrease once a temporary backlog of demand was cleared (Davey and Popay, 1993): waiting lists represented a pool of unmet demand – a backlog – that could be eliminated once surgical capacity was temporarily increased (Mullen, 1994). While simple and intuitively appealing, the evidence needed to support the backlog theory is limited. As total waiting list numbers, despite increasing, have remained relatively constant as a percentage of total throughput (Frankel, 1993), the backlog theory fails to account for a number of important observations. For example, it is unable to explain why new additions to surgical waiting lists tend to follow surgical admissions or why excessive waiting times are limited to a small number of surgical specialities.

The backlog theory embodies the most common explanation for the existence of waiting lists: waiting lists are mechanisms for resolving the gap between supply and demand, and whenever demand exceeds supply waiting lists form. This frames the waiting list as a queue. According to Pope (1991) the rational queue provides a natural framework for categorising the waiting list literature, as researchers have tended to search for reasons why

the rational queue is malfunctioning or why the actions of stakeholders such as clinicians and patients cause the queue to behave in an irrational way.

According to free market economists the absence of the price mechanisms means that demand will always exceed supply. In this respect, waiting lists are inefficient and because the “market knows best” are economic anomalies (Street and Duckett, 1996). However, in contrast to the belief of policy makers that patient part charges will reduce demand and so lessen the load on the public health care system, it is unclear whether the introduction a price mechanism will eliminate or eliminate waiting lists. As either cause or solution, the price mechanism is unsatisfactory because it fails to consider the value of equity that underlies national public health systems such as the NHS.

It has been suggested that waiting lists are in part caused by poorly managed inflows into waiting lists (Fraser et al., 1991). It is thought that some referrals are inappropriate and consequently increasing the output rate has little meaning, as it is “a pointless objective if the procedures carried out are unjustified or ineffective” (Jennett, 1987, p. 797). As health care resources are limited, minimising inappropriate variation in principle can free up resources (Grimshaw and Hutchinson, 1995) and reduce waiting lists. Best practice guidelines are becoming increasingly popular although the utility of this approach is difficult to assess since issues such as cost-effectiveness appear not be addressed in the literature.

Many internal and external disruptions and inefficient/ineffective work practices are thought to reduce surgical capacity and lead to waiting lists that are longer than necessary. Factors external to the surgical facility can reduce its efficiency. Patients are thought to contribute to lengthy waiting lists by failing to attend and by becoming unsuitable for treatment. In both cases valuable surgical capacity may be wasted. However, these patients may become unsuitable for treatment simply because they are continually “overlooked” in favour of urgent or clinically interesting cases as Frankel (1989) suggests. It is widely believed that that eliminating “did not attends,” unsuitable or unavailable patients could greatly reduce the size of waiting lists and make the waiting list problem more manageable.

The empirical evidence suggests that external disruptions have a marginal influence. Frankel, Farrow and West (1989) have shown that patients who did not attend account for less than three percent of cancellations. Other external disruptions include the impact of industrial action by junior doctors and nurses, which can result in operations being postponed or cancelled (Yates, 1987) as well as broader shifts in government policy (Blank, 1994).

Researchers have systematically documented the inefficiencies that occur in operating theatres (for example, Fox, 1992) and have found that common causes of delay include prior patients (with surgical complications), patients not ready for surgery, a number of disruptions labelled as anaesthesia disruptions, and late additions to the surgical list. All these can be seen as problems of patients as work-in-progress.

The adequacy of resource levels has been questioned by a number of stakeholders and it has been suggested that waiting lists are caused by an intentional mismatch between supply and demand brought about by inadequate funding (for example, Hamilton, 1997). Gillet and Katauskas (1993) have noted that shortages of specialists, nurses, beds, operating theatres and donor organs all contribute to lengthy waiting lists. Similarly, Heron and Boddie (1993) have argued that more staff are needed to fix the waiting list problem. Evidence to support the proposition is mixed and almost certainly represents an oversimplification of the waiting list problem. In what seems a counter-intuitive result, Goldacre, Lee and Don (1987) and Newtown et al. (1995) found that an increase in hospital admissions was associated with an increase in referrals. Harvey (1993) has suggested that Goldacre's et al. (1987) result can be partly explained because waiting lists are commonly used to improve the utilisation of scarce health care resources. However, as previously noted, most researchers agree that waiting lists are larger than necessary for scheduling purposes. It is not possible to dismiss Goldacre's et al. (1987) finding so easily: the relationship between supply and demand appears to be conceptually complex¹⁵.

¹⁵ The inflow onto waiting lists is likely to be influenced by treatment capacity. Supply and demand is probably not exogenous as econometric models assume (Worthington, 1987; Mullen, 1994). This has led to two competing explanations: the encouraged patient hypothesis (see Frost, 1991; Bloom and Fendrick, 1987) and the discouraged patient hypothesis (see Klein, Day and Redmayne, 1995).

It is generally accepted that bottlenecks are a sign of either inefficiency or inadequate funding and need to be eliminated (for example, West, 1993). Lengthy waiting lists have been blamed on various bottlenecks. However, this is a mistaken view. How the bottleneck is managed is important. As the bottleneck limits the total number of patients treated, failure to correctly manage it means a sub-optimal throughput rate and increased levels of congestion, which can lead to scarce resources being diverted to what amounts to unproductive and unnecessary work.

All of the preceding discussion presumes that a rational queue exists, it can be modelled and efficiently improved but it is generally accepted that neither the phenomenon nor the participants involved or affected by waiting lists behave rationally. A number of irrational causes for lengthy waiting lists have been documented in the literature. As owners of waiting lists, doctors have been criticised for mismanaging waiting lists for financial or professional gain. The curious arrangement where consultant clinicians have dual appointments and may use lengthy waiting lists to encourage patients to opt out of the public health care system has generated a lot of discussion. Leading the attack on the clinicians is Light (1996) who has argued “British surgeons and anaesthetists are short changing their patients and the NHS in order to stuff their pockets with gold” (p. 812). Richmond (1996) and Hamilton (1996) have objected to Light’s (1996) comments claiming that it is the purchasers who control waiting lists and that only a small number of consultants abuse the trust that patients and the public put in them.

Other irrational factors include the supposed prestige associated with waiting lists, where the length of the waiting list is sometimes equated with the skill of the consultant surgeon (Yates, 1987) and government and hospital willingness to allocate additional resources to departments with lengthy waiting lists (Iversen, 1993). Frankel (1989) also points to an apparently apathetic public that would seem to tolerate lengthy waits.

What should be done with the waiting list problem?

Both rational and irrational causes for the waiting problem have been suggested. Despite the lack of agreement as to what causes waiting lists, interventions have been made to try to solve the problem. None of the interventions have effectively addressed the waiting list problem (Mullen, 1994; Cooper, 1995). Morris (1984) notes:

[W]ith so much advice on a chronic and apparently unremitting problem the cynic might be forgiven for calling to mind the clinical dictum which suggests that the greater the number of remedies for a particular condition the less the likelihood that any is really effective. (p. 272)

Examples of suggested interventions include calls for increasing resource levels (Heron and Boddie, 1993); stylised queuing models for determining resource levels (Worthington, 1987, 1991); proposals of priority guidelines for encouraging appropriate referrals and managing existing backlogs (Culyer and Cullis, 1976; Central Health, 1997; Hardon and Holmes, 1997a, 1997b); and suggestions for improving scheduling methods for optimising utilitarian objective functions (Sier and Ralph, 1995; Sier, Tobin and McGurk, 1997). Encouraged by results of medical audits, a number of managers have also embarked on conducting their own audits in the hope of reporting reduced waiting list lengths (Yates, 1987). Population-based contracting has been used as a tool for controlling public perception of the size of the waiting list problem (Economist, 1992; Mullen, 1994).

In New Zealand elective services waiting lists have been replaced with booking systems, which is widely regarded as a significant advance in the management of waiting lists. Specialists will assess patients using clinical priority assessment criteria, which score patients according to clinical need and the ability to benefit from treatment (Evans and Price, 1999). Points are allocated for clinical urgency, age, threat to independence, care of dependents and ability to work (Hardon and Holmes, 1997a). Patients who “earn” enough points are given a firm date for treatment, although the correct role of the clinical priority assessment criteria is to guide clinician decision-making. Patients who score under the threshold (clinical or financial) are either placed on a residual waiting list or sent back to

their GP for continued management. An overview of the booking system can be found in Hardon and Holmes (1997a) and Hefford and Holmes (1999).

It is generally accepted that there are a number of problems with the booking system (Gauld, 2001). It is unclear how robust the booked dates will be and whether this will expose hospitals to litigation from patients and GPs. Anecdotal evidence suggests that scheduling is poorly done in hospitals and reported implementations of a similar booking system in the United Kingdom have noted that consultants use diaries to schedule patients, a technique that is unlikely to be an effective means of scheduling (Frankel and West, 1993). Unless funding matches the clinical criteria the booking system is unlikely to resolve the waiting list problem. Another problem with the booking system is that because of its rigidity certain patients will be excluded from treatment because of the weightings that are given to each factor. Another difficulty associated with the scoring system was highlighted when the booking system was introduced. Clinicians opposed to its introduction announced their intention to manipulate the scoring system in order to ensure that their patient received treatment. While it is unclear whether this will turn out to be the case, it nevertheless illustrates that the booking system is open to manipulation, and the actions of stakeholders may subvert its intention.

Operations management techniques such as the TOC¹⁶ have been suggested as a means to better manage the gap between supply and demand (see Motwani, Klein and Harowitz, 1996; Phipps, 1999) and are likely to be instrumental in guaranteeing that booked dates under the booking system can be kept. Foote et al. (1999b) have argued that the application of TOC to health care systems is problematic noting likely difficulties in following its five focusing steps based around identification, exploitation, subordination and elevation of bottleneck and non-bottleneck resources.

¹⁶ Readers wanting more information about TOC are referred to Goldratt and Fox (1986), Goldratt (1990) and McMullen (1998).

Images of waiting lists: what is a waiting list like?

A central question is how has the waiting list phenomenon been described to formulate potential interventions: how is a waiting list seen? While physically a waiting list is an administrative structure – little more than a list of names – its definition is problematic. Waiting lists cannot be directly observed. Patients do not stand in line. A similar problem faces researchers. Waiting lists have been predominately described using four metaphors: the bus queue, the rational queue, the mortlake and the shop.

The bus queue is a popular conception of how a waiting list behaves (Yates, 1987; Pope, 1991; Cooper, 1995). This model emphasises order: a form of blanket equality where patients receive treatment after waiting their turn. As a result, it is of little surprise that the public is interested in media reported waiting list statistics such as waiting list length and total waiting time. Given what is known about the sequencing rules that clinicians use to prioritise patients, the bus queue is undoubtedly oversimplified and is probably only used when clinicians cannot distinguish between patients or when non-urgent patients streams are sequenced. The first-come-first-serve heuristic may also have the advantage that it is administratively simple and is seen as fair.

The idea of the rational queue is common in most managerial and research accounts of waiting lists (Pope, 1991). Despite the similarity that exists between the bus and rational queues, the rational queue differs in one important respect: it makes no assumption about the queue discipline except that it is rational. The bus queue can be seen as a special case of the rational queue. Treating a waiting list as a rational queue leads to a focus on managing productive capacity through efficiency gains, improved prioritisation and better demand management in order to balance supply with demand.

Despite its intuitive appeal, the rational queue has been criticised by some researchers such as Frankel (1989) and Pope (1991) as too mechanistic and restrictive. It is a poor fit with how waiting lists behave in practice as Pope's (1991) ethnographic account of waiting list administration demonstrates. Many interventions that flow from the image of the rational

queue are ineffective. While increasing productive capacity improves immediate accessibility, it has the effect of stimulating further demand and thus lengthening waiting lists. Attempts to allocate capacity more rationally raises a number of problematic questions (that are characteristic of the rationing debate) including who ought to make what rationing decisions, and what criteria best ensures that scarce resources are effectively utilised? The value in the rational queue is that it reflects how stakeholders believe a waiting list should operate: upholding notions of fairness and justice, which are common justifications for bureaucratic interventions (Herzfeld, 1993).

Frankel's (1989) concern over the disproportionate number of patients waiting for cost effective – though clinically uninteresting - procedures led him to propose a contrasting image of waiting lists, a mortlake or pool of unmet demand.

We are not dealing with a simple queue where flow of demand is dammed back by banks that are too narrow. The formation of a waiting list corresponds more with the development of an ox-bowl lake. The meandering flow succeeds in taking a short cut, and so leaves an isolated lake. Similarly the flow of acute care finds a way of isolating a selected portion of the demand upon it. (p. 57)

Frankel (1989) suggests that the mismatch between the surgical signature and waiting list signature is the result of clinical priorities and an apathetic public that appears to tolerate lengthy waiting lists. As a simple measure of clinical priority, Frankel (1989) has compared the number of research papers with the number of deaths and discharges of various conditions. Those conditions associated with long waiting lists such as cataracts and adenoids attract little interest in the research literature despite the large number of deaths and discharges, leading to the claim that clinical interests dominate waiting lists.

Whether Frankel's (1989) crude measure of clinical priority supports the idea that clinicians mismanage waiting lists for professional advancement and interest is unclear for a number of reasons. First, it is generally accepted that most waiting list conditions are not complex and as Jennett (1987) points out further research is probably not warranted. Second, it is difficult to tell from the literature whether research interests do in fact reflect the day-to-day interests and contractual obligations of clinicians. Third, the mortlake metaphor fails to account for the existence of waiting lists for cardiac artery bypass grafting, a procedure that

is both clinically interesting and enjoys public support (Derrett, 1997). The mortlake metaphor is nevertheless valuable in that, by drawing attention to clinician aspirations (to be surgical entrepreneurs rather than surgical technicians), Frankel (1989) offers a possible explanation for the endurance of problem waiting lists, and challenges the commonsense notion that waiting lists reflect the mismatch between supply and demand.

Both the rational queue metaphor and the mortlake metaphor are critiqued by Pope (1991) who claims that:

[The] medical literature has done much to show where waiting lists occur and has indicated that there is considerable variation across specialities, procedures and locations. What it has singularly failed to do is uncover the mechanics of waiting lists. (p. 197)

Pope's (1991) study of a surgical waiting list office considered how managers and waiting list clerks influence and manage the waiting list. As a result Pope (1991) proposed a third image of waiting lists: the shop. This image examines how various actors constitute the day-to-day organisation of waiting lists, but does not consider other perspectives, notably those of waiting patients. Consequently, Pope's (1991) shop metaphor as with the bus queue, rational queue and mortlake metaphors largely discounts the significance of stakeholder perspectives, which are critical if waiting lists are to be understood systemically (Flood, 1995a).

In Frankel's (1993) later writings on the mortlake metaphor, he conceptualises the waiting list problem as a discrepancy between the rationality of the health system and the individual (ir)rationalities of various stakeholders. This conceptualisation of the waiting list problem is important since it implicitly recognises that no one waiting list metaphor is likely to capture the economic, political, organisational and professional complexity of waiting lists. In particular, Frankel's (1993) insight highlights the role of culture, interests and power and the importance of stakeholders who play an active part in constituting problem waiting lists, but interprets stakeholder purposes and actions with respect to economic rationality. Nevertheless, waiting list metaphors need to be grounded in the concerns, dilemmas and experiences of stakeholders such as waiting patients and clinicians rather than the dictates

of economic theory or queuing models. A new image of waiting lists that captures the diverse realities of waiting list management is warranted.

This potentially promising avenue of research has received little attention in the waiting list literature. While clinicians have been vocal about problem waiting lists and drawn attention to resourcing issues, surprisingly little is known about how other stakeholders conceptualise waiting lists. In particular, little is known about patients' perspectives nor how organisational processes and structures influence stakeholder viewpoints. Understanding these issues may provide a systemic basis for understanding the three questions that researchers have attempted to address: what is an acceptable wait; what causes waiting lists; and what should be done with the waiting list problem?

Conclusions

Hospital waiting lists are commonly employed as health care rationing mechanisms. While waiting lists help to balance demand with supply, it is generally accepted that waiting lists are unacceptably long. Waiting lists have also proved difficult to manage. As with other countries with similarly high levels of state financed expenditure on health care such as the United Kingdom and Australia, waiting lists have grown despite interventions such as increasing funding to control either waiting times or waiting list lengths (Morris, 1984; Mullen, 1994).

Much of what is known about waiting lists is based on studies or accounts of surgical waiting lists and consequently little is known about diagnostic waiting lists. Researchers and policy makers have drawn on three main images of waiting lists to understand and better manage waiting lists, although most accounts and interventions assume that waiting lists behave as rational queues (Pope, 1991). Waiting lists do not behave as rational queues and it is this unpredictability and resistance to intervention, which frustrates attempts to manage waiting lists. The image of the rational queue (as with other waiting list metaphors) downplays the significance of stakeholder perspectives, as it labels behaviour not consistent with its assumptions as irrational. Following West Churchman's insight detailed in Chapter

1, that every world-view is terribly restricted, the uncritical adoption of the image of the rational queue by researchers and policy makers has resulted in a poor systemic understanding of the waiting list issue. Consideration of directly affected stakeholders perspectives might result in alternative images of waiting lists and more effective and sustainable solutions. This argument is the basis of Chapter 3.

Chapter 3

Problem Statement and Research Framework

In Chapter 2 the nature of the hospital waiting list issue was examined. While much has been written about waiting lists, there appears to be little agreement among researchers and policy makers over the extent or the nature of the waiting list problem. Despite the absence of this basic understanding researchers and policy makers have nevertheless attempted to explain why waiting lists exist and determine what should be done to reduce or eliminate them. Waiting lists remain poorly understood and most interventions are ineffective.

This chapter argues that to better understand waiting lists, more attention needs to be paid to waiting lists conceptually as part of the problem setting process that defines the nature of the problem (Schön and Rein, 1995). Alternative images that acknowledge stakeholders perspectives are needed. To this end, this chapter introduces a case study of a hospital ultrasound waiting list, which aimed to uncover the viewpoints and images held by key stakeholders such as radiologists, sonographers, departmental managers, GPs and waiting patients. This chapter also theoretically grounds the case study by examining the selected research framework Critical Systems Thinking and its practical enactment TSI.

Towards reframing the waiting list problem

At the outset of the present research the possibility of employing TOC as a potential solution to the waiting list problem was considered. TOC, however, shares a common focus with the rational queue metaphor in that it is concerned with the management of productive capacity. In reviewing the waiting list literature it became apparent that waiting lists were not, in fact, rational and after critical review TOC was dismissed as an unsuitable solution approach.

While waiting lists may administratively behave as rational queues, the meaning that stakeholders attribute to waiting lists may cause waiting lists to behave unlike rational queues. Despite the importance of stakeholder perspectives to understanding waiting lists, it is perplexing that little is known about how stakeholders view waiting lists and how these stakeholder perspectives constitute a problem, which appears immune to rational solution approaches. The present research is based on the premise that waiting lists are complex primarily because they are the creative constructions of stakeholders and cannot be understood from a single perspective. To appreciate the complex nature of the waiting list problem, the research adopted a systems approach rather than conceptualising waiting lists as rational queues, mortlocks or shops. West Churchman (in Flood, 1999a, p. 63) characterises the systems approach¹⁷ as:

- The systems approach begins when you see the world through the eyes of another;
- The systems approach goes on to discover that every world-view is terribly restricted;
- There are no experts in the systems approach; and that
- The systems approach is not a bad idea.

While waiting lists tend to be reified by researchers and policy makers, a systems approach cautions against accepting the waiting list problem as an objective given and the adoption of interventions that attempt to efficiently manage existing – and presumably – scarce capacity. Rather waiting lists were conceptualised as messes, which Flood and Jackson (1991b) contrast with problems:

The systems age is about whole whose essential properties are lost when they are taken apart.... Messes are complex systems of changing problems; problems being abstractions from messes by means of analysis. (p. 15)

A mess, as its common-sense meaning indicates, is a set of interacting issues, which “cannot be clearly defined and are not susceptible to ‘solution’” (Clarke and Lehaney, 1997, p. 615). An important consequence of defining a waiting list in terms of a mess is that it is misleading to refer to *the* waiting list problem. Following Ackoff (1991) a problem

¹⁷ It should be noted that what is understood as the system approach varies according to hard, soft or emancipatory rationalities. However, all systems methodologies are committed to understanding problem situations as structured wholes (Jackson, 2000).

is an abstraction – an image – that is the product of the values and interests held by the inquirer¹⁸. As such it is partial:

[Images] ignore many forms of difference, virtually all subtleties, and a wider range of connotations. The images of an enemy, a hero, or a scholar takes little or no account of such people's inner conflicts, misjudgements, fatigue, network of interests, diversions, family, or friends while focusing on a stereotype in the mind that a term evokes. (Edelman, 2001, p. 12)

While images are partial they are nevertheless important tools for structuring understandings about problematic situations, simplifying complexity and highlighting possible solution approaches (Lakoff and Johnston, 1980; Schön, 1993). Given that “the questions we ask shape the answers we get” (Rein and Schön, 1977, p. 236), it is important that serious consideration is given to what Schön and Rein (1995) refer to the problem setting process where issues such as what should be done with the waiting problem are framed and given meaning.

With respect to the rational queue that underlies most managerial and research accounts of the waiting list issue, a potential reframing in how waiting lists are conceptualised is dependent on better understanding the limitations of current waiting list metaphors and exploring alternative frames that could result in more effective interventions. To these ends, the systems notion of boundary critique was employed (Midgley, 1996; Midgley, 2000). Boundary critique aims to challenge consensus on existing boundaries that define what is considered relevant (and conversely what is not relevant) and provide the assumptions that give meaning to problem situations such as the hospital waiting list issue (Ulrich, 1983; Flood, 1999a). Boundary critique is based on two important operations: sweeping in and unfolding (Ulrich, 1988). Sweeping in involves seeking out and considering a variety of perspectives while unfolding – the process of identifying possible clients and decision takers – helps to structure the resulting action area that “determine[s] ... the client, issues, dilemmas of concern and purposes to pursue” (Flood, 1999a, p. 92).

¹⁸ Schön and Rein (1995) also see problems as abstractions and point to the role that generative metaphors play in defining the nature of intractable policy problems. As with Lakoff and Johnston (1980), Schön (1993) regards metaphors as “central to the task of accounting for our perspectives on the world: how we think about things, make sense of reality, and set problems we later try to solve” (p. 137).

By adopting the systems approach of boundary critique, the present research attempted to challenge the adequacy of current waiting list metaphors by sweeping in the (ir)rationality that is discounted by current waiting list models. In particular, a theoretically informed case study of an ultrasound waiting list was conducted to understand how stakeholders including waiting patients, GPs, radiologists, sonographers and departmental managers conceptualised the waiting list and how these understandings influenced how the waiting list was managed.

Boundary critique helps extend Frankel's (1993) recent suggestion that waiting lists can be understood with respect to the interplay between the rationality of the health system and the (ir)rationalities of stakeholders. While Frankel's (1993) conceptualisation is an improvement in that it potentially sweeps in alternative viewpoints, Frankel (1993) nevertheless chastises stakeholders such as clinicians (and apathetic waiting patients) for failing to provide timely access to cost effective and desirable treatment for common waiting list conditions. Such behaviour is irrational and needs to be addressed with economic rationality. In contrast, the present research has attempted to embrace this (ir)rationality by attempting to understand the meanings that stakeholders attributed to the management of an ultrasound waiting list. This study takes the perspective that the rationality of the health system is likely to be coloured by the interests and values of powerful stakeholders rather than concerns of cost-effectiveness.

Research Framework

The philosophical and theoretical basis of boundary critique is Critical Systems Thinking (CST). Some of the wider literature on CST is reviewed. Despite its diverse and contested nature, an argument is made that CST holds the potential to advance thinking on the nature of the waiting list problem and to assist in the development of interventions to manage the problems associated with rationing by delay. Drawing on developments in multimethodology, a case is built for combination of methodologies and methods that have informed the present research.

Critical Systems Thinking

Midgley (2000) regards CST as an evolving discourse in recognition that there “is no single approach or set of principles that define ... CST” (Flood, 1999b, p. 139). Flood and Jackson (1991a) conceptualise CST with respect to three commitments¹⁹: sociological awareness, human emancipation and complementarity. Jackson (1991) and Flood (1999b) sees CST embracing five commitments to research and practice centring on critical awareness, social awareness, human emancipation, theoretical complementarity and methodological complementarity²⁰. Midgley (1996) characterises CST in terms of three themes: critical awareness, improvement and methodological pluralism. Other representations of CST are provided by Schechter (1991), Flood and Jackson (1991b) and Valero-Silva (1996).

Critical awareness involves two aspects. First, subjecting the assumptions and value judgements implicit in systems designs and proposals to reflection and critique; and second examining the theoretical and methodological principles as well as the strengths and weaknesses associated with systems methodologies, methods and techniques. Social awareness centres on exploring the extra-disciplinary or societal forces that legitimise the use or development of particular problem solving methodologies (Jackson, 1991). Both critical and social awareness support theoretical and methodological complementarity, which is also known as pluralism (Midgley, 1996). Pluralism is perhaps the major discourse that has characterised CST^{21,22}, which Jackson (1997) interprets “in the broadest sense [as] ... the use of different methodologies, methods and/or techniques in combination” (p. 347). As such the concern that systems thinking was fragmented with the emergence of competing methodologies from functionalist, interpretative and emancipatory rationalities

¹⁹ For Midgley (2000) the notion of commitments downplays the diversity of ideas that underlie the vitality of the CST community.

²⁰ It is these latter two commitments that differentiate CST from emancipatory systems thinking (Jackson, 1991).

²¹ Flood and Jackson (1991a) refer to pluralism in terms of complementarity. Jackson (1997) now favours pluralism in recognition that complementarity “suggested something of a ‘happy compatibility’ between epistemologies and methodologies that was not intended and which pluralism does not imply” (Jackson, 1997, p. 349).

²² For Midgley (1996) the realisation that all methodologies contain philosophical and theoretical assumptions makes the notion of theoretical pluralism redundant.

has been replaced with a recognition of the need for a diverse range of theoretical orientations and systems methodologies to manage the increasingly diverse and complex individual, organisational and societal issues that characterise systems research and practice (Flood, 1995a; Flood and Romm, 1996).

Dando and Bennett (1981) utilised the Kuhnian notion of paradigm incommensurability to argue that official (functionalist), reformist (interpretative) and revolutionary (emancipatory) approaches need to be used in contexts that best match their respective strengths. Jackson (1987a) sought to determine the theoretical basis for critical systems research and practice. Drawing on Reed's (1985) four development strategies for organisational analysis – isolationism, imperialism, pragmatism and pluralism²³ – Jackson (1987a) put forward the argument that pluralism offered the best opportunity for the development of systems thinking. Jackson's (1987a) position is summarised by Torlak (2001).

Pluralism ... respects the ultimate grounds of different strands, encourages their epistemological development, and suggests different routes by which they can be appropriately brought to bear on various problems. The strategy aims to highlight the strengths and weaknesses of different ranges of methodologies. There, it seeks to recognise the different aspects of problems situations in order to appreciate the most appropriate methodology (or methodologies) and method(s). (p. 301)

Critical system thinkers have attempted to operationalise pluralism in a number of different ways²⁴ including the System of Systems Methodologies (Jackson and Keys, 1984; Jackson, 1987b), various conceptualisations of TSI (Flood and Jackson, 1991a; Flood, 1995b; Flood, 1996; Flood, 1999b), Triple Loop Learning (Flood and Romm, 1996), Discordant Pluralism (Gregory, 1996), Creative Design of Methods (Midgley, 2000) and Critical Systems Practice (Jackson, 2000).

²³ See Jackson (1997) and Midgley (1997a) for discussion on the implications of development strategies based on isolationism, imperialism and pragmatism.

²⁴ See Midgley (1997a) for a useful review.

The System of Systems Methodologies (SOSM) and TSI are perhaps the best known attempts at developing pluralist technologies and enacting the related CST commitments of critical and social awareness. Jackson and Keys' (1984) SOSM^{25,26} draws attention to the assumptions that systems thinkers make when systems methodologies are employed as well as the potential consequences that might flow from their use in an intervention. TSI is a meta-methodology, which operationalises pluralism throughout the intervention with respect to three recursive and interrelated processes: creativity, choice and implementation²⁷ (Flood and Jackson, 1991a; Flood, 1995a).

Research interest in pluralism has made extensive reference to meta-theories to assess methodological strengths and weaknesses (Midgley, 1996) as well as attempt to overcome the paradigm incommensurability problem, which casts doubt on the complementarist use of system methodologies due to incompatible ontological and epistemological assumptions (Mingers and Brockesbly, 1997). Flood and Jackson (1991a) evoked Habermas' theory of knowledge constitutive interests²⁸ in order to operate above and beyond the paradigms (Midgley, 2000). Functionalist systems methodologies serve a technical interest in prediction and control while the interpretative system methodologies help ensure that a practical interest could be secured through inter-subjective understanding. Emancipatory system methodologies serve an emancipatory interest in freedom from distorted communication, exploitation and domination (Flood and Jackson, 1991a).

²⁵ Jackson (1987b) extended the original SOSM to incorporate a coercive dimension.

²⁶ It is widely recognised that the SOSM has a number of weaknesses, which has resulted in its abandonment and relegation as a teaching tool (Jackson, 2000). In particular the SOSM has been criticised for its lack of flexibility since it implies that only one methodology will be used in an intervention and fails to operationalise methodological partitioning where methods are detached from methodologies (Mingers and Brockesbly, 1997).

²⁷ It should be noted that Mingers and Brockesbly (1997) regard that "there is some debate about the interpretation of TSI, and it is still changing and developing" (p. 492). Indeed, TSI has gone through a number of transformations including "creative problem solving" (Flood and Jackson, 1991a), "a potent force for effective management" (Flood, 1995b) and "local systemic intervention" (Flood, 1999b).

²⁸ According to Habermas' knowledge constitutive interests knowledge always serves an anthropological (quasi-transcendental) purpose rather than being a representation of an empirical reality or changes in shared values (Torlak, 2001).

Touskas (1993) took issue with Flood and Jackson's (1991a) claim that the theory of knowledge constitutive interests could resolve the issue of paradigm incommensurability since system methodologies are based on reality shaping paradigms, which implicitly or explicitly provide answers to Habermas' technical, practical and emancipatory interests. For this and other reasons (see Midgley, 2000) the use of Habermas' knowledge constitutive interests has largely been abandoned by the CST community, although Mingers and Brockesbly (1997) have drawn on Habermas' theory of three worlds (the external natural world, our social world and my internal world) to reconstitute an epistemological basis for pluralist research and practice. Jackson (2000) and Midgley (2000) argue that CST is not meta-paradigmatic. This has lead Jackson (2000) to advocate pluralism as a new paradigm.

In critical systems thinking a meta-methodology ... is required which protects paradigm diversity and handles the relationships between the divergent paradigms.... It has to manage the paradigms, not by aspiring to meta-paradigmatic status and allocating them to respective tasks, but by mediating between the paradigms. Paradigms are allowed to confront one another on the basis of 'reflective conversation.' (p. 393)

While critical and social awareness have primarily served pluralistic research and practice, pluralism is underpinned by the notion of emancipation, which also provides the rationale for CST's other commitments (Flood and Jackson, 1991a; Maru and Woodford, 2001). Schecter (1991) defines emancipation in terms of "a commitment to human beings and their potential for full development via free and equal participation in community with others. It is also a commitment to recognising the barriers to human emancipation – unequal power relations and the conceptual traps, which perpetuate them – and incorporating this understanding into systems thinking" (p. 212). Jackson (1991) argues that emancipation is dependent on addressing all of Habermas' knowledge constitutive interests.

Midgley and Ochoa-Arias (2001) have cautioned critical systems thinkers from taking the notion of emancipation for granted given its contested nature. Indeed, Jackson (2000) after surveying how the notion of emancipation has been variously defined asks the following question:

[S]hould [we] be seeking human emancipation or individual emancipation or, indeed, whether non-human elements such as other species or the environment should be considered as well[?] Within Burrell and Morgan's category of the sociology of 'radical change' there are subjectivist approaches (radical humanism) which see emancipation as coming about as individual rid themselves of some form of 'false consciousness', and objectivist approaches (radical structuralism) that picture emancipation as becoming possible because of changes in the structure of society. There are 'modern' and 'postmodern' versions of emancipation; the differences resting on how 'universal' or 'local' the emancipation is suppose to be. (p. 291)

Mirroring developments in Critical Theory, which has seen the emergence of micro-emancipation in response to poststructuralist criticism over grand narratives²⁹, CST has replaced the notion of emancipation with that of improvement (see Midgley, 2000) or ethical alertness (see Jackson, 2000). Although both are defined locally and temporally, CST remains wed to the Habermasian notion of human emancipation rather than a Foucauldian concern with providing tools for resisters and freedom fighters (Brockesbly and Cummings, 1996).

Critical Systems Thinking and the present research

Given the contested nature of CST, this section details how its commitments are interpreted and used to inform the present research. In doing so, this section sets out its philosophical and theoretical underpinnings. In particular, the present research chooses to align itself with Midgley's (1996) understanding of CST since it forms the basis of boundary critique (Midgley, 2000). Midgley (1996) defines CST in respect to three discourses based on critical awareness, emancipation and methodological pluralism.

- Critical awareness – examining and re-examining taken-for-granted assumptions along with the conditions that gave rise to them

²⁹ Poststructuralists accuse Critical Theorists of "advanc[ing] all-embracing frameworks that necessarily reduce or 'totalise' the complexity and heterogeneity of phenomena so they 'fit' into a single integrated, vision" (Alvesson and Willmott, 1996, p. 165). According to Jackson (2000) soft systems thinkers such as Ackoff are also critical of emancipatory systems thinkers who are "obsessed with the notion of irresolvable conflicts" (p. 246). Foucault (1980), drawing attention to the productive aspects of knowledge-power and the impossibility of life with power relations, cautions against grand critiques of exploitation and domination. Emancipation is problematic. In response to these criticisms, Alvesson and Willmott (1996) have suggested that the aspirations of critical theorists need to be toned down to embrace the possibility of micro-emancipation: that is, "an emphasis on partial, temporary movements that break away from diverse forms of oppression, rather than successive moves towards a predetermined state of liberation" (p. 172).

- Emancipation – ensuring that research is focused on “improvement,” defined temporarily and locally, taking issues of power (which may affect the definition) into account
- Methodological pluralism – using a variety of research methods in a theoretically coherent manner, becoming aware of their strengths and weaknesses, to address a corresponding variety of issues. (p. 11)

Midgley (1996) unpacks three forms of critical awareness: critical thinking about methodology, methodology use and how power-relations impact on how emancipation is understood. It these latter two aspects of critical awareness that provide the theoretical basis for understanding how a problem waiting list is framed, and how such a framing influences the repeated use of particular (yet ineffective) solution approaches including funding injections and the application of evidence-based practice guidelines. Indeed, attention to power-relations enabled a number of common-sense notions about waiting lists to be challenged.

At the most practical level, soon after data collection was complete, a written report detailed a number of recommendations was given to the ultrasound service where the case study was primarily based enabling those stakeholders to take such actions as they saw appropriate. Summaries of the research were made available (on request) to other stakeholders including waiting patients and GPs. However, the Habermasian notion of human emancipation³⁰ informs the present research in that its intent was the design of a better system of access to ultrasound imaging (Brookesbly and Cummings, 1997). In accordance with CST practice, the present research aimed to work with key stakeholders in order to improve the management of the waiting list, but given the constraints imposed by doctoral study in relation to a powerful health system the notion of emancipation proved problematic (see Chapter 10). It should be noted that the use of interventionist problem

³⁰ There are a number of reasons why human emancipation rather than individual emancipation is an appropriate focus for interventions to improve the management of waiting lists. First, some GPs and waiting patients already employ strategies designed to subvert the authority of the ultrasound service (see Chapter 6). Second, pursuing research that provides tools for self-emancipation may result in powerful stakeholders adopting similar tools and further exploiting waiting patients and GPs. Third, while individual GPs and waiting patients may be able to resist the existing systems of process and structure, those who may be unwilling to pursue similar actions may be disadvantaged by such strategies (see Chapter 7). Fourth, without changing the configuration of the current system of access, interests and values of future patents cannot be necessarily secured; any gains may not be sustainable (see Chapter 10).

solving methodologies as research tools is valid. Midgley (2000) recommends that boundary critique should be done up front prior to any intervention and the widespread adoption of Action Research approaches has seen the blurring of research and action.

Throughout the creativity phase the present research operationalised methodological pluralism in the manner suggested by Jackson (2000). Initially an interpretative rationality was privileged in an attempt to address a gap in the waiting list literature by sweeping in the (ir)rationality excluded by current images of waiting lists. In recognition that key stakeholders regarded aspects of the ultrasound service as coercive, the present research switched to an emancipatory rationality. This sought to demonstrate who was disadvantaged by the current systems of access, and how, as well as provide an account of the sources of domination and alienation (Jackson, 1999).

It is the contention of the present research that CST with its various commitments provides a robust framework for researching waiting lists. In this respect, CST has the capacity to transcend the narrow mechanistic images of waiting lists that are rarely questioned by conventional approaches, and encourage creative thinking that acknowledges that the waiting list problem is constituted by a variety of professional, cultural, clinical and personal factors. Reframing the waiting list problem in a way that engages with the context downplayed by images like the rational queue has the potential to move beyond piecemeal interventions such as increasing funding. Questioning fundamental assumptions on which the systems of access are organised provides for greater choice in managing the problematic aspects associated with waiting.

Total Systems Intervention

In order to understand how stakeholders conceptualised the waiting list and what impact these subjective interpretations had on its management, the systems idea of boundary critique was employed and operationalised primarily through the creativity phase of the TSI, which challenges consensus on the placement of boundaries by sweeping in different perspectives. This section begins by describing TSI and by drawing on developments in the

area of multimethodology provides justification for the selection of TSI to structure and direct the present research.

TSI is based on four interrelated principles: systemicity, meaningful participation, reflection and human freedom. Systemicity refers to the need to take the whole into account (Flood, 1995a). TSI draws on the interpretative insight that it is more meaningful to think of systems as particular ways of viewing problem situations (Flood and Jackson, 1991a)³¹. As no one single perspective is likely to be adequate, being systemic requires that TSI's other three principles are met to surface a variety of issues and ways of reframing problem situations. Given Flood's (1995a) observation that organisations are largely what people say they are without meaningful participation it is unlikely that all the relevant issues that may need to be managed will be raised and considered. To avoid a limited set of perspectives, a variety of viewpoints need to be considered. Being reflective about how organisational processes, designs, cultures and politics limits involvement in problem setting and solving activities supports the principles of meaningful participation and systemicity. In addition, being reflective requires that TSI practitioners ensure that issues are managed with appropriate problem solving methodologies. The principle of human freedom is tied up with other concepts including empowerment and self-determination but seeks to free people from inefficient processes, ineffective designs as well as unfair and meaningless designs and decisions.

As mentioned TSI is based on three processes: creativity, choice and implementation. While the creativity, choice and implementation operate as a singularity, each phase can be usefully understood in terms of having an associated task, method and outcome (Flood, 1995a). The task of the creativity phase begins with the realisation that the notion of a problem is misleading. Flood (1993) rather elegantly makes this point with a story of a gremlin:

³¹ Recently, the field of complexity theory has suggested that systems concepts such as emergence are more complex than originally thought (Flood, 1999a). Issues such as spontaneous self-organisation depend on "details" that are essentially unknowable to the human mind. For Flood (1999a) a systems approach must deal with a number of paradoxes including managing within the unmanageable, organising within the unorganisable and knowing within the unknowable.

A factory manufacturing chemicals has a problem... [and] they call in management consultants.... The consultants know that the gremlin has been there because bugs in the software are found and the main computer keeps crashing.... On further investigation the consultants find that the gremlin has just vanished up the air-conditioning, towards the Accounting Department. After carrying out investigations in Accounting the evidence is clear enough. The gremlin has been through the books and now they will not balance. It has played tricks on the staff so that the brought ledger clerk has fallen out with the sales ledger clerk and the accounting manager has lost control. But, as usual, the gremlin has just slipped away, via the offices of the senior management, this time to a pressure group's headquarters carrying a secret document found on the managing director's desk. (p. 72)

As what constitutes a problem depends on interpretation, the task of the creativity phase is to surface as many issues as possible to “break out of current assumptions and to get to grips with core issues that need to be dealt with” (Flood and Romm, 1995, p. 380). In Flood and Jackson (1991a) the creativity phase is enacted through five systemic metaphors, which relate problem situations to machines, organisms, neuro-cybernetic brains, cultures and prisons. In recognition that reliance on these five systemic metaphors may be limiting, Flood (1995a) has developed the creativity phase to include a decontextualising and a contextualising focus as well as drawing attention to what Flood (1996) refers to as the ergonomics of reflection.

The purpose of decontextualisation is to generate novel insights that may be obscured by conventional thinking and (some) methods include brainstorming, metaphor generation, rich pictures and idealised design (Flood, 1995a). Contextualisation assists in the selection of core issues to be managed. Flood (1995a) suggests making use of Morgan's (1997) images of organisation. Flood (1999b) has more recently suggested that viewing problem situations through four systemic windows can allow for a deepening systemic appreciation “to stimulate debate, to generate insights, and to enhance learning ... [and] help to locate types of issues and dilemma encountered in organizational life” (pp. 140 – 141).

The outcome of the creativity phase is that core issues to be managed are passed onto the choice phase whose aim is “to choose a method(s) that will best manage the interacting surfaced by the creativity phase” (Flood, 1995a, p. 181). In this respect Flood's (1995a) operationalisation of the choice phase differs significantly in that it allows for the use of

multiple methods rather than setting up dependent and dominant methodologies. In Flood and Jackson (1991a) the SOSM was the primary vehicle for enacting the choice phase. Due to difficulties in explaining the SOSM to practising problem solvers, Flood (1995a) proposed that methodological choice should be governed by the differences between the main purposes of problem solving methods. These include the design and implementation of efficient processes and effective structures, debate and decision concerning human and technical issues, and freedom from dominating designs or decisions.

For Flood (1999b) the four systemic windows provide the necessary support in order to select appropriate problem solving methodologies/methods:

Methodology design unfolds and subsequent action is then taken, depending on what is learned by employing the [four systemic windows]. [For example] [i]f there is inefficiency or unreliability in processes, then action might be taken on the processes. This might take the form of continuous incremental improvement or radical change and quantum improvement... And if people experience unfairness in chosen actions, then there may be a need do one or both the following. Steps might be taken to emancipate privileged people from their ideologies and power structures that lead to unfair treatment for less privileged people. Also, steps might be taken to unshackle underprivileged people from dominant ideologies and power structures. (p. 141)

The implementation phase employs the selected method(s) although dominant and dependent methodologies may be used to address core issues identified in the creativity phase. Change proposals are produced according to the chosen methodological principles. The insights gained from the creativity phase may also prove useful and help with the development of change proposals. An intervention will cut across the mess constituting the problem situation raising further issues to manage. And so the process of TSI continues.

Recent developments in Multimethodology (see Mingers and Gill, 1997) have highlighted that methodological choice is a complex matter that extends beyond epistemology to the intersection between personal, professional and situational demands (Mingers, 2001). Mingers' (1997) model of multi-methodology practice views methodological choice governed by three notional systems: a problem context system – the real world situation of concern; an intellectual resources system – the available theories and methodologies; and

an intervention system – the agent undertaking the intervention. Accordingly, TSI's creativity phase was chosen to operationalise the process of boundary critique for a number of reasons. Given the central role that the analyst plays in methodological choice, it is appropriate that this section is written in the first person.

To start with the problem situation was perceived as demanding by both my supervisors and myself. TSI offered a well developed and thought out approach to intervening in problem situations that were characterised by complexity, conflict and uncertainty. A number of successful case studies had been reported in the literature (for example, see Green, 1992; Flood, 1995b). The creativity phase was particularly relevant since it highlighted the necessity to view problem situations from a variety of angles and break out of limiting assumptions.

TSI was also interventionist in orientation and from a research perspective sought to understand problem situations through changing them. This fitted well with my value set/desire to undertake doctoral research in a real life context with the aim of improvement. Significantly, TSI offered a complementarist vision of methodological use that helped me reconcile/accommodate the cognitive dissonance I experienced when I attempted to engage with stakeholder perspectives from my positivist background in manufacturing technology.

With respect to the need to sweep in a variety of stakeholder perspectives TSI's systemic understanding of organisations as a mix of horizontally and vertically integrated sets of interacting human and technical activities was appropriate.

Organizations comprise of parts that are continually interacting. Parts form a system (horizontal) that is a subsystem of a larger system and has subsystems itself (vertical). An organization is therefore both vertically and horizontally integrated. At each systemic level the phenomenon of emergence occurs, meaning that the result of the whole activity is more than the sum of the results of activities which any level comprises. An organization is also open to its environment. This image of organizations provides a framework on which an ideal whole system view can be constructed. (Flood, 1995a, p. 176).

In particular, Flood's (1999a) four systemic windows draw attention to four key organisational dimensions (process, structure, meaning and knowledge-power), which

ensures a variety of issues are surfaced particularly those often obscured by existing waiting list models. In this way, Flood's (1999b) most recent reconceptualisation of TSI's creativity phase was followed primarily due to ethical and logistic difficulties in organising a workshop where stakeholders could reach a common understanding about core issues. The four systemic windows were used as theoretical lenses to interrogate issues raised by stakeholders in in-depth and semi-structured interviews, which were conducted in accordance with TSI's principles of systemicity, meaningful participation, reflection and human freedom.

Conclusions

This chapter builds on the argument of Chapter 2 that the image of the rational queue despite being of limited usefulness still underlies how the waiting list problem is conceptualised by most researchers and policy makers. The present research takes the view that waiting lists could be better understood if the views of various stakeholders were considered. A theoretically informed case study of an ultrasound waiting list utilising the creativity phase of TSI to undertake boundary critique was proposed. In addition the philosophical and theoretical base of boundary critique was reviewed and the present research's theoretical basis was outlined.

Chapter 4

Methodology

This chapter examines the methodological issues associated with the present research. The research questions are presented. Given the likely complexity of the ultrasound waiting list it is argued that these questions are best addressed using a qualitative research approach that allows an understanding of the ultrasound waiting list to emerge from the experiences of the study participants. A number of issues characterising qualitative research are then discussed. This chapter also details the present research's case study design as well as the procedures used to identify stakeholders, recruit study participants, and collect and analyse the case study data. Reliability, validity and ethical considerations are also discussed.

Research questions

The present research sets out to better understand diagnostic waiting lists. An ultrasound waiting list was investigated by sweeping in other perspectives excluded by the dominant waiting list metaphors. In this way the present research aimed to critically assess the appropriateness of the rational queue and its associated interventions. This implies four research questions:

1. How do ultrasound waiting lists behave in practice;
2. What are the limitations of the image of the rational queue;
3. To what extent are these limitations justifiable in terms of the complexity of the waiting list problem or the constraints that these assumptions place on less powerful stakeholders such as waiting patients and GPs; and
4. How might the ultrasound waiting list problem be reframed?

Given the open-ended nature of these research questions and the reported complexity of waiting lists in the literature, a qualitative research approach was appropriate.

Qualitative research approach

Two common research paradigms exist with contrasting ontologies and epistemologies: the naturalistic and positivist paradigms. Qualitative research is usually based on a naturalistic understanding of the world, seeking the “development of concepts which help ... to understand social phenomena in natural (rather than experimental) settings, giving due emphasis to meanings, experiences, and views of all the participants” (Pope and Mays, 1995, p. 43). Such an understanding reflects the assumption that problem situations are complex and it is important that researchers are aware of preconceptions they may carry into the field. In contrast, quantitative research methods view problem situations like machines behaving according to natural laws that can be discovered by measurement and hypothesis testing.

The relative merits of qualitative and quantitative methods have been widely debated. For Mays and Pope (1995), qualitative and quantitative methods should be seen as complementary and the use of either method should be determined by the nature of the research questions. Jones (1995) saw the difference between qualitative and quantitative research in terms of opposites: hypothesis generation versus hypothesis testing, explanation versus measurement, and understanding versus generalisability. It is important to address the common criticisms of qualitative research, which rest on different understandings of reliability, validity and generalisability. Table 4.1 sets out how these issues are understood from positivist and naturalistic viewpoints indicating how issues such as validity and reliability are dealt with in qualitative research³².

³² For a discussion of the key differences between positivist and naturalistic research paradigms, see McCullagh (1992).

Table 4.1: Validity, reliability and generalisability (Easterby-Smith, Thorpe and Lowe, 1995, p. 41)

Issue	Positivist viewpoint	Naturalistic viewpoint
Validity	Does an instrument measure what it is suppose to measure?	Has the researcher gained access to the full knowledge and meanings of the informants?
Reliability	Will the measure yield the same results on different occasions?	Will similar observations be made by different observers on different occasions?
Generalisability	What is the probability that patterns observed in a sample will also be present in the wider population from which the sample was drawn?	How likely is it that ideas and theories generated in one setting will also apply in other settings?

Reliability can be ensured by making data collection and analysis transparent. Interviews are commonly tape recorded and transcribed so they can be checked, if necessary, at a later stage by an independent auditor. Coding can be done in research teams. Validity can be ensured through triangulation where a number of independent data sources and data collection methods are used to generate data. Convergence in this respect strengthens the validity of the findings and conclusions reached. Another more pragmatic way of assessing the quality of qualitative research is to consider whether the findings and conclusions are sensible by comparing them to what is already known about the social phenomenon and whether interviewees think the research account is a reasonable explanation of the social phenomenon. Qualitative research does not attempt to make empirical generalisations. Instead qualitative research makes analytical generalisations.

Case study design

The case study is a commonly used research methodology in health service research, employing both quantitative and qualitative methodologies. Many empirical investigations of problem waiting lists have been case study based. Examples include Pope's et al. (1991) study of the composition of a surgical inpatient waiting list and German's et al. (1993) investigation of a urology outpatient clinic waiting list.

The present research is amenable to a case study design because the ultrasound waiting list is a contemporary phenomenon of concern to the ultrasound service, referring clinicians and patients. Yin (1994) suggests case studies are useful for researching contemporary phenomenon when the boundaries between phenomena under study and context are not evident. Because little is known about how diagnostic waiting lists are managed, the boundary between the waiting list and its context is blurred particularly as different stakeholders hold different views about the ultrasound waiting list making distinguishing between the “environment” and the enactment of commonly held images problematic.

Selection of research setting

A chance meeting with a radiology departmental manager gave the researcher the opportunity to raise the possibility of researching the department of radiology’s waiting lists. After a fairly lengthy and protracted process the radiology department agreed to the research proposal but on the condition that the research focus on the ultrasound waiting list. The hospital’s chief executive officer then approved the study.

In order to assess the extent to which the research findings can be generalised, Mays and Pope (1995) state that a good qualitative study will “take care to describe the context and the particulars of the case study and to flag up for the reader the similarities and differences between the case study and other settings of the same type” (p. 41). Out of concern that such details may violate the research bargain with the ultrasound service that it would remain anonymous, the particulars of the case are not described. Through sweeping in the perspectives excluded by the rational queue metaphor, the present research set out to better understand diagnostic waiting lists and present findings from one ultrasound service in one New Zealand regional hospital.

The significance of the case study site lies in the large number of contentious issues including: continuing disagreements with the Health Funding Authority (HFA) over appropriate funding levels; radiologist preferences that seem to play an important role in determining what work is undertaken by the ultrasound service; a private radiology facility

that is staffed by public hospital radiologists who hold dual private-public appointments; GP and patient dissatisfaction that results in attempts to “subvert” the system of access; and apparently inappropriate referrals that are thought to contribute to wasting of scarce capacity. All these factors serve to frustrate the rational management of the waiting list. The ultrasound service is also characterised by distrust, discontent and blame shifting. While the details are particular to the case study site, such phenomena are by no means unusual.

Identifying stakeholders

The creativity phase of TSI (see Chapter 3) was used to structure the present research, which attempts to surface a variety of issues and concerns that characterise the management of the ultrasound waiting list. Accordingly, the research design sought a variety of stakeholder perspectives. After discussions with the ultrasound service a number of possible stakeholders were identified and are presented in Figure 4.1.

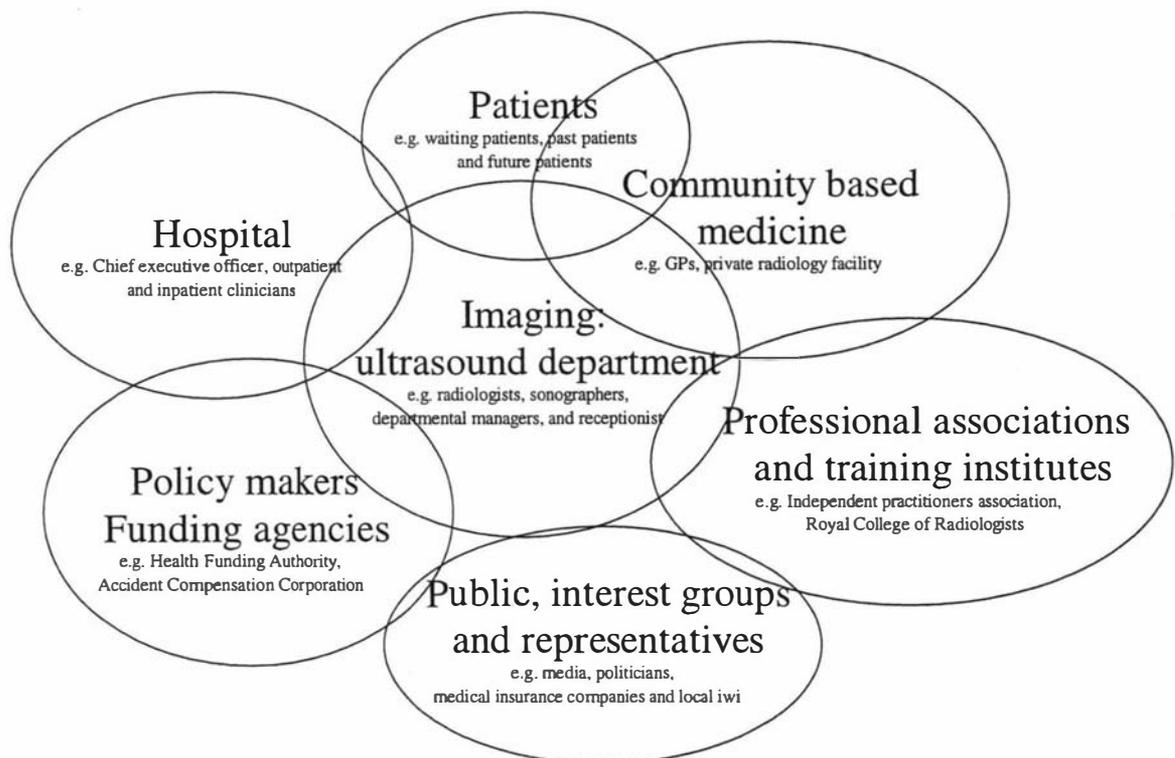


Figure 4.1: Possible stakeholders

Figure 4.1 illustrates the complexity of the ultrasound waiting list problem in its real-life context. In order to make the present research manageable, seven key stakeholders directly involved in the ultrasound service were selected: consultant radiologists, sonographers, GPs, departmental managers and clerical staff, waiting patients³³ and outpatient services.

The decision to explore the viewpoints of stakeholders involved or affected by the day-to-day management of the ultrasound waiting list is justified with respect to Midgley's (2000) observations that what counts as knowledge depends on the purposes of research or intervention^{34,35}. Early on in the data collection it emerged that radiologist interests and values played a central role in constituting the many problems associated with accessing the ultrasound service that were assumed by outpatient clinicians, GPs and waiting patients. Stakeholders external to the specific ultrasound service such as politicians and policy makers were therefore not interviewed: while their decisions on resourcing and monitoring impact on all ultrasound scans, they have little influence on internal management practices that produce what amounts to a local problem.

At the outset of the case study, the two advisors (internal to the radiology department and ultrasound service) were also asked to identify any significant stakeholders excluded by the research design. This led to another group being identified: the inpatient wards. This group influenced the ultrasound waiting list directly as the ultrasound service has a policy of performing inpatient scans within twenty-four hours. However, the inpatient perspectives

³³ As patient interviews were conducted over a period of two months the distinction between waiting patients and past patients became blurred. A number of patients had received their ultrasound scan by the time the interview was conducted.

³⁴ A common criticism of qualitative studies is that sampling is non-probability based. Mays and Pope (1995) point out that statistical representativeness (guaranteed by a random sample) is not a necessity for good qualitative research. Instead the purpose of qualitative research is to better understand a social phenomenon. Theoretically led sampling (that is, systematic and non-probabilistic) is preferred. A variety of perspectives allow a social phenomenon to be fully explored. Theoretically led sampling also helps to minimise the chance of convenience sampling. Mays and Pope (1995) notes that in principle probability based sampling could be used. But because qualitative research is time intensive and a variety of viewpoints are needed to understand the richness of social phenomena, probability based sampling is impractical.

³⁵ The selection of stakeholders can also be justified with respect to the waiting list literature reviewed in Chapter 2. For example, the radiologist perspective is important, as researchers such as Frankel (1989) and Pope (1991) have drawn attention to the role that clinicians play as gatekeepers and owners of waiting lists.

were not considered in-depth, as they do not reflect the impact of the waiting list. That is, they are part of the problem of access rather than being affected by the access problem.

Recruitment of participants and data collection

Participant selection

The ultrasound service consists of consultant radiologists (whose time is split between the radiology department's imaging modalities), radiology registrars, staff sonographers, student sonographers and clerical staff. It is part of the department of radiology overseen by the clinical director, charge and deputy charge radiographers who report to a manager who assumes overall responsibility.

The researcher worked through two advisors to contact potential participants. One advisor approached consultant clinicians and departmental managers and asked whether they would be interested in taking part in the study. Another advisor liaised with sonography and clerical staff. With their tentative approval, the researcher contacted potential interviewees to organise interviews. Four consultant radiologists, six departmental managers, three sonographers, two clerical workers, one outpatient clinician and one outpatient nurse consented to participate and were interviewed by the researcher³⁶. The researcher was unsuccessful in organising interviews with the manager with overall responsibility, other sonographers and consultant radiologists, and the clinical directors of general surgery and obstetrics and gynaecology.

Because of the Privacy Act (1993) the researcher was unable to have direct access to patient details. Therefore the clerical staff of the radiology department had to send patient invitations rather than the researcher contacting patients directly. A sonographer was asked to select a mix (age, sex, condition, time spent on the waiting list) of patients from the waiting list³⁷.

³⁶ Some study participants were interviewed multiple times.

³⁷ Obstetrics scans were excluded from the scope of the study since the private radiology facility scans many of these patients and obstetric scans of a more urgent nature were undertaken by the ultrasound service within 24 hours.

The researcher imposed two restrictions. First, waiting patients needed to be at least eighteen years old in order to avoid the need to gain parental consent. Second, to maximise the response rate eligible waiting patients were required to live in the city where the ultrasound service was located. To minimise possible bias a departmental manager familiar with statistical sampling concepts, was asked to check over the list of possible patient interviewees. While statistics on patient profiles was recorded, it was difficult to retrieve these statistics from the patient information system. Thus it was not possible to ensure that the recruited patients reflected the overall composition of the ultrasound waiting list. However, the sampling criteria described above did ensure that a variety of perspectives would be collected.

A total of thirty-six invitations were sent out to waiting patients. Each invitation contained an information sheet, a consent form and a prepaid envelope addressed to the ultrasound service. Because a disappointing number of patients replied to the invitation, a second attempt to recruit waiting patients was made. Another thirty-six invitations were sent out. Fifteen patients consented to an interview and were interviewed by the researcher. Two invitations were returned unopened and one patient phoned the researcher to say that he had received his scan privately and should not be on the ultrasound waiting list.

As with recruiting waiting patients, the recruitment of GPs was problematic. The radiology department supplied the researcher with a list of referring medical practitioners. Twenty-four non-obstetric³⁸ referring doctors were randomly selected. Few GPs responded to the invitations sent out to them by the researcher. In order to improve the response rate, each GP was telephoned to ask if they had received the invitation. All but one GP (who later agreed to a one-on-one interview) declined to participate in the present research citing intolerable workloads or lack of interest. A second lot of invitations were sent to another twenty-four GPs. In total, eight GPs consented to an interview and were interviewed by the researcher.

³⁸ Different funding arrangements and the fact that obstetric patients do not wait means that obstetric referring GPs were excluded from the present research.

It should be noted that enough participants were recruited for the purposes of the present research and saturation was reached. That is, there was no new information being presented (Strauss and Corbin, 1999).

In-depth and semi-structured interviews

Interviews are the most commonly used method of data collection in case study research (Yin, 1994). Interviews can be classified as structured, semi-structured or in-depth along a continuum of imposing the researcher's preconceptions to listening to experiences recounted by interviewees. Structured interviews tend to consist of a number of closed-ended questions, whereas in-depth interviews resemble natural conversations about an agreed topic.

The present research used in-depth and semi-structured interviews to explore stakeholder viewpoints of the ultrasound waiting list including its perceived rationale and what impact waiting had for a variety of indicated scans. Interview schedules were developed from the waiting list literature. Interviews began by asking interviewees what they saw as some of the key issues surrounding the ultrasound waiting list. Interviewees were then asked what difficulties or problem the ultrasound waiting list caused. For contrast, interviewees were also asked what advantages or benefits the ultrasound waiting list might offer. Questions about acceptable waiting times and what interviewees saw as improvements to how the ultrasound service managed its waiting list were also asked. When a metaphor was explicitly used, interviewees were prompted by the researcher to provide further clarification. A typical semi-structured interview schedule can be found in Appendix B. Interview schedules were slightly modified later in the data collection period to further explore key issues such as double scanning and the Consumers Guarantee Act (1993).

Interviews lasted between twenty-five minutes to one and half hours and were tape-recorded for later transcription by the researcher. For a number of interviews, contextual details including the researcher's initial impressions and discussion prior and after the interview were recorded in a logbook.

Analysis: grounded theory procedures

Grounded theory is based on the naturalistic paradigm that attempts to understand a social phenomenon in its natural setting. Central to a grounded theory analysis is the development of categories based on the interviewees' understandings of the social phenomenon (Strauss and Corbin, 1999).

The researcher transcribed all the interviews. An initial reading of a transcript enabled the researcher to understand the interviewees' comments in context. Open codes were then developed. A process of constant comparison enabled grounded categories to emerge from the interviews. Axial coding was used to further develop the categories by teasing out sub-categories, dimensions and relationships.

Ensuring reliability and validity

Understanding the naturalistic paradigm has important implications for how qualitative research is evaluated in terms such as trustworthiness³⁹. The following discussion largely draws from Mays and Pope (1995). For qualitative research to be rigorous, all research phases such as data collection and analysis need to be conducted in a systematic yet reflective manner. In practice a study is thought to be rigorous if its design, data collection protocols and analysis methods are clearly spelt out and can be followed by independent researchers.

Soon after each interview each tape was spot checked for quality. Two tapes had recording problems and had to be transcribed with the help of notes. To ensure consistency in coding, a number of transcripts were independently coded by the researcher's supervisor who had considerable experience in ground theory procedures. Codes were consistent and only differed in insignificant ways. Both advisors were also helpful in that they were willing to

³⁹ Readers interested in checklists for assessing the quality of published qualitative studies are referred to Greenhalgh and Taylor (1997) and Rowan and Huston (1997).

clarify issues. This enabled local checks on the researcher's understanding to be carried out, which helped ensure the validity of the research findings.

Ethical issues

The following general ethical principles guiding research using human participants were considered (Massey University Human Ethics Committee, 2001):

- Informed consent;
- Confidentiality;
- Minimising of harm;
- Truthfulness; and
- Social sensitivity.

These principles recognise that the researcher is typically in a position of power over others that are the focus of study. Easterby-Smith et al. (1995) suggest that ethics are more important in qualitative research because qualitative researchers have “far more control over what information is gathered, how it is recorded and how it is interpreted” (p. 65).

Ethical issues specific to the present study

Ethical issues significant to the present study of the ultrasound waiting list varied according to stakeholders interviewed. Few ethical issues were raised when health professionals such as radiologists and GPs were interviewed simply because these groups were already in positions of power, and were in a position to decline participating in the research at any stage.

Patients, however, were vulnerable in the researcher/researched relationship. This occurred for many reasons but notably that the researcher may have access to more information and that the patient may fear retribution from the hospital if they do not choose to participate in the research. The following steps were taken to minimise possible ethical risks to patients.

First, the research design was subjected to ethical scrutiny by the researcher's supervisors, the Massey University Human Ethics Committee and the appropriate health ethics committee. No interviews were undertaken until ethical approval was obtained⁴⁰. Second, every participant was sent an information sheet that detailed what was being asked of the participants, what the research was about, how the data would be collected, who the researcher was and why the research was being done. Participants were also encouraged to contact the researcher or his supervisors if they had any questions or concerns about the present research (two did so). It could be reasonably assumed that patients would be in a position to exercise informed choice. Third, participants were asked to sign a consent form. In addition, the telephone number for the appropriate health ethics committee was also included on the consent form.

Some ethical issues could not be anticipated at the start of the present research as they were of a personal nature. The waiting patient interviews posed a number of ethical dilemmas. Instead of passively recording the perceptions of patients, interviews became a humbling process where patients were sharing their life experiences with the researcher, and for some a realisation of their own mortality. It was out of this personal response that ethical dilemmas arose.

A particular concern was that the research upset a number of patients. Two waiting patients took offence at receiving an invitation, believing that personal details had been divulged by the hospital to the researcher. One patient made a formal complaint to the hospital believing that the ultrasound service had failed to follow the Privacy Act (1993) by allowing the researcher to send her an invitation even though the ultrasound service had mailed out the invitation. Another patient attempted to contact the researcher's supervisor but was not able to because of a typographical error in the information sheet. Rather than telephone the researcher (a correct telephone number was given) the waiting patient instead contacted the health reporter of the local newspaper who then made contact with the researcher.

⁴⁰ However, it is briefly noted here that the conflicting advice that both ethics committees gave and the inability of lay members to understand the research design were sources of frustration for the researcher.

To better understand how patients conceptualised the ultrasound waiting list, patients were asked to comment on the relevance of queue, mortlake and shop metaphors. Patients were shown a picture of each: a line of people, a fishing pond and a shop front (see Appendix B). Much to the researcher's surprise, the first two patients interviewed were disturbed by these images. The question schedule was slightly changed so that the study participants could respond to the images in a more detached manner.

It became apparent in the interviews that the patients' GPs poorly prepared them for the wait. Patients looked to the researcher for information about how the ultrasound waiting list was managed. How did the ultrasound service select patients off the waiting list? Did they listen to GPs? One patient off-handedly commented that she would like a copy of the research so she could learn the trick to get her scan faster. This raised an ethical dilemma for the researcher. Was the present study purely about research?

At the start of data collection the researcher avoided the issue of emancipation. In the case of the patient who asked about prioritisation, he could honestly say that he was unsure how the ultrasound service selected patients from its waiting list. Yet in later stages of data collection avoiding this issue became problematic as the researcher had a clear idea of how the ultrasound waiting list was managed. Answers given to the interviewees tended to be vague in an attempt to dismiss the issue. Reflecting on the situation now, a potentially better approach might have been to outline how the ultrasound waiting list was managed. Patients then could have then been asked for comment on how the ultrasound waiting list ought to be managed. This would have added an ethical dimension to the case study data, which in some ways would have been illuminating complementing the "ought" analysis of CSH presented in Chapter 10.

Conclusions

Following Churchman (1991) the ultimate aim of health service research is to secure improvement. What improvement did the present research hope to secure? Part of the research bargain with the radiology department was that on the completion of the present research a number of specific policy recommendations would be made to the hospital where the study was conducted concerning its ultrasound waiting list.

Partly defining the purpose of the present research in this way caused a number of problems. First, at times the researcher tended to focus more on process issues (organisational flows and controls). This introduced a process bias into his research. Second, for the ultrasound service understanding patient and GP viewpoints was an attempt to make sense of what was seen as irrational behaviour, or as relayed by one sonographer, “the inability [of GPs and their waiting patients] to play [according] to the rules of the game.” The present research in part could be used to strengthen the ultrasound service’s capacity to control the actions of other stakeholders despite a later realisation that the waiting list was part of a system that could be regarded as coercive.

Given the nature of the research questions, a case study approach, which employed qualitative data collection and analysis methods, was justified. Difficulties including gaining access, participant recruitment, ensuring reliability and validity as well as how the present research dealt with these issues was discussed.

Chapter 5

Systems of Process and Structure

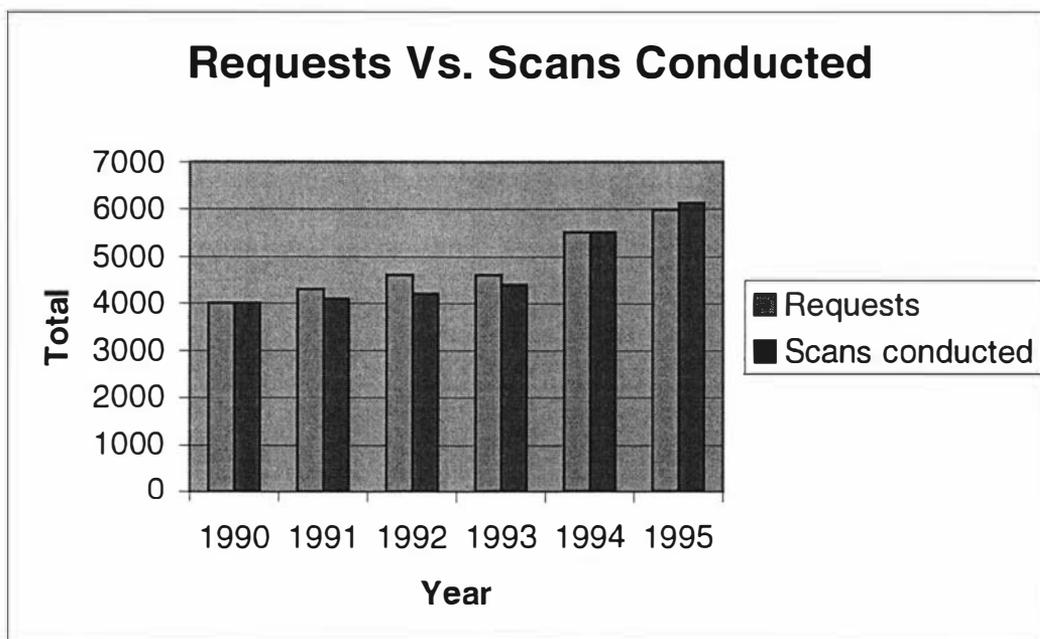
Stakeholder accounts of the waiting list are viewed through the first two systemic windows of process and structure (see Chapter 1). The chapter begins with the simple observation that the ultrasound service appears to operate in a resource-constrained environment and explores what might be termed bounds to process. Key processes that influence the ultrasound waiting list are then elucidated. The focus of the chapter then shifts to structure. Issues pertaining to the division of medical authority and how this impacts on operational policies, access arrangements and the existence of a private radiology service are discussed. Together process and structure contribute to the givens of stakeholder experiences of the ultrasound waiting list.

Bounds to process

The ultrasound service operates in a resource-constrained environment, which places a limit on the number of patients that can be scanned. This section looks at the process bounds of the ultrasound service by detailing the productive elements and examining workload statistics.

The ultrasound service, which is staffed by consultant radiologists, sonographers and clerks, offers an ultrasonography service to hospital and community-based clinicians in the region where the hospital was based. The ultrasound service scans patients five days a week between the hours of 8 a.m. and 3:30 p.m. Frequent session overruns mean that the ultrasound service is commonly open much later. A 1995 workload survey showed that approximately 23 referrals were received each calendar day and about 28 examinations were conducted every day a radiologist was present for about 11 months of the year. Figure 5.1 depicts the ultrasound service's workload for the years 1990 to 1995. The demand for

ultrasound has steadily increased. While supply has kept up with most of the demand, a steady backlog has developed. The net imbalance between supply and demand has resulted in the growing ultrasound waiting list although waiting list statistics (for example, waiting list length and average waiting time) are unavailable and must be inferred from Figure 5.1. The inference of waiting list statistics from Figure 5.1 is complicated given that the number of scans conducted includes inpatient examinations that are typically scanned within 24 hours⁴¹.



Note 1: In 1999 the ultrasound service scanned approximately 7250 patients.

Note 2: In 1981 the ultrasound service scanned approximately 2780 patients.

Note 3: Workload statistics for years 1982-1989 and 1996-1998 are unavailable.

Note 4: The backlog represented in Figure 5.1 as the gap between supply and demand is cumulative in the sense that requests unable to be scanned in one year are carried over to the next (and so on) unless the referring clinicians withdraws the request.

Figure 5.1: Requests versus scans conducted

⁴¹ The dynamics of the ultrasound waiting list mirror those of other (predominately surgical) waiting lists reported in the literature where despite increasing levels of throughput the waiting list has remained static or increased. Figure 5.1 lends some support to this observation although the reported numbers of referrals and procedures undertaken are likely to be inaccurate given that the ultrasound service does not systematically collect such information.

Supply in contrast to demand is constrained by two factors. First, funding levels are set explicitly by the purchasing agency, the HFA, via a set number of funded contracts. Historically funding levels have kept pace with growing demand but the HFA in an effort to equalise access to imaging services between regions reduced the number of funded community-referred contracts. A reduction in the number of community-referred contracts has meant that supply has not kept pace with demand and the community-referred waiting list has grown. Non-urgent community-referred patients expect to wait between six and 12 months.

Second, supply is limited implicitly by the availability of ultrasound machines and staff. The ultrasound service has two ultrasound machines. The first machine, despite being purchased in the early 1990s, is considered old and scans are increasingly being deferred to the second and newer machine. Despite budgetary constraints, internal access by outpatient and inpatient services has remained relatively unaffected. No limit has been set on the number of outpatient or inpatient scans and these are implicitly rationed according to staff or machine time left over when all of the community-referred contracts have been accounted.

Following accepted clinical guidelines it is a departmental policy that patients cannot be scanned without a supervising radiologist. Radiologist availability is a critical factor in determining how many patients are scanned each day. As radiologist availability cannot be taken for granted, the ultrasound service uses a two-week scheduling horizon to schedule approximately 250 community referred and outpatient appointments. The responsibility for making patient appointments and sending out appointment cards lies with Receptionist A⁴². In addition to radiologist availability, differences in radiologist skill mix mean that session time is restricted for some patient streams.

This section has examined some key organisational factors that impact on the productive capacity of the ultrasound service. It is within this context of scarcity, highlighted by the bounds on process, that the ultrasound waiting list is managed.

⁴² The names of study participants have been altered to preserve anonymity.

Systems of process

Processes are “ordered flows of events” that are undertaken to accomplish a particular task (Flood, 1999a, p. 98). The system of access, which includes the waiting list, is mediated by following key processes: referral, selection, production, interpretation and decision (Figure 5.2). Because the ultrasound waiting list is affected by GP referrals as well as the relationship between supply and demand, GP, patient and ultrasound service processes are considered.

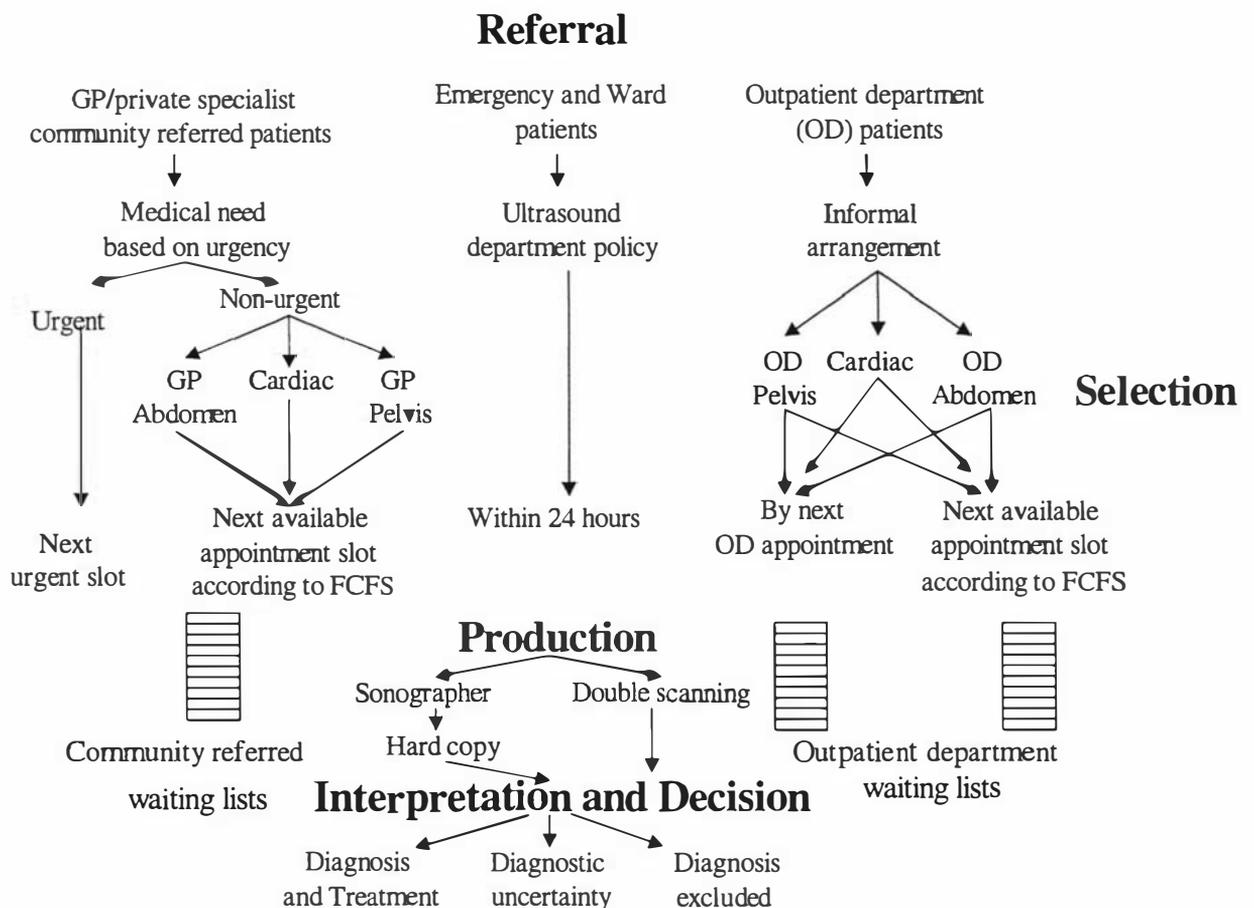


Figure 5.2: Systems of process

This section traces the referral process at the micro level along what Shortell and Kaluzny (1994) call the pathway to wellness from the initial patient consultation to the ultrasound

diagnosis and action taken by the GP. The key decisions governing referral and selection are documented. Other processes including production and interpretation of an ultrasound-based diagnosis that involve the interaction of key internal stakeholders are discussed. Management processes, which support the operational processes, are briefly considered. Operational processes will be examined in detail in later sections where systems of meaning and knowledge-power are detailed.

Referral

Patients present at the GP's surgery with a variety of complaints, many of which are nebulous and vague. Uncertainty is a defining characteristic of general practice with the GP's world being a curious mix of the trivial and the potentially serious. Despite this clinical uncertainty, most patients expect a diagnosis and cure. At the least, patients expect relief from symptoms^{43,44}.

Following Rogers, Hassell and Nicolaas (1999) the GP's task is fourfold. First, to diagnose the underlying abnormal pathology, if any; second, to assess any likely risks of the problem to the patient; third, to treat or alternatively refer to an appropriate specialist for expert advice; and finally, to reassure the worried but well patient. In recent times, however, consumer advocates have argued that the correct role of the GP is to empower the patient by providing sufficient information and support to help patients decide the best course of action consistent with patient health beliefs, values and wishes (see Williamson, 1992).

⁴³ Even though the GP is the patient's first point of contact with the formal health system, prior to or concurrent with consulting with a GP patients often turn to family, friends or other community health workers such as pharmacists for help (Cooper, 1975). The decision to consult a GP is often suggested by such people (Smith, 1984). The delayed decision to consult a GP is based on a number of factors that have been investigated by medical sociologists and health service researchers who are interested in exploiting lay care as a rationing mechanism. For example, Rogers, Entwistle and Pencheon (1998) cite a number of reasons including health beliefs about risk or significance of symptoms, financial considerations and past experiences with the formal health system.

⁴⁴ For example, patients with vague abdominal pain often present to the GP soon after the pain has occurred (Frear, Tilyward and Gurr, 1997). These patients are frequently referred for an ultrasound to assist in diagnosis, in spite of the fact that ultrasound rarely demonstrates abnormalities in such cases. GPs and patients, however, are reassured by the exclusion of abnormal pathology.

Depending on the clinical context, making a diagnosis is not always a clear-cut process; there may be a number of possible causes for worrying or painful symptoms, although some causes will be more likely than others. Further testing may be needed to exclude or confirm a diagnosis before treatment or a referral is initiated.

Ultrasound is available to GPs and their patients at both public and private facilities. Unlike the fully priced private radiology facility, the public service is free at point of service, but the length of the public waiting list makes accessing the public ultrasound service problematic. Private ultrasound is readily available and is used by patients who hold private medical insurance or are able (and prepared) to pay out-of-pocket. GPs usually will ask their patients whether they have private medical insurance, and advise their patients with medical insurance to have their scan done privately. A private scan can usually be arranged that same day or at some other time at the patient's convenience. As the present research focuses on the public ultrasound service, the remainder of this section will concentrate on the referral process at the public facility where the ultrasound service is located.

To request an ultrasound examination, a referral form is filled out by the GP. This form contains information about the patient, a clinical summary that describes the patient's symptoms and tentative diagnosis and the GP's details. Hospital-based clinicians fill out a similar form. GPs may also indicate the urgency of the scan. In particular, if a GP feels the ultrasound scan is urgent, the consultant radiologist will be contacted to make a special arrangement. Without such an indication, clerical staff will assume that the patient is non-urgent and does not require an immediate scan, resulting in the patient being placed on the waiting list. Alternatively, a GP may refer the patient to an outpatient consultant and leave it up to the discretion of the outpatient consultant to order an ultrasound scan.

Non-urgent patients are advised by the GP that they are likely to wait for an ultrasound scan. Many GPs, however, give vague or inaccurate waiting time estimates. This is partly because the waiting times vary week-to-week, regular updates about likely waiting times are not provided by the ultrasound service and GPs are unclear about the selection criteria

that are used to prioritise non-urgent patients. Such information about waiting times is available, however, if a GP makes a specific inquiry.

The GP usually mails a referral form to the ultrasound service where the request is received and opened by Receptionist A. A few GPs fax their referral form to the ultrasound service, often marked with urgent. It is department policy, however, that the GP must ring a radiologist if an urgent scan needs to be arranged. A small number of GPs will also advise their patient to personally take the form into the ultrasound service with the hope the patient will opportunistically present at the “right place and time,” thus bypassing the “queue,” should another patient fail to show for an appointment.

Once the referral is received at the ultrasound service, Receptionist A will sort through the request forms and separate them according to membership in two main groups or patient streams: “GP abdomen” and “GP pelvis.” Unless an urgent scan has been organised, “GP abdomen” or “GP pelvis” scan requests are placed in separate waiting lists. Due to different funding streams, all GP referral forms are kept separate from inpatient or outpatient requests. Funding issues are further discussed in Chapter 7 when the internal stakeholder perspectives are considered.

The placement of the referral form onto the waiting list – or strictly speaking into the correct pile - marks the completion of the referral process. This paper-based waiting list that is depicted in Figure 5.3 raises a number of questions about reliability. Patient request forms can be lost or placed in the wrong pile. In these cases, the GP may be asked to resend the request form despite some patients reporting receiving more than one appointment. With growing waiting list, increasing (and ongoing) levels of maintenance are required to maintain the viability of the waiting list as an administration structure. Iversen (1993) has claimed that such inefficiencies serve to divert productive resources and thus serve to perpetuate lengthy waiting lists.



Figure 5.3: The literal ultrasound waiting list

Waiting and Selection

Strictly speaking waiting is not a process. It is a delay between the referral and selection processes. However, in Chapters 8 and 10 it will be argued that waiting is integral to the selection process, as it allows a particular image of illness to be enacted and used as justification to allocate appointments between referrals.

Many commentators have noted that selecting patients from surgical waiting lists is a difficult exercise that is influenced by a variety of medical and non-medical factors. Frankel (1993) has noted that clinical interest and public disinterest are instrumental in explaining why apparently cost effective, desirable and beneficial procedures are delayed in favour of other procedures. Cullis (1993) cites the work of the health economist Williams (1990) who has suggested that patients be selected for treatment based on the cost per quality-adjusted life year. The New Zealand booking system utilises a variety of guidelines to help clinicians select patients who are in need and will benefit from treatment.

The ultrasound service, in contrast, selects patients in a straightforward manner. An appointment system is used to structure and limit the number of “slots” or appointments assigned to patient streams. Patients are assigned to those appointment slots on a first come first served basis. Patients who are considered urgent by a radiologist are given the next available appointment slot.

The appointment system: “the book”

The ultrasound service’s workload is structured according to a template developed by the charge sonographer. This appointment system or the “book” as internal stakeholders describe it, covers a two-week scheduling horizon that carves up the working week into morning and afternoon sessions. Each session consists of a variable number of half hour slots in which individual patients are scanned.

Both GPs and specialists refer community-based patients, with the majority referred by GPs. No distinction in selection is made between GPs and specialists outside the hospital. Despite this fact ultrasound staff refer to appointments where community-referred requests are scanned as “GP slots.” A limited number of slots are reserved for departments such as the neonatal unit. Unscheduled patients requiring immediate attention are metaphorically “squished” in between slots.

Community referred and outpatient slots are further characterised according to which body cavity needs to be scanned. This division, as previously discussed, is partly pragmatic due to the need to manage an increasingly large number of referral forms, making it difficult to remove patient clinical summaries from the respective waiting list if a request needs to be reassessed for urgency. Categorising the waiting list according to body cavities provides the ultrasound service with a number of additional advantages. First, as one radiologist does not report or scan gynaecology or obstetrics patients, radiologist skill mix can be accommodated. Second, in order to facilitate training sessions, runs of “pelvises” and “abdomens” are required. Third, separating out patient streams into body cavities also allows the ultrasound service’s workload to be monitored and if necessary adjusted. Mini

waiting list “blitzes” for example, may be done, although a reduction of one pile (of referral forms) is invariably at the expense of another given radiologist skill mix constraints.

The total number of slots is determined by staffing levels and the number of functioning ultrasound machines. In principle, with two ultrasound machines that operate Monday to Friday, 8:00 a.m. to 3:30 p.m. with a one-hour break for lunch, a total of 28 patients could potentially be scanned each day. However, in practice the actual number of patients scanned differs due to a number of factors that limits the effective capacity of the ultrasound service. Of particular concern is that the ultrasound service is contracted to scan a certain number of community-referred patients per year. Not only does this place a ceiling on the number of community referrals to be scanned; it also influences the ultrasound service’s capacity to meet what is essentially an open-ended commitment to carry out scans ordered by the outpatient department and inpatient service. Slots are allocated to patient streams in the following way:

Firstly what we work out is what we are funded to do for community referrals ... you divide that into working days...[to] meet our requirements with the regional health authority... we make sure we have enough slots to cope with... the average amount of ward work. And then after that we do all the outpatient work we can do. (Sonographer A)

Three simple allocative heuristics govern how time is allocated between community, outpatient and inpatient requests. Ensuring that all contracted community-referrals are scanned is an important consideration for the ultrasound service and ensures a reliable source of revenue. Either because of urgency or the need to minimise length of stay, inpatients are scanned the same day of referral if possible.

Sequencing patients within patient streams

Unless an urgent scan is organised, and in the absence of clinical indications that the scan is urgent, patients are selected according to the heuristic “first come first served.” All requests must be scanned reflecting what Manager E sees as a paradox:

We are unable to provide an adequate service and therefore we are holding up the management of the cases that are dependent on an ultrasound image. Ultimately if the clinical – here you have a bit of a paradox – if the clinical inspection of the

patient, which prompted the referral, is correct then the condition of the patient is likely to be worse as a result of the waiting list. (Manager E)

In order to respond to a patient enquiry or to reassess whether a patient needs a scan urgently, ultrasound staff need to locate the request form. As forms are placed in the relevant body cavity pile in order of referral, the form can be retrieved if the date of referral is known.

Patients are sent out an appointment card indicating the date and time of their scan. Patients are also asked to ring the ultrasound service if the appointment time is unsuitable. Because of the nature of ultrasound, patients may be required to prepare for their scan, for example to fast or drink fluid. Information regarding preparation is also sent out. Some patients may fail to keep the allocated appointment and are labelled “did not attend.” In these cases, Receptionist A will notify the patient referring doctor and ask whether a scan is still required.

Production

In general radiology, a clear distinction is made between production and interpretation. The former is the responsibility of the radiographer, while the latter is the responsibility of the radiologist, requiring expert medical knowledge. In ultrasound, unlike other imaging modalities, the distinction between production and interpretation is blurred due to scanning being in “real time” and therefore the process is operator dependent. This produces a boundary conflict between the sonographers and the radiologists that will be explored in detail in Chapter 8. The purpose of this section is to describe production from a process-oriented viewpoint.

The production process can be divided into four sub-processes: patient preparation, scanning, confirmation and capturing of the scanned image⁴⁵. The description of the

⁴⁵ Gendall (2000), in an article in the *New Zealand Doctor* exploring “The mysteries of an abdominal ultrasound,” provides a description of how an abdominal ultrasound is done.

production process detailed in this section is obtained from interviews and the observation of a small number of ultrasound scans.

In order to ensure a successful scan, patients booked for abdominal and pelvic scans (who make up much of the service's workload) require preparation. Preparation for an abdominal scan is age specific and does not apply to children under the age of 12. Adult patients need to drink in a short period at least one litre of clear fluid (for example, water or fruit juice). Patients who arrive unprepared may be given another appointment, although in practice most are given fluid and told they can be scanned later in the session. Women requiring a pelvic scan transabdominally do not need to fast but need to drink one and half litres of clear fluid. If a transvaginal or endovaginal scan is required the patient will have to empty their bladder.

An ultrasound scan can be relatively unpleasant for some patients. Staff and patients consider the environs as inadequate. Patient privacy is a major concern as the ultrasound service is small and faces a busy hospital corridor. The intimate nature of some scans, and the pressure of the transducer on a full bladder or tender abdomen are uncomfortable. As session overruns are also common, waiting in a public waiting room with a full bladder is a source of discomfort for patients.

The scan itself is relatively straightforward, although for some inpatient scanning may be technically difficult. Patients are called into the examination room. For pelvic scans (particularly transvaginal or endovaginal) a third person may be present in the room while the scan is conducted. This is not only for the protection of the patient but also for the sonographer, who could potentially be accused of sexual assault and battery.

Patients are asked to change into a hospital gown. Once changed, patients lie on an examination table. The sonographer will then explain the procedure and may ask the patient about their symptoms, especially if the patient has been on the waiting list for a considerable period of time. This information is compared with the GP's clinical summary and if necessary a revised clinical question will be investigated. The sonographer scans the

patient, often from a variety of planes so that a clear picture of the suspected abnormal pathology can be obtained.

Scanning time varies depending on the patient, the procedure, the complexity of the disease process and the skill of the sonographer in managing these factors. Regarding patient factors, obese patients pose difficulties in obtaining a clear image as fat deflects ultrasound. For echocardiography examinations, variations in chest wall thickness across the patient population can make imaging difficult. The patient needs to co-operate with remaining still during the scan. This makes dealing with some patients, for example, patients in pain or otherwise in distress, problematic. Persons with Downs syndrome, who are likely to have congenital heart defects, present a particular challenge to the sonographer.

Patients may ask the sonographer what has been found and if they are “okay” or “normal.” Because giving a medical diagnosis is legally a medical practitioner’s responsibility, sonographers are not permitted to communicate the results of the scan. Sonographers are thus placed in a difficult position, as they are competent to detect whether or not a scan is normal, and in practice experienced sonographers have been known to reassure patients that all is well if nothing abnormal is found.

Once the sonographer has completed the scan, an image is captured. A variety of media can be used although photographic film is commonplace. The development of real time ultrasound has also meant that video is used to capture images.

As the sonographer is under the direct supervision of a consultant radiologist, the sonographer will approach the radiologist and ask whether the radiologist would like to rescan the patient to confirm the sonographer finding. With two ultrasound machines in operation and the radiologist covering both, it is likely that the patient will have to wait again until the radiologist is ready to repeat the examination. This is known as double scanning⁴⁶, or more formally second look sonography (Tessler, Tublin, Peters et al., 1996).

⁴⁶ Some sonographers colloquially refer to double scanning as “double doing.”

After the radiologist is satisfied with the outcome of the examination, the patient dresses and leaves the department.

Interpretation and decision

Once the radiologist confirms the diagnostic interpretation or alternatively is satisfied with the sonographer's scan, a copy of the image is made for the patient's report. For other examinations such as the assessment of foetal growth, a series of measurements are made and compared against growth charts.

Each radiologist has a different style of reporting. Some dictate the report at the end of each examination although other radiologists will wait to the end of each session and dictate all the session's reports. The risk of delaying reporting to the end of the session is that radiologist's notes can be mislaid or confused; the sonographers are critical of this reporting style.

The report is typed by the department of radiology's typist and then checked by the radiologist before it is mailed out to the GP, a process generally taking five days. If an urgent problem is uncovered, the radiologist may contact the GP via telephone. Occasionally, the radiologist will liaise with an appropriate hospital consultant to organise an outpatient consultation.

The report reflects a specialist's opinion. While the aim of the report is to detect abnormal pathology to confirm or exclude a diagnosis, if the ultrasound scan is normal and cannot account for the clinical signs or symptoms, the radiologist may recommend an alternative investigation or leave it up to the referring clinician to decide what to do next. In many cases, the referring clinician will use the radiologists' report to organise the next stage in treatment or care. An outpatient consultation may be organised or antibiotic treatment for suspected renal disease for example can be stopped. The scan may also be used to reassure the patient that nothing "untoward is happening," such as cancer in the case of abdominal lumps. In other cases, as when gallstones are discovered, the patient may need to be

referred for an outpatient consultation where the patient's suitability will be assessed for surgery. The patient may be added to the general surgery waiting list.

Management processes

Management processes support the flow of work through the processes identified in Figure 5.2. Key management processes were securing funding from the HFA in the form of a fixed number of community-referred contracts and ongoing monitoring by the charge sonographer to see how many community-referred contracts had been actioned. The charge sonographer also collects information on the ultrasound waiting list by estimating the number of new referrals received each month that have yet to be scanned. This information is sent to the departmental managers.

Systems of structure

Systems of structure form the basis for co-ordination, communication and control of the productive processes that mediate the system of access to the ultrasound service. Flood (1999a) defines structure as “a set of rules and procedures that organise management support around operational activities and within operational activities themselves” (p. 104). As with the systems of process, structure needs to be understood so the stakeholder accounts of the ultrasound waiting list can be put in context. Emerging from the case study findings were three aspects of structure that impacted on the management of ultrasound waiting list: first, how medical authority - that is, the right to diagnose - is divided among the stakeholders and expressed in terms of the ultrasound service's operational policies; second, access routes into the ultrasound service; and third, the existence of a private radiology facility, which operates in parallel to the ultrasound service.

Division of medical authority

A significant rule that constitutes the systems of structure is the division of medical authority that separates and mediates interactions between stakeholders. In New Zealand as

in other western countries, medical practitioners fall into one of two categories: specialists and GPs⁴⁷. For a number of reasons a hierarchy has emerged among medical practitioners. Within the health system, doctors possessing specialist knowledge have been highly regarded while GPs have tended to be viewed with considerably less respect. The GP based in the community often deals with trivial cases such as sore throats. In marked contrast, the specialist deals with a variety of intellectually challenging and often potentially life-threatening conditions. The division between primary and secondary levels of care is also reflected in working conditions and levels of remuneration⁴⁸.

The division of medical authority is related to the degree of involvement in patient care and to the patient experience. A hierarchy of medical authority in relation to the ultrasound service is depicted in Figure 5.4. Departmental managers – despite all being ex-radiographers – are absent from Figure 5.4 as they do not undertake any clinical work. It also should be noted that the position of the sonographer and the waiting patient is difficult to place in the hierarchy and that while outpatient consultants and radiologists have equal expertise in their respective specialist areas, radiologists consider themselves more expert at making ultrasound diagnoses. The issue of radiologist expertise and the anomalous positions of the sonographer and the waiting patient will be explored in later chapters.

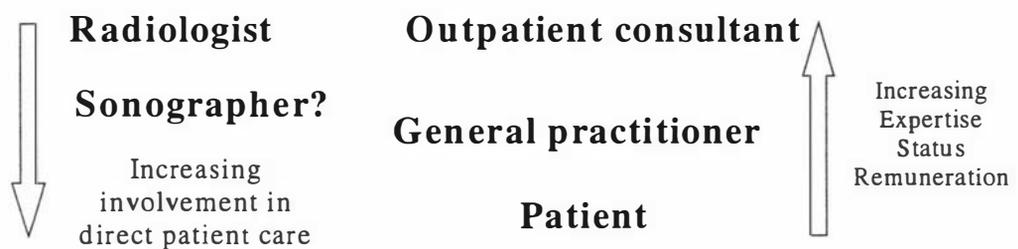


Figure 5.4: Hierarchy of medical authority in the ultrasound service

⁴⁷ Some, however, promote the view that general practice is a speciality. In the United States the speciality is called Family Practice.

⁴⁸ This distinction (at least in the past) has been blurred in New Zealand with the role that GP-anaesthetists and GP-surgeons have played in the provincial hospitals (West, 1978).

The radiologist, or imaging specialist as some have suggested as a more accurate term, is a medical specialist. Ryan, Sutton and Baigent (1996) define a radiologist⁴⁹ as:

radiologist [emphasis in original] (Dr) The practitioner who interprets and reports on x-ray film or other organ imaging examination, such as ultrasound. This person has medical qualifications and takes legal responsibility for the interpretation of images. The medical practitioner is in charge of the examination and carries responsibility that the test will be carried out by the best method possible in order to obtain the most diagnostic information possible. Radiologists are also responsible for the actions of any staff employed under their direction. (pp. xv – xvi).

After Ryan's et al. (1996) description, the radiologist may rescan the patient to confirm the sonographer's finding, reports on the results of the ultrasound scan and thus guarantees the accuracy of the diagnosis. The radiologist may also make arrangements for another radiological test if the referring clinician's request for an ultrasound is deemed inappropriate.

A GP⁵⁰ is a registered medical practitioner who is often the patient's first contact with the formal health care system. GPs use ultrasound to assist them in reaching a diagnosis and organising treatment. For the ultrasound service, the GP by their location in the community and generalist orientation acts as a gatekeeper determining which patients warrant an ultrasound scan.

⁴⁹ In New Zealand and Australia, radiologist status is conferred by membership in the Royal Australasian College of Radiologists (RACR) although other radiologists with recognised overseas specialist qualifications can also practice in New Zealand. The RACR also includes in its membership radiation oncologists. To train as a radiologist takes approximately five years after registration as a medical practitioner. In 1996⁴⁹, a total 240 people were employed as radiologists or radiation oncologists. Of those, 45 percent were female; however it is unclear how many women work full-time as opposed to part-time. Most radiologists/radiation oncologists practised in Auckland (41 percent), Wellington (13 percent) and the Christchurch regions (10 percent). Radiology is a well-paid profession. Of the 80 percent of publicly employed radiologists/radiation oncologists, most earn between \$75,000 and \$100,000. The earning potential of a private radiologists/radiation oncologist is much higher and a radiologist/radiation oncologist may hold dual public/private appointments. Approximately 15 percent of radiologists/radiation oncologists describe themselves as self-employed.

⁵⁰ With the establishment of the Royal New Zealand College of General Practitioners (RNZCGP), GPs must undertake a general practice vocational training programme and meet the entry requirements to become a member or fellow of the RNZCGP. GPs are also expected to engage in ongoing professional development and peer review. Unlike a radiologist who tends to work structured hours, a GP can expect to work irregular and long hours. GPs are generally self-employed, and most earn between \$80,000 and \$90,000 a year. While similar to public radiologist remuneration levels, GP earnings are capped, as unlike public radiologists they cannot take on additional private work. In 1996, of New Zealand's 11,557 registered medical practitioners, 3,480 (30 percent) were employed as GPs. Females make up 32 percent of GPs and most GPs work in Auckland (33 percent), Canterbury (15 percent) and Wellington regions (11 percent).

Allied health professionals are also usually overlooked when issues pertaining to medical authority are discussed. Due to effective boundary maintenance activities other health professionals such as radiographers and nurses have been subordinated to the authority of medical practitioners (see Larkin, 1983). Allied health professionals have limited scope for autonomous action and are frequently sidelined from such discussions. Nevertheless allied health professionals do carry out tasks that are critical to diagnosis, treatment and patient safety. For this reason in the present case study it is important discuss the role of the sonographer.

Sonographers are also referred to ultrasonographers, ultrasound technologists and imaging technologists. Other health professionals can be less charitable and refer to sonographers as technicians⁵¹ (for example, Rimington, Adam and Chamber, 1996b). Sonographers may also specialise. In the United States for example, sonographers who scan vascular patients are known as vascular technologists. Likewise, sonographers who image the heart are known as cardiac technologists. Most sonographers are ex-radiographers although other health professionals such as nurses and midwives also practice sonography.

The Australian Sonographer's Association defines a sonographer⁵² as a "professional health care worker with Qualifications and Experience in one or more fields of diagnostic ultrasound involving the recording and interpretation of sonographic images and/or data" (<http://www.a-s-a.com.au>). As non-medically qualified health professionals, sonographers support the diagnostic work of the radiologists. Sonographers prepare the patient for examination by the radiologist by calling the patient from the waiting room into the ultrasound service, explaining to the patient the nature of the procedure, undertaking an initial scan and formulating an initial impression of the patient's condition. Sonographers also assist in housekeeping duties such as cleaning equipment and maintaining

⁵¹ As another example Tully and Mortlock (1999) refer to sonographers as medical equipment controllers.

⁵² It is interesting to compare this definition with the one offered by Ryan et al. (1996) who authored the official history of Australasian radiology at the request of the Royal Australasian College of Radiologists. Ryan et al. (1996) defines a sonographer more narrowly as a "... highly trained person who carries out ultrasound examinations. He or she holds the DMU [that is, the diploma of medical ultrasound] of the Australian Society for Ultrasound in Medicine" (p. xvi).

departmental records. The charge sonographer has overall responsibility for the day-to-day management of the ultrasound service including monitoring the number of community-referred contracts remaining and ensuring adequate staffing. As the sonographers are under medical supervision they are responsible to the radiologists for all work done. The student sonographer reports to the charge sonographer but is in practice supervised by staff sonographers.

The patient occupies a position at the bottom of the medical authority hierarchy. If an open system view is adopted it should be noted that the lay interpretation and treatment of illness forms a significant part of the health system, yet in formal discourse this is seldom acknowledged (see Cooper, 1975; Rogers et al., 1998).

The ultrasound service is managed by the department of radiology whose management team consists of a clinical director, charge radiographer, deputy-charge radiographer and a departmental manager with quality assurance responsibilities. With the exception of negotiating with the HFA over the value and number of community-referred contracts - which according to radiologists and sonographers bears little relation to the growing ultrasound waiting list - departmental managers have little to do with the ultrasound service. The ultrasound service is under the control of the radiologists who set department policy but who do not involve themselves with the day-to-day management of the ultrasound service.

Although a radiologist informally oversees the ultrasound service, the radiologists collectively set departmental policy. A key departmental policy is the requirement that a radiologist must be present when patients are being scanned, a policy that has been reinforced by double scanning. The insistence on double scanning is a controversial policy decision and has been imposed by the radiologists without regard for the departmental managers' and sonographers' concerns that it may lengthen the ultrasound waiting list.

Given double scanning, the work patterns of the sonographers are governed by radiologist availability. In contrast, radiologist work patterns are determined by a variety of factors,

many of which are idiosyncratic to individual radiologists and set according to their clinical preferences. First, as mentioned radiologist skill mix limits what examinations are conducted when; and second, the amount of time individual radiologists choose to spend in ultrasound as opposed to another imaging modality potentially limits radiologist coverage. It is these horizontal rationing decisions that are based on clinical preference, which govern the availability of the radiologist.

Access arrangements

Access to the ultrasound service is governed by a number of operational policies, which reflect the division between primary and secondary level of care. The first operational policy affords inpatient requests priority and requires that such referrals are actioned within 24 hours. A second operational policy is an informal arrangement with outpatient consultants to scan patients according to their next scheduled clinic appointment.

GPs and specialists outside the hospital can also request ultrasound examinations. This third operational policy means that GPs do not need to involve a third party such as an outpatient consultant to legitimise their request as necessary or beneficial. This open access⁵³ arrangement is funded through the HFA, which contracts the ultrasound service to scan a fixed number of community-referred patients each year.

Durham and McLeod (1999b) have cited studies suggesting two reasons why access to radiology services is restricted in New Zealand: first, that a lack of funding limits the capacity of radiology departments to deal with GP requests; and second – echoing literature reviewed in Chapter 8 - that GPs make a disproportionate number of inappropriate referrals. At the case study site these views were also held by HFA. It is for these two reasons that open access arrangement is a controversial operating policy among stakeholders. Internal stakeholders in particular lay blame for the intractability of the ultrasound waiting list by citing inadequate resourcing and inappropriate referrals as core problems.

⁵³ See Appendix C for a brief review of the literature relating to open access to radiology services.

Private Practice

In New Zealand private radiology⁵⁴ facilities exist in a number of cities with groups of radiologists pooling the necessary capital. There is one private radiology facility in the case study region, which offers a comprehensive range of imaging services including computerised tomography, ultrasound and nuclear medicine. For the purposes of the present research it is referred to as the private radiology facility.

Access to the private radiology facility is open to all medical practitioners and private radiology facility draws on many revenue streams. According to its managing director, the private radiology facility is always looking for ways to expand its business. A large part of its income comes from a maternity contract held with women's health unit at the hospital, as the public ultrasound service cannot cope with the volume of obstetrics referrals. Private hospitals also utilise the private radiology facility. Another source of income is Accident Compensation Corporation (ACC) patients. Because of difficulties of obtaining a public scan, GPs will refer patients covered by ACC to the private radiology facility. There is no co-payment. Most ACC patients suffer from musculoskeletal problems, which are often the result of a sporting injury.

The presence of a private radiology facility is the other structural characteristic that mediates patient access to ultrasound. In New Zealand, as in the United Kingdom context, private practice has often been implicated as a cause for the growth of hospital waiting lists. While this is almost certainly an over-simplification, the link is difficult to dismiss given that clinicians do hold dual appointments in private and public hospitals and that the public is increasingly finding the altruistic claims of the medical profession difficult to accept. The "evils" of private medicine in New Zealand were suspected as early as the 1940s (Dukes, 1948).

⁵⁴ The book "Australasian Radiology: A History" (written for the Royal Australasian College of Radiologists) provides a historical account of radiology in Australia and New Zealand but has little to say about the history of private practice (Ryan et al., 1996).

The existence of public hospital waiting lists plays a key role in the advertising strategy for the private radiology facility. But perhaps more significantly, it is the GPs who tend to ask patients whether they have private medical insurance. If this is the case often the GP will suggest that the patient “goes private” and patient willingness to be scanned privately is considered an important rationing mechanism by the ultrasound service and HFA. At the ultrasound service the issue of private practice is complex and is a source of tension between staff. Departmental manager B, Sonographer A and Radiologists X and W are critical of the private radiology facility, with Radiologist W describing the private radiology facility as the “dark-side.” The existence of a private radiology facility raises concerns about equity in access. Radiologist X was particularly outspoken:

They [that is, the patients] shouldn't be forced to go private because the waiting list is too long. That isn't fair is it? In other words its money they can't afford otherwise they would have gone private in the first place. (Radiologist X).

Radiologist Z downplayed the suggestion that the private radiology facility influenced the growing ultrasound waiting list. He noted that given that the bulk of the ultrasound waiting list is for abdominal scans, a surprisingly small number are scanned privately and that private obstetric work is funded separately from community-referred contracts.

I suppose in some ways it suits [the private radiology facility] that there is a [lengthy] waiting list. [They] don't actually do that much abdominal ultrasound really considering. [They] do a lot of obstetric stuff but that's because it is funded separately. (Radiologist Z)

Given Radiologist Z's comments it is interesting to note that the hospital diverts its obstetric work to the private radiology facility as the public ultrasound service is overloaded. While the hospital does not pay the private radiology facility to undertake the obstetric work, it represents a missed opportunity to earn revenue from maternity contracts.

Departmental managers and sonographers were critical of radiologists with dual private and public appointments believing that such an arrangement was a “conflict of interest.” In contrast, patients and GPs did not see the existence of the private radiology facility as a conflict of interest, although it is unclear whether waiting patients knew that some radiologists held dual private and public appointments. While patients and GPs were

sensitive to the fact that some patients could not afford a private scan, for them the private radiology facility offered a service and alternative to the lengthy public waiting list.

Despite the controversy surrounding private radiology, the private radiology facility has a close working relationship with the radiology department and radiology consultants. One radiologist is the managing director of the private radiology facility while another is a principal partner and one departmental manager also works as a clinician.

Conclusions

This chapter has examined issues relating to process and structure that provides the context to help understand the findings and analysis presented in subsequent chapters. The processes, which represent what work is done by whom was detailed beginning with the patient presenting in the GP's surgery with symptomology and ending with an ultrasound diagnosis that is used to direct rational treatment or referral. These operational processes enabled a diagnosis to be reached. In contrast to operational processes, there were few management processes that supported the clinical work.

Focusing on the system of structure and in particular the division of medical hierarchy highlighted the nature of the operational policies governing access. The system of structure mirrored the split between primary and secondary levels of care. With the exception of the referral process, all other operational and management processes occur within the hospital where the ultrasound service is based. Access to ultrasound is similarly determined with requests from hospital-based clinicians scanned as required unlike GP requests, which could be deferred for extended periods of time. The private radiology facility although staffed by some public radiologist operated outside the system of structure underlying the ultrasound service.

A focus on systems of process and structure highlights the importance of the referral form in mediating between stakeholders and determining the patients' eventual diagnosis: processes do work on the referral form and the structure directs the referral form. The focus

on the referral form leads to the realisation that the literal ultrasound waiting list is little more than a collection of request forms that is depicted in Figure 5.3.

Figure 5.3 begs the question: “how can a simple collection of forms result in such a complex problem as described by stakeholders?” This suggests that the ultrasound waiting list is a social construct that is given meaning by stakeholders and points to the need to understand the perspectives and action areas of internal and external stakeholders. An understanding of process and structure is insufficient by itself if the ultrasound waiting list is to be better understood and managed systemically. Nevertheless an understanding of process and structure does raise a number of important issues relating to efficiency, reliability and effectiveness. Given that the waiting list is a collection of request forms, the possibility that referral forms are lost or incorrectly placed in the pile increases as the waiting list grows in size.

The unresolved issues of open access and the appropriate role of the private radiology facility were flagged as potential barriers to effectiveness of the ultrasound service. GP requests are unnecessarily delayed due to claims of inappropriateness and presence of a private radiology facility raises the possibility that it provides an economic incentive for radiologists with dual public/private appointments to maintain lengthy waiting lists.

The next two chapters look at the systemic window of meaning to better understand how stakeholders interpret the waiting list problem. Chapter 6 examines the accounts of GPs and waiting patients while Chapter 7 details the perspectives of radiologists, departmental managers and sonographers.

Chapter 6

Systems of Meaning

From the outside: perspectives of waiting patients and GPs

There are two perspectives from which the ultrasound service (that embodies the ultrasound waiting list) can be examined in terms of the quantitative and qualitative dichotomy discussed in Chapter 4. The first perspective is reflected in the literature on waiting lists where the emphasis is placed on understanding objective givens that are typically associated with process and structure. The second perspective is concerned with meaning and has received considerably less attention, which on reflection is perplexing, as waiting lists are agreements between the respective hospital departments and referring clinicians to attend to patients at a later date. Waiting lists are not physical structures.

Little is known about how stakeholders view and construct the waiting list problem. Waiting patients are a case in point. While researchers have surveyed patients about the acceptability of waiting times, there have been few attempts at unpacking what acceptability might mean to patients. Few researchers have attempted to understand the lived experiences of patients. An emphasis on supposed objective attributes of waiting lists, while ignoring the subjective nature of the phenomenon, probably arises from the value that researchers and policy makers place on different types of knowledge, and a realist outlook that dismisses the constructed nature of social reality. Consequently, subjective definitions of the waiting list problem are seen as anecdotal and are thought to play no role in informing how waiting lists are managed. Nevertheless, subjective definitions form the basis for purposeful social action on which systems of process and structure are built. It is through process and structure that meaning is enacted, constituting the waiting list problem.

What is notable from the stakeholder accounts is that while there is broad agreement that a problem of some description exists, there is little agreement between stakeholders over what exactly the problem is and hence how it should be resolved. It will be argued that such disagreements, while not necessarily overt, are attributable to different images of illness and expertise informed by the various interests and values of stakeholders. This chapter details the external perspective, the views of the waiting patients and the GPs who request the test. These stakeholders exist outside the systems of structure and process, which are based on specialist medical authority, that are ultrasound service and the hospital.

A barrier to diagnosis

The GP is the patients' first point of contact with the formal health care system and acts as a filter between lay and medical systems of rationing. Patients often present with a number of undifferentiated symptoms that may be worrying to the patient, GP or both. Something may be wrong. While it is the patient's responsibility (after Parsons, 1951) to seek medical attention, it is the task of the GP to find out what, if anything, is wrong, and to treat the cause of the patient symptoms. Alternatively, the GP may need to refer the patient to secondary care where a hospital-based clinician can assume responsibility for the patient's care.

The decision to treat or refer depends on the perceived seriousness of symptoms and the GP's ability to diagnose and treat the likely underlying cause in the general practice setting. In many cases, the decision to refer is relatively clear-cut and it is generally thought by policy makers and specialists that the remainder of general practice consists of the irrelevant and trivial⁵⁵.

Central to the GP's task is the establishment of a diagnosis that explains the patient's troubling symptomology and suggests a rational course of treatment. An ultrasound scan is

⁵⁵ Richards and McPherson (1981) noted that seven percent of surveyed United Kingdom GPs saw trivialities as a source of frustration. Walton, Romans-Clarkson and Herbison's (1990) survey results demonstrated that GPs did not believe that patients consulted inappropriately. They found that 21 percent of GPs thought that five percent or more consultations were inappropriate and that 37 percent of GPs thought that none or less than one percent of consultations was inappropriate.

one of many diagnostic tools that GPs can use. A GP will order an ultrasound scan based on a clinical impression, informed by history taking, knowledge about the patient and a clinical examination. While the clinical impression may be uncertain, and the appropriateness of the referral may be questionable in hindsight, a referral nevertheless represents a working diagnosis or hypothesis about what could be wrong. The significance of the referral lies not so much in the scan outcome, but in the thinking processes that led to the referral.

The suspected abnormal pathology is then confirmed or excluded by the radiologist/sonographer who correlates the GP's clinical impression with the ultrasound image. While a normal scan may indicate that patient symptomology is idiosyncratic in the sense that it fails to correlate with the GP's clinical impression, a normal scan is nevertheless helpful in forming a definitive diagnosis. Excluded diagnoses help reduce the number of potential diagnoses that the GP needs to consider (as might a sieve), suggesting further diagnostic tests. The basis of this iterative process of diagnosis – that GP C alludes to in the following extract - is depicted in Figure 6.1.

The negative tests are just as important as positive ones in the sense that you have excluded a particular condition. For example, if you have someone with a pain, an abdominal pain, you think it could be gallstones and you get a scan and the gallbladder looks normal, and then okay, you know, you can put that diagnosis to one side and focus on maybe narrowing things down.... So a normal test can be just as important as an abnormal test. (GP C)

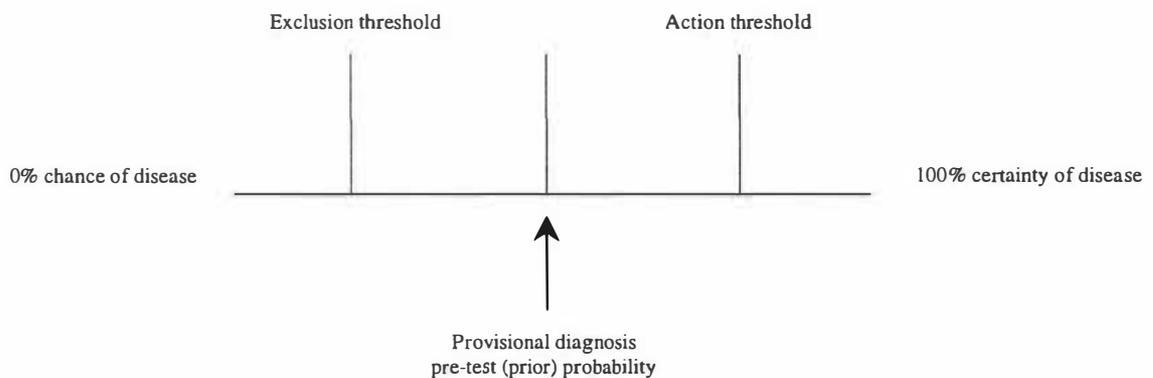


Figure 6.1: Establishing a diagnosis (Sally, 1999, p. 255)

For GPs, the ultrasound waiting list acted as an external constraint that slowed and frustrated GPs' attempts at establishing diagnoses.

The problem with the waiting list is that people wait to have the scan done... [and] the scan is used for diagnosis. (GP B)

Something else might be causing their pain and you are reluctant to organise multiple investigations. You want to have a scan first because you think that [a named cause] is [most] likely. But then if the scan comes back negative, as some of them do, you have then delayed further investigations. (GP H)

Despite the importance of a diagnosis in the biomedical enterprise, concern about the ultrasound waiting list varied between GPs. For GP E it was evidence of "incredible negligence" on the part of the HFA and hospital. He described the waiting list as a "bloody disaster." GP A also voiced a similar opinion when he pointed to the ethical dilemmas of using waiting lists to manage supply and demand. Other GPs were less critical and appeared resigned to the existence of the ultrasound waiting list. GP H, when asked how he might describe the waiting list, reflected "the waiting list has become such a regular part of our lives these days." GP G saw the waiting list as no real consequence, noting that GPs often employed strategies to avoid waiting lengthy periods of time.

An ultrasound scan helps GPs rationally treat and refer patients with troubling symptomology. For GPs the ultrasound waiting list acted as a barrier to obtaining timely diagnoses.

Waiting as disruptive uncertainty and suspended living

In addition to GP viewpoints are the accounts of patients. The patients' accounts are difficult to describe, as these are the most diverse, and unlike the accounts of GPs and internal stakeholders, are not structured around professional interests and values. While each patient's experience is unique in the sense that it is influenced by autobiographical factors, patterns in the patient accounts were nevertheless evident. The representation of patient accounts presented below builds on recurrent themes uncovered in the in-depth and semi-structured interviews but does not include individual issues, and are therefore partial.

Another limitation worth mentioning is that with the exception of Patient J, all interviewed patients were referred by GPs and were waiting on the “community-referred waiting list”; only Patient J was referred by a specialist. While waiting times are likely to be different, outpatient and community-referred patient perspectives of waiting are likely to be similar particularly if, as internal stakeholders argue, the symptomology of outpatient referrals is more severe, which intensifies the waiting experience (despite the shorter waiting time). Despite the complexity of the patients’ viewpoint and the partiality of any research-derived account, the system of meaning underlying patient accounts is important if a systemic understanding of the ultrasound waiting list is to be obtained⁵⁶.

Diagnostic and timing uncertainty

A recurring theme that characterised the patient accounts centres around the difficulties associated with two sources of uncertainty. The first source of uncertainty, concern over what the ultrasound scan might reveal, is closely aligned with the GPs’ concern about establishing a diagnosis and beginning rational treatment. While diagnostic uncertainty is what makes diagnostic waiting lists unique from waiting lists for treatment (for example, elective surgery), diagnostic waiting lists share with those other waiting lists a second – and many argue unavoidable – type of uncertainty that primarily affects patients. This is timing uncertainty, which is associated with when patients would receive an ultrasound scan. Both forms of uncertainty serve to create states of powerlessness and helplessness in patients, as demonstrated by patient accounts below, and patients have the added task of having to manage their emotions.

Uncertainty surrounding the likely diagnosis or expected waiting time was rarely a problem for patients at the time of referral. Many patients had low expectations of receiving a prompt scan, and while not necessarily happy at the prospect of waiting, tended to be accepting of the need to wait and the GP’s estimate of the likely waiting time.

⁵⁶ In a later chapter the patients’ perspective will be central to questioning some of the significant boundary judgements that underlie how the ultrasound waiting list is managed. It will be argued that patients are required to assume the risk of the appropriateness of boundary judgements.

Well I'm not unhappy with [waiting]. You know, I'm an old person and I know that you have to wait.... I just accepted it. (Patient C)

I didn't get excited [when my GP made the referral] because I knew that I would have to wait. (Patient D)

The circumstances of Patient A are an interesting exception, as unlike Patient D, she was excited when her GP made a referral. However, her excitement turned to disappointment when she realised that there was a waiting list and that she would have to wait for an ultrasound scan.

I guessed within a week or two I would be in, and find out what was wrong, and it would be fixed up. (Patient A)

Patient A continued to explain:

I didn't realise that there was [a waiting list]. I actually didn't realise there was [a waiting list] until I started getting really sick and my GP said, "Well it is up to them when they could fit me in." I didn't realise. (Patient A)

Despite the initial acceptance and detached recognition that delays were inevitable, the ongoing experience of diagnostic uncertainty in the upcoming months (or weeks for some) created problems for waiting patients particularly as symptomology worsened. However, in the absence of information from the ultrasound service about when patients were likely to receive a scan or how the waiting list was managed, and the vague and inaccurate GP estimates about waiting times, all patients (regardless of symptomology) expressed feelings of anxiety, annoyance, anger and resignation. These feelings were embedded in a number of metaphors describing the waiting including "sitting," "hanging," "stagnant," "being left dangling," and "being left in the lurch." Each metaphor emphasises patients' powerlessness, helplessness and lack of control about what might happen: powerful others had control.

The extent to which waiting was disruptive for patients largely depended on the nature of the patients' symptoms and the meanings ascribed to the symptomology. Some patients – particularly those waiting for cardiac scans – were untroubled by waiting. They did not feel ill.

[Waiting] hasn't really troubled me because I don't think that I'm very ill whatever the doctor says. I don't feel very ill but if I was ill I might be anxious.... I'm not happy for other people but I'm quite content to be patient. (Patient C)

For other patients, such as Patients A, E, F and K, delayed diagnoses resulted in ongoing health problems as symptomology worsened. Waiting became more and more disruptive and constraining, impacting on the ability to undertake day-to-day activities.

Patient A, who experienced gynaecological problems, detailed the extent of how disruptive waiting was for her and her family:

My husband came out of the workforce because I was too weak [and] because we have a child. He had to look after me because I couldn't walk and I couldn't go out of the house for more than an hour.... I was bleeding and [my GP] couldn't control it. I couldn't get out of the house for more than an hour. (Patient A)

And that:

I had to stop going to university. I had to stop because I couldn't study. I was getting weak. (Patient A)

Patient F who also experienced gynaecology problems commented that waiting became difficult and in her words she "was not coping."

I got so sick I couldn't function any longer ... I have quite a busy job ... I was really compromised. (Patient B)

Patient K decided not to accept a permanent appointment at work while waiting for a cardiac scan.

I made a job choice. I had been [doing] a job for six months that was very stressful... and it had an effect on my health and my blood pressure went up. And I made the choice of not taking that job full time because I thought, "I want to know what's going on first." (Patient K)

As waiting became more and more disruptive, patients tended to speak as if the scan itself possessed therapeutic properties and that ongoing health difficulties were attributed solely to the delay in getting an ultrasound diagnosis

[I was] really angry. They were stopping me from getting better.... All I needed was a quick scan and it was like they wouldn't let me [have one]. (Patient A)

Patient A's comment is an interesting departure from that of the GPs who recognised that the ultrasound waiting list was potentially one of many steps that needed to be negotiated before health problems were corrected.

I think a lot of [patients] do put a lot of weight on the scan in that there is almost the expectation that the scan is curative. You are waiting for your scan and once your scan comes through everything will be okay. It's sort of a subconscious thing. But for me it tends to answer a [clinical] question - yes or no. I've already formulated a hypothesis and it is confirmed yes or not. (GP E)

While in some cases an abnormal scan may improve access to subsequent invasive tests, patients referred as a result to other specialities commonly waited again. GP B relayed a story about a patient who, after several months of waiting for a pelvic scan, decided to opt out of the public system. As the private scan was abnormal, GP B reflected on the irony of further delays.

[The patient] had been waiting several months for a scan. So she comes back to see me ... still having problems. She said, "I'll just go privately and have it done." In fact she had a mildly abnormal pelvic scan so now she has to wait to be seen at the gynaecology clinic. (GP B)

It is notable that no patients passed comment on how, for example, confirmation of gallstones may result in the patient joining an outpatient and/or inpatient waiting list. In this case the symptomology may continue, and in some cases under the New Zealand booking system may need to be managed on an ongoing basis in the community. The patients' lack of appreciation of the likelihood of having to join new waiting lists is curious but partly explained by GPs who may not have time to fully inform patients about possible pathways once the scan was done. The patients' experiences are limited to waiting in the first "queue," the ultrasound waiting list.

While for patients with ongoing problems waiting was disruptive to lives, patients with less severe symptomology, such as those with abdominal pain, also reflected on possible consequences of delaying the diagnosis. For them waiting could be mentally disruptive. Patient B reflected on a "worst case" scenario.

Other than really the worry [of not knowing what is wrong] not a lot really. I had some stomach pain. It's not really bad or anything ... it was quite manageable with [pain relief] and things. It is more of a worry more than anything else, I think, when

you've got a young family and [there is a chance] you're not going to be around or something like that. (Patient B)

The uncertainty of when patients would receive an ultrasound appointment also represented a potential source of disruption for patients. This made planning difficult. Patient E, a student, after waiting six months was scheduled for an ultrasound scan on the day of her academic examination. After expecting to be told by the ultrasound service, "tough bickies – go to the back of the queue" (Patient E) an alternative appointment time was instead arranged in the period in between two academic examinations.

I was sent to the scan just before one exam so I was stressing completely through those exams not knowing [what would be found]. (Patient E)

It was for this reason, according to GP D, that she advised patients who were students to take the referral form into the ultrasound service along with a copy of any examination timetables or other constraints such as term holidays.

Patient H also commented on potential problems in timing, in her case a potential problem but one that turned out well. An appointment card arrived just days after she had arrived home from an extended holiday.

I had been away on holiday and there was an appointment card two days after I got back from holiday. I was pleased so it was a bit of oops already. (Patient G)

Internal stakeholders contend that employing a scheduling horizon of more than two weeks is likely to result in more patients failing to turn up to appointments, as they forget and cannot be expected to plan in advance to be available for the scan. The circumstances of Patients E, H and J, however, seem to suggest that a two week scheduling horizon is too short, particularly so in Patient J's case, as she did not know that her outpatient clinician had placed her on the ultrasound waiting list. While in the cases of Patients E and H a short scheduling horizon made little difference (both received ultrasound scans and neither complained about the short time), it seems likely that if waiting patients knew that appointments were sent out only two weeks in advance the uncertainty associated with not knowing when they would be scanned would have a more pronounced and possibly disruptive effect.

While the uncertainties related to diagnosis and timing are closely related, and patients appeared to treat the two forms of uncertainty as equivalent, analytically it helps to treat them as separate. Each form of uncertainty results in two different ways of experiencing waiting, which enables the process that causes patients to become passive and resigned to be better understood. Patient passivity was a fact that bothered internal stakeholders such as Radiologist Z:

It surprises me that patients are so accepting of waiting. (Radiologist Z)

Bounded time

The first form of uncertainty, diagnostic uncertainty, caused patients to experience time in a bounded manner. Patients worried about the potential consequences of delay. Time was short and patients felt a sense of urgency about when they would receive an ultrasound scan.

This sense of bounded time is most evident in the accounts of Patients A, E and F. Patient A's increasingly severe symptomology (which placed restrictions on her day-to-day activities) resulted in her being admitted acutely as an inpatient where she received an ultrasound scan the same day she was admitted. For her it was a "scary" time:

Because I had to wait so long I ended up being admitted to hospital ... it was horrible. It was scary as my friend was saying she thought I was going to die and I thought that I was going to die too. (Patient A)

Because of a family history of cancer, Patient E was particularly worried that the lump in her stomach might be malignant. Common symptoms such as a stomach-ache or indigestion in such contexts can take on special significance and be interpreted as cancer.

Patient E explains:

Sometimes if you are feeling a bit crook – you have a stomach-ache that's normal – but because you have this [worry] in the back of your head you just react 10 times more ... and you think, "I could be sitting here with cancer and nobody cares." (Patient E)

Patients with less worrying (and less disruptive) symptomology such as vague but manageable abdominal pain also experienced a bounded sense of time as they focused on potential (yet unlikely) health consequences. Patients B and D entertained the possibility of having an unlikely yet serious condition that might leave them unable to care for their children. Patient B in particular was concerned about the death notice of Dead Patient A⁵⁷ that appeared in the local newspaper who had also been waiting for an ultrasound scan and died before receiving the scan. When asked about how she felt about her own waiting, Patient B replied:

Well if there was anything seriously wrong with you it would be too bad wouldn't it. Did you see the death notice in the paper the other day? Yeah I think it is a scary thing ... it is much better to get it cleared up quicker.... It puts your mind at ease.
(Patient B)

Unbounded time

This second form of uncertainty, timing uncertainty, created a sense of time that was unbounded. Patients employed a variety of metaphors to illustrate the unbounded nature of waiting time. For Patient E waiting for an ultrasound was like waiting for a letter from an unreliable friend:

It's like waiting for a letter from a friend you know who is not going to write. But you keep hoping. It's like I was always waiting for the appointment in the mail. It's like you are waiting for [a friend] who might write this week and you go to your letterbox and [when the letter isn't there] you aren't really surprised. And then when [the ultrasound service] finally [sends an appointment card] you are absolutely over the moon. And you are like, "Oh my God, she was finally written." You know, that's what it is like. (Patient E)

While Patient E experienced waiting time as being unbounded and potentially infinitely unbounded, Patient G expressed a quiet confidence that eventually she would receive an ultrasound scan, although when this would be was unpredictable.

Perhaps [it's like] someone who comes to visit you. You don't know when and it is sort of way, way into the distance, but they will just turn up when they are ready.
(Patient G)

⁵⁷ In this way, the family of Dead Patient A publicly apportioned blame to the hospital for what they saw as failing to provide a timely scan.

While the first form of uncertainty arises out of the symptomology and produces a bounded “body” time, the second form of uncertainty is largely produced by the unknown and unpredictability of how the ultrasound waiting list is managed by internal stakeholders. It is the latter characteristic of the waiting list problem that has recently been promoted as the rationale for implementing the New Zealand booking system (examined in Chapter 2): the New Zealand booking system attempts to give patients certainty either by scheduling a treatment date, guaranteeing that treatment will be undertaken within six months, or alternatively letting patients know that they do not qualify for treatment. Managing uncertainty in this way, however, merely serves to change the basis of uncertainty, and has served to shift uncertainty back into the community. Patients at the time of referral are now uncertain as to whether they will score enough points to qualify for treatment during a specialist assessment rather than simply being uncertain as to when they will receive treatment. In addition, while patients have been told they will wait six months for a specialist assessment, it is unclear how robust these specialist appointments are. The current Labour Government’s recent waiting list strategy “Reduced Waiting Times for Public Hospital Elective Services” (Ministry of Health, 2000b) makes it clear that the booking system concept will be extended into diagnostic services and that timely access to diagnostic services themselves are important to making the system function effectively.

In contrast with the New Zealand booking system that gives “certainty” about waiting times, the waiting list management mechanism utilised by the ultrasound service is largely responsible for creating timing uncertainty and the sense that the waiting time is unbounded. Patients are dependent on their GPs to provide them with information although some patients reported telephoning the ultrasound service to make an inquiry about likely waiting times. The ultrasound service does not provide GPs with an indication of how long patients are likely to wait. Without regular updates about how long patients were likely to wait, GPs often gave patients vague and inaccurate estimates about the likely waiting time. When these were exceeded patients often were disappointed, and waiting time took on an increased sense of unboundedness.

A recent practice for the ultrasound service (within the two years prior to patient interviews) was to send out an acknowledgement of receipt of referral to patients indicating that patient's name had been added to the waiting list. Presumably due to administration errors, a number of patients reported they did not receive this acknowledgement. In at least two instances – Patients J and H – this did not cause any difficulty, as the referring clinician had not informed them that they had been referred for an ultrasound scan. Sometime after Patient H and J were interviewed about their general views on waiting lists, Patient J telephoned the researcher expressing her surprise that the hospital had contacted her with details of an appointment:

I've just had a call from the hospital to tell me I'm on the waiting list and I go in on Wednesday [to have my scan]. But the funny part is that I had the heart attack in July and I didn't even know I was on the waiting list. (Patient J)

In other cases Patients B, D, E and K did not receive any acknowledgement. Patient D explains:

I think the doctor told me it was three or four months [wait] and its [now] heading up to six months. The only reason I knew I was on the waiting list is when I got [the invitation to take part in the research]. I mean I hadn't heard anything from the hospital saying, "Yes, we have got a letter from your doctor and you are on a waiting list." So I suppose it was quite reassuring to get [the research invitation]. (Patient D)

Patient E also reflected on the absence of information from the ultrasound service, which led her to feel depersonalised and dehumanised.

I felt I would be no more than a piece of paper. Because I had a sense of being a piece of paper there was the attendant risk that can go with that. You see that bit of paper can fall off a table or fall off a shelf.... I had no recognition [from the ultrasound service] that I was on that list in the form of even a photocopied letter.... I had a sense looking back on it now that well is it real? Am I part of this? (Patient E)

The absence of any form of acknowledgement from the ultrasound service introduced the possibility that the GP had failed to make the referral as promised. Another factor that helped contribute towards experiencing waiting time as unbounded was that patients (as GPs) were unclear as to how the ultrasound service allocated appointments between patients. A number of patients did suggest that priority was awarded to patients "worse off" than themselves.

Be patient. Realise that there are people worse off than you. (Patient A)

I'm sure my GP wouldn't have referred me [to the waiting list] if I was that sick. He would be saying to the hospital give me a scan. (Patient C)

Patients when talking about assigning priority used common-sense distinctions, such as Patient A who assumed that cardiac scans would have priority over, say, a scan for a less essential body part such as a foot. As discussed in Chapter 5 (and further explored in Chapter 7 when internal stakeholder perspectives are presented), the explanations offered by patients of how priority was awarded are incorrect and do not correspond to how the appointment system is structured or how the urgent mechanism functions.

In contrast to Patient C's comment about the trust she placed in her GP, and the reassurance she received from being on the waiting list, some patients expressed doubt in the ability of their GPs to act as effective advocates. Patient D had waited six months with no worsening of symptoms, but still expressed a fear that if her condition did deteriorate, she may still have to continue waiting:

I'm not overly confident ... maybe there is some sort of feeling that if [my condition] was really really bad then I may get in sooner. (Patient D)

Patients A and F also questioned the effectiveness of their GPs as advocates. Patient A was particularly critical of the passive approach her GP took to negotiating an urgent ultrasound scan.

My GP said, "Well it was up to them when they could fit me in" ... my GP would just ring up and say, "Has such and such got [an appointment] coming? No. Okay." She would then hang up. (Patient A)

While Patient A saw the failure to obtain a timely scan resting with her GP, Patient F, in contrast, reflected on the failing of the urgent mechanism in general.

In spite of the fact that ... my GP, in the course of me being on the waiting list, elevated my need status to high or significantly high or whatever it was, to date I haven't seen anything from [the ultrasound service] at all. (Patient F)

And that:

I was grossly annoyed that I wasn't seen as a priority by the system and how could I have let the system know that I was in fact worse and not coping? What did I have to do to get [the ultrasound service] to take notice of me? (Patient F)

Doubting the ability of their GP to act as an effective advocate combined with the belief that scans were allocated to patients who were “worse off,” led to patients apparently having difficulty in reconciling the meaning they ascribed to their symptomology with the urgent/non-urgent distinction enforced by waiting.

Well [my condition] is not urgent. Obviously my GP didn't think it was urgent but of course he's not the one who has the problem. It's not urgent for him. No I can't see much point [going back to my GP and asking about my referral]. I don't think he can do much anyway. [I will] just sit and wait. (Patient D)

This unboundedness arising from the lack of offered information from the ultrasound service, and doubt over the ability of the GP to act as an effective advocate, increased patient anxiety. In some cases patients felt that they might not receive their scan at all. While both forms of uncertainty are significant in their own right, it is notable that patients often conflated the two forms. Waiting time was experienced as simultaneously bounded yet unbounded. This served to magnify feelings of anxiety, annoyance and ultimately feelings of resignation. In this way the limited effectiveness of the GP as an advocate and the ultrasound service's failure to offer information were responsible for aggravating anxiety levels and created feelings of powerlessness and helplessness. Patients saw themselves trapped by the waiting list and saw two possible resolutions. First, wait and receive an ultrasound scan sometime in the distant and uncertain future; or second, become increasingly ill and receive an urgent ultrasound scan. The patient had no control over either possible resolution. Patient D describes what she saw as “back-handed reassurance”:

I don't know whether ... [it] would be reassuring that when it got really bad you would be seen.... There is a system there if you are really really bad.... Back-handed reassurance is a good way to describe it. (Patient D)

Patients felt trapped between primary and secondary levels of care and used a variety of metaphors to describe waiting that emphasised their restricted options. Consider Patient D's supermarket metaphor:

It's a bit like waiting in a supermarket queue really. You have got to wait your turn. You got to the supermarket and get your groceries and if its really busy all you do is stand in a queue and there is nothing you can do about it except put your groceries back and leave. It's a bit like a supermarket queue. You get there and you wait your turn and then you leave. (Patient D)

The sense of powerlessness and helplessness conveyed by patients contrasts with their circumstances at the time of referral, when patients had a degree of control. The longer they waited, the more out of control patients felt. For Patient A (who in particular experienced complications) it was like:

... being really stretched. It felt like I was really stretched beyond what I could contain. (Patient A)

Patient K also reflected on her waiting experience, an experience that contrasted with how she normally dealt with illness.

Normally I don't use doctors. I use totally natural methods, so [the ultrasound waiting list] ... is something I've had no control over. I can't do anything about it. If I know I'm getting a cold then I will just dose up on vitamin C and garlic but in this case I can't. It leaves you feeling a bit, I don't know, defenceless. Yeah, there's nothing you can really do about it. (Patient K)

Patients F and H who were able to access a private radiology facility at any time and thus had control over diagnostic uncertainty chose to release this control. They too found waiting to be a disempowering experience. In Patient F's case, from her initial position of power - where she had choice over whether or not she joined the public waiting list, and did so because she had paid her taxes - waiting ultimately led her into a position of powerlessness. Reflecting on her experiences Patient F noted what she saw as a paradox:

I felt that in order to be sick you actually have got to be very well. A bit of paradox there really. In order to be at the mercy of a system like [the ultrasound service] one has to be really quite strong and determined and able to navigate your way through the obvious pitfalls. (Patient F)

Patient H, who chose to join the ultrasound waiting list despite having medical insurance, was now ambivalent towards waiting for an ultrasound scan. Although her diagnostic uncertainty was minimal (she was living with a well defined problem and needed a routine scan), her feelings of ambivalence centred on not knowing when she would receive her ultrasound scan, an inconvenience.

Managing waiting

Patients employed a number of strategies to manage anxiety resulting from diagnostic and waiting time uncertainty. While patients expressed an interest in minimising unboundedness by being informed of likely waiting times, in practice this was not a viable option. First, the waiting times given out by GPs were largely inaccurate. Second, if contacted by patients Receptionist A did tell patients how long they would need to wait, but a number of patients expressed reservations about telephoning the ultrasound service for information. Patient F in particular noted:

Part of me realised that if I rang them then I was probably going to be in some ways re-victimised. (Patient F)

What do you mean by that? (Researcher)

[The difficulty is] getting through to this department, getting through to anybody who had the authority and the knowledge to be able to let me know what was happening and to offer any more than a platitude. It won't have been something I would have needed or been able to cope with terribly well. (Patient F)

In addition to limited opportunities for action – arising from feelings of entrapment and the failure to reconcile the operation of the urgent mechanism with their own set of circumstances - patients instead sought to perform emotion work (see Small, 1999) whereby they attempted to control feelings associated with waiting by internalising feelings. Patients worked on themselves in an attempt to make waiting more acceptable. Patients also hinted at strong social pressures to internalise the difficulties that they experienced while waiting. Patient H commented:

Don't drive your friends crazy with the moaning [about the waiting time]. (Patient H)

Patients used a variety of strategies in their attempts to control the embodied sense of uncertainty created by the tension arising from experiencing time bounded yet unbounded. A common strategy was to forget about being on the waiting list by pushing worries “to the back of the mind.” (Patient G). Patients B, G, H, E and F spoke of this strategy.

For me [waiting] didn't worry me because I pushed it to the back of my mind and I knew [the appointment] would come up eventually. (Patient G)

And that:

You take things as they come and waiting for a scan is part of that. Don't dwell on [waiting] everyday because it is put out of all perspective. It's out of proportion if you dwell on something. (Patient G)

Patient C noted that while she was content to wait other family members might not.

[My daughter] gets quite cross and she says, "You are too passive, you should be pushing for [the scan]." (Patient C)

Patient F also commented on the sense of proportion:

There were days I when I pushed [the fact I was waiting] to the back of my head. There was a lot more stuff that needed to be sorted out today. So I guess it was self-management and generally trying to establish some sort of perspective. (Patient F)

As with Patients F and G, Patient E also attempted to contain within herself the anxiety of waiting by forgetting:

In the first few weeks [waiting] was really bad. I was petrified because we have got a family history of [cancer]... but then later you say, "Oh well" so you forget about it and get on with life. (Patient E)

The reason for forgetting according to Patient E was simply pragmatic.

You can't worry yourself senseless for six months. (Patient E)

The effectiveness of this strategy depended on how frequent and severe patients' symptoms were and what the patients thought the symptom might signify. In many cases the symptomology seemed to conspire against the patients' best intentions.

You do tend to forget a bit in between, and something happens and it rears its ugly head again. Yes you have a crook stomach again. I mean, "Ah ha." (Patient B)

I don't wake up every morning and think, "Oh, am I going to get an ultrasound today?" But I think its one of these little things that you sort of think you forget about it for a while and you think, "Oh," especially when you are waiting for gynaecological [scans] you ... get obvious reminders through the cycle that you think, ... "Oh yes, I should be getting an ultrasound at some stage." So I think it's not a huge huge thing but its just ... get reminders now and then. (Patient D)

Other patients used positive thinking and adopted fatalistic philosophies such as "things happen when they happen" (a strategy similar to forgetting). Other patients redirected their

energies and focus to other activities. Patient A's belief in God helped her cope with waiting.

[God] helped me believe that I was going to get better ... even though people were telling that I was going to die.... Even though mentally I was getting drained, I was still getting filled up.... If anything that's the closest I have ever got to God. I was really strong in myself. (Patient A)

Patient K also coped with waiting in a unique way. Despite waiting for a cardiac scan and feeling weak, she decided to continue with her marathon running. At the time of her interview she had run two marathons while on the waiting list.

The patient accounts serve to illustrate how intrusive and disruptive waiting was and disputes the view of some health economists who argue that patients incur no costs while waiting and an operations management perspective that sees patients in terms of passive raw materials.

Diagnostic dilemmas

GPs typically went to great pains to emphasise that patients who urgently needed an ultrasound scan received it in a timely manner:

I meant the thing is [that] it is important to stress that nobody who really needs an urgent scan has to wait.... Most of the waiting times are for more routine problems. (GP C)

If someone is going to die ... you ring the department. And that's not a problem. Or if there is someone who is going to get into difficulty if they are not seen quickly. I'll explain to people that if there is something that is not urgent it's going to be [a wait of] several months. Lots of people are happy to wait as long as they know they won't come to any harm. (GP F)

It is noted that GP F's account is in broad agreement with patients' accounts. While this arrangement was in principle regarded favourably and most GPs seemed satisfied that urgent scans could be arranged, several GPs commented on the difficulty of contacting a consultant radiologist necessary in order to arrange an urgent scan.

The last time I rang it took me three phone calls to find a radiologist because I rang just after 12 noon and it took till two p.m. to track the radiologist down. (GP B)

Very occasionally you will get some one with an abdominal mass, and obviously something is going on and you want an urgent ultrasound scan. [If the patient] can't afford [to have a private scan] you [need] to talk to a radiologist. I must admit that that is still available ... [but] it is a big hassle to get. (GP D)

Some GPs, although annoyed at the “lack of backup” (GP E) provided by the ultrasound service, nevertheless endeavoured to contextualise the problem of access in more detail. When asked about problems that a delayed diagnosis posed, GP A replied:

Well there is no simple answer to that. It depends on what the worry is. It depends on the actual clinical indication, [that is] what's on your mind. (GP A)

GP A went on to describe the types of diagnostic dilemmas or puzzles faced by GPs, dilemmas that needed answers but were seldom life threatening. The first diagnostic dilemma that GP A described related to ongoing but stable problems where deterioration or change is not expected.

GP C described a similar diagnostic puzzle where a differentiated diagnosis would make a difference to patient management.

A lot of things you want a scan done but it's not something that is posing serious health problems.... A fairly common type of thing is a rotator cuff injury in the shoulder where you are not sure whether its just inflammation or a tear in the tendon or the tendon may be completely ruptured. I think it's important to know that. It can affect the [patient's] management ... [do you order a course of] physiotherapy or do you in fact need to refer [the patient] for a surgical opinion. (GP C)

In these cases, the illness or condition followed a predictable trajectory or presented a well-defined diagnostic problem for the GP to solve. Diagnostic uncertainty would be resolved with an ultrasound scan and both the GP and patient could be sure that waiting was unlikely to pose any serious health risks. GP A also noted that in such cases it might be possible for the GP to proceed clinically without a confirmation of the likely diagnosis by treating the worst case.

Take my common referral for a renal tract investigation in a child. What we are trying to do is check out whether there is a renal abnormality. If there is kidney damage we are inclined to prescribe a long-term antibiotic for this child. If I couldn't get a scan organised I could make that decision without the [ultrasound diagnosis]. There are a whole range of [clinical conditions] which you can manage

clinically without the full picture at the expense of over-treating a few patients. (GP A)

Although such procedures were non-urgent, GPs H and E questioned the desirability of delaying such diagnoses, reflecting on the total health cost of a delayed diagnosis:

The delayed diagnosis may result in more health costs and more morbidity for the patient. Perhaps more time off work or [you might end up] doing an operation on a sicker patient where the outcome may be worse. [You don't] necessarily save any more money because you end up doing more [work on the patient]. (GP H)

Whilst patients are waiting a disease process will change and patients will get worse. [The hospital] leaves itself open to criticism or litigation in the event of disease progression and these are patients [they] have never seen. I guess there is a lot of goodwill lost while the [hospital] doesn't provide the service. Another [possible] disadvantage is ... the patient is worse off by the time the diagnosis is made and the treatment is provided. And who provides the ultimate treatment? The [hospital]. (GP E)

GP A raised a more serious diagnostic puzzle where the patients' condition could deteriorate quickly and waiting would pose health burdens. A scan was urgently required:

There is a whole range of things that could deteriorate fast and need urgent [scans] so I'm more interested in having a few [appointment] slots available for urgent examinations within a week or within a few days. (GP A)

Other than contacting a consultant radiologist to organise an urgent scan, the "approved" process, GPs employed alternative strategies to obtain timely scans for patients they considered urgent. In this way GPs "got around the waiting time or subvert[ed] the queue" (GP A). The first option was to make an outpatient referral, as it was well recognised by GPs that outpatient clinicians had better access to ultrasound services by virtue of their specialist expertise⁵⁸. In this way, GPs balanced the waiting time for an ultrasound scan against the waiting time for an outpatient clinician.

If you have a high index of clinical suspicion you might manage [the patient's condition] somewhere else. [You can] refer to secondary care and let them fight their waiting lists.... Our access is less good than ... [outpatient] access from within the institution. (GP A)

⁵⁸ See Chapter 8 for a review of the literature, which examines whether specialists refer more appropriately than GPs. Many studies have found that there is little difference in the rates of inappropriate ultrasound referrals between specialists and GPs (for example, Mills, Joseph and Adam, 1989; Connor and Banerjee, 1998).

If I feel the patient is an urgent referral I'll just refer them to a specialist without [ultrasound scan]. It would be nice to have an ultrasound but it isn't available. It's not a sure thing. You have a waiting list for a specialist but they are often shorter than the ultrasound waiting list. (GP D)

GPs were aware that making outpatient referrals had a number of drawbacks, notably unnecessary and expensive outpatient consultations, which defeated the purpose of open access arrangements with the ultrasound service. GP H questioned the efficiency of that strategy:

The problem [with an outpatient appointment] is that [the patient] may well go to the outpatient [clinic] and [then] get a scan. Perhaps they didn't need the outpatient appointment so you're clogging up something else [other than the ultrasound service]. (GP H)

The expertise afforded to outpatient consultants represents a strategic resource. Internal stakeholders favoured restricting access to ultrasound to outpatient clinicians only. In this case, GP subversion would be formalised and open access arrangement would be revoked. GP H commented on the desirability of letting the outpatient clinicians prioritise the ultrasound service's workload with reference to other similarly restricted services.

Half of the time we ring the [outpatient] specialist to say, "What do you think?" ... Some specialists will try and get around [clogging up the clinic] by writing a [referral] form on the basis of what we told them. (GP H)

A second option was to hospitalise acutely ill patients where hospital clinicians could then assume responsibility for the patient, which GP G described as "the problem."

[You can] refer them to the registrar ... not only to organise an ultrasound [scan] but also to organise other tests to get a definitive diagnosis. They can manage the problem there. (GP G)

As with contacting a consultant radiologist, GP G noted that this strategy potentially involved a lot of extra work by the GP:

[An inpatient admission] takes quite a while to organise, you know, in the middle of a busy session [where I am seeing other patients]. I'm sure it is disruptive for the [hospital] staff and the registrars. I don't know if it's a very efficient use of [resources], but that's the way it is. (GP G)

GPs interviewed were well aware of the costs associated with waiting: there were costs to the patient and family who may in the meantime be disadvantaged; costs to the GP who had to expend time and energy in subverting the formal systems; downstream costs to the health system if the patients' condition deteriorated; and costs in relation to strategies bypassing the ultrasound waiting list. Leaving aside the issues of costs, GPs reflected on a third but problematic diagnostic dilemma.

There are some situations of uncertainty ... especially if there is pain involved we are uncomfortable. We know there is something wrong. We suspect something [is] wrong and we really want to get on and investigate it but we have to wait a long time. That is the worst situation. (GP A)

This type of diagnostic dilemma was characterised by uncertainty. GPs were uncertain of the significance of the patients' symptomology, which at times was vague and non-specific. Non-specific pain was particularly problematic. Such pain may be idiosyncratic and improve with time or the pain might indicate a serious underlying condition. GPs expressed their frustration that without the ultrasound scan, rational treatment was not possible:

Clinical diagnosis [can be] incredibly difficult if you don't have the back up. So my patient comes through and says, "Doc, I have this vague pain down here." Well I think, you might have a lump down here. You examine them and you can't find anything so you flick off an [ultrasound] referral. The waiting time can be nine months. Now I put it to you. How the devil can you do your job? (GP E)

More commonly, however, a patient would present with symptomology characteristic of a clinical entity such as gallstones. But as GP E notes, while gallstones are the likely diagnosis, there could be other reasons for the pain. It is this clinical uncertainty combined with delays that causes GPs concern and problems.

When I order an ultrasound scan it is because of diagnostic uncertainty. Now I could give an impression to patients and say, "I think you have gallstones. [Given your symptoms] the clinical basis is gallstones. [There are] a few other things it could be though, and let's get a scan to find out what is going on and diagnose the gallstones." (GP E)

Other GPs made similar comments when describing the problems a delayed diagnosis might pose:

If you've got a real emergency situation we are probably going to either a) hospitalise [the patient] or b) ring the radiologist [and organise an urgent scan].

Because, you know, it is easy to say this is what they need, but for a lot of people it's not an emergency [that] we are aware of at the time. (GP B)

Clinically I may not think it's a big deal but I may be sitting on something that is a big deal. For example, someone with regular bleeding and they have an ovarian tumour ... or someone with an abnormal liver function test and the pathologist recommends an ultrasound [to] "query gallstone." And if the ultrasound turns out to have liver secondaries, that can obviously be a surprise. (GP D)

[A waiting list] for a diagnostic procedure is very poor ... in the scheme of medical procedures it's not that expensive. It's diagnostic ... not treatment ... therefore you can't reasonably [predict] what the outcomes are going to be every time. Most of the time you can say, "This is not likely to be the outcome" but there are going to be some surprises some times. (GP H)

GP F expressed this point differently explaining that her acceptance of the growing waiting list was largely due to fact that most patients were easily categorised as non-urgent or urgent.

Well, a lot of [my work] is non-urgent, either very urgent or non-urgent and only a little bit in-between. (GP F)

The significance of this type of diagnostic dilemma was that the GP's usual strategies for side-stepping the ultrasound waiting list broke down. GPs found it difficult to translate the patient symptoms into a form that could be understood by biomedically oriented radiologists or outpatient clinicians, a form that would justify the need for a timely ultrasound scan, or even that the scan was appropriate. Defining urgency in such cases is problematic:

[Referring patients to outpatient clinicians] breaks down when as a GP you've got the feeling that something is wrong but you can't define what your fears are clearly. So for example, [a women with a ovarian cyst will have] ... a list of risk factors for it being malignant. You know, older women, post menopause da da da, but you might feel that she is unwell in a systemic way. She's stopped work or something, which is really surprising and serious. And this doesn't mean a thing [to specialists] as it doesn't appear on a list [of risk factors]. (GP A)

Most of the waiting things are for routine problems. Of course it is where you are prepared to say where the line is [which is the hard part]. Where do you draw [the line] between urgent things and routine [things]? (GP C)

GPs were aware that such requests were afforded a low priority by the ultrasound service and patients had to wait. However, at the same time GPs B and E also reflected on the problem of hindsight that characterised how GPs were judged on whether they correctly managed the patient's condition.

That patient who died of pancreatic cancer, if I had able to get her an abdominal scan fairly quickly, I mean, it's easy to look back isn't it. But if there hadn't been much of a waiting list then it would have highlighted the fact that it looked like she had metastases in her liver and we could have got her seen fairly quickly for the next stage [of treatment]. (GP B)

Hindsight is marvellous. It is great. Unfortunately we are always judged in hindsight without an awareness [of the circumstances at the time of the referral]. The person is here holding their side saying, "Doc it hurts." You don't know until you have excluded everything else that it is of no importance. (GP E)

Paradoxically, waiting can function as a therapeutic tool enabling clinicians to reach a differential diagnosis, according to GP E:

A lot of people with abdominal pain can be extremely difficult to diagnose what it is. There is often no pathology there and you are applying a waiting time or using time as a therapeutic tool to see what will happen. If it is cancer they die. If it's not cancer then with any pathology the symptoms will just settle down. The pain goes away so you can say in retrospect that this is idiosyncratic abdominal pain. It's of no importance. So [waiting] has a rather perverse advantage in that respect [for the doctor]. (GP E)

This class of patients posed problems for GPs who were concerned about the medico-legal implications of delayed diagnoses that might leave them exposed to criticism or litigation. GP D in particular was critical of the inequitable distribution of risk shared between GPs and the ultrasound service.

When things go wrong I'm accountable at the coalface right under the Health and Disabilities [Commissioner] Act. The health provider can opt out of responsibility based upon inadequate funding [from the HFA]. I'm in it from the Medical Council but the [hospital]... will not be in front of any court I'm aware of. (GP D)

There are medico-legal implications if the diagnosis is delayed ... the patient may say, "Why didn't you find it sooner?" (GP D)

GPs also noted the concern that waiting caused patients.

You know as a result [of not knowing the diagnosis] patients ... are more anxious and more distressed by symptoms we are sufficiently concerned about to warrant suggesting an ultrasound scan. (GP H)

Given the weight placed on the confirmation of abnormal pathology, and the difficulty that GPs had in translating worrying non-specific symptoms and worry into clinical rationale, GP B was of the opinion that any prioritisation that the ultrasound service might undertake would not reassure patients.

How do patients get rated? I understand that they are given a priority rating in terms of what [the ultrasound service] feel is likely to show disease but that doesn't necessarily reassure patients [or GPs] because they are just reading the [referral form]. (GP B)

GP B continued:

The only people I have ever got a scan through quickly at the moment have been three men who have had problems with their testes, so we somewhat ironically wondered whether the person who gives the priority rating was a male up there [in the ultrasound service]. (GP B)

While GP B's comment is mischievous it should be noted that testicular lumps are readily palpable in general practice unlike lumps that may be located in the abdominal or pelvic areas.

At times the need for reassurance was negotiated between the patient and the GP. In this way, the GP acted as a mediator between the unlikely and likely, but in doing so could reinforce the possibility that something could be wrong. GP B cited two examples:

The wait limits our ability to diagnose and also to reassure. For example, you might have a kid with a urinary tract infection. Well okay, there is a risk that they might have an underlying problem ... I don't know that and ... they just have to wait. (GP B)

The reality is that it does concern people if they are on any waiting list [particularly] if they think they might have a serious problem. My patient [who was not waiting for an ultrasound scan] said she had really severe headaches. "How do you know I don't have a brain tumour?" And I said, "I don't think you have a brain tumour but I can't exclude that till you have further investigations and you have to wait to see the specialist." (GP B)

For GP A “there [was] a whole creditable area of doubt and uncertainty” that underlay requests that were not recognised by the ultrasound service. As well as acting as mediators between the likely and the unlikely, GP A indicated that it was the GP’s job to act as a translator. When discussing the difficulties in assigning urgency, which left the GP open to criticisms of inappropriateness by hospital-based clinicians, GP A reflected:

It is always a list of possibilities ... you see, we get the undifferentiated symptoms and we’ve started that sifting process and pattern recognition stuff. At the secondary care level most of the labels have been applied to most of the hunches... part of it is translating possibilities. We are negotiating the next step. (GP A)

On the subject of radiologists, GP E noted:

Well I don’t expect any of [the radiologists] to sit here as a GP and take whatever comes through the [door] with no sieving or funnelling and expect them to get it right every single time. (GP E)

GP A also commented that this translation process often began with a sense - a hunch - that something was wrong; possibly the product of an unconscious and unverballed calculus.

What I’m trying to get at is that [the patient’s symptoms] won’t fit a list of criteria. We don’t even know what the problem is, or don’t even know what we are looking for. How on earth can you define whether the request is urgent? (GP A)

GPs rarely made any connection between their actions and the growth of the ultrasound waiting list. Metaphorically, GPs viewed the ultrasound waiting list as an external barrier to timely diagnosis. Some GPs did recognise that referrals for reassurance were in hindsight questionable and might leave them open to criticism for over-investigating.

You can do an ultrasound on just about everything that walks through the door, you know, just to reassure yourself everything is okay (GP D)

It’s very difficult to say to patients “Oh well, I’m sure there is nothing wrong with you.” I can’t say that and then discover they have got [cancer].... Yes probably some GPs over-investigate but on the other hand we still need the ability to investigate. (GP B)

Despite the realisation that reassurance scans could be criticised as inappropriate, GPs defended requests intended to exclude pathology (as much to confirm it) and in doing so brought into focus the non-referential nature of the concept appropriateness.

I gather from my colleagues that you don't sort of order an ultrasound sort of willy-nilly. There would be a good clinical reason for ordering it. Mostly you need that information. (GP G)

I mean we order scans because we want a diagnosis or part of an investigatory work up. (GP C)

One would think that you would use [ultrasound] wisely.... I mean there might be the occasional person you refer for a scan and their problem resolves by itself... [but] in an awful lot of people [the symptomology] doesn't resolve. (GP B)

Experiencing marginalisation

A consequence of the diagnostic dilemmas detailed in the previous section was that both GPs and their waiting patients experienced marginalisation. For GP E the issue of inappropriateness came to ahead when a radiologist wrote "nasty personal comments" on the patient report about the appropriateness of his referral.

Avoiding nasty personal comments on the x-ray reports is incredibly important. If you made an inappropriate referral they had a chap who was in the habit of writing caustic personal and very nasty attacks on the patient reports, which were then filed in the patient files. (GP E)

GP E saw this as a "personality" issue, and as an issue relating to specialists' attitudes towards GPs.

There have been personality issues over the years ... where some of the senior radiologists have not being averse to making comments about GP abilities... I have no problems being judged by peers, but I do have a problem by being judged by someone who has no understanding of my job. (GP E)

GPs felt exposed and in the cases of GPs E and A felt that GP expertise was devalued and undervalued. GPs were marginalised, reflected in the low priority afforded to community-referred patients. GPs' patients were also marginalised while waiting. A number of patients spoke of feeling like non-entities.

[The ultrasound service] needs to treat you as a person, not just a number. (Patient D)

It felt like nobody cared. (Patient E)

I felt I was no more than a piece of paper. (Patient F)

Patient G, however, saw this as understandable:

The hospital is busy. They don't [have time] and after all you are only a number or a name. You don't really mean anything to them. How do they know how you are? It's up to the patient to do the chasing. (Patient G)

Patients deprived of information from official sources drew on other information sources:

Well I had a friend around the corner. At that stage she had being on the [ultrasound] waiting list for nearly a year.... She said, "You'll be lucky if it comes within a month if I've been on it for a year." (Patient B)

Being acknowledged and treated seriously by the ultrasound service was a problem for the patient. For most patients a simple way of their being acknowledged as persons was a letter that outlined how long they were likely to wait.

It would have been nice to get an acknowledgement that, one, I was on the waiting list and maybe two, [my condition] was non-urgent and [three,] maybe some sort of time frame of when to expect [my scan] would have been good. (Patient D)

Patient D referred to simple courtesies:

I think most people are fairly reasonable about waiting maybe it's just a simple courtesy to let you know how long you are going to wait. (Patient D)

Patient F reflected on the sense that everyone saw the wait as a joke.

I didn't like the fact that everybody seemed to think the whole thing was a joke. (Patient F)

Did they? (Researcher)

Yeah. I got that... I certainly picked that up from the doctor. (Patient F)

According to some patients, these dehumanising attitudes persisted after they were in the hospital system. Patient E, who had recently been scanned, noted that even when she was waiting in the waiting room at the ultrasound service she felt insignificant. This was communicated to her through staff attitudes:

I stood at the counter when I went for my appointment for at least four minutes whilst the receptionist was chatting. Yeah, absolutely slack. Then you say, "I'm Patient E and I have a three o'clock appointment." [The receptionist] replied, "Oh yeah, take a seat.".... They were so rude, they don't care and they just don't care. I heard so many conversations within the 20 minutes I was sitting there waiting [for an ultrasound scan]. The social lives of half the nurses in the hospital were relayed

to the whole waiting room. They were a pack of gossips. I wasn't impressed. (Patient E)

Patient E, however, went on to say that she was impressed with the sonographers whom she referred to as nurses. Patient G's experience also illustrates that patients were treated well once they received their scan.

Well they were actually very good when I was there. I couldn't fault the actual [service] once I got the appointment. One thing I was pleased about that I've never had done before is that they did the kidneys, which I've never had. The [sonographer] said, "While I'm at it I'll do your kidneys as well" which I was pleased about it ... she happened to take her initiative and actually do it. (Patient G)

Strategies for coping with diagnostic equivocality and overcoming marginalisation

GPs relied on three mechanisms for resolving diagnostic dilemmas characterised by equivocality and risk: first, to use the private radiology facility; second, to employ strategies for subverting the public ultrasound waiting list; and third, to exploit the ability of the patients to self-monitor their own symptomology.

The private option

The lengthy ultrasound waiting list prompted GPs to present patients with the option of receiving their scan privately. Patients were encouraged by some GPs to have their scan done privately although GP A felt it was his professional responsibility to highlight to the patient that it was the HFA that was responsible for the delay.

Not all GPs would ask patients whether they had medical insurance. For GP H:

I chose not to know the patients' health insurance status because ... [I] feel that it shouldn't make any difference to the care they get. (GP H)

But GP H pragmatically noted that he drew on other clues:

Obviously I may know because somebody turns up in a Peugeot versus a bashed up old Corolla so they may have more or less disposable income. I mean I know what

sort of job they do or something like that, but whether they have actually got health insurance, I see that as their problem. (GP H)

Unlike the public facility, access to the private radiology facility is not problematic, even for scans that are afforded low priority or regarded as inappropriate by the ultrasound service. GP E, when explaining the plight of a patient with abdominal pain who was tentatively diagnosed with gallstones, noted:

If I have a patient that walks in here, and has private medical insurance, with gallstone pain, I say, "Right, go down this afternoon [to the private radiology facility] and we will tidy this up tonight." Bang I've got the [scan] result by five o'clock in the evening. (GP E)

Any problems [for the private radiology facility] fitting the patient in [its appointment system]? (Researcher)

Maybe tomorrow. (GP E)

Similar comments were made by GPs A and H:

There has never been the same queuing trouble in the private system, never. Never ever been a queue... the most they will ever wait is 10 days. (GP A)

They usually get [a private scan] done in a week or so. (GP H)

Despite benefiting from the services offered by the private radiology facility, GPs were critical of what they saw as a strengthening of the two-tier system and erosion of the public health service.

What we see is people leaving the public system and going private.... To me that's artificial ... [and] is being put in quite deliberately to lower the demand for public health services [by] flicking the cost over to private. (GP E)

GPs in particular were concerned about the inequity and the effect this had on patients.

It puts a lot of stress on people because ... the cost of going private is enough to be just out of reach for some people, but not out of reach for some others. Maybe for those people [who don't access the private system] it becomes a matter of, "Do we buy the kid [who needs a scan] a birthday present or do we get them a scan?" (GP B)

In contrast, GP C saw the decision to pay out of pocket by a patient as a reflection of the value that patients placed on their own health, by taking on some of the responsibility for managing the delay. Some waiting patients also echoed this opinion.

If people see their health as important enough they may say, “Look, I don’t have insurance. I don’t want to wait. I’ll get it done now [and pay out of pocket].” (GP C)

GP C’s comment is in one respect unfair. The decision to receive a private scan is made at the time of the referral, and as indicated by GPs’ comments, the GP is unable to determine whether the symptomology is idiosyncratic or serious. How then can the patient be expected to know whether opting out of the waiting list by buying the service privately is a reasonable choice, given all the other demands on disposable income?

A number of waiting patients commented on the expense of receiving a private scan, often adding that the public system was funded out of their taxes as further justification for joining the public ultrasound waiting list. In Patient A’s case, her GP apparently did not give her the option to go private, although the costs incurred through medication changes and GP visits is likely to have exceeded the cost of a private scan. Cash flow might have been a problem for Patient A, however, while costs for GP visits and medication may have attracted a subsidy. This provides an example of cost shifting and market distortions.

In hindsight, patients were of the opinion that knowing the waiting time would have helped them make the decision to opt out of the public system. However, once the patient made the decision to enter the public system, they seemed resigned to wait and expressed powerlessness over when they would receive a scan. Having waited so long already, it made no sense to belatedly also pay the price of a private scan. Patients appeared metaphorically trapped by the waiting list. While more accurate current information on waiting times will help reduce the non-productive work of GPs in dealing with waiting patients’ enquiries, it is unlikely to affect patients’ choice in having their scan done privately or in the public sector. The correctness of the decision to wait can only be evaluated in hindsight.

While critical of the inequity between the private and public system, GP H nevertheless saw the private radiology facility as belonging to GPs. This affinity is understandable in the New Zealand context given that GPs, while heavily subsidised, are part of the private health sector.

GPs felt that the private radiology facility provided a good service. It would scan the patients afforded low priority by the ultrasound service and GPs were under no pressure to justify the appropriateness of the referral. GPs E and H noted that private radiologists (and radiologists with dual public/private appointments) ran teaching sessions for the local GPs. When asked whether GPs might be interested in obtaining a low-specification ultrasound machine to exclude simple conditions such as gallstones, GP B replied:

Where would we get the money? We have got a private scan... that would be over-supplying ultrasound.... Where is our responsibility to have a private scanner? There is one available. (GP B)

GPs were aware of radiologists who had joint public/private appointments, but GP H did not consider that this affected the ultrasound waiting list.

The specialists will run the private clinic as well as the public hospital clinic. If the main selling point [at the private clinic] is the time [patients] have to wait to be seen, then they may not wish the public hospital waiting list to be too small which will mean that there is difference between public and private.... But this doesn't apply because there are a sizeable chunk of people who just work in private and a sizeable chunk that just work in the public system. The few who work across don't actually control ... how long people wait. So it doesn't make any real practical difference for ultrasound. I think [radiologists with dual public/private appointments] could be working twice as hard in private or twice as hard in the public system and they still won't bring [the waiting list] down. (GP H)

Subverting the formal system

GPs based urgency not only on symptomology but also their "hunches" that something was seriously amiss with their patient. In this respect strategies for managing the lengthy ultrasound waiting list (for example, an outpatient referral) were ineffective, as they did not address the issue of diagnostic equivocality. Yet requests had to be framed in a way that could be understood by specialists. When asked whether best practice guidelines might be helpful to both GPs and specialists in determining urgency, GP A gave an example of

guideline creep - how best practice guidelines could be subverted to justify a request based on the GP's sense that something was wrong:

The guidelines are a bit of a joke really. On one level my main worry is pain and uncertainty but if there is an outside chance that [the vague non-specific pain is caused by] ... an ovarian cyst [warranting an urgent scan], then I will put [query] ovarian cyst on my referral because it is there but probably not the most likely [and] not your main concern. (GP A)

Another common strategy was for the GP to mark the referral form "urgent" and fax it to the ultrasound service. GP G notes:

I would usually put as much clinical information in the referral letter later. I mean if I feel it is ... very urgent I would mark it urgent. Mostly it is picked up on. (GP G)

The relative "anonymity" of the faxing process meant that the GP did not have to explain to the radiologist the concern that was perhaps embedded more in intuitive worry than in the clinical picture. Despite being told that GPs must telephone a consultant radiologist to organise an urgent scan, it is uncertain whether GPs such as GP G knew that faxed urgent forms were added to the general waiting list unless the sonographer (not the radiologist) decided that the patient should be scanned immediately (see Chapter 7).

Another strategy employed by GPs was to send the patient to the ultrasound service with the referral form rather than sending it through the postal system. GP C commented:

I let patients deliver the referral form on the off chance that another patient has just cancelled. (GP C)

Relying on patients

Awareness that the ultrasound service afforded low priority to reassurance scans, and a realisation that the patient was unwilling or unable to opt out of the public system, placed the GP in an awkward position.

I wouldn't say we over maximise the risk to people but I mean ... you have to inform the patient. You can't say, "You'll be fine, don't worry there is nothing wrong with you." [You] can't say the truth anymore. You can say, "I really think it's X but it could be this, and this is why you should have the scan." (GP B)

In this way the patient's condition might deteriorate, something that given the nature of the diagnostic dilemma, the GP could not predict. Despite this difficulty, GPs did not keep track of waiting patients on the ultrasound waiting list.

GPs commented that they were dependent on the patient to consult them if symptomology deteriorated, indicating that non-specific pain was a product of likely abnormal pathology.

[What I'll say is], "You need an ultrasound for your gallbladder. If this is serious you might get another pain, but I'm pretty sure that's what is wrong. It's going to take a long time [to get your scan], so hopefully you won't get another attack. Here are some pills [to take] if [the pain] does come back.... I want to hear from you [again if this happens]." What I'm doing here is promoting realistic expectations about waiting and reassuring anxiety. (GP A)

What I say to [patients] is "If the situation changes, if you feel your symptoms are getting worse or something else happens that you are not happy with, you come back and let me know. We will sort it out." If that means trying to get a more urgent scan then that is what will happen. (GP C)

We can only know if the time was unacceptable if the patients had increasing symptoms and came back. We have to rely on patients by saying "Look, this is what I think is wrong with you. Come back if the problem gets any worse." (GP B)

While this strategy absolves the GP of the need to track the patient condition, GPs nevertheless did note that the very reason, shortage of cash, which might have prevented a patient from opting out of the public system, might prevent them from returning to consult the GP. GP B noted therefore that this strategy was "a little bit stressful for the doctor concerned."

It is also interesting to note that the recent telephone health line set up by the HFA is based on the premise that "patients don't know the urgency of their symptoms... and need advice to direct them to the appropriate health provider" (New Zealand Nursing Review, 2000). The telephone health line contrasts with the traditional reactive approach undertaken by GPs who are assumed to manage the clinical risk assumed by patients while they wait for an ultrasound scan. The realisation that clinical risk is managed by patients (or families) also highlights a weak link in the New Zealand booking system that requires the GP and specialist to collaboratively manage the patients' condition in the community.

Conclusions

The diagnostic and timing uncertainty resulting from a delayed ultrasound referral created a number of problems for GPs and waiting patients. For most GPs the waiting list is a source of frustration and seen as a barrier to a timely diagnosis. This is not surprising given the importance of the diagnosis in biomedical enterprise (see Glenn, 1984). GPs identified a number of diagnostic dilemmas. Some diagnostic dilemmas if solved were unlikely to impact on the management of patients while others would influence patient management. The GP accounts in particular reflect difficulties in translating images of illness that inhabit primary care (“the worst case scenario”) to the neat boxes that characterise specialist medicine where a diagnosis has been established and rational treatment can begin.

Waiting times for patients deemed routine by the ultrasound service posed a particular problem for GPs since they were unable to exclude potentially serious yet unlikely conditions. Non-specific pain is a particular diagnostic dilemma. As such symptoms indicate either idiosyncratic pain or the presence of a serious underlying condition such as cancer, the cause of such symptoms is equivocal. These patients simultaneously bracket two mutually exclusive categories: “unlikely urgent” but “likely non-urgent.” Obtaining an ultrasound scan is an important mechanism for bounding diagnostic uncertainty and allows for appropriate treatment including reassurance or referral to secondary level specialist services.

For waiting patients the worry engendered by diagnostic uncertainty was compounded by a sense of “suspended living.” It was the absence of information from the ultrasound service about its waiting list that drew the most criticism from patients. It is notable that acknowledgement of GP referral to the patient was a recent development but due to possible administration errors a number of waiting patients did not receive this letter. Lack of information about the ultrasound waiting list – how long patients would likely wait and how patients were allocated appointments - created a sense of unboundedness and increased anxiety levels. Patients employed a number of strategies to manage their waiting

experience, most notably engaging in emotion work where they sought to internalise feelings of anxiety, anger and frustration.

Patients relayed the experience of waiting using a number of implicit and explicit metaphors that reflected how patients viewed themselves in relation to the ultrasound service. Most patients – particularly those who had difficulties while waiting – saw themselves as non-entities and equated themselves with pieces of paper that ran the risk of being lost or misplaced by the ultrasound service. Waiting for an ultrasound scan was the equivalent of a negation of self. GPs and patients were unaware of internal workings of the ultrasound service.

GPs were largely satisfied with the availability of urgent appointments even though contacting a radiologist was often problematic. Waiting patients not deemed urgent, however, were not necessarily reassured. While some patients concluded that not being deemed urgent indicated there was no reason for concern, others questioned the judgement and effectiveness of their GP as their advocate, and still others construed the ultrasound service as uninterested in them.

The next chapter provides a useful contrast to the accounts presented from primary care. Chapter 7 examines the perspectives of internal stakeholders such as radiologists, sonographers and departmental managers. It is notable that internal stakeholders also face a number of dilemmas and tensions that help bring focus to the difficulties faced by GPs and patients.

Chapter 7

Systems of Meaning

In and around the centre: perspectives of the ultrasound service

Perceptions and experiences of the ultrasound waiting list, presented in this chapter, demonstrate a different picture from the systems of meaning held by waiting patients and GPs. Waiting patients and GPs who were directly affected by waiting described waiting using a variety of metaphors. In contrast, in radiologist, sonographer and departmental manager accounts there is a notable silence about the ultrasound waiting list. Although these stakeholders expressed concern about the growing waiting list, and noted the concern it created for waiting patients and GPs, internal stakeholders tended to view the waiting list as an entity external to the ultrasound service. Process issues that characterised the ultrasound service tended to dominate accounts of the ultrasound waiting list. While process issues were considered in Chapter 5, examination of the case study data through the systemic window of systems of meaning uncovers a variety of tensions inherent in the ultrasound service.

These tensions, it is argued, essentially arise from the radiologists' concern to allocate scarce capacity to requests that are likely to have abnormal pathology, and the resultant importance yet difficulty in prioritising such patients. This imperative is in direct contrast with the main concerns of GPs and patients, which is to exclude as well as identify abnormal pathology. A second major source of tension is predicated on the management of medico-legal risk, the basis for the practice of double scanning. In combination, practices of prioritising patients and double scanning create further backpressure onto the waiting list, obstruct the GP from diagnosing, treating or referring, and shift medico-legal responsibility for the waiting patient back onto the GP.

Prioritising patients

In a context of resource scarcity, distinguishing between urgent and non-urgent patients is a useful heuristic for balancing supply with demand. Urgency from a medical perspective is also a common-sense way of prioritising patients in that it provides justification for delaying some patients while scanning others. Indeed, the premise of urgency is central to the currently popular “solution” to the waiting list problem presented by the booking system. In practice, however, determining who is urgent and who can be treated as non-urgent is not straightforward. It is argued in this chapter that clinical uncertainty and increasing medico-legal pressures means that such a distinction based on urgency is one of the defining dilemmas of the ultrasound service.

As noted in Chapter 5 the ultrasound service uses three simple heuristics based on the origin of the request (inpatient, outpatient and community) to determine which requests are scanned when. These heuristics embody different assumptions that the ultrasound service makes about patient urgency and consequently whether the patient is likely to have abnormal pathology.

Inpatient and outpatient department patients

Reflecting the assumption that ward requests are more acute than outpatient and community referrals, inpatient requests are afforded priority as they are allocated a sizeable number of appointments in every session. While it is departmental policy that no ward request waits more than 24 hours, Sonographer A noted that inpatient requests might be deferred to the next session if the existing session was fully booked. The extent to which inpatient requests were delayed was difficult to ascertain, although it is likely such delays were probably understated. It was Ward Nurse’s A experience that inpatient treatment was sometimes postponed while awaiting an ultrasound scan. For example, one patient in her care waited five days to receive an ultrasound before surgery. Ward Nurse A was also of the opinion that delays were not restricted to ultrasound, but also to other inpatient imaging services.

A number of ward requests are made by junior doctors – house surgeons - that have recently finished medical school. Despite their relative inexperience, house surgeons can order an immediate ultrasound scan without approval from a supervising registrar or consultant clinician. According to House Surgeon A and Ward Nurse A, it is common knowledge among ward staff that ultrasound scans were often requested without sufficient cause yet such requests are scanned within 24 hours. In contrast to house surgeons, most GPs have years of clinical experience to draw on when deciding whether an ultrasound is warranted. At the time of data collection, most GP scans were delayed nine months.

In contrast to inpatient requests, which are all assumed urgent, the urgency of outpatient requests is determined by outpatient clinicians who signal urgency by the date of the patient's next outpatient clinic appointment, setting a hard constraint on when the request must be actioned. This informal arrangement between the ultrasound service and the outpatient department allows Receptionist A to take the patient's urgency as given and allocate an appropriate appointment slot, although there is no guarantee that the assumed clinical urgency is necessarily related to the scheduled appointment date.

They indicate the urgency by putting a return date to clinic. We will always try and get them done before that date. That suggests to us how urgent they think it is. If they have no date that basically means that nine months [that is, current length of waiting list] is fine. If they say two weeks we struggle but we still get them in. (Sonographer A)

Unlike inpatient or outpatient requests, the urgency of community-referred requests is assumed to be non-urgent unless the referring clinician – mostly GPs – first contacts a consultant radiologist and make a case for an immediate scan. This strategy is based on a judgement that many of the GP requests are of dubious quality, which is evidenced when the patient is scanned and no abnormal pathology can be found. It is believed that such scans have little utility other than to recommend further – and more appropriate - tests or to reassure the “worried well,” that is, patients who are inappropriately concerned with trivial symptomology. Community-referred patients make up the bulk of the ultrasound waiting list and when scanned form a significant proportion of the ultrasound service's workload.

Internal stakeholders were of the opinions that if community-referred patients were excluded from the ultrasound service's workload sufficient capacity would then exist to scan inpatient and outpatient department patients. The number of community-referred requests frustrated attempts to minimise the outpatient waiting lists as well as the delays experienced by inpatient requests. Consequently, many of the difficulties in managing the workload, resulting in a waiting list, stem from the number of community-referred requests, but as previously noted actual discourse about the ultrasound waiting list tends to focus on process issues. As such, community-referred requests are problematic and it is for this reason that the problems associated with these requests are examined in more detail.

Dilemmas of community-referred patients

Although a GP's request represents medical justification for an ultrasound scan, resource constraints alluded to in Chapter 5 mean that only community-referred patients deemed urgent by radiologists are entitled to an immediate scan. The limited number of available appointments means that non-urgent or routine requests are deferred and added to the appropriate waiting list according to the referral dates of the requests.

While urgency and priority are analytically distinct concepts, in practice they are conflated, as sufficient capacity exists to scan all urgent patients. In this way, the urgency of the request (fixed through negotiation with a radiologist) is used to allocate immediate appointments and delay other requests.

A number of GPs and waiting patients were of the opinion that radiologists prioritised incoming requests to minimise the risk that waiting posed for patients. While these comments served to underline their sense of powerlessness over when the request might be actioned, it nevertheless highlights an interesting aspect of how the ultrasound waiting list is managed. Incoming requests are not medically prioritised by the radiologists. Indeed, prioritisation presents practical difficulties, and the ultrasound service must employ strategies to manage these difficulties.

A key reason for the lack of radiologist prioritisation of incoming requests was that in many cases the decision to delay a scan could only be justified in retrospect. Radiologist X noted that many GP requests were equivocal in this sense:

[GPs] find it hard to know whether [the patient] is normal or not. There is no way you can tell that beforehand. (Radiologist X)

Other radiologists and the sonographers were similarly aware that many requests were equivocal. However, they were critical of the sketchy nature of the clinical summaries that described the patient symptomology and referring clinician concerns, which highlighted the possibility that patients with abnormal pathology could be waiting for an ultrasound scan.

They [that is, the GPs] write down the clinical problem but it maybe a couple of lines like upper abdo[minal] pain, vomiting. You don't know, I mean that could be serious or not and so it's very hard to pick. You tend to lump ... all [the requests] together, which means they wait a long long time [before they are scanned]. (Radiologist Z)

A lot of [requests] that come in ... that could be a mass. Doctors don't necessarily write, "Query mass, query tumour" they write, "Pain blah blah." It could mean a mass or it could mean something really simple like a cyst or something like that. (Sonographer C)

From the gynae[cology] side you get quite a few that say "query ovarian cyst." Well they want the answer that month, not in nine months or six months time. What happens if it is not a simple ovarian cyst and it has waited six months? You have really relegated this patient to almost palliative care haven't you? (Sonographer A)

It is the sketchy and often equivocal nature of many requests that places radiologists in a difficult situation. While the clinical summaries provide a possible indication of the request's urgency, attempts at prioritisation were problematic as they might result in urgent requests being misclassified as non-urgent. In these cases, there is a risk that such cases will deteriorate or a delay in treatment will result in negative health outcomes for the patient.

The equivocality of the requests – and the difficulty in prioritising incoming requests - was further increased given that radiologists perceived that misclassification of urgency may result in patient litigation. Radiologist Z drew an analogy with the plight of his surgeon colleagues to illustrate the medico-legal risks that radiologists faced:

The surgeons have the same problem in that they have to ... decide whether a patient should be seen urgently or non-urgently. The non-urgent ones [may] wait three or four months and they [may] turn out to have something significant. If you, the specialist, have written on the form “non-urgent” then you could be liable for that. So ... [surgeons]... tend to write urgent on them all and if the hospital can't keep up with them [it] hasn't got enough surgeons or clinic appointments... it's not the surgeon's fault, it's the hospital fault. It shifts the blame. (Radiologist Z)

It can be justifiably concluded, therefore, that every patient prioritised, who remains unscanned, is a potential lawsuit from the radiologist perspective. When asked about the problems that the waiting list might cause the hospital, Radiologist W replied:

[P]eople are waiting too long and therefore having diagnoses delayed which legally puts the hospital at risk. (Radiologist W)

Radiologist Z also expressed concern:

I'm concerned about the risk of being accused of providing inadequate care. You know by there being letters in the newspaper or being taken to court. I think either of those can happen easily. (Radiologist Z)

Sonographer A saw the reticence of the radiologists to involve themselves in prioritisation as understandable. Sonographer B, however, was more critical and felt prioritisation would improve access for waiting patients by eliminating the number of clinically inappropriate scans undertaken by the ultrasound service:

Every part of the [radiology] department ... has a doctor in charge, although [this arrangement] isn't official.... Ultrasound has someone ... [and] I showed him ... [the prioritised requests] and he said, “You are right, but maybe there is something [important]”.... I told him it was better to say, “No [to the inappropriate requests] and ... [perhaps] we ... will miss one or two gallstones rather than [without prioritising] have a year long waiting list and [have] people die.” (Sonographer B)

And that:

The radiologist doesn't want to say this is not necessary because if it is something nasty it is their responsibility. They would rather do unnecessary examinations to cover themselves. You know, to be safe. I think this is the other thing, which makes the waiting list longer. (Sonographer B)

Informal prioritisation

In a small number of cases the request's urgency can be assessed directly from the clinical summary supplied by the referring clinician. If such information indicated a suspected

malignancy or serious problem, Receptionist A allocated urgent appointments without consulting a radiologist:

[Conditions relating to] testes, thyroids, anything acute I just make an appointment and send ... [the appointment card] out straight away. (Receptionist A)

While sonographer opinion over the decision of radiologists not to prioritise the referral forms is mixed, the sonographers nevertheless saw prioritisation as a useful tool for managing the waiting list and attempted to interpret the clinical summaries.

[Y]ou read them and there is a few that shouldn't be ultrasound... they get pulled and they get given to one of the radiologist to write a letter to [the referring clinician about the inappropriate request]. Occasionally you will get ones where the GP has basically put down "Large mass felt. Patient weight loss." Once you have read that you can't morally leave that person nine months. I certainly can't. (Sonographer A)

While sonographer prioritisation was done under the guise of housekeeping – matching the request to the appropriate waiting list – Sonographer A expressed concern over the possible medico-legal implications of screening the incoming requests for appropriateness and priority:

I don't like to say ... [I'm screening the forms] because what that does is makes you liable for the ones you miss.... I can't get a radiologist to do it... once you start doing that you are in trouble because there is not enough information on most of the forms. (Sonographer A)

Despite the potential medico-legal difficulties the radiologists appeared to be accepting of the informal prioritisation that non-medical stakeholders undertook. There are two possible reasons. First, there are fewer medico-legal implications in misclassifying non-urgent requests as urgent and scanning the patient ahead of other non-urgent patients. Second, sonographers in an act of deference will approach the radiologist with requests they believe are urgent and ask whether an urgent appointment can be allocated.

Shifting responsibility

While prioritisation by sonographers and the receptionist is accepted and indirectly encouraged, to avoid the possibility of litigation every request is assumed to be non-urgent. It is the ultrasound service's formal policy for the referring doctor to contact (via telephone)

a consultant radiologist if they believe or “feel” that an urgent scan is medically justified. Responsibility for determining urgency is transferred to the referring clinician.

Obviously the GP or the referring specialist would know more about the clinical urgency of the referral, whether it is really justified and whether the resources are being well spent. Our job [as radiologists] is may be to do the technical side of things and do it... Like do I do an ultrasound or computerised tomography for this particular problem? That is our job but in terms of assessing which patient [to scan] or not, that is a clinical thing [that should be done by the referring clinician]. (Radiologist X)

However, GPs are discouraged from writing urgent on the request form as it places the radiologist in the difficult position of determining whether an immediate scan is required.

We get doctors who fax forms with urgent on them all the time but [who] never bother to ring up, never bother to lift up the phone and say, “I need to speak to a radiologist. This is urgent.” I actually did a man’s carotids at lunchtime like that. Now he sat there and said, “Oh my doctor faxed three of those forms to you.” I said, “That does absolutely nothing because they are picked up by clerical staff. If they think this is urgent enough and it warrants being bumped ahead of everything else that’s waiting nine months they must pick up the phone and speak to the radiologist.” They know that. They have been sent a letter that says that. (Sonographer A)

They are looking at a system now where the GPs will tag something as urgent, moderately urgent or you know, basically in the next millennium scans. [This would be] a system of self-regulation by GPs. I have a problem with that because we get patients from Dr [name]’s general practice. They mark everything urgent. Most of those doctors will write everything urgent. They write it on the forms but the clinical summary on the forms is the same as everything else. That is really frustrating because their patients will get a privileged service over and above [patients of] other GPs who are perhaps more realistic. (Sonographer A)

Radiologist Z also expressed the concern that if GPs were able to self-prioritise patients, this action could encourage GPs to refer more patients making managing the ultrasound waiting list even more difficult to manage.

I’m sure it’s a nuisance for ... [GPs] to ring up if they want something urgent. They probably prefer to write urgent on the form and it got done. I think if we did that it would open the floodgates. Making them have to ring up is making them do it when they actually need to do it. (Radiologist Z)

It is through the urgent mechanism that radiologists prefer urgent scans to be organised. However, as discussed in Chapter 6 contacting a consultant radiologist poses difficulties for referring doctors:

They [that is, the GPs] have to spend time ringing up and it's hard to get through to us guys [that is, the radiologists]... we are busy and there is not many of us. We are busy doing things and so you know they have to sort of get through two or three layers of switchboard before they can actually get to us. (Radiologist W)

Radiologist [name] won't answer the phone when [Receptionist A] said, "It is a GP on the phone and he wants an urgent something something." He wouldn't take the call. (Sonographer B)

When radiologists were asked to reclassify requests as urgent, radiologists attempted to differentiate between authentic and inauthentic urgency with varying degrees of success.

Some [patients] sound really serious but the patient gets here and there is nothing really wrong with them. It's ... little bit hard. They [that is, the GPs] don't ring us often [but] when they do ring us we [that is, the radiologists] have to try and work out whether they are really sick or not. (Radiologist X)

In some cases the radiologist yielded to pressure from the GPs to scan their patients immediately. However, similar problems occur with inpatient referrals.

[Y]ou have the doctors who continually complain on the phone, yelling and screaming. They get their patients [scanned ahead of other patients] even though the radiologists may get off the phone say, "That person is a real pratt and they don't really deserve to get their patients moved up" but they are not prepared to say that to them. (Sonographer A)

Difficulties in establishing whether a patient's condition was really urgent was overcome by the following strategy:

What we do is usually just we tell them to come through [the emergency department] because then they will get triaged there and if sick they may get it. There might be nothing wrong. That's a good way of doing. Otherwise we would get too many patients coming in. The ones that do need scanning won't get done because they [that is, the inauthentic urgent patients] will fill up all the time slots. (Radiologist X)

This avoidance of prioritisation on the part of the radiologists, while recognising the central importance of maintaining a demarcation between urgent and non-urgent patients, gives rise to the structure of the waiting list previously depicted in Figure 5.3. From the

ultrasound service's perspective, the only distinguishing characteristic of a request is the date that the referral was received. The non-urgent request is added to the general waiting list, although in reality there is not one, but several, separate piles, reflecting the different body cavities that will be scanned.

There is a risk that a non-urgent patient's condition will deteriorate while waiting for a routine scan. Deterioration in the patient's condition signals that pathology is probable and an ultrasound scan is likely to result in a definitive diagnosis. Urgent scans can be organised through the urgent mechanism thereby reclassifying the patient as urgent. The structure of the waiting list facilitates the efficient functioning of this urgent mechanism by enabling the request form to be located amongst the non-urgent pile, although difficulties may arise if the request form is misfiled. The structure is efficient for a small number of request forms.

Some patients will also ring the ultrasound service and attempt to negotiate an immediate ultrasound scan. Such telephone calls cause difficulties for Receptionist A and the student sonographer, who must answer the telephone. First, such phone calls create extra work during the already busy sessions.

It does create extra work, no doubt about it. When you have a full list morning and afternoon you haven't really got a lot of time to do anything extra in your day. (Receptionist A)

[P]eople ringing and asking why they haven't been scanned and what the scan was for they don't remember. You have to pull the form out of the 1300 pile and they are all divided up into different things, you look at it and put it back. The chances of losing the form in those circumstances becomes more... so we have probably one a day when we have got no form so you have to call notes up and ring the doctor and that doesn't look very efficient. (Sonographer A)

As both Receptionist A and the student sonographer are low status members there little that they can do to organise an immediate scan other than to advise the patient to go back to their GP if they believe they need an immediate scan. It is socially awkward.

[Y]ou do still get some people who think that ringing will make them sound more urgent. Unfortunately you do get the case history behind it. I'm not wanting to sound horrible but you end up having a conversation with someone and they are

telling you why they want it done now etcetera but you are stuck. You can't do anything about it. There is nothing we can do unless their doctor rings. (Sonographer C)

While patients are not able to negotiate an immediate ultrasound scan, it was curious that Sonographer A was of the opinion that:

Realistically ... [the waiting patients] didn't need to be scanned. They went [to the GP] with a gut ache and it was possibly gallstones but as it turns out [the gut ache] went away. It's not likely to be gallstones. They could have rung [the ultrasound service] and said, "Look, I don't need this anymore. I'm perfectly well." But they come anyway. (Sonographer A)

Rather than attempt to "queue jump" (Sonographer A) many patients instead telephone the ultrasound service to find out how long they are likely to wait for an appointment. However, while separating referral forms may facilitate the efficient functioning of the urgent mechanism, it creates difficulties for Receptionist A and the student sonographer. In order to relay information about waiting times, they need to ask the waiting patients what type of ultrasound scan they are waiting for, but as Receptionist A notes:

[A] lot of people don't know what they are being referred for. A lot of people it's almost if sometimes they have difficulty in telling me what part of their anatomy is. (Receptionist A)

The extent to which the informal prioritisation and responsibility shifting strategies are successful is difficult to ascertain from the internal stakeholder accounts. The radiologists and sonographers did report that only a few urgent requests are considered from GPs each week, although Chapter 6 highlighted that GPs utilised a number of strategies for avoiding the ultrasound waiting list such as making outpatient referrals.

Finding "nasties"

According to internal stakeholder accounts, serious abnormal pathology is occasionally detected in non-urgent patients who have waited lengthy periods of time.

The classic story is a 40 to 45 year old female coming in [to have a scan] after being on the waiting list for six to seven months. It is found that she has a huge mass, an ovarian mass and the prognosis is not good because of the time it has taken her to ... have the scan. That's a classic story that can happen quite a bit. (Sonographer C)

I have this awful feeling that ... with an eight month waiting list maybe [for] 90 percent of the patients it would not matter, but two or three will die. (Sonographer B)

It is of note that the ultrasound service does not collect any statistical information of such cases or the proportion of patients who deteriorate while waiting. In the first case the absence of this information is presumably due to the question of whether such abnormal pathology could have been detected had the patient being scanned earlier.

It is frustrating ... when you know that there are patients waiting nine months. You know the indication might not have been serious on the form but at this stage they have got advanced liver [metastases]... The other side of that coin is that you may not have seen it nine months ago. It might have not been visible then. But you think that this person has gone nine months with this problem and you found it now it's basically too late. (Sonographer A)

Despite the concern expressed over misclassifying on the basis of urgency, in reality when eventually scanned the community-referred patients are likely to be normal. That is, no abnormal pathology can be established with an ultrasound scan. Scans with such outcomes are referred to as "rubbish" and this label is meant to reflect on the ability of the GP who made the referral. "Consultant only" referral is a preferred intervention for some departmental members.

We do a lot of examinations, which are normal. From the GP side probably 70 percent, that would be a conservative estimate. We have radiologists here that would say 95 percent and that might be a little over-estimated. A good 70 percent are absolutely normal. So that doesn't mean to say that they are not getting pain. It's just that we can't find a cause for it in ultrasound. Whether these people need the ultrasound [scan] or need a good clinical summary and alternative tests done [it's difficult to say]. (Sonographer A)

A lot of that stuff [GP referrals] is not urgent anyway... most of them don't have any pathology. Occasionally you will pick up something up but most of it is normal. (Radiologist X)

Sonographers expressed frustration at the prevalence of "normal" scans. Sonographer B drew an analogy with working in a factory when talking about normal scan outcomes.

[While scanning] GP request forms ... we find nothing ... and the next patient nothing and the next patient nothing. [It is like working in a factory you]... do some screwing in one box and in the next one. But if you think about the ward patients and the screened patients [outpatients] it is interesting, new and challenging. It gives [us] a good feeling because you can give something back to the patient and the

doctor. But with the long waiting list and because ... we don't have any positive findings [it is no good]. (Sonographer B)

The difficulty arising from the equivocal nature of the many requests and the attentive (and often unpredictable) risks of delaying requests places both the internal stakeholders and GPs in a bind. Herein lies the frustration associated with managing the ultrasound service's scarce capacity: determining who should receive an immediate scan given the hindsight driven nature of justifying delay.

The examination of how internal stakeholders manage what is often a contested claim on scarce capacity reveals a contradiction in how the ultrasound service operates. While a discourse of expertise is used to justify delaying GP requests – “rubbish” scans – because of the medico-legal implications that comes with radiological expertise it is the non-medical internal stakeholders who screen the referral forms for priority and appropriateness. Simultaneously, responsibility for determining the request's urgency is shifted to the referring clinician who is expected to contact a consultant radiologist if the patient condition deteriorates. However, the consultant radiologists make themselves difficult to contact.

Second look sonography: double scanning

Radiologists exert a large degree of control over how the ultrasound service's workload is organised and carried out. One particular practice that the radiologists insist on is “double scanning,” or second look sonography. Double scanning occurs when the patient is rescanned by the radiologist to confirm the sonographers' provisional findings. Sonographers rarely rescan after radiologists. Based on the new images obtained by the radiologist, a diagnosis is established and reported. The aim of double scanning is to establish an accurate diagnosis.

Unlike other imaging modalities such as plain film radiography or computerised tomography, capturing an ultrasound image from which a diagnosis is made is largely operator dependent.

During an ultrasound scan ... you freeze the film and take certain pictures but those representative pictures only represent a small slice or small fraction of the information which has been gathered during the ultrasound scan. (Radiologist Y)

You can make things look like things that are not. It is sort of due to different angles, gas, and sort of strange things like that. You sometimes can't quite get the picture you require or should be getting. (Sonographer C)

Without double scanning, a diagnosis reached by the radiologist rests on the ability of the sonographer to correctly image any pathology. While it is standard practice that if serious pathology is discovered, a radiologist will rescan the patient to verify the presence and extent of illness, accepting the sonographer finding that no abnormal pathology is present carries with it medico-legal implications. The sonographer may have missed the abnormal pathology. In this case, the radiologist will report the scan as normal even though abnormal pathology may be present making the radiologist liable for any future complications. It is for this reason that the radiologists as a group insist on rescanning the patients themselves if they believe that abnormal pathology may be present.

[U]ltrasound is very very person dependent because if you see it, it's fine, if you don't see it you don't picture it. Nobody can report the abnormality if it is not on the picture. (Sonographer B)

Double scanning is considered a world-wide standard, although its use overseas varies between ultrasound services and specialists (Tessler et al., 1996). In the ultrasound service, the insistence by radiologists for double scanning is relatively recent. Previously many radiologists were prepared to report off "hard copies" – the images captured by sonographer's scan.

They are checking more and more because they are very worried. More patients are suing the doctor and this is trouble for the medical profession. They like to check not just the film but also the patient. (Sonographer B)

Individual radiologists held differing opinions on the appropriateness of double scanning. In contrast to radiologists who defended double scanning, Radiologist Z was open about the inefficient nature of double scanning.

I think it is wasteful that we both scan but some of my colleagues insist on that. So it's their name on the report, their neck on the block if it comes to it. I can't insist on how they practice. But it is inefficient in some ways. (Radiologist Z)

When it comes down to it if you are reporting it, it's your name that goes on the bottom of it [patient's report]. It's your responsibility to ensure that the information is correct and in those situations I like to scan the patient myself. It's not often but you know it certainly does happen that I pick up serious pathology, which has not been seen by the sonographer. Certainly for complex scanning for example vascular work and some other work often it's a case I've often discussed the case with the clinician you know frequently I'll be the only one who knows exactly what information is required. (Radiologist Y)

If the sonographer is very good then you are fairly safe most of the time... with a good sonographer, you know, the sonographer is as good as you are, if she misses it you will miss it too. It is just that we have a little bit of extra knowledge about pathology so where they see findings we try to put it together in a clinical context... because we are doing that we might find very subtle things ... it's fairly rare. (Radiologist X)

For the sonographers, the ultrasound service is characterised by a number of interruptions or disruptions to the flow of work. The primary interruption is due to the practice of double scanning. Patients failing to turn up for a scan, in contrast, are rarely disruptive as sessions commonly overrun and "fresh requests from the ward" (Sonographer A) fill empty slots.

How is double scanning thought to impact on the ultrasound service and in particular contribute to the waiting list problem? While not all radiologists insist on double scanning in all instances, it is departmental policy that a radiologist must be present when patients are scanned by sonographers. In operational terms double scanning means that no scanning can be done without a radiologist, although a small number of vascular patients may be scanned without a radiologist. There are two implications. The first highlights the disruptive potential of the radiologist, as the session throughput is dependent on the availability of the radiologist.

Today a radiologist is away. He's away this morning, which is his ultrasound list. Therefore we can't do any patients this morning because he likes to check all his patients. (Sonographer C)

The hardest problem we strike is when the radiologists are away and we don't have coverage for the sessions... [we] come into work and shuffle paper around, clean the machines and deflect doctors from other sections who are getting really nasty because they can't get their patient [scanned]... that day. (Sonographer A)

Radiologists may cancel sessions that have been scheduled. Sonographer A explains:

It is not uncommon for them [radiologists] to come and look at the book [containing scheduled appointments] and say, "Oh there is a meeting I wanted to go to next Monday. Move these patients." And, that's you know less than 10 days. (Sonographer A)

[This is] [a]fter the appointment card has gone out to the patient? (Researcher)

Yes and then of course you get people who turn up and say that they didn't receive the [new] appointment card. You know that this was the appointment that they were given and this is the appointment that they are keeping. We ring but then there are a lot of people who work so they are not at home during the day. Our receptionist takes work home and rings them at night So it actually puts an unfair burden on the reception staff. It doesn't happen as often as it used to. They are a little bit organised at the moment. But it does happen three or four times a year. They go, "Oh oops, I forgot to tell you. Remove these 20 patients from the list. I won't be there." (Sonographer A)

There are two tardy radiologists who also potentially disrupt session throughput. Sonographers may organise the session's workload so that patients with early appointments can be scanned without needing to be rescanned by the radiologist.

[With a tardy radiologist] you may have your first patient on the table for an awful long time. One we book a lot of pelvises. If they are normal they can all go and I do send them off and I check them myself if anyone else has done them. I will send those off. He will report those off films. He won't report an abdomen the same. The other radiologist who is late will report off films completely so I just do that with her. And Radiologist [name] who is supposed to start at nine, which we have already had to compromise [over] as we start at eight with other radiologists. We have to book other things that he doesn't check or we can get reported off films now through to nine. Because he is not ever going to start before nine. If he doesn't bother to come in until nine thirty or nine forty five we wait. The workload has to be worked out to the ability of the radiologist on the session to keep in time. (Sonographer A)

Radiologist time is limited as it is shared among the radiology department's other imaging modalities. Radiologists may disrupt the session throughput by taking conference or annual leave. According to Sonographers and Receptionist A, radiologist leave is a principal reason why the waiting list has grown so rapidly.

It's really frustrating ... [to have] worked really hard at one stage... changing our appointment system and working more efficiently and all that sort of stuff to get our waiting list down to within a month and once we hit that month we stayed there for two months and then it was like an atomic bomb went off and it just exploded into this huge list we have now.... The first few months what happened is we got the

waiting list down really well and then all the radiologists decided they would have time off, lots of time off. Sometimes together and sometimes separate. So for about 12 weeks we were never fully staffed so we were losing 15 to 30 to 50 patients a day sometimes for a week at a time. It didn't stop the forms coming in and just added to the pile. We went to having 200 patients waiting which is about a month to 400 patients waiting more than a month and then 600 waiting for two months and after that just like 100 to 150 a month get added to that [waiting] list. (Sonographer A)

Second, sonographers may experience periods of time where they and patients are waiting for a radiologist to confirm the sonographers' provisional findings.

They have one radiologist and two scanners going. The [radiologist] can scan one patient while the other is waiting [to be scanned by the radiologist]. (Radiologist Z)

Periods of enforced idleness result and vary according to the radiologist's ability to quickly and efficiently rescan the patient. While some radiologists are able to rescan patients quickly, others are considerably slower.

One radiologist will check the scan and he may take 20 minutes to scan a patient I've taken 10 minutes to scan and come to the same conclusion, come out of the room, write his report... he's taken another 20 minutes to do that. So the patient waiting on the other side of the table to be checked on the other bed has already being waiting 20 minutes over their appointment time. So we end up with a mess on that day. (Sonographer A)

This also has a number of effects. Primarily, sonographers (and departmental managers) are of the opinion that it is double scanning that places bounds on the session throughput rather than HFA constraints. Sonographer A was of the opinion that the ultrasound service could scan 60 as opposed to 40 or 50 patients a day, increasing throughput by 20 to 50 percent. Such an increase in throughput was expected to help reduce the waiting list.

Sonographer A assesses each radiologist as fast or slow sets the number of appointments in the appointment system according to the speed of each radiologist.

For instance Radiologist [name] ... can do his list [session] faster than anyone else.... We used to have an example where we had one radiologist who didn't check anything. Just reported off films and Radiologist [name] checking each patient and there was no difference in the amount of patients we were doing in that time frame. So we have that standard and then we have the other side where we have two doctors where we reduce the amount [of patients] on their lists because they can't cope with that volume of patients. (Sonographer A)

On this list there will be maybe 20 patients and somebody else's list will have 40 patients. (Sonographer B)

There are other consequences. The effect of periods of enforced idleness is cumulative impacting on the ability of the ultrasound service to keep to allocated appointment times.

... we are scanning and we wait 10 minutes for the radiologist. Usually 10 minutes isn't long for the patient. She or he is happy to wait. But the other patient is already here. We start her 10 minutes later and if we wait another five minutes for the radiologist to check her, the third patient will be 15 minutes late. So the fourth or fifth patient will wait half an hour. (Sonographer B)

Patients waiting to be rescanned also are uncomfortable, particularly those with "bursting bladders" and worried about what the sonographer might have discovered as sonographers are prohibited to give non-medical opinions to patients. Perhaps, more seriously Sonographer B felt pressured to scan later patients faster increasing the likelihood of her missing significant pathology.

We try and reduce the time, which we spend at the station but while we can reduce our scanning time this isn't safe.... I scan quickly but maybe I didn't see what I had to. It's alright at the beginning of the day but at the end of the day it's probably a bit dangerous. We are tired but because of double checking, because the radiologist will check, it's probably not so dangerous. (Sonographer B)

Sonographers had much to say about double scanning although opinions about its appropriateness varied. While double scanning was seen as a constraint on the total number of patients scanned by all sonographers, Sonographer A expressed concern over unnecessary inefficiencies and apportioned blame to the radiologists for the existence of the waiting list. In contrast, Sonographer B defended the practice despite its acknowledged inefficiencies.

They [that is, the sonographers] are very good [at scanning] but I won't report from hard copy. I wouldn't report after me. (Sonographer B)

Sonographer A was critical of the variable application of double scanning by some radiologists:

A couple of our radiologists today will allow you to scan and won't check what you do but tomorrow they might be in a different mood or they may decide they let you get away with this. They have consistently let you scan a patient, scanned patients and not checked that particular type of work that you do and the very day you send

a patient off because they have not checked this patient for you in the last two months, that will be the one that they decide to check. They will get upset because you have presumed that they won't check it because they haven't checked it for the last couple of months. (Sonographer A)

When asked about the reason for the unpredictable nature of double scanning, Sonographer A replied:

It is control. Why else would you do that? Because the sonographer has presumed that you trust them enough to do that. They will take that away from you and it is like jerking the chain of a dog. You allow the dog to have six feet for three or four months when it only had three feet before but you decide you don't like that anymore so you will bring them back to three feet so they know who is boss. That is exactly how it makes us feel. (Sonographer A)

Is that because the dog is dangerous? (Researcher)

Well the dog can be dangerous. I guess if the dog thinks it knows more or as much as you do. (Sonographer A)

Manager A also formulated double scanning in terms of the tensions that exist between sonographers and radiologists.

... I would just like to see the radiologists and sonographers work as a team and have mutual respect for each others professions because I don't think it is there at the moment and only that way they can head in the same direction. (Manager A)

Sonographer C, unlike Sonographers A and B held a more pragmatic view and deferred to the radiologist viewpoint:

In an ideal world it would be good if we could scan and the [radiologists] report off [hard copies]. Some radiologists don't like operating like that. They like to see for themselves... which is fair enough as things can be missed. (Sonographer C)

More will be said about the context dependent nature of double scanning in Chapter 8 when issues of knowledge-power are considered.

Conclusions

This chapter has examined the internal stakeholder accounts of how the ultrasound waiting list is managed. Two major process issues dominated accounts: first, the difficulty of

determining the urgency of a request; and second, the use of second look sonography to minimise the probability of abnormal pathology being misdiagnosed. In the first instance, the fundamental dilemma for ultrasound service staff is the trade-off between managing patient risk - by prioritising - versus medico-legal risk - by treating every request as routine and thus at risk of deteriorating or being inappropriately delayed. This was managed via a number of strategies that drew on the expertise of non-medical stakeholders including sonographers and the receptionist. The second process issue centred on contested use of double scanning to manage medico-legal risk of misdiagnosis, which capped (and disrupted) departmental capacity to respond to the growing ultrasound waiting list.

Both process issues highlighted the limited involvement of the radiologist in managing the waiting list, which contrasts with popular view in the literature that clinicians directly manipulate waiting lists. Nevertheless, the ultrasound waiting list is managed in a way that is consistent with radiologist interest in detecting and confirming abnormal pathology. In particular, the urgent mechanism and the likely deterioration of waiting patients with abnormal pathology meant that equivocal requests could be managed using radiological expertise.

Waiting lists for ultrasound is a problem principally for waiting patients and their GPs – it is non-urgent community referrals that assume the burden of waiting. Radiologist and sonographer perspectives trivialises waiting – these are, after all, likely to be “rubbish” scans, inappropriate and clinically uninteresting. Second, responsibility for the growing waiting lists lies with the GPs (for inappropriate referrals), and funding agencies and hospital management (for inadequate resourcing). Yet the internal stakeholder accounts have demonstrated that technical scanning and prioritising management practices also contribute to scanning throughput lagging behind demand, resulting in ballooning of waiting lists.

Paradoxically, a concern to manage perceived medico-legal risk has resulted in the practice of double scanning patients, even the presumed “rubbish” scans, a practice that increases

medico-legal exposure through its effect in extending the wait for the scan. The underlying reasons for these apparently perverse practices are further developed in Chapter 8.

Chapter 8

Systems of Knowledge-Power

From the stakeholder accounts detailed in Chapters 6 and 7, there appears to be at least three complementary ways of understanding the importance of an ultrasound diagnosis. The first of these ways of understanding is derived from a functionalist explanation. An ultrasound diagnosis is needed to begin rational treatment (Glenn, 1984). This is where the probable cause for the patient symptoms is uncovered, treated or referred appropriately. The second conceptualisation acknowledges the subjectivity inherent in human activity systems pointing to the centrality of an interpretative understanding. For example, as well as providing the basis for rational treatment, an ultrasound diagnosis provides reassurance to GPs and patients that nothing sinister is happening.

A third and critical conceptualisation examines what might be regarded as the coercive nature of the ultrasound service, viewing the act of diagnosis as a mechanism that structures the delivery of ultrasound on the grounds of legitimate expertise held by the dominant stakeholder group. This chapter picks up on this conceptualisation of a diagnosis by reconsidering, and expanding on, three key issues. First, double scanning; second, claims about GP referrals of doubtful utility; and third, concerns about diffusion of ultrasound to other medical specialities. These issues are examined through the fourth and final systemic window, knowledge-power.

In doing so, the present research seeks to problematise the dominant rationality of the ultrasound service by querying the social categories that constitute the systems of process and structure. Alternative stakeholder perspectives (embodied in systems of meaning) whose interests and values are subservient with respect to the dominant rationality of the ultrasound service are privileged at the expense of the dominant stakeholder group - the radiologists – whose perspective often appears as an object of analysis.

The analysis set out in this chapter is consistent with TSI's ideological commitment to human emancipation (discussed in Chapter 3, see Flood and Jackson, 1991a), and further developed in Chapter 10 where the possibility of emancipation is explored. Central to the following analysis are the social categories of "appropriateness," "urgency," "illness" and "expertise." These categories are placed in quotation marks primarily to serve as a reminder that these are tied to the interests and values of the radiologists. It should be noted, however, that although these words are used frequently in relation to ultrasound services, as concepts these words are problematic and should not be taken for granted. As such these categories are socially contestable and offer a site from which systemic interventions consistent with TSI's concern with enlightenment and emancipation can be developed.

Double scanning

With the growing importance of outcomes research and quality assurance in health systems management, radiologist-led processes such as double scanning have increasingly been seen as the most "appropriate" way to organise the delivery of ultrasound services. An alternative perspective problematises the notion of best practice by illustrating how double scanning is related to issues of knowledge-power. In particular, the context dependent nature of double scanning is examined by focusing on the departure between the officially espoused aims of double scanning and how it is practised at the case study site and the private radiology facility. The practice of double scanning is situated in the historical context of the distinction between radiography and radiology. Finally, the practice of double scanning is further problematised with reference to other issues such as the prioritisation of waiting patients and the potential diffusion of ultrasound to non-radiologist professionals.

Context dependent nature of double scanning

To illustrate the context dependent nature of double scanning, three inconsistencies in its use are considered. The first inconsistency occurs in private practice where hard copy reporting and a clear division of labour is a defining characteristic of radiological practice. Sonographers, under site supervision from a radiologist, scan patients and radiologists report from hard copy images. As private sonographers have more autonomy than their public colleagues, private practice offers sonographers an attractive working environment and consequently many experienced sonographers leave the public health system to work for private radiologists. The inconsistency is most apparent when these ex-public sonographers potentially work with the same private radiologist who while working as a public radiologist refused to hard copy report.

The absence of double scanning at the private radiology facility is notable particularly since a private scan is associated with an image of superior quality service and both private and public facilities face similar medico-legal risks if abnormal pathology is missed. Sonographer A and Manager B view this discrepancy as economically driven:

In private practice your sonographer is ... [scanning] between three and four patients an hour. You are getting a minimum of 75 dollars per quarter hour from the patient or the funding authority.... It is much more realistic to let the person who knows the job really well to scan and if they think they are over their limit ... [they] can call for help [from a radiologist]. (Sonographer A)

[There is] a radiologist with private interests who seems to require a different standard of performance [in public] from his private rooms and the [higher] standard of performance [in public] is such that it slows [down] the throughput, which means that the waiting list stays longer, which could be to [his] ... advantage [with] people saying, "Well maybe I'll go private instead." (Manager B)

Radiologists with dual private and public appointments defend double scanning by citing the presence of student sonographers in the public setting as justification for this process even though an experienced sonographer usually rescans student work.

Sonographer A was also of the opinion that radiologists favoured double scanning because if hard copy reporting were utilised the volume of reported scans would increase without a corresponding increase in remuneration or revenue.

[If we hard copy reported] that would mean that ... [the radiologists] would have to report more [examinations] here than they do [now] for no extra money. (Sonographer A)

Sonographer A and the majority of the departmental managers tended to view radiologists as economically motivated, and by implication, antipathetic to the values of the public system. It was not in the best economic interests of radiologists to undertake hard copy reporting. The view held by Sonographer A and the departmental managers, however, does not account for the variable use of double scanning. Not all radiologists with dual public and private appointments insist on double scanning just as some public radiologists insist on double scanning every patient. Alternative explanations are possible. It is conceivable that due to the high public stake in health care services irrespective of actual ownership, the ultrasound service as with other hospital departments is under intense media scrutiny. Radiologist X and Outpatient Nurse A bemoaned what they saw as unfair attention devoted to errors made by the hospital:

If you do miss something ... there is too much coverage [in the media] about the one thing that does go wrong, which is extremely rare and that's sort of blown out of proportion. (Radiologist X)

The publicity about all the mistakes the hospital makes is [huge]. They must think the whole hospital is clumsy.... The good things never come out in the news about how great the hospital staff really are. It's always the bad stuff. (Outpatient Nurse A)

Even though it seems likely that private radiology facility would come under the same scrutiny as the public facility if abnormal pathology was missed, the private radiology facility is not generally the focus of journalists. Other than as a speculative cause of the waiting list, the private radiology facility is rarely mentioned.

An alternative reason for why hard copy reporting is utilised in a private context is that there may be little need for double scanning simply because it might be expected that the private radiology facility would undertake more “rubbish” scans than the public service.

Another possible explanation for the inconsistent application of double scanning between the private and public facilities lies in the apparent lack of clinical interest in ultrasound by radiologists who, according to Sonographer A, treated the ultrasound service like the poor cousin of the radiology department.

We are the poor cousins of the whole radiology department so we are the first to be dropped in it... a lot of [radiologists] are not particularly keen in doing ultrasound. It is not seen as a particularly productive examination even though we do thousands of them a year. So they get left. [The radiologists] are not interested because it isn't trauma, it's not computerised tomography and they are not urgent and therefore they can wait. (Sonographer A)

Sonographer A continued by drawing a parallel with surgery, and went on to say:

[Ultrasound] is not glamorous I guess. That's probably more to the point. Things like digital subtraction angiography and stuff like that are sort of like cutting edge life saving examinations. And that's always going to come first, but it's a bit like surgery. It's the glamour industry of hospitals. (Sonographer A)

While the first inconsistency focused on activity minimisation and maximisation tied to economic considerations, perceptions of medico-legal risk and clinical interest, the second inconsistency served to antagonise the sonographers and undermine their sense of professionalism. Radiologists employed double scanning erratically, often only rescanning patients only after the sonographer had sent the patient home. In a public display of radiologist authority, the patient is recalled back into the department and rescanned by the radiologist.

If you say [to the radiologist]... “This is normal therefore I don't need it checked” ... and ... send the patient off ... you are likely to get your head bitten off. You might get away with it a couple of times but for no rhyme or reason the third time you try this the answer will be, “No. Get the patient back.” If you went out and said [to the radiologist], “This is normal. Do you want to check?” they will say, “It's fine I won't find anything else. Send the patient off.” (Sonographer A)

Manager D made a similar comment:

Sometimes the radiologist will say, “Oh no I won’t need to look at that,” and [then later on need to rescan] the exactly same [type of] patient, the same symptoms. You see it is done on a whim or it’s done on a mood. (Manager D)

Other inconsistencies relate to the availability of radiological “expertise.” This is captured by Sonographer A’s frustration over what she saw as a “seething double standard”:

Like Radiologist [name] is away [on annual leave] and there are several things that he does that no one else does. So [either] they will not be covered or I am going to be taught how to do [the scans] and will report them. That’s the joke of it. When he comes back that will cease. I’m allowed that responsibility when he is not here... but once he comes back that responsibility will be removed from me again. It’s a seething double standard I would say. (Sonographer A)

The third inconsistency in the use of double scanning is that only radiologists practice it at the case study site. Cardiologists, for example, who have recently acquired a dedicated ultrasound machine, do not double scan and are content to let the sonographer scan the patient. While the cardiologists see their role as reporting, the growing number of cardiac scans means that in a limited number of cases the sonographer will report the scan.

For example, [take] that last study. Because there was nothing of concern found, if I had some one whom I trust [as] I do with the sonographers, they will report it.... [It is] just like the other procedures that used to be done by doctors that are [now] done by nurses. (Outpatient Clinician A)

Three inconsistencies in the use of double scanning were reported to illustrate its context dependent nature. The first and third inconsistencies appear tied to activity minimisation and maximisation strategies employed by radiologists to manage workload. In the first instance, double scanning restricts the volume of work, and therefore risk, assumed by public radiologists. The relaxation of double scanning in private practice maximises revenue earned. The third instance highlighted the variable use of double scanning by non-radiologists such as cardiologists, who do not insist on double scanning and also allow sonographers to report a limited number of scans. This further blurs the distinction between the doctor and technologist. The second inconsistency appears to be tied to a public demonstration of the radiologists’ “expertise” (hence authority) over sonographers.

Understanding the significance of double scanning

We are radiographers first and sonographers second. (Sonographer A)

Doctors and informed members of the public know the radiographer as a professional who produces diagnostic images using not only x-rays but ultrasound, magnetic resonance, and nuclear medicine, while the radiologist is a doctor who reports on the images or uses imaging to perform medical interventions. (Chapman, 1997, p. 581)

The observation of Sonographer A and Chapman (1997) provide useful insights towards understanding the significance of double scanning. In plain film radiography, other than following a technically prescribed set of rules governing image quality and the positioning of the patient, the technologist does not need to consider how the diagnostic information will be interpreted. For Larkin (1983) the social organisation of radiology departments revolves around the distinction between production and interpretation. Radiologists and technologists have clearly defined roles: technologists produce diagnostic information while radiologists, as medical professionals, supervise production and interpret this diagnostic information. The identities of radiologists and technologists are constructed around this distinction. With the introduction of other advanced imaging modalities such as computerised tomography and magnetic resonance imaging this distinction has been largely maintained⁵⁹.

Manager C (a radiographer by training) saw the separation between production and interpretation as fundamental and also unbridgeable.

We had a radiologist ... who maintained that sonographers would never ever bridge the gap [between scanning and reporting] because the doctor is trained right from day one to think in a totally different [way]. It's true I'm afraid.... It doesn't matter if [it's] a sonographer ... or whatever. We tend to look at the picture and see the anatomy ... [and] reposition the transducer to get ... the classical image.... Whereas the doctor who has had formal training in pathology and anatomy ... is not worried about the quality of the picture at this stage. We being radiographers by pedigree, are always looking at the image, the image quality, ... and in the case of ultrasound,

⁵⁹ Barley's (1986) ethnographic study of the introduction of CT technology in a radiology department noted that as radiologists and radiographers made sense of the new technology, existing role relationships became strained.

whether we have got the parameters right [and if] we are covering the right area. That's why radiologists are bloody awful radiographers. (Manager C)

Larkin (1983) has traced United Kingdom radiology's division of labour back to a boundary dispute between the newly established Society of Radiographers and the emergence of radiology as a new speciality, and in doing so, poses a fascinating juxtaposition to the everyday acceptance of the radiologist as "expert" diagnosticians. Writing on the early days of radiological practice Larkin (1983) notes, referring to the time circa 1920:

Both radiologists, and other practitioners, could only be alarmed by the prospect of technicians controlling a new and strikingly successful diagnostic technique. Postgraduate medical training was only starting, the specialism [of radiology] was very recent, and yet the medical usages of X-rays were apparent and in urgent demand. Technicians, more familiar with their product than many doctors, were in a critical period prior to the final fixing of boundaries, interpreting films and plates. (p. 847)

Larkin (1983) has also implicated gender in the fixing of professional boundaries between radiologists and radiographers. While radiography is now primarily a female dominated profession, it was initially male dominated. It was only after boundary disputes over the right to report x-ray plates was settled that radiography was promoted as a profession suitable for "girls." The gender of radiographers has had consequences for the further development of radiography as a profession. For example, the mid 1960s saw moves to extend radiographer training from two to three years, which produced a lively debate in the letters page of the *British Medical Journal*. For example, Abeles (1964) puts forward the case that:

Girls wish to become radiographers because they feel the urge to do something practical to help sick people. Those who show interest in radiography as a career are girls with a strong practical bent, girls with limited interest in academic studies, theories, books, etc. They are the "doers" and not the thinkers. They do want to do "their bit" and being perfectly healthy girls they want to get married – the sooner the better – and have children. The last thing they want is academic distinction. Such subjects as physics ... are there to be endured and not to be enjoyed. (p. 1533)

Given the central importance of the division of "expertise" between production and interpretation, ultrasound is particularly anomalous since an ultrasound diagnosis is the

product of the interplay between scanning and interpretation of the real time image. The ability of the radiologist/technologist to reach a correct diagnosis, and if medico-legal risks are to be avoided to minimise the probability of missing abnormal pathology, depends on the radiologist/technologist formulating a provisional diagnosis from the referring doctor's clinical summary (and the patient's description of their symptoms at the time of the scan) and testing it by imaging the site of suspected abnormal pathology. Scanning and diagnosis are thus intertwined. Unlike mainstream radiology that contains subjectivity in the interpretation of the image, an ultrasound image is a product of a subjective operator engaging with a clinical problem. Ultrasound therefore fits uncomfortably within the traditional social organisation of radiology. It blurs and partly collapses the distinction between the radiologist/technologist based on interpretation and production as Sonographer A indicates:

I can actually make everyone normal if I want to.... If I have the ability to say that something is normal surely I have the ability to say that it is abnormal.... It's fundamental to what we do in scanning. (Sonographer A)

In this respect given the blurring of production and interpretation boundaries, it is not surprising that the radiology department tended to view sonographers with suspicion. Manager E expressed the view that the sonographers:

... would only talk to other ultrasonographers. They would associate ... only in their own little group. They [had] forgot that there were other [imaging] modalities that could produce similar sort of effect. Nuclear medicine is one of them. It hasn't arisen with magnetic resonance yet to the same degree because magnetic resonance has an affiliation with computerised tomography, as it were, in its image presentation. I know the whole technology is vastly different but you could see a parallel. No, they became a bit insular. (Manager E)

Manager E's comparison with magnetic resonance imaging and computerised tomography is significant. As previously noted these new sub-specialist imaging modalities have maintained the production/interpretation distinction embedded in the social organisation of general (plain film) radiography. Manager E went on to suggest that it would be helpful if from time to time sonographers undertook general radiography duties to reconnect with radiography.

... we have a rotation system so that [a radiographer] in [postgraduate] training comes back into the main [radiology] department on a regular basis ... because they

don't want to cut their ties with mainstream radiography by going into a speciality. If you had more [sonography] positions ... at least the sonographers could come in back into the [radiology] department for a short spell.... I think that is good for them because its keeps them from getting too myopic, too exclusive. (Manager E)

Double scanning can be understood as an adaptation of the production/interpretation distinction into ultrasound even though it appears at odds with the nature of the technology. In its adapted form, sonographers undertake the technical, or initial examinations, which are not accepted until they are validated or interpreted by radiologists as correct or the likely diagnosis. The documentation completed by the sonographer also reflects this adapted order. Sonographers produce "technical" reports, which serve to supplement the radiologist's formal diagnosis. The production/interpretation distinction is maintained.

Through the production/interpretation distinction the "expertise" of the radiologist is maintained although in the case of ultrasound, this image of "expertise" is dependent on the sonographer. While radiological "expertise" is symbolically expressed through double scanning, it is also in part constituted by it.

First, the practice of double scanning is structured so that double scanning is something that is done to sonographers by radiologists. Mirroring the production/interpretation distinction, sonographers always scan the patient first. The sonographer has no opportunity to see whether the radiologist has missed abnormal pathology. Second, session overruns and the phenomenon of bursting bladders, places pressure on the sonographers to speed up scanning to minimise the time patients wait on the examination table and in the waiting room. Sonographer B expressed concern that this pressure may result in abnormal pathology potentially being missed by sonographers. In this way, the process of double scanning enacts a work environment that justifies its continued practice.

At times radiologist "expertise" is disputed blurring further the distinction between the radiologist/technologist. A new consultant or registrar radiologist, for example, may need to be taught how to scan by a senior sonographer. This can create tension between the neophyte specialist radiologist and the experienced sonographer:

Quite often when new radiologists or registrars come in we teach them how to scan and then they check what we scan. Isn't that a double standard? I teach you how to scan as a registrar today and in two days you will check what I scan and if you disagree your report stands. (Sonographer A)

With a growing waiting list, the practice of double scanning is increasingly contested as it places what sonographers and departmental managers see as unacceptable constraints on throughput. Sonographers, departmental managers and non-radiologist clinicians question the utility of the practice particularly since it is generally accepted that double scanning will rarely uncover serious abnormal pathology missed by the first scan. In the absence of radiologists, outpatient clinicians will pressure sonographers to scan a patient and produce a technical report, which can be used to provide an initial diagnosis.

You get the [obstetrics and gynaecology] guys who know that we can all scan and give the same answer [as the radiologist] They can't understand why we can't [scan the patient] ... and give them a technical report and it gets reported later. That's difficult because I sometimes can't understand why we can't do that. (Sonographer A)

Notions of medico-legal risk are used to distinguish sonographers and from radiologists – a notion closely tied to radiological “expertise.”

A radiologist will always argue that it is their name on the report and they are the ones who have the radiology expertise. They are the doctors. We have never ever disputed that but when it comes to scanning in most cases if the sonographers don't find it, the radiologist won't find it either. (Sonographer A)

When we don't have radiologists and the ward or somebody wants a [scan] urgently, they say, “Why don't you do it. You can do it.” “Yes I can but it is not official” ... it doesn't matter that I can [scan]. (Sonographer B)

Double scanning also provides an opportunity for the radiologist to judge the quality of GP referrals and may comment out loud to the sonographers about any “rubbish” scans. On the issue of prioritisation Manager C noted:

I think some of the girls [that is, the sonographers] sort them out [that is, the GP referrals] and show them to a radiologist, but there is a lot to get through [so some requests are not screened] and you hear a radiologist later on saying, “This is ridiculous, why are we doing this?” (Manager C)

Thus the justification for double scanning is explicitly tied up with the notion of clinical “expertise” and enacted through concern over medico-legal risk if a misdiagnosis is made.

The other source of radiologist “expertise” comes from technological metaphors of progress to do with increasing technological sophistication of ultrasound and the growing number of clinical indications that are tractable to ultrasound. GP D, when asked why GPs did not undertake ultrasound scans, responded:

I think that would be unlikely... ultrasound is becoming increasingly sophisticated ... the technology has advanced significantly over the last few years ... you would want a radiologist to do your scans. (GP D)

Manager F also voiced a similar opinion and commented:

[Ultrasound machines] really need to stay in the ultrasound service. It really needs those experts. With increasing technology it goes hand in hand that you also need to know more about it. It is the same with a computer. Anyone that has an ordinary old-fashioned computer probably can use it as a word processor and do a few other things. Someone who is a computer whiz can do all sorts. (Manager F)

A misplaced sense of certainty?

While double scanning places an upper limit on the volume of patients scanned, it is also interesting as juxtaposition to other issues including the lack of prioritisation.

For GPs the waiting list represents a barrier to accessing diagnostic imaging service and brings into prominence the major concern of being able to deal with clinical uncertainty and equivocality. Patients who present with pain but few clinical signs that might indicate serious underlying conditions posed a particular diagnostic dilemma. GPs saw a need for back up or reassurance.

An obvious question relates to the extent to which double scanning aids GPs in rational treatment and “appropriate” referral to outpatients. Is the focus on minimising the risk of not detecting abnormal pathology a suitable definition of improvement and focus for the ultrasound service? The answer is possibly no. The management of this risk is open-ended and can never be bounded, and structures the organisation of the ultrasound service in a

way that magnifies other risks, notably those assumed by waiting patients by the restriction of throughput.

It is also worth pointing out that the ultrasound service is structured in such a way that a high level of diagnostic accuracy is not an absolute prerequisite to providing an “appropriate” service. If double scanning was relaxed and abnormal pathology was missed, the patients’ condition is likely to deteriorate just as it might while waiting nine months for the initial scan. The “urgent” mechanism would operate just as well in “reverse.” While it is a possibility that if hard copy reporting was adopted some patients may need to be rescanned at a later date, this inefficiency would be offset by an increase in capacity without the need to have a radiologist present. It would also buffer the ultrasound service from tardy or forgetful radiologists (mentioned in Chapter 7) who greatly reduce the throughput rate.

This potential configuration of the ultrasound service comes with one important qualification. It is possible that an incorrectly reported normal scan might lull the referring clinician into a false sense of security and that deterioration of clinical symptoms may be denied or misinterpreted. Referring clinicians would need to understand that a normal scan does not necessarily rule out abnormal pathology, which may be too small to image or incorrectly scanned and/or reported.

The question of GP and patient acceptability would need to be considered but this strategy may represent an acceptable trade-off given a lengthy waiting list and that the majority of patients despite living with the possibility of abnormal pathology after a lengthy wait when scanned are found not to have abnormal pathology.

Images of “expertise”

The issue of sonographer efficacy provides a porthole into understanding how issues of knowledge-power have been represented in the literature. The literature presents a mixed case for double scanning particularly since it is mostly based on the assumption that the

radiologist is the “expert.” Furthermore, few if any researchers consider issues of cost effectiveness.

Tessler et al. (1996) compared the provisional diagnoses of sonographers and radiologists and found out of 398 scans there were a total of 52 discrepancies. Of these, sonographers missed 28 instances of abnormal pathology, while the radiologist refuted 24 initial findings. Chan, Hanbidge, Wilson et al. (1996) after comparing 1510 scans found that radiologists and sonographers agreed in 74 percent of cases although this varied between examination types. In 100 instances the discrepancy was judged to be clinically important. Weston, Morse and Slack (1994) reported that in a sample of 100 patients, two patients were misdiagnosed by sonographers as normal. In several cases radiologists also detected incidental pathology such as small renal cysts or pleural effusions.

Singh, Bonna, Solberg et al. (1998) have looked at the issue of operator variability by reviewing measurements of abdominal aortic diameters made by radiologists and sonographers three weeks apart. Despite finding that radiologists’ measurements were more consistent over time, Singh et al. (1998) concluded that “ultrasound measurements ... can be obtained with a high degree of accuracy” and that “inexperienced sonographers may achieve acceptable performance given appropriate training and surveillance” (p 497). What is interesting about Singh’s et al. (1998) study is that radiologists were experienced while sonographers were relatively inexperienced after having just finished a short course in sonography.

It is this assumption - radiological “expertise” is given – that is played out in the literature. Chan et al. (1996) attempted to find a correlation between the sonographer experience (measured crudely by the number of years since graduation) and the discrepancy rate. Implicit in Chan’s et al. (1996) design is the notion that “expertise” is intrinsic to a radiologist while it is earned by the sonographer through experience. They did not test the hypothesis that radiologist experience impacted on the discrepancy rate – limiting the applicability of their results to non-teaching hospitals and therefore is unlikely to apply to most New Zealand radiology departments. Radiology registrars may have only one year’s

extra work experience than house surgeons. In this case senior sonographers are likely to be more experienced as implied by Sonographer A's comment about teaching junior radiologists to scan.

The study of Tessler et al. (1996) is an improvement on that of Chan et al. (1996), as they attempted to obtain a diagnosis via another imaging modality when sonographers and radiologists disagreed. This helps to clarify the efficacy of the sonographers and radiologists. This, however, still represents a partial view of efficacy; no studies made an attempt to independently reach a diagnosis when sonographer and radiologists agreed. It is unclear what the effectiveness of the ultrasound service was overall.

It is also notable that the studies made no attempts at randomisation to control for the fact that by scanning the patient first the sonographer undertakes the initial sensemaking and the radiologist can then undertake a targeted search (with an added sense of security). This again reflects the fact that double scanning is something that is done to sonographers.

In a similar vein, no studies have been conducted to examine the effectiveness of sonographers checking the provisional findings of sonographers, again reflecting the implicit assumption that the radiologist opinion represents the appropriate gold standard to judge the effectiveness of an ultrasound service. If the concern over misdiagnosis is accepted as valid, such studies would be needed to further explore the possibilities fulfilling the stated aims of double scanning: increasing diagnostic accuracy.

It is surprising that little is known about the diagnostic errors that radiologists make⁶⁰. Scally (1999) cites two studies by Siegle, Baram and Reuter (1998) and Tudor, Finlay and Taub (1997). These studies fix misinterpretation rates for radiologists reporting radiographs at about five percent. In the case of ultrasound given its operator dependent nature this estimate is likely to be higher.

⁶⁰ The recent New Zealand controversy over the misdiagnosis of cervical cancer in Gisborne also highlights the fact that little is known about the diagnostic errors made by pathologists.

A close examination of double scanning has revealed three apparent inconsistencies in how double scanning is practised to highlight the relationship between second look sonography and a system of knowledge-power that situates the radiologist as the centre of the ultrasound service by defining an action area based on medical “expertise.” Leaving aside the issue of whether double scanning is warranted in public systems, the present research has queried the rationality of this practice that manages localised uncertainty at the expense of helping GPs and their patients manage clinical uncertainty at the referral interface.

“Inappropriate” referrals

“Inappropriate” referrals were another major process issue that was put forward by internal stakeholders as an explanation for the growing waiting list and a point of leverage for improving accessibility to existing scarce capacity.

It should be noted that explanation of “inappropriate” referrals is significant as it forms the basis of the national strategy for managing waiting lists initiated by the previous National government: the New Zealand booking system. While the booking system focuses on surgical procedures, it is intended that the idea will be extended to diagnostic/imaging services. Of further significance is that the notion of “inappropriateness” is closely tied with dominant rationality of the ultrasound service – and in line with the intentions of this chapter – is a pertinent focus for the knowledge-power lens.

“Inappropriate” referrals were thought by internal stakeholders to affect accessibility in four ways. First, such referrals add unnecessarily to the growing waiting list; second, when scanned these patients represent a waste of scarce capacity; third, internal stakeholders felt that “inappropriate” referrals led to increased “did not attend” rates that further waste scarce capacity; and finally, in doing so, “inappropriate” referrals reduce the accessibility for other patients who were referred for clinically “appropriate” reasons.

This section argues that the “appropriate/inappropriate” dichotomy defines accessibility in such a way, which allows the narrowly focused dominant rationality of the ultrasound

service (and thus the legitimate authority of the radiologist) to be demonstrated and constituted.

Defining “inappropriateness”

What does “inappropriateness” mean? A referral can be deemed “inappropriate” if the referring clinician asks for an imaging examination that does not have the necessary diagnostic sensitivity or when the examination is unlikely to provide useful information aiding the clinician in rational treatment. Various guidelines such as the Royal College of Radiologists (1996) document “Making the best use of a department of clinical radiology” and locally the Royal Australian and New Zealand College of Radiologists (1998) “Imaging guidelines” have codified this information for specific conditions.

The first type of inappropriateness is relatively clear-cut and reflects the physical constraints of the imaging technology. For example, ultrasound is unable to image the stomach and requests to verify stomach ulcers are inappropriate. The second type of “inappropriateness” – expressed in terms of benefit – is less certain and depends on the purpose for which the examination was requested. This is often subject of dispute between clinicians:

That point of distinction between what really should be done and what does need to be done is [blurred]. There is lots of debate between ... radiologists ... and referring doctors or even among radiologists. (Manager A)

While a few internal stakeholders were of the opinion that all referring doctors made “inappropriate” referrals, “inappropriateness” is a concept that applies to GPs rather than hospital-based clinicians. First, internal stakeholders tended to single out GPs as being responsible for making a disproportionate number of “inappropriate” requests. Second, as a strategy for managing demand, “inappropriateness” is institutionalised when applied to GP referrals, as inpatient and outpatient requests receive priority.

While the vast majority of GP requests were presumably technically indicated at the time of request, by the time the scan was carried out many requests fell into the category of

doubtful utility, where it was unlikely that the scan outcome would alter patient management as it failed to reveal a diagnosis:

We tend to think ... that if somebody had pain nine months [ago] by the time [they] get around to having his or her scan, it is unlikely to be significant anyway.... If they did have a tumour it would have grown big enough to feel by then or if they had a kidney infection ... they would be in severe pain by nine months. The scans that have been waiting for nine months have a higher proportion of them that are normal. So you wonder, why do you bother at all? (Radiologist Z)

Such requests were deemed as “inappropriate,” which according to Radiologist X and Sonographer B, were referred to by the euphemism “rubbish” scans and reflected a failing on the part of the referring doctor.

For Sonographer B it was a failing of clinical skill:

Lots of GPs don't know anything about the examination. It's a waste of time. Sometimes we read the request forms and we know without seeing the patients that [the scan results] will be normal. (Sonographer B)

Sonographer C saw GPs who made referrals of doubtful utility as false advocates noting that:

If [a GP] doesn't think there is anything wrong ... instead of telling the patient, “Look I don't think it's anything to worry about,” what they will do is, they will look as if they are acting for the patient by saying, “Look we will send you along for a scan to sort that out” ... you tend to get a lot of [GP requests] that are not really warranted for a scan. (Sonographer C)

Radiologist X argued that referrals of doubtful utility had its base in the GP's need to avoid litigation.

For the GP the waiting list mainly [poses] a legal [problem].... [GPs] have to ... [order] the scans for medico-legal reasons more than anything else and reassure the patient. (Radiologist X)

As ultrasound is relatively inexpensive, safe and accessible in principle to community-based clinicians, internal stakeholders were of the opinion that there were no incentives for GPs to refer patients “appropriately.” Radiologist Z contrasted ultrasound with computerised tomography and angiography:

With computerised tomography and angiography because it is expensive to perform and there are risks with both radiation and contrast [agents used] unless there is a significant chance of finding something it is probably better to do something else

like ultrasound. That is why poor old ultrasound gets the big demand and so that is the root of the problem. (Radiologist Z)

For internal stakeholders, an ultrasound scan served to buffer the GPs from what amounted to an unreasonable and demanding public, and shortcomings in their own clinical skills. However, most internal stakeholders such as Radiologist Z were of the opinion that in an ideal world a radiologist-centred ultrasound service would be freely accessible to GPs. In practice, however, the volume of requests caused difficulties. In the interest of managing workload, Sonographer B saw a need to separate “inappropriate” from “appropriate” requests.

For the GP ultrasound is the easiest examination. If I was a GP ... I would send the patient for an ultrasound but the capacity in the hospital is not enough to do GP work as well as the inpatient and outpatient work. (Sonographer B)

Despite the significance of “inappropriate” referrals as a process issue, it is perplexing that radiologists rarely refused such requests. This was at odds with the Royal Australian and New Zealand College of Radiologists (1998) policy statement on the provision of ultrasound, which states:

While all Medical Practitioners should be free to request ultrasound examinations dependent on their clinical experience and judgement, a specialist in diagnostic ultrasound has a duty to decide whether a requested investigation is appropriate, having regard to the level of diagnosis required and cost effectiveness of the examination. (p. 2)

As the prioritisation of requests and screening out of “inappropriate” requests are complementary, radiologists appeared to be fearful of misclassifying “appropriate” requests as “inappropriate.” Consequently, radiologists instead tended to pass judgement on “appropriateness” after the patient had been scanned.

Manager A, however, saw the problem of screening request forms in terms of resourcing although he did hint at the likelihood of antagonism between referring clinician and radiologist as a contributing reason:

If you say that [each request form] needs to be screened first, you have got to have a radiologist sitting at the front desk [screening the requests]. We really need doctors talking to [referring doctors] and they need to be diplomatic doctors talking to them

who know their stuff. You have to find a diplomatic radiologist. Some people would say that is an oxymoron. (Manager A)

Nevertheless Manager A was critical, as was Manager C, of the lack of screening of requests undertaken by the ultrasound service:

Really for ultrasound ... I believe [every request form] probably should be screened. (Manager A)

I don't think anybody's taking responsibility for looking at the forms and saying whether they should be done or shouldn't be done.... I don't think it would be very hard to do it just needs somebody to feel it's not working, it's my responsibility and I will do something about it. (Manager C)

Another reason why "inappropriate" scans are not refused by radiologists relates to what Manager A saw as hassle, where to placate the referring clinician, the requests is scanned:

When the [sonographer] brings [a request form] through [which is] a bit questionable ... to the radiologist, unless it is really really questionable it is much easier, much less hassle and much less waste of time in most cases to just do the thing rather than argue [with the referring doctor]. (Manager A)

"Inappropriate" requests are a source of conflict between radiologists and GPs. This came to a head when a HFA sponsored utilisation review was undertaken in an attempt to balance demand with supply, implying that the waiting list was caused by "inappropriate" GP referrals. GPs instead saw the utilisation review as a short-sighted attempt to save money and an intrusion on medical autonomy.

Understanding the significance of "inappropriate" referrals

Given that the waiting list allows equivocality surrounding the patient condition to be reduced, the notion of "inappropriateness" based on the ability of the scan outcome to influence the management of the patient condition is problematic. Such a definition is based on the assumption that a simple relationship exists between the patients' symptoms and abnormal pathology. While it is strictly true that a normal scan outcome after a lengthy waiting time has no clinical value other than reassuring anxious patients, this fact does not invalidate the reason for the referral in the first place: the management of clinical uncertainty. Low utility reflects a problem of prioritisation rather than "inappropriateness"

and also begs the question of whether it is as appropriate to eliminate uncertainty as to confirm abnormal pathology.

The notion of “inappropriateness” may perhaps deflect attention from internal process issues such as the systemic irrationality associated with double scanning, which if addressed would have a significant impact by freeing up organisationally hidden levels of capacity that could be used to reduce the growing waiting list.

The label “inappropriate” is doubly problematic given that internal stakeholders appeared to have little appreciation of the diagnostic dilemmas faced in general practice. GPs referred to these dilemmas by noting instances where the diagnosis was surprising, unexplainable and even incomprehensible.

Unless [patients] have got really alarming [symptoms] ... they are going to wait to be seen [by the radiologist]. I can give you a classic example. One of my patients had vague abdominal pain and a few other things happening – but nothing that would raise alarm bells at the hospital. I didn't refer her for a scan because I didn't see much point. She would be waiting months for it anyway so I got her into the [outpatient] clinic to be seen and she was admitted acutely with abdominal pain, which suddenly got worse. She had an abnormal [ultrasound] scan and died of pancreatic cancer. I don't know if it made no difference at the end of the day, but [an ultrasound scan] would have been a useful thing to do early in the piece. (GP A)

The emphasis afforded by double scanning to correctly diagnosing the patient lying on the examination table allows the aberrant nature of general practice to be ignored and distanced from the “expert” undertakings of the consultant radiologists.

The separation between general practice and secondary care might account for the difficulties that some GPs had in translating the patients' symptoms into justification for an ultrasound scan and the radiologist's or sonographer's frustration over poor clinical summaries.

The GP writes, “The patient has tummy ache.” Who doesn't have tummy ache? Or, “Please scan the patient.” This is not a clinical summary.... If they would ask a proper [clinical] question it would be easy to [prioritise patients]. (Sonographer B)

As with the issue of prioritisation, the task of screening the request forms for “appropriateness” falls on the sonographers in an attempt to improve accessibility in accordance to the criteria set down by radiologists: the likelihood of abnormal pathology. Sonographers, however, are not medically qualified and are therefore unable to query any GP requests considered “inappropriate.” “Inappropriate” requests may be passed to the radiologist, although as noted these are rarely refused given the potential medico-legal consequences if abnormal pathology is (unlikely to be) present. “Inappropriateness” is announced after the fact when the radiologist scans the patient and declares them “normal.”

It is interesting to note that the arguments for double scanning, embodying radiologists’ “expertise,” are based on the chance that subtle abnormal pathology may be missed and the patient misdiagnosed. Yet paradoxically the importance of GP referrals is discounted (and referrals are placed on a waiting list) and GPs are characterised as anxious and worried about unlikely problems.

Everyone knows that there is nothing wrong with the patient. You are not going to find anything. (Radiologist X)

While waiting allows time for the patient condition to develop and fit the dominant image of the ultrasound service, this anomaly is understandable in terms of who has the power to define the nature of patients’ problem – the GP/patient or radiologist. The next section, which looks at how “inappropriateness” is defined in the literature makes the case that in the notion of “inappropriateness” is the embedded assumption of the GP as a failed specialist. Thus the notion of “inappropriateness” creates a clear division of labour between radiologists as “expert” diagnosticians and GPs enacted through double scanning. Furthermore, “inappropriateness” buffers the radiologists’ source of “expertise” from unintelligible requests of GPs who contend with equivocality and uncertainty.

Thus the dominant rationality discounts or hides the “expertise” (sonographer and GP) that it ironically depends on for the ultrasound service to function effectively.

Images of “inappropriateness”

A number of studies have also considered the “appropriateness” of GP referrals for ultrasound⁶¹ (for example, Colquhoun, Saywell and Dewbury, 1988; Mills et al., 1989; Connor and Banerjee, 1998). Colquhoun et al. (1988) compared the percentage of positive findings for GP and outpatient consultants of referrals for gallstone, post-cholecystectomy, left upper quadrant pain/mass and lower abdominal pain/mass. They concluded that a “comparison of outpatients and family practitioner referrals shows an equal incidence of overall positive examinations” (p. 299). On the basis of their findings they recommend that it is “inappropriate” for ultrasound services to control their workload by restricting GP access.

Mills et al. (1989), after examining 1000 abdominal and pelvic ultrasounds, found that there was no significant difference between the numbers of abnormalities detected for GP referred patients or outpatient referred patients. Thompson, Freake and Worall (1998), however, found that half of 225 rural GP-obstetricians prenatal ultrasound studies of 103 singleton deliveries were “inappropriate.” No relationship between the number of ultrasound scans and maternal or neonatal outcomes was detected. Connor and Banerjee (1998) after examining 82 GP referrals for upper abdominal scans concluded that “GP referrals for upper abdominal US [ultrasound] were generally appropriate,” “the positive scans were referred appropriately and with good clinical outcome” and that “direct access to a negative scan significantly reduced outpatient workload” (p. 1024).

In echocardiography arguments have not centred on the “appropriateness” of GP referrals but rather the ability of GPs to understand the technical contents of the report (see for example Rimington, Adams and Chambers, 1996a; Rimington et al., 1996b or Inglesfield, 1996). Other studies have examined the compliance of GP referrals and outpatient referrals with best practice guidelines. In particular, compliance with the RCR guidelines has been well researched. Morgan, Mullick, Harper et al. (1997) found that 50 percent of United

⁶¹ Gompel (1978) argued that inappropriate referrals by clinicians prevented the rapid uptake of ultrasound by radiologists “leaving ultrasound to the regrettably narrow monopoly of the obstetrician.” (p. 1487).

Kingdom GP referred knee radiographs fell within the RCR guidelines. According to the Royal College of Radiologists (1991) study, hospital-based consultants fare no better. A multicentre audit of hospital referrals found evidence to support the widely held belief that at least a fifth of all x-rays examinations are “inappropriate.”

The literature suggests that while a radiological investigation may be “inappropriate,” there is no evidence to suggest that GPs make more unnecessary referrals than hospital-based clinicians. There also seems to be little added utility in the continued replication of such studies. However, despite concerns over loss of clinical autonomy, referral guidelines are generally welcomed as part of ongoing GP education. It is perplexing that despite 30 years of research, the issue of open access has yet to be resolved. Organisations such as the Royal College of Radiologists have effectively sidestepped this issue by agreeing that open access is desirable, but practical concerns such as the availability of radiology resources limit its applicability.

Given the growing body of literature looking at the “appropriateness” of GP referrals and application of best practice guidelines, there is a notable absence of evidence-based health policy. It appears that there have been no randomised-controlled trials looking at cost effectiveness issues or other impact on clinical outcomes for open access. What is also surprising is that it appears that there are no published peer reviews looking at the “appropriateness” of radiological procedures carried out by consultant radiologists.

It should be noted that there are difficulties in interpreting the results of these studies that examine the incidence of positive examinations between GPs and outpatient consultants. Two reasons are suggested. First, rationing mechanisms such as outpatient waiting lists are likely to ensure that outpatient consultants see “urgent” patients. If anything this seems to suggest that the number of outpatient abnormalities detected should be higher.

Perhaps a more serious problem is that these studies assume the purpose of a GP’s request is the confirmation of a diagnosis. There are a number of reasons why GPs may refer patients to consultants. Coulter (1998) suggests that GPs may refer patients for the

following reasons: diagnosis, investigation, treatment advice, specialist treatment, second opinion, patient reassurance, sharing the load or risk of treating a difficult or demanding patient, deterioration in the GP-patient relationship, medico-legal reasons and requests from patients or their relatives.

Durham and McLeod (1999a) cite Wikin, Hallam, Leavey and et al. (1987) who claim that London GPs are twice as likely to request an investigation to exclude rather than confirm an abnormality. A GP may also request an investigation to reassure a worried patient in an attempt to manage the physical and psychological state of the patient. At least one researcher has documented the therapeutic usefulness of diagnostic ultrasound. Ghaly (1994) found that counselling combined with ultrasound scanning for reassurance resulted in reduced pain scores for women suffering from chronic pelvic pain.

A better understanding of these factors would require that the context of general practice be better understood although this may be prevented by the quantitative orientation adopted by many studies that examine variation in referral rates and outcomes.

The failure to examine why and under what conditions GPs make referrals is striking and probably reflects the common-sense theories about general practice held by hospital-based doctors and academics as well as a quantitative bias in the literature. Gray (1966) reflecting on the cultural divide that exists between primary and secondary care notes:

Far from being a help to general practice, hospital medicine is becoming a positive hindrance; it deals with the serious, the advanced, and the rare cases, and it is pervaded by a materialistic philosophy long since abandoned by all other educated sections of the community. In general practice, on the other hand, the central problem is presented by our old friend, the "trivial case." For the benefits of those who have forgotten, the trivial case is the one that is too difficult for the consultant (if anyone doubts this let him send his next trivial case to a consultant). Yet the trivial case includes many of the earliest manifestations of serious disease, together with many minor conditions, both organic and psychological – all in their early and most treatable state – for those who have the "know-how." What the general practitioner needs is more instruction in general practice, not in some largely irrelevant speciality. (p. 583)

Gray (1966) questions the assumption that GP's refer "inappropriately" and suggests that such an assumption is ill founded: "appropriateness" is too narrowly defined. While it is important to critically reflect on the robustness and validity of studies such as Colquhoun et al. (1988) and Connor and Banerjee (1998), it is nevertheless perplexing that the ability of GPs is questioned. The reason for this according to Wright-St Clair (1989) may be historical:

The apothecary was a cross between the pharmacist of today and the general practitioner. He dispensed medicines, but he was also consulted by the sick, often visiting them in their homes, especially among the poor who could not afford to consult a physician. (p. 1)

The archetypical GP was a doctor for poor patients and usually did not have a university education like the members of the Royal Colleges of Surgeons and Physicians. GPs were also considered ignorant by their physician colleagues, who in their opinion did not have a sufficiently well rounded education to appreciate the finer aspects of the profession. Proficiency in Latin was considered essential (Wright-St Clair, 1989). The GP even today continues to be associated with the image of relative ignorance, perhaps reflecting failure to attain the rarefied air of a specialist.

More recently, patients have been accused of pressuring GPs into ordering ultrasound scans. This is a reinterpretation of the pre-scientific idea of ignorance; one that highlights the human fallibility of the GP is certainly a step down from Talcott Parsons's (1951) "Doctor as an Avatar" metaphor.

The New Zealand context differs from that described by Wright-St Clair (1989) in that the medical specialism is a relatively recent development. The fee-for-service system that New Zealand health system was based on necessitated medical practitioners to work in general practice in order to earn a living unless they were wealthy landowners that could afford to practice medicine as a hobby (Hay, 1989). The first specialists were hospital-based surgeons although prior to the 1900s few cities were large enough to support full-time surgeons. It was not until after the Second World War that the specialist had become a large part of medical practice in New Zealand (Wright-St Clair, 1989). Even as recently as the

1970s, GP surgeons and anaesthetists held part-time hospital appointments and played a role in smaller cities such as Taupo (West, 1978).

Recently radiology has undergone a crisis (particularly in the United States) where increasing emphasis has been placed on limiting high technology as a cost containment measure (Hillman, 1997). The division of medical hierarchy inherent in Figure 5.4 is becoming increasingly contested. In the United Kingdom, the growth of primary care has led the radiology profession to reposition itself as a link between primary and secondary care. Royal College of Radiologists (1996) states:

The primary document *Primary Care: The Future* has recently been published by the NHSE [National Health Service Executive]. It emphasises the importance of the development of primary care services and the increased provision of care within the primary care environment. The Royal College of Radiologists are uniquely placed to provide an interface between primary and secondary health care services, in order to produce an improvement in quality of care for the patient and to enhance clinical effectiveness. (p. 1)

Given that ultrasound is considered as an excellent primary imaging modality over more specialised and expensive procedures such as computerised tomography and magnetic resonance imaging the delivery of ultrasound is likely to remain an important topic.

Diffusion of ultrasound

Given the issues surrounding double scanning, but in particular the uncertain contribution that the sonographer makes to the overall production of the ultrasound scan, the need for sonographer/technician is perplexing. Sonographers B and C were asked the question “why does the ultrasound service employ sonographers?” Sonographer C emphasised the technical “expertise” of sonographers:

[Sonographers] are specialists at the ... scanning part.... They know all the moves ... all the ways to get the organs [into view].... They know all the controls of the machines. (Sonographer C)

Sonographer B, however, was of the opinion that the sonographer was probably not needed, citing examples of overseas practice where radiologists only scanned patients. The question of “why have sonographers?” remains unanswered, therefore.

This section argues that the sonographer is critical to the continuation of radiologist-centred use of ultrasound, and as such the sonographer, despite low levels of “expertise,” acts as a symbol of access. This provides an additional way to understand the significance of the process of double scanning. This insight is explored in two parts, and evidence is drawn from issues arising from the case study data and radiology literature. First, the contentious issue of non-radiologist use of ultrasound is explored; and second, structural explanations for the practice of double scanning are considered.

Part I: Non-radiologist use of ultrasound

Non-radiologist use of ultrasound is internationally a contentious issue (Martin, 1996). Martin (1995) notes that ultrasound “is not and has never been solely radiological. It was not developed by radiologists and it is not performed uniquely by radiologists” (p. 589). Rogers and Linton (1990) made a similar observation when they cautioned the radiological community about reaching “obvious conclusions” and that ultrasound developed from “the early work of ophthalmologist Gilbert Baum, internist Joseph Holmes, and cardiologist Harvey Feigenbaum” (p. 319).

Internationally it appears that encroachment by other specialists is driven by difficulties in accessing radiologist-centred services. Rogers and Linton (1990) noted:

Poor service encourages competition and do-it-yourself spirit among potential referrers. Radiologist services must be accessible after five o'clock, on weekends, during holidays, and at other inconvenient times when patients need help. Reports must be prompt. Consultations must be available and the radiologist knowledgeable about the patient's problems. (p. 320)

The diffusion of ultrasound is not widespread at the case study site only being used by cardiologists and a few (notably younger) obstetricians and gynaecologists. Obstetricians and gynaecologists have two ultrasound machines that are primarily used to make simple

diagnoses or diagnoses out of hours when consultant radiologists are difficult to contact. The ultrasound service commonly rescans obstetric and gynaecology patients: a consultant radiologists' report is required for revenue. This is an arrangement that drew criticism from Sonographer A (perhaps reflecting her dislike of double scanning) and Radiologist Z:

Now the patient is scanned twice ... although this is considered safe. Why do anything twice? (Sonographer A)

They do their own scans ... but sometimes they ask us to scan them as well. So that is doubling up and may be a waste of resources. (Radiologist Z)

Despite limited non-radiologist use of ultrasound at the case study site, non-radiologist use of ultrasound was still a contentious issue. Mirroring international trends, diffusion appears to be driven by difficulties experienced by hospital clinicians in accessing ultrasound.

A reason why non-radiologist use of ultrasound was contentious lay in the fact that the ultrasound service had not been successful in securing funding for another ultrasound machine despite its growing waiting lists.

Sour grapes come into it, that these other [clinicians] have bought ultrasound machines. When our waiting list gets longer I don't know whether that is appropriate really. (Radiologist Z)

At issue was how the cardiologists built the case for a dedicated ultrasound machine – through manipulating the ultrasound service's waiting list by marking requests “urgent,” thus causing waiting patients to wait longer (and longer).

Of course when they realise that if they write a clinic appointment date on [the request form] you will do it before that, you get some who will work the system. Cardiologists are very good at it. We went for months where everything had to be within two months ... within a month ... within six weeks. That made the waiting list, the general waiting list, mark time. We were doing everything early and nothing else was getting through. (Sonographer A)

Unlike computerised tomography or magnetic resonance imaging scanners, which are expensive, the case for the centralisation of ultrasound technology is not as strong. Ultrasound scanners are relatively inexpensive, particularly those scanners that can exclude simple abnormal pathology such as gallstones. The case for restricting the availability of ultrasound instead lies in ensuring that users are “appropriately” qualified. This point is

disputed by some non-radiologists who see ultrasound as little more than a “high tech” stethoscope (Martin, 1995).

Radiologist Z and Sonographer A and B objected to non-radiologist use of ultrasound on the basis of “expertise” – notably lack of scanning skills:

You have to have consultants and people using those machines that know what they are doing. It always looks really simple when someone else is scanning but you get them trying to scan ... and they make heinous errors. (Sonographer A)

Accounts were related to the use of ultrasound by obstetricians and other non-radiologists.

There was a young registrar with no scanning experience who scanned a young woman 32 weeks pregnant, thin, so there were no excuses for not being able to see what you should see. This woman had already had a scan ... and [the foetus] had normal anatomy scan – the baby had a head attached to its body – and he - aloud over the top of this woman while scanning - said that he couldn't find the baby's head. [He then said], “But not to worry – don't worry I will send you to get a proper scan.” The sonographer then scanned her and said, “Here's the baby's head and here's the spine” and the young woman said, “Oh it has got a head then.” The sonographer said, “Well, yes, of course. You know we scanned it and showed you the last time.” Now that's probably an extreme example of a patient who is very simple to scan. If they are getting that wrong what are they doing with ones which say, “Query miscarriage” at eight weeks? Now are those patients going to theatre in the weekend [when the ultrasound service is closed] and having evacuations because they don't have a baby in their uterus when they do? (Sonographer A)

Sometimes after hours the [non-radiologists] don't call the radiologist or [they scan] to entertain the patient. In our experience it's not good ... the [non-radiologists] can't do it properly. When somebody can't do something properly, it's bad. (Sonographer B)

Even where non-radiologists are able to identify organs on scans, if their own scanning skills are inadequate, they are dependent on others' “expertise.”

The [emergency] department [at another hospital] wanted an ultrasound machine because they said, “We have to wait for scans. If somebody ... was [badly injured] we have to look at the kidney or spleen or something. One of the very good surgeons was standing by me while I was scanning a patient... he said, “I can see that it is a kidney, I can see that this is the spleen.” I said, “Fine” and I gave him the transducer. “Try it.” He tried to do it but, “I'm sorry I can't see the kidney.” There wasn't a thing on the picture because it is difficult, [it's] not easy. (Sonographer B)

Such accounts were not related to cardiologists who recently acquired their own ultrasound machine. This is understandable given that cardiologists chose not to scan patients and only report on the hard copy ultrasound scan. As such it is not an encroachment on combined sonographer and radiologist “expertise” as in the case where obstetricians/gynaecologists (or emergency department consultants in Sonographer B’s case) both produce and interpret the ultrasound scan.

Understanding the potential diffusion of ultrasound to non-radiologists

Given that double scanning underscores the basis of radiologist “expertise” it is of no surprise that radiologists object to non-radiologist use of ultrasound and resent their comparing ultrasound to a stethoscope.

A helpful way of understanding the potential diffusion of ultrasound is by contrasting the objections to non-radiologist use with the arguments for double scanning. The argument for double scanning centres on the possibility of sonographers missing abnormal pathology. According to this argument, sonographers by virtue of being sonographers, fail to appreciate and correlate findings with the clinical context. An ultrasound service therefore needs to be radiologist centred.

This argument, however, is not applied to non-radiologists who are medical practitioners. Furthermore, non-radiologists in all likelihood possess a specialist understanding of the organ system being scanned as opposed to the radiologists’ more generalist understanding. It is probably for this reason that the Royal Australian and New Zealand College of Radiologists (1998) policy document outlining the use of ultrasound makes no distinction between radiologist and non-radiologist use of ultrasound.

Instead of lacking the necessary clinical skills, non-radiologists lack the technical scanning skills. It is for this reason that cardiologists – who do not know how to scan – depend on the sonographers to undertake examinations. The obstetricians and gynaecologists,

however, did not have access to sonographers. Sonographers A and B directed criticism only at the obstetricians and gynaecologists.

Furthermore, both private radiologists and radiologists with dual public/private appointments have a vested interest in limiting the use of obstetrician use of ultrasound; maternity scans represent a major income stream in private practice.

Radiologists differentiate themselves from sonographers by their skill in interpretation according to the production/interpretation distinction. However, when radiologists are compared with other medical specialists, radiologist “expertise” becomes potentially redundant as sonographers have scanning skills that in theory complement the non-radiologist expert understanding as illustrated by cardiology scanning. Radiologist “expertise” is constructed around scanning skills. It is notable that when Sonographer C was asked why radiologists insist on double scanning she volunteered:

After-hours and in the weekends they have to scan by themselves any urgent cases because obviously we are not here. I think they like to keep their hands in.
(Sonographer C)

It is possibly for this reason also that radiologists engage in double scanning, demonstrating not only clinical but technical “expertise.” In both instances, double scanning serves to validate radiologists as the centre of the ultrasound service. In the first case, the difference between radiologists and sonographers is maintained ensuring that sonographers do not scan independently of radiologists, while in the second case, non-radiologists are constructed as lacking the “appropriate” technical “expertise” in production. It should be noted that this argument does not preclude non-radiologists wishing to train as sonologists from undertaking radiologist approved and/or taught courses. Radiologist “expertise” is central.

The process of double scanning also communicates to other clinicians that radiologist “expertise” is exact, scarce and important. In this sense sonographers assume the role of a handmaiden in order to maximise the “appropriate” use of this valuable expertise. The practice of double scanning, which requires the sonographer, forms the basis of radiological

“expertise” as it indicates radiological technical “expertise” over non-radiologists, both medical specialists and sonographer.

The dilemma of why radiologists need sonographers remains since it technically appears that the practice of double scanning implies it is only radiologists who have the prerequisite clinical and technical skills needed to produce an accurate ultrasound diagnosis. The increasing adoption of ultrasound by non-radiology specialists appears to challenge the legitimacy of a radiologist-centred ultrasound service as ultrasound diagnoses are reached without radiological “expertise.”

This section has built on the insight that while the waiting list is an effective sensemaking mechanism, translating the diagnostic dilemmas of general practice into the “expert” language of the radiologists, it simultaneously threatens the very erosion of this “expertise.” The arguments for centralisation are not so strong as in the case of other imaging modalities such as computerised tomography. As ultrasound blurs the traditional distinction between radiologist and technologist and outpatient clinicians face difficulties in gaining timely ultrasound scans, radiologists have had to take on a technician like role to validate radiological “expertise.” They have employed a technical discourse centring on scanning skills. Radiologists can be thought of as super-technicians.

Part II: Double scanning and structural explanations

While the previous section argued that double scanning was tied to the identity of radiologists as “experts” and is thus constituted locally, it is worthwhile considering some broader structural explanations for the practice of double scanning – notably the private practice angle.

A possible structural explanation lies in workforce planning. In the United Kingdom, Australia and New Zealand there is a shortage of qualified radiologists (Chapman, 1997; Jones, O’Donnell and Stuckey, 1999). This problem is not new and has been an issue for a

long time⁶². The shortage of radiologists is primarily due to the lengthy periods of training required. As previously noted, to train as a radiologist takes approximately an additional five years after registration as a medical practitioner. Sonographers in contrast can be trained sooner and supply of sonographers is more sensitive to changes in demand for ultrasound examinations. After qualifying as a radiographer (or perhaps a nurse), which takes three years, it takes another three years to complete postgraduate training in sonography. It is for this reason that sonographers are possibly more knowledgeable and experienced than registrar radiologists who are beginning their specialist training. The fact that one sonographer was an overseas trained radiologist points to a possible hidden level of “expertise” that is under-utilised in New Zealand ultrasound services. It should be pointed out that little is known in the literature about the professional histories of sonographers.

Matching available radiologist numbers with supply of sonographers makes the sonography profession easier to control and no doubt a scarce supply of qualified sonographers serves to maintain a radiologist-centred ultrasound service. In this respect, an oversupply of sonographers may result in more non-radiologists attempting to employ this under-utilised resource. Furthermore an oversupply of sonographers could result in sonographers lobbying to operate independently of radiologists completely, which is arguably not in the best interests of privately employed radiologists. This would impact on private income.

The dogma of double scanning limits throughput and prevents sonographers scanning patients independently of radiologists. Student sonographers can only be trained while a radiologist is present. The operator-dependent nature of ultrasound means that “expertise” is built over time by undertaking a number of examinations. Thus the practice of double scanning that caps throughput also serves to limit the number of training positions open to new sonographers. At the same time, double scanning is justified by the presence of student sonographers; the dogma of double scanning both justifies and is justified by its impact on the supply of qualified sonographers.

⁶² For an example of the correspondence on the shortage of qualified radiologists in the *British Medical Journal* see Pygott (1966).

From the perspective of sonographers, the insistence on double scanning in the public health system potentially makes private practice an attractive employer. Private radiologists benefit through recruiting skilled senior sonographers who are eager to practice autonomously.

The practice of double scanning is implicated in creating a case for a radiologist-centred ultrasound service by first demonstrating technical “expertise” and second, by restricting the accessibility of sonography “expertise” by limiting sonographer numbers.

Enactment of systems of knowledge-power

While the waiting list acts as an effective sense-making mechanism, translating the diagnostic dilemmas of general practice into the expert language of the radiologists, it simultaneously threatens the very erosion of this “expertise.” The arguments for centralisation are not so strong as in the case of other imaging modalities such as computerised tomography. As ultrasound imaging blurs the traditional distinction between radiologist and sonographer, and outpatient clinicians faced difficulties in gaining timely ultrasound scans, radiologists have taken on a technician like role to validate the centrality of radiologist “expertise.” In addition to employing a discourse that downplays the validity of GP referrals thus buffering radiologist “expertise” from the realities of general practice, radiologists have also resorted to a technical discourse to legitimise their claim to control over ultrasound imaging. Viewed through the lens of knowledge-power, these discourses help construct a series of dichotomies that mediate the relationships between radiologists and other stakeholders constituting radiologist “expertise” by strategically decoupling it from the “expertise” of other stakeholders (see Table 8.1). Double scanning is instrumental in protecting radiologist turf and preserving private radiologist incomes.

Table 8.1: Systems of knowledge-power enacted through double scanning

Stakeholder	Similar competencies	Dichotomy	Distinction enacted by
Sonographers	Scanning skills	Production vs Interpretation	Medico-legal risk assumed by radiologists Radiologists as medical practitioners have the necessary clinical knowledge to interpret the ultrasound scan
GPs	Clinicians	Appropriate vs Inappropriate	Judging the utility of scan and the appropriateness of the request in hindsight Waiting list decoupling radiologist expertise from problems of general practice
Outpatient clinicians	Medical diagnostic	Ultrasound service vs Non-ultrasound service	Only radiologists have the necessary scanning and interpretation skills needed to undertake ultrasound examinations

Midgley (1991) makes a distinction between the sacred and profane, which is associated with primary and secondary boundaries. Given the centrality of the radiologist values and interests in the system of process and structure, the emphasis on the confirmation and detection of abnormal pathology forms a primary boundary while the GP and patient interest in excluding unlikely but serious abnormal pathology is a secondary boundary. This primary boundary is reinforced by metaphors of progress as evidenced by the comments of GP D and Manager F and the belief that the growing waiting list is the result of increasing numbers of scannable indications. The primary boundary is also reinforced by drawing on the image of the GP as a failed specialist. In this way, GP and patient interests are seen as irrational pressures that contribute to lengthy waiting lists. As all requests of diagnostic equivocality must be scanned by the radiologists if medico-legal risks are to be avoided, such referrals while profane are marginal and according to Midgley (1991) “are neither fully included in, nor excluded” (p. 6). These requests are added to the waiting list and delayed, which creates, as Chapters 6 and 7 illustrate, a number of problems for stakeholders (including radiologists).

Conclusions

Underlying the system of process, structure and meaning is knowledge-power relationships that form the social categories and rules that stakeholders use to make sensible the accounts of the ultrasound waiting list. A focus on knowledge-power draws attention to problematic concepts central to the system of access to ultrasound, which are closely tied to the interests and values of the radiologists. Two issues faced from the systems of meaning were unpacked: first, the process of double scanning, which enacts the narrowly defined rationality of the ultrasound service; and second, the issue of “inappropriate” GP referrals that from an understanding of radiologist legitimatised need.

In the context of managing the waiting list, double scanning similarly allows the “expertise” of the radiologist to be insulated or buffered. In particular the emphasis on double scanning defines the “appropriateness” of a referral in terms of the likelihood of abnormal pathology, which fails to capture the diagnostic dilemmas faced by GPs and patients in general practice. GPs diagnose using exclusion in an attempt to manage diagnostic uncertainty and growing medico-legal pressures (secondary boundary). In contrast, radiologists diagnose by confirmation (primary boundary). This chapter has argued that this diagnostic practice constitutes and indicates radiologist “expertise.” Double scanning builds the justification for a radiologist-centred ultrasound service and in part slows the diffusion of ultrasound into other specialities as well as slowing the throughput in the ultrasound service itself.

Knowledge-power signals the importance of boundary judgements (which define what is included or excluded). For this reason it is important to better understand how stakeholders attempted to resolve the tension between the primary and secondary boundaries. To do this, the next chapter examines the stakeholder proposed interventions for managing the growing ultrasound waiting list.

Chapter 9

Stakeholder proposed interventions for managing the ultrasound waiting list

This chapter considers stakeholder proposed interventions in the ultrasound waiting list problem. At least five interventions for improving the management of the ultrasound waiting list were suggested. An understanding of the systems of process, structure, meaning and knowledge-power enables stakeholder proposed solutions to be critically assessed. This chapter ends with a critique of the rational queue metaphor as a sensemaking framework for understanding and intervening in the ultrasound waiting list.

Intervention one: enhancing the productive capacity of the ultrasound service

Enhancing the productive capacity of the ultrasound service was a popular (and preferred) solution to the growing ultrasound waiting list. Although it will be argued that the HFA community-referred contracts act as a notional constraint on the actual throughput of the ultrasound service, all stakeholders were critical of the HFA⁶³ for financially restricting the ultrasound service.

I believe that way the contracts are signed and ultimately the creation of such waiting lists are unethical and immoral. I believe that the [ultrasound service] or whoever signs those contracts should refuse to sign [them] and make public to the community [the restrictions on community access]. (GP E)

GPs and waiting patients in particular, favoured the approach of increasing the ultrasound service's capacity through adding extra resources or in a small number of cases increasing the efficiency of the service. Patient A's comment was typical.

⁶³ Waiting patients rarely referred to the HFA but instead directed their criticism at the "government" or unnamed politicians.

There must be a way they can get their waiting list down.... See if financing can be done to help it. (Patient A)

Some waiting patients criticised the efficiency of the ultrasound service. For them the public health system was inefficient, unresponsive and slow.

I had a sense that [the ultrasound service] would be extremely disorganised and that I would possibly get an appointment and find that I'm rung at work to tell me that no I can't have it after all. (Patient C)

One patient who had just recently been scanned vented her frustration after waiting nine months:

I couldn't understand it. [Being scanned] was a two second procedure... it took about 10 minutes. Most of that was done by the [sonographer] and then the doctor comes in for 30 seconds and said, "Yup" what the [sonographer] did was correct and then you are out of there. How can they not do like 20 a day? They don't. They are so slow. It seems like the cruisiest place to work. (Patient B)

While most GPs were of the opinion that extra capacity would help reduce or eliminate the waiting list, many thought that extra funding was unlikely. GPs did suggest a number of small process improvements, designed to improve the acceptability of the waiting time through minimising extra work for the GP or minimising anxiety for the waiting patient. A common suggestion was the provision of waiting time information by the ultrasound service (looked at in detail in a later section).

From the perspectives of internal stakeholders, adding more resources was needed as efficiency gains such as improvements to the appointment system had been exhausted. Radiologist W reflected on the improvements made so far:

We've worked very hard at making systems [work], timetabling and stuff to get as many people through as we can. But there is a limit. (Radiologist W)

That would be the [appointment] system? (Researcher)

The limit isn't the [appointment] system. It's the amount of money. [We] need another machine or [we] need to work out of hours.... So [we] need more funding for more staff and more machines. (Radiologist W)

Internal stakeholders favoured the purchase of another ultrasound machine. The major advantage of adding a third machine is that it avoids the throughput limitations imposed by double scanning. Provided that radiologists can rescan the patients at a rate faster than what they are doing now – and curiously many radiologists believe that they are able to – the ultrasound service should be able to scan more patients. Following Chapters 7 and 8 this indicates either a potential tension between the accounts offered by the sonographers and radiologists or an insight into the motivation of radiologists who have a stake in limiting throughput.

Despite ultrasound machines being relatively inexpensive compared to computerised tomography or magnetic resonance imaging scanners, it is believed that departmental managers are not prepared to authorise such a purchase without acquiring more HFA community-referred contracts at a higher level (or value).

If we went to the management and said, “Can we have another scanner so we can keep up with the demand” they would say, “We are not getting any more money to pay for it so we are not going to buy a new one.” (Radiologist Z)

... the number we are contracted to do limits the number [of patients that can be scanned]. What I mean by that is the management don't want us to do any more than we are doing... that's all we are contracted to do. So they are not willing to put the resources in to increase the number that we put through. (Radiologist W)

While departmental managers are concerned with maintaining the viability of the service, this view is partly flawed: it ignores the importance of the ultrasound service's problematic bottleneck, the radiologist. Provided no new radiologists need to be employed, or present radiologists paid more, the cost to the department of each additional patient scanned is negligible. The only truly variable costs are associated with clerical and miscellaneous items such as ultrasound gel and disinfectant. Salaries and plant are fixed expenses and do not vary with the number of patients scanned or scans reported.

Determining the appropriate level of funding is problematic. Appropriate funding levels depend largely on the context in which the waiting list is embedded rather than simple measures such as waiting list length and waiting time that are commonly used by stakeholders to argue for additional resources.

First, at the ultrasound service the contract culture (based around a fixed price for a given volume for community-referred patients; fixed price for scanning all outpatient department patients; and additional revenue available for demand driven ACC and maternity requests) appears to limit the opportunities for efficiency gains. Departmental managers in particular seem interested in only scanning the number of community-referred patients specified in the contract with the HFA. Sonographer A relayed her considerable frustration at the departmental managers' lack of interest in the waiting list.

Well, the attitude of management here, it seems to be as long as you are meeting your quota for community referrals they don't seem to care. So the waiting list could be three years and it wouldn't particularly worry them as long as each year you meet your community-referred [quota]. (Sonographer A)

The contractual arrangements for community-referred patients are inefficient. First, the cost structure between community-referred scans and outpatient scans are similar. The hospital incurs the additional cost of an unnecessary outpatient appointment, as in the case where the patient when scanned is "normal" and the outpatient clinician believes further diagnostic tests are not indicated. Second, as radiologist time acts as a bottleneck, any increases in radiology (non ultrasound specific) funding ironically holds the potential to reduce the overall throughput of the ultrasound service. Sonographer A claimed that ultrasound was afforded low priority by the radiologists due to the high number of normal scans. Radiologist time might be diverted from ultrasound to another more "productive" imaging modality. It is notable that no stakeholders spoke of horizontal rationing decisions when dividing up radiologist time between the different radiological sub-specialities.

After the data collection period had finished the ultrasound service acquired funding from the mammography contract to purchase a third ultrasound machine needed to undertake follow up work from Breast Screen Aotearoa (a preventative health programme which offers free mammograms to woman patients from age 50 to 64). This third machine has not been used to reduce the existing waiting list. However, given that radiologist time is limited and that no extra radiologists were employed, it seems unlikely that the extension of this ultrasound service will reduce the general waiting list or impact on other lower priority

imaging modalities such as “routine” plain film emergency department reporting. The priority given to mammography service may have been responsible for increasing the waiting time from 12 to 18 months.

In the same way you have the same radiologists who are doing the mammography who are doing the ultrasound. Changes in the mammography service impinge on ultrasound. (GP H)

Getting extra radiologist time was considered problematic although Sonographer A did see outsourcing to locum radiologists and sonographers as a possible solution to reducing the waiting list. Manager F noted that lack of human resources was a problem throughout the health system, which also applied to locum radiologists.

We would dearly love another gastroenterologist... its just getting them here you know. And that's not a lack of resources, that's not because we lack the money to do it. Psychiatrists are the same. Mental health workers are very hard to get. (Manager F)

Third, determining appropriate funding levels is complex and cannot be done by treating the ultrasound service in isolation from other specialist services. For example, growing gynaecology and general surgery waiting lists mean that a prompt diagnosis may do little to speed up the resolution of the patient condition. This perspective, however, overlooks the benefits that many patients derive from knowing that nothing untoward is happening. Sonographer B saw “companion waiting lists” as problematic but at the same time as a simplifying factor in helping the service to allocate its scarce capacity: GP scans could be delayed.

[O]r if it's definitively gallstones, maybe [they are] 90 percent [sure it's] gallstones and the waiting list for surgery is three years ... so the patient can wait and take care with their diet. And because the waiting list is three years and we have to scan the patient before the operation it doesn't matter. The gallstones won't go away. (Sonographer B)

The growing gynaecology waiting list further serves to illustrate that determining appropriate funding levels is problematic, as impacts on one speciality have flow-on effects to other parts of the health system.

GP H recounted the policy decision to allow midwives to compete for maternity funding; however, any gains in efficiency or cost effectiveness by employing midwifery “expertise” were local in the sense that it enhanced the quality of care to individual clients. GP H noted that this policy decision had flow-on effects given that midwives were unable to pick up all the maternity work previously done by GPs as GPs “left the maternity system in droves” (GP H).

Most of what the GPs weren’t doing suddenly went to the antenatal clinic ... it became completely swamped and they couldn’t cope with [the increased demand]. They had to cancel a gynaecology clinic and make it another antenatal clinic instead. The gynaecology waiting list went ... from being six weeks to 18 months in a matter of a few months, certainly within the year. (GP H)

Given the important part that ultrasound plays in establishing diagnoses and the introduction of the New Zealand booking system, which requires ongoing patient reassessment, ultrasound may be more “exposed” to dependencies that exist between waiting lists.

The difficulties in determining appropriate levels of funding for the ultrasound service and the assumed limited opportunities for efficiency gains make intervention one, enhancing the productive capacity of the ultrasound service, problematic.

Intervention two: hard copy reporting

The second option⁶⁴ centres on the unresolved issue of double scanning, which the radiologists had adopted as a catchall policy at the ultrasound service given growing concerns over medico-legal issues. This intervention, favoured by sonographers and departmental managers, is the same as the “private practice” model employed at the local private radiology facility where the radiologist reports from hard copy and is on call to assist with scanning diagnostically challenging patients.

If we could only just have a burst of hard copy reporting. If the radiologists would accept it for only the short term to get the waiting list down to an acceptable number we probably could do it within the hours that the department has. But waiting for

⁶⁴ While intervention two is a variant of intervention one, it is singled out given the significance of double scanning.

the radiologist is absolute dead time. Time and time again. See [the sonographers] will do a patient and along will come the radiologist who does him again. Where's the productivity in that? (Manager C)

Hard copy reporting is also relatively common in other hospitals throughout New Zealand although Sonographer A seems to imply in the examples that she gave, that hard copy reporting is more acceptable to non-radiologist sonologists such as obstetricians, gynaecologists, cardiologists and urologists.

Associated with hard copy reporting are two issues that would need to be addressed. First, departmental managers would need to address medico-legal issues.

[I]f we gave [the sonographers] more responsibilities, we have to give them more protection at the same time because they could be exposed to litigation. (Manager E)

While Manager E was of the opinion that a registration system would be helpful, he noted that there was little pressure for registration from the Ministry of Health.

[According to the Ministry of Health] an ultrasonographer cannot harm a patient and so why should they be even registered? They won't accept the argument that they could produce a misleading result, which could then have a deleterious effect later on. They maintain that it's the person who interprets the information, uses the information who is the villain in the piece. The responsibility lies with them. (Manager E)

Second, the radiologists are unlikely to agree to discontinue the practice of double scanning and managers would have to coerce the radiologists into reporting off films. When asked whether management had tried to encourage the radiologists to hard copy report, Sonographer A replied:

No. They have never got to that stage because now they all stand firm. They will check everything that is done. It is their responsibility and if they [that is, the departmental managers] want them to report off film they will refuse to report them. Then what is management going to do? (Sonographer A)

The second intervention attempts to address the problematic issue of double scanning by hard copy reporting. However, the success of this strategy is dependent on addressing

radiologist concerns, which are embedded in systems of meaning and knowledge-power that constitute radiologist “expertise.”

Intervention three: restricting GP access

The third option was to restrict GP access to ultrasound. In the opinion of Radiologist Z, while GPs had equality of access with hospital-based consultants, a massive inequity existed in how community referrals were treated. Removing open access would effectively formalise and rationalise a *de facto* inaccessibility.

Maybe it’s better to not to do something rather [than] you pretending you do it and not do it properly. (Radiologist Z)

As with previous interventions, there are a number of potential disadvantages with restricting GP access that arise from the interacting nature of issues that characterise the ultrasound service. Internal stakeholders believe that “consultant only” referrals will result in an increase in relatively unnecessary outpatient referrals. Radiologist Z, for example, said:

That clogs up the clinics more so that the surgeons are seeing these people that half of them won’t have gallstones or they don’t really need to see them at all. (Radiologist Z)

For the departmental managers, community-referred patients also represent a guaranteed source of income. If scanned as outpatients, the radiology department receives no additional funding; outpatient revenue is instead earned by the hospital. In the case of community referrals the radiology department receives definitive dollars from the HFA to a certain fixed volume.

Despite such disadvantages, closed access is still an attractive option for the ultrasound service. Sonographers in particular felt that the outpatient consultants should screen the requests for “appropriateness” and “urgency.” This, they suggested, would help the ultrasound service make the best use of its already stretched capacity by weeding out wasteful “rubbish” scans. More significantly it would resolve the medico-legal dilemma

(facing the radiologists) of misclassifying “urgent” patients as non-urgent if patients were prioritised by outpatient clinicians.

Under similar conditions of resource scarcity, outpatient clinicians presumably face the same medico-legal dilemmas as radiologists: who to examine next? For the outpatient department this dilemma is likely to be particularly acute with outpatient streams competing with inpatient streams for clinician time and with the attention afforded to surgical waiting lists by clinicians and managers hoping to obtain extra funding. Only “urgent” GP patients are likely to be seen by outpatient consultants and these “urgent” patients are likely to have detectable abnormal pathology. While in such a scenario the yield of abnormal scans would increase and justify the ultrasound service’s use of its limited and scarce capacity, the dilemma facing GPs of excluding possible abnormal pathology when undertaking diagnostic work-ups would remain.

Restricting GP access would also shift the responsibility of diagnosis from the GP to the outpatient clinician. This raises a significant question, which is reminiscent of the American health system: why have a GP whose responsibility it is to manage patient’s health and well-being if an outpatient clinician can assume this responsibility?

Manager A’s favoured option was to engage in GP education. Departmental managers were of the opinion that only radiologists could do this given that sonographers are not medically qualified. However, the feasibility of this option is doubtful given that radiologist time is currently limited and constrains throughput.

Some GPs attuned to equivocality associated with patients presenting with non-specific symptomology were interested in obtaining advice from the ultrasound service in the form of best practice guidelines. While GP D was critical of guidelines, as “often patients don’t fit into a definitive criteria,” he nevertheless expressed a hope that improved guidelines would help unearth a number of potential surprises but also noted that even with good guidelines a lengthy waiting time was still unacceptable. Residual equivocality could only be resolved with an ultrasound scan.

I think they can develop guidelines and that guidelines can hopefully scoop 90 percent of the nasties.... Guidelines would be helpful but even so six months I think is too long [to wait]. [A scan] needs to be done to protect [the GP] and the patient. (GP D)

GP A noted that current guidelines, such as those of the Royal College of Radiologists (1998), directed clinicians to refer patients presenting with abdominal pain for an ultrasound scan – the very scans frequently showing normal results and dismissed as “rubbish” by radiologists and sonographers.

GP E thought that scan reports could be used by radiologists to help GPs improve their practice in requesting ultrasounds.

I think the scan reports can be used as teaching tools. It’s effectively a letter from one doctor to another. I’m not a radiologist. I haven’t sat my exams and I don’t expect to be at the same level as them but having some teaching ... or padding out [of] a report is advantageous to [GPs]. You are treated as equals. (GP E)

As with the first and second intervention, restricting GP access through removing the open access arrangement and the imposition of stricter referral guidelines is unlikely to resolve the difficulties associated with the ultrasound waiting list.

Intervention four: waiting list audit

The fourth intervention was to return to GPs their request forms if the request had not been scanned after six months. GPs at this time would be asked whether they still required the test. This was Sonographer B’s preferred approach. She was of the opinion that a number of GP referrals were made without much thought of the clinical context and what they hoped to gain from an ultrasound scan. Idiosyncratic abdominal pain, for example, is likely to resolve itself in six months and when such patients are scanned little can be found with ultrasound. The need for the ultrasound may have changed after six months. This intervention inherits some of the weaknesses of intervention three as well as increasing the workload of the receptionist, GPs and waiting patients.

Intervention five: information about the waiting list

A defining characteristic of the management of waiting list is the conspicuous lack of information provided to GPs and waiting patients about the ultrasound waiting list.

GPs ordered ultrasound scans for reassurance to help exclude serious but unlikely conditions. While such referrals were intended to reassure patients, GPs noted that the uncertain waiting time often increased patient anxiety levels. For GPs knowing the expected waiting time was valuable information that they could pass on to patients.

I think there is nothing worse than knowing you've got to have a test and not knowing when the test is coming up. It would be nice to be able to say, "Well look, I'm sorry. You have to wait three or six weeks or whatever." (GP C)

All GPs thought that knowing the waiting times for specific ultrasound scans would be helpful and represent an improvement over the present system where the ultrasound service did not give out information without a specific inquiry being made.

Okay if we say this beast exists and one has no choice other than to live with it, ... the referrers of the service such as myself ... should have some idea as to what the actual waiting list is. (GP E)

GP H noted that in the absence of regular updates from the ultrasound service his estimates tended to be vague:

I say, "Well [the waiting time] varies from time to time and it maybe anywhere from a few weeks to a few months, and if you wish to know we can find out." (GP H)

GP B added that she often told patients to contact her again if nothing was heard from the ultrasound service in a given period of time:

[When I give the patient an expected waiting time I'll] explain I can't guarantee it. Sometimes I may say, "If you don't hear [about your appointment] within a certain time frame ring me." (GP B)

But as GP C notes this was often a source of extra work for the GP or their practice nurse.

Sometimes we have to ring up [the ultrasound service] and say, "Did you get the referral? What's going on?" It involves a lot of unnecessary time wasting on our part and the patient as well. (GP C)

The extra work done by GPs and practice nurses is another example of cost shifting and additional costs incurred to the health system. Restricting the availability of ultrasound while saving money, leads to more GP time being needed to deal with worried patients, difficult to contact radiologists, and if necessary ongoing remedial care (for example, pain medication).

While the lack of information about waiting time was a source of extra work, GP H saw the absence of offered information as reflecting a potentially more serious problem.

About two years ago there was an episode where the ultrasound service ceased to do GP referred scans for a period of at least two months unless they were obviously urgent. They didn't bother telling any GPs about that. This was because one of their ultrasound machines had broken down. (GP B)

As previously discussed, patients in particular were critical of the ultrasound service for not providing information. Patient F was particularly critical.

The total absence of any sort of communication is a pitfall I think and it is inexcusable. (Patient F)

Patient A also noted that:

Because [the waiting time] was so open ended and the total absence of communication didn't even set a ball park figure that you are on the waiting list and your scan will be done within the next 18 months. That would have given me some degree of knowledge, knowing when it might happen. I might liken it to a bus where the service is in fact different from what was up on the timetable on the bus shelter. [Maybe] they don't even run as a day service any longer so I could have been waiting all day. In fact a bus doesn't come past at all. (Patient A)

The absence of communication from the ultrasound service led GP E to describe the ultrasound waiting list as a "black-hole."

It is a bit like a black hole. You send the form off and you get a phone call from a patient two months later saying, "Doctor, did you send off my form? I haven't heard from the [ultrasound service]." Yes it is a black hole. [The referral form] goes into the middle of nothing. I guess an acknowledgement of [referral] to the patient is important. Sometimes you look at your records and you are pretty sure you have sent the form but it might not be in black and white that you did. (GP E)

From the ultrasound service's perspective, notably that of Receptionist A and the student sonographer, giving out regular updates on waiting times to GPs was a source of extra work and considerable frustration and stress. Receptionist A found the telephone inquiries from patients and GPs highly disruptive.

Sonographer A expressed frustration when she attempted to deal with this ongoing issue.

We have had several meetings [with management] and I have said, "I'm really concerned about our waiting list. It's putting a lot of pressure on people [and] the phone calls are getting more nasty." So they gave us a tick sheet to see how many phone calls we get about how many people are asking about the waiting list. That's as far as it's gone. (Sonographer A)

It is evident, then, that patients, GPs and reception staff were disadvantaged by the extra work of seeking information about the waiting list. Yet GPs and patients were not surprised that the ultrasound service does not regularly update GPs on expected waiting times, as noted in Chapter 6. Stakeholders were aware that providing such information would result in an obvious improvement in how the waiting list was managed, although some internal stakeholders such as Radiologist X saw the psychological effect of waiting as being of little overall importance. Manager F talked about reaction that patients had to the information supplied by the ultrasound service:

In other clinics and I'm not sure whether it happens [in the ultrasound service] they get a referral letter, they write to the client and say, "We have received your referral form from your GP for a so and so. You have been put on the waiting list as routine or something like that. I know that is quite frustrating because what does routine mean? For the client they don't know. [If I was a client] I [would] want know whether I'm going to be seen in two weeks or two months. (Manager F)

The ultrasound service was asked why they did not supply patients or GPs with information about waiting times. The unpredictability of the waiting time, which fluctuates according to the number of "urgent" requests coupled with the concern over the Consumers Guarantee Act (1993), which will be examined shortly, was cited. On the unpredictability of the ultrasound service's workload Radiologist Y commented:

There are some [appointment] slots left aside for urgents but it doesn't work out often, as there are more urgents than there are [appointment] slots. You can't sort of leave half the ultrasound list spare for urgents because sometimes they don't come in and you sit around twiddling your thumbs. (Radiologist Y)

So it's quite unpredictable? (Researcher)

It is unpredictable. It is predictable everyday that you will get a certain number of urgents, but you don't know whether that happens to be half a dozen a day or whether it is 15 or 20 a day. It is unpredictable. (Radiologist Y)

Manager F emphasised that because of the uncertain number of "urgent" patients, the ultrasound service could not guarantee when patients would be scanned. Waiting times were necessarily uncertain.

If you are a routine person and you are on the waiting list and we get six [urgents] to be done before you we can't actually commit ourselves to having you done in three weeks time because it depends on those [urgent patients]. (Manager F)

The accuracy of waiting times was an important issue to patients and departmental managers. For patients, knowing the expected waiting time helped them to manage the waiting experience and to manage their lives around the medical uncertainty associated with their symptomology. Expected waiting times were based on GP estimates, which were at times vague and inaccurate. When this estimated waiting time was exceeded patients were disappointed and found waiting increasingly unacceptable. Inaccurate waiting times further exacerbate patient helplessness and powerlessness.

For the ultrasound service, uncertainty regarding waiting times also was not acceptable from a legal point of view. For departmental managers, worry was expressed over non-medical instruments being used to allocate appointments under the Consumers Guarantee Act (1993). It was important for the ultrasound service to be able to allocate appointment based on "urgency" rather than legal entitlement.

[Management] didn't want us to put down that the waiting list was six or 12 months. We couldn't indicate how long the waiting list was because by the Consumers [Guarantee Act] if you put down that the waiting list was six months [the patients] would have to be scanned at six months. It can't be nine months. (Sonographer A)

A simple intervention would be to inform waiting patients at the time of the referral that the ultrasound service is "currently scanning patients referred in January 1998" (for example) or what Manager F referred to as an overrider.

What happens if you say approximately [when giving waiting times]? (Researcher)

[You need an] overrider saying, “Depending on the urgent patients, depending on the sickness of other patients.” (Manager F)

Proposed interventions and primacy of the radiologist action area

Intervention one is an attempt to side-step the problematic issue of double scanning and prioritisation primarily by adding a third machine to increase throughput. Intervention two in contrast tackles head on a primary reason for the stubborn waiting list: the practice of double scanning. However, the intervention attracts limited support, as medico-legal issues and notions of risk are difficult to quantify and objectively consider. While intervention two was framed by internal stakeholders as giving sonographers more autonomy, it may also lead to alternative formulations such as only having the radiologist scan the patient. This raises questions over the importance of the role of the sonographer, which Chapter 8 attempted to address by considering how radiologists used sonographers to demonstrate their technical “expertise” over other medical specialists such as obstetricians and gynaecologists who have an interest in providing ultrasound services.

Interventions three and four relate to the common-sense idea held by sonographers and radiologists that many of the GP requests are “inappropriate” or at least of questionable utility. The extent of “inappropriate” GP referrals is difficult to determine but nevertheless it is assumed to be significant.

Notable about all suggested interventions is that they seem to strengthen the basic design of the ultrasound service and how the ultrasound waiting list is managed, according to radiologist-centred images of “illness” and “expertise.” In particular arguments favouring the restricting of GP access in intervention three serve to further entrench the radiologists as the clients of the ultrasound service by eliminating reassurance scans.

The fifth intervention - providing information on the ultrasound waiting list – poses a potential threat to this design; the Consumers Guarantee Act (1993) overrides radiologist

control by stepping outside the systems of process and structure that make up the ultrasound service. It seems unlikely that waiting patients would be able to engage with the ultrasound service in this legal manner given the accessibility of private radiology facility. In this regard, the actual risk to the basic design is low.

While the waiting list to the ultrasound service represents a secure future source of revenue, it also represents a strategic disinvestment in community access. Use of time (confounded with arguments over appropriate funding levels) covers the appropriateness of the radiologist action area, which is decoupled from the equivocality of general practice. The contradictions and inconsistencies in how the system is managed are hidden from outside scrutiny.

In particular by playing up the uncertainty associated with the number of “urgent” requests, the ultrasound service avoids responsibility for allocating appointments, even through this lack of control is enacted by the “urgent” mechanism, which is an open-ended commitment to scan all “urgent” patients. Other interventions can be understood in this manner, which strategically play up or play down uncertainty to buffer the appropriateness of the primary boundary. In this way uncertainty is used to strengthen the design of the existing system⁶⁵.

Critiquing the rational queue

Although examination of systems of process and structure in Chapter 5 pointed to the ultrasound waiting list as a rational queue, close examination of stakeholder accounts served to illustrate its inadequacy as a sensemaking framework. To borrow from philosopher John Searle (1995), the metaphor of the rational queue conceals “a huge invisible ontology” (p. 3), an ontology expressed in terms of assumptions about the nature of need, benefit, scarcity and expertise. While the rational queue was critiqued in Chapter 2,

⁶⁵ Consider the strategic exaggeration of uncertainty where radiologists in particular emphasise the possibility of missing abnormal pathology and the need for appropriate radiological “expertise” to ensure that this does not happen. This possibility becomes the rationale for double scanning and for the need to increase the capacity of a radiologist-centred service as detailed in intervention one. However, as Chapter 8 demonstrated, a focus on this type of uncertainty is misplaced systemically (for example, the “urgent” mechanism could operate just as well in reverse) and this leads to waiting patients assuming the risk of waiting.

the intention of this section is to explore Searle's (1995) invisible ontology by grounding the critique in the case study findings presented in Chapters 5, 6, 7, and 8. This exploration forms the basis for conceptualising waiting lists in alternative and systemic manner that builds on Frankel's (1993) insight that the waiting list problem can be better understood by focusing on the interplay between stakeholder-specific rationalities.

The rational queue is based on a number of assumptions. Central to the rational queue is the rational allocation of scarce capacity through a system of prioritisation. In this regard, the ultrasound waiting list is managed as a series of rational queues. Appointments are allocated according to a priority rule (the "urgent" mechanism) and the sequencing heuristic "first come first serve." This system of management ensures that scarce capacity is allocated to patients who are likely to have abnormal pathology.

Pope's (1991) critique of the rational queue focused on the irrationalities governing how appointments were allocated. Such an emphasis, however, unduly privileges rational medical prioritisation. In contrast, the case study findings point to a more fundamental difficulty, which is seldom mentioned in the waiting list literature: a limit to which requests can be prioritised.

Although apparently "rational," the queue discipline informing the ultrasound waiting list is dictated by diagnostic hindsight and growing medico-legal pressures rather than rational management as such. Time is an important diagnostic tool that usefully reduces the equivocality associated with troubling symptomology, prioritising and framing such referrals in terms of scannable requests in which radiologist "expertise" can be constituted.

The rational queue portrays patients as little more than work-in-progress needed to ensure the utilisation of scarce resources. Rather than being passive, patients play an active part in the management of the ultrasound waiting list. Given that prioritisation is problematic, both GPs and radiologists depend on the waiting patient to go back to the GP if symptomology deteriorated. The part that waiting patients play in wasting scarce capacity by failing to appear for scan is likely to be overstated given the short two week scheduling horizon

employed the ultrasound service; the availability of inpatient work and frequent session overruns; and the impact that radiologist tardiness coupled with double scanning has on session throughput.

This critique of the rational queue with respect to the ultrasound waiting list highlights that the strategies employed by GPs (for example, “inappropriate” outpatient referrals) and waiting patient (for example, badgering the ultrasound service staff) to bypass the waiting list and securing timely diagnoses are not irrational. Rather such strategies reflect the contested nature of “illness” and “expertise” underlying the organisation of the service. For example, GPs may make referrals based on hunches and clinical impressions that may not be substantiated by clinical guidelines or the concern of the radiologists to confirm abnormal pathology. This critique also signals that the patients’ willingness to self-monitor their own symptomology may not be in their best interests as it perpetuates existing systems of process and structure.

These two problematic assumptions point to a significant failing of the rational queue metaphor. It assumes that patient interests and values are synergistic with those of the health system. That is, access to the radiologist-centred ultrasound service is intrinsically desirable in its own right and there is no need to challenge the legitimacy on which the service is organised. While this assumption underlies the stakeholder proposed interventions⁶⁶, Frankel (1993) conceptualisation of the waiting list problem draws attention to the fact patient interests are not necessarily served. Waiting may instead be consistent with the goals and values of other stakeholders and following Flood and Jackson (1991a) may be regarded as a component of a coercive problem context.

The radiologist action area enables the ultrasound service to make sense of most of the equivocality associated with the hindsight driven nature of diagnosis and perceptions of medico-legal risk⁶⁷. However, the centrality of this action area would lead Morgan (1997) to characterise the ultrasound service as an egocentric organisation. An egocentric

⁶⁶ For example, intervention three, which by restricting GP access attempts to make best use of existing scarce capacity.

⁶⁷ With the notable exception of Dead Patient A.

organisation is one that has “a rather fixed notion of who they are or what they can be and are determined to impose or sustain that identify at all costs” (p. 259). In this regard, the ultrasound service attempts to structure the outside environment in its own image by overemphasising its own importance (radiologist centred) and downplaying wider contextual considerations. In particular, the decoupling of radiologist expertise from dilemmas of general practice through the waiting list, “urgent mechanism” and insistence on double scanning downplays the work undertaken by sonographers, GPs and their waiting patients in maintaining internal systems of process and structure.

In this way the rational queue emphasis on rational prioritisation and making the best use of existing capacity serves to obscure the tensions that arises from the primacy of the radiologist boundary, which structures the delivery of the ultrasound service in terms of radiologist “expertise.” Although the way in which the ultrasound waiting list is managed mirrors the rational queue, its management is in fact irrational given that it dismisses the significance of action areas (secondary boundary) formed around GP and waiting patient interests and values. It follows that interventions based on the rational queue are unlikely to be effective given that they do not address the underlying tensions and contradictions that characterise the radiologist action area.

The rational queue does not provide a framework to understand how stakeholders construct the waiting list problem. In particular, it glosses over issues of knowledge-power that colour issues relating to “appropriateness,” “expertise,” and scarcity. Consequently, interventions are limited, inevitably managerialistic in orientation and help to maintain the status quo.

Similar criticisms can also be levelled at other conceptualisations of the waiting lists such as Frankel’s (1989) mortlake metaphor and Pope’s (1991) metaphor of the shop. Frankel (1989, 1993) berates clinicians and patients for failing to ensure that cost effective and desirable interventions are carried out. In doing so Frankel (1989, 1993) employs his own boundary judgements based on economic rationality. However, in the process he fails to demonstrate how the interests of clinicians are constructed or mediated by the actions of

other stakeholders, or how waiting patients are marginalised. Pope's (1991) metaphor of the shop is similarly limited. While Pope (1991) demonstrates the process in which surgical appointments are allocated, she nevertheless fails to include the perspectives of other key stakeholders such as waiting patients.

In both cases the existence of alternative action areas and their relationship to the primary boundary are not recognised. As in the case of the rational queue, both the mortlake and shop metaphors take notions such as "scarcity" and "expertise" as unproblematic and not linked to the interests of clinicians.

Clearly, improvement is not dependent on more rationality as the rational queue might suggest. In addition to needing to identify and understand the implications of the boundary judgements that underlie the action area, there is also a need to facilitate dialogue between internal and external stakeholders around whose rationality should inform access to ultrasound. Chapter 10 attempts to begin this discussion by employing Ulrich's (1983) CSH in both its "is" and "ought" modes.

Conclusions

This chapter has detailed what stakeholders saw as appropriate interventions to the ultrasound waiting list problem. All stakeholders were in favour of increasing the capacity of the ultrasound service to deal with the growing waiting list. However, there were two notable difficulties with this strategy. First, it was argued that adding an additional ultrasound machine or increasing funding may not increase throughput, as radiologist time restricts output and it is unclear how radiologist time is distributed between the radiology department's imaging modalities. Second, the relationship between the ultrasound, gynaecology and surgical waiting lists make determining appropriate resource levels difficult.

While GPs and waiting patients were not aware of the significance of double scanning, departmental managers and Sonographer A were keen to reverse this departmental policy

by utilising hard copy reporting. Although this intervention was expected to increase the throughput rate, hard copy reporting was considered problematic due to growing medico-legal risks and the reluctance of radiologists to report without the option of rescanning the patient. Restricting GP access was an intervention favoured by most internal stakeholders. While this intervention would effectively rid the ultrasound service of the GP waiting list, it would nevertheless require the radiology department to forgo the funding from the HFA community-referred contracts. Shifting the responsibility for prioritisation to the outpatient consultants was also unlikely to help GPs manage clinical uncertainty as outpatient consultants face the same diagnostic problems associated with hindsight. In a similar intervention, Sonographer B suggested that GP requests that were not scanned within six months should be returned to the referring GP. While this intervention would create additional work for Receptionist A and the referring GPs as well as potentially exposing waiting patients to unnecessary worry, it would help remove requests from the waiting list that were no longer necessary.

The final intervention centred on providing GPs and waiting patients with information about the waiting list such as likely waiting times. This intervention was considered undesirable by departmental managers who expressed concern that it might expose the ultrasound service to litigation under the Consumers Guarantee Act (1993). What is notable about the interventions is that they strengthen the legitimacy of the radiologist action area, which in turn serves to structure the delivery of ultrasound according to radiologist "expertise." These interventions are unlikely to resolve the tensions that characterise the management of the ultrasound waiting list yet the primacy of the radiologist action area constrains what interventions can be implemented.

A critique of rational queue and other images of waiting lists similarly pointed to the inability of existing waiting list metaphors to highlight the importance yet partiality of the radiologist action area. In order to address what might be regarded as entrenched radiologist expertise, the next chapter uses Ulrich's (1983) CSH. In particular, alternative boundary judgements based on the interests and values of waiting patients and their GPs are explored and form the basis for two alternative (systemic) interventions.

Chapter 10

Towards a systemic understanding of the ultrasound waiting list

From the analysis presented in Chapters 5 to 8, it is clear that the way in which the waiting list was managed served to subordinate the needs of waiting patients and their GPs to the interests and values of the radiologists. The organisation of access to the ultrasound service was characterised by a clash between the different ethics held by radiologists and GPs. In particular, the radiologists structured the system of access to facilitate the detection of abnormal pathology whereas GPs were broadly interested in managing diagnostic uncertainty and saw the exclusion of abnormal pathology as desirable. Although counter-intuitive, the advantage of this analysis is that it dismisses a widely accepted argument that waiting lists are inevitable given inadequate levels of funding, rising public expectations and increasing levels of technological sophistication. Indeed, this insight opens up the possibility of reframing the way in which the ultrasound waiting list is managed leading to interventions that are better attuned to the needs of waiting patients and GPs.

This chapter attempts to move beyond the tasks of reflection and critique that characterise the creativity phase to consider how the entrenched nature of radiologist “expertise” might be managed. Following Flood and Jackson (1991a) and Flood (1995a), Ulrich’s (1983) CSH in its “is” and “ought” modes are used for two purposes. First, to highlight that radiologist sanctioned systems of process and structure are not objective givens; and second, to stimulate debate on how the ultrasound service ought to be managed and what particular forms a GP and patient centred ultrasound service could take. Two possible designs are detailed. The first views the “expertise” of the radiologists and sonographers as complementary and discusses how separate sonographer exclusion and radiologist confirmation services could address waiting patient and GP concerns. The second possible

design reflects a more pragmatic attempt to negotiate the existing systems of process and structure by exploiting the private radiology facility's excess capacity.

Critical Systems Heuristics

The viability of the radiologist-centred ultrasound service was becoming increasingly questionable as waiting times increased despite discourses about technological progress and GPs as failed specialists (and patient advocates) as well as suggested improvements that would help contain the disturbances resulting from the contradictions in the radiologist ethic. As all stakeholders agreed that a problem some description existed, and viewed increasing the capacity of a radiologist-centred ultrasound service as the most efficacious means of reducing the waiting list, the problems resulting from the way in which radiologist "expertise" was enacted was rarely questioned. Sonographers in particular were keen to replicate radiologist "expertise" in confirming abnormal pathology⁶⁸.

The systems of process and structure were characterised by the dominance of a particular partial ethic centring on the detection of abnormal pathology and what could be interpreted as implicit coercion. This ethic subordinates the considerations of waiting patients and the needs of doctors, who refer such patients, to the interests and values of the radiologists. In such a situation where coercion is relatively easy to identify, the use of CSH to shift existing patterns of accountability is recommended (Flood and Jackson, 1991a; Flood, 1995a). Flood and Jackson (1991a) describe the utility of CSH as:

In coercive contexts, where the powerful seek to impose their proposals [or systems] upon other participants ... critical systems heuristics enables us to reveal the 'true' interests and motivation underlying these proposals [or systems], assists with challenging the proposals [or systems] and constructing counter-proposals [or counter-systems], and insists that no plans are rational which have not been approved by the 'affected but not involved'. (p. 198)

⁶⁸ This is the basis in which researchers such as Chan et al. (1996) have evaluated the efficacy of sonographer diagnostic capabilities. However, (as discussed later when the sonographer exclusion service is detailed) to evaluate the contribution of sonographers in this way misunderstands how ought the ultrasound service be organised from patient and GP perspectives.

CSH operates in two modes reflecting the here and now (the “is” mode), and the possibility of alternative proposals or systems (the “ought” mode). When answers from the “is” mode are compared with answers to the “ought” mode the normative content of the proposal or system is revealed. Both the “is” and “ought” modes consist of twelve questions that centre on: The client – who benefits? The decision taker – who has control? The expert – what source of legitimacy guarantees the proposal or system? And the witness – what is the legitimate basis of the proposal or system? CSH can provide a systematic basis for challenging fundamental assumptions that are often unacknowledged or obscured in proposals or systems.

As mentioned the use of CSH in this manner requires that “the sources of power of the different participants ... [are] relatively easy to identify” (Flood and Jackson, 1991a, p. 40). In addition is the requirement that the powerful – the radiologists – are willing to reflect on the consequences that flow from the partiality of the ethic governing the allocation of scarce capacity. While it generally accepted that the current access arrangements are unacceptable, the radiologists are able to draw on the discourse surrounding medico-legal risk that justifies the present systemic arrangement that leads to what might be regarded as the oppression and alienation of waiting patients and their GPs. In this sense the ultrasound service has a powerful incentive not to engage in the dialogue as envisioned by Ulrich (1983), given concerns about litigation being brought against the ultrasound service or individual radiologists. The radiologists and departmental managers expressed a reluctance to participate in dialogical debate with waiting patients and GPs about the purpose of the ultrasound service. It seems unlikely that CSH can be employed in a manner consistent with the aspirations of CST practitioners and researchers who prefer to work with the affected and the involved in the problem situation (Midgley and Ocha-Arias, 2001). For this reason the planned use of CSH to facilitate discussion with stakeholders about the ultrasound waiting list was abandoned.

Reflecting on the inability of CSH to adequately deal with coercion, Midgley (1997b) has suggested coercion can be tackled by redefining the boundaries of an intervention. This present research employs CSH in a way that attempts to widen the boundaries of the

intervention to sweep in the interests of policy makers and researchers. These stakeholders are able to challenge the dogmatic (and sometimes cynical) employment of radiologist boundary judgements by drawing on other discourses (such as economic rationalism) to counter the radiologist insistence about the inevitability of the systems of access given medico-legal risk. Thus this research attempts to intervene in *health policy and health service management discourse* (see Midgley and Ochoa-Arias, 2001).

Towards this end, answers to the critical heuristics in the “is” mode serve to deconstruct the radiologist-dominated systems of process and structure by highlighting (following Oliga (1996)) its lack of comprehensiveness, ethical inadequacy and undemocratic nature. In this way it is intended that policy makers and health service researchers can embarrass the radiologists into dialogue about the purpose of the ultrasound service with GPs and waiting patients. After challenging the basis for the radiologist-centred ultrasound service, the “ought” mode allows the specification of the desired properties of a waiting patient and GP focused ultrasound service, which can be used by policy makers and health service researchers as a polemic to facilitate dialogue about how the ultrasound service might be reconfigured with the involvement of waiting patients and GPs.

Critical Systems Heuristics: “is” mode

Using the “is” mode of CSH draws out the key characteristics or assumptions underlying the existing systems of access to the ultrasound service, indicated as *S*. Wordings of the critical heuristics are taken from Flood and Jackson’s (1991a) concise summary of Ulrich’s (1983) work.

S’s value basis – questions about clients: Who is the actual client of S’s design? What is the actual purpose of S’s design? What, judged by the design’s consequences, is its built in measure of success?

The way in which the ultrasound waiting list was managed benefited public and private radiologists. While no mission statement exists as such for the ultrasound service its

notional aim is to help referring clinicians establish a diagnosis to aid in treatment and if necessary referral or further diagnostic tests. However, access to the service is managed to increase the likelihood of achieving the specific purpose of identifying abnormal pathology through applying radiologist “expertise.” The measure of success is the rate of timely detection of abnormal pathology.

S’s basis of power – questions about decision takers: What conditions of successful planning and implementation of S are really controlled by the decision taker? What conditions are not controlled by the decision taker, i.e. what represents “environment” to him [sic]?

Both the purpose and in built measure of success point to the centrality of the radiologist in determining how the ultrasound waiting list is managed. The radiologists control the following procedural aspects of the ultrasound service:

- Procedures offered to non-radiologist clinicians and GPs given the clinical skills and interests of the radiologists;
- Number of sessions undertaken each week in the ultrasound service;
- Which patients are scanned and when (accessibility). This also includes decisions about the case-mix between inpatients, outpatients and community-referred patients; and
- The decision whether to rescan the patient after the sonographer has completed her or his examination.

They also control the right to declare a patient normal (and the request as “rubbish”) or abnormal by virtue of the radiologist position. In many respects the radiologists are powerless over the growing waiting list. Given the existence of a broader ethic – the right to refer - radiologists have little control over the number of referrals from non-radiologist clinicians such as GPs. Radiologists are also unable to determine how non-radiologists specialists practice. As such, radiologists have no control over the diffusion of ultrasound. However, the local practice of double scanning is usefully seen as creating a distinction between radiologist, sonographer and non-radiologist use of ultrasound with radiologist use being equated as “expert” usage bolstering the case that a radiologist centred ultrasound service is desirable. Both a growing waiting list and non-radiologist interest in performing ultrasound scans is threatening the viability of current configuration of the ultrasound

service. Funding levels and service agreements are also outside the control of the radiologists.

S's basis of knowledge – questions about know-how and expertise: Who is actually involved as planner? Who is involved as expert, of what kind is his [sic] expertise, what role does he [sic] actually play? Where do the involved see the guarantee that their planning will be successful?

The radiologists are heavily involved in setting departmental policy, which specifies, for example, the role of the sonographer and how priority is allocated between inpatient, outpatient and community referrals. While the radiologists set the framework within which the ultrasound service is delivered, the sonographers take on responsibility for the day-to-day planning the ultrasound service. The sonographers organise the service's workload so to minimise the impact of double scanning, unavailability of radiologists and other disruptions. What is notable from the stakeholder accounts is the lack of managerial input into how the systems of process and structure were managed despite planning being a key management function.

As the inpatient and outpatient requests are afforded priority and the "urgency" of requests is accepted, hospital clinicians enact the role of "expert," determining workload of the ultrasound service. Given the discourse about GP inappropriateness, it is perplexing that radiologists do not take an active role in prioritising GP requests. They instead rely on GPs to contact them while at the same time making themselves difficult to contact. As the focus of the radiologist-centred ultrasound service is on confirming abnormal pathology, the "expertise" of radiologists is applied in the role of super-technicians/diagnosticians.

GP medical "expertise" is downplayed and focuses on manipulating the systems of process and structure to secure timely scans. For example, some GPs are known to frequently mark the referral form with "urgent" without contacting a radiologist to organise an "urgent" scan. The sonographers also represent a *de facto* form of "expertise" in that they informally

read the incoming request forms and prioritise those requests that they believe may be affected by waiting.

As inpatient and outpatient department requests are afforded priority, and there is little discussion about the utility of these requests, the guarantor is the “expert” medical knowledge of inpatient and outpatient clinicians who it is assumed are able to select patients that are likely to have abnormal pathology for scans. In many respects this guarantor is false. It is possible that the belief that the outpatient clinicians are able to effectively screen patients is partly an artefact of the medico-legal pressures resulting from lengthy outpatient waiting list and the assumption that patient symptoms are clearer in a secondary care setting. Studies such as Colquhoun et al. (1988) and Connor and Banerjee (1998) of GP and outpatient referrals cast doubts on this latter assumption.

S’s basis for legitimisation – questions about legitimacy: Who among the involved witnesses represents the concerns of the affected? Who is or may be affected without being involved? Are the affected given an opportunity to emancipate themselves from the experts and to take their fate into their own hands? What worldview is actually underlying the design of S? Is it the worldview of (some of) the involved or of (some of) the affected?

It is the job of the GP to advocate for their patients. However, the effectiveness of the GP as an advocate is reduced particularly when GPs struggle to verbalise concerns about patient symptomology in a way that resonates with the radiologist ethic of the detection of abnormal pathology. Waiting patients in Ulrich’s (1983) framework are the affected but not involved as they have little say in how the ultrasound service is managed.

Waiting patients do have the option of exiting the public system and being scanned privately. While the cost of a private ultrasound is in the order of \$100 to \$200 (depending on type of scan), cost is nevertheless a barrier for patients without private health insurance or adequate disposable incomes. They are treated as means to radiologist-centred ends.

The worldview underlying the systems of access to ultrasound is biomedical, which according to Little, Jordens, Paul et al. (1998) characterises:

... the body and illness only in terms of organs, cells and systems ... [and] tends to arrive at an understanding of disease processes, without necessarily achieving an understanding of illness as experienced of an embodied, suffering subject. (p. 1486)

The worldview of GPs is similar in many respects to the radiologists as they share a common educational grounding. However, the GP worldview is broader as it encompasses psychological and social as well as physical dimensions. The worldview underlying the ultrasound service is based on some of the involved. It discounts the worldview of many of the affected.

It is not the intention to paint the radiologists as villains. However, given the entrenched nature of radiologist “expertise” and the reluctance of the ultrasound service to engage in dialogue with waiting patients and GPs, the purpose thus far has been to illustrate that the way in which the ultrasound waiting list is managed subordinates the considerations of waiting patients, and the needs of doctors, who refer such patients, to the interests and values of the radiologists. It should be noted that the radiologists at the case study site clearly attempt to do good for those patients with abnormal pathology. The question remains open: how ought an ultrasound service that elevates/privileges the considerations of waiting patients and GPs faced with diagnostic uncertainty be structured? This is a question to which that application of CSH’s “ought” mode offers answers.

Critical Systems Heuristics: “ought” mode

S’s value basis according to waiting patients and GPs: Who ought to be client (beneficiary) of the system S to be designed or improved? What ought to be the purpose of S, i.e. what goal states ought S be able to achieve so as to serve the client? What ought to be S’s measure of success (or improvement)?

Patients and GPs ought to be the client of the ultrasound service equal in value to hospital clinicians and their patients. This assertion is justified in reference to Ulrich’s (1983)

insistence that the needs of the affected but not involved must be explicitly catered for before any proposal, design or system can be declared rational. At the case study no dialogue has occurred between the involved and affected but not involved. Even though it is recognised that the interests and values of GPs are at times likely to clash, such a pairing is necessary because illness is a time characterised by vulnerability. Patients need help in negotiating the health system, which can be unfamiliar and complex.

The purpose of the ultrasound service (and its systems of access) should be to help GPs and waiting times deal with diagnostic uncertainty at the time that an ultrasound scan is deemed warranted. A measure of success or improvement ought to be a reduced waiting time for GP requests traditionally afforded low priority. Such a measure would recognise the legitimacy of scans requested for exclusion. The accuracy of scan results and the associated probability of missing abnormal pathology would still remain an important measure. Additional patient-centred measures such as reducing patient uncertainty and anxiety may also be considered (but developing valid metrics would be difficult).

S's basis of power according to waiting patients and GPs: Who ought to be the decision taker, i.e. have the power to change S's measure of improvement? What components (resources and constraints) of S ought to be controlled by the decision taker? What resources and conditions ought to be part of S's environment, i.e. not be controlled by S's decision taker?

The absence of managerial input into how the systems of process and structure were managed and measured was a notable aspect of the existing system. Given the worldview and the clinical rather than managerial "expertise" of the radiologist and the marginal position of the GP and patient in respect to the systems of process and structure, the decision taker ought to be the departmental managers. As decision takers, the departmental managers would need to be able to broker between the various interests of parties in the client-producer relationship that underlies an ultrasound diagnosis.

The departmental managers would need to control the following:

- Priority afforded to GP requests and scheduling heuristics;
- Funding allocated to the ultrasound service to match supply with demand;
- Input into how radiologist time is spread amongst the various imaging modalities that compete for radiologist time (and the possibility of a dedicated radiologist stationed in ultrasound); and
- A mechanism to address the possibility that some GPs may refer troublesome patients for a “placebo” scan without the aim of exclusion or confirmation.

Planning would need to embody recognition of first, GP “expertise” being complementary to hospital-based medicine and second, of currently unrecognised emotion work (and additional financial costs incurred while waiting) by waiting patients, to overcome barriers to meaningful participation in discussing the purpose of the GP and patient centred ultrasound service.

Given the ethic of right of referral, the departmental managers should not have control over the professional “expertise.” Nor should they be able to make ultrasound a closed examination to GPs. It is for this reason that economic instruments such as volume/cost contracts that encourage efficiency and productivity will also form a major component of the design environment.

S’s basis of knowledge according to waiting patients and GPs: Who ought to be involved as designer of S? What kind of expertise ought to flow into the design of S? Who ought to be the guarantor of S?

The designer role should be a shared role between stakeholders mediated by an external party outside the medical hierarchy who is able to ensure that the needs of the affected but not involved are explicitly catered for. Departmental managers could potentially take on this role. However, it is hoped that this analysis might in a small way contribute the realisation of a GP and patient centred ultrasound service, supporting attempts to question the implications of radiologist boundary judgements.

At present the systems of process and structure are built on significant but currently discounted “expertise.” This “expertise” that ought to flow into the design includes:

- GP diagnostic “expertise” at the interface between the patient and the ultrasound service;
- The imaging and interpretative “expertise” of sonographers; and
- The diagnostic “expertise” of radiologists as the interface between the ultrasound service and other outpatient clinicians.

GPs, sonographers as well as the radiologists ought to be the guarantors that ensure that the ultrasound service will be successfully implemented and be judged effective according to its measure of reduced waiting times for GP requests. The guarantees of the system’s success should be based on the consensus amongst “experts” negotiated or brokered by the decision makers; and the experience and competence of the involved.

In particular, the GP whose worldview encompasses psychological and social as well as physical dimensions (rather than the false body/mind split of the biomedical view) helps to recognise that human issues such as anxiety can be overcome by GPs reassuring patients by excluding potentially serious but unlikely conditions. Furthermore, sonographer competence in imaging and their ability to recognise normal versus potential abnormal pathology ought to be reframed as exclusion “experts.” Radiologists ought to be instrumental in developing protocols that guarantee that abnormal pathology is detected at a level of specificity and sensitivity that serves the needs of waiting patients and their GPs.

The validity of empirical studies such as Bates, Conlon and Irving (1994) also help guarantee the design as they demonstrate that experienced sonographers can detect and report abnormal pathology at comparable levels of specificity and sensitivity to radiologists. Monitoring of waiting times and error rates become meaningful measures of success when the purpose of the system is specifically to help GPs and patients deal with diagnostic uncertainty at the time that an ultrasound scan is deemed warranted.

These guarantors, even if false, are likely to be more meaningful to patients and GPs. They deliver a more balanced view of risk taking and risk shifting that the present design does not allow as the risk assumed by patients is neither recognised or valued. Recognition of legitimate “expertise” of GPs and sonographers will lead to the existing service becoming focused and well adjusted. While the guarantors seem to imply a hierarchy between health

professionals (being knowledgeable) and patients (being less knowledgeable), patients will still function as lay diagnosticians if a misdiagnosis is made and their condition deteriorates.

S's basis for legitimisation according to waiting patients and GPs: Who ought to belong to the witnesses representing the concerns of the citizens that will or might be affected by the design of S? To what degree and in what way ought the affected be given the chance of emancipation from the premises and promises of the involved?

As noted earlier, it is the job of the GP to advocate for their patients. Their effectiveness as an advocate ought to be enhanced by a design that privileges dealing with diagnostic uncertainty over the confirmation of abnormal pathology in patients whose clinical picture is clearer. Sonographers by reframing themselves as exclusion “experts” could potentially act as advocates for patients and GPs. Involvement from health service researchers and policy makers in evaluating the service based on effectiveness, efficiency and ethics is also probably warranted. This would include health economists looking at issues such as cost-effectiveness but with an awareness of underlying boundary judgements, and greater involvement from patient advocacy groups.

GP patients ought to be informed of all the options open to them for obtaining a scan and the conditions and costs associated with each option. They would then be able to make an informed choice. For example, being initially scanned by the consultant radiologist would come with the proviso that such radiologist exclusion scans are a low priority and the patient will need to wait. These waiting patients ought to be supplied with information concerning the waiting list including likely waiting times. The design proposed in the next section provides a further choice to patients and de-emphasises the premises of the radiologist.

The system ought to be designed upon the worldview of GPs and others who focus on the health and well-being of the whole patient. Waiting impacts on the psychological, social and spiritual as well as physical dimensions of health. Patients are whole people who ought

not to be reduced to containers of abnormal pathology. In this way ultrasound scans for reassurance are legitimate.

Towards a GP and patient centred ultrasound service

The preceding section helps to set alternative boundaries to the ultrasound service by de-emphasising the radiologist values and ethic. It privileges the worldview of the patients and GPs. It also points to a redefinition of the role of the sonographer. Figure 10.1 presents a summary of “is” (in bold) and “ought” (in italics) by overlaying the each analysis according to diagnostic risk

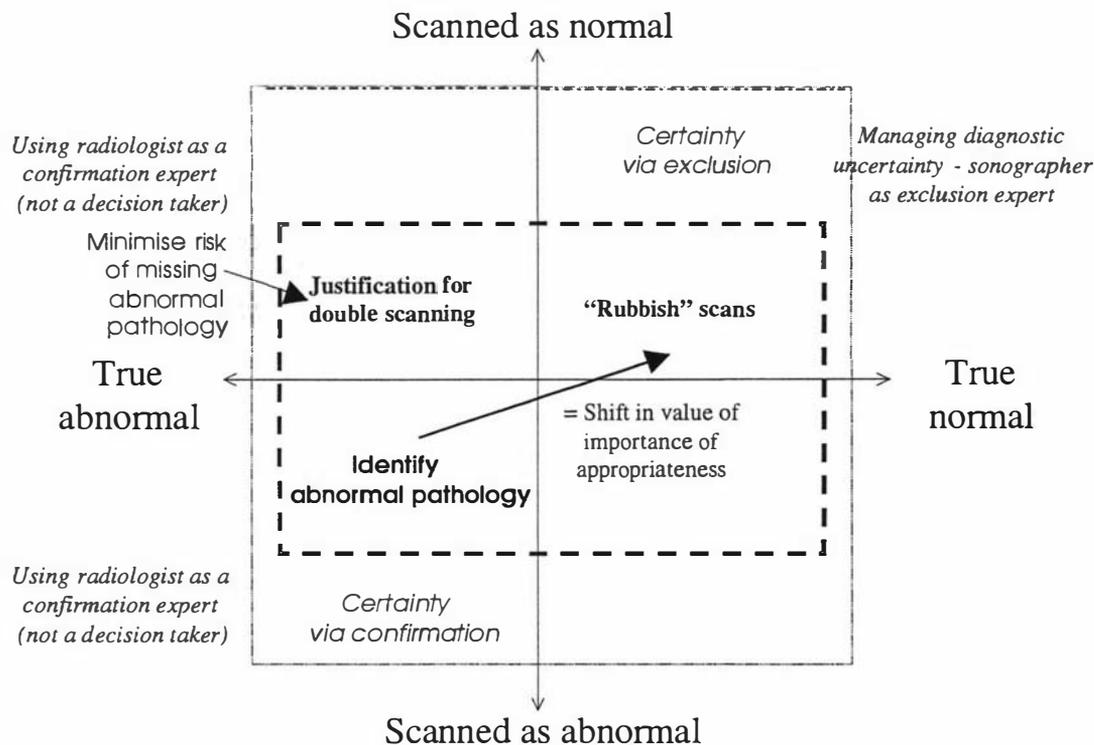


Figure 10.1: Comparison of “is” and “ought” analyses

The upper right quadrant is concerned with discourse that looks at a normal outcome where no abnormal pathology is detected by the sonographer or radiologist. Given the present boundary judgements such outcomes are regarded as “rubbish” that reduce access for the

population of GP patients who are likely to have abnormal pathology. When an alternative set of boundary judgements is considered that situates the GP and patient as the ultrasound service's clients, such outcomes are seen as a valuable means of managing diagnostic uncertainty.

The "ought" mode shifts the emphasis of the waiting list away from minimising the probability of missing abnormal pathology indicated by the bolded box that surrounds the upper and lower left quadrants. By relaxing the justification for double scanning and separating the radiologist and sonographer both forms of "expertise" can be utilised to provide a patient (and GP) centred service⁶⁹.

What might an ideal ultrasound service that privileges the worldview of patients and their advocates (GPs) be like? The mission of the GP and patient centred ultrasound service is to help GPs and patients manage diagnostic uncertainty at the time of referral (rather than after an indeterminate waiting time). This division would effectively remove the radiologist as the ultrasound service's decision taker and make use of their "expertise" in a systemically valid context that serves the interests and values of patients. The issue is balanced. By adopting a strategy that focused on questioning the rationality of the process of double scanning justified on clinical and medico-legal grounds, and reframing the waiting list problem in terms of occupational control, alternative ways of organising access to ultrasound are possible. Experienced sonographers could act as community exclusion "experts" and refer suspected abnormalities (or border-line cases) to a radiologist-centred confirmation service that would provide a definitive diagnosis. It is important to note that such potential interventions are hardly new. Sonographer-centred ultrasound services are becoming increasingly common in the United Kingdom (Chapman, 1997).

The following potential designs for a GP and patient ultrasound service deal with the issue of double scanning through firstly, setting up a sonographer-based exclusion service based

⁶⁹ Indeed, it is conceivable that double scanning could be relaxed in many different ways. For example, if the principal reason for the request was the exclusion of abnormal pathology then the sonographer could scan the patient without the radiologist checking on the sonographer's findings. Similarly, if the purpose of the request is to confirm abnormal pathology then double scanning is appropriate.

either in the community or at the hospital and secondly, utilising the excess capacity of the private radiology facility.

Sonographer exclusion service

What form would a community or hospital-based exclusion services take? GPs could refer patients to the exclusion service where the patient would be examined and reported by the sonographer. If necessary the referral forms could be pre-screened by a radiologist according to set criteria to exclude any complicated cases that need to be seen by a radiologist.

The outcome of the scan would indicate to the GP that serious but unlikely conditions have been excluded and that the patient is normal. Other strategies for diagnosis or management may be suggested. Following Aberhour (1975) two other categories could be employed. First, that abnormal pathology has been detected and second, that abnormal pathology cannot be excluded with certainty but the patient is probably normal. Aberhour's (1975) system is similar to what occurs in some radiology departments where radiographers place a red dot suspect on radiographs to alert emergency doctors about the appearance of abnormalities (Chapman, 1997).

If the sonographer's report indicates that abnormal pathology was detected or that abnormal pathology could not be excluded, it would be appropriate for a referral to be made to the ultrasound service where the radiologist could single-handedly scan the patient to verify or disconfirm the sonographer's initial report. While the sonographer is the exclusion "expert" for community-based clients, the radiologist is the hospital-based "expert" and this "expertise" is increased as the radiologist acts as a true consultant rather than as super-technicians. The radiologist would then report to the GP.

The risk of managing false negatives – abnormal pathology being mistakenly scanned as normal – could be minimised in a number of ways including radiologists developing scanning protocols and by formalising the role that the patient assumes as a lay

diagnostician, in much the same way that the “urgent” scans are presently arranged. Patients with excluded abnormal pathology should be given a clear indication that they should see their GP or telephone (or visit) a practice nurse if symptomology continues or worsens.

The proposed sonographer-centred exclusion service (see Figure 10.2) would operate in a similar manner to the sonographer-radiologist model currently used in private practice, although in the proposed model the radiologist and sonographer would be separate in time and space (unless the sonographer-based service operated concurrently in the ultrasound service) unlike the private radiology facility where the radiologist is on site and can be called to assist when scanning is difficult.

The success of the proposed exclusion service is dependent on getting the stakeholders to reflect on the boundary judgements that currently inform how the ultrasound waiting list is managed. The sonographer exclusion service tackles head on the issue of double scanning that embodies accepted images of “illness” and “expertise.” How acceptable this potential intervention is likely to be is unclear, although it seems diametrically opposed to the radiologist agenda particularly given how dogmatically double scanning is defended at the hospital ultrasound service.

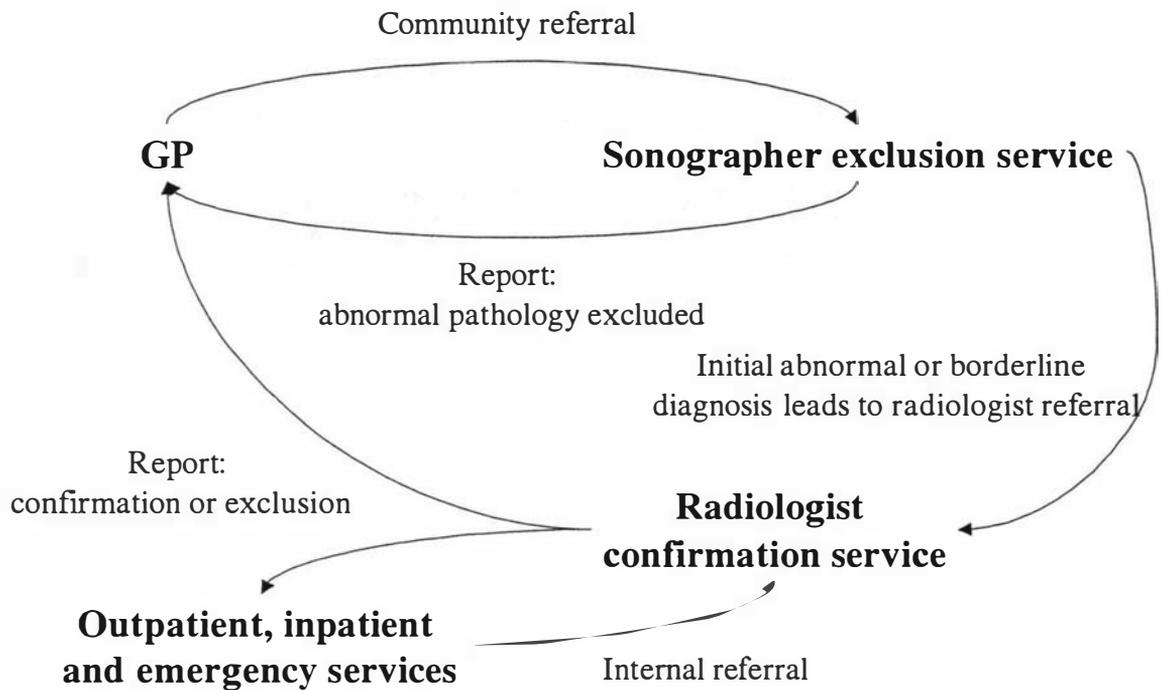


Figure 10.2: Referral and reporting pathways of a sonographer exclusion service

A design to exploit the existing structure and motivations of the radiologist-centred ultrasound service

In contrast to the previous design, this design is more pragmatic and attempts to exploit the existing systems of knowledge-power to help improve access to ultrasound services for GPs and their patients.

The discourse of inappropriateness and yet perceptions of medico-legal risk limit accessibility for public exclusion scans by limiting the throughput rate and affording priority to “urgent” referrals. In contrast, the private radiology facility operated by radiologists with dual private-public appointments does not employ these discourses as evidenced by the ability of GPs to organise timely non-urgent scans and sonographer criticism of radiologists who in public insist on double scanning but in private practice report off hard copies of the scan without rescanning the patient.

Given that organising non-urgent same day scans (or within a few days) at the private radiology facility poses no difficulties for GPs, it appears that the private radiology facility has excess capacity due to the acceptability of hard copy reporting (and cost barriers) that could be utilised to reduce the public waiting list. The design attempts to align the price of a private scan with its true cost (by treating sonographer and radiologist time as fixed rather than variable cost) and in doing so make better use of the private radiology facility's capacity.

A barrier to utilising this excess capacity is the price of receiving a private scan, which GPs felt were often just out of the reach of some patients. If a theory of constraints perspective on costing is taken, it is likely that sonographer time is treated as a variable cost by the private radiology management even though in reality it is a fixed cost (see Goldratt, 1992). Unused capacity represents a loss of potential profit; the constraint limiting profitability lies in the market and not in the private radiology facility. The private radiology facility can increase profit by reducing the price of private scans provided the market was segmented. In other words, this depends on the patients currently scanned privately not demanding a lower price. Waiting public patients are such a niche market particularly "rubbish" scans, as such scans are not discounted in private.

The following design can be used to reduce demand by giving GPs the option to refer patients requiring exclusion scans based on the ability to pay, such as whether the patient qualifies for government assistance. The ultrasound service could alternatively negotiate a fixed price contract where the HFA pays out a fixed amount to provide an ultrasound service and use part of this lump sum to contract out waiting exclusion scans at the marginal price, which is less than what a scan costs in the ultrasound service to the private radiology facility.

This design, however, is likely to redefine the threshold that GPs use to order scans and homeostatic pressures are likely to result in more referrals for exclusion scans. A possible result is that the private radiology facility will become swamped with extra work and unable to meet new levels of demand. A waiting list may then develop for private exclusion

scans, as the private radiology facility is unlikely to destroy its competitive advantage over the public system for GP referred patients who will pay the full (distorted) price for an ultrasound scan.

In this case the private radiology facility may wish to invest in extra sonographer time and ultrasound machine capacity to keep pace with the increased demand. Increases in fixed costs need to be balanced against increased revenue. More radiologist time may also be required although for private radiologists with public appointments, time commitments are likely to be elastic and dependent on motivations for undertaking private work (which were not examined). In the case of private radiologists without public appointments, additional time may have to come from efficiency gains including considering the possibility of allowing sonographers to report a limited number of exclusion scans.

Public sonographer time could also be lent to the private radiology facility and the public radiologists could scan and report public patients single-handedly. This development mimics some of the characteristics of the sonographer exclusive service in particular the separation of sonographer and radiologist “expertise,” which attempted to redefine “expertise” within the systems of access to ultrasound examinations.

Conclusions

This chapter has attempted to deconstruct the boundary judgements underlying the ultrasound service and in particular the ultrasound waiting list. The radiologist viewpoint dominates the system of access through the importance placed on confirming abnormal pathology and various cost and risk shifting strategies. In this way, the radiologist is positioned as the centred of the ultrasound service and ironically the judge of what constitutes the best use of scarce capacity.

The “is” mode of CSH in particular highlights the role that non-radiologist stakeholders such as sonographers and waiting patients play in allowing radiologists to assume roles as “expert” diagnosticians. It is this realisation that the radiologist-centred processes are

dependent on this non-radiologist “expertise” that suggests new solutions to the ultrasound waiting problem. Two potential systemic interventions were proposed: a community-based sonographer exclusion service; and second, the exploitation of excess capacity contained in the private radiology facility.

The recommendations that flow from the “ought” mode do not claim to represent but rather redefine the focus of the ultrasound service, arguably bringing more balance to notions of “expertise” and risk by employing different but equally valid boundary judgements. CSH has been criticised for raising more questions than it provides answers (Flood and Jackson, 1991a). However, unless such questions are raised satisfactory answers and solutions to the waiting list problem cannot be found. In particular, recognition that scarce capacity is socially constructed around contestable assumptions offered two possible reconfigurations of the ultrasound service such as the community sonographer exclusion service, which could operate in parallel with a radiologist confirmation service.

Chapter 11

Conclusion

The present research has grappled with a set of complex and interacting issues that characterise the management of an ultrasound waiting list. This chapter presents the conclusions drawn from the research.

The waiting list problem

Hospital waiting lists are a feature of publicly funded health care services. While much has been written about surgical waiting lists, little is known about diagnostic waiting lists, which is surprising given the centrality of rational treatment. Germane to accounts of the waiting list problem is the metaphor of the rational queue. This metaphor plays an important role in the problem setting process. According to many researchers and policy makers the essence of the waiting list problem is irrationality. It follows, therefore, that the answer to the waiting list problem is increased rationality within the image of the rational queue dealing with such issues as matching funding levels with “appropriate” demand and better systems of prioritisation.

Increasing funding rarely has been successful at reducing or eliminating waiting lists, paradoxically stimulating further demand for the service and stabilising the waiting list at previous levels. Systems of prioritisation and measurement are also ineffective and are frustrated by the actions of stakeholders such as patients and referrers who subvert the systems of access.

The present study

The present research is a case study of an ultrasound waiting list. In order to understand the waiting list systemically, a variety of key stakeholder viewpoints were sought, sweeping in aspects of the problem context not normally considered by researchers and policy makers. A close reading of the problem context is important as it enables researchers to think creatively about the ultrasound waiting list issue and provides for a greater number of choices in addressing its problematic aspects.

The case study of an ultrasound waiting list is significant. First, the ultrasound waiting list is rapidly growing and is seen by departmental managers and ultrasound staff as an intractable problem. Second, ultrasound waiting lists are common throughout New Zealand. Third, ultrasound is popular primary imaging modality and demand is likely to increase further given the expanding number of diagnostic indications and assessment/reassessment work required by the New Zealand booking system. Rationing dilemmas are expected to intensify.

Findings

The bulk of the findings relate to the issues highlighted by Flood's (1999a) systemic windows based on meaning and knowledge-power with process and structure forming the context within which stakeholder perspectives are interpreted.

The bounds to process, which were described in Chapter 5 mean that GP requests, unless considered "urgent" by radiologists, are added to the waiting list. At the time of writing (some two years after data collection), non-urgent patients could expect to wait some 18 months before they were scanned. This waiting time created a number of problems for stakeholders. For GPs the ultrasound waiting list interfered with their ability to appropriately treat, reassure or refer patients to outpatient clinicians. Without diagnoses GPs were left with the legal responsibility for patient conditions yet a times were unclear about the significance of patient symptomology. Patients with equivocal symptomology

such as vague abdominal pain posed a particular problem. Such symptoms indicate either idiosyncratic pain or the presence of a serious underlying condition. Having the capacity to rule out such condition was considered important and a number of GPs made referrals for this reason.

GPs managed these dilemmas using a variety of strategies. To secure timely diagnoses, GPs acted outside the existing systems of structure (determined by the referral process) and attempted to subvert/manipulate the systems of process that determined the “urgency” of GP requests. Using one such strategy, some GPs made what the ultrasound service saw as unnecessary hospital outpatient appointments to bypass the FCFS heuristic. This created a number of disturbances, which among other things clogged up outpatient facilities (lengthening outpatient waiting lists) and complicated efforts to allocate timely scans to “urgent” patients, and is an example of the perverse effects of an unsatisfactory community referral system. A second important strategy employed was to send patients directly to the ultrasound service hoping that an appointment may be available on the off chance that another patient had cancelled, or to fax “urgent” requests, neither of which are legitimate part of the system of process.

A recurring theme that characterised patient accounts centred on the difficulties created by uncertainty over what the ultrasound scan might reveal and uncertainty of the waiting time. Many patients were not necessarily happy at the prospect of waiting but tended to accept waiting. The ongoing experience of diagnostic uncertainty created problems. The absence of information from the ultrasound service, and the vague and inaccurate GP estimates of waiting times, led patients to express feelings of anxiety, annoyance, anger and resignation. In addition to magnifying anxiety associated with diagnostic uncertainty this timing uncertainty inferred with life events such as patient holiday plans, academic examinations and work commitments.

Waiting patients employed a number of strategies to internalise anxiety and emotions such as frustration and anger in order to make waiting more acceptable. Common strategies included trying to forget about being on the waiting list, maintaining a positive attitude,

redirecting energies elsewhere and drawing strength from religious beliefs. The effectiveness of strategies such as these depended on the nature of the patient symptoms and the meaning that patients and their families as well as friends ascribed to the symptomology. In this respect, some patients appeared untroubled by waiting while for others waiting became increasingly disruptive and constraining, impacting on the ability to undertake day-to-day activities.

Perceptions and experiences of the ultrasound waiting list held by radiologist, sonographers and departmental managers demonstrate a different picture from GP and patient accounts. GPs and waiting patients were broadly interested in managing diagnostic uncertainty and saw the exclusion of abnormal pathology a positive outcome. In contrast, the ultrasound service's account of the management of the waiting list centred on the difficulties in allocating scarce capacity to patients who were likely to have abnormal pathology in order to minimise the impact of waiting on ill patients.

It is notable that the radiologists do not medically prioritise incoming requests (as "urgent" or non-urgent) but instead rely on GPs to contact them if an immediate scan is warranted. A key reason for this apparent idiosyncrasy is that the decision to delay a request can only be justified in retrospect after the scan has been conducted. While radiologists and sonographers criticised GPs for providing sketchy and incomplete clinical summaries, many requests (such as in the case of non-specific abdominal pain) were equivocal highlighting the possibility that patients with abnormal pathology could be incorrectly prioritised as non-urgent. This placed the radiologists in a difficult situation particularly given concerns over what many radiologist saw as a litigious relationship existing between medical practitioners and patients as well as heightened media attention being focused on health issues. Although sonographers were broadly sympathetic to the position of the radiologists, they along with the departmental managers saw prioritisation as an important strategy for managing the growing waiting list. Indeed, sonographers under the guise of housekeeping informally prioritised some incoming requests.

Sonographers in particular pointed out that the current access arrangements were not foolproof and serious abnormal pathology would on occasion be detected in the assumed non-urgent patient who had waited a lengthy time. In most cases GP requests when scanned were found to be normal. That is, no abnormal pathology could be established with an ultrasound scan. Frustrated by the inability to scan all requests in a timely manner, the ultrasound service referred to such requests as “rubbish,” the label used in such a way as to reflect on the competence of the GP who made the referral. In this respect, in addition to blaming funding constraints, inappropriate GPs requests were held responsible for reducing access for genuinely “urgent” patients. Sonographers and departmental managers questioned the utility of double scanning by drawing attention to its detrimental impact on the ultrasound service’s productive capacity. Radiologists, however, pointed to the medico-legal implications of missing abnormal pathology (particularly given a lengthy wait) and their right as medical practitioners to govern how they should practice radiology.

Through the critical lens of knowledge-power, the waiting list played an important role in mediating between the diagnostic practices of GPs and radiologists, practices that result in conflict over which patients ought to be scanned. As the waiting list builds a delay between the referral and examination, some patient conditions will deteriorate and need to be scanned urgently. In this sense the waiting list allows GP exclusion requests to be transformed into likely abnormal pathology (if the request is appropriate) or idiosyncratic pain (if the request is inappropriate). This simple dichotomy based on appropriateness/inappropriateness buffers the radiologists from the clinical dilemmas that GPs face at the time of referral, allowing them to concentrate on undertaking ultrasound examinations – a skill that radiologists claim “expertise” in.

The symbol of this skill was the process of double scanning, which legitimised radiologist control over ultrasound imaging despite the growing waiting list and pressure from sonographers and outpatient clinicians to relax the practice of double scanning. The guarantee that double scanning successfully restricts the diffusion of ultrasound technology rests on its ability to adapt and build on existing professional identities, which differentiate the radiologist from both the sonographer and outpatient clinicians. In particular, the

discourse surrounding double scanning framed the sonographer as a technician and the outpatient clinician as lacking in technical scanning skills.

While double scanning was instrumental in protecting radiologist turf and preserving private radiologist income, it was the source of domination and alienation underlying waiting patient, GP and sonographer accounts of the waiting list. However, the backpressure created by radiologist insistence on double scanning makes the viability of the radiologist-centred ultrasound service problematic. This is particularly the case given the growing number of ultrasound indications; increasing pressure for GPs and radiologists to practice defensive medicine; public health service rationing objectives; the push by sonographers and outpatient clinicians to move to hard copy reporting; and the extra demand for ultrasound examinations created by the introduction of the booking system in New Zealand. It is not surprising that radiologists feel as trapped and powerless as waiting patients and their GPs although radiologists tended to blame external factors such as resourcing and demand as causes, not internal factors.

Radiologists along with waiting patients and GPs may require emancipation from radiologist dominated systems of process and structure. To this end, two possible reconfigurations of the ultrasound service were suggested. The first conceptualises radiologist and sonographer “expertise” as complementary in the context of a separate sonographer exclusion and radiologist confirmation services while the second reconfiguration examined a possible synergy between the private and public ultrasound services.

Contribution of the present research

The present research has made a number of contributions. An in-depth understanding of the dynamics associated with a diagnostic waiting list addresses an omission in the waiting list literature that tends to focus on surgical inpatient waiting lists. Perhaps the most significant contribution is that the present research has advanced an understanding of ultrasound waiting lists that goes beyond mechanistic conceptualisations such as the rational queue

metaphor that takes the waiting list problem for granted. In particular, the present research has highlighted how the management of the ultrasound was based on a series of contestable assumptions that served to subordinate the needs of waiting patients and their GPs to the interests and values of radiologists. A primary cause of the waiting list appeared to flow from radiologist attempts at protecting specialist radiological “expertise” from encroachment by sonographers and outpatient clinicians. In this respect a key contribution was the insight that the capacity of the ultrasound service was socially constructed around the contested radiologist images of “expertise” and “illness” rather than funding constraints as commonly believed. What is notable about this construction of scarcity is that it is dependent on the “expertise” of waiting patients who act as lay diagnosticians. Somewhat ironically it is unclear who is waiting for whom: the patient for the radiologist to reach a diagnosis, or the radiologist for the patient to present with a scannable condition?

Unlike many studies of waiting lists, this study has shown that an adequate understanding of an ultrasound waiting list depends on grasping how powerful stakeholders such as radiologists are successful in imposing a particular definition of the waiting list problem over interests and values of less powerful stakeholders such as GPs and waiting patients. Indeed, the present research has raised a number of questions about the appropriateness in how radiologist “expertise” dominates over the GP and waiting patient interest in managing clinical uncertainty, which has not been addressed in the literature, and in addition to having far reaching implications for policy makers with aspirations of strengthening primary care, also highlights a central difficulty in effectively managing problems associated with rationing by delay. This key difficulty is that due to the partial and bounded nature of the social construction of the waiting list problem the translation of research findings is unlikely to be straightforward since at the root of the problem are professional power structures that require political rather than technical solutions.

Thus the present research has highlighted the limitations of approaches that treat the waiting list problem as a technical problem that is amenable to a technical solution such as those recommended by the TOC or the New Zealand booking system. The case study findings help shed light on why boosting funding to clear waiting lists proves ineffective.

Limitations of the present study

The aim of the present study was to better understand hospital waiting lists by adopting a systems approach to investigating an ultrasound waiting list. While the notion of systemicity was adopted as an epistemological ideal, in practice the present research is necessarily partial. This section identifies these limitations and suggests some recommendations to address them.

The present research has presented a rather one-sided view of the ultrasound waiting list drawing its own boundary judgements, in particular, the radiologist viewpoint was problematised by privileging the accounts of other stakeholders such as patients and GPs, which were assumed to be synergistic. This assumption needs to be critically examined by problematising GP and patient accounts. A possible avenue would be to unpack the notion of reassurance scans.

It was analytically convenient to present the case study findings according to membership in a stakeholder group. While coherence within stakeholder accounts enabled a given stakeholder perspective to be elucidated, variation in stakeholder accounts was common. In particular, the present study presupposes and portrays the radiologists as representing unified and coherent decision takers, which is itself a thin simplification (Scott, 1998). Attention could be paid to developing a richer picture of the radiologist as “a complicated structure of partially conflicting values and attitudes” (Churchman, 1991, p. 29).

Another limitation of the present study is that it has presented a largely ahistorical view of the organisation of the ultrasound service using the related notions of boundary judgements and boundary critique. Given the present study’s philosophical commitment to improvement, and the assertion by Carr and Kemmis (1986) that many constraints are historically contingent, there is a need to supplement this boundary critique with an appreciation of the development and emergence of the problem context.

Another important bound on the present research is the fact that in TSI the creativity phase is enhanced through the implementation phase. Implementation is a necessary element, not merely a possible, but later, outcome. In the case of the present study, implementation of the findings surfaced in the creativity phase was not possible. A full TSI cycle was therefore not undertaken, and to borrow a phrase from Carr and Kemmis (1986) the present research might be thought of as an “arrested” TSI application. However, TSI has usefully structured the present research and provided a coherent approach to enacting boundary critique.

Implications for health policy

It is the HFA’s intention to ration access to ultrasound using a booking system. However, the case study findings suggest that the hindsight driven nature of a diagnosis, which characterises the ultrasound service (and frustrates stakeholder attempts at allocating scarce capacity) is likely to make overlaying the booking system and its priority access guidelines difficult. In addition priority access guidelines are likely to be evidence based. Examination of systems of knowledge-power suggests that the results of evidence-based studies examining issues such as double scanning and “appropriateness” should be treated cautiously and not accepted as unproblematic. A profitable approach is to consider what boundary judgements inform such studies and how they are related to interests of dominant stakeholders such as clinicians. Waiting patients with equivocal symptomology may be further marginalised if radiological best practice is further institutionalised.

Given the imbalance of power between stakeholders that is characteristic of health systems, the application of rational approaches to managing existing capacity (exemplified by clinical priority guidelines) has limited applicability in securing improvement that is inclusive of the interests and values of less powerful stakeholders. Following CST’s call for pluralistic practice and research, while these methodologies have a role to play in managing waiting lists, they need to be employed in a critical and reflective manner. Attention to systems of meaning and knowledge-power is important.

The present study has highlighted that the rational queue metaphor provides an inadequate framework for policy makers, as it decontextualises the waiting list from contextual considerations thus obscuring the role of boundary judgements in structuring the waiting list problem and its solutions. Given the increasingly contested nature of health systems and growing levels of uncertainty and complexity, alternative frameworks that adopt a critically normative stance (dealing with power differentials) can be usefully employed to aid in sensemaking. CSH is one such methodology that could be used to better understand the limitations of the New Zealand booking system for example.

Implications for managing the ultrasound waiting list

The present research points to the need to encourage open and meaningful dialogue between GPs, radiologists and sonographers over the efficiency, effectiveness, meaningfulness and fairness of internal systems of process and structure. A number of issues need to be considered. Given the importance of double scanning, internal stakeholders along with GPs need to consider the double scanning trade-off between diagnostic accuracy versus reduced access times. Radiologists and GPs could develop access protocols for patients' with symptomology that is diagnostically equivocal. Radiologists may want to consider using scan reports to coach GPs on how they might manage the next patient with similar symptomology.

The two potential systemic interventions developed in Chapter 10 should be trialed with the aim to reduce the load on the radiologist-centred public service. Other simpler interventions should be implemented including supplying patients and GPs with information about how the ultrasound waiting list is managed and likely waiting times. The expectation that patients and GPs monitor ongoing symptomology should also be explicitly clarified.

Implications for Critical Systems Thinking

Even though the purpose of the present research primarily centred on the application of CST to the waiting list problem, Jackson (2000) points out that a key aspect of CST is that

practice should inform the development of CST as an evolving body of knowledge. This section examines this issue with respect to the difficulties the researcher experienced in setting up an emancipatory intervention. While the difficulties of using emancipatory systems methodologies have been discussed by Payne (1992) and Flood and Romm (1995), this section looks at the significance of Midgley's (1997b) suggestion that coercion can be tackled through the redefinition of the boundaries of an intervention, and what this redefinition means for how an intervention is understood.

In problem situations involving powerful institutions gaining access to research participants can be problematic (Walford, 1994). In these contexts given that it is not in the interests of the powerful to engage in boundary critique, critical systems thinkers and emancipatory systems thinkers do not have the luxury of philosophical purity. Access is likely to be dependent on researchers making improvements to existing systems of process and structure (adopting a functionalist orientation).

In the case of the present research the core issue to manage was the entrenched nature of radiologist "expertise," which was enacted through a variety of risk and cost shifting strategies. Radiologists and departmental managers were averse to addressing this issue and at this point the present research was terminated. It was for this reason that the present research sought to intervene in health management and health policy discourse in the hope of bringing about the uncertain outcome of other influential stakeholders initiating this dialogue with the ultrasound service.

Usually an intervention is understood as purposeful activity with issues being dealt with in a direct or indirect manner (Flood and Romm, 1995; Midgley, 2000). In contrast, the present research has become a resource to be drawn on to build constituencies of support that might be successful in shifting patterns of domination and accountability. Following Midgley (2000) an expanded understanding of an intervention is needed that acknowledges the politics of an intervention and engage in what social constructivists such as Loseke (1999) (who study how issues become policy problems) term as problem work.

Given that many issues in health service management and health policy are structured around political and power structures of powerful stakeholders such as the medical profession, further application of CST to such issues may prove to be a fertile area for research and practice that results in an expanded understanding of what it means to intervene in problem situations that are characterised by complexity, uncertainty and conflict.

Recommendations for future research

There is a need to test and further develop some potential analytical generalisations from the present research. As the process of double scanning is central to constituting radiologist “expertise,” a survey of how widespread this practice is in New Zealand ultrasound services, private radiology practices and other non-radiology specialities is needed. Such a survey would enable the relationship between the practice of double scanning and diffusion of ultrasound technology to be further explored. In cases where double scanning is predominately practised, the question of why radiologists need sonographers requires further investigation given the uncertain contribution sonographers make to the overall diagnostic process. Likewise other findings relating to the lack of radiologist prioritisation and dependence on waiting patients as lay diagnosticians needs to be investigated over other ultrasound services and other waiting lists.

In the process of using CSH two potential systemic interventions were developed and grounded in the interests and values of less powerful stakeholders: GPs, waiting patients and sonographers. While community-based sonographers are a reality in the United Kingdom, in contrast to double scanning, there seems to be a lack of well designed and publicised studies examining the effectiveness and efficiency of such services. There is a need to conduct an evaluation of the systemic sonographer exclusion service using methodologies that employ an instrumental rationality such as cost benefit analyses. Such an evaluation would contribute to better understanding the relative advantages/disadvantages over a radiologist-centred service and would need to embrace measures of cost effectiveness that are clinician as well as patient centred. For example,

possible measurements including the number, and effect on clinical management, of false positives (where abnormal pathology has been mistakenly identified) and false negatives (where abnormal pathology has been missed). Of particular importance is that a sonographer-based exclusion service does not result in new iatrogenic effects such as GPs “inappropriately” excluding conditions and consequently unnecessarily worrying patients undergoing scans.

Understanding the strengths and weaknesses of a sonographer exclusion service serves two purposes. First, a well-constructed evaluation would enable the understanding of the ultrasound waiting list generated from the creativity phase of TSI to be validated in the implementation phase. Second, such a study would help address two significant limitations: a) the strong possibility following Roemer’s (1961) law (a bed built is a bed used) that the referral threshold of GPs will decrease resulting increased referrals; and b) concerns of acceptability from affected stakeholders such as the funding authority and future patients who may view a radiologist-centred service as the gold standard.

While little is known about the dynamics of diagnostic waiting lists and surgical waiting lists, research is needed to examine the relationship between diagnostic waiting lists and other waiting lists (or booking systems) that patients find themselves on after a diagnosis is made. This could be done by tracking the trajectories of patients as they move to and from primary and secondary levels of care. Other research looking at the similarities and differences between diagnostic and surgical waiting lists would also be helpful. It would be interesting to examine the impact of hindsight and to see whether analogues to double scanning (which construct scarcity) existed in other elective services and whether these could be successfully challenged using systems methodologies such as CSH.

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APPENDIX A:

ULTRASOUND: TECHNOLOGY AND APPLICATIONS TO MEDICAL PRACTICE

Ultrasound has a frequency of 20 kHz or higher and cannot be heard by the human ear. Medical ultrasound utilises much higher frequencies that typically range between three to 20 kHz (Pickuth, Grover, Chiara et al., 1995). Ultrasound is produced by a piezoelectric effect where an electrical current is applied to certain crystals (for example, quartz), called transducers, producing mechanical vibrations. Transducers also convert reflected sound back into electrical energy enabling an image to be formed on a monitor, film, videotape or chart paper.

The medical application of ultrasound involves passing high frequency sound waves through a patient's body. As sound waves interact with acoustic barriers formed between tissues of differing densities (such as blood or muscle), the sound waves are reflected, refracted, scattered or absorbed. This reflected sound or echo is turned into an image of a wide range of disease processes reflecting structural and functional concerns - much like sonar is used to locate submarines.

Ultrasound is relatively inexpensive (Wells, 1986), portable and so far has a good safety record unlike other x-ray services that utilise ionising radiation. In 1996, the medical ultrasound industry was worth approximately two billion dollars (half from United States of America) and it was thought that at least 100 million ultrasound examinations were carried out (Werner, 1996). Competition is fierce with eight to 10 key manufacturers (Smith, 1998), which has been intensified with a fall in price. Most ultrasound machines are priced between US \$50,000 to \$200,000.

Ultrasound is a popular imaging modality with medical doctors and it is the imaging modality of choice for imaging the liver, biliary system, pancreas, spleen, kidneys, prostate, scrotum, uterus, ovaries, thyroid and parathyroid. Pickuth et al. (1995) notes that ultrasound may also be usefully used to investigate a variety of clinical problems relating to intestines, adrenals, retroperitoneum, bladder, breast, vessels, musculoskeletal system, skin and neonatal brain. Table A.1 presents the common uses of ultrasound broken down by medical speciality.

Table A.1: Common uses of diagnostic ultrasound (World Health Organisation, 1998, pp. 45 - 46)

Speciality	Applications
Radiology	All paediatric examinations Neck, thyroid, and parathyroid Chest and mediastinum Heart Breast Abdominal organs, peritoneum, and retroperitoneum Female pelvis Scrotal contents Obstetric examinations Soft tissues, bone, muscles, tendons, and joints Visceral arteries and veins Peripheral arteries and veins Intraoperative applications Interventional procedures (biopsy, aspiration, etc.)
Cardiology	Heart Large vessels
Obstetrics	Fetus Uterus Placenta
Gynaecology	Uterus Ovaries Adnexa
Neurology and neurosurgery	Extracranial arteries Intracranial arteries Brain
Paediatrics	Brain Hips Abdomen Pelvis Heart Soft tissues Scrotal contents
Gastroenterology	Gastrointestinal tract Liver Biliary system Pancreas Spleen

Table A.1 cont: Common uses of diagnostic ultrasound (World Health Organisation, 1998, pp. 45 - 46)

Urology	Adrenals Kidneys Ureters Urinary bladder Prostate Seminal vesicles Scrotal contents
Surgery (including general, orthopaedic, vascular, and gastroenterological surgery)	Abdomen (for trauma) Intraoperative examinations (brain, spine, colon, and rectum) Pelvis Interventional procedures (biopsy, aspiration, etc.) Breast Soft tissues Joints and bones Extracranial arteries and veins Large vessels
Angiology	Peripheral arteries and veins Extracranial arteries
Internal medicine	Abdominal organs Retroperitoneal organs Chest and mediastinum Other parts (excluding breast, scrotum) Visceral and peripheral arteries and veins Heart (as a subspecialty) Infectious diseases (for example, schistosomiasis and echinococcosis)

APPENDIX B:

TYPICAL SEMI-STRUCTURED INTERVIEW SCHEDULE

The interview schedule was developed from a review of the waiting literature and attempted to further probe stakeholder perspectives on three main questions. First, what caused the ultrasound waiting list? Second, what represented an acceptable waiting time for an ultrasound scan? And third, what should be done to address the ultrasound waiting list? Stakeholders were shown three graphical images of waiting list metaphors used by researchers and policy makers and asked to comment on whether the metaphor corresponded with their experiences.

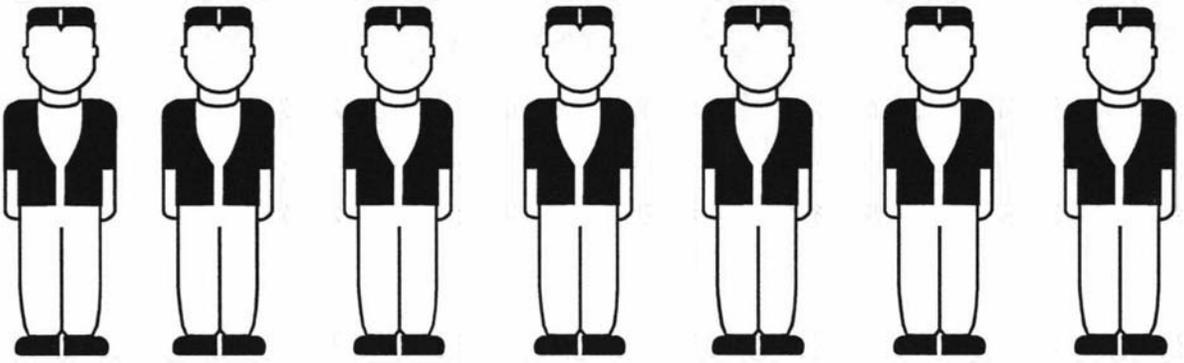
Stakeholder-specific questions were included as appropriate. For example, waiting patients were asked to describe what information their referring doctor had given to them about the ultrasound waiting list and whether they obtained information from other sources. The interview schedule was pilot tested with the advisors (internal to the radiology department and ultrasound service) and researcher's supervisors.

The interview schedule was used as a basis for discussion with the researcher and the interviewee with the researcher utilising probing to obtain additional information. Interview schedule was altered as appropriate when emergent issues arose (for example, the importance of double scanning) or when after analysis of previous transcripts more information was needed to make sense of issues. The interview schedule began with an open-ended question about what issues the ultrasound waiting list posed for respondents.

1. What difficulties or issues does the ultrasound waiting list cause for you?
2. Were there any advantages being on ultrasound waiting list for you?
3. What do you think the ultrasound waiting list is like?
4. Researchers and policy makers tend to compare waiting lists to three images: queue, fishpond and shop. How do these compare with your experience with the ultrasound waiting list? *

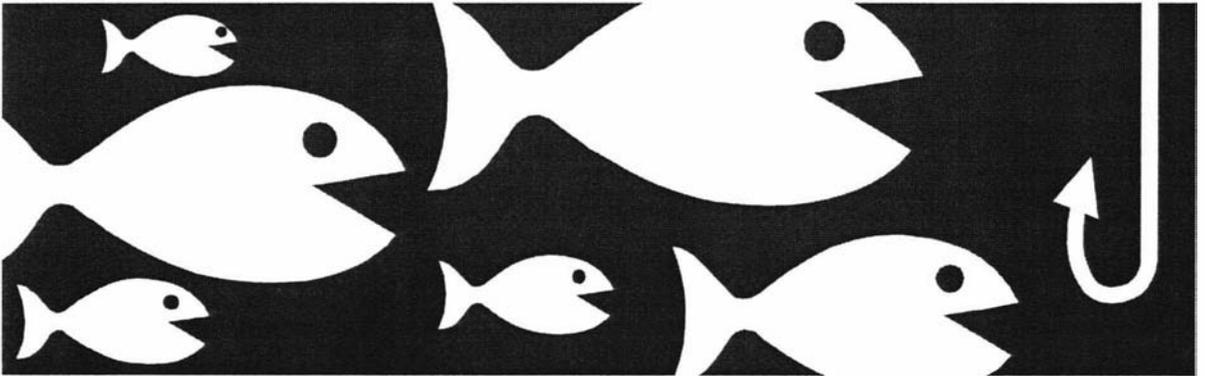
5. What do you think has caused the ultrasound waiting list?
6. What represents an acceptable time to wait for an ultrasound scan? Why?
7. What do you think should be done about the ultrasound waiting list?

*



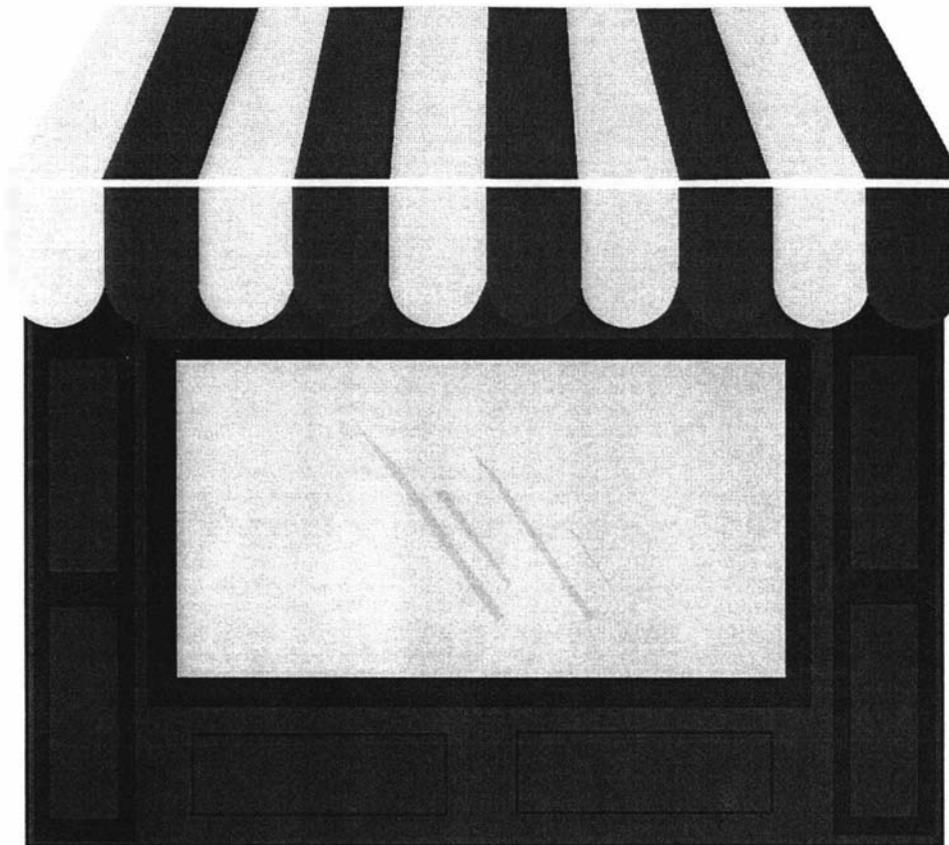
A queue

Figure C.1: The ultrasound waiting list as a queue



A pond

Figure C.2: The ultrasound waiting list as a pond



A shop

Figure C.3: The ultrasound waiting list as a shop

APPENDIX C:

OPEN ACCESS ARRANGEMENTS TO RADIOLOGY SERVICES

Open access to departments of radiology has been extensively discussed in the literature since at least the 1940s and is also recognised as an important contribution to primary care (Royal College of Radiologists, 1996).

In 1946 the Annual Representative Meeting of the British Medical Association recommended that, wherever possible hospital departments of pathology and radiology should give direct-access facilities to general practitioners, and this policy has repeatedly been urged at meetings of the Radiologist group. (Cook, 1966, p. 351).

In New Zealand it was also advocated that GPs who worked in group practices should have access to radiological and pathological services (Wright-St Clair, 1989).

Open access to radiology is thought to have a number of benefits. Durham and McLeod (1999a) note “open access to radiology may improve the quality of the service offered by general practitioners to their patients and also reduce costs for the health service by reducing outpatient referrals” (p. 212). Opponents of open access, who tend to be hospital-based clinicians, have expressed a number of reservations about the utility of open access. A key reservation is the belief that GPs will overload already overworked radiology departments with unnecessary or inappropriate tests and unnecessarily irradiate patients. Oakeshott, Kerry and Williams (1994) cite one study that suggests that approximately 200 UK patients may die from cancer caused by unnecessary radiology investigations.

Health policy makers have expressed interest in open access arrangements particularly since the implementation of GP fund-holding practices. Although policy makers are concerned an open door policy may metaphorically “open the flood gates,” they are careful

to construct budgetary mechanisms to limit use. Similar measures are also used in outpatient funding arrangements.

The radiology open access literature is littered with descriptive studies looking at referral patterns, workload patterns, clinical outcomes and comments from consultant and GPs (Cook, 1966, Vickers, 1966; Hartley and Walters, 1968; Barton, Gallagher, Flower et al., 1987; Colquhoun, Saywell and Dewbury, 1988). Barton et al. (1987) examined the effect of open access on the management of GP patients with a two-year prospective study and found that open access arrangements significantly reduced the number of outpatient referrals that GPs made.

While workload and referral pattern studies generally support open access, they fail to explain why open access arrangements are uncommon between referring GPs and consultant radiologists. For example, Rimington, Adam and Chambers (1996a) surveyed 100 hospitals and found that only 30 offered GPs open access to echocardiography. Of those 30 hospitals, 70 percent had opened the service in the last year. For the Royal College of Radiologists (1996), resourcing issues limit the applicability of open access services:

The College accepts that these [open access arrangements] can only be implemented successfully when local circumstances permit provision of adequate resources to service them. Nonetheless the College would be failing in its duty were it to advocate less than the best standard of practice for the benefit of patients. (p. 2)

A number of studies have tested the hypothesis that examinations requested by GPs are less likely to reveal abnormalities in comparison to their outpatient colleagues. For example, Cook's (1966) evaluation of Middlesex Hospital's "open door" policy found that GP ordered radiographs detected a comparable number of abnormalities to outpatient and emergency department referrals. A number of other studies have look at the issue of appropriate GP referrals for ultrasound and these were reviewed in Chapter 8.