Understanding, measuring and improving clinical
decision-making in urological cancer
multidisciplinary team meetings

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ABSTRACT

Cancer care in many countries is delivered by healthcare professionals working together as multidisciplinary teams (MDTs). In the UK the delivery of care by MDTs is mandatory. The aims of the research reported here were to investigate the factors that affect the quality of clinical decision-making in MDT meetings, to develop and evaluate tools to measure this process, and to use these tools to evaluate interventions designed to improve the quality of such decisions.

The introduction presents an overview of the evidence for clinical decision-making in MDT meetings, before Chapter 2 provides a critical appraisal of existing evidence, focusing on specific factors that affect decision-making by MDTs.

My first empirical Chapters have explored the attitudes and experiences of MDT members and patients. Chapters 3 and 4 present analyses of national survey data that explore the views of MDT members from different professional groups across a range of tumour types. Chapters 5 and 6 present data from in-depth exploration of the views of urology MDT members and cancer patients respectively.

Chapters 8 and 9 present data from studies that develop and cross-validate an observational tool for the assessment of decision-making in MDT meetings (MDT-MODE). I have used this
tool in Chapter 10 to assess the relationship between organisational factors, information use, teamworking and decision-making in urology MDT meetings.

Having built up a picture of the factors that are important for good decision-making, Chapter 11 reports a study that uses MDT-\textit{MODE} to evaluate a multistage intervention to improve the quality of decision-making in urological MDT meetings.

Finally, my general discussion reflects on the findings and the wider evidence base, explores the limitations and presents implications of my work for clinical practice, patient care, future research and policy.

**DECLARATION OF ORIGINALITY**

The work presented in this thesis is my own and all else has been appropriately referenced.
LIST OF PEER REVIEWED PUBLICATIONS AND PRESENTATIONS

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International presentations


National Presentations


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1 INTRODUCTION

1.1 Quality in cancer multidisciplinary teams (MDTs)

Multidisciplinary teams (MDTs) provide a means of improving communication, coordination and decision making between healthcare professionals when weighing up treatment options with patients. However, the performance of MDTs is variable - the average overall compliance with established criteria in the UK (‘Peer Review’ measures – these will be explained in detail later) across 1314 teams in 2008 was 73%, ranging from 7% to 100%.

Furthermore, the task of improving the quality and performance of the MDT meeting, which is the focus of clinical decision-making, has not previously been approached in a systematic manner.

My programme of research will build on existing research in team performance in healthcare and apply qualitative and quantitative methodologies to scientifically assess the quality of, and devise methods of improving the quality of team decision-making in Urology MDT meetings.

In this introductory Chapter I will review the current organisation of cancer services into MDTs, review literature on improving the quality of healthcare, and review the literature on clinical decision-making by MDTs.
1.2 Multidisciplinary teams in cancer care

1.2.1 What is a MDT?

Multidisciplinary teams (MDTs) are increasingly becoming the model of care for patients with cancer across the world. In the UK a MDT is made up of surgeons, physicians, clinical and medical oncologists, radiologists, pathologists, specialist nurses, palliative care specialists and may also include researchers, dieticians, radiographers, social workers and other allied healthcare professionals. A MDT has been defined as a “group of people of different healthcare disciplines, which meets together at a given time (whether physically in one place, or by video or teleconferencing) to discuss a given patient and who are each able to contribute independently to the diagnostic and treatment decisions about the patient”.(3)

1.2.2 Cancer care before MDT working

The arrangement of cancer services into MDTs and specialist centres was introduced following evidence of variation in the quality of cancer services across the UK.(4) In particular there was evidence of non-uniform access to specialist care, frequent reporting of inadequacies in cancer services, a disjointed system of referral to and between specialists, as well as variation in the frequency of individual treatments, the caseload for particular doctors, and crucially variation in patient survival. Up until the mid 1990’s patients were referred to individual clinicians, and local services were arranged according to local expertise and the available facilities. Healthcare professionals worked in teams, but there was little standardisation of service organisation or operating procedures, and referrals were made on an ad hoc basis. Moreover, there were no mandatory standards to which services had to adhere, and no process of standardised assessment of services.(3)
1.2.3 Implementation of MDT working

In the 1990’s some evidence started to emerge regarding the benefits of treating patients with a multidisciplinary team approach, rather than treatment by individual clinicians. In addition, studies had found that patients’ surgical outcomes improved when they were treated by surgeons with higher numbers of cases, and in centres that carried out higher volumes of cases. It was this evidence that the Chief Medical Officers for England and Wales drew on in the Calman-Hine report in 1995 to recommend that cancer care should be delivered by MDTs at specialist cancer centres arranged into site-specific cancer networks. Following the publication of this report, which marked a change in the arrangement of cancer services, the UK Department of Health began to produce a series of evidence-based documents aimed to establish national standards for cancer care. The first was for breast cancer; similar documents for lung, colorectal, upper gastrointestinal and gynaecological cancers followed. The guidance in these documents, called Improving Outcomes Guidance, included recommendation that patients were treated in cancer units and cancer centres by MDTs involving surgeons, physicians, oncologists, nurses and other MDT members. The delivery of cancer care by MDTs has increased from 20% in 1996 to over 80% by 2006, which is reflected in the guidance of The National Institute for Health and Clinical Excellence (NICE) which has continued to endorse this arrangement.

1.2.4 The setting of the MDT

In practice, members of the MDT work to investigate, and treat patients with suspected or diagnosed cancer. MDTs are based in cancer units, which are speciality specific departments with the facilities and personnel capable of serving a local population of approximately
300,000 people. This involves the day to day running of hospital departments to provide cancer services to the local population across the whole care pathway, including clinics, diagnostic tests, therapeutic interventions and personal care and information. Once diagnosed, certain cases of high risk cancer, or those requiring specialist interventions can then be referred onto a specialist MDT, which operates from a cancer centre that heads a network of cancer units covering a population of one million. A cancer centre is usually a hospital department that is able to provide specific services, in particular complex surgery and radiotherapy. Patients from surrounding cancer units can be referred to the specialist MDT and treated at the cancer centre as required.

1.2.5 The MDT meeting

A focal aspect of the MDTs is the MDT meeting, which in the UK occurs typically once a week. In the UK all patients with suspected or diagnosed cancer must be referred to and discussed by the MDT in the MDT meeting. Referral is usually made by members of the MDT and patients can be discussed at any point along the treatment pathway, although typically this occurs at diagnosis, following treatment, and sometimes if there is a recurrence or progression of disease. The key task of the team during a MDT meeting is to collate and review information about the patient and their disease, discuss it, and make a decision for further investigation and treatment. Recommendations made by the MDT meeting are then discussed with patients and actioned by members of the team.
1.2.6 Regulation of MDTs

The treatment of patients with cancer by MDTs has been mandatory since 2004, which is just one of the domains against which cancer services are assessed. The Manual for Cancer Services sets out measurable standards relating to the planning, commissioning, organising, and providing of cancer services that is likely to have a significant impact on health outcomes with the aim of identifying gaps in provision and checking the appropriateness and quality of existing services. (3) Compliance with the Manual for Cancer Services is assessed through the National Cancer ‘Peer Review’ Programme. This programme involves the collection of information about individual teams through engagement of front line clinicians in reviews with the aim of being a catalyst for change. However, one criticism of the Manual for Cancer Services and the Peer Review process is that they focus largely on the structures and processes of cancer services, rather than on the MDT meeting, which is the focus of clinical decision-making. Indeed, there is little focus on requirements for clinical information or the process of clinical decision-making itself. One argument for the current assessment process is that it can only include standards that can be measured, and therefore improved. (3) To date, the process of decision-making, the use of clinical information, and team behaviours have not been measured, and therefore cannot be easily assessed or improved.

1.3 Quality and performance in healthcare teams

Outside cancer MDTs, in the past 10 years there has been significant interest and an ever expanding evidence base on the description, assessment and improvement of teamworking and team performance across a range of healthcare specialties. (14;15) Much of the research on team performance in healthcare was originally translated from work in other industries.
that share the need for high reliability, high reliance on human interaction, and the potential
for disastrous consequences when communications fail or team leadership is inadequate, such
as commercial aviation and the military.\(^{(16;17)}\) This work suggests that factors including the
environment, team factors, and an individual’s non-technical skills affect clinical
outcomes.\(^{(18-22)}\) Non-technical skills have been grouped into cognitive and behavioural
skills. Behavioural skills refer to skills such as teamwork and leadership. Cognitive skills
include situational awareness (the awareness of the surgeon to what is happening in the
operating room) and decision making. Decision making includes the choices the surgeon
makes e.g. when to operate, as well as judgements e.g. of risk.\(^{(15)}\) Consideration of these
factors alongside traditional indicators of performance such as the surgeons technical skills
and patient factors has given rise to a new ‘systems approach’ to performance in healthcare
(Figure 1). Within healthcare, research on team skills was pioneered in surgery and
anaesthesia and has since been adapted to other specialities including intensive care and
emergency medicine. Work to improve team performance has been achieved using a variety
of qualitative and quantitative methodologies which has led to the development of robust
tools for team assessment and feedback through to simulation-based training.\(^{(18;23-25)}\)
1.4 Clinical decision-making in surgery

Decision making has recently gained prominence in the healthcare literature and in the literature on surgical skills in particular. Most decisions in surgery involve a series of often rapid and unconscious interrelated steps and several different modes of decision making have been described including intuitive, recognition-primed, rule-based decision making and analytical decision making. These strategies cover a spectrum of decisions which surgeons apply to particular situations, e.g. using an analytical strategy when deciding whether a patient needs surgery or not, or a rule based decision when deciding post-

Figure 1: The systems approach to surgical performance

(Taken from Undre S, Arora S, Sevdalis N. Surgical performance, human error and patient safety in urological surgery. British Journal of Medical and Surgical Urology 2009 Jan;2(1):2-10.)
operatively whether to remove a drain. (30) Although some decisions in surgery appear to be isolated choices, they are in fact part of a complex care pathway. Fox and colleagues analysed the care pathway for patients with breast cancer and described approximately 65 decision points along the care pathway, at which choices regarding diagnosis, work up, treatment and follow up have to be made.(31) The authors concluded that even a small margin of error at each decision point can accumulate across the whole care pathway to dramatically increase the chance of an error or lapse in service quality. Jacklin and colleagues have mapped the decision making process in general surgery and identified 18 key decisions across different phases of care (pre-, intra- and postoperative). The authors demonstrated that the process of deconstructing and assessing surgical decision making could be carried out reliably, both by another surgeon and a psychologist with good inter-rater reliability (30). These studies highlight that decision making in surgical oncology is a complex process that occurs over the whole care pathway. However, in reality decision making is performed by a variety of healthcare professionals, including surgeons, who work together to care for the patient.

1.5 MDTs and clinical decision making

Several authors have found that the establishment of MDTs in cancer care has had an impact on clinical decision making. Researchers have investigated the impact of MDTs on decision making and have shown that a decision by an MDT is different to that of an individual clinician (32-37). Forrest and colleagues found that after the introduction of MDT the number of patients with non-small cell lung cancer receiving chemotherapy rather than palliative care rose significantly (38). A review by Fleissig and colleagues postulates that MDT’s provide a
means of improving decision making between healthcare professionals by bringing together key professionals with all the necessary knowledge, skills, and experience (1). The combination of a long care pathway with multiple decision points and the number of different healthcare professionals involved make decision-making in cancer care complex. Using a ‘systems approach’ provides some structure to the discussion of MDT decision making. Decision-making by MDTs can be understood in terms of the input-process-output model of team performance (Figure 2). The input-process-output model has been used extensively in team work literature, is established in the aviation industry and the NHS, and provides a useful framework for studying surgical teams (39). The model permits the relationship between team factors and team performance- in this case factors that affect decision making by MDTs- to be defined and manipulated.

1.5.1 Inputs

Using information to make decisions

Several studies have assessed the different factors that are taken into account by members of the MDT when making decisions. Clarke and colleagues used judgement analysis to look at the cues used by consultant urologists when making treatment decisions about localised prostate cancer. They found that the cues used most frequently in these decisions were PSA, 10 year predicted survival, MRI/Laparoscopic stage and Gleason score. Patient choice was used to make decisions much less frequently (40). A similar study by Wilson and colleagues found that patient choice was not used significantly by any of the 30 consultants, and that the cues most used were digital rectal examination result, stage of disease, PSA, age of patient and Gleason grade (41). Langenhoff and colleagues used conjoint analysis to develop a
decision model to help select patients suitable for surgery of liver metastases. They found that surgeons made their decisions based on the age of the patient, whether metastases were uni/bilateral and the proximity of the lesions to major blood vessels (42). Penel et al found that factors significantly associated with palliative intent when MDTs were deciding on treatment for patients with sarcoma were contraindication for GA, head and neck location, visceral sarcoma, tumour size over 8cm, and presence of metastases (43). The results show that doctors favour biomedical cues when making treatment decisions. This is in contrast to an in-depth study by Junnola and colleagues that found that nurses acquire information on pain, family situation, pain medication, spread of cancer, psychosocial situation and use information from the patient, their own nursing knowledge and experience, the medical diagnosis, their nursing education, and personal values when making decisions (44). These studies suggest that by considering different types of information, the different members of the MDT come together to make decisions differently to any single individual, which may help to improve the quality of the decision.

**Team attendance and decision-making**

Previous work into healthcare teams has shown that increased team diversity is correlated with increased effectiveness (45). This has been replicated by Haward and colleagues who studied a national sample of breast cancer care teams. They found that self-reported effectiveness increased with team size and team diversity (46). Ruhstaller and colleagues argue that the core attendees must be surgeons, radiotherapists and medical oncologists and that it is beneficial to also include radiologists and pathologists, but that specialist nurses should be invited as an extended member of the MDT (47). Haward et al found that clinical
effectiveness was correlated with the proportion of breast care nurses (46) which suggests that specialist nurses should also be core members of the team. Indeed in the UK specialist nurses are core members of any cancer MDT and are seen to have a key role in the decision making process (3). Barriers to attending MDT meetings have been found by an Australian study to be due to time commitments, schedule clashes, too few cases to make attendance worthwhile (48). It is imperative that the key healthcare workers who are involved in the decision making of the MDT are given time to attend in their job plans. Surprisingly Macaskill et al found in 2006 that only 28% of surgeons surveyed had protected session for MDT meetings. Those whose meetings were unprotected occurred in mealtimes, and in the evening (49). These issues must be addressed in order to ensure maximal attendance and therefore optimum performance of decision making.

**Using technology to improve MDT decision-making**

The use of information and communication technology to enhance health care has recently been encouraged by policy makers (50). Modern telemedicine permits the sharing of real time images between sites over great distances. Kunkler and colleagues conducted a cluster randomised trial to assess the use of telemedicine in multi-disciplinary breast cancer decision making. They found that there was no difference in compliance with clinical practice guidelines between telemedicine and face-to-face meetings. There was also no significant difference in the appropriateness of the decision or in the satisfaction that the decision was in the best interests of the patient. The only difference was in opinion over reaching a consensus which only just reached significance (51). This study shows that decision making with telemedicine can be high quality and acceptable to team members. Stalfors and colleagues
found that the ability to reach a decision at the first presentation of a case to the tumour board with telemedicine was similar to that with face-to-face meetings, and that there was no significant difference in the time to treatment between the two methods of meeting (52). The latter was also found by Davison et al who found that for patients with lung cancer there was no significant difference in the time to treatment when telemedicine was used compared to face to face meetings. In addition they found that the frequency of resections increased after the introduction of telemedicine (53). These studies suggest that by allowing discussion by expert clinicians who may otherwise not be included in the MDT decision making may be enhanced, and certainly is not impaired.

1.5.2 Processes

Modifying decisions

The benefits of MDT decision making often come from the expert review of information presented to the team. Chang and colleagues compared the decisions made by tumour board review to the decision of the referring clinician for breast cancer patients. They found that 32 of 77 decisions were modified by the tumour board and suggested that these changes come as a result of differences in interpretation of pathological specimens by specialist pathologists attached to the MDT as well as of clinical guidelines (36). This finding was supported by Ganesan and colleagues who looked at cases of ovarian cancer referred to their MDT. They found that 48 of 91 received a change of diagnosis leading to a change in treatment decision in 20 out of 91 cases (34). Newman et al found the MDT changed the treatment decision in 48 of 149 cases that they reviewed and suggest that expert review of radiological and pathological information is responsible for some of the change, but also that the MDT offers
a forum to ‘disseminate new research findings and treatment strategies’ which impact on clinical decision making (37). Kee and colleagues, when looking at treatment decisions made by members of MDT for lung cancer patients, used an expected utility model of analysis and suggested that the effect of the MDT is to increase internal consistency of decision making (54). This evidence suggests that the MDT changes the clinical decision, perhaps by implementing a quality control mechanism for radiological and pathological information, or by increasing the consistency of decision making.

**Leadership for decision-making**

Previous work on team working and effectiveness in the health service has shown that clear leadership is necessary for team performance (45). These findings were confirmed by Haward et al in breast cancer teams who also found that good leadership was associated with a number of leaders and significantly negatively correlated with having just one leader, lack of leadership clarity and leadership conflict (46). Good leadership is a prerequisite for effective teamwork and decision making, and likewise, visible and participative decision making facilitates successful teamwork.

**Teamworking and decision-making**

Improvements in clinical processes including decision making brought about by MDTs may not just result from consensus opinion, or expert review, but also because of improved team working (55). Qualitative studies by Lanceley and Kidger suggest that in MDT meetings traditional professional hierarchies are often followed which may lead to the exclusion of nurses and a bias towards biomedical information (56;57). This results in missing information
and poorer quality decisions which may lead to non-implementation (58;59). Effective teamwork relies on full collaboration of all team members and an atmosphere of trust and respect (1;47).

**Reaching a decision**

A Swedish study by Stalfors and colleagues into the ability of a Head and Neck tumour board to reach treatment decisions found reasons for failure to reach a diagnosis or treatment decision included lack of proper imaging, need for investigations regarding tumour extension, histological re-evaluation, and uncertainty regarding general cardiovascular status. The authors conclude that the ability to reach a decision at the first presentation to the tumour board is a good measure of team performance- they suggest that any delay in diagnosis or treatment decisions can negatively affect outcome, probably have a negative psychosocial impact on patients and their next-of-kin, as well as being costly to the healthcare system and to the patients. Their results suggest that having the necessary information available to the MDT is a prerequisite for high quality surgical decision making (52).

**Disagreement in decision-making**

One of the often stated benefits of MDTs is reaching a consensus of opinion when making decisions. However, disagreements do arise and how one deals with these is the subject of debate (1;47;60;61). Disagreement within MDTs does not seem to be common but when it does happen members appear reluctant to officially dissent. Sidhom et al surveyed clinicians involved in MDTs in Australia about whether they ever fundamentally disagreed with the final MDT decision and found that 15% said never, 58% rarely, 25% occasionally and 2%
often disagreed. Less than a third of respondents had ever formally dissented, over two thirds having never done so, even when they had important disagreements (61). In another essay Sidhom and Poulsen state that each doctor who is present at a MDT is individually responsible and potentially liable for all decisions within their area of expertise, and that formal dissent would help to minimise this liability where they disagree (60). Ideally, all available options would be put to a patient and a process of shared decision making undertaken (47). Sidhom and Poulsen suggest that MDTs are a medico legally safe decision making process and that increased awareness of individual responsibility should promote better patient outcomes and the best decisions (60).

1.5.3 Outputs

Implementing decisions

Several authors have looked recently at implementation of MDT decisions into clinical practice and found that between 98.6 and 84.9% of decisions made by MDTs are put into clinical practice (33;58;59;62;63). This research suggests that the decisions made by the MDT are acceptable to the physician caring for the patient, and to patients themselves. Where decisions were not implemented it was found to be for a number of reasons including co-morbid health problems preventing the implementation of the management as suggested by the MDT, patients rejecting the suggested treatment, or other additional clinical information coming to light and rendering the decision inappropriate. Blazeby and colleagues suggest that improving the presentation at meetings of information about the comorbidities and treatment preference of patients- factors that are often not fully considered- will optimize treatment decisions and improve implementation (58), a view consistent with previous research into
clinical decision making (64). In their analysis of treatment decisions at a colorectal cancer MDT Wood and colleagues suggests that monitoring the implementation of MDT treatment decisions may be a good means of evaluating MDT decisions and informing areas of team performance that need improvement (59).

Documenting decisions

MDT decisions should be documented to provide a record of decisions for future reference. A survey of surgeons involved in MDTs in the UK found that at some meetings there was no formal mechanism for recording decisions, (49) and in a national survey of MDT coordinators one centre kept no record of MDT decisions (65). Good medical record keeping is part of good clinical care. Ideally records would be kept on an electronic record, accessible to all MDT members at any location. Recording reasons for the choice of particular treatments including consideration of performance status, age, comorbidities etc will help to improve transparency (47).

Communication of decisions

Once decisions have been made it is important that they are quickly and accurately communicated to patients and other healthcare professionals involved in caring for the patient. Communication with patients depends on the type of information being conveyed. Catt and colleagues found that surgeons and oncologists had primary responsibility for conveying information to patients about their investigations, results and treatment options and prognosis, and clinical nurse specialists for covering the psychosocial well being of patients. These roles were generally well recognised by the different healthcare professionals (66). It
follows that it is important for patients to see medical as well as nursing members of the MDT for a full picture of the care pathway. Feldman-Stewart and colleagues found that different professional groups involved in caring for patients with prostate cancer agreed on what information was important for patients to know, although there was variability of opinion within groups (67). This suggests that patients will receive consistent information when meeting various members of the healthcare team, but the information experience of different patients may vary from one another. The responsibility for communicating with primary care is variable, falling to MDT coordinators, nurses and administrators in different centres. Often the decision is communicated by means of a letter, fax or telephone call to the GP, or a combination (65). Penel and colleagues in France surveyed GPs regarding the structured report that their MDT sent to GPs following patient discussion. They found that GP’s were generally happy with structured report but just over a third wanted more information regarding side effects of treatment, prognosis and follow up plans (68).

1.6 Discussion

The systems approach provides a structured way of thinking about decision making in surgical oncology and identifies many of the factors that affect the quality of the process. Understanding decision-making in MDT meetings in a systematic manner reflects the thoughts of previous researchers who looked at the effect of the technical skills of the surgeon, as well as the environment, teamwork and other non-technical skills on surgical performance. The application of a systems approach to multidisciplinary cancer teams provides a framework that I can use to approach my research into the quality of decision-making in MDT meetings. Although this Chapter begins to add some evidence to that
framework, the next step must be to establish the current evidence base with a systematic review of the literature on MDT decision making. Chapter 2 reports a systematic review, carried out in order to explore the strengths and limitations of current evidence and provide avenues for my future research.

Figure 2: A systems approach to decision-making in MDT meetings. ‘Technical’ refers to organisational factors and clinical skills. ‘Non-technical’ refers to team skills.
THESIS AIMS

My thesis reports a series of studies that will attempt to explore, measure and improve teamwork and team decision-making in urology multidisciplinary cancer team meetings. I start in the Introduction with a narrative review of the literature on team decision-making in cancer care, with a focus on surgical oncology and MDTs. In Chapter 2 I conduct a systematic review of the evidence for clinical decision-making in cancer MDT meetings, to review the existing evidence on factors that affect decision-making by MDTs. In Chapters 3 and 4 I use data from a national survey, which explores the views of MDT members from different professional groups across a range of tumour types, to analyse consensus and difference between tumour types for a range of statements (Chapter 3), and attitudes towards teamworking and patient-centeredness in MDT decision-making (Chapter 4). In Chapters 5 and 6 I use the findings from Chapters 1 to 4 as a framework to explore in depth the personal experiences and views of patients and of members of urology MDTs. Evidence from existing literature, and the experiences of healthcare professionals and patients are used in Chapter 7 to inform the development of a tool for the observational assessment of team decision-making in MDT meetings- MDT-MODE. In Chapter 8 the validity of MDT-MODE is tested through cross-validation against the self-assessment of MDT members, before the tool is used to prospectively assess the relationship between decision-making efficacy, organisational factors, information availability and team members’ contribution in Chapter 9. Having built up a picture of the factors that are important for decision-making in MDT meetings, and equipped with a tool to measure this process, Chapter 10 will describe the development and evaluation of MDT-QuIC, an intervention to improve decision-making in MDT meetings.
Finally, in Chapter 11 I will report a prospective study that uses MDT-\textit{MODe} to evaluate a multistage intervention to improve the quality of clinical decision-making in MDT meetings.

**The aims of this thesis are:**

1. To review and evaluate the evidence-base for team decision-making by multidisciplinary cancer teams (Introduction and Chapter 2)

2. To assess the views and experiences of health care professionals regarding decision-making in MDT meetings (Chapters 3, 4 and 6)

3. To evaluate the views of cancer patients in order to inform subsequent studies and ensure this research is patient-centred (Chapter 5)

4. To scientifically develop and evaluate objective assessment tools for use in urology MDT meetings (Chapters 7 to 9)

5. To develop and evaluate an intervention to improve decision-making in urology MDT meetings (Chapters 10 and 11)
2 TEAM DECISION MAKING BY CANCER

MULTIDISCIPLINARY TEAMS: A SYSTEMATIC REVIEW

2.1 Chapter overview

In Chapter 2 I present a systematic review of the evidence for clinical decision-making in cancer MDT meetings, to review the existing evidence on factors that affect decision-making by MDTs.

2.2 Introduction

A narrative review of MDT effectiveness by Fleissig et al highlights that there is little evidence that MDTs improve the quality of clinical decision making and very little is known about the decision-making process itself (1). As I mentioned in the Introduction, the majority of research has looked at the effect of MDTs on various measures of process, whether it is the ability to reach a decision, the quality of the decision, a change in decision or whether a decision is implemented. The body of research into MDT working in cancer care appears to be extremely diverse, covering multiple cancer specialties, many different methodologies, assessing a variety of outcomes.

2.3 Aims

The aim of this Chapter is to systematically review the literature on decision-making in cancer MDTs to assess the factors that affect decision-making and their value for patients.
My analysis assesses the information preferences, interpretation of information, changes to decisions, and implementation of decisions by MDT members. It also analyses membership, leadership, and workload of the MDT as well as the effect of telemedicine and the involvement of patients on decision-making by the MDT.

Table 1: Search strategy

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<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>(malignan$2 or tumour$1 or tumor$1 or carcinoma).mp. or neoplas$2.ti,ab. [mp=title, original title, abstract, name of substance word, subject heading word]</td>
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<td>malignancy/ or tumour/ or tumor/ or cancer/ or neoplasm/</td>
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<td>multidisciplinary/ or multi-disciplinary/ or (multi/ adj disciplinary/)</td>
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<td>6</td>
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<tr>
<td>13</td>
<td>limit 12 to yr=&quot;2004-2009&quot;</td>
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<td>14</td>
<td>remove duplicates from 13</td>
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2.4 Methods

2.4.1 Search strategy and selection criteria

I undertook systematic literature searches of Embase, Medline, PsycINFO (using OvidSP), and the Cochrane database. The free text and MeSH search terms used were variations of
“decision-making”, “neoplasm”, “multi-disciplinary” and “team”. Results were limited to human beings, English language, and dates 1999 to 15\textsuperscript{th} May 2009 (Table 1). I also hand-searched studies through consultation with experts in the field, scrutiny of reference lists of retrieved papers, existing reviews, guidelines and Department of Health documents. Retrieved titles and abstracts had to relate to decision-making by healthcare professionals, who attend multi-disciplinary cancer teams. Articles had to present empirical data for decisions relating to diagnosis or treatment of patients that occurred as part of the MDT meeting. These criteria were applied to a sample of 100 titles and abstracts by another researcher with a background in psychology (Brown) to check the validity of the selection criteria. Cohen’s Kappa coefficient was 0.790.

2.4.2 Quality assessment and data abstraction

Quality of the included papers was assessed formally with an assessment tool designed for use in systematic reviews of heterogeneous articles (69). I scored the papers in different domains from zero to two giving a minimum of zero and a maximum for quantitative papers of 18 and for qualitative papers of 24 (the quality scoring data are included in Appendices 1 and 2). Internal validity was checked against a random sample of ten quantitative papers (32;34-36;44;51;55;68;70;71) and all three qualitative studies (56;57;72) scored by another researcher (Nagpal). Quantitative papers were assigned a number from one to 34 and a random sample was selected using an online random number generator (73). Cohen’s Kappa coefficient was 0.765.

Data were abstracted by myself for: country in which the study was undertaken; clinical specialty; setting of the MDT; number of participants; patient characteristics; healthcare
professional characteristics; study design; objectives; and study findings. Given the heterogeneous nature of the outcomes being assessed summary measures were not possible.

2.5 Results

2.5.1 Study Characteristics

2484 articles were retrieved by the search criteria above (Figure 3). 2432 articles were excluded by review of title or abstract, and a further 26 by reviewing the full text. Nine studies were identified from hand-searching and were included in the review. The 37 included studies were articles published in peer-reviewed journals between 2000 and 2008 inclusive. Papers were from ten countries: UK (n=20),(32;38;40;41;46;49;51;53-59;65;71;72;74-76) France (n=4),(43;62;68;77) USA (n=3),(35-37) Australia (n=3),(48;61;70) and Germany (n=2). (33;63) Hong Kong,(78) Finland,(44) Holland,(42) Sweden,(52) and India. (34) Ten specialities were represented: breast (n=12),(36;37;46;48;49;51;70;72;74;75;77;78) lung (n=5),(38;53;54;62;71) gynaecology (n=4),(34;35;56;57) urology (n=3),(32;40;41) upper gastrointestinal (n=3),(33;55;58) colorectal (n=3),(42;59;76) sarcoma (n=2),(43;68) brain (n=1),(63) and head and neck (n=1). (52) One study looked at nurses,(44) one investigated MDT coordinators,(65) and one surveyed Consultant/Attending-level surgeons involved in MDT meetings.(49) One study was set at a local MDT.(32) Eight studies were undertaken at teaching hospitals (33-38;44;78) and 16 at specialist or regional MDTs.(43;48;51-56;58;59;62;63;68;71;74;75) There was one regional survey from Australia,(61) and a further eight studies were national surveys – one from Australia,(70) and seven from the UK.(40;41;46;49;65;72;76) (Table 2)
Figure 3: Study selection flow diagram
<table>
<thead>
<tr>
<th>Author</th>
<th>Date</th>
<th>Quality score (18)</th>
<th>Country</th>
<th>Specialty</th>
<th>MDT Setting</th>
<th>Number</th>
<th>Themes</th>
<th>Cases</th>
<th>Healthcare professionals</th>
<th>Study design</th>
</tr>
</thead>
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<tr>
<td>Acher et al</td>
<td>2005</td>
<td>3</td>
<td>UK</td>
<td>Urology</td>
<td>Local</td>
<td>124‡</td>
<td>Effect of MDT on decision</td>
<td>Urological cancer cases.</td>
<td>Consultant urologists</td>
<td>Prospective Intervention (MDT meeting), pre-post intervention assessment.</td>
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<td>Blazeby et al</td>
<td>2006</td>
<td>6</td>
<td>UK</td>
<td>Upper GI</td>
<td>Specialist</td>
<td>273‡</td>
<td>Implementation of MDT</td>
<td>New diagnosis of upper GI primary tumours. Mean age 68.7 (26-98), male 172 (63.5%)</td>
<td>No information given</td>
<td>Prospective cohort study over 6 months. Analysis of case records to ascertain final treatment.</td>
</tr>
<tr>
<td>Bumm et al</td>
<td>2007</td>
<td>4</td>
<td>Germany</td>
<td>Upper GI</td>
<td>Teaching Hospital</td>
<td>730‡</td>
<td>Implementation of MDT</td>
<td>64% male, median age 62</td>
<td>No information given</td>
<td>1 year retrospective analysis of random sample of 730 case discussions from prospective cohort. Sub-analysis of pre-and-post intervention (MDT meeting).</td>
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<tr>
<td>Butow et al</td>
<td>2007</td>
<td>15</td>
<td>Australia</td>
<td>Breast</td>
<td>National survey</td>
<td>429†</td>
<td>MDT structure and process</td>
<td>N/A</td>
<td>Patient advocates, surgeons, breast nurses, radiation oncologists, medical oncologists.</td>
<td>2 surveys, healthcare professionals (292) and patient advocates (137).</td>
</tr>
<tr>
<td>Chang et al</td>
<td>2001</td>
<td>5</td>
<td>USA</td>
<td>Breast</td>
<td>Teaching Hospital</td>
<td>75‡</td>
<td>Effect of MDT on decision</td>
<td>Women with breast lesions referred to tumour board. Median age 49 (26-82)</td>
<td>Surgical oncologist, radiation oncologist, medical oncologist, radiologist, pathologist, plastic surgeon.</td>
<td>Prospective Intervention (MDT meeting), pre-post intervention assessment.</td>
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<tr>
<td>Author</td>
<td>Date</td>
<td>Quality score</td>
<td>Country</td>
<td>Speciality</td>
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<td>Cases</td>
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<td>Clarke et al</td>
<td>2007</td>
<td>11</td>
<td>UK</td>
<td>Urology</td>
<td>National survey</td>
<td>30†</td>
<td>Information used for decision Reliability of decision making</td>
<td>N/A</td>
<td>Consultant urologists</td>
<td>57 simulated cases using 9 cues (13 duplicated). Preference for 3 treatments for prostate cancer.</td>
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<td>Davies et al</td>
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<td>9</td>
<td>UK</td>
<td>Upper GI</td>
<td>Specialist</td>
<td>118‡</td>
<td>Effect of MDT on diagnosis/treatment</td>
<td>Oesophageal or gastric carcinomas. 78% male, median age 65 (IQR 59-74).</td>
<td>Surgeons, gastroenterologists, medical oncologists, radiation oncologists, radiologists, pathologists, dieticians, nurse specialists, researchers, trainees.</td>
<td>Prospective Intervention (MDT meeting), pre-post intervention assessment.</td>
</tr>
<tr>
<td>Davison et al</td>
<td>2004</td>
<td>5</td>
<td>UK</td>
<td>Lung</td>
<td>Specialist</td>
<td>N/S</td>
<td>Use of telemedicine</td>
<td>Patients with lung cancers</td>
<td>Consultant physicians, clinical and medical oncology, radiologist, nurse specialists, technician, cardiothoracic surgeon and radiologist.</td>
<td>Retrospective analysis of cases in 3 years preceding telemedicine. Prospective analysis of cases with telemedicine over 1 year.</td>
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<tr>
<td>Delaney et al</td>
<td>2004</td>
<td>8</td>
<td>Australia</td>
<td>Breast</td>
<td>Specialist</td>
<td>22*32†</td>
<td>Use of telemedicine MDT structure and process</td>
<td>N/S</td>
<td>Surgeons, radiologist, medical oncologists, radiation oncologists, nurses, pathologist.</td>
<td>12 consecutive weeks of face-to-face MDT followed by 12 weeks of video-conferences. Video connected 3 sites. 3x face-to-face and 3x telemedicine MDTs recorded and analysed by anthropologist and linguist. Pre-trial and post trial questionnaires about attitudes towards MDT and telemedicine.</td>
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<td>2006</td>
<td>9</td>
<td>Hong Kong</td>
<td>Breast</td>
<td>Teaching Hospital</td>
<td>102‡</td>
<td>Use of decision tools</td>
<td>Breast cancer patients</td>
<td>MDT made up of 15-20 cancer specialists.</td>
<td>Intervention study assessing the effect of computer decision tool on decision making. Pre-post control. Survey of clinician attitudes to computer decision tool.</td>
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<tr>
<td>Author</td>
<td>Date</td>
<td>Quality score (18)</td>
<td>Country</td>
<td>Speciality</td>
<td>MDT Setting</td>
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<td>Cases</td>
<td>Healthcare professionals</td>
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<tr>
<td>Fielding et al</td>
<td>2005</td>
<td>7</td>
<td>UK</td>
<td>Breast</td>
<td>Specialist</td>
<td>45/33*</td>
<td>Use of telemedicine</td>
<td>N/A</td>
<td>Medical, surgical, nursing and research staff.</td>
<td>Survey regarding attitudes to future use of MDT telemedicine. Semi-structured interview about</td>
</tr>
<tr>
<td>Forrest et al</td>
<td>2005</td>
<td>11</td>
<td>UK</td>
<td>Lung</td>
<td>Teaching</td>
<td>243‡</td>
<td>Effect of MDT on decision</td>
<td>Patients with inoperable NSCLC</td>
<td>Respiratory physicians, surgeons, medical oncologists, clinical oncologists, palliative care</td>
<td>Retrospective case note analysis of control group. Intervention group prospectively analysed.</td>
</tr>
<tr>
<td>Ganesan et al</td>
<td>2008</td>
<td>4</td>
<td>India</td>
<td>Gynaecology</td>
<td>Teaching</td>
<td>91‡</td>
<td>Effect of MDT on decision</td>
<td>Cases of ovarian cancer referred to the MDT.</td>
<td>Consultants and residents at department of pathology and medical oncology.</td>
<td>Prospective Intervention (MDT meeting), pre-post intervention assessment.</td>
</tr>
<tr>
<td>Gatcliffe et al</td>
<td>2008</td>
<td>5</td>
<td>USA</td>
<td>Gynaecology</td>
<td>Teaching</td>
<td>133‡/52*</td>
<td>Effect of MDT on decision</td>
<td>Patients with gynaecological cancers. 116 new, 121 post operative review.</td>
<td>Attending physicians, residents, oncology nurses and research staff, social workers.</td>
<td>Prospective Intervention (MDT meeting), pre-post intervention assessment.</td>
</tr>
<tr>
<td>Howard et al</td>
<td>2003</td>
<td>12</td>
<td>UK</td>
<td>Breast</td>
<td>National</td>
<td>548‡</td>
<td>Leadership in MDT MDT structure and process</td>
<td>N/A</td>
<td>Surgeons, breast nurses, pathologists, radiologists, clinical oncologists, medical oncologists. Mean age 45.5 (SD 8.1); female 46.5%.</td>
<td>Random sample of English Breast teams. Postal questionnaire.</td>
</tr>
<tr>
<td>Junnola et al</td>
<td>2002</td>
<td>15</td>
<td>Finland</td>
<td>Nursing</td>
<td>Teaching</td>
<td>95‡</td>
<td>Information used for decision</td>
<td>N/A</td>
<td>Registered nurses</td>
<td>Simulated case descriptions with survey to ascertain information used by nurses.</td>
</tr>
<tr>
<td>Author</td>
<td>Date</td>
<td>Quality score</td>
<td>Country</td>
<td>Specialty</td>
<td>MDT Setting</td>
<td>Number</td>
<td>Themes</td>
<td>Cases</td>
<td>Healthcare professionals</td>
<td>Study design</td>
</tr>
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</tr>
<tr>
<td>Kee et al</td>
<td>2007</td>
<td>15</td>
<td>UK</td>
<td>Lung</td>
<td>Specialist</td>
<td>50‡</td>
<td>Effect of MDT on decision</td>
<td>No information given</td>
<td>Respiratory physicians, thoracic surgeons, oncologists, radiologists.</td>
<td>Prospective intervention (MDTM), pre-post control</td>
</tr>
<tr>
<td>Kee et al</td>
<td>2004</td>
<td>13</td>
<td>UK</td>
<td>Lung</td>
<td>Specialist</td>
<td>50‡</td>
<td>Effect of MDT on diagnosis/treatment</td>
<td>Cases with available pathological and radiological reports</td>
<td>Participants are clinicians.</td>
<td>Prospective Intervention (MDTM), pre-post design</td>
</tr>
<tr>
<td>Kelly et al</td>
<td>2003</td>
<td>9</td>
<td>UK</td>
<td>Colorectal</td>
<td>National survey</td>
<td>166∞</td>
<td>MDT structure and process</td>
<td>N/A</td>
<td>N/S</td>
<td>Survey of all UK colorectal cancer leads</td>
</tr>
<tr>
<td>Kunkler et al</td>
<td>2006</td>
<td>7</td>
<td>UK</td>
<td>Breast</td>
<td>Specialist</td>
<td>473‡/57†</td>
<td>Use of telemedicine</td>
<td>N/S</td>
<td>Oncologist, surgeons, radiologist, oncologist, breast care nurses.</td>
<td>MDTs randomised into 4 weekly blocks (telemedicine 48/ face-to-face 28). Survey into attitudes towards MDT before and at 28 weeks.</td>
</tr>
<tr>
<td>Kunkler et al</td>
<td>2007</td>
<td>14</td>
<td>UK</td>
<td>Breast</td>
<td>Specialist</td>
<td>253‡/72*</td>
<td>Use of telemedicine</td>
<td>Patients with breast cancer</td>
<td>Consultant surgeons, oncologists, pathologists, radiologists and breast care nurses.</td>
<td>Cluster randomisation of 12x 4-week blocks of telemedicine or face-to-face with 2:1 ratio. 2 consecutive 6-month periods; Cost-minimisation analysis; Survey.</td>
</tr>
<tr>
<td>Langenhoff et al</td>
<td>2007</td>
<td>10</td>
<td>Holland</td>
<td>Colorectal</td>
<td>N/S</td>
<td>25†</td>
<td>Use of decision tools</td>
<td>Decision model trialled on 48 cases of metastatic colorectal cancer.</td>
<td>Colorectal surgeons</td>
<td>Computer based decision model designed from cues used by surgeons when making treatment decisions. Decision model compared with Real treatment for 48 patients.</td>
</tr>
<tr>
<td>Author</td>
<td>Date</td>
<td>Quality score (18)</td>
<td>Country</td>
<td>Speciality</td>
<td>MDT Setting</td>
<td>Number</td>
<td>Themes</td>
<td>Cases</td>
<td>Healthcare professionals</td>
<td>Study design</td>
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<tr>
<td>Leo et al</td>
<td>2007</td>
<td>12</td>
<td>France</td>
<td>Lung</td>
<td>Specialist</td>
<td>344‡</td>
<td>Implementation of MDT</td>
<td>72.9% male, 43% &lt;65yrs, 39.8% 65-75, 17.1% &gt;75.</td>
<td>24: Thoracic surgery, thoracic oncology, pulmonology, radiotherapy, radiology, pathology, nuclear medicine.</td>
<td>Prospective cohort of 344 patients discussed at 51 meetings over 1 year. F/U for 9 months.</td>
</tr>
<tr>
<td>Lutterbach et al</td>
<td>2004</td>
<td>6</td>
<td>Germany</td>
<td>Brain</td>
<td>Specialist</td>
<td>500‡</td>
<td>Implementation of MDT</td>
<td>Median age 55 (3-90), 57% male.</td>
<td>Neuropathology, neuroradiology, neurology, neurosurgery, radiation oncology.</td>
<td>Retrospective analysis of random sample of 500 patients out of 1516 discussed at MDT over 5 years</td>
</tr>
<tr>
<td>Newman et al</td>
<td>2006</td>
<td>9</td>
<td>USA</td>
<td>Breast</td>
<td>Teaching Hospital</td>
<td>149‡</td>
<td>Effect of MDT on decision</td>
<td>149 consecutive patients referred to tumour board for 2nd opinion.</td>
<td>Surgeons, oncologists, radiologists, pathologists, radiation oncologists, nurses.</td>
<td>Retrospective case notes review</td>
</tr>
<tr>
<td>Penel et al</td>
<td>2007</td>
<td>10</td>
<td>France</td>
<td>Sarcoma, melanoma</td>
<td>Specialist</td>
<td>52†</td>
<td>Communication with GP’s</td>
<td>Sarcoma, melanoma, carcinoma of unknown primary. Curative intent 42, palliative 68.</td>
<td>GP's who had referred a patient in the 18 months preceding the study.</td>
<td>Survey</td>
</tr>
<tr>
<td>Penel et al</td>
<td>2008</td>
<td>13</td>
<td>France</td>
<td>Sarcoma</td>
<td>Specialist</td>
<td>341‡</td>
<td>Information used for decision</td>
<td>Patients with Soft tissue sarcoma. Median age 53 (18-99), 50% male</td>
<td>Surgeon, radiation oncologist, medical oncologist, radiologist, pathologist.</td>
<td>Retrospective notes review cohort study</td>
</tr>
<tr>
<td>Seroussi et al</td>
<td>2007</td>
<td>8</td>
<td>France</td>
<td>Breast</td>
<td>N/S</td>
<td>467‡</td>
<td>Use of decision tools</td>
<td>Female breast cancer patients.</td>
<td>Surgeons, radiologist, oncologist, radiotherapist, pathologist, oncogenetecist.</td>
<td>6 months of control MDT meetings analysed retrospectively, followed by 6 months of MDT meetings using decision tool analysed prospectively.</td>
</tr>
<tr>
<td>Author</td>
<td>Date</td>
<td>Quality score</td>
<td>Country</td>
<td>Specialty</td>
<td>MDT Setting</td>
<td>Number</td>
<td>Themes</td>
<td>Cases</td>
<td>Healthcare professionals</td>
<td>Study design</td>
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<tr>
<td>Sidhom et al</td>
<td>2008</td>
<td>10</td>
<td>Australia</td>
<td>N/A</td>
<td>Regional</td>
<td>136†</td>
<td>Effect of MDT on diagnosis/treatment</td>
<td>N/A</td>
<td>Male 63%.</td>
<td>Survey</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>MDT structure and process</td>
<td></td>
<td>Surgeons, Medical oncologists, radiation oncologists, radiologists, pathologists, haematologists, physicians.</td>
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<td>Legal aspects of MDT decision</td>
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<td></td>
<td>Discussion environment</td>
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<td></td>
<td>Patient involvement in MDT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soukop et al</td>
<td>2006</td>
<td>8</td>
<td>UK</td>
<td>N/A</td>
<td>National survey</td>
<td>128†</td>
<td>Use of telemedicine</td>
<td>N/A</td>
<td>Colorectal cancer teams</td>
<td>Postal survey</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MDT structure and process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stalfors et al</td>
<td>2007</td>
<td>8</td>
<td>Sweden</td>
<td>Head and Neck MDT</td>
<td>Specialist MDT</td>
<td>285‡</td>
<td>Implementation of MDT</td>
<td>ENT patients</td>
<td>Oncology, radiology, pathology, dental surgery, general surgery, thoracic surgery, dietetics,</td>
<td>Prospective cohort of referred patients to weekly MDT 1 year. Retrospective nested case-control with telemedicine as exposure.</td>
</tr>
<tr>
<td>Wilson et al</td>
<td>2008</td>
<td>11</td>
<td>UK</td>
<td>Urology</td>
<td>National survey</td>
<td>30†</td>
<td>Information used for decision</td>
<td>N/A</td>
<td>Consultant urologists</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reliability of decision making</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

57 simulated cases using 9 cues (13 duplicated). Preference for 3 treatments for prostate cancer.
<table>
<thead>
<tr>
<th>Author</th>
<th>Date</th>
<th>Quality score (18)</th>
<th>Country</th>
<th>Speciality</th>
<th>MDT Setting</th>
<th>Number</th>
<th>Themes</th>
<th>Cases</th>
<th>Healthcare professionals</th>
<th>Study design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood et al</td>
<td>2008</td>
<td>10</td>
<td>UK</td>
<td>Colorectal</td>
<td>Specialist</td>
<td>201‡</td>
<td>Implementation of MDT</td>
<td>Colorectal cancer new and old presentation. Male 62.2%, age &lt;65 29.5%, 65-74 25.8%, &gt;75 44.8%.</td>
<td>No information given</td>
<td>Prospective cohort study for 15 months. Analysis of records to ascertain final treatment.</td>
</tr>
<tr>
<td>Amir et al</td>
<td>2004</td>
<td>14</td>
<td>UK</td>
<td>Breast</td>
<td>National</td>
<td>139/16*</td>
<td>MDT structure and process</td>
<td>24 BCN’s, 25 Surgeons, 14 oncologists, 20 radiologists, 20 pathologists, 30 other professionals also contributing (admin, clerical, doctors).</td>
<td>Qualitative. Observation of 16 weekly MDTs. In-depth interviews with healthcare professionals.</td>
<td></td>
</tr>
<tr>
<td>Kidger et al</td>
<td>2009</td>
<td>13</td>
<td>UK</td>
<td>Gynaecology</td>
<td>N/S</td>
<td>N/S</td>
<td>Discussion environment</td>
<td>Surgeons, medical oncologists, pathologists, radiologists, nurses, MDT Coordinator.</td>
<td>10 weeks of weekly team meetings and semi-structured interviews with 16 team members</td>
<td></td>
</tr>
<tr>
<td>Lanceley et al</td>
<td>2008</td>
<td>9</td>
<td>UK</td>
<td>Gynaecology</td>
<td>Specialist</td>
<td>N/S</td>
<td>Discussion environment</td>
<td>General nurses, surgeons, palliative care physicians, clinical and medical oncologists, pathologists, radiologists, radiographers, social worker, specialist nurse.</td>
<td>Observation of 16 weekly MDTs by single observer. 12 semi structured interviews.</td>
<td></td>
</tr>
</tbody>
</table>

* interviews; † observed meetings; ‡ survey responses (individuals); ∞ survey responses (teams); † case discussions.
2.5.2 Study Quality

The median quality score for quantitative papers was nine of 18 (range 3-15) and for qualitative papers was 13 of 24 (range 9-14). Study methodology included non-randomised control trials (n=10), surveys (n=9), cohort studies (n=7), observation studies (n=5), qualitative studies (n=3), simulations (n=3), and one randomised control trial (n=1). Due to the heterogeneity of the included studies results could not be combined. (Appendices 1 and 2) Every endpoint presented in the studies has been included in the results tables. Some studies have multiple endpoints and these were split across different tables to enable cross-study comparison (Table 2).

2.5.3 Decision-making efficacy: failures to make decisions and decision implementation (Table 3)

One study found that a decision on management could be reached at the first MDT meeting in only 73% of cases. Reasons for failure were often attributable to gaps in the information needed to make decisions, including proper imaging, investigations of tumour stage, review of pathology and comorbidities. (52) In another study, the proportion of MDTs reaching a firm decision at the first MDT presentation was only 47.6%, but underlying reasons were not investigated. (62) Time pressure is one factor that has been linked with failure or difficulty to reach a decision. (56)

Disagreements within MDT are uncommon, and even when they occur team-members are reluctant to officially dissent. (61) Interestingly, only 48% of respondents in this study were aware of their individual liability for MDT decisions – which is important, not least because those dissenters are still legally responsible.
<table>
<thead>
<tr>
<th>Lead author</th>
<th>Themes</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blazeby et al 2005</td>
<td>Compliance with MDT decision</td>
<td>41/271 not implemented (15·1%, 95% CI 11·1-20·0%): 18 (43·9%) patient co morbidity, 14 (34·2%) patient choice, 8 (19·5%) when more clinical info available.</td>
</tr>
<tr>
<td>Bumm et al 2007</td>
<td>Compliance with MDT decision</td>
<td>32/807 (4%) MDT decisions were not implemented. No further information given.</td>
</tr>
<tr>
<td>Lanceley et al 2008</td>
<td>To explore the process of decision-making in MDT.</td>
<td>The team: 30+ members. Meetings highly pressurised, crowded, swift and technical. Little time. Some members resented technicality. Meetings favoured traditional professional hierarchies.</td>
</tr>
<tr>
<td>Leo et al 2007</td>
<td>Compliance with MDT decision Establishment of diagnosis and treatment plan at MDT meeting</td>
<td>15/344 (4·4%) MDT decisions not implemented. (7 refused treatment. 5 co-morbidities prevented treatment. 1 doctor gained second opinion. 2 lost to follow up). 164/344 (47·6%) decisions possible at first meeting, 112 (32·6%) at second, 51 (14·8%) at third and 17 (5%) at later meetings.</td>
</tr>
<tr>
<td>Lutterbach et al 2004</td>
<td>Compliance with MDT decision</td>
<td>45/500 (9%) of MDT decisions were not implemented. (26 due to lack of progression, 5 due to decline in condition. 14 due to local physician choice).</td>
</tr>
<tr>
<td>Sidhom et al 2008</td>
<td>Awareness of individual legal liability if MDT negligent Significant disagreement with final decision:</td>
<td>Awareness of individual liability 48% 15% never, 58% rarely, 25% occasionally, 2% often. Of those who disagreed 71% never formally dissented.</td>
</tr>
<tr>
<td>Stalfors et al 2007</td>
<td>Establishment of diagnosis and treatment plan at first MDT meeting</td>
<td>236/324 (73%) decisions possible at first meeting. Failures: lack of imaging 42%, extra staging information needed 30%, histological problems 7%, comorbidity information needed 6%, 16% more than 1 of above.</td>
</tr>
<tr>
<td>Wood et al 2007</td>
<td>Compliance with MDT decision</td>
<td>20/201 not implemented (10%, 95% CI 6·3-15·2%) (9 co morbidity, 7 patient choice, 2 further clinical information at time of surgery) Odds ratio of discordance 4·9 for palliative intent (P= 0·002). Not significant for age or gender.</td>
</tr>
</tbody>
</table>
Not all decisions made in a MDT are implemented: decisions are not implemented in 1-16% of cases because of contradictory patient choice and treatments being inappropriate in view of comorbidities.(33;52;58;59;62;63)

2.5.4 Information used to make decisions (Table 4)

Physicians attending MDTs base their decisions almost exclusively on biomedical information. Clarke et al (40) and Wilson et al (41) studied the information used by 30 urologists each in deciding upon a treatment option for patients with urological cancer. Prostatectomy was mostly decided on the basis of PSA, 10yr survival, and MRI/Lap stage. Radiotherapy+/−hormones was decided upon 10yr survival, PSA, and Gleason grade. Finally, decision for active surveillance/hormones was based on 10yr survival, MRI/Lap stage, and PSA. In Wilson et al’s study prostatectomy was determined by digital rectal examination (DRE), stage, and PSA; radical radiotherapy was chosen based on Gleason grade, DRE, and patient age; and active surveillance/hormones based on age, DRE, and stage. Patient choice was used by a minority of urologists (seven of 30) in Clark et al, and was not used at all in Wilson et al. Similarly, Langenhoff et al found that colorectal surgeons base their decision-making on patient age, whether metastases were unilateral or bilateral and the proximity of the lesions to major blood vessels.(42) Similarly biomedical information was found by Penel et al in their study of palliative intent.(43) Lanceley et al’s and Kidger et al’s qualitative studies confirm these findings: these researchers showed that decisions are made by physicians with little nursing input on the basis of biomedical information over patient-related factors such as psychosocial situation and the patients’ wishes.(56;57) Nursing
### Table 4: Information used to make decisions

<table>
<thead>
<tr>
<th>Lead Author</th>
<th>Theme</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarke et al 2007</td>
<td>Information preference of Urologist for three treatments for prostate cancer.</td>
<td>Cues used significantly for prostatectomy were PSA (n=27), 10yr survival (n=20), MRI/Lap stage (n=19); For radiotherapy +/-hormones were 10yr survival (n=12), PSA (n=12), Gleason grade (n=13); For active surveillance/hormones were 10yr survival (n=23), MRI/Lap stage (n=16), PSA (n=10) (all p &lt; 0.01, multiple stepwise linear regression analysis).</td>
</tr>
<tr>
<td>Julnola et al 2001</td>
<td>Information acquired to make decisions. Information guiding actions when making decisions</td>
<td>Pain, family situation, pain medication, spread of cancer, psychosocial situation (in order of importance). Information from patient, knowledge and experience of nurse, medical diagnosis, nursing education, personal values (in order of importance).</td>
</tr>
<tr>
<td>Kidger et al 2008</td>
<td>Factors that influence decision making in the MDT</td>
<td>(1) Unsystematic consideration of patient related factors (comorbidity, psychosocial situation, patient wishes), privileged role of disease/pathological information in decision making. (2) Variation in team members’ role and level of participation in discussions, depending on their profession.</td>
</tr>
<tr>
<td>Lanceley et al 2008</td>
<td>To explore the process of decision-making in MDT.</td>
<td>(1) The team: 30+ members. Meetings highly pressurised, crowded, swift and technical. Little time. Some membersresented technicality. Meetings favoured traditional professional hierarchies. (2) The discussion: junior medical staff began discussion. This set a disease focussed discussion, excluding non-medical team members from contributing. Not open to challenge. (3) Psychosocial information: another form of knowledge concerning personhood, ethics and morality. Nurses were talked over and biomedical knowledge prevailed. (4) Union of medical and psycho-social information: when good knowledge of patients was present, the different strands were integrated. This gave an improved discussion.</td>
</tr>
<tr>
<td>Langenhoff et al 2007</td>
<td>Information preference of surgeons when choosing from 4 treatments for colorectal cancer metastases.</td>
<td>Patient age, extra hepatic spread, uni/bilobar disease and location of metastases in regards to large vessels all used significantly (all P&lt;0.001, Chi squared). Number of metastases and size of largest lesion also correlated but less so.</td>
</tr>
<tr>
<td>Penel et al 2008</td>
<td>To see which factors are associated with palliative treatment intent</td>
<td>Factors significantly correlated with palliative intent- contraindication to general anaesthetic (P=0.001), head and neck location (P=0.017), visceral sarcoma (P=0.022), tumour &gt;8cm (P=0.008), and presence of metastases (P=0.001) (Cox multivariate proportional hazards model).</td>
</tr>
<tr>
<td>Wilson et al 2007</td>
<td>Information preference of Urologist for 3 treatments for prostate cancer.</td>
<td>Cues used significantly for: Prostatectomy was digital rectal examination (DRE) (94%), stage (90%), PSA (84%); Radical radiotherapy was Gleason grade (44%), DRE (25%), Age (19%); Active surveillance/hormones were age (63%), DRE (60%), stage (53%) (All p &lt; 0.01, Spearman’s correlation). Patient choice not used significantly by any consultant.</td>
</tr>
</tbody>
</table>
personnel, in contrast, typically prioritises information about the patients’ symptoms, psychosocial and family situation. (44) Interestingly, MDT discussions are rated very high when biomedical discussion is combined with a more holistic discussion of the patient as a human being. (56)

2.5.5 Information interpretation and comparison of decision making by individuals with that of MDTs (Table 5)

Three studies showed that the MDTs change the interpretation of information presented to the meeting. Chang et al (36) found that 4% of pathological specimens were reinterpreted; Ganesan et al (34) found that MDT discussion resulted in change to the diagnosis in more than half of the cases (52%); and Davies et al found that MDTs outperforms a range of other diagnostics tests, including CT, oesophageal ultrasound, and laparoscopic ultrasound in tumour staging. (55) However, two studies by the same research group showed no significant difference to individual or the group prognostications or survival predictions before and after MDT discussion. (54; 71)

Seven studies found that MDTs affect treatment decision in 2-52% of cases. (32-37) These studies did not show the reasons for changes, or whether decision-making improved. A study by Forrest et al shows that the number of patients being offered chemotherapy was significantly higher after the introduction of MDT (7% to 23%), and the proportion of palliative care fell (58% to 44%). The authors postulated that this finding could indicate that the MDT takes a more proactive approach to treatment than individual clinicians alone (although they note that other factors could also have contributed) (Table 4). (38) In addition,
Table 5: Information interpretation and individual vs. MDT decisions

<table>
<thead>
<tr>
<th>Lead Author</th>
<th>Theme</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acher et al 2005</td>
<td>Effect of MDT on treatment decision</td>
<td>2/124 (2%) management changed as result of discussion.</td>
</tr>
<tr>
<td>Bumm et al 2007</td>
<td>Effect of MDT on treatment decision</td>
<td>36% of subset of 1545 decisions modified by MDT. No further information given.</td>
</tr>
<tr>
<td>Chang et al 2001</td>
<td>Effect of MDT on diagnosis</td>
<td>3 of 77 (4%) pathological diagnoses changed by MDT.</td>
</tr>
<tr>
<td></td>
<td>Effect of MDT on treatment decision</td>
<td>32 of 77 (43%) decisions modified by MDT. Of 32, 10 needed further workup, 3 had pathology re-evaluated 15 more conservative treatment given, 4 more invasive treatments.</td>
</tr>
<tr>
<td>Davies et al 2006</td>
<td>Effect of MDT meeting on accuracy of staging.</td>
<td>T stage: oesophageal- MDT more accurate than CT (p&lt;0·02, Chi-squared). N stage: oesophageal- MDT more accurate than CT (p&lt;0·001, Chi-squared), Oesophageal ultrasound (EUS) (p&lt;0·01, Chi-squared), Laparoscopic ultrasound (LUS) (p&lt;0·01, Chi-squared); gastric- MDT more accurate than CT (p&lt;0·03, Chi-squared), EUS (p&lt;0·02, Chi-squared), LUS (p&lt;0·05, Chi-squared). Incorrect treatment given: Oesophageal cancer: CT scans alone 42 of 94 (44.7%), EUS alone 31 of 94 (33%), LUS alone 11 of 28 (39%), MDT discussion 17 of 94 (18.1%). Gastric cancer: CT alone 6 of 24 (25%), EUS 8 of 24 (33%), LUS 5 of 11 (45%), MDT 7 of 24 (29%). No effect sizes given.</td>
</tr>
<tr>
<td>Forrest et al 2005</td>
<td>Effect of MDT on treatment decision</td>
<td>Chemotherapy: pre 7% v post 23% P=&lt;0·001. Palliative care: pre 58% v post 44% P=0.045. Overall change in treatment P=0·003.</td>
</tr>
<tr>
<td>Ganesan et al 2008</td>
<td>Effect of MDT on diagnosis</td>
<td>Change in diagnosis in 48/91 (52%) cases (Grading modifications in 34 cases, non-grading modifications in 14 cases).</td>
</tr>
<tr>
<td></td>
<td>Effect of MDT on treatment decision</td>
<td>20/91 (22%) decisions modified by MDT (Changed grading 9 cases, alterations in histopathology 3 cases, change to primary site 8 cases).</td>
</tr>
<tr>
<td>Gatcliffe et al 2008</td>
<td>Effect of MDT on treatment decision</td>
<td>13/153 (8.5%) of decisions modified by MDT (change from pathology 6, radiology 2, staging 4, oncologist 1 case)</td>
</tr>
<tr>
<td>Kee et al 2007</td>
<td>Effect of MDT meeting on accuracy of individual clinician prognostication</td>
<td>Mean difference after MDT discussion 0·007, (95% CI -0·014 to 0·001). No significant difference.</td>
</tr>
<tr>
<td></td>
<td>Effect of MDT meeting on accuracy of group prognostic estimates.</td>
<td>Mean difference after MDT discussion 0·01. No effect size reported.</td>
</tr>
<tr>
<td>Lead Author</td>
<td>Theme</td>
<td>Result</td>
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<tr>
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<td>------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Kee et al 2004</td>
<td>Effect of MDT on treatment decision</td>
<td>39% of decisions modified by MDT (no reason given).</td>
</tr>
<tr>
<td></td>
<td>Effect of MDT on quality of clinician decision</td>
<td>Combined mean net utility -0.00087 (95% Confidence interval -0.00487 to 0.00313). No significant difference.</td>
</tr>
<tr>
<td></td>
<td>Effect of MDT discussion on clinician prediction of survival</td>
<td>No significant difference between mean predictions of survival (P= 0.236) or morbidity (P= 0.916) before and after MDT discussion (Wilcoxon Signed Rank Test).</td>
</tr>
<tr>
<td>Newman et al 2006</td>
<td>Change in decision from MDT discussion</td>
<td>48 of 149 (32%) decisions modified by MDT due to reappraisal in line with guidelines.</td>
</tr>
</tbody>
</table>
one study found that accuracy of staging with MDT at least as good as the individual modalities and in some cases better, but no effect size was reported. (55) No significant improvement in prognostication or survival prediction by MDT over individual clinicians’ estimates were found in two studies that investigated them. (54;71)

2.5.6 Teamworking and leadership in MDTs (Table 6)

Time pressure and workload are key factors affecting the quality of the MDT work. Team performance is negatively affected by workload. (46) Time pressure is often observed in MDTs, rendering decision-making rushed (57) and lowering team-members’ attendance. (48) Sidhom et al found that the biggest limitation of MDTs was when patients were not worked up enough prior to their case discussion. (61) Protected time for these meetings and preparation has been reported as a key improvement to MDT functioning. (49)

One survey study has assessed team-members’ views of the MDT environment. (61) Team-members perceive the MDT as an environment in which optimal management plans are formulated, treatment is coordinated, and likelihood of error is reduced. In the same study, 67% of Consultant/Attending-level team-members reported that they typically work in an open and free MDT environment. Comparing different professional groups, surgeons tend to be more content with the teamworking than other specialties. (61) However, the role of nursing personnel in these meetings appears to be limited. A number of studies found that nurses bring the patient’s views and psychosocial aspects of care to the MDT. (56;57;72) Nurses’ views however are often ignored, and nurses do not speak at the meetings. (56;57) When they are actively involved, performance of the team is higher. (46) In addition to
### Table 6: Teamworking and leadership in MDTs

<table>
<thead>
<tr>
<th>Lead Author</th>
<th>Theme</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amir et al 2004</td>
<td>Professional roles of Breast cancer nurses.</td>
<td>(1) Role in ensuring the co-ordination, communication and planning of the team not recognised outside the team. (2) Role in making the bureaucracy respond to patients and family. (3) Role to assess patients’ concerns and incorporate them into the plan. (4) Confidence and humour (5) politically restricted compared to doctors.</td>
</tr>
<tr>
<td>Butow et al 2007</td>
<td>Current practice of involving patients in MDT meetings: Involving patients in discussion of their own case</td>
<td>Only 12 of 300 (4%) healthcare professionals’ work practice allowed for patient attendance. 126 of 135 (93%) patient advocates, 41 of 56 (73%) nurses, of 45 of 142 (32%) surgeons, 16 of 65 (25%) medical and 7 of 31 (24%) radiation oncologists thought it would benefit patients (Chi squared, P&lt;0.001).</td>
</tr>
<tr>
<td>Delaney et al 2004</td>
<td>Effect of telemedicine on non attendance at MDT meetings</td>
<td>63% regularly attended face-to-face MDTM. Non attendance due to time commitments, schedule clashes, too few cases to make worthwhile.</td>
</tr>
<tr>
<td>Haward et al 2003</td>
<td>Evaluation of Leadership in breast teams in England. Team composition and self reported effectiveness Team input and clinical performance</td>
<td>Positive correlates: a number of leaders (β=0.258, p=0.018). Negative correlates: one leader (β=-0.353, p=0.002), lack of leadership clarity(β=0.382, p=0.001), leadership conflict (β=0.453, p=0.001), (all stepwise regression analysis) Self-reported team effectiveness increased with team size (β=0.254, p=0.034), team diversity (β=0.428, p=0.001), and number of medical oncologists (β=0.243, p=0.044). Breast surgeons (p=0.05) and breast care nurses (p=0.01) associated with higher self-reports of effectiveness. Radiologists (β=0.235, p=0.035) and clinical oncologists (β=0.241, p=0.041) associated with lower self reports of team effectiveness. (all stepwise regression analysis) Clinical performance correlated with proportion of breast cancer nurses (β=0.376, p=0.0003) (stepwise regression analysis), workload (β=0.331, p=0.009) (stepwise regression analysis), and proportion of new cases (r=0.262, p=0.045) (univariate analysis). Negative correlates: Number of hospitals team operated over (β=0.342, p=0.011) (stepwise regression analysis).</td>
</tr>
<tr>
<td>Kidger et al 2008</td>
<td>Factors that influence decision making in the MDT</td>
<td>(1) Unsystematic consideration of patient related factors (comorbidity, psychosocial situation, patient wishes), privileged role of disease/pathological information in decision making. (2) Variation in team members’ role and level of participation in discussions, depending on their profession. (3) Different pathways of discussion- quick and decisive, long and decisive, long with no decision.</td>
</tr>
<tr>
<td>Lead Author</td>
<td>Theme</td>
<td>Result</td>
</tr>
<tr>
<td>-------------</td>
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</tr>
</tbody>
</table>
| Lanceley et al 2008 | To explore the process of decision-making in MDT. | (1) The team: 30+ members. Meetings highly pressurised, crowded, swift and technical. Some members resented technicality. Meetings favoured traditional professional hierarchies.  
(2) The discussion: junior medical staff began discussion. This set a disease focussed discussion, excluding non-medical team members from contributing. Not open to challenge.  
(3) Psychosocial information: another form of knowledge concerning personhood, ethics and morality. Nurses were talked over and biomedical knowledge prevailed.  
(4) Union of medical and psycho-social information: when good knowledge of patients was present, the different strands were integrated. This gave an improved discussion. |
| Macaskill et al 2006 | Timing of MDT meetings attended  
Chairperson of MDT meeting  
Improvements to MDT meeting | Protection of time for MDT meetings: 28% protected session, 72% unprotected (51.5% lunchtime, 26.5% breakfast, 6.6% evening).  
Chair: surgeon 76.5%, radiologist 14%, rotating chair 5.9%.  
78% wanted more time or protected sessions. |
| Sidhom et al 2008 | Limitations of MDTM:  
Discussion environment:  
Perceived benefits of MDT:  
Effect of patient attendance on understanding of legal position | Failure to adequately work patients up before discussion 69%, inadequate time and resources 45%.  
67% felt open and free. 49% radiation oncologists felt discussion environment suboptimal vs. 22% surgeons and 21% medical oncologists. (P=0.003).  
Best management plan generated 61%, coordinated service delivery 18%, minimization of error 11%. good learning environment for participants 10%.  
Where patients attend MDTs 63% understood legal position vs. 42% if patients not attending (P= 0.04, chi-squared). |
nursing staff, generally larger and more diverse teams are associated with increased self-reported effectiveness.(46)

Regarding MDT leadership, surgeons tend to lead MDTs.(49) Haward et al found that having several leaders (not within one meeting) contributed to better teamworking, whereas having one stable leader makes team work deteriorate. Lack of clarity in leadership and conflicts also significantly impede teamworking.(46)

General practitioners were found to be generally satisfied with the way decisions were communicated, and most were happy not to take part in MDT discussions.(68)

2.5.7 Patient involvement (Table 7)

One Australian study found that only 4% of healthcare professionals’ MDTs involve patients in their meetings. Most clinicians (surgeons, medical and clinical oncologists) were not keen to do so, whereas patient advocates and nursing personnel are significantly more positive about patient involvement.(70) Interestingly, Sidhom et al found that clinicians who included patients in the MDT had a significantly better understanding of their legal position compared to those who did not.(61)

2.5.8 Technology: telemedicine and decision support systems (Table 7)

Several studies have investigated various aspects of telemedicine in MDT meetings. A UK national survey in 2005 found that 30% of colorectal cancer teams (who responded) have
<table>
<thead>
<tr>
<th>Author</th>
<th>Themes</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change in time to resection after introduction of telemedicine</td>
<td>Pre-telemedicine= 69 (SD 38); Post-telemedicine= 54 (SD 26). P&gt;0.05 Student's T- test- No significant difference.</td>
</tr>
<tr>
<td>Delaney et al 2004</td>
<td>Effect of telemedicine on attendance of MDT meeting</td>
<td>Face-to-face median 8 (4-10) vs. telemedicine median 10 (8-15).</td>
</tr>
<tr>
<td></td>
<td>Effect of telemedicine on mean number of cases discussed at MDT meeting:</td>
<td>Face-to-face 6 vs. telemedicine 4 (P&lt;0.01, Student's T-test).</td>
</tr>
<tr>
<td>Epstein et al 2006</td>
<td>Extent to which regular use of web-based decision making tool affected MDT decisions.</td>
<td>Treatment decision for adjuvant systemic therapy modified in 13 of 102 decisions (12.7%).</td>
</tr>
<tr>
<td>Kunkler et al 2006</td>
<td>Attitudes of clinicians to telemedicine for MDT meeting</td>
<td>Pre-trial mean =96 (range 53-131, SD 19), after mean =93 (range 60-128, SD 20).</td>
</tr>
<tr>
<td></td>
<td>Agreement of MDT decision with best practice guidelines.</td>
<td>Face-to-face 116/116 (100%). telemedicine 136/137 (99%).</td>
</tr>
<tr>
<td></td>
<td>Costs of service delivery as modified by cost avoidance due to telemedicine</td>
<td>Cost neutral between 20-30 meetings per year.</td>
</tr>
<tr>
<td></td>
<td>Satisfaction of MDT members with the quality of decisions</td>
<td>No significant difference between telemedicine and face-to-face for appropriate sharing of decision on management, consensus on next steps in management or confidence in decision.</td>
</tr>
<tr>
<td>Seroussi et al 2008</td>
<td>To see whether decision tool reduced non-compliance of decisions with clinical guidelines.</td>
<td>Before introduction of decision tool: 179/226 (79.2%) compliant. After: 225/241 (93.4%) compliant. (P &lt;0.0001 Fisher's exact test).</td>
</tr>
<tr>
<td>Soukop et al 2006</td>
<td>Availability of telemedicine facilities.</td>
<td>Videoconferencing facilities: available in 32 (30%), further 11 planning to acquire. only 17 used for MDT.</td>
</tr>
<tr>
<td>Stalfors et al 2007</td>
<td>Change in time to treatment for face-to-face vs. telemedicine</td>
<td>Surgery: telemedicine= 19 days (5-34). Face-to-face = 14 days (5-59). Oncology: telemedicine= 38 (5-267). Face-to-face= 32 (3-229). No significant difference MWU test.</td>
</tr>
<tr>
<td></td>
<td>Change in rate of treatment plan with telemedicine vs. without.</td>
<td>Failure to reach a decision: Face-to-face 69/234 (29%), telemedicine: 15/49 (31%). No effect size reported.</td>
</tr>
</tbody>
</table>
telemedicine facilities available. (65) A few studies have shown that decision-making that relies on telemedicine is not inferior to face to face decision-making. (51-53; 74) whereas Delaney et al found telemedicine may improve attendance. This study, however, also showed that using telemedicine significant reduces number of cases discussed per meeting (from six to four). (48) Kunkler et al found that telemedicine can be cost-effective at 20-30 meetings per year. (51)

Decision support is not used very often in MDTs, although there is evidence that they can improve care. (78) Seroussi et al found that compliance with clinical guidelines improved (79-2% to 93-4%) with the use of a decision tool. (77)

2.6 Discussion

2.6.1 Summary of results

To the best of my knowledge this systematic review has looked at all the available literature concerning decision-making by healthcare professionals in cancer MDTs. The review has produced papers from ten countries around the world which confirms that this topic is of global significance.

MDTs seem to make a difference to the outcome of decisions, compared with the decisions of individual clinicians. The literature shows the varied roles played by different team members within the MDT and that MDT decisions are sometimes not implemented, often because of insufficient information when a decision is made. This review has found that high-quality
decision making requires optimal support in the form of comprehensive information at the point of decision-making, effective teamworking and leadership, protected time and good facilities. Use of telemedicine is increasing and can provide a cost effective way to improve attendance and synchronously present pathological and radiological information at different sites.

2.6.2 Limitations

There is an array of different outcomes being investigated and therefore only a small amount of research for any given cancer site (Table 2). This scarcity of research presents a complex issue for researchers and provides a limited evidence base on which clinicians can base MDT practice, presenting a challenge for future research. Although large, double-blind, randomised control trials are the gold standard of medical research, they may not be appropriate or feasible in this area. Larger prospective studies would reduce the risk of studies being underpowered, a problem faced by several authors in my systematic review, and would help to eliminate bias.\(^{(54;55)}\)

This systematic review exposes several shortcomings in the literature on MDT decision making. The studies in this review were of variable quality and many were not able to give significance values or confidence intervals. The studies’ methodological limitations probably reflect a pilot or feasibility status. Only one paper in this review examines activity of a local MDT.\(^{(32)}\) Other studies are based at either teaching hospitals or specialist MDTs (often convened at city teaching hospitals), or are national surveys that do not draw the distinction between local and specialist/regional MDTs. This potential bias could arise because researchers, often based at teaching hospitals, may find it easier to study their institution’s
own specialist MDT rather than a local MDT based elsewhere. Only one paper from India gives any indication of the work into decision-making in MDTs in the developing world. (34) MDTs may not be as widely practiced in the developing world, or research into MDTs may not be widely undertaken. There is also the possibility of publication bias towards research from these countries, and language bias given that I only selected papers published in English.

2.7 Conclusion

This Chapter summarised the current evidence surrounding decision making by MDTs across a range of specialities in multiple countries and has found that high-quality decision making in MDT meetings depends on a number of factors including comprehensive information at the point of decision-making, effective teamworking and leadership, protected time and good facilities. A recent national survey by the UK National Cancer Action Team suggests that many of these factors are relevant to healthcare professionals in the UK. (79) It is not known, however, whether these issues apply to professionals across all tumour types, or to particular tumour types, such as urology. It is important to explore which of the factors from the present Chapter healthcare professionals feel apply to their own clinical practice, and to which tumour types these issues are relevant. To this end, the following two Chapters describe analyses of the original data from the 2009 NCAT national survey (79) Chapter 3 explores areas of consensus and difference in opinion/perceptions between MDT members from different tumour types using data from closed survey questions. Chapter 4 uses health care professionals’ own free text responses to questions that address the decision-making process in more depth.
3 ANALYSIS OF A NATIONAL UK SURVEY ON MULTIDISCIPLINARY TEAM WORKING ACROSS DIFFERENT TUMOUR TYPES

3.1 Chapter overview

In this Chapter I analyse the responses of MDT members from a UK national survey to statements regarding MDT working, in order to assess consensus and difference across a range of tumour types.

3.2 Introduction

In the absence of empirical evidence about the characteristics of effective MDTs the National Cancer Action Team recently conducted a national survey of MDT members’ perceptions of MDT working.(79) Over 2000 MDT members responded to the survey which has enabled a working definition of MDT effectiveness to be developed. There was strong agreement about the components of effective MDT working in relation to various domains of teamworking, including aspects of the structure, resources and process of decision-making within cancer MDTs. The results from the 2009 NCAT survey were summarised in a report where descriptive comparisons were made of perceptions of MDT working across professional groups and tumour types but no statistical techniques were applied.(79) However, the underlying assumption that the basic model for MDT working is appropriate for all tumour types, including urology has not been validated.(80)
3.3 Aims

The aim of the present Chapter is to empirically test this assumption regarding MDT working by applying appropriate statistical techniques to data from the national NCAT survey. Specifically, my objectives are to:

1. Systematically analyse responses relating to the components of effective MDT working
2. Identify areas of consensus and difference in opinion/perceptions between MDT members from different tumour types

3.4 Methods

3.4.1 The 2009 national NCAT survey

The survey aimed to investigate MDT members’ perceptions about effective MDT working. It was designed with input from a steering group consisting of 32 cancer professionals, including representatives from all core disciplines in cancer MDTs. Surveys were completed on-line between 30th January and 16th March 2009. The survey contained 131 statements which were rated on 1-4 Likert scales (1=strongly disagree, 4=strongly agree), along with 5 additional multiple choice questions, all of which are included in the current analysis. In addition, there was a background section to collect information about respondents’ demographics and current working practices and also some free text questions – these are not included in this paper. The domains of teamworking covered by the survey and analysed here are depicted in Figure 4.
Survey participants were recruited using a snowball sampling method via cancer networks, cancer service managers, the MDT coordinators forum and the Network Development Programme forum for Informatics. Participants were sent an introductory email with the web address of the survey, and were encouraged to circulate the details broadly amongst MDT members. A link to the survey was also provided on the National Cancer Intelligence Network website. Anonymity was assured and informed consent implied by completion of the survey.

3.4.2 Participants

Due to the focus on tumour type differences, only respondents who were core or extended members of an MDT, and who worked in a single tumour type were included in analysis. The survey only enabled an ‘overall’ opinion, rather than permitting respondents to give different responses for different teams/tumour types. Therefore the responses of those who work in more than one tumour type would be averaged across the different teams they work in, thus artificially reducing any difference that might occur between tumour types. In addition, members of tumour types with fewer than 100 responses were excluded to ensure all subgroup analyses were carried out on a statistically robust sample size. Included tumour types were breast, gynaecological, colorectal, upper gastrointestinal, urological, head and neck, haematological and lung.
<table>
<thead>
<tr>
<th>The team</th>
<th>Membership</th>
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<tr>
<td></td>
<td>Attendance</td>
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<tr>
<td></td>
<td>Leadership</td>
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<tr>
<td></td>
<td>Team working &amp; culture</td>
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<td></td>
<td>Personal development &amp; training</td>
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<tr>
<td>Infrastructure for Meetings</td>
<td>Physical environment of meeting venue</td>
</tr>
<tr>
<td></td>
<td>Technology &amp; equipment (availability &amp; use)</td>
</tr>
<tr>
<td>Meeting Organisation &amp; Logistics</td>
<td>Scheduling of MDT meetings</td>
</tr>
<tr>
<td></td>
<td>Preparation prior to MDT meetings</td>
</tr>
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<td></td>
<td>Organisation/administration during MDT meetings</td>
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<td></td>
<td>Post MDT meeting /co-ordination of service</td>
</tr>
<tr>
<td>Patient-centred Clinical Decision-Making</td>
<td>Who to discuss</td>
</tr>
<tr>
<td></td>
<td>Patient-centred care</td>
</tr>
<tr>
<td></td>
<td>Clinical decision-making process</td>
</tr>
<tr>
<td>Team Governance</td>
<td>Organisational Support</td>
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<tr>
<td></td>
<td>Data collection, analysis and audit of outcomes</td>
</tr>
<tr>
<td></td>
<td>Clinical governance</td>
</tr>
</tbody>
</table>

Figure 4: Domains of MDT working covered in the 2009 NCAT survey of cancer MDT members. Main headings are set out on the left with themes detailed on the right.
3.4.3 Analysis

Following the NCAT report authors’ recommendations, which were intended to render the analysis most meaningful, and also to simplify a very extensive dataset, responses were aggregated into agree/disagree categories (scale ratings 3 or 4=agree; scale rating 1 or 2=disagree).(79) Three levels of analysis were undertaken. Firstly, statements for which the difference between the tumour group with the highest and the lowest percentage agreement was under 20% were treated as consensus. In these cases no further analysis was undertaken. Secondly, where the difference between the tumour group with the highest and the lowest percentage agreement was equal to, or more than 20%, the nonparametric Kruskal Wallis test was applied to responses to each statement in order to explore differences by tumour type.

For each statement, a non-significant test result would indicate that responses were similar across tumour types, implying consensus. In these cases no further analysis was undertaken. A significant Kruskal Wallis test would indicate differences in perceptions across tumour types which were submitted to a third line of analysis. For the third analysis, pair-wise comparisons were undertaken between the different tumour types using the nonparametric Mann Whitney U test. As in the previous analysis, non-significant Mann Whitney results between any two tumour types on pair-wise comparison would indicate consensus between the pair, whereas significant results would indicate differences in perception/opinion between specific tumour types. Bonferroni correction with nominal p<0.05 was used for multiple comparisons to minimise statistical bias (Type I error). All statistical analyses were performed using SPSS version 17.0 (SPSS Inc., Chicago, IL, USA).
3.5 Results

3.5.1 Respondents

Of 2054 respondents to the survey, 1141 met the criteria for inclusion in this analysis (were members of MDTs that only covered one tumour type and there were at least 100 respondents in the tumour type). These included members of eight of the most common tumour types: Breast, Colorectal, Lung, Gynaecological, Head and Neck, Upper Gastro-Intestinal, Urological, and Haematological cancers, with the exclusion of skin, brain and CNS, sarcoma and children and young people due to sample size of less than 100. The professional groups of respondents within each tumour type are shown in Table 8.
Table 8: Responses of MDT members by professional group and tumour type

<table>
<thead>
<tr>
<th>Professional Group</th>
<th>Respondents by tumour type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bre</td>
</tr>
<tr>
<td>Surgeon</td>
<td>22</td>
</tr>
<tr>
<td>Radiologist</td>
<td>15</td>
</tr>
<tr>
<td>Histo/cytopathologist</td>
<td>4</td>
</tr>
<tr>
<td>Oncologist</td>
<td>6</td>
</tr>
<tr>
<td>Haematologist</td>
<td>0</td>
</tr>
<tr>
<td>Other Doctor (Physician, GP etc)</td>
<td>2</td>
</tr>
<tr>
<td>Palliative care specialist</td>
<td>0</td>
</tr>
<tr>
<td>Clinical Nurse Specialist</td>
<td>29</td>
</tr>
<tr>
<td>Nursing (other)</td>
<td>0</td>
</tr>
<tr>
<td>Allied Health Professional</td>
<td>8</td>
</tr>
<tr>
<td>MDT coordinator</td>
<td>10</td>
</tr>
<tr>
<td>Other (admin/clerical and managerial)</td>
<td>2</td>
</tr>
<tr>
<td>Total number</td>
<td>204</td>
</tr>
</tbody>
</table>

3.5.2 Consensus and differences across tumour types

The responses to 116 of the total 136 statements were similar across tumour types (no significant difference across tumour types, as assessed by Kruskal Wallis tests and Mann Whitney U test). The remaining 20 statements showed significant differences between the responses of different tumour types (Table 9).
Table 9: Statements with significant differences in agreement/opinion between MDT members from different tumour types; Mann Whitney U Test; Significance level P≤0.001.

<table>
<thead>
<tr>
<th>Domain</th>
<th>No Significant difference</th>
<th>Significant difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The team</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Membership, attendance &amp; Leadership</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Team working &amp; culture</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Personal development &amp; training</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td><strong>Infrastructure for Meetings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical environment of meeting venue</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Technology &amp; equipment (availability &amp; use)</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td><strong>Meeting Organisation &amp; Logistics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scheduling of MDT meetings</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Preparation prior to MDT meetings</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Organisation/administration during MDT meetings</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Post MDT meeting /co-ordination of service</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td><strong>Patient-centred Clinical Decision-Making</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who to discuss</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Patient-centred care</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Clinical decision-making process</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td><strong>Team Governance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organisational Support</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Data collection, analysis , audit and clinical governance</td>
<td>23</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>116</td>
<td>20</td>
</tr>
</tbody>
</table>

There were no differences in opinions between MDT members from the different tumour types regarding aspects of teamworking that related to the infrastructure for meetings, and team governance (Table 10). Significant agreement (i.e., no more that 20% difference between the highest and lowest percentage agreement across tumour types) was obtained for these domains.
### Table 10: Statements showing consensus of opinion relating to infrastructure for meetings, and team governance

<table>
<thead>
<tr>
<th>Statement</th>
<th>% Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infrastructure for Meetings</strong></td>
<td></td>
</tr>
<tr>
<td>Physical environment of meeting venue</td>
<td></td>
</tr>
<tr>
<td>All attendees need to be able to view diagnostics from where they are seated</td>
<td>98 96 100</td>
</tr>
<tr>
<td>A dedicated MDT meeting venue should be available</td>
<td>96 93 99</td>
</tr>
<tr>
<td>Technology &amp; equipment (availability &amp; use)</td>
<td></td>
</tr>
<tr>
<td>MDT meeting rooms should have equipment for projecting and viewing radiology images</td>
<td>100 99 100</td>
</tr>
<tr>
<td>Meetings need to have access to retrospective images during the meeting</td>
<td>99 97 100</td>
</tr>
<tr>
<td>MDTs need to be able to access retrospective pathology reports</td>
<td>98 97 100</td>
</tr>
<tr>
<td>MDT meeting rooms should be connected to PACS</td>
<td>96 92 99</td>
</tr>
<tr>
<td>Technology (availability and use) (is important / very important)</td>
<td>95 93 97</td>
</tr>
<tr>
<td>MDT meeting rooms need facilities for projecting and viewing specimen biopsies</td>
<td>94 88 97</td>
</tr>
<tr>
<td><strong>Team Governance</strong></td>
<td></td>
</tr>
<tr>
<td>Organisational Support</td>
<td></td>
</tr>
<tr>
<td>Professional support (i.e. from peers) for MDT working is important</td>
<td>99 97 100</td>
</tr>
<tr>
<td>Organisational support (i.e. from employers) for MDT working is important</td>
<td>97 96 99</td>
</tr>
<tr>
<td>Interactive electronic data systems should support MDT meetings</td>
<td>96 95 98</td>
</tr>
<tr>
<td>Data collection, analysis, audit of outcomes and clinical governance</td>
<td></td>
</tr>
<tr>
<td>If a patient chooses a treatment that is not in line with MDT recommendations this should be recorded</td>
<td>98 94 100</td>
</tr>
<tr>
<td>MDTs should be responsible for collecting key information that directly affects treatment decisions</td>
<td>97 94 100</td>
</tr>
<tr>
<td>MDTs should have processes to review audit data</td>
<td>97 92 100</td>
</tr>
<tr>
<td>Internal audit should be used to confirm that treatment decisions match current best practice</td>
<td>97 92 100</td>
</tr>
<tr>
<td>Being an MDT member is not solely confined to attendance at meetings</td>
<td>96 94 99</td>
</tr>
<tr>
<td>MDTs must collect and use defined national minimum datasets (e.g. cancer registration)</td>
<td>96 93 98</td>
</tr>
<tr>
<td>MDTs should be alerted to serious treatment complications or death in treatments</td>
<td>95 88 100</td>
</tr>
<tr>
<td>Data collection, analysis and audit of outcomes (is important / very important)</td>
<td>92 88 95</td>
</tr>
<tr>
<td>MDT should review treatment recommendations after notification of complications/ death in treatment</td>
<td>91 83 98</td>
</tr>
<tr>
<td>There should be agreed guidelines for how an MDT operates, how members work together etc.</td>
<td>91 85 95</td>
</tr>
<tr>
<td>Majority agreement of a treatment recommendation is acceptable</td>
<td>91 87 93</td>
</tr>
</tbody>
</table>
Similarly, significant consensus was obtained for most of the survey statements in the other domains, including characteristics of the team, MDT meeting organisation and logistics, and patient-centred clinical decision-making (Table 11). Within these three domains, however, there were also significant differences between tumour types for some statements – these are reported in detail in Table 12.

Regarding tumour types, haematology participants were consistently different from other tumours (involved in 8 of the 20 non-consensual statements), followed by lung participants (involved in 6 of the 20). Other tumour types showed fewer discrepancies from the general consensus. Regarding domains, tumour types disagreed in relation to circulating case summaries prior to the meeting (Breast, Colorectal and Lung did not agree) and not allowing late additions to the agenda (Colorectal and Lung did not agree). Both of these are aspects of meeting organisations and logistics. Moreover, disagreement was evident on whether a patient should be discussed in an MDT if no one is present who has seen the patient (Gynaecological and Upper Gastro-Intestinal did not agree with this), which is an aspect of patient-centred decision-making care. Within the same domain, Haematology was an outlier in relation to several statements about the process of clinical decision-making in MDTs – including whether MDT discussion improves timeliness of care, patient choice, patient involvement, patient staging, and survival rates. Lung participants also contributed to three significant disagreements within this domain that related to palliative care processes, discussion of patients with recurrences, and oncologists making treatment decisions without MDT support for some patients.
Table 11: Statements showing consensus of opinion relating to the team; meeting organisation and logistics; and patient-centred clinical decision-making

<table>
<thead>
<tr>
<th>Statement</th>
<th>% Agreement</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The team</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Membership, attendance &amp; Leadership</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Membership and attendance (is important / very important)</td>
<td>99</td>
<td>98</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Good leadership is a pre-requisite for effective teamwork within the MDT environment</td>
<td>98</td>
<td>96</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Leadership (is important / very important)</td>
<td>95</td>
<td>93</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>Team working &amp; culture</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamworking (is important / very important)</td>
<td>99</td>
<td>96</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>The relationship between the Chair and the MDT coordinator is key to ensuring the meeting runs effectively</td>
<td>92</td>
<td>87</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>Personal development &amp; training</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDTs have an important role in sharing learning and best practice with peers</td>
<td>97</td>
<td>94</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>MDTs provide an opportunity for education and learning for staff in all disciplines</td>
<td>96</td>
<td>91</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>The MDT should contribute to the continuing professional development of all members</td>
<td>95</td>
<td>92</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>Meeting Organisation &amp; Logistics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scheduling of MDT meetings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDT members need allocated protected time (including travel time) to attend meetings</td>
<td>98</td>
<td>96</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Core members should attend for the full meeting and not just for the cases directly relevant to them</td>
<td>93</td>
<td>88</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Preparation prior to MDT meetings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation prior to MDT meeting (is important / very important)</td>
<td>97</td>
<td>92</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>Preparation time for MDT meetings should be recognised in job plans</td>
<td>97</td>
<td>94</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>The agenda and patient lists should be circulated prior to the meeting</td>
<td>97</td>
<td>91</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>Information about patients to be discussed should be collated and summarised prior to the MDT meeting</td>
<td>96</td>
<td>93</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>All case notes/reports/images, past and present, should be available at the meeting</td>
<td>96</td>
<td>87</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>Organisation/administration during MDT meetings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organisation/admin during MDT meeting (is important / very important)</td>
<td>98</td>
<td>96</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
### Patient-centred Clinical Decision-Making

<table>
<thead>
<tr>
<th>Patient-centred care</th>
<th>99</th>
<th>98</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient demography and co-morbidities should always be considered</td>
<td>99</td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td>Patient psychosocial, supportive and palliative care issues should always be considered</td>
<td>97</td>
<td>95</td>
<td>99</td>
</tr>
<tr>
<td>Patients should be made aware that an MDT will be advising on their treatment/care</td>
<td>96</td>
<td>88</td>
<td>99</td>
</tr>
<tr>
<td>(Effective MDT working results in) More co-ordinated patient care</td>
<td>96</td>
<td>92</td>
<td>99</td>
</tr>
<tr>
<td>Patient views should always inform the decision-making process</td>
<td>96</td>
<td>93</td>
<td>98</td>
</tr>
<tr>
<td>Patient views/preferences should be presented to the MDT meeting by someone who has met the patient</td>
<td>94</td>
<td>88</td>
<td>97</td>
</tr>
<tr>
<td>Patient-centred care/coordination of service (is important / very important)</td>
<td>94</td>
<td>86</td>
<td>98</td>
</tr>
<tr>
<td>(Effective MDT working results in) Improvement to overall quality of care</td>
<td>94</td>
<td>86</td>
<td>98</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinical decision-making process</th>
<th>99</th>
<th>98</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case management and clinical decision-making process (is important / very important)</td>
<td>99</td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td>MDTs should consider all clinically appropriate treatment options even if they cannot offer/provide them locally</td>
<td>99</td>
<td>96</td>
<td>100</td>
</tr>
<tr>
<td>Care plans should be communicated to other health professionals within a locally agreed timeframe</td>
<td>99</td>
<td>96</td>
<td>100</td>
</tr>
<tr>
<td>(Effective MDT working results in) Improved clinical decision making</td>
<td>98</td>
<td>94</td>
<td>99</td>
</tr>
<tr>
<td>A patient's suitability for trials should always be considered</td>
<td>98</td>
<td>94</td>
<td>100</td>
</tr>
<tr>
<td>Standard pro-forma documentation should be used when electronic databases are not available</td>
<td>97</td>
<td>95</td>
<td>98</td>
</tr>
<tr>
<td>Decisions should be documented in real time on a database or proforma</td>
<td>96</td>
<td>92</td>
<td>99</td>
</tr>
<tr>
<td>(Effective MDT working results in) Evidence-based treatment decisions</td>
<td>95</td>
<td>91</td>
<td>98</td>
</tr>
<tr>
<td>A minimum dataset of diagnostic information (pathology and radiology) should be presented for each patient</td>
<td>94</td>
<td>86</td>
<td>97</td>
</tr>
<tr>
<td>Standard treatment protocols for patients should be used whenever possible</td>
<td>94</td>
<td>89</td>
<td>97</td>
</tr>
<tr>
<td>Formal protocols are needed to manage referral of patient cases between MDTs</td>
<td>91</td>
<td>83</td>
<td>95</td>
</tr>
<tr>
<td>MDTs should always be notified if their treatment recommendations are not adopted</td>
<td>91</td>
<td>82</td>
<td>99</td>
</tr>
<tr>
<td>(Effective MDT working results in) Improved treatment</td>
<td>90</td>
<td>78</td>
<td>95</td>
</tr>
</tbody>
</table>
Table 12: Statements with significant difference in opinion between MDT members across different tumour groups.

<table>
<thead>
<tr>
<th>Statements with differences</th>
<th>Agreement by tumour type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Br</td>
</tr>
<tr>
<td>The team</td>
<td></td>
</tr>
<tr>
<td>Leadership</td>
<td></td>
</tr>
<tr>
<td>The same individual should chair the MDT meeting on a regular basis</td>
<td>74</td>
</tr>
<tr>
<td>Teamworking &amp; culture</td>
<td></td>
</tr>
<tr>
<td>A good MDT can save you time elsewhere in the period between meetings</td>
<td>94</td>
</tr>
<tr>
<td>Meeting Organisation &amp; Logistics</td>
<td></td>
</tr>
<tr>
<td>Preparation prior to MDT meetings</td>
<td></td>
</tr>
<tr>
<td>All MDT core members need to do some preparation prior to the meeting</td>
<td>83</td>
</tr>
<tr>
<td>Case summaries should be circulated prior to the meeting</td>
<td>50</td>
</tr>
<tr>
<td>Late additions to the agenda should not be allowed unless clinically urgent</td>
<td>74</td>
</tr>
<tr>
<td>Organisation/administration during MDT meetings</td>
<td></td>
</tr>
<tr>
<td>What is the maximum length of time an MDT should last? (minutes)</td>
<td>105</td>
</tr>
<tr>
<td>What is the optimum number of cases your MDT can discuss during a single meeting?</td>
<td>30</td>
</tr>
<tr>
<td>Patient-centred clinical decision-making</td>
<td></td>
</tr>
<tr>
<td>Patient-centred care</td>
<td></td>
</tr>
<tr>
<td>A patient's case should not be discussed unless someone is present who has been involved in assessing the patient</td>
<td>65</td>
</tr>
<tr>
<td>Clinical decision-making process</td>
<td></td>
</tr>
<tr>
<td>MDT discussion results in Improved timeliness of tests/treatments</td>
<td>87</td>
</tr>
<tr>
<td>MDT discussion results in Improved patient choice</td>
<td>76</td>
</tr>
<tr>
<td>MDT discussion results in Improved patient involvement in decisions</td>
<td>73</td>
</tr>
<tr>
<td>MDT discussion results in Increase in proportion of patients staged</td>
<td>71</td>
</tr>
<tr>
<td>MDT discussion results in Improved survival rates at appropriate intervals</td>
<td>87</td>
</tr>
<tr>
<td>Specialist palliative care representation is essential at every MDT meeting</td>
<td>20</td>
</tr>
<tr>
<td>Specialist palliative care attendance is not needed if there are referral mechanisms</td>
<td>94</td>
</tr>
<tr>
<td>All patients with recurrence/progressive disease should be discussed by MDT</td>
<td>92</td>
</tr>
<tr>
<td>Oncologists should not make treatment decisions on patients with recurrence/progressive disease without MDT support</td>
<td>63</td>
</tr>
</tbody>
</table>

Key: Br= Breast; CR= Colorectal; Gyn= Gynaecological; H&N= Head and Neck; UGI= Upper Gastrointestinal; Uro= Urological; Haem= Haematological. Colour coding= Figures in **Red** significantly lower than those in **Green**, Black are not significantly different to any other.
3.6 Discussion

3.6.1 Summary of results

This study aimed to systematically assess whether there exist tumour-based differences in definition of effectiveness of MDT working. Consensus between team members from different tumour types was very high – the majority (116/136) statements were answered similarly regardless of tumour specialty of the respondent. The differences of opinion I have revealed related to preparation for and organisation of MDT meetings, case selection and the clinical decision-making process (Figure 5). Regarding urology specifically, differences from other tumour types were found in only eight of 136 statements, and in each of these, urology only differed from one or two other tumour types, with no significant differences form the remaining tumour types. This study offers statistical evidence that MDT members from different tumour types across the UK are in reasonable agreement about what constitutes effective MDT working.

3.6.2 Limitations

The results of this analysis should be interpreted against certain limitations. The sampling method used for the survey involved snowballing so it is not possible to estimate the representativeness of responses with any confidence. However, the sample adequately represents respondents across core MDT members, common tumour types and a wide range of geographical locations throughout England. Team members were only able to give one response per statement, which meant that respondents who worked in multiple teams across different tumour types were not able report opinions relating to different teams. My analysis
had to exclude such team members and include only those who worked in one tumour type so that only data relating to specific tumour types was included. This imposes an inevitable bias on the sample as MDT members who commonly work across multiple tumour types including oncologists, radiologists and histopathologists, are underrepresented in this study. Future research should elicit the opinions of these professional groups to validate the results of this study. Moreover, professionals who work in more than one tumour type may provide interesting insights into the differences identified in this study by virtue of working in different and possibly contrasting teams. (79) In addition further work should be undertaken to investigate the views of healthcare professionals working in tumour types not included (i.e. those with fewer than 100 responses) in this analysis, in particular members of MDTs working with children and young people, who may need to work in a different way from those working with adult patients.

3.7 Conclusion

In this Chapter I have reported a rigorous analysis of responses to a recent NCAT national survey of MDT members’ views of the characteristics of effective MDT functioning. My analysis reveals numerous areas of consensus across responses from members of different tumour types, including those from urology MDTs. Members from all common tumour types, including those of urology MDTs, expressed variation in some areas of teamwork and clinical decision-making. In Chapter 4 I will attempt to address issues of teamwork, decision-making and patient-centeredness, with an analysis of the responses of healthcare professionals to open-ended questions that address such domains within the same UK national survey.
Figure 5: Diagrammatic representation of domains necessary for effective MDT working, split into generic and tumour specific components. Generic components display consensus across different tumour types; tumour type specific components exhibit variation between tumour types.
4  PERCEPTIONS OF UK MDT MEMBERS ON FACILITATORS, BARRIERS AND PATIENT-CENTEREDNESS IN MDTs

4.1  Chapter overview

In the present chapter I will analyse the responses of MDT members to the open-ended questions in the survey described in Chapter 3, to explore attitudes towards teamworking and patient-centeredness in MDT decision-making.

4.2  Introduction

A number of questions remain regarding MDT functioning, which have not been addressed to date. These include issues like how best to represent patient views in MDT meetings, how disagreements within the team should be dealt with, and what are the factors that impair good teamworking and team decision making in these meetings – including organizational factors (e.g., lack of time to prepare or attend the meeting), or more personal factors (e.g., lack of leadership skills in MDT chairs/leads). These issues can affect directly the process by which a MDT makes clinical decisions, and may contribute to some of the variability seen in MDT performance.(2;81) Therefore addressing some of these questions will equip MDTs with evidence on which to base their practice.
In addition to multiple choice and scale items, the NCAT survey described in Chapter 3 also included free-text responses, where participants could report their own views and perceptions on their MDTs. These responses are available in individual reports by professional group—however, a substantial number of them that relate to the key areas of teamworking and patient-centeredness in MDT decision-making were not analysed in the original work due to limitations of time and resources.(79) Systematic and scientific analysis of responses to these questions will help to fill gaps in the evidence, which are required to improve the standard of clinical decision-making in MDTs. Finding what is important to MDT members in relation to how their teams actually function and how they make patient-centred decisions can contribute to defining benchmarks for effectiveness of MDTs in these key domains.(80) Such benchmarks could then be used to augment current assessment methods (e.g., the ‘peer review’ process), which do not address such issues.(3)

4.3 Aim

In Chapter 4 I have carried out a detailed qualitative analysis of the NCAT free-text responses, aiming to gain an in-depth understanding of effective teamworking in MDTs; the efficacy of decision-making by MDTs; and patient-centeredness of the MDT decision-making process – all of these with particular reference to similarities and differences in views between different ‘core’ professional groups.
4.4 Methods

4.4.1 The 2009 National Cancer Action Team survey

The 2009 National Cancer Action Team survey, as described in Chapter 3, contained both free-text and ‘closed’ (Likert scale and multiple choice) questions. This Chapter focuses on 6 free-text items that address the issues of teamworking and team decision-making in MDTs. The raw data for these items are publicly available (http://www.ncin.org.uk/cancer_type_and_topic_specific_work/multidisciplinary_teams/mdt_development.aspx), but are yet to be analysed scientifically. These 6 questions fall in the following 3 categories:

- Effective teamworking in MDT meetings:
  
  Q1: What makes an MDT work well together?

  Q2: What would help you to improve your personal contribution to the MDT?

- Efficacy of decision-making:

  Q3: How should disagreements/split decisions over treatment recommendations be recorded?

  Q4: What are the main reasons for MDT treatment recommendations not being implemented?

- Patient-centeredness of the MDT decision-making process:

  Q5: Who is the best person to represent the patient’s views at an MDT meeting?

  Q6: Who should be responsible for communicating the treatment recommendations to the patient?
4.4.2 Data analysis

2054 MDT members responded to the survey. For the purposes of the analysis, respondents were grouped into three categories: doctors (D), nurses along with allied healthcare professionals (N), and then MDT coordinators and non-clinical personnel (C). The analytical approach followed well-established standards in qualitative research to ensure validity and transparency. First, all responses were analysed for content to identify emergent themes by two blinded coders (Lamb J & Strickland). Emergent themes were subsequently discussed between the coders, and two other members of the research team who did not have access to the data during the coding phase (i.e., they were blinded), one with background in medicine (Lamb B) and one with background in psychology (Sevdalis). Theme content was finalised at this stage, themes were tabulated, and verbatim quotes from respondents to validate and illustrate the themes were extracted. To simplify presentation themes reported by a very small minority of respondents (fewer than 5% of the total) are not presented in this Chapter.

4.5 Results

4.5.1 Respondents

Of 2054 respondents to this survey, 1636 answered at least one of the questions included in this analysis, including 875 doctors (80% of those who participated overall); 502 nurses and allied healthcare professionals (81%); as well as 260 MDT coordinators and other non-clinical MDT members (76%). The range of responses across all questions (i.e., minimum-maximum number of responses) was 369-689 for doctors, 191–421 for nurses/allied health professionals and 93–202 for coordinators/non-clinical personnel. These numbers are
unusually high in qualitative research of the type reported here and ensure adequate ‘theme saturation’ – in other words, adequate coverage of the key themes per question.

4.5.2 Key Themes

Tables 13 to 15 display detailed results for each of the questions across the 3 areas of interest, namely teamworking in MDTs (Table 13), team decision-making in MDTs (Table 14), and patient-centeredness of the decision-making process (Table 15). The tables include the most prevalent themes in descending order, the proportion of responses that fell within each one of them (%), and verbatim quotes to illustrate theme content.

4.5.2.1 Effective teamworking (Q1 & Q2)

MDT members recognise the need for adequate ‘non-technical’ skills to ensure MDT meetings function well, including mutual respect, good communication and good leadership (Table 13, upper panel). Equally, institutional support from the hospital for the work of the MDT emerged as a key requirement, particularly among doctors– including MDT workload to be included in the job-plans of the team-members, lengthier meetings to ensure less rushed discussion and more time for pre-meeting preparation (Table 13, lower panel). MDT Coordinators/non-clinical personnel were less likely than either doctors or nurses to want more time for MDT working, but more likely to suggest that educational training days would improve their contribution, thereby revealing an existing training need for this group.
4.5.2.2 Efficacy of decision-making by MDTs (Q3 & Q4)

Participants recognised that disagreements do occur, and the consensus across all of them was that such disagreements ought to be recorded. Doctors were overall more likely to suggest verbatim recording, whereas nurses and coordinators were of the view that noting disagreements in meeting minutes is sufficient. Acknowledging such disagreement within patient notes and also in discussions with patients also surfaced as aspects of the process of handling disagreements (Table 14, upper panel). Regarding lack of implementation of MDT decisions, lack of information derived from close contact with patients was reported as the main reason for decisions not being implemented (Table 14, lower panel). Interestingly, a smaller proportion of doctors than nurses or MDT coordinators responded that a direct lack of patient contact is the main reason behind non-implementation.

4.5.2.3 Patient-centeredness of the MDT decision-making process (Q5 & Q6)

Consensus emerged regarding who within the MDT is the key patient contact, with clinical nurse specialists and Consultants both cited most frequently. The view that whoever in the team knows the patient best, however, was also prominent (Table 15, upper panel). Respondents’ views were equally consensual regarding which MDT member should be communicating the team recommendation to the patient: the Consultant in charge and the clinical nurse specialist emerged as the key members to carry out this task (Table 15; lower panel).
<table>
<thead>
<tr>
<th>Rank</th>
<th>Themes</th>
<th>D</th>
<th>N</th>
<th>C</th>
<th>Total</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1:</td>
<td>What makes an MDT work well together?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Mutual respect &amp; understanding</td>
<td>50</td>
<td>64</td>
<td>44</td>
<td>54</td>
<td>People are valued and their opinions taken seriously and considered” (N)</td>
</tr>
<tr>
<td>2</td>
<td>Enthusiasm &amp; positivity</td>
<td>22</td>
<td>14</td>
<td>27</td>
<td>21</td>
<td>“Enthusiasm, dedication, and hard work” (C).</td>
</tr>
<tr>
<td>3</td>
<td>Good communication</td>
<td>11</td>
<td>29</td>
<td>29</td>
<td>21</td>
<td>“On some occasions there has been difference of opinions but by good communications it is worked out” (C)</td>
</tr>
<tr>
<td>4</td>
<td>Sharing of common goals</td>
<td>20</td>
<td>14</td>
<td>7</td>
<td>16</td>
<td>“A clear operational policy which has been constructed with involvement from core members thus promoting shared common goals” (D)</td>
</tr>
<tr>
<td>5</td>
<td>Good leadership</td>
<td>11</td>
<td>12</td>
<td>8</td>
<td>11</td>
<td>“The Chair should endeavour to control controversy between members, and try and resolve problems” (N)</td>
</tr>
<tr>
<td>6</td>
<td>Patient-centeredness</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>“All members here tend to focus on the patient's welfare and agree on the best pathway for each patient” (C)</td>
</tr>
<tr>
<td></td>
<td>Number of respondents:</td>
<td>434</td>
<td>292</td>
<td>153</td>
<td>867</td>
<td></td>
</tr>
<tr>
<td>Q2:</td>
<td>What would help you to improve your personal contribution to the MDT?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Time recognized in job-plan to attend</td>
<td>29</td>
<td>18</td>
<td>8</td>
<td>23</td>
<td>“More time for MDT's- at present they are over lunchtime on a Friday, we have no radiology or histology staff” (N).</td>
</tr>
<tr>
<td>2</td>
<td>Educational training days</td>
<td>7</td>
<td>14</td>
<td>39</td>
<td>14</td>
<td>“Access to training within a multi-professional team, done as an MCT team away from the hospital environment” (N)</td>
</tr>
<tr>
<td>3</td>
<td>More time in meetings</td>
<td>19</td>
<td>3</td>
<td>0</td>
<td>11</td>
<td>“There are many issues that could be discussed at our MDT but there is no time” (D)</td>
</tr>
<tr>
<td>4</td>
<td>Time to prepare for meetings</td>
<td>14</td>
<td>10</td>
<td>2</td>
<td>11</td>
<td>“More preparation time recognized in my job plan. More support from my department in recognizing the importance of the MDTs” (D)</td>
</tr>
<tr>
<td>5</td>
<td>Organizational support</td>
<td>10</td>
<td>11</td>
<td>15</td>
<td>11</td>
<td>“More support from line managers who don’t seem to have a basic understanding of the demands of the role” (C)</td>
</tr>
<tr>
<td>6</td>
<td>Stimulation by other team members</td>
<td>2</td>
<td>17</td>
<td>8</td>
<td>7</td>
<td>“We are a functional team and actively stimulate each other to work better” (N)</td>
</tr>
<tr>
<td></td>
<td>Number of respondents:</td>
<td>369</td>
<td>191</td>
<td>93</td>
<td>653</td>
<td></td>
</tr>
</tbody>
</table>

Note: D=Doctor, N=Nurse/Allied Health Professional; C=Coordinator/Non-clinical personnel
Table 14: Responses related to team decision-making in MDT meetings (questions 3 & 4)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Themes</th>
<th>% Response</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>D</td>
<td>N</td>
</tr>
<tr>
<td>1</td>
<td>Record</td>
<td>91</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>Document verbatim</td>
<td>43</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>Write in minutes of meeting</td>
<td>19</td>
<td>44</td>
</tr>
<tr>
<td>4</td>
<td>Write in case notes</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>Tell patient about disagreement</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>Record a consensus</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>

Number of respondents: 454 239 117 810

Q4: What are the main reasons for MCT treatment recommendations not being implemented?

<table>
<thead>
<tr>
<th>Rank</th>
<th>Themes</th>
<th>% Response</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>D</td>
<td>N</td>
</tr>
<tr>
<td>1</td>
<td>Lack of knowledge of patient’s views</td>
<td>53</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>Lack of personal contact with patient</td>
<td>6</td>
<td>64</td>
</tr>
<tr>
<td>3</td>
<td>Changing clinical picture</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Lack of knowledge of patient comorbidities</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Incorrect clinical information</td>
<td>14</td>
<td>3</td>
</tr>
</tbody>
</table>

Number of respondents: 539 273 130 941

Note: D=Doctor, N=Nurse/Allied Health Professional; C=Coordinator/Non-clinical personnel
Table 15: Responses related to team decision-making in MDT meetings (questions 5 & 6)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Themes</th>
<th>D</th>
<th>N</th>
<th>C</th>
<th>Total</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clinical Nurse Specialist</td>
<td>68</td>
<td>55</td>
<td>65</td>
<td>63</td>
<td>“The specialist nurse as they work closely with the patient and the patient’s family and form a relationship” (C)</td>
</tr>
<tr>
<td>2</td>
<td>Consultant in charge</td>
<td>51</td>
<td>22</td>
<td>41</td>
<td>40</td>
<td>“Ideally the physician with responsibility for their care” (D)</td>
</tr>
<tr>
<td>3</td>
<td>Whoever knows the patient best</td>
<td>36</td>
<td>37</td>
<td>17</td>
<td>33</td>
<td>“Variable, dependant on individual who knows the patient the best” (D)</td>
</tr>
<tr>
<td>4</td>
<td>Key-worker (other)</td>
<td>16</td>
<td>15</td>
<td>9</td>
<td>15</td>
<td>“Key worker or clinician who has had direct contact with the patient” (N)</td>
</tr>
</tbody>
</table>

Number of respondents: 682 420 202 1,304

Q6: Who should be responsible for communicating the treatment recommendations to the patient?

<table>
<thead>
<tr>
<th>Rank</th>
<th>Themes</th>
<th>D</th>
<th>N</th>
<th>C</th>
<th>Total</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Consultant in charge</td>
<td>68</td>
<td>68</td>
<td>75</td>
<td>69</td>
<td>“The consultant who the patient is under the care of at the time of the management decision of the MDT” (C)</td>
</tr>
<tr>
<td>2</td>
<td>Clinical Nurse Specialist</td>
<td>33</td>
<td>49</td>
<td>51</td>
<td>41</td>
<td>“For some patients this information may be appropriately communicated by a specialist nurse” (D)</td>
</tr>
<tr>
<td>3</td>
<td>Key-worker (other)</td>
<td>6</td>
<td>14</td>
<td>6</td>
<td>9</td>
<td>“Whoever is delegated as the key-worker” (N)</td>
</tr>
<tr>
<td>4</td>
<td>Whoever knows the patient best</td>
<td>7</td>
<td>8</td>
<td>3</td>
<td>7</td>
<td>“Whoever has had most meaningful contact - medic or nurse –may be different for different people” (N)</td>
</tr>
</tbody>
</table>

Number of respondents: 689 421 202 1,312

Note: D=Doctor, N=Nurse/Allied Health Professional; C=Coordinator/Non-clinical personnel
4.6 Discussion

4.6.1 Summary of results

In this Chapter I have analysed comments provided by over 1600 MDT members regarding effective teamworking in MDTs; efficacy of decision-making by MDTs; and patient-centeredness of the MDT decision-making process. The key themes emerging in relation to effective teamworking were the importance of good relationships between team members, adequate non-technical skills (i.e., communication, leadership) and the need for support at an organizational level. In relation to team decision-making, recording of disagreements when they occur (and potentially letting the patient know), and the importance of having adequate information about the patient were key emerging issues. Finally, in relation to patient-centeredness of MDT decision-making the key role of the clinical nurse specialists as patient advocates alongside the medical personnel, and the complementary role of nurses and Consultants in discussing team recommendations with the patient were key findings.

4.6.2 Limitations

Certain limitations must be applied to the results of this analysis. The method used to recruit the survey sample involved snowballing so it is not possible to be certain of the response rate, or how representative the sample is of the population of MDT members as a whole.

Moreover, the total number of participants (to the survey and also to the free-text questions reported here), although large for this type of qualitative research, are certainly only a fraction of the thousands of healthcare professionals working in the 1500 MDTs in the UK. Taken together, these limitations do limit the generalisability of the findings. However, the
sampling was successful in representing respondents across core MDT members, from a wide range of geographical locations throughout England. Caution should also be used before extrapolating the results of this study to healthcare systems in other countries where MDT are in use, particularly concerning organisational factors that are likely locally different. Again, however, some of the issues revealed here (e.g., team skills, team-members to communicate with patients) are indeed found in other countries outside England and are increasingly reported in the literature.(83;84)

4.7 Conclusion

This Chapter provides in-depth understanding of elements of good teamworking and patient-centeredness in clinical decision-making by MDTs in the UK. This Chapter supports the findings of Chapters 2 and 3 and reveals the importance of team-members’ skills, as well as organizational support in having well-functioning teams that make recommendations for their patients that are implementable. The views of healthcare professionals support evidence in the literature that clinical decisions in MDT meetings are better when focussed on the patient, not just the disease. However, little is known about how patients want their needs and preferences to be represented in MDT meetings, which is an issue that I will explore in the next Chapter.
5 PATIENTS’ VIEWS ON MDT WORKING IN CANCER CARE

5.1 Chapter overview

A phrase that has been frequently occurring in the Chapters so far is, “Patient-centred”. The idea of having the patient and their interests at the heart of cancer care, and indeed of any research project is integral to high quality healthcare services. The previous Chapters have explored the factors that affect the quality of teamworking and decision-making in MDTs across international literature, and from the perspectives of UK healthcare professionals. The current Chapter follows on from the previous and sets out to explore patients’ perspectives on MDT decision making in order to ensure that any subsequent assessment tools or interventions capture that which is important to patients, as well as cancer teams.

5.2 Introduction

Patient-centred care is increasingly recognised as being integral to high quality healthcare services. The Manual for cancer Services requires regular assessment of patient satisfaction in several areas. However, little research has been carried out to assess what patients think of, or understand about the role of the MDT in cancer care.(3) To date, the evidence for what patients think of MDTs has been limited, and at present it is not clear whether their experience reflects the perceptions of healthcare professionals, researchers and policymakers.
5.3 Aims

The aims of the study presented in this Chapter are to:

1. Explore patients’ understanding and experience of the purpose of an MDT
2. Investigate patients’ views on how they would like their views and preferences to be incorporated into MDTs decision-making
3. Elicit patients’ views on who they feel would be best suited to represent them, assuming that they themselves cannot or do not wish to attend meetings.
4. Elicit patients’ views on how they want the outcome of MDT decisions to be communicated to them and how they can be involved in decision-making with the MDT

5.4 Methods

5.4.1 Study design

The aim of the study is to explore the perceptions and experiences of cancer patients regarding patient involvement in the clinical decision-making process by multidisciplinary cancer teams. Therefore, a qualitative method was employed, designed to enable detailed exploration of participants’ experiences and opinions across a range of topics. (85-87) Themes covered on the topic guide were:

- Patients’ experience of cancer diagnosis and/or treatment
- Awareness of the role and make-up of the multidisciplinary team (MDT)
- Experiences of being treated by/interacting with a cancer MDT
- Information that is felt to be important for the MDT to consider
• Patient representation and attendance at MDT meetings
• Communication of MDT outcomes to patients
• Patient involvement in decision-making with the MDT

5.4.2 Participants and setting

Purposive sampling was used in order to recruit patients previously treated by MDTs, and to ensure a diverse sample that collects opinion from a range of social and cultural groups. Participants were recruited via local patient groups through group representatives (the patient information sheet is provided in Appendix 3). Two focus groups were organised due to time and resource limitations. Focus groups were planned to occur at NHS Trusts and last approximately two hours. Informed written consent was sought by all participants prior to participation.

5.4.3 Data collection

Focus groups were all conducted in person, the first by a psychologist (Brown) and a surgeon (Lamb), and the second by a surgeon alone (Lamb). The focus groups were recorded with a digital voice recorder. The researcher followed a semi-structured open-ended list of questions to obtain and explore participants’ views on MDTs in cancer care. The question list has been developed by the research team (which includes a patient safety researcher, urological surgeons, a health psychologist, and an oncologist) based on the literature outlined in the introduction (the focus group topic guide is presented in Appendix 4).
5.4.4 Analysis

Focus groups were recorded and transcribed verbatim. Transcripts were then coded by one researcher with a surgical background (Lamb), before themes were checked for content by a second researcher with a psychological background (Brown). A Grounded Theory approach was used whereby a skeleton coding frame was devised based on the topic guide, and data were coded to those primary codes, then new codes were added as new themes emerged in the data. All codes were grounded in the data and quotes were extracted to support codes. (82)

5.4.5 Ethical Approval

Ethical approval for the study was given by the South East London Research Ethics Committee, and also locally by the R&D departments of the NHS Trusts concerned.

5.5 Results

5.5.1 Participants

Two focus groups were held, the first in Essex in October 2010 that was attended by nine participants (1hr:45m), and a second in Surrey in August 2011 that was attended by six participants (1hr:30m). Demographic information of participants is given in Table 16.

5.5.2 Patients’ awareness and opinions of the MDT (Table 17)

None of the participants in the first focus group and only two participants in the second focus group had heard of the MDT at the time of their treatment. Other participants reported that
they became aware of a team structure as their care progressed, and all found the idea of being treated by a team to be reassuring. Participants generally felt that a team approach to cancer care would mean that patients are offered a wider range of treatments than those provided by the clinician they might personally see. The phrase “MDT” was not popular with group members, they felt it was jargonistic and did not reflect their understanding of the team and the team meeting. The term “Case-conference” was preferred by participants. The majority of participants knew that surgeons, oncologists and nurses were MDT members, but there was little awareness of the professional groups of other team members. Participants felt that confronting a whole team would be intimidating, and they would prefer to have contact only with individual team members. Regarding the cases that might require MDT discussion, participants felt that inclusion criteria as they stand are reasonable. Participants were open to the idea of streamlining the MDT meeting by prioritising cases, or treating some straightforward cases by ‘chair’s action’, rather than a full discussion.

### Table 16: Characteristics of participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Participants (N=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>2</td>
</tr>
<tr>
<td>Age group</td>
<td></td>
</tr>
<tr>
<td>60-80</td>
<td>14</td>
</tr>
<tr>
<td>&gt;80</td>
<td>1</td>
</tr>
<tr>
<td>Cancer type</td>
<td></td>
</tr>
<tr>
<td>Prostate</td>
<td>11</td>
</tr>
<tr>
<td>Breast</td>
<td>1</td>
</tr>
<tr>
<td>Upper GI</td>
<td>2</td>
</tr>
<tr>
<td>Sarcoma</td>
<td>1</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>White British</td>
<td>15</td>
</tr>
<tr>
<td>Theme</td>
<td>Illustrative quote</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Initially not aware of MDT</td>
<td>“Felt like a parcel being handed carefully along from one person to the other” (M, 62)</td>
</tr>
<tr>
<td>Aware of teamworking</td>
<td>“I just assumed that these links exist, but I didn’t know they existed formally and I don’t think we were ever told as patients that there is an MDT team discussing” (M, 83)</td>
</tr>
<tr>
<td>Little knowledge of MDT membership</td>
<td>“What makes up a case conference? Who is there? I don’t know” (M, 73)</td>
</tr>
<tr>
<td>Liked idea of being treated by a team</td>
<td>“I think it would be a comfort to know that your case is being looked at by a group of professionals and they also have access to other areas outside” (M, 70)</td>
</tr>
<tr>
<td>Knowledge of MDT would help decision-making</td>
<td>“It would have stopped that niggle in the back of your mind that in the future thinking what would have happened if I had had the other treatment. This way you think a group of experts have gone over it” (M, 70)</td>
</tr>
<tr>
<td>All cases need MDT discussion</td>
<td>“What if someone points something out and says hold on and changes the plan” (M, 65)</td>
</tr>
<tr>
<td>Prioritisation might be good</td>
<td>“It’s ok if you are 5th on the list, but what if you are number 40 on the list?” (M, 62)</td>
</tr>
<tr>
<td>Simple cases can be sped through</td>
<td>“[Simple cases could be treated by chair’s action] as long as there is the option of stopping and saying hang on” (F, 71)</td>
</tr>
</tbody>
</table>
Table 18: What information patients want MDT to take into account when making clinical decisions

<table>
<thead>
<tr>
<th>Theme</th>
<th>Illustrative quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primacy of pathology</td>
<td>“The other doesn't come into play unless you've actually got the right diagnosis first. Everything else follows” (F, 71)</td>
</tr>
<tr>
<td>Importance of assessment of fitness</td>
<td>“It's [fitness] part of the picture. After all, if your heart's about to give out, there's no point in doing liver surgery because you probably wouldn't survive the op anyway” (F, 60)</td>
</tr>
<tr>
<td>Importance of social factors</td>
<td>“If people have got a wife or a husband and how fit they are can also be brought in” (F, 60)</td>
</tr>
<tr>
<td>Importance of Patients’ circumstances</td>
<td>“I think we are in cloud cuckoo land, I don’t think the patient other than the direct circumstances is going to be dealt with” (M, 74)</td>
</tr>
<tr>
<td>Trust that MDT will know all they need to</td>
<td>“Somebody attending the meeting will know my blood pressure, my heart, my diet, all the rest of it that makes me, and how it will best fit in to the various courses of treatment available” (M, 74)</td>
</tr>
<tr>
<td>Nurse who gathers patient-centred information</td>
<td>“But it's the nurse that sits with the patients and finds out what makes them tick and all about them and is therefore able to put the patient” (M, 74)</td>
</tr>
<tr>
<td>Experience of assessing fitness before surgery</td>
<td>“I was asked to do exercises and run up and down stairs to see if I was fit etc, to see if I could cope. And I think it wasn't specifically said to me that he was trying to assess whether it was worthwhile” (M, 60)</td>
</tr>
<tr>
<td>Experience of being asked about social factors</td>
<td>“I was never asked about family or anything else” (M, 79)</td>
</tr>
<tr>
<td>Experience of seeing CNS</td>
<td>“I was coming back for another one [endoscopy], and then the clinical nurse specialist got involved: family life, family history, and that's when it all started. That was two weeks before surgery” (M, 70)</td>
</tr>
<tr>
<td>Experience of comorbidities not being taken into account</td>
<td>“I had recent inguinal hernia operation and there was a large mesh in the way. I didn’t find out until the last minute that they had not realised I had a mesh. I was told well you can’t have surgery now. I kept telling them and nobody seemed to take it into account” (M, 62)</td>
</tr>
</tbody>
</table>
5.5.3 Information that patients want the MDT to consider in decision-making (Table 18)

Members felt strongly that biomedical information, and pathology in particular, was the most important information to consider, and without this, it would be impossible to arrive at the correct diagnosis, or treatment. After information about the disease in question, participants felt that information about a patients’ fitness and social circumstances were also crucial to ensure that decisions were appropriate. There was a mix between trust in the MDT, a feeling that they knew all they needed to in order to make good decisions, though others did not trust that MDT members would have the time or inclination to consider patients’ preferences, or their individual circumstances. Regarding who might collect information on patients’ circumstances and fitness, participants felt that the nurse was the easiest person to talk to and would be best able to gather this information. Patients had experienced assessment of their fitness, often by the operating surgeon. However, only one patient had been asked about family life, and those details were taken by the CNS between visits for endoscopy. One participant went further and said that he had tried telling his clinicians about his comorbid conditions that may complicate surgery, but that he was not listened to until just before surgery, which was subsequently cancelled causing considerable distress.

5.5.4 Opinion about attending/representation in MDT meeting (Table 19)

Several participants felt that they could potentially be directly involved in their own case discussion, and that their personal contribution would add value to the decision-making process. However, there were others who felt that their presence in the MDT meeting would inhibit full and frank discussion of their case by MDT members, as well as being distressing
to themselves. In addition, some participants thought that the MDT members would know everything that was relevant, and as such, their participation would not add any benefit.

Participants were unanimous in their opinion that the nurse was the member of the MDT with whom they had the best relationship and who would be best placed to ascertain information on their social circumstances, personal views, and even information of a more intimate nature. By virtue of the fact that the CNS has a good relationship with patients, most participants felt that in the absence of the patients in the MDT meeting themselves, the CNS was the team member best placed to act as a patient advocate. One participant raised the point that all team members should have the patients’ best interest in mind and should do their best to act in the patients’ best interest, an idea to which other participants gave their approval. Another participant discussed whether the CNS should have a formal role as patient advocate, with the official responsibility of representing patients’ views and circumstances in meetings.

The occurrence of hierarchies in the MDT meeting was discussed, and in particular the way in which this limited the input of nurses. Participants all found this concerning, but many felt that this style of teamwork was outdated, and was changing with the increasing recognition that CNS played a unique and valuable contribution to the MDT meeting.

Participants felt strongly and unanimously that patients’ cases should only be discussed if someone was present who personally knew the patient. Many participants were incredulous at the idea of being discussed without being known. Someone raised the idea that if there was no team member who knew them present, they would rather delay case discussion until
someone they knew was present. This idea was supported by the majority of other participants.

Participants were generally not keen on the idea of having a patient representative in the MDT meeting. They felt that such a role would be too demanding for the individual, and may be unpopular with patients and team members should they misrepresent the patient, or the opinion of the team. Participants did not give much support for the involvement of their GP as their representative in meetings, largely as they do not have close relationships to an individual GP, as was the case in previous times.

5.5.5 Opinion about receiving information from MDT meeting (Table 20)

There was variation in the amount of information that participants thought patients would want following discussion of their case at the MDT meeting. All participants wanted to be informed of the outcome of meetings, some wanted only to be informed of the decision, where as others wanted to be given details about different possible options as well as the presence of any differing opinions from team members, or any disagreement. Several participants articulated that the outcome of the MDT meeting should be tailored to the preferences of the individual patient, as some would want choice and information, but others would want a more paternalistic and prescriptive approach. Where choice over possible treatments might exist, it was felt that members of the MDT with particular treatment expertise might not be able to give a balanced view of all the different options available. In that instance, the view was raised that it would be best to discuss options with the respective practitioners in sequence, to get a balanced view. This opinion was countered by other
participants who felt that it would be best to talk to an MDT member, such as the CNS, who
did not have a particular treatment expertise, but who could give a balanced overall picture of
the pros and cons. This opinion was strengthened by the trust that participants had in the CNS
they knew, and the ease with which they could talk to them.

Participants reported a range of experiences regarding being given information about
diagnosis and treatment. Experiences ranged from being given little information on a variety
of options, to a good amount of information on a single option, to a single option with no
information. There did not seem to be an association between the amount of information
patients were given about their diagnosis and treatment, and their satisfaction with the
treatment they received. The only criticism came from patients who had not been prepared to
be given information about the diagnosis and found it very distressing and therefore difficult
to take in, and those patients who found that there was no continuity of care, so they did not
have the rapport with the clinician who was giving them information, which made it difficult
to interpret.
<table>
<thead>
<tr>
<th>Theme</th>
<th>Illustrative quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t want to go to own MDT discussion</td>
<td>“I do think there is a place for a patient to attend and I can’t see why a patient can’t be bound by the same confidentiality as the professionals” (F, 65)</td>
</tr>
<tr>
<td>Patients can contribute to meetings</td>
<td>“The patient can actually add in value to the discussion, not just tick the box” (M, 70)</td>
</tr>
<tr>
<td>Patients cannot want to contribute to decision-making</td>
<td>“Beyond going what the options are, I’m not entirely sure what one would have to contribute” (M, 83)</td>
</tr>
<tr>
<td>Concerned that presence would disrupt discussion</td>
<td>“My problem is if I’m sitting there and I’m putting the professionals off frank discussion” (F, 65)</td>
</tr>
<tr>
<td>Timing of MDT meeting difficult</td>
<td>“I don’t think you’re in the right frame of mind when you’re diagnosed” (M, 62)</td>
</tr>
<tr>
<td>Relationship with the CNS</td>
<td>“You can talk [to the CNS] about anything and everything, she knows more about us than we do, or our partners do” (M, 60)</td>
</tr>
<tr>
<td>All MDT members should speak for patients</td>
<td>“I think the nurse is the patient advocate in that group. But they should all have the patient’s benefits at heart” (F, 71)</td>
</tr>
<tr>
<td>Have a specific role for the patient advocate</td>
<td>“It’s quite an interesting idea to actually make the nurse the person who assesses and informs the person’s personal and social circumstances...you should have somebody who’s responsible actually for saying” (M, 83)</td>
</tr>
<tr>
<td>Surgeons dominating meetings, CNS not speaking</td>
<td>“That’s a worry and I think it probably does happen in some places where the surgeon is the prima donna and it’s not worth upsetting them or whatever” (F, 71)</td>
</tr>
<tr>
<td>Role of CNS as patient advocate</td>
<td>“Every patient and I think most clinicians accept how valuable they are...they will have more confidence to be the patient’s spokesperson, if you like, on the MDT if the patient themselves doesn’t want to be there” (F, 71)</td>
</tr>
<tr>
<td>Importance of knowing patient</td>
<td>“If they don’t know me how can they make decisions about me?” (M, 74)</td>
</tr>
<tr>
<td>Importance of personal knowledge of patients</td>
<td>“If I needed to and they were going to have an MDT, I shall now ask who’s going to be there and if I don’t approve, ‘No, no. I’ll wait until next week.’” (F, 65)</td>
</tr>
</tbody>
</table>
### Table 20: Opinion about receiving information from MDT meeting

<table>
<thead>
<tr>
<th>Theme</th>
<th>Illustrative quote</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient representative on MDT not popular</strong></td>
<td>“It would be extremely demanding...That volunteer has only got to come back to the patient with one false misconception of what was discussed and the whole lot would be thrown into turmoil” (M, 60)</td>
</tr>
<tr>
<td>Communication important</td>
<td>“Keep me informed and do what you have to do” (M, 73)</td>
</tr>
<tr>
<td>Amount of choice should be tailored to patient</td>
<td>“It's part of the assessment whether the patient is going to be stressed out by being offered choice” (M, 83)</td>
</tr>
<tr>
<td>Specialist should give own information</td>
<td>“Well, if it's essential surgery, I think it needs to be the surgeon. If it's chemo or radio or something like that, then probably the oncologist, in conjunction with the nurse” (M, 70)</td>
</tr>
<tr>
<td>Concern that patients are not given whole choice</td>
<td>“The surgeon could be biased in favour of this particular treatment, and the radiotherapist and the oncologist, too” (M, 74)</td>
</tr>
<tr>
<td>CNS unbiased</td>
<td>“The nurse is so valuable because they don’t have the same biases, perhaps, as the surgeon and the oncologist” (M, 83)</td>
</tr>
<tr>
<td>CNS easy to talk to</td>
<td>“Nurse is person in whole NHS I sit down and actually talk to. I get the impression that surgeons are busy and clock watching. Nurses give the impression of having more time” (M, 65)</td>
</tr>
<tr>
<td>Experience of CNS giving information</td>
<td>“She [the CNS] came to me and she did advise she’d spoken with [the surgeon] on this account, ‘and this is the procedure we will recommend.’ I had a booklet given me” (M, 60)</td>
</tr>
<tr>
<td>Experience of sufficient time to decide</td>
<td>“I was given three options and told go away and think about it. I made my mind up and went back some time later and said this is what I want” (M, 79)</td>
</tr>
<tr>
<td>Experience of insufficient time to decide</td>
<td>“I was actually told by the oncologist that you either have radiotherapy or you have the operation. I must have your answer in the next hour” (M, 74)</td>
</tr>
<tr>
<td>Experience of not being given real choices</td>
<td>“In my case the surgeon was hell bent on taking it out. Although I was told of other options he did not expand on them because it wasn’t his thing” (M, 73)</td>
</tr>
<tr>
<td>Experience of lack of preparation</td>
<td>“They're up there and I was down there and it hadn't crossed anybody's mind...I was on my own. I wasn't asked to bring anybody. So that would be my criticism” (M, 74)</td>
</tr>
<tr>
<td>Experience of lack of continuity of care</td>
<td>“When I was diagnosed I went back and forth and saw a different registrar each time. There was no continuity” (F, 65)</td>
</tr>
</tbody>
</table>
5.5.6 Patients’ role in decision-making after the MDT meeting (Table 21)

Participants generally agreed that any decision-making at the time of diagnosis was very difficult on account of the news being overwhelming. Some participants intimated that they would rather have a clinician that they trusted to make decision for them, than to make decisions for themselves, though others said they would rather decide themselves.

Participants felt that patients should be able to make decisions with the help of carers and family, and that if a choice was available the patient should also be supported by members of the MDT to come to a decision that was tailored to their circumstances. When making decisions about different treatments, participants said that as well as considering factors such as the side effects of different treatments, issues such as the reputation and location of potential treating hospitals would be important. Regarding factors that had helped participants to make decisions in the past, some had spoken to friends who had similar experiences, where as others were put in touch with past patients by the clinician treating them. In both cases, Participants said that talking to other patients was helpful, and that they would also talk to their GP to get advice. Participants thought that the amount of weight the MDT opinion carried would depend on the unanimity of any recommendation, and that although disagreement within the MDT might make decision-making more difficult for them, they would rather be informed.
5.6 Discussion

5.6.1 Summary of results

The present study gives an initial picture of what patients think about MDTs, and how they want to be represented and included in the decision-making process. Awareness about the MDT among participants was low, but they found the idea reassuring. Participants felt that it was important to consider all relevant information—biomedical, psychosocial as well as preferences, although their experience showed that this was not always the case. While participants were not keen on attending their own case discussion, they felt that they could contribute indirectly via the CNS, who by virtue of the close relationship with patients had a special role in gathering information and could act as an advocate in the MDT meeting. Participants felt that it was important that cases were only discussed when there were members present who knew the patient; otherwise they thought it would be preferable to delay discussion. Participants felt that it was important that they were well supported when being given diagnoses and treatment options, including impartial and clear information from a range of sources, with adequate time to decide.

5.6.2 Limitations

The results of this study are subject to certain limitations. The sample size in this study is small and therefore may not be representative of the population in general. However, pilot qualitative work does not generally require large sample sizes, and in the present study saturation point was reached, suggesting that the sample size was sufficient. Participants may not be representative of the population as a whole, and there were a minority of women participating in the study, although participants were selected from diverse locations and
Table 21: Opinion/experience of patients’ role in decision-making after the MDT meeting

<table>
<thead>
<tr>
<th>Theme</th>
<th>Illustrative quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of certainty of MDT on trust</td>
<td>“And if the MDT says, ‘We’re all absolutely certain that now’s the time for surgery,’ for example, then I would probably go along with it because they’ve obviously come to an informed decision” (M, 83)</td>
</tr>
<tr>
<td>Patient should be able to choose if choice exists</td>
<td>“Provided the patient, and maybe the carer, which in this case was his daughter, are told the whole scene. Then they can make a choice” (M, 74)</td>
</tr>
<tr>
<td>Would rather be given a choice of treatments</td>
<td>“I’m not taking the drug to which I am entitled; I chose not to take it, at the moment, anyway. I don’t want the side effects and I discussed it with the oncologist and the surgeon and the radiologist...they gave me that choice” (F, 65)</td>
</tr>
<tr>
<td>Experience that decision making at diagnosis impossible</td>
<td>“At that point when you are given the diagnosis that you have got cancer, you don’t hear anything else, you’re not really listening to anybody else, and as far as you’re concerned that’s it-you’re dead” (M, 74)</td>
</tr>
<tr>
<td>Often did not want a choice, wanted best option.</td>
<td>“He gave me options. I said, ‘what do you think is best? You tell me.’” (M, 74)</td>
</tr>
<tr>
<td>Patient-centred information important in decision making</td>
<td>“I took other little things into considerations when deciding between surgery and radiotherapy. I was told certain hospitals offering surgery didn’t have good reputations for cleanliness. Also my wife can’t drive, so is there a bus service to the hospital? It’s an important consideration” (M, 79)</td>
</tr>
<tr>
<td>Experience of being offered choice</td>
<td>“My friends said you want it done with keyhole. So I asked my man and he said I don’t do it but if you want it done I can send you to someone who can do it” (M, 74)</td>
</tr>
<tr>
<td>Speaking to other patients was useful</td>
<td>“I was able to phone David and ask him what the operation was like and speak to somebody who’d been operated upon about 100 years ago and he’s still answering the phone” (M, 63)</td>
</tr>
</tbody>
</table>
social groups in order to access opinion from different parts of society. Future research might examine the views of a larger range of patients across different social groups before generalisations can be made with any certainty.

5.7 Conclusion

In this Chapter I have begun to explore the views and experiences of patients who have been treated by MDTs regarding these teams and the way they interact with patients. Although the study itself was exploratory in nature, it has served a valid purpose. Firstly, to the best of my knowledge, this was the first study to elicit the views of patients about their treatment by MDTs, and as such brings new evidence to this field of research and practice. In doing so this study also brings out several areas that require further in depth exploration, including how patients are included and represented in the decision-making process. Secondly, this Chapter places the interests of patients at the core of this thesis. This Chapter will be able to inform all subsequent Chapters and ensure that they are based on patient-centered evidence. Now that I have assessed the current evidence base (Introduction and Chapter 2) and gathered the views of MDT health care professionals (Chapters 3 and 4) and patients (this Chapter) I can begin to focus in on some of the issues raised in the preceding Chapters in more depth with members of urology MDTs. In doing so I will be able to confirm whether such issues are relevant to their working lives and assess how they affect the quality of decision-making. This will be the focus of Chapter 6.

6 BARRIERS, FACILITATORS, AND OPPORTUNITIES FOR IMPROVEMENT OF TEAMWORK AND TEAM
6.1 Chapter overview

In order to begin to improve performance in urological MDT meetings, issues that have arisen in the Chapters so far must be explored and defined in more depth. Chapters 3 to 5 have confirmed that the evidence presented in the Introduction and Chapter 2 is relevant to patients and members of MDTs across different tumour types in the UK. Following on from that, Chapter 6 reports a qualitative exploratory study to explore teamworking issues in more depth with core members of Urology MDTs.

6.2 Introduction

Although MDTs provide a means of enhancing patient care,(1) the team decision making processes can be variable.(46) Chapter 2 has systematically examined the current evidence base, and demonstrate that there are many factors that affect the quality of cancer MDTs. The present study aimed to evaluate in depth whether the experiences of members of Urological MDTs from a range of professional groups reflected the issues raised in the literature.

6.3 Aims:

Specifically, the aims of this study are:
1. To explore the experiences and attitudes of MDT members towards information use, discussion, leadership and team decision making in MDTs

2. To evaluate what MDT members see as the positive aspects of MDT working, and suggestions for any improvements.

3. To assess whether such findings are applicable to all core MDT professionals, or affect individual members more than others.

6.4 Methods

6.4.1 Protocol development

This was a prospective, qualitative, semi-structured interview study. I used qualitative methodology and an interview based approach to gain a deep understanding of the factors that affect decision making in urological MDTs, where people feel there are problems, and what people think can be done to improve the quality of the process. An interview protocol was developed and piloted in iterative phases to ensure feasibility and adequate content. It was then distilled into a topic guide (Appendix 5). This explored participants’ opinions on the following issues: MDT attendance, information presentation, case discussion, leadership, reaching a decision and general benefits, challenges and improvements to MDT meetings.

6.4.2 Participants

I carried out semi-structured individual interviews with a purposive sample of MDT members from Urological, Oncological, Nursing and MDT Coordinator backgrounds. The sample was
drawn from MDTs across England who had taken part in a Bladder Cancer Training day, run by the Pelican Cancer Foundation. Participation was voluntary and informed consent was obtained. Anonymity was ensured throughout the study.

6.4.3 Procedure

Each interview lasted approximately 20 to 40 minutes. All interviews were audio-taped and transcribed verbatim (an example transcript is presented in Appendix 6). Transcripts were cross-checked with the original recordings to ensure accuracy.

6.4.4 Data analysis

After an initial period of familiarisation, during which transcripts were read and re-read to ensure full immersion in the data, I analysed each of the interviews for content to identify emergent themes. A sample of interview transcripts (20%) from each professional group (chosen at random) was then coded independently by another member of the research team (Pinto), with a background in psychology and qualitative methodology. The interview protocol was used in this phase to aid the coding process. Finally, emergent themes were reviewed by me and another researcher (Arora) with a surgical background to identify key strands. The level of coding agreement between researchers was evaluated.(88)
<table>
<thead>
<tr>
<th>Table 22: MDT interview protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MDT interview protocol</strong></td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
</tr>
<tr>
<td>Establish ID of who I'm speaking to</td>
</tr>
<tr>
<td>Introduce myself</td>
</tr>
<tr>
<td>Introduce project – State aim of the interview</td>
</tr>
<tr>
<td>Ask permission to tape interview, assure anonymity</td>
</tr>
<tr>
<td><strong>Identify present system</strong></td>
</tr>
<tr>
<td>I would like to talk to you about multidisciplinary team meeting in urology.</td>
</tr>
<tr>
<td>Do you attend MDTM? (How many? How often?)</td>
</tr>
<tr>
<td>Do you get allocated time/session for the MDTM? (Are you covered for other work you might be doing at that time? Who covers? What other work would it be?)</td>
</tr>
<tr>
<td>What do you find good about MDTMs? (ask for examples)</td>
</tr>
<tr>
<td><strong>Information</strong></td>
</tr>
<tr>
<td>At the MDTM is every patient’s case history presented? (Who presents? Is it useful? What are the possible problems, or problems you’ve encountered in your experience?)</td>
</tr>
<tr>
<td>What format is the information available in? (Are the notes present? Is there a summary? Is it prepared beforehand? By whom?)</td>
</tr>
<tr>
<td>At the MDTM are the x-ray images presented? (For all patients or certain ones?)</td>
</tr>
<tr>
<td>At the MDTM are the path slides presented? (For all patients or certain ones?)</td>
</tr>
<tr>
<td>At the MDTM are the patients other problems presented? (Morbidity and social problems who knows them?)</td>
</tr>
<tr>
<td>At the MDTM are the patient’s wishes presented? Wishes in general, or for specific treatment options. (Who knows them? Who by?)</td>
</tr>
<tr>
<td><strong>Leadership</strong></td>
</tr>
<tr>
<td>At the MDTM is there a chair person? (What is the chair’s background?)</td>
</tr>
<tr>
<td>What is the ideal role of a chair?</td>
</tr>
<tr>
<td>What are some of the good things your chair person does?</td>
</tr>
<tr>
<td>If you were chair would you do things differently?</td>
</tr>
<tr>
<td><strong>Discussion</strong></td>
</tr>
<tr>
<td>Who contributes to the debate about treatment options? (Is everyone encouraged to take part?)</td>
</tr>
<tr>
<td>What are the key problems with the debate about treatment options that you’ve encountered? (E.g. like some people not taking part at all, or someone being overbearing)</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
</tr>
<tr>
<td>Is there always a clear treatment plan from the MDT meeting or every patient?</td>
</tr>
<tr>
<td>If not, why not?</td>
</tr>
<tr>
<td><strong>Improvements</strong></td>
</tr>
<tr>
<td>Can you identify/suggest one thing that would make your MDTM work better? Is there something you would change?</td>
</tr>
<tr>
<td><strong>Questions</strong></td>
</tr>
<tr>
<td>Do you have any questions? Anything else you would like to add?</td>
</tr>
</tbody>
</table>
6.5 Results

Nineteen members of the Urology MDT were recruited using a purposive sampling technique (5 Consultant Urologists, 5 Consultant Oncologists, 5 Clinical Nurse specialists and 4 MDT Coordinators). These specialities were chosen as they are core members of the Urology MDT and have direct patient contact (Urologists, Oncologists, CNS) or a pivotal role in administering the MDT (MDTC) and all are involved in team working and decision making in the MDT. Interviews took place face-to-face (n=4) and via telephone (n=15) between October 2009 and April 2010.

6.5.1 Coding category reliability

Tables 23 to 26 list the main findings for each key question of the interview protocol (i.e. the items mentioned), the number of participants who mentioned each item, and an exemplary quote.

I examined the correlation between myself and the second coder (Pinto) for a randomly selected sample of one each of Urologist, Oncologist, CNS and MDTC for the number of items that each of them identified per interview. High correlations would imply similar coding across researchers and, therefore, adequate reliability of the coding. The correlations were high for the whole interview: r=0.870, p<0.001, and for all six questions: MDT attendance: Pearson’s r=1.00; information presentation, r=0.95, p<0.001; case discussion: r=0.94, p<0.001; leadership: r=0.61, p=0.006; reaching a decision: r=0.84, p<0.001; and general benefits, challenges and improvements to MDT meetings: r=0.67, p<0.001.
Therefore, my background did not affect theme extraction from the transcripts. In the following sections, data relating to key themes is summarised and supported by verbatim quotations. The code letter suffixed to each quotation refers to the MDT members’ professional group of Urologist (U), Oncologist (O), CNS (C), and MDTC (M).

6.5.2 MDT Working

Fourteen of 19 participants reported that they attend a satisfactory number of Urological MDT meetings. The remainder managed to attend some, but not all of the MDT meetings they were expected to attend. Having protected time (10 of 19) was associated with being more likely to attend the MDT ($\chi^2(1) = 5.63, p=0.018$). However, for others meetings were often held outside core hours, “[the MDT meeting is] before the day starts so it’s an additional hour to the day” (U4). For some, though, there was a direct clash: “I can’t do both [the MDT and Clinic]...And my priority obviously has to be the oncology outpatients” (O3).

6.5.3 Information presentation (Table 23)

Some participants reported that the radiological images were one of the most positive aspects of the MDT, others having specialist Uro-radiologists present at meetings. Dissatisfaction occurred as a result of an inability to view radiological images across sites via videoconferencing, and because of non-attendance of radiologists. Pathological information presented was usually satisfactory. Opinion was more divided about the adequacy of presentation of information about the comorbidities of patients. Participants felt generally that comorbidities had an important bearing on decision-making, but approximately half of participants felt that they were not adequately discussed. An oncologist echoed the opinion of
several participants saying, “Sometimes important parts of the cases are not necessarily in the disease but the comorbidities. They’re often skipped over so it can make meeting decisions less meaningful” (O2). Several participants said that often although information about co-morbid conditions was enquired about, no one at the MDT meeting had personal knowledge of the patient, which could cause a problem.

Table 23: Adequacy of presentation of information in MDT meetings

<table>
<thead>
<tr>
<th>Adequately presented?</th>
<th>N/19</th>
<th>Representative Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case history</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes=12</td>
<td></td>
<td>It’s the consultant usually, will likely present his own cases (U3)</td>
</tr>
<tr>
<td>No=7</td>
<td></td>
<td>It depends...we have to have the notes in the clinics so that we can go back and double check (O4)</td>
</tr>
<tr>
<td><strong>Radiological images</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes=12</td>
<td></td>
<td>The most positive aspect is having radiology (O3)</td>
</tr>
<tr>
<td>No=7</td>
<td></td>
<td>A lot of the time we’re just working off reports, which is obviously not adequate (U3)</td>
</tr>
<tr>
<td><strong>Pathology slides</strong></td>
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<tr>
<td>Yes=7</td>
<td></td>
<td>Very often yes, there’s an agreement not to discuss every G2, G1 TCC (O2)</td>
</tr>
<tr>
<td>No=12</td>
<td></td>
<td>If there’s anything really interesting he will actually put these slides up (N2)</td>
</tr>
<tr>
<td><strong>Comorbidity, psychological and social problems</strong></td>
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<tr>
<td>Yes=10</td>
<td></td>
<td>The patient’s social, domestic or psychological circumstances may have a bearing on what we would recommend (U4)</td>
</tr>
<tr>
<td>No=9</td>
<td></td>
<td>If you’re asking whether they’re [comorbidities] discussed on the majority of patients, no they’re not (U3)</td>
</tr>
<tr>
<td><strong>Patients’ wishes</strong></td>
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<tr>
<td>Yes=11</td>
<td></td>
<td>If they [the patient] have a strong preference then, yes, we normally would say (N3)</td>
</tr>
<tr>
<td>No=8</td>
<td></td>
<td>Not overall, not generally speaking (U4)</td>
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</tbody>
</table>
Presentation of patients’ wishes evoked strong reaction from participants. Poor presentation often came down to lack of personal knowledge of the patient. Where patient wishes were known, it was often down to the nurses to gather and present this information – despite there being a reluctance to do so. One of the Nurses went further to say that in the past he had been reprimanded for discussing treatment with patients before the MDT had made a decision.

6.5.4 Case discussion

The most common professional group that contributed to the discussion about treatment options was Urologists (15/19), followed by Oncologists (10), CNS (7), Pathologists (7), Radiologists (6) and MDT Coordinators (1). Most participants felt that the discussion was not balanced equally across groups, and sometimes not open. One Urologist felt that poor attendance led to one sided discussions: “Often it’s just the urological consultants...other people who may have an input are often absent” (U3). Even when others were present at the MDT, it was felt that Urologists dominated discussions: “Anyone can [contribute]...but normally in reality I think the urologist very often they’re almost decided the management strategy. You’ve got to say, hang on a minute, if you really don’t want that to happen”. It was recognised that different members of the MDT contribute to the discussion in different ways, and some participants encouraged multidisciplinary discussion: an Urologist said, “The nurses are encouraged to give us information...they often they know a patient’s wishes... and they often know about home circumstances” (U2). However, this was not the case for all participants, with one in particular becoming disillusioned at the process, “I never get an opportunity to speak at that meeting, if I have, or in the past when I have tried to speak at that
meeting you're more or less told it's not my place to question a consultant's opinion, and really then you just think well what's the point in me coming?” (N3).

6.5.5 Leadership (Table 24)

Participants felt that the combination of interpersonal and clinical attributes was important, and that an ideal chair would possess both.

Table 24: Ideal qualities/role of a MDT chairperson

<table>
<thead>
<tr>
<th>Ideal qualities/role of a chair</th>
<th>N/19</th>
<th>Representative quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time management</td>
<td>8</td>
<td>To try to ensure the thing runs to time...Time can be really important (O2)</td>
</tr>
<tr>
<td>Gathering opinions</td>
<td>6</td>
<td>The role of a chair really is to ensure that all voices are heard (N1)</td>
</tr>
<tr>
<td>Leadership</td>
<td>6</td>
<td>As a leader it is having to take charge (M3)</td>
</tr>
<tr>
<td>Forming a plan</td>
<td>5</td>
<td>If there’s any sticking points, to be able to make a casting decision (M2)</td>
</tr>
<tr>
<td>Clinical experience</td>
<td>5</td>
<td>Without clinical knowledge it would be very difficult, because you are dealing with difficult complex patients (U2)</td>
</tr>
<tr>
<td>Camaraderie</td>
<td>4</td>
<td>We all trust each other and I think the chair...doesn’t need to be terribly, terribly formal (O1)</td>
</tr>
<tr>
<td>Facilitation</td>
<td>2</td>
<td>I think to facilitate the actual meeting (N3)</td>
</tr>
<tr>
<td>Respect of peers</td>
<td>2</td>
<td>They need to be well respected within their team (U2)</td>
</tr>
<tr>
<td>Coordinate meeting</td>
<td>1</td>
<td>The ideal role of the chair is to try and coordinate the meeting (N4)</td>
</tr>
</tbody>
</table>
6.5.6 Reaching a decision (*Table 25*)

Nine out of 19 participants reported that there were occasions where it was not possible for the MDT to reach a recommendation that could be presented to the patient, but that this was in a minority of cases. The most commonly reported barrier to reaching a clear treatment recommendation was lack of clinical or staging information and as such, the MDT Coordinator was crucial to ensuring that patients were only discussed when all the necessary information was available. The second most common barrier to reaching a decision is lack of personal knowledge of the patient, or the patients’ comorbidities.

6.5.7 Benefits, and potential improvements to MDT meetings (*Table 26*)

Camaraderie and consensus was the most commonly reported positive aspect of MDT working with all team members working towards common goals. The second most commonly reported benefit was the clinical discussion, particularly with input from various specialities. Although mentioned as good points by some, preparation for MDT meetings, IT and videoconferencing, attendance; and patient-centredness were all suggested as areas of MDT working that needed to be improved. The most commonly reported improvement to MDTs was more time: not only time in meetings, but also time in job plans to attend. Better case selection was seen both as a way of reducing time pressure and avoiding boredom. Several MDT members reported that the MDT would benefit from working in a more structured way, with ground rules that MDT members adhered to.
Table 25: Barriers to reaching a clear treatment plan in MDT meetings

<table>
<thead>
<tr>
<th>Barriers to reaching a clear treatment plan</th>
<th>N/19</th>
<th>Representative quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of clinical or staging information</td>
<td>11</td>
<td>Patients are re-discussed because the MDT may say, well we need another scan or we need further information or...a biopsy or something else (U2)</td>
</tr>
<tr>
<td>Lack of personal knowledge of patient</td>
<td>5</td>
<td>If you’ve never met them [the patient], I think that does hamper the discussion and sometimes you can’t come to a proper decision (O3)</td>
</tr>
<tr>
<td>Lack of information on comorbidities</td>
<td>3</td>
<td>Often that [deferring to another meeting] will be because it’s a very complicated patient ...somebody who’s got complex comorbidities that again you need the notes to be able to assess it (O4)</td>
</tr>
<tr>
<td>Poor attendance</td>
<td>3</td>
<td>Our one big problem is getting people, getting everybody there every week (U1)</td>
</tr>
<tr>
<td>Disagreement</td>
<td>3</td>
<td>Sometimes there’s disagreement over what the best course of action to take is between the consultants (M2)</td>
</tr>
<tr>
<td>Complex cases</td>
<td>1</td>
<td>70% of cases include a treatment plan...it [failing to make a plan] is really about information, complexity of case (U3)</td>
</tr>
</tbody>
</table>
Table 26: Positive aspects of MDTs and aspects requiring improvement

<table>
<thead>
<tr>
<th>Positive aspects of MDTs</th>
<th>N/19</th>
<th>Representative quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camaraderie and consensus</td>
<td>5</td>
<td>We all feel very comfortable...which is why I think it works well (O1)</td>
</tr>
<tr>
<td>Clinical discussion</td>
<td>4</td>
<td>Probably the best part of the process is the clinical discussion (N1)</td>
</tr>
<tr>
<td>Attendance of specialists</td>
<td>3</td>
<td>It’s [MDT meeting] very well attended in the sense that we always have pathological cover, radiological cover, and oncological cover (U1)</td>
</tr>
<tr>
<td>High standard of care</td>
<td>2</td>
<td>The patients clinically are managed well in that good, sound clinical decisions are discussed and ultimately formulated (N1)</td>
</tr>
<tr>
<td>Patient-centred</td>
<td>2</td>
<td>We know the patients well, their morbidities, their preferences (U3)</td>
</tr>
<tr>
<td>Efficiency</td>
<td>1</td>
<td>They’re quite fast, I think just that it’s more organised (M1)</td>
</tr>
<tr>
<td>Preparation</td>
<td>1</td>
<td>I think the fact that we prepare all our cases before the MDT (N3)</td>
</tr>
<tr>
<td>Videoconferencing facilities</td>
<td>1</td>
<td>With the hospitals, 20 to 30 miles apart, so the good AV, the high quality AV facilities help us (U1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aspects of MDTs requiring improvement</th>
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</thead>
<tbody>
<tr>
<td>More time</td>
<td>5</td>
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<tr>
<td>Working in a more structured way</td>
<td>4</td>
</tr>
<tr>
<td>Better preparation</td>
<td>3</td>
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<tr>
<td>Better case selection/fewer cases</td>
<td>3</td>
</tr>
<tr>
<td>Improved IT and videoconferencing</td>
<td>3</td>
</tr>
<tr>
<td>Better attendance</td>
<td>2</td>
</tr>
<tr>
<td>More patient-centred</td>
<td>2</td>
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</tbody>
</table>
6.6 Discussion

6.6.1 Summary of results

Through my exploration of the experiences and attitudes of four groups of core members of cancer MDTs from six teams across England and Wales I have drilled down into some of the key areas affecting the performance of cancer MDTs. The high inter rater reliability confirms that the coding used in this study is an accurate representation of the information from the interviews, and that my results are robust. I found that over a quarter of those I interviewed were not able to attend the MDT as often as they would have liked, and that there was an association between not attending and not having protected time in the job plan to attend. Lack of protected time also resulted in longer working days for those able to attend. Members perceived case history as well presented, but that problems with equipment and attendance reduced the quality of presentation of radiological and pathological information which led to reduced satisfaction with meetings. Information on the comorbidities of patients, and any choice they had expressed was often glossed over, which was compounded by lack of personal knowledge of patients, or non-attendance of someone who knew the patient at the meeting. The discussion environment was not one of equality. Participants reported that discussions were dominated by surgeons, even by their own admission, but often because other professionals were absent. Nurses sometimes felt that they were marginalised. Participants across professional groups felt that personal qualities of leadership and facilitation as well as clinical experience were necessary for an effective MDT chair. The main reasons that it was not always possible to reach an effective outcome were lack of clinical information, lack of personal knowledge of patients, and poor attendance at meetings. Overall, MDT members were positive about MDT working and reported the main benefits
were improved team-working and input from specialists. Improvements to MDTs could come from more time—both at meetings and in job plans to attend; improved case selection and working in a more structured way.

6.6.2 Limitations

These results should be interpreted against certain limitations. The views of my sample of urology MDT members may not represent the views of all MDT members within their groups, or of other professional groups in the MDT. However, I have interviewed four of the core groups within cancer MDTs, and my sample covered a wide geographical area; District General Hospitals and teaching hospitals; local and network MDTs allowing some generalisability of my findings. Also although I only looked at the Urology MDT, which is only one specific site within the whole of cancer, I have no reason to believe that this differs from any other cancer MDT. Importantly, the findings of this study are consistent with those of the National Cancer Action Team in the UK, mentioned above, who surveyed 2054 MDT members, covering all major cancer specialities including urology.(79) Finally, these results are based on self-reported data, which are subject to potential recall bias. In order to be sure of the integrity of the results, more objective evidence (e.g. observational data) is needed to confirm the findings of this study.
6.7 Conclusion

This study has begun to explore in depth some of the issues relating to information use, case discussion, teamworking, and decision making by MDTs. I have found that MDT members view MDTs positively, however a range of improvements are possible, aiming to maximize the quality of service and therefore enhance patient care. So far, Chapters 3 to 6 have relied on self-reported data, which are by their nature subjective. In Chapter 7 I apply the principles of observational assessment to MDT working and develop a systematic and objective method of assessing performance in cancer MDT meetings.
7 DEVELOPMENT AND EVALUATION OF MDT-MODe- A TOOL FOR THE OBSERVATIONAL ASSESSMENT OF TEAM DECISION-MAKING IN UROLOGICAL MULTIDISCIPLINARY CANCER TEAMS

7.1 Chapter overview

My first two Chapters have critically evaluated the existing evidence base on team decision-making in cancer MDTs, revealing various technical and non-technical factors affecting the performance of cancer MDTs. Chapters 3 and 4 have explored similar themes on a national level across multiple tumour types and between different professional groups, whilst Chapter 5 found that such issues are found to be important to patients as well as health care professionals. The previous Chapter has taken the findings that have emerged from preceding Chapters and have explored in depth MDT members’ views on how their teams function. In the current Chapter I have taken a step towards quantifying the performance in the MDT meeting with the development and evaluation of an objective, observational measure of teamwork and team performance in Urological MDTs.
7.2 Introduction

Outside cancer MDTs, in the past 10 years there has been significant interest and an ever expanding evidence base on the description, assessment and improvement of teamworking and team performance across a range of healthcare specialties. Within healthcare, surgery and anaesthesia are the specialties that pioneered the research on team skills – including developing reliable and valid tools for assessment and feedback, and using simulation-based training to improve team performance. Building on such existing research on team performance in other healthcare specialties, it might be possible to construct a robust (i.e., reliable and valid) and feasible observational tool to assess the quality of teamworking in cancer MDTs. Such a tool might then be used to address the existing gap in understanding how cancer teams function.

7.3 Aims

The specific objectives of the study are:

1. To construct a robust tool for systematic assessment of MDT team performance

2. To assess which aspects of MDT team performance can be validly and reliably assessed by observers

3. To assess usability of the tool by clinical and non-clinical observers (including observers’ learning curves, i.e., whether observers’ reliability improves as their volume of observations increases)
7.4 Methods

7.4.1 Tool development

To ensure content and face validity, tool development proceeded in two Phases.

In Phase 1, the evidence base on teamworking and team decision making in cancer MDTs was reviewed (see Chapter 2) to ensure that the assessment tool captures all relevant aspects of teamworking and team decision-making in Urological MDTs. The key aspects of team functioning that emerged are as follows:

- information presentation to the team: coverage of all relevant domains for all patients in the discussion list
- team leadership: aspects of effective and ineffective leadership and on MDT decision-making
- team decision-making processes: level of involvement of different professional groups; ability to reach and implement a decision

Phase 2 involved the modification of an existing validated tool that assesses quality of teamwork to include the themes of cancer team functioning that emerged from Phase 1. The Observational Teamwork Assessment for Surgery (OTAS), a validated structured observational tool for use in operating theatre teams was chosen as a basis for urological cancer team observation. In OTAS, behaviours of operating theatre team members are scored by an observer (surgeon, or psychologist) on Likert scales with reference to pre-defined anchor behaviours that are objective (i.e., observable). Two experts (one Consultant Urologist (Green), and a Patient Safety expert (Sevdalis)) converted the themes from Phase 1
into behaviours to be used in cancer teams. The behaviours that were included in the cancer team assessment tool were: presentation of information (radiological, pathological, comorbidities and social factors), performance of the chair, and contribution to team decision-making of MDT members (Urologists, Oncologists, Radiologists, Pathologists, and Clinical Nurse Specialists). Five-point Likert scales (1= lowest to 5= highest) were introduced to score the behaviours. Specific, observable anchors were provided for each behaviour, which were also derived from Phase 1. The tool is depicted in Figure 27.

7.4.2 Cases

Data were collected across 112 cancer patients discussed in three different MDTs of three separate hospitals in England by a total of 78 team-members. The observed MDTs were general Urology MDTs. Cases covered tumours of the bladder, kidney, prostate, testis and penis, as well as discussion of benign cases.

7.4.3 Procedure

I and a psychologist researcher with expertise in observing healthcare teams (Wong) sat in and observed the MDT meetings. The researchers were introduced to the teams, informed consent was sought by team-members, and it was explained to participants that the aims of the observation was to develop and validate an observational tool (the participant information sheet is provided in Appendix 7). The observers used the tool to rate team decision-making for every patient discussed in the attended meetings. The observers were kept blinded to each other’s ratings throughout data collection. At the end of the observation period, data were collated for statistical analyses.
Table 27: MDT-MODE scoring sheet (this page) and behavioural anchors (next page)

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<th>Site</th>
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<th>Hx</th>
<th>X-ray</th>
<th>Path</th>
<th>Psy/soc/</th>
<th>comorbid</th>
<th>Patient view</th>
<th>Chair</th>
<th>Surg</th>
<th>Phys</th>
<th>Oncolo</th>
<th>Nurse</th>
<th>Radiolo</th>
<th>Histopath</th>
<th>MDTC</th>
<th>Y/N</th>
<th>Free text</th>
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<tr>
<td>History</td>
<td>5</td>
<td>Fluent, comprehensive case history</td>
<td>Psycho-social</td>
<td>5</td>
<td>Comprehensive first-hand knowledge of patients’ personal circumstances, social and psychological issues.</td>
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<td></td>
<td>3</td>
<td>Partial case history</td>
<td></td>
<td>3</td>
<td>Vague first-hand knowledge or good second-hand knowledge of personal circumstances, social and psychological issues.</td>
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<td></td>
<td>1</td>
<td>No patient case history</td>
<td></td>
<td>1</td>
<td>No knowledge of personal circumstances, social and psychological issues.</td>
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<tr>
<td>x-ray</td>
<td>5</td>
<td>Radiological images</td>
<td>Co-morbidity</td>
<td>5</td>
<td>Comprehensive first-hand knowledge of past medical history and performance status</td>
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<td></td>
<td>3</td>
<td>Radiological information from a report/account</td>
<td></td>
<td>3</td>
<td>Vague first-hand knowledge, or good second-hand knowledge of past medical history or performance status</td>
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<tr>
<td></td>
<td>1</td>
<td>No provision of radiological information</td>
<td></td>
<td>1</td>
<td>No knowledge of past medical history or performance status</td>
<td></td>
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<tr>
<td>Pathology</td>
<td>5</td>
<td>Histopathological information from pathologist</td>
<td>Patient’s views</td>
<td>5</td>
<td>Comprehensive first-hand knowledge of patient’s wishes or opinions regarding treatment</td>
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<tr>
<td></td>
<td>3</td>
<td>Histopathological information from a report/account</td>
<td></td>
<td>3</td>
<td>Vague first-hand knowledge, or good second-hand knowledge of patient’s wishes or opinions regarding treatment</td>
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<tr>
<td></td>
<td>1</td>
<td>No provision of Histopathological information</td>
<td></td>
<td>1</td>
<td>No knowledge of patient’s wishes or opinions regarding treatment</td>
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<tr>
<td>Chair</td>
<td>5</td>
<td>Good leadership enhanced team discussion and decision making</td>
<td>Members</td>
<td>5</td>
<td>Clear contribution of speciality.</td>
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<tr>
<td></td>
<td>3</td>
<td>Leadership neither enhanced or impeded team discussion and decision making</td>
<td></td>
<td>3</td>
<td>Contribution inarticulate or vague</td>
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<tr>
<td></td>
<td>1</td>
<td>Poor/inadequate leadership impeded team discussion and decision making</td>
<td></td>
<td>1</td>
<td>No contribution</td>
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<tr>
<td>Point</td>
<td>Pre Rx</td>
<td>Pre treatment</td>
<td>Decision</td>
<td>Y</td>
<td>Clear treatment decision</td>
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<tr>
<td></td>
<td>Post Rx</td>
<td>Post treatment</td>
<td></td>
<td>N</td>
<td>No decision/ Decision deferred</td>
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<td></td>
<td>R</td>
<td>Recurrence/ surveillance</td>
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</table>
7.4.4 Data analyses

Descriptive statistics (mean and median; standard deviation (SD) and range) are reported for behavioural ratings. Differences in ratings of the various behaviours were assessed statistically using the non-parametric Kruskal Wallis test. All behaviours were assessed against the scale midpoint (3), which indicates average quality, using one sample t-test. Tool reliability was also assessed statistically. In order to demonstrate reliability, two kinds of agreement between observers must be shown. Firstly, it must be demonstrated that there is adequate correlation between the scores awarded by the observers across cases. This was assessed statistically using Intraclass Correlation Coefficients (ICC) and 95% confidence intervals for each behaviour observed. The ICC is a useful correlation coefficient for making comparisons between observations. It is frequently used in the assessment of consistency of quantitative measurements made by different observers measuring the same quantity e.g. comparing the weight of two objects, rather than comparing the height and weight of the same object.(90) Secondly, agreement between observers also entails no significant differences in the average score per behaviour awarded by each observer. This analysis demonstrates whether one observer is using the tool more leniently (or harshly) that the other. This was assessed via comparison of the two observer’s average scores for each observed behaviour. Non-parametric Mann Whitney U tests were applied to these scores to determine significant differences in the scoring. Finally, to assess improvement in tool utilisation over time, observed cases were grouped into cohorts of 10 and ICC calculated for each cohort. Improving ICCs would demonstrate learning curves in tool usage by the observers.

All statistical analyses were performed using SPSS version 17.0 (SPSS Inc., Chicago, IL, USA). Significance was taken at the 0.05 level, and Bonferroni correction was used to correct for multiple tests.
7.5 Results

Descriptive information on the meetings observed is given in Table 28. Between 16 and 34 cases were discussed at each meeting. The meetings were busy, with an average 19 cases discussed per hour (average of 3.2 minutes spent on team discussion per case) (Table 28).

Table 28: Descriptive data of MDT meetings observed

<table>
<thead>
<tr>
<th>Observation session</th>
<th>Number of cases observed</th>
<th>Meeting duration (minutes)</th>
<th>Team-members in attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
<td>60</td>
<td>21</td>
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<tr>
<td>3</td>
<td>17</td>
<td>60</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>34</td>
<td>120</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>112</td>
<td>360</td>
<td>78</td>
</tr>
<tr>
<td>Mean</td>
<td>22.4</td>
<td>72</td>
<td>15.6</td>
</tr>
<tr>
<td>Median</td>
<td>20</td>
<td>60</td>
<td>16</td>
</tr>
</tbody>
</table>

7.5.1 Ratings of quality of information presentation and team members’ contributions

Table 16 summarises the observers’ ratings. Both observers (surgeon and psychologist) rated the various aspects of information presentation and team-member contribution in the same rank order – in other words, aspects of teamworking that were rated higher/lower by the surgeon were also rated higher/lower by the psychologist. Significant differences were observed in the ratings of the various behaviours, both in terms of information presentation and also in relation to team-members’ contributions (Kruskal Wallis, P<0.05). This means that the observers rated some behaviour significantly higher than others.
Regarding the quality of presented information to the team, case history presentation was rated highest by both observers (observers’ mean =3.93, SD=0.89), followed by Radiological information (observers’ mean =3.56, SD=1.72) and Pathological information (observers’ mean =3.03, SD=1.27). Regarding each team-member’s contribution, Urologists were scored highest (observers’ mean 4.05, SD=1.26) and clinical nurse specialists lowest (observers’ mean=1.60, SD=1.07), with other team-members in between (Ps<0.05).

Ratings were also submitted to a one-sample t-test, to test whether they were significantly different from the scale midpoint (3). Given the scale length and anchors, ratings significantly higher than 3 indicate good teamworking; significantly lower than 3 indicate poor teamworking; and non-significant differences indicate moderate teamworking (always in relation to the scale’s average anchor for each behaviour). This analysis demonstrated that the contribution of Urologists and the behaviour of the Chair, as well as presentation of case history, and of radiological information were rated above moderate (P≤0.001), Histopathologists and Clinical Nurse Specialists were rated below moderate (P≤0.001), and presentation of histopathological information, Oncologists and Radiologists were rated moderate (P=0.78; P=0.77; P=0.09 respectively).
Table 29: Observers’ ratings across all categories

<table>
<thead>
<tr>
<th></th>
<th>Observer 1 (surgeon)</th>
<th>Observer 2 (psychologist)</th>
<th>Statistical significance#</th>
<th>ICC‡</th>
<th>95% CI</th>
<th>P value</th>
<th>95% CI</th>
<th>P value</th>
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<tbody>
<tr>
<td><strong>Information</strong></td>
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<td></td>
<td></td>
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<tr>
<td>presentation to</td>
<td>History</td>
<td>3.67</td>
<td>4.20</td>
<td>&lt;0.001</td>
<td>0.68</td>
<td>0.53 - 0.79</td>
<td>&lt;0.001</td>
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</tr>
<tr>
<td>team</td>
<td>Radiological</td>
<td>3.52</td>
<td>3.61</td>
<td>0.702</td>
<td>0.84</td>
<td>0.76 - 0.90</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>information</td>
<td>Pathological</td>
<td>2.85</td>
<td>3.20</td>
<td>0.039</td>
<td>0.31</td>
<td>-0.44 - 0.55</td>
<td>0.039</td>
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<tr>
<td></td>
<td>information</td>
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<tr>
<td><strong>Team-</strong></td>
<td>Chairperson</td>
<td>3.50</td>
<td>3.29</td>
<td>0.168</td>
<td>0.52</td>
<td>0.31 - 0.67</td>
<td>&lt;0.001</td>
<td></td>
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<tr>
<td>members’ contribution</td>
<td>Urologists</td>
<td>4.26</td>
<td>3.85</td>
<td>0.017</td>
<td>0.69</td>
<td>0.54 - 0.78</td>
<td>&lt;0.001</td>
<td></td>
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<tr>
<td>to team discussion</td>
<td>Oncologists</td>
<td>3.04</td>
<td>2.88</td>
<td>0.447</td>
<td>0.71</td>
<td>0.56 - 0.81</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Radiologists</td>
<td>2.83</td>
<td>2.74</td>
<td>0.771</td>
<td>0.82</td>
<td>0.73 - 0.88</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Histopathologists</td>
<td>2.03</td>
<td>2.15</td>
<td>0.679</td>
<td>0.86</td>
<td>0.79 - 0.90</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clinical Nurse</td>
<td>1.63</td>
<td>1.58</td>
<td>0.738</td>
<td>0.87</td>
<td>0.80 - 0.91</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Specialist</td>
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</table>

Note: Bonferroni correction applied to all statistical tests. Statistically significant results following Bonferroni correction highlighted in boldface; \#Mann Whitney U test; † average difference between observers (see text); ‡ICC- Intraclass Correlation Coefficient.
7.5.2 Inter-rater reliability

Reliability was assessed via examination of average differences between the two observers’ ratings of the various behaviours, as well as ICCs for each one of the behaviours. Table 16 summarises the observers’ ratings, as well as ICCs. Obtained ICCs (Marked ‡ Table 16) were good both for the rating of quality of information presentation as well as for the ratings of individual team-members’ contributions to the team. ICCs were very high (0.70+) for five of the nine assessed behaviours, and adequate for rating of case history (0.68) and rating of Urologists (0.69). Rating of the quality of presentation of histopathological information only reached poor reliability (0.31), indicating that perhaps this aspect of the meeting cannot be assessed robustly by a non-clinician. Finally, quality of contribution of the Chairperson could certainly improve (0.52) – these findings and their implication for team assessment are revisited in the Discussion.

Analyses of average differences in the scoring between the two observers (marked † in table 16) revealed a promising pattern, with no significant differences between them in eight of the nine categories. This suggests that the tool allows both observers to score consistently, without one being significantly more or less lenient than the other. The single behaviour where differences were obtained was case history presentation, where the surgeon observer gave significantly lower scores than the psychologist.
7.5.3 Observers’ learning curves

Figure 6 displays inter-observer ICCs for cohorts of 10 cases in each category of observation. The plots are annotated with a solid line at ICC=0.00 and a dotted line at ICC=0.70. Reliability coefficients should be read as follows:

- Observations below the solid line (≤0.00) indicate serious disagreement, and potentially inability of a non-clinical observer to agree with a surgeon on that aspect of an MDT
- Observations between the solid and the dotted line (≥0.00 and ≤0.70) indicate some agreement between surgeon and psychologist observers
- Observations above the dotted line (≥0.70) indicate very good agreement between surgeon and psychologist observers

The two observers showed good agreement (i.e., most coefficients consistently above the dotted line) in their assessment of Clinical Nurse Specialists, Radiologists and Histopathologists. From the other behaviours, improvement (i.e., an increasing number of points above the dotted line as the volume of observations increased) was noted in the assessment of case history, and Oncologists. Assessment of Urologists and radiological information showed a more mixed pattern, with some good agreement, but not consistent improvement over time. Finally, the observers did not reach adequate agreement for the presentation of histopathological information and the contribution of the Chair (majority of data points below the dotted line, with some of them below the solid line cut off).
Closer inspection of the plots reveals a consistent “dip” across most behaviour ratings in Cohort 4. This cohort consists of observations carried out in meeting, in which 21 MDT members discussed 25 patients. This was the highest rate of case discussion with the greatest number of participants included in these observations, and it occurred relatively early in the observers’ learning curve. The increased difficulty of observing such an intense meeting may have reduced the reliability of the observation.

Figure 6: Graphs depicting learning curves for ICCs between observers
7.6 Discussion

7.6.1 Summary of findings

The study has demonstrated that robustly constructed observational metrics can reliably be used by medical and non-medical observers to assess a range of aspects of MDT performance – including the quality of information presentation to the team, and the contributions to team decision-making of the core members of the MDT. With the exception of the rating of the performance of the MDT Chair, the two observers statistically agree on their average ratings of quality of information presentation and team-members’ contribution. Moreover, adequate to good reliability was obtained in the assessment of seven of the nine aspects of the MDT performance (presentation of history and radiological information; contribution of Urologist, Oncologist, Radiologist, Histopathologist, and Clinical Nurse Specialist). The observers were less reliable in their assessments of the Chair’s contribution, or of the quality of presentation of histopathological information, which need further discussion. Finally, a range of learning curves were obtained in the aspects of the teams that were overall reliably rated: ratings were consistently reliable for Clinical Nurse Specialists, Radiologists and Histopathologists (no learning curve evident); improved over time for Oncologists and presentation of case history (learning curve evident); and showed a mixed pattern for Urologists and presentation of radiological information (no learning curve evident).

7.6.2 Limitations

These findings are subject to certain limitations. First of all, the sample of MDTs observed was rather small and therefore potentially unrepresentative of urology MDTs in general. Although this is a fair criticism, it is important to note here that three different hospitals were
recruited in the study and the variation in the number of cases discussed and length of team discussion time implies that these MDTs were mixed and thus likely representative of the wider population. Observations and reliability analyses could have been biased by the presence of a non-medically trained observer, who cannot evaluate presentation of clinical information. The unsystematic presentation of information and contribution to team discussion that was often witnessed made data capture difficult particularly for the psychologist observer. Information on pathology or radiology was often presented within the case history, making it difficult for a psychologist to tease out. However, the presence of the psychologist observer did not compromise the reliability of most of the observations.

7.7 Conclusion

Healthcare providers and policy makers are seeking cost-effective and decentralised ways for healthcare teams to self-monitor and improve their performance. Developing robust assessment tools for MDTs, of which observational metrics are one part, is the first step to providing teams with a robust tool kit to assess and improve how they work. In this study I have piloted a robust observation tool and demonstrated content validity, face validity and feasibility. This alone, without further interventions (like team training, team building, or others) can help to highlight problems and issues in a systematic and transparent manner – such that some teams will be able to resolve these issues internally. Other teams may require further support, in the form of training or other interventions. (25) This observation measure may therefore provide the first phase in a staged approach to assessing and improving teamworking within MDTs. In the following Chapter I attempt to further validate MDT- MODE and assess how it compares to team members’ own ratings of their performance. If
successful, such a comparison might also provide some cross-validation for the self-reported data presented in Chapters 3 to 6.
8 CROSS-VALIDATION OF ASSESSMENT METHODS OF TEAMWORK AND CLINICAL DECISION-MAKING IN MDT MEETINGS

8.1 Chapter overview

The previous Chapter described the process of developing and the initial evaluation of an evidence based tool for the observational assessment of team decision-making at MDT meetings. Although I have demonstrated that the tool can be used reliably, further validation is difficult as there are no existing validated tools with which the tool can be compared. In the present Chapter I assess validity by comparing objective ratings using MDT-MODE with team members own self-assessments.

8.2 Introduction

In this Chapter I report a study to cross-validate expert observational assessment of cancer MDTs against the same teams’ self-assessment of their team performance and clinical decision-making. High agreement between observation and self-report would show good concurrent validity. In addition, systematic, statistically evaluated agreement between an expert observer’s assessment of MDT functioning and the team’s own self-assessment would show that teams have self-insight, and therefore can regularly assess themselves without constant need for external assessors. In contrast, significant discrepancies between a team’s self-assessment and an assessors’ evaluation of the same team would show that external
assessors are required for team assessment and feedback for cancer MDTs, with the relevant cost and resource implications.

8.3 Aims

The aims of this Chapter are:

1. To develop an evidence based survey tool with which teams can assess their own performance in MDT meeting team decision-making
2. To recruit teams to self assess their performance in MDT meeting team decision-making
3. To observe the same teams in MDT meetings and assess their team decision-making using MDT-MODE
4. To cross-validate assessment methods through comparison of the results of observational- and self-assessment

8.4 Methods

8.4.1 Observational tool development

The development of the observational tool has been reported in the previous Chapter.

8.4.2 Survey tool development

A 29-question survey was developed in three iterative phases to ensure robustness and feasibility. Specifically, the tool sought to demonstrate:(89)
• content validity: the survey should capture all relevant aspects of teamworking and team decision-making in MDTs

• face validity: the survey should be perceived as relevant and comprehensive by expert MDT team members

• feasibility: the survey should be feasible to complete in that the questions/items ought to be understood easily and uniformly by the intended respondents, and the tool should not take too long to complete

Aiming to achieve these properties, in Phase 1, I reviewed and extracted key themes from the literature on MDT decision-making and its efficacy. The main themes were the quality of the discussion at the MDT meeting (enough time; coverage of all relevant issues for all patients in the discussion list), MDT leadership (aspects of effective and ineffective leadership; impact of effective/ineffective leadership on MDT decision-making process), and MDT decision-making processes (level of input by different professionals; coverage of clinical and psychosocial aspects of the decision).

In Phase 2, the themes that were extracted in Phase 1 were discussed within the research team and a long-list of relevant questions was formulated for potential inclusion in the survey. To ensure adequate domain coverage and feasibility, three experts blinded to Phase 1 contributed to Phase 2: one Consultant Urologist (Green), one Consultant Oncologist (Payne) and a Patient Safety Expert (Sevdalis). The selected questions mirrored the themes that were extracted in Phase 1.
Finally, in Phase 3, the draft survey tool was piloted with five clinicians, nurses, and psychologists with expertise in survey development and validation to ensure feasibility (adequate question comprehension and reasonable length of time taken to complete survey). A few amendments were carried out as a result of this Phase, resulting in the final version of the tool for data collection.

The final survey (Appendix 8) incorporated multiple choice questions, questions answered on Likert rating scales (1=Never, 2=Not often, 3=Sometimes, 4=Half of the time, 5=Usually, 6=Nearly always, 7=Always), and open-ended questions, in which participants freely recorded their views. The questions covered in detail participants’ work practices, the frequency of presentation of different types of information at MDT meetings, the frequency of contribution of different healthcare professionals to the MDT discussion, leadership of the MDT, and decision-making by the team. Participants’ demographic information was also captured.

8.4.3 Cases

Participants were recruited between September-November 2009 across multiple hospitals in England. Potential participants were recruited in numbers that reflected the representation of different specialties within typical MDTs in order to ensure comparability between observational and self-assessment data. Participating MDT members were sent an electronic invitation letter to the study. Those who accepted were asked to fill out an electronic survey via freely available software (http://www.surveymonkey.com). Following completion of the survey I visited the participating MDTs to carry out the observational
assessment of teamworking and team decision-making. I used the previously developed and validated observation tool, MDT-MODE to rate team decision-making for every patient discussed. (92) I had calibrated my ratings with a psychologist observer (Wong) in a previous set of observational assessments (i.e., the ratings showed good inter-rater reliability), (See Chapter 7 (92)) and was kept blinded to the team-members’ self-assessments throughout data collection. Institutional and ethical approvals to carry out the study were obtained and oral informed consent was provided by team-members prior to data collection.

8.4.4 Data analyses

To ensure comparability between numerical ratings on the observation tool and participants’ self-reported surveys, all data were first standardized to scores ranging from 0 to 1 and expressed on a percentage scale (0-100%). Higher scores indicate higher quality of case presentation at the MDT and higher quality of team discussion. Mean, standard deviation (SD) and range (min-max) are reported for all ratings. The rank ordering of the quality of various aspects of the case discussion (i.e., which aspect was better discussed) was analyzed using the non-parametric Jonckheere-Terpstra test. (93) This test allows the agreement between the observer’s and self-reported rank orderings to be statistically compared. Cross-validation of the observational and self-report assessments was carried out statistically using non-parametric Spearman’s correlations (Rho). Significant positive correlations between observations and self-reports would provide evidence for adequate consistency between the two, and hence concurrent validity for both assessment methods. To visually demonstrate correlations between tools, the data were also plotted on scatterplots. All statistical analyses
were performed using SPSS version 18.0 (SPSS Inc., Chicago, IL, USA). Significance was taken at the 0.05 level.

8.5 Results

Preliminary data were collected across 164 cancer cases discussed in five different MDTs in England by a total of 67 team-members. Cases were presented by a range of MDT members, predominantly Consultant Surgeons and Oncologists. The majority of the time for each case was taken with information presentation, and often discussion occurred concurrently with presentation of information. Descriptive information on the participating MDTs is given in Table 22. Self-report assessments were undertaken by Nurses, (N=16), Surgeons (N=11), MDT Coordinators (N=10), Radiologist (N=5), Oncologists (Medical and Radiation; N=3), and Pathologists (N=2) with a 70% response rate.

Table 30: Summary of participating MDTs

<table>
<thead>
<tr>
<th>Observation session</th>
<th>Number of cases observed</th>
<th>Meeting duration (minutes)</th>
<th>Team-members in attendance</th>
<th>Number of surveys completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>48</td>
<td>120</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>43</td>
<td>120</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>41</td>
<td>120</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>25</td>
<td>120</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>20</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>164</td>
<td>500</td>
<td>67</td>
<td>47</td>
</tr>
<tr>
<td>Mean</td>
<td>33</td>
<td>100</td>
<td>13</td>
<td>9.4</td>
</tr>
</tbody>
</table>
8.5.1 Quality of information presentation and team members’ contributions:

observational and self-assessments

Table 31 and Figure 7 summarise the ratings from the observation and self-report assessments.

Table 31: Descriptive data for observer’s assessment and teams’ self-assessment of team performance by category

<table>
<thead>
<tr>
<th>Component</th>
<th>Observer’s assessment (%)</th>
<th>Teams’ self-assessment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Score</td>
<td>SD</td>
</tr>
<tr>
<td>Case history</td>
<td>56</td>
<td>23</td>
</tr>
<tr>
<td>Radiological</td>
<td>53</td>
<td>45</td>
</tr>
<tr>
<td>Histopathological</td>
<td>40</td>
<td>31</td>
</tr>
<tr>
<td>Comorbid, psychosocial</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>Patients’ views</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>Surgeons</td>
<td>84</td>
<td>24</td>
</tr>
<tr>
<td>Oncologists</td>
<td>43</td>
<td>41</td>
</tr>
<tr>
<td>Radiologists</td>
<td>33</td>
<td>42</td>
</tr>
<tr>
<td>Histopathologists</td>
<td>23</td>
<td>36</td>
</tr>
<tr>
<td>Nurses</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>MDT Coordinators</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: scores range from 0 to 100%. Higher scores indicate higher quality of presentation and higher quality team discussion.
Both the observer and the MDT members rated the various aspects of information presentation, and team-member contribution in the same rank order. Regarding the quality of information presentation to the team, both the observational assessment and participants’ self-assessments concurred that case histories and radiological information were best presented and that, in contrast, patients’ views and comorbidities/psychosocial issues were least well covered (Observed: Z=14.80, P≤0.001; Self-report: Z=3.70, P<0.001; Jonckheere-Terpstra test). Regarding the contribution of MDT members to case discussion, Surgeons and
Oncologists were found to make the greatest contribution, both by participants’ self-reports and the observational assessment. Both assessment methods found that the contribution of Nurses and MDT Coordinators to case discussions were the least frequent (Observed: Z=20.00, P≤0.001; Self-report: Z=8.10, P<0.001; Jonckheere-Terpstra test). Regarding the variability of ratings, there was no significant relationship between the mean and the SD for the observational data (Spearman’s rho= 0.224; p=0.508). For self-report data, as the mean rating increased there was a corresponding reduction in the SD (Spearman’s rho= -0.922; p<0.001).

8.5.2 Agreement between observational and self-report assessments

Table 32 summarizes Spearman’s Rho correlations between observer and self-assessments for each MDT. The median correlation was Rho=0.74, indicating very good agreement between observer’s ratings and self-reported scores. Correlations were high for MDT 4 (Rho=0.91), MDT 3 (Rho=0.76) and MDT 2 (Rho=0.74), and adequate for MDT 1 (Rho=0.66) and MDT 5 (Rho=0.67) – all significant (P<0.05 or lower).

Figure 8 depicts scatterplots displaying mean scores from observational and self-report data for each category of assessment by MDT. The dotted line shows a perfect correlation of 1.0; the solid line is the line of ‘best fit’ of the data on each plot. At lower scores there is increased deviation from the line of perfect correlation, indicating that participants scored themselves higher than the observer rated them. The lines converge at higher scores, which implies that for better-completed aspects self-report scores fell into line with scores of the external assessor.
Table 32: Spearman’s rho correlation coefficients between observer’s assessments and self-assessments of team performance across MDTs

<table>
<thead>
<tr>
<th>MDT</th>
<th>Rho</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.66</td>
<td>P=0.027</td>
</tr>
<tr>
<td>2</td>
<td>0.74</td>
<td>P=0.010</td>
</tr>
<tr>
<td>3</td>
<td>0.76</td>
<td>P=0.007</td>
</tr>
<tr>
<td>4</td>
<td>0.91</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>5</td>
<td>0.67</td>
<td>P=0.039</td>
</tr>
</tbody>
</table>

![Graphs showing correlation between observed and self-reported scores across different MDTs](image-url)
8.6 Discussion

8.6.1 Summary of results

My results demonstrate that observational and self-assessment metrics can be used to reliably assess teamworking and clinical decision-making in MDTs. Overall positive correlations between the observational and self-assessments were adequate to strong across all MDTs with the pattern of self-reported results mirroring those of the observer. The overall pattern of results seen in this study reflect previous research, where it can be seen that bio-medical information is more comprehensively presented than patient-centered information, and that nursing MDT members often have little overt involvement in team decision-making.(81;92;94;95) The peripheral role of nurses in clinical decision-making reported here, both through observational and self-report data, is a concern.

8.6.2 Limitations

These findings are subject to certain limitations. Firstly, the sample of MDTs observed was small and may not be representative of MDTs in general. However, the variation seen in the characteristics of meetings (e.g. case load, attendance) implies that MDTs in the study were mixed and likely representative of the wider population. Furthermore, the proportion of respondents from particular specialties reflects that of MDTs nationally in the UK.(79) Secondly, the present study examined urology MDTs only, and whilst I have no reason to believe that the nature of teamworking or decision-making processes differs between specialties, further research is needed to discover whether my findings are applicable across
tumour types. Use of both self-report and observational methods of assessment in five different MDTs from across England, in conditions that realistically reflect the environments in which these teams work, demonstrates the usability of these tools for assessing team performance.

8.7 Conclusion

The study reported in this Chapter provides cross-validation evidence for observational and self-report assessments of cancer MDT teams and demonstrates that MDT-MODE is valid and reliable for use in MDT meetings to assess the quality of team decision-making. Chapters 7 and 8 have suggested that factors other than team behaviours, such as the organisation of meetings, time for discussion, and attendance may influence decision-making behaviour. In the next Chapter I will investigate the effects of these on decision-making.
9 A STUDY OF FACTORS THAT AFFECT THE EFFICACY OF CLINICAL DECISION-MAKING IN MDT MEETINGS

9.1 Chapter overview

The first two Chapters of this thesis have described how organisational factors, as well as behavioural factors, can have an effect on MDT working. Chapter 4 also found the scheduling, caseload and timing of meetings to be an area of significant variability between urology and other specialities. It follows that such characteristics should be investigated to provide a more complete picture of team decision-making in MDT meetings. In the current Chapter I describe a study of the effect of organisational factors on decision-making behaviours using MDT-MODE. In addition, I will compare results with the ability of the team to reach a decision, which was discussed in Chapter 3 as an indicator of decision-making quality.

9.2 Introduction

Providing good patient care requires that the process of decision-making in the MDT meeting is also of high quality. Previous Chapters have shown that this depends on access to comprehensive information at the point of decision making, attendance of core team members, good teamworking and effective leadership. In addition, there is some evidence that organisational factors can affect MDT working. From my experience of MDT meetings so far, and discussions with those working in MDTs factors such as the number of MDT members present, the timing of meetings, number of cases, and whether cases are at the
start or end of meetings also appear to have an effect on the quality of case discussion and decision-making. Neglecting to appreciate the effects of such factors could provide an incomplete picture of decision-making in the MDT, and failing to account for them might confound the results of any study to assess the effect of interventions designed to improve MDT decision-making.

9.3 Aims

The aims of the study reported here are to prospectively assess the relationship between the quality of the presented information, contribution to discussion of team members, team size, case positioning, and timing and the ability to reach clinical decisions using the MDT assessment tool developed and validated in Chapters 8 and 9.

9.4 Method

9.4.1 Study setting

A prospective observational study took place between Dec 2009 and Jan 2010 at Whipps Cross University Hospital (WXUH), which provides pelvic and complex urological surgery for a population of approximately 1 million in north east London. WXUH has a local MDT meeting, at which all cases of suspected or confirmed cancer are discussed. Certain cases of complex or high risk disease (Table 33) are referred from surrounding hospitals to the Specialist MDT at WXUH and are discussed at the specialist MDT meeting, which takes place at WXH once a week with referring sites linked via videoconference.
Table 33: Table outlining which patients must be discussed at the specialist MDT

<table>
<thead>
<tr>
<th>Organ</th>
<th>Criteria for referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate</td>
<td>Eligible for radical therapy</td>
</tr>
<tr>
<td>Bladder</td>
<td>Eligible for radical therapy, G3, CIS</td>
</tr>
<tr>
<td>Kidney</td>
<td>Nephron sparing surgery</td>
</tr>
<tr>
<td>Testis</td>
<td>All</td>
</tr>
<tr>
<td>Penis</td>
<td>All</td>
</tr>
<tr>
<td>Ureter</td>
<td>Eligible for Radical therapy</td>
</tr>
</tbody>
</table>

9.4.2 Cases and Participants

During the study period, all local and specialist cases at seven MDT meetings were observed and included in the study. Members of the MDT in attendance included urological surgeons, clinical and medical oncologists, specialist and research nurses, radiologists, pathologists, and an MDT coordinator. Ethical approval for the study was given by the South East London 5 Research Ethics Committee. Oral informed consent was given by team-members.

9.4.3 Assessment tool development

Data collected on features of team decision-making in the MDT meeting was collected using MDT-\textit{MODe}, the development of which was discussed in detail in Chapter 7.(92)
9.4.4 Data collection

The study was a prospective observational study. Using MDT-MODE I collected data on:

- Meeting characteristics: whether a decision was reached for each case; the number of team members in attendance; the profession of team members in attendance; the start and end times of meetings.

- Team behaviours:
  
  a) Quality of information from case history, radiological and pathological investigations, on comorbidities, psychosocial issues and the patients’ views

  b) Observed quality of contribution to team decision-making of the Chair, Surgeons, Oncologists (Medical and Radiation), Radiologists, Pathologists, Nurses and MDT Coordinators (MDTCs)

9.4.5 Statistical analysis

Values for the mean, 95% confidence intervals, standard deviation, and Pearson’s correlation are reported for outcomes and meeting characteristics and results tabulated. All statistical analyses were performed using SPSS version 18.0 (SPSS Inc., Chicago, IL, USA). Significance was taken at the 0.05 level.
9.5 Results

298 local and specialist cases were assessed over seven MDT meetings. Table 34 presents descriptive data for meeting characteristics. Table 35 presents data on each domain of MDT meeting assessment (information and professional contribution) as well as information score, contribution score and decision score for each MDT meeting. Figure 9 displays mean values and 95% confidence intervals for each domain across specialist and local MDT cases.

Overall, a clinical decision could be reached in 254 of 298 cases (85%) of the cases discussed. In the forty four cases where decision could not be reached, reasons included insufficient radiological information (n=16), inadequate pathological information (n=12), inappropriate referral to the MDT meeting (n=11), lack of clinical notes (n=3), and non-attendance of team members (n=2).

Table 34: Meeting characteristics

<table>
<thead>
<tr>
<th>MDT meeting</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>103</td>
<td>15.5</td>
<td>3.5</td>
<td>02:15</td>
<td>00:23</td>
<td>8.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Specialist</td>
<td>195</td>
<td>29.9</td>
<td>5.5</td>
<td>02:32</td>
<td>00:24</td>
<td>12.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Total</td>
<td>298</td>
<td>24.9</td>
<td>8.4</td>
<td>02:26</td>
<td>00:25</td>
<td>11.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>
Figure 9 Bar charts displaying ratings for each domain of information (light grey bars) and professional contribution (dark grey bars) observed across the study. Specialist MDT cases are displayed in the upper panel, and local MDT cases in the lower panel. The dotted line represents the scale midpoint.
Table 35: Descriptive statistics for domains of the observation assessment tool for each MDT meeting observed (range= 1–5)

<table>
<thead>
<tr>
<th>MDT meeting</th>
<th>Number</th>
<th>Local Specialist</th>
<th>Case History</th>
<th>Radiological</th>
<th>Pathological</th>
<th>Psychosocial</th>
<th>Comorbidity</th>
<th>Patients’ views</th>
<th>Information Score</th>
<th>Chair</th>
<th>Surgeons</th>
<th>Oncologists</th>
<th>Nurses</th>
<th>Radiologists</th>
<th>Pathologists</th>
<th>MDTC</th>
<th>Contribution Score</th>
<th>Decision Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td>28</td>
<td>3.29 (0.87)</td>
<td>2.78 (1.67)</td>
<td>2.95 (1.16)</td>
<td>1.34 (0.76)</td>
<td>1.34 (0.76)</td>
<td>1.17 (0.77)</td>
<td>12.88 (6.00)</td>
<td>3.15 (0.48)</td>
<td>4.59 (1.07)</td>
<td>1.56 (1.38)</td>
<td>1.00 (0.00)</td>
<td>2.61 (1.96)</td>
<td>2.41 (1.90)</td>
<td>1.00</td>
<td>16.32 (6.79)</td>
<td>0.88 (0.33)</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
<td>24</td>
<td>3.40 (0.91)</td>
<td>2.52 (1.80)</td>
<td>2.29 (1.37)</td>
<td>1.50 (1.15)</td>
<td>1.50 (1.15)</td>
<td>1.07 (0.46)</td>
<td>12.29 (6.85)</td>
<td>3.14 (0.52)</td>
<td>4.05 (1.32)</td>
<td>2.31 (1.63)</td>
<td>1.31 (0.75)</td>
<td>2.31 (1.76)</td>
<td>2.07 (1.67)</td>
<td>1.00</td>
<td>16.19 (7.66)</td>
<td>0.83 (0.38)</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>10</td>
<td>3.16 (0.76)</td>
<td>2.79 (1.65)</td>
<td>3.21 (0.85)</td>
<td>1.37 (0.68)</td>
<td>1.37 (0.68)</td>
<td>1.37 (1.12)</td>
<td>13.26 (5.76)</td>
<td>3.05 (0.23)</td>
<td>4.58 (1.02)</td>
<td>2.11 (1.59)</td>
<td>1.95 (1.22)</td>
<td>2.16 (1.77)</td>
<td>2.16 (1.67)</td>
<td>1.00</td>
<td>17.00 (7.61)</td>
<td>0.95 (0.23)</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>32</td>
<td>3.04 (1.04)</td>
<td>2.34 (1.52)</td>
<td>2.66 (1.26)</td>
<td>1.43 (1.02)</td>
<td>1.43 (1.02)</td>
<td>1.11 (0.52)</td>
<td>12.00 (6.37)</td>
<td>3.38 (0.57)</td>
<td>4.51 (1.02)</td>
<td>1.74 (1.50)</td>
<td>1.23 (0.70)</td>
<td>1.91 (1.64)</td>
<td>1.89 (1.66)</td>
<td>1.00</td>
<td>15.68 (7.08)</td>
<td>0.83 (0.38)</td>
</tr>
<tr>
<td>5</td>
<td>21</td>
<td>30</td>
<td>3.37 (1.13)</td>
<td>2.71 (1.74)</td>
<td>2.57 (1.15)</td>
<td>2.04 (1.37)</td>
<td>2.04 (1.37)</td>
<td>1.47 (1.14)</td>
<td>14.20 (7.90)</td>
<td>3.82 (0.68)</td>
<td>4.00 (1.64)</td>
<td>1.98 (1.53)</td>
<td>1.94 (1.59)</td>
<td>1.86 (1.59)</td>
<td>1.12 (1.66)</td>
<td>1.00</td>
<td>14.82 (6.34)</td>
<td>0.69 (0.47)</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
<td>34</td>
<td>3.40 (0.97)</td>
<td>2.89 (1.67)</td>
<td>2.87 (1.08)</td>
<td>2.13 (1.44)</td>
<td>2.13 (1.44)</td>
<td>1.38 (1.03)</td>
<td>14.81 (7.63)</td>
<td>3.91 (0.58)</td>
<td>4.77 (0.84)</td>
<td>2.02 (1.62)</td>
<td>2.09 (0.58)</td>
<td>3.11 (2.00)</td>
<td>2.30 (1.84)</td>
<td>1.00</td>
<td>18.19 (7.47)</td>
<td>0.96 (0.20)</td>
</tr>
<tr>
<td>7</td>
<td>19</td>
<td>32</td>
<td>3.25 (1.00)</td>
<td>2.25 (1.52)</td>
<td>2.65 (1.25)</td>
<td>1.41 (0.96)</td>
<td>1.41 (0.96)</td>
<td>1.27 (0.87)</td>
<td>12.25 (6.56)</td>
<td>3.70 (0.70)</td>
<td>3.98 (1.56)</td>
<td>2.63 (1.90)</td>
<td>2.32 (0.88)</td>
<td>1.51 (1.32)</td>
<td>1.92 (1.62)</td>
<td>1.00</td>
<td>15.96 (8.00)</td>
<td>0.73 (0.45)</td>
</tr>
<tr>
<td>Mean</td>
<td>15</td>
<td>27</td>
<td>3.29 (0.98)</td>
<td>2.59 (1.65)</td>
<td>2.70 (1.20)</td>
<td>1.63 (1.16)</td>
<td>1.63 (1.16)</td>
<td>1.26 (0.87)</td>
<td>13.10 (7.03)</td>
<td>3.45 (0.54)</td>
<td>4.32 (1.30)</td>
<td>2.06 (1.63)</td>
<td>1.20 (0.70)</td>
<td>2.19 (1.78)</td>
<td>1.94 (1.64)</td>
<td>1.00</td>
<td>16.16 (7.59)</td>
<td>0.84 (0.35)</td>
</tr>
</tbody>
</table>
9.5.1 Correlations between domains and outcome measures

Values for Pearson’s $r$ across each domain of the observed data, and each outcome measure are displayed in Table 36. Decision score was positively correlated with case history, radiological and pathological information, and the contribution of surgeons and radiologists. There was a positive correlation between information score and each category of information, as well as with the contributions of surgeons, oncologists and radiologists. Contribution score was positively correlated with the contribution of each professional group except for MDT coordinators. There were also positive correlations between contribution score and information from case history, radiological, pathological and patients’ views. Decision score, information score and contribution score were positively correlated with each other.

9.5.2 Correlations between meeting characteristics and outcome measures

Pearson’s $r$ values for correlations between meeting characteristics and outcome measures are presented in Table 37. Case number (i.e. cases occurring towards the end of the meeting) was associated with less time per case, a lower number of members present at the meeting, and lower scores for all three outcome measures: information score, contribution score and decision score. Specialist MDT meetings were positively correlated with the number of cases per meeting, the amount of time per case, and the numbers of team members present, as well as information score and contribution score. The number of cases per meeting was associated with higher numbers of team members present, and the better information and contribution scores, but a lower amount of time per case. Time per case was positively correlated with contribution score. The number of team members present was associated with higher scores for both the information and contribution score.
# Table 36: Correlations for components of the observational tool and outcome measures

<table>
<thead>
<tr>
<th>Information components</th>
<th>Radiological</th>
<th>Pathological</th>
<th>Psychosocial</th>
<th>Comorbidities</th>
<th>Patient view</th>
<th>Contribution components</th>
<th>MDT Coordinator</th>
<th>Scores</th>
<th>Decision score</th>
<th>Information score</th>
<th>Contribution score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case history</td>
<td>0.246**</td>
<td>0.147</td>
<td>0.172</td>
<td>0.172</td>
<td>0.070</td>
<td>-0.015</td>
<td>0.382**</td>
<td>0.285**</td>
<td>0.099</td>
<td>0.198**</td>
<td>-0.004</td>
</tr>
<tr>
<td>Radiological</td>
<td>1.000</td>
<td>-0.018</td>
<td>0.141</td>
<td>0.141</td>
<td>0.044</td>
<td>0.076</td>
<td>0.371**</td>
<td>0.307**</td>
<td>0.012</td>
<td>0.676*</td>
<td>-0.084</td>
</tr>
<tr>
<td>Pathological</td>
<td>1.000</td>
<td>-0.128</td>
<td>-0.128</td>
<td>0.034</td>
<td>-0.002</td>
<td>-0.002</td>
<td>0.336**</td>
<td>-0.026</td>
<td>0.003</td>
<td>0.003</td>
<td>0.521**</td>
</tr>
<tr>
<td>Psychosocial</td>
<td>1.000</td>
<td>1.000</td>
<td>0.085</td>
<td></td>
<td>0.003</td>
<td>0.003</td>
<td>0.105</td>
<td>0.108</td>
<td>0.023</td>
<td>0.117</td>
<td>-0.110</td>
</tr>
<tr>
<td>Comorbidities</td>
<td>1.000</td>
<td>1.000</td>
<td>0.085</td>
<td></td>
<td>0.003</td>
<td>0.105</td>
<td>0.108</td>
<td>0.023</td>
<td>0.117</td>
<td>-0.110</td>
<td>-</td>
</tr>
<tr>
<td>Patient view</td>
<td>1.000</td>
<td>0.034</td>
<td>0.092</td>
<td>0.177</td>
<td>0.097</td>
<td>-0.019</td>
<td>0.097</td>
<td>-0.060</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chair</td>
<td>1.000</td>
<td>0.039</td>
<td>0.124</td>
<td>-0.022</td>
<td>0.102</td>
<td>-0.077</td>
<td>-</td>
<td>-</td>
<td>-0.010</td>
<td>0.038</td>
<td>0.133</td>
</tr>
<tr>
<td>Surgeons</td>
<td>1.000</td>
<td>0.243**</td>
<td>0.111</td>
<td>0.309**</td>
<td>0.081</td>
<td>-*</td>
<td>-</td>
<td>-</td>
<td>0.583**</td>
<td>0.456*</td>
<td>0.649*</td>
</tr>
<tr>
<td>Oncologists</td>
<td>1.000</td>
<td>0.126</td>
<td>0.159*</td>
<td>-0.097</td>
<td>-*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.149**</td>
<td>0.308*</td>
<td>0.579*</td>
</tr>
<tr>
<td>Nurses</td>
<td>1.000</td>
<td>0.051</td>
<td>0.033</td>
<td></td>
<td>-*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.107</td>
<td>0.069</td>
<td>0.308*</td>
</tr>
<tr>
<td>Radiologists</td>
<td>1.000</td>
<td>-0.071</td>
<td>-*</td>
<td></td>
<td>-*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.239**</td>
<td>0.417*</td>
<td>0.626*</td>
</tr>
<tr>
<td>Pathologists</td>
<td>1.000</td>
<td>-*</td>
<td></td>
<td></td>
<td>-*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.119</td>
<td>0.047</td>
<td>0.361*</td>
</tr>
<tr>
<td>MDT Coordinator</td>
<td>-*</td>
<td>-</td>
<td>-*</td>
<td></td>
<td>-*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Key:** *=P≤0.01, **=P≤0.001.
### Table 37: Correlations for meeting characteristics and outcome measures

<table>
<thead>
<tr>
<th></th>
<th>N=298</th>
<th>Specialist /local</th>
<th>Cases per meeting</th>
<th>Time per case</th>
<th>Members present</th>
<th>Information score</th>
<th>Contribution score</th>
<th>Decision score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case number</td>
<td></td>
<td>-0.759**</td>
<td>-0.483**</td>
<td>-0.468**</td>
<td>-0.557**</td>
<td>-0.300**</td>
<td>-0.371**</td>
<td>-0.153*</td>
</tr>
<tr>
<td>Specialist / local</td>
<td>1.000</td>
<td>0.813**</td>
<td>0.329**</td>
<td>0.750**</td>
<td></td>
<td>0.371**</td>
<td>0.433**</td>
<td>0.123</td>
</tr>
<tr>
<td>Cases per meeting</td>
<td>1.000</td>
<td></td>
<td>-0.212**</td>
<td>0.635**</td>
<td></td>
<td>0.318**</td>
<td>0.292**</td>
<td>0.034</td>
</tr>
<tr>
<td>Time per case</td>
<td>1.000</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td>0.092</td>
<td>0.163*</td>
<td>0.134</td>
</tr>
<tr>
<td>Members present</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.348**</td>
<td>0.433**</td>
<td>0.150</td>
</tr>
<tr>
<td>Information score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contribution score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: * = $P \leq 0.01$, ** = $P \leq 0.001$. 

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9.6 Discussion

9.6.1 Summary of results

My results suggest that the ability of an MDT to reach clinical decision is associated with improved information quality, specifically, improved information form case history, radiological and pathological investigations, improved contribution of team members, and with cases that are discussed closer to the beginning of the meeting. Higher quality of information and team contribution are themselves associated with specialist cases, cases at the beginning of meetings, larger team size, higher numbers of cases per meeting, and longer case discussions.

9.6.2 Limitation

The results of this study should be interpreted in the light of certain limitations. Firstly, the sample of MDT meetings observed comes from a single MDT and may not be representative of MDTs in general. However, the sample size is large and the cases referred to the specialist and local MDTs are drawn from a large population which is more likely to be representative of the UK in general. Secondly, the present study is set in a urology MDT, and whilst there is evidence that the nature of teamworking and decision-making is similar across common tumour types, further research is needed to discover whether my findings are applicable to different surgical oncology specialities.
9.7 Conclusion

The present Chapter offers an objective and scientific analysis of the factors that affect teamworking and decision-making in MDT meetings - not just behavioural factors, but organisational factors too. This is the first study of MDT working to demonstrate a quantitative relationship between the way teams work together, the information they have available to them and their ability to make clinical decisions. I have also provided the first analysis of the effect of MDT meeting organisation on clinical decision-making. Taken together, these results reinforce the importance of good MDT working in the delivery of high quality cancer care - the care given to patients can only be as good as the clinical decision-making process that underpins it. It now remains to develop an intervention to address some of the factors that I have so far described in an attempt to improve decision-making and teamworking in urological MDT meetings. This is what I have done, and I report it in Chapters 10 and 11.
10 DEVELOPMENT AND EVALUATION OF MDT-QUIC: A CHECKLIST TO SUPPORT DECISION-MAKING IN CANCER MULTIDISCIPLINARY TEAM MEETINGS

10.1 Chapter overview

My thesis so far has set out to identify behavioural and organisational factors that influence team decision-making in MDT meetings, and to construct a robust tool to objectively assess the decision-making process. These objectives have been met and in the current Chapter I begin the process of developing and evaluating an intervention that, by addressing issues that I have previously identified, might improve team decision-making. The subsequent Chapter will describe the implementation and testing of the intervention described here as part of multi-component intervention in a urology MDT meeting over a period of 16 months.

10.2 Introduction

Previous Chapters have demonstrated that there is currently no standardized method of conducting MDT meetings, and case discussions can be rapid, highly pressured and unstructured.\(^{(92;97)}\) The average length of time of case discussion have ranged from just over two, to three minutes, and input from nurses was lacking.\(^{(92;97)}\) In addition, information on patients’ views, psycho-social aspects of care, and patients’ comorbidities was consistently under-considered in clinical decision-making.\(^{(97;98)}\)
In the light of this evidence, it is conceivable that standardizing the discussion process might improve the overall quality of clinical decision-making for cancer patients by ensuring minimum quality requirements for information presentation and participation of team members. One means of standardizing processes and improving quality that has been successfully used across a number of industries is the checklist. Checklists are inexpensive tools that can be used in complex, high intensity fields of work, to improve safety and accuracy of service delivery by reducing human error. Checklists vary from the prescriptive (the algorithm for CPR), to those that are just a mnemonic list (an equipment list for a procedure), leaving the method of implementation to the clinician. They can be used as guidance during a task, or for post hoc verification that certain tasks have already been performed. There are limitations to the utility of checklists - they can be difficult to enforce, and may be perceived to undermine autonomy, skill or knowledge. In addition, organizations can suffer from checklist fatigue, where the increasing number of checklists becomes a nuisance, rather than a benefit. However, strong evidence now exists that demonstrates robust improvements in healthcare processes and outcomes where checklists are employed, including in critical care units to reduce infections and length of stay, in anaesthetics to reduce communication error, and recently by the WHO to improve safety in surgery.

10.3 Aims

In order to overcome such barriers to implementation a checklist must be developed in a user-driven and evidence-based manner. The aim of the research reported here is to
develop an intervention to standardize and improve the quality of case discussion and clinical decision-making in MDT meetings. My specific objectives are:

- To develop an intervention based on the best evidence of quality improvement in MDTs and checklist development, with input from experts and key user groups
- To evaluate the content and face validity of such an intervention with key user groups in order to validate the checklist for use in MDT meetings

**10.4 Methods**

**10.4.1 Checklist development (Figure 10)**

To ensure content and face validity, checklist development was undertaken in three Phases. Phase 1 consisted of a review of the literature on clinical decision-making in cancer MDTs in order to ensure that the tool captures all salient aspects. The key aspects of optimum clinical decision-making that emerged, to be included in the intervention are:

- presence of all core team members, including those who know the patients to be discussed
- coverage of all relevant domains of information for all patients
- involvement of different professional groups
- ability to reach and implement a decision

In Phase 2, in order to validate the aspects that emerged from Phase 1, comparison was made with data from empirical studies of team decision-making in MDT meetings. The
comparison confirmed the importance of the factors listed in Phase 1 for comprehensive clinical decision-making.

In Phase 3 the evidence base on checklist design in healthcare was reviewed. Experts in human factors/safety (Sevdalis and Vincent) and cancer MDT working (Green and Lamb) converted the list of features from Phases 1 and 2 into a feasible preliminary decision-support tool, or checklist for use in MDT meetings. Features of the checklist included:

- presentation of checkpoints in a logical and functional order reflecting the flow of real-time MDT case discussion(100;101)
- minimum information necessary to cover the major checkpoints, whilst allowing team members the freedom to use their own judgement(100;101)
- clear, bold fonts and clear colouring(100;101)

Upon completion of this study, the preliminary checklist was modified to take into account feedback from the evaluation process.(100) The final version of the checklist is depicted in Figure 11.

10.4.2 Checklist evaluation

10.4.2.1 Participants

Participants were recruited between October 2010 and April 2011. Recruitment was purposive in order to ensure representation of professional groups who have clinical contact with patients, namely surgeons, specialist nurses, oncologists, as well as MDT coordinators.
Participants were recruited from national forums and a regional cancer network within England, and were asked to forward the invitation to their colleagues in order to maximize the sample size.

Figure 10: Flow diagram illustrating the process of development and evaluation of the MDT Quality Improvement Checklist (MDT-QuIC)
10.4.2.2 Procedure

MDT members were sent an electronic invitation to fill out an electronic survey via freely available software ([http://www.surveymonkey.com](http://www.surveymonkey.com)). Some questions were answered on a 5-point Likert scale (1=completely disagree, 3= neither agree nor disagree, 5=completely agree), some were multiple choice, and others required free text responses. The survey consisted of an evaluation of the concept of the checklist for structuring MDT discussions (content and face validity), an evaluation of potential use and users of the checklist (feasibility), a section for suggestions for improvements to the checklist, and capture of demographic information (the survey tool is presented in Appendix 9). The experimental protocols were approved by the appropriate institutional review committee and meet the guidelines of their responsible governmental agency. The final version of the checklist (Figure 11) took into account all of the feedback provided by participants.

10.4.2.3 Data analyses

Descriptive statistics are reported for each element of the evaluation (median, minimum, maximum; or percentage and 95% confidence intervals). Differences in ratings of professional groups (surgeons, oncologists, nurses, MDT coordinators) were assessed statistically using the Kruskal Wallis test. Where significant differences were obtained, pairwise comparisons to look for specific differences between professional groups were carried out using the Mann Whitney U test. In addition, elements evaluated on a 5-point Likert scale were assessed against the scale midpoint (3) using one sample t-tests. All statistical analyses were performed using SPSS version 17.0 (SPSS Inc., Chicago, IL, USA). Significance was taken at the 0.05 level, and Bonferroni correction was used to correct for multiple tests.
Figure 11: MDT-QuIC following the development and evaluation process
10.5 Results

10.5.1 Characteristics of participants

Participants included 38 surgeons, 40 oncologists, 62 nurse specialists and 35 MDT coordinators. 73% of participants worked only in urology, with 27% also working in other specialties. 42% of respondents were male, 33% chaired their MDT, 87% had attended over 100 MDT meetings, 55% attended the MDT meeting at a major cancer centre, and 45% were electronically linked into a MDT meeting from a satellite hospital. There was no significant difference between healthcare professionals working only in urology, and those also working in other specialties for any of the survey items.

10.5.2 Current practice at MDT meetings

54% of participants already had some structure to their MDT meetings: 58% used a proforma, 28% had an electronic patient record, and 14% used both. 80% of respondents thought that a more structured way of discussing cases at the MDT meeting would aid the team’s decision-making.

10.5.3 Potential uses of the checklist

Table 38 and Figure 12 display results for the evaluation of the potential uses for the checklist. The use of the checklist during the MDT meeting as a memory aid to guide discussions, and as a checklist to structure discussions were most popular. Most respondents also thought that the checklist could be used prior to the MDT meeting to gather and record information, or afterwards to comprehensively record the MDT outcome and decision-
making process. There was no significant difference between the responses of different professional groups (Kruskal Wallis test).

Table 38: Responses of participants to the question, “How should the checklist be used?”. Selection of more than one answer was permitted

<table>
<thead>
<tr>
<th>How should the checklist be used?</th>
<th>Yes (%)</th>
<th>95% confidence interval</th>
<th>KW Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a memory aid to guide discussion</td>
<td>60.7</td>
<td>51.4 - 69.6</td>
<td>.531</td>
</tr>
<tr>
<td>As a check-list to structure discussion for each case</td>
<td>57.3</td>
<td>46.9 - 65.4</td>
<td>.867</td>
</tr>
<tr>
<td>With the MDT proforma to help prepare cases</td>
<td>55.6</td>
<td>46.0 - 64.5</td>
<td>.565</td>
</tr>
<tr>
<td>With the MDT outcome to structure the record</td>
<td>53.8</td>
<td>43.3 - 61.9</td>
<td>.876</td>
</tr>
<tr>
<td>None of the above</td>
<td>6.0</td>
<td>1.7 - 10.6</td>
<td>.556</td>
</tr>
</tbody>
</table>

KW Test: Kruskal Wallis Test. Significance level P<0.01 after Bonferroni correction for multiple comparisons
Figure 12: Graph showing the percentage of respondents who answered ‘Yes’ to statements regarding possible uses of the checklist. Error bars represent 95% confidence intervals.

Table 39: Responses of participants to the question, “Who should be responsible for using the checklist?”. Selection of more than one answer was permitted.

<table>
<thead>
<tr>
<th>Who should be responsible for using the checklist?</th>
<th>Yes (%)</th>
<th>95% confidence interval</th>
<th>KW Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDT Chair</td>
<td>70.1</td>
<td>60.7 - 77.9</td>
<td>.000*</td>
</tr>
<tr>
<td>MDT Coordinator</td>
<td>54.7</td>
<td>45.1 - 63.7</td>
<td>.000*</td>
</tr>
<tr>
<td>All MDT members</td>
<td>37.6</td>
<td>28.7 - 46.8</td>
<td>.031</td>
</tr>
<tr>
<td>Nurses</td>
<td>12.8</td>
<td>6.9 - 19.5</td>
<td>.567</td>
</tr>
<tr>
<td>Surgeons</td>
<td>7.7</td>
<td>2.9 - 12.9</td>
<td>.701</td>
</tr>
<tr>
<td>Oncologists</td>
<td>6.0</td>
<td>1.7 - 10.6</td>
<td>.696</td>
</tr>
<tr>
<td>Radiologists</td>
<td>3.4</td>
<td>0.1 - 6.9</td>
<td>.036</td>
</tr>
<tr>
<td>Pathologists</td>
<td>1.7</td>
<td>-0.7 - 4.2</td>
<td>.045</td>
</tr>
<tr>
<td>None of the above</td>
<td>2.6</td>
<td>-0.4 - 5.6</td>
<td>.220</td>
</tr>
</tbody>
</table>

KW Test: Kruskal Wallis Test. *=Significant at P<0.006 level after Bonferroni correction.
10.5.4 Potential users of the checklist

Table 39 and Figure 13 display results for the evaluation of the potential users of the checklist in MDT meetings. The most popular choices were the MDT chair, the coordinator, followed by the whole team. There were significant inter-professional differences for two of the questions. Regarding whether the MDT Chair should use the checklist, significantly more nurses (79% yes, 69-89 95% CI) and surgeons (66% yes, 50-82 95% CI) than oncologists (33% yes, 17-48 95% CI) or MDT coordinators (26% yes, 10-41% 95% CI) gave a positive answer (all P<0.003 on pair-wise comparison, Mann Whitney U Test). Second, regarding whether the MDT coordinator could use the checklist, significantly more nurses (89% yes, 81-97 95% CI) than MDT coordinators (46% yes, 28-63 95% CI), or oncologists (38% yes, 22-53 95% CI); and significantly more surgeons (71% yes, 56-86 95% CI) than oncologists gave positive answers.
10.5.5 Attitudes to checklist

Table 40 and Figure 14 display results for participants’ attitudes to the checklist. The median responses to all but one of the statements were significantly positive, i.e., statistically higher than the scale midpoint of 3 (all P<0.001, single sample T-test). The only response which failed to reach significance level was to the item ‘[the checklist] would allow me to contribute more to the MDT’ (median=3, Neither agree nor disagree). Moreover, some significant differences between professional groups in three statements were found. Nurses agreed significantly more (median=4, range=3–5) than surgeons or oncologists (both median=4, range=1–5) that the checklist was easy to use (P=0.001, and P<0.001 respectively, Mann Whitney U test). Nurses’ belief that the checklist would allow them to contribute more to the MDT (median=4, range=1–5) was significantly more positive than that of the surgeons,
oncologists or MDT coordinators (all median=3, range=1–5) (all P<0.001, Mann Whitney U test). Nurses were also more positive towards introducing the checklist to the MDT they attend (median=4, range=1–5) compared to oncologists (median=3, range=1–5).

Table 40: Responses of participants to statements regarding their attitudes towards the checklist.

Participants were asked to rate their agreement with each statement on a 5-point Likert scale (1=completely disagree, 3= neither agree nor disagree, 5=completely agree).

<table>
<thead>
<tr>
<th>The checklist...</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>T-test</th>
<th>KW Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is a good idea</td>
<td>4.0</td>
<td>1.0</td>
<td>5.0</td>
<td>.000*</td>
<td>0.061</td>
</tr>
<tr>
<td>Is easy to use</td>
<td>4.0</td>
<td>1.0</td>
<td>5.0</td>
<td>.000*</td>
<td>0.000*</td>
</tr>
<tr>
<td>Would improve the way my MDT runs</td>
<td>4.0</td>
<td>1.0</td>
<td>5.0</td>
<td>.000*</td>
<td>0.149</td>
</tr>
<tr>
<td>Would make the MDT more patient-focused</td>
<td>4.0</td>
<td>1.0</td>
<td>5.0</td>
<td>.000*</td>
<td>0.019</td>
</tr>
<tr>
<td>Is something that I would like to introduce in the MDTs I attend</td>
<td>4.0</td>
<td>1.0</td>
<td>5.0</td>
<td>.000*</td>
<td>0.001*</td>
</tr>
<tr>
<td>Would allow me to contribute more to the MDT</td>
<td>3.0</td>
<td>1.0</td>
<td>5.0</td>
<td>.013</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

KW Test: Kruskal Wallis Test. *=Significant at P<0.008 level after Bonferroni correction
Figure 14: Graph showing median response by professional group to statements regarding participants’ attitudes towards the checklist (1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree). Error bars represent 95% confidence intervals.
10.6 Discussion

10.6.1 Summary of results

This is the first study to develop and evaluate a checklist as a tool to support clinical decision-making in cancer MDTs. The development process ensures that the checklist is evidence based, validated with expert opinion, and evaluated by users. My evaluation data suggest that team members from across disciplines are positive towards the concept and content of the checklist as a tool to support decision-making, although nurses envisage a greater improvement to their personal contribution than other groups.

10.6.2 Limitations

The interpretation of the findings of this study is subject to certain limitations. The sample used in this study was small, and included only four professional groups. The study sample may not therefore be representative of MDT members in general. In addition, the sampling method used for the survey involved snowballing, which means that the response rate of those invited to participate cannot be determined. However, the oncologists, nurses and MDT coordinators who participated were recruited from national forums, and surgeons from a regional cancer network, and as such represent those core MDT members who have contact with patients, from a range of locations throughout the UK. The majority of participants practiced only in urology, which means that the checklist remains to be evaluated fully for use in MDTs in other specialties. Although in Chapter 4 I suggest that urology MDT working may not differ from that in other major tumour types, further replication of these results with more team members across more tumour types should be undertaken to clarify the generalisability of the results.
10.7 Conclusion

In Chapter 11 I have developed MDT-QuIC, an evidence-based checklist for use in MDT meetings, which has been validated by key user groups. Respondents of all professional groups that participated were positive about the checklist. Teams may benefit from integrating the checklist with current MDT structures, such as electronic patient records, or pro formas used to prepare cases for discussion, to ensure that clinical decision making is comprehensive and patient-centered across the whole care pathway. In the following Chapter I use the checklist as described here as the basis for a multi-component intervention designed to improve decision-making, information quality and teamworking in the urology MDT meeting.
11 A MULTI-COMPONENT INTERVENTION TO IMPROVE
THE QUALITY OF UROLOGICAL MULTIDISCIPLINARY
TEAM DECISION-MAKING

11.1 Chapter overview

In previous Chapters I have described the development and validation of a tool to assess
performance in MDT meeting decision-making, and an intervention to attempt to improve
such decision-making. In the present Chapter I will describe a study that builds on my work
so far and attempts to assess the effect of a series of quality improvement interventions on
decision-making in a urology MDT meeting over a period of approximately 16 months.

11.2 Introduction

One method of improving healthcare quality that has been successful in areas that require
interventions on multiple fronts is the use of multi-component interventions.(107;108) Such
initiatives are composed of multiple interventions each based on the best available evidence.
The collection of interventions is designed to be introduced together with the hypothesis that
as a whole they can improve the quality of care more than the sum of the individual
components. Such an approach has the advantage of allowing several interventions to be
introduced over a shorter time scale with fewer resources required for implementation or
assessment.(109;110) To this end, my research team has developed and evaluated a series of
quality improvement initiatives for use in MDT meetings to enhance the quality of decision-
making, information availability and teamworking. The bundle of interventions consists of four stages, each designed to complement the previous and based on the best available evidence:

- **Team training:** face to face didactic lecture on the evidence for effective clinical decision-making in MDT meetings (Appendix 10)

- **Introduction of MDT-QuIC:** introduction of team to a previously developed and evaluated checklist to support decision making in MDT meetings (MDT-QuIC), to use as team saw best (See Chapter 10).(111)

- **Enhanced use of MDT-QuIC:** Use of checklist to improve preparation of information for MDT meeting, as well as supporting decision-making in meeting, with a team member devoted to populating summaries for each case.

- **Written guidance:** emailed to local team and network highlighting evidence for best decision-making.

A previously validated tool for assessment of the quality of clinical decision-making and team working in urological MDTs was used to assess the effect of the QI bundle on the decision-making and behaviours of the MDT during meetings (MDT-MODE). MDT-MODE was shown in Chapters 8 and 9 to be valid and reliable for use in urological MDT meetings by medical and non-medical assessors.(92:97)

### 11.3 Aims

The aim of this study is to prospectively evaluate the effect of an evidence based quality-improvement bundle on the quality of decision-making and teamworking in a urological
MDT. I hypothesise that the implementation of such an intervention will increase the efficacy of decision-making and improve information quality and teamworking.

11.4 Methods

11.4.1 Study setting

The study took place between December 2009 and April 2011 at Whipps Cross University Hospital (WXUH), which provides pelvic and complex urological surgery for a population of approximately 1 million in north east London where local and specialist cases are discussed at the MDT meeting, which takes place at WXH once a week with referring sites linked via videoconference.

11.4.2 Cases and Participants

During the study period, 36 MDT meetings were observed. All observed cases, both local and specialist were included in the study. Members of the MDT in attendance included urological surgeons, clinical and medical oncologists, specialist and research nurses, radiologists, pathologists, and an MDT coordinator. Ethical approval for the study was given by the South East London Research Ethics Committee. Oral informed consent was given by team-members.

11.4.3 Study design

The study was a prospective intervention study. A period of baseline observations (01/12/2009–26/01/2010) was followed by the implementation of the intervention (Figure
The baseline observations allowed the observer to become accustomed with the MDT meeting and the team to become accustomed to the presence of the observer, hopefully minimising the Hawthorn effect. During the baseline observation the MDT underwent certain changes including changes to the IT and videoconferencing system, and change of venue for meetings. Consequently, the baseline period is split into two, so that any effect of the changes to infrastructure could be assessed. The individual components of the intervention were introduced sequentially so as not to overwhelm the team before introduction of the next part.

![Timeline of study interventions and observation periods](image)

**Figure 15: Timeline of study interventions and observation periods**
11.4.4 Interventions

- **Team training (31/08/2010):** a session consisting of a 30 minute slideshow followed by interactive questions and discussion was conducted for all MDT members (10 fellows or residents, 3 specialist nurses, 5 consultant/attending surgeons, and 1 MDT Coordinator). The programme included an introduction to the idea of quality improvement in the MDT meeting with detailed presentation of the evidence for improved clinical decision-making in MDT meetings (Appendix 10).

- **MDT-QuIC (19/10/2011):** MDT-QuIC (see Chapter 11) is an evidence based checklist to support clinical decision-making in MDT meetings. The checklist was introduced to the team, who decided to use the checklist to structure information presentation for each case.

- **Enhancement of MDT-QuIC (16/11/2010):** In order to enhance the use of the checklist, a member of the research team trained one of the clinical fellows to use MDT-QuIC to prepare case summaries in advance of the MDT meeting. The Clinical fellow then spent one morning each week collating results, going through case notes, ensuring that patients were appropriately referred for the following MDT meeting.

- **Written guidance (01/02/2011):** Guidance on how to optimise the use of MDT-QuIC was written by the research team and emailed to all members of the MDT. The guidance was drawn from a review of the evidence on care management decisions in MDT meetings and applied to situations that they encountered in their everyday practice, setting out how team members could draw the optimal clinical information required for MDT decision-making.
11.4.5 Data collection

I collected data using MDT-\textit{MODe} (see Chapter 8). Measures included:

a) Information score derived from rating of the quality of information from case history, radiological and pathological investigations, on comorbidities, psychosocial issues and the patients’ views (MDT-\textit{MODe})

b) Contribution score derived from the observed quality of contribution to team decision-making of the Chair, Surgeons, Oncologists (Medical and Radiation), Radiologists, Pathologists, Nurses and MDT Coordinators (MDTCs) (MDT-\textit{MODe})

c) Decision score derived from whether a decision was reached on each case. This was objectively assessed from the Chair’s action, which is recorded by the MDT coordinator in the meeting minutes

I also gathered data on the number and profession of team members in attendance, as well as start and end times of meetings. Inter-rater reliability was assessed for Information Score and Contribution Score at the beginning and the end of the study over a total of seven MDT meetings by psychologist observers trained in the observation of teamwork, and blind to the surgeon observer’s ratings (Wong and Brown) and was found to be excellent (ICC 0.719–0.951, all $P<0.001$).

11.4.6 Outcome measures

The primary outcome measure for the study was \textit{Decision Score} – i.e. the proportion of cases for which a decision could be made (range 0–1, converted to a percentage). Secondary outcome measures were \textit{Information Score} (the sum of the scores for the six different
information types, range 6–30, converted to a percentage for ease of comparison); and
Contribution Score (the sum of the scores for contribution of the seven different professional
groups, range 7–35, converted to a percentage for ease of comparison).

11.4.7 Covariates

Organizational characteristics of MDT meetings (including the number and profession of
team members in attendance, start and end times of meetings, and number of cases per
meeting) were expected to have an effect on the outcome measures. These data were
collected and used as covariates, which were controlled for in the analyses.

11.4.8 Statistical analysis

Mean and standard deviation (SD) are reported for all outcomes and meeting characteristics.
Analysis of Covariance (ANCOVA) fitted as a series of linear models was used to assess the
impact of each intervention phase upon the outcome measures, through statistical comparison
with the first baseline period. Linear or Logistic Regression procedures were used according
to the nature of the outcome being assessed. A series of covariates (see above) were entered
in each model as a preliminary step in the analysis, to control for variability in key
organizational features of each MDT meeting. Linear modelling was carried out to identify
which interventions were independent predictors of each outcome measure. The individual
effects of the intervention components were assessed according to the significance of the
change in variance that occurred with the addition of each intervention over that of the study
baseline when controlling for effects of the covariates. Statistical significance was set at
Results for meeting characteristics and each outcome measure were tabulated. All statistical analyses were performed using SPSS version 18.0 (SPSS Inc., Chicago, IL, USA).

11.5 Results

1421 local and specialist cases were assessed over 36 MDT meetings. Table 41 presents descriptive data for meeting characteristics. Table 42 presents descriptive statistics for the primary and secondary outcome measures.

### Table 41: Data on characteristics of meetings

<table>
<thead>
<tr>
<th>MDT meeting</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Meeting duration</th>
<th>Time per case</th>
<th>Members attending</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialist</td>
<td>884</td>
<td>24.6</td>
<td>8.7</td>
<td>01:01:11</td>
<td>00:02:29</td>
<td>11.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>00:00:26</td>
<td>1.9</td>
</tr>
<tr>
<td>Local</td>
<td>537</td>
<td>14.9</td>
<td>6.4</td>
<td>00:26:04</td>
<td>00:01:45</td>
<td>8.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>00:00:31</td>
<td>1.6</td>
</tr>
<tr>
<td>Total</td>
<td>1421</td>
<td>39.5</td>
<td>11.2</td>
<td>01:27:16</td>
<td>00:02:13</td>
<td>10.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>00:00:28</td>
<td>2.3</td>
</tr>
</tbody>
</table>

11.5.1 Inter rater reliability

Table 42 presents data for inter rater reliability. Intraclass correlation coefficients for the beginning of the study are good for both information score and contribution score, and at the end are excellent for both.
### Table 42: Interrater reliability analysis

<table>
<thead>
<tr>
<th>Assessment point</th>
<th>Outcome</th>
<th>Observer 1 (surgeon)</th>
<th>Observer 2 (psychologist)</th>
<th>ICC</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Range</td>
<td>Mean</td>
<td>Range</td>
</tr>
<tr>
<td>Start</td>
<td>Information score</td>
<td>3.38</td>
<td>1 - 5</td>
<td>3.72</td>
<td>1 - 5</td>
</tr>
<tr>
<td></td>
<td>Contribution score</td>
<td>2.93</td>
<td>1 - 5</td>
<td>2.79</td>
<td>1 - 5</td>
</tr>
<tr>
<td>End</td>
<td>Information score</td>
<td>2.70</td>
<td>1 - 5</td>
<td>2.75</td>
<td>1 - 5</td>
</tr>
<tr>
<td></td>
<td>Contribution score</td>
<td>2.68</td>
<td>1 - 5</td>
<td>2.68</td>
<td>1 - 5</td>
</tr>
</tbody>
</table>

Note: ICC = intra-class correlation coefficient. ** = significant at P<0.001 level.

### Table 43: Table presenting data for each primary outcome measure across each intervention period

<table>
<thead>
<tr>
<th>Intervention added</th>
<th>Cases</th>
<th>Decision score (Range 0–100)</th>
<th>Information score (Range 6–30)</th>
<th>Contribution score (Range 7–35)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean (SD)</td>
<td>%</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Baseline A</td>
<td>298</td>
<td>82.21 (38.30)</td>
<td>82.21</td>
<td>13.10 (3.76)</td>
</tr>
<tr>
<td>Baseline B</td>
<td>169</td>
<td>85.80 (35.01)</td>
<td>85.80</td>
<td>12.96 (3.82)</td>
</tr>
<tr>
<td>Team training</td>
<td>139</td>
<td>78.42 (41.29)</td>
<td>78.42</td>
<td>13.78 (4.22)</td>
</tr>
<tr>
<td>MDT-QuIC</td>
<td>186</td>
<td>77.42 (41.92)</td>
<td>77.42</td>
<td>14.87 (4.21)</td>
</tr>
<tr>
<td>Enhanced MDT-QuIC</td>
<td>301</td>
<td>85.05 (35.72)</td>
<td>85.05</td>
<td>14.57 (3.84)</td>
</tr>
<tr>
<td>Written guidance</td>
<td>328</td>
<td>92.68 (26.08)</td>
<td>92.68</td>
<td>15.21 (3.65)</td>
</tr>
</tbody>
</table>
11.5.2 Decision Score

Decision Score rose over the course of the study from 82.2% to 92.7% (Table 43, Figure 16). Decision Score showed positive correlations with both Information Score ($r=0.298$, range 0.177–0.418) and Contribution Score ($r=0.348$, range 0.104–0.506) (Table 44). A weak positive correlation was found between Decision Score and time per case (Table 44). Analysis using a linear model revealed that the change in variance in Decision Score explained by the combination of team training, the use of MDT-QuIC, and enhancing MDT-QuIC with training was significant, showing that these interventions were associated with significant improvement in Decision Score when compared to the score at baseline A. Addition of written team guidance had further a significant effect on variance in Decision Score (Table 45).

11.5.3 Information score

Over the course of the study the mean Information Score increased from 29.6% to 38.4% (Table 43, Figure 16). Correlational analysis revealed a positive association between Information and Contribution Scores. Information Score was lower for cases discussed later in the list, and higher with more cases per meeting, more time per case and more team-members present, although these correlations were weak (Table 44). Linear statistical modelling revealed that a combination of team training and the introduction of MDT-QuIC were associated with a significant change in variance in Information Score, showing that these interventions were associated with significant improvements in this outcome over the baseline level. Enhancing the use of MDT-QuIC with training, and written team guidance explained further variance (Table 45).
11.5.4 Contribution score

Over the entire study the mean Contribution Score rose from 32.9% to 41.7% (Table 43, Figure 16). Like Information Score, Contribution Score was lower for cases discussed later in the list, and higher with more cases per meeting, more time per case and more team-members present (Table 44). Linear statistical modelling showed that team training and MDT-QuIC were together sufficient to significantly change the variance in Contribution Score over the baseline level, suggesting that such interventions are associated with significant improvement in Contribution Score. The addition of training for MDT-QuIC, and then dissemination of written team guidance gave additional change in variance in Contribution Score (Table 45).

Figure 16: Graph showing Decision score, Information score and Contribution score across intervention periods.
Table 44: Table displaying Pearson’s $r$ correlations for outcome measures and organisational characteristics of MDT meetings

<table>
<thead>
<tr>
<th></th>
<th>Decision score</th>
<th>Information score</th>
<th>Contribution score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision score</td>
<td>1.000</td>
<td>0.298*</td>
<td>0.348*</td>
</tr>
<tr>
<td>Information score</td>
<td>–</td>
<td>1.000</td>
<td>0.544*</td>
</tr>
<tr>
<td>Contribution score</td>
<td>–</td>
<td>–</td>
<td>1.000</td>
</tr>
<tr>
<td>Case number</td>
<td>-0.016</td>
<td>-0.249*</td>
<td>-0.261*</td>
</tr>
<tr>
<td>Cases per meeting</td>
<td>-0.026</td>
<td>0.174*</td>
<td>0.198*</td>
</tr>
<tr>
<td>Time per case</td>
<td>-0.078*</td>
<td>0.124*</td>
<td>0.112*</td>
</tr>
<tr>
<td>Number of members present</td>
<td>0.029</td>
<td>0.193*</td>
<td>0.222*</td>
</tr>
</tbody>
</table>

Note: * $P<0.05$

Table 45: Regression analysis (linear model) of the effect of each additional part of the quality improvement intervention on each outcome measure

<table>
<thead>
<tr>
<th>Intervention added</th>
<th>Decision Score</th>
<th>Information Score</th>
<th>Contribution Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chi-Squared</td>
<td>OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Baseline B</td>
<td>0.000</td>
<td>1.00</td>
<td>0.49–2.07</td>
</tr>
<tr>
<td>Team training</td>
<td>0.259</td>
<td>0.82</td>
<td>0.38–1.77</td>
</tr>
<tr>
<td>MDT-QuIC</td>
<td>0.038</td>
<td>0.95</td>
<td>0.58–1.56</td>
</tr>
<tr>
<td>Written guidance</td>
<td>5.146$^*$</td>
<td>1.94</td>
<td>1.08–3.49</td>
</tr>
</tbody>
</table>

Note: * $P<0.05$. OR= odds ratio; CI=confidence interval; $\Delta R^2= R^2$ change; $\Delta F=F$ change.

$^{A}$Df1=1, Df2=438; $^{B}$Df1=1, Df2=430; $^{C}$Df1=1, Df2=477; $^{D}$Df1=1, Df2=592; $^{E}$Df1=1, Df2=619
11.5.5 Decision failure

Figure 17 and Table 46 display data on cases where decision was not possible across each stage of the study. At each phase of the study, inadequate radiological and pathological information accounted for the greatest proportion of decision-failures. Failures appear to increase most noticeably following team training and MDT-QuIC, due to an increase in inadequate radiology and pathology, which then subside in the final part of the study.

Figure 17: Area chart presenting data for cases with decision failure. The coloured areas represent the percentage of cases where decisions could not be reached across each phase of the study. Each colour represents a different reason for the decision failure.
Table 46: Analysis of decision failure

<table>
<thead>
<tr>
<th>Intervention added</th>
<th>Cases</th>
<th>Decision-failure</th>
<th>Reason for decision-failure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N (%)</td>
<td>Inadequate pathology</td>
</tr>
<tr>
<td>Baseline A</td>
<td>298</td>
<td>44 (14.8)</td>
<td>4.0</td>
</tr>
<tr>
<td>Baseline B</td>
<td>169</td>
<td>22 (13.0)</td>
<td>2.4</td>
</tr>
<tr>
<td>Team training</td>
<td>139</td>
<td>28 (20.1)</td>
<td>4.3</td>
</tr>
<tr>
<td>MDT-QuIC</td>
<td>186</td>
<td>38 (20.4)</td>
<td>6.5</td>
</tr>
<tr>
<td>Enhanced MDT-QuIC</td>
<td>301</td>
<td>40 (13.3)</td>
<td>3.3</td>
</tr>
<tr>
<td>Written guidance</td>
<td>328</td>
<td>24 (7.3)</td>
<td>2.1</td>
</tr>
</tbody>
</table>

11.6 Discussion

11.6.1 Summary of results

Over the course of the study, the introduction of a multi-stage intervention designed to improve MDT team decision-making was associated with a significant increase in the ability of the MDT to make decisions on cases discussed, as well as improvements in the quality of information, and team contribution to decision-making. This study provides further evidence to support the association between information quality, team contribution and the ability to reach management decisions on cases discussed at the MDT meeting. These results lend support to the use of measures of decision-making efficacy, information quality and teamworking as indicators of MDT performance, and suggest that by improving such metrics, teams may improve the way they work.
11.6.2 Limitations

The results of this study should be interpreted in light of certain limitations. Firstly, the lack of a control group makes it difficult to attribute causation to the introduction of the quality improvement bundle itself, rather than to other factors. In our analysis we have controlled for the effects of meeting characteristics known from previous research to affect information quality and team decision-making. Secondly, the sample of cases included in the study comes from a single MDT and may not be representative of MDTs in general. However, the large sample size drawn from a population of approximately one million suggests that our results might be representative of the UK in general. Thirdly, the present study is set in a urology MDT, which means results may not be generalisable to MDTs treating other tumour types. In Chapter 3 I have suggested that many aspects of MDT working are similar across common tumour types, but further research is needed before we can be confident that our findings are applicable to different surgical oncology specialities.

11.7 Conclusion

As the first study to prospectively assess the effect of a quality improvement bundle on the effectiveness of the MDT decision-making process, and as such, the results are encouraging. I have found further evidence of the importance of comprehensive clinical information, and good teamworking on clinical decision-making, and that such factors can be improved by relatively simple interventions. Further work is needed to assess the effect of quality improvement bundles on other measures of MDT performance that take into account patient outcomes, patient-centredness, and team member satisfaction.
12 GENERAL DISCUSSION

12.1 The problem

Although there was evidence that arranging cancer services into multidisciplinary teams may improve outcomes and reduce complications for patients, and even improve the working lives of healthcare professionals, there had been little research into how MDTs worked together and made decisions. Existing research that did examine the decision-making process and how team members interacted was largely qualitative and descriptive. (56;57) In parallel, in other healthcare fields, researchers were building an evidence base for how the performance of teams could be objectively measured, assessed and improved. (23;24) When I started this PhD in May 2009, my aim was to apply the approach that had been successfully used in surgery, anaesthesia and other specialities to the field of decision-making in MDT meetings. In the chapters of this thesis I have described how I have attempted to scientifically and systematically study this field by critiquing the existing evidence, defining current practice, exploring the attitudes of healthcare professionals and patients, developing tools to assess teams and using these tools to measure the effect of evidence based interventions on the quality of decision-making in MDT meetings. In the final Chapter I present an overview of my findings, review the main limitations of my work and discuss some possible implications of this work for future research and clinical practice.
12.2 Overview of thesis findings

This thesis has reported a series of studies that have explored, measured and improved teamwork and team decision-making in urology multidisciplinary cancer teams. I started with a narrative review of the literature on team decision-making in healthcare, with a focus on cancer care and a systems approach to set out a conceptual framework to help rationalise the many factors that affect this process (Chapter 2). In Chapter 3 I conducted a systematic review of the evidence for clinical decision-making in cancer MDTs, which takes stock of the existing evidence, and focuses on specific factors that affect decision-making by MDTs. In Chapters 4 and 5 I analysed data from a national survey that explores the views of MDT members from different professional groups across a range of tumour types. Chapter 4 used non-parametric analysis and pairwise comparisons to analyse consensus and difference between tumour types for a range of statements. In Chapter 5 I used qualitative methods to analyse free text responses to the survey data that related to teamworking and patient-centeredness in MDT decision-making. I then used the themes that arose in Chapters 2 to 5 as a framework for qualitative exploration of the experiences and views of patients through a focus group study in Chapter 6, and of members of urology MDTs with an interview study in Chapter 7. A combination of the evidence base, and the experiences of healthcare professionals and patients were used in Chapter 8 to inform the development of an observational assessment tool, with demonstration of inter-rater reliability between medical and non-medical observers, as well as learning curves for each domain of assessment. In Chapter 9 the validity of the observational tool was then tested through cross-validation against the self-assessment of MDT members using an evidence based survey tool. In Chapter 10 I used the validated observation tool, MDT-MODE to assess the relationship between decision-making efficacy, organisational factors, information availability and team
members’ contribution in a prospective experimental observational study. Having built up a picture of the factors that were important for decision-making in MDT meetings, and equipped with a tool to measure this process, Chapter 11 described the development of MDT-
QuIC, an intervention to improve decision-making in MDT meetings and its evaluation with key user groups. Finally, in Chapter 12 I reported a 16 month long prospective study using MDT-MODe to evaluate a multistage intervention, which included MDT-QuIC, to improve the quality of decision-making.

12.3 Thesis findings by aim:

Aim 1: To review and evaluate the evidence-base for team decision-making by multidisciplinary cancer teams

Evidence from the quality and safety literature suggests that cognitive processes and behaviours of healthcare professionals (individually and as teams), and organisational factors can affect decision-making. Chapter 1 took a broad approach in its examination of all available evidence relevant to decision-making in cancer care. Overall, I found little evidence linking the existence of MDTs to oncological outcomes, and no research found convincing evidence of an effect on survival. Most research specific to MDTs has looked at the effect of MDTs on various measures of process, whether it is the ability to reach a decision, the quality of the decision, a change in decision or whether a decision is implemented. The systems approach provides a structured way of thinking about such measures of performance and identifies many of the factors that affect the quality of the process. The main findings of Chapter 1 were that decision-making requires people with the appropriate skills and information attend meetings and present, discuss and make decisions based on all relevant
information. The next step taken towards fulfilling my aim was my systematic review, reported in Chapter 2, which looked more specifically at the available literature concerning decision-making by healthcare professionals in cancer MDTs. Studies were generally of low quality and numerous endpoints were used, preventing synthesis of results. Of the evidence that was reviewed in this Chapter, much of it suggests that MDTs make a difference to the outcome of decisions, compared with those of individual clinicians. Changes to decisions came from reinterpretation of diagnostic information, or change to the choice of treatment, although evidence for improved decision-making was lacking. The literature shows the varied roles played by different team members within the MDT: different professionals use different information when making decisions, in particular that medical team members focus on biomedical information about the disease, and nurses tend to focus on information about the patient as a person, and how their illness affects their lives and families. Often hierarchies operate which result in the exclusion of certain team members, most frequently nursing and allied healthcare professionals. There is evidence that when teams cannot reach decisions it is often due to inadequate radiological or pathological information at the point of decision-making. Concerning the implementation of decisions, failure of decisions to be implemented is related to the changing clinical picture, or when patients’ comorbidities renders the decision clinically inappropriate, or the patient chooses to go against the recommendation of the MDT. Use of telemedicine is increasing and can provide a cost effective way to improve attendance and synchronously present pathological and radiological information at different sites. High-quality decision making requires optimal support in the form comprehensive information at the point of decision-making, effective teamworking and leadership, protected time and good facilities.
Aim 2: To assess the views and experiences of health care professionals regarding decision-making in MDT meetings

The study presented in Chapter 3 aimed to systematically assess whether there exist tumour-based differences in definition of effectiveness of MDT working. Consensus between team members from different tumour types was very high – the majority (116/136) statements were answered similarly regardless of tumour specialty of the respondent. No differences between tumour types were found the physical environment of meeting venues, technology or equipment, or the type and level of support required at an organisational level or aspects of team governance. The differences of opinion that I revealed related to preparation for and organisation of MDT meetings, case selection and the clinical decision-making process. Regarding urology specifically, differences from other tumour types were found in only eight of 136 statements, and in each of these, urology only differed from one or two other tumour types, with no significant differences form the remaining tumour types. This study offers statistical evidence that MDT members from different tumour types across the UK are in reasonable agreement about what constitutes effective MDT working. In Chapter 4 I analysed comments provided by a national sample of over 1600 MDT members regarding effective teamworking in MDTs: efficacy of decision-making by MDTs; and patient-centeredness of the MDT decision-making process. The key themes that emerged in relation to effective teamworking were the importance of good relationships between team members, adequate non-technical skills (i.e., communication, leadership) and the need for support at an organizational level. In relation to team decision-making, recording of disagreements when they occur (and potentially letting the patient know), and the importance of having adequate information about the patient were key emerging issues. Finally, in relation to patient-centeredness of MDT decision-making the key role of the clinical nurse specialists as patient
advocates alongside the medical personnel, and the complementary role of nurses and Consultants in discussing team recommendations with the patient were key findings. In Chapter 6 I explored in depth using qualitative interviews the experiences and attitudes of the core members of urology MDTs from six teams across England and Wales, which confirmed the findings of preceding Chapters. The main reasons that it was not always possible to reach an effective outcome were lack of clinical information, lack of personal knowledge of patients, and poor attendance at meetings. Overall, MDT members were positive about MDT working and that improvements to MDT meetings could come from more time for meetings, improved case selection and working in a more structured way.

**Aim 3: To evaluate the views of cancer patients in order to inform subsequent studies and ensure this research is patient-centred**

Although Chapter 5 described a small study, it gave an initial picture of what patients think about MDTs, and how they want to be represented and included in the decision-making process. I found that awareness of the MDT among participants was low, but they found the idea reassuring. Participants in the study felt that it was important for teams to consider all relevant information- biomedical, psychosocial as well as preferences, although their experience showed that this was not always the case. While I found that participants were not keen on attending their own case discussion, they felt that they could contribute indirectly via the CNS, who by virtue of the close relationship with patients could act as an advocate in the MDT meeting. Participants felt that it was important that cases were only discussed when there were members present who knew the patient; otherwise they thought it would be preferable to delay discussion.
Aim 4: To scientifically develop and evaluate objective assessment tools for use in urology MDT meetings

In Chapter 7 I developed, used and assessed the inter-rater reliability of a tool to assess the quality of teamwork and decision-making in MDT meetings (MDT-MODE). The study demonstrated that this observational assessment tool can reliably be used by medical and non-medical observers to assess the quality of information presentation to the team, and the contributions to team decision-making of the core members of the MDT. Reliability was adequate or good across seven of the nine aspects of the MDT performance, and less reliable in assessments of the Chair’s contribution, or of the quality of presentation of histopathological information. Learning curves were mixed showing that raters could learn to use the tool for assessing most aspects of decision-making within 100 cases. In Chapter 8 I then attempted to validate MDT-MODE through cross-validation with MDT members’ self-reported performance. Firstly, the results of this study demonstrated that observational and self-assessment can be used reliably to assess teamworking and clinical decision-making in MDT meetings. Furthermore, the pattern of self-reported results showed a positive correlation with those of the observer. In Chapter 10 MDT-MODE was used to assess the relationship between the ability of an MDT to reach a decision and information and contribution quality and organisational factors. The results suggest that the ability of an MDT to reach clinical decision is associated with improved information quality, specifically, improved information form case history, radiological and pathological investigations, improved contribution of team members, and with cases that are discussed closer to the beginning of the meeting. Higher quality of information and team contribution are themselves associated with specialist cases, cases at the beginning of meetings, larger team size, higher numbers of cases per meeting, and longer case discussions. The overall pattern of
results seen in Chapters 7 to 9 was consistent and reflected those of previous Chapters, where it was seen that bio-medical information is more comprehensively presented than patient-centered information, and that nursing MDT members often have little overt involvement in decision-making in the MDT meeting.

**Aim 5: To develop and evaluate an intervention to improve decision-making in urology MDT meetings**

In Chapter 10 I presented a study to develop and evaluate a checklist as a tool to support clinical decision-making in cancer MDTs. The development process, which involved input from the evidence described in Chapters 1 and 2 as well as input from experts in cancer care and quality and safety, ensured that the checklist had content and face validity, and was feasible. My evaluation data suggested that team members from across disciplines are positive towards the concept and content of the checklist as a tool to support decision-making, although nurses envisage a greater improvement to their personal contribution than other groups. The checklist, MDT-*QuIC*, was tested in Chapter 11 as part of a staged intervention, designed to improve MDT team decision-making. Introduction of the programme of interventions, which was comprised of team training, use of a checklist, training in the checklist and written guidance for the team, was associated with a significant increase in the ability of the MDT to make decisions on cases discussed, as well as improvements in the quality of information, and team contribution to decision-making. The pattern of results required some interpretation, and it was not clear from the results how long each stage of the bundle takes to bed-in and take effect. The main reason for decision failures appears to be an increase in the number of cases without adequate pathological or
radiological information. Interestingly, although not reaching significance level, the decision score decreased with the introduction of training and the checklist. One possible explanation for the drop in decision score may be that by enlightening the team about the necessity of comprehensive information for good decision-making, they become critical and despite some improvement in information score, are less happy to make decisions without adequate information. It was not until enhanced MDT-QuIC, when a team member is trained to collate results, prepare summaries and assess which cases are appropriate for discussion during that the decision score showed a significant improvement, an effect that was sustained with introduction of written guidance. The staged quality improvement intervention trialled in this study (team training, the introduction and demonstration of a checklist, and written team guidance) were designed to ensure that the MDT have the tools necessary to make high quality decisions, and not to replace the judgment of healthcare professionals. This study suggested that information quality and team contribution are associated with and necessary for the ability of the team to reach management decisions on cases discussed at the MDT meeting. These results lend support to the use of interventions designed to improve decision-making efficacy, information quality and teamworking as means of improving the way MDTs work and therefore improving the care that teams are able to give to patients.

12.4 Limitations

12.4.1 Limitations of evidence base

There are several limitations in the evidence base for improving MDT working. The review presented in Chapter 1 utilises literature on teamworking and team skills in cancer care as well as other domains of healthcare. Many parallels can be observed between teams in
different domains of healthcare, and one might expect that evidence from one might be applicable to another. However, Chapter 2 shows that the weight of evidence from empirical studies in decision-making in cancer MDTs is limited. 37 studies were included in my systematic review, which are a small number given the number of tumour types covered and the range of outcomes surveyed. The median quality score for quantitative papers was nine of 18 (range 3-15) and for qualitative papers was 13 of 24 (range 9-14). One randomised control trial was included in the review along with ten non-randomised control trials, most with a pre-and post design. Other systematic reviews that I have referenced during this thesis have also found limitations in the quality of studies to be a limiting factor in this field of research. In addition, other factors including novel treatments, technology and service changes have evolved in parallel and it is difficult to unpick the specific effects attributable to MDT working in itself. However, as I have pointed out previously, in the UK, prospective trials aiming to robustly evaluate the effectiveness of working as an MDT cannot be carried out, as MDT working is now ubiquitous having been mandatory for a number of years. This means that much of the research on MDT working from recent years is ‘behind the curve’ in terms of UK healthcare. Such research is certainly useful in other countries where MDT working is not mandatory and will allow other healthcare providers to decide whether they wish to organise their cancer services as the UK has done. Indeed, it is encouraging that a recent large retrospective study assessing the impact of MDT working on breast cancer outcomes in Scotland found that there were significant improvements in survival and other clinical outcomes. What is more relevant to patients and healthcare professionals in the UK is research into improving MDT working, which has been the aim of this thesis, and to date has resulted in publication of eight of the Chapters in this thesis along with other related manuscripts.
A recurring theme in this thesis has been the challenge of measuring the effect of an MDT or the effectiveness of an intervention using measures of MDT process or outcome. My first two Chapters revealed that previous research has attempted to assess the effect of MDT working against a variety of outcomes including patient survival. Such research has struggled to demonstrate changes to clinical outcomes in part because the MDT meeting is one part of the cancer care pathway, which is a complex process. (31) Measures of patient outcomes, such as survival and complications remain the gold standard of the effectiveness of clinical care, and the ultimate aim of my research is to improve the outcomes of patients. A limitation of all work to date looking at improving MDT working, including my own, is a failure to demonstrate improvements in ‘gold standard’ outcomes, and instead with a reliance on proxy measures, which demonstrate improvements in measures of the process of decision-making and MDT working. Demonstrating improvements in such proxy measures across the care pathway can provide quality assurance to the care of patients such that the process leading to care is the best possible, which is perhaps the best that patients can be offered at present. (113) Further research is needed to establish and validate measures of MDT performance against patient outcomes before I can be confident that studies that assess interventions using these measures translate into real benefits to patients.

12.4.2 Limitations of methods

12.4.2.1 Sampling

The sampling method used for the studies in Chapters 4 and 5, and also for the evaluation of MDT-QuIC in Chapter 10 involved snowballing (i.e. those who are recruited passing on
invitations to participate to other potential participants), which means that the response rate cannot be determined. However, the oncologists, nurses and MDT coordinators who participated were recruited from a national population and as such represent core MDT members from a range of locations throughout the UK. Furthermore, team members who participated in the NCAT survey described in Chapters 4 and 5 were only able to give one response per statement, which meant that respondents who worked across several teams in different tumour types were not able to provide responses reflecting their experience across different teams. (79) As a result respondents who were members of multiple teams were excluded from my analysis. Only those who worked in one tumour type were included in the analysis, in order that study data accurately reflected specific tumour types. Therefore, oncologists, radiologists and histopathologists, were underrepresented in the study as they commonly work across multiple tumour types. Moreover, the professionals who were excluded from the analysis may actually provide interesting insights into the differences identified in this study by virtue of working in different and possibly contrasting teams. Finally, there is a possibility that as participation of the studies described in Chapters 3,4 and 10 were opt-in in nature, those who responded are more favorably disposed to the idea of MDT working and use of checklists in healthcare, respectively.

12.4.2.2 Observational assessment

I chose observation as the method of assessment of teamwork and team decision-making in MDT meetings and here I will discuss some of the main limitation, most of which I have experienced firsthand in my research. Most of the urology MDT meetings I observed were busy and case discussions were rapid. In these conditions, it was difficult for me and my
fellow observers to capture and rate all aspects of a case discussion, which is a limitation of all observational assessment of teamwork. (39) Paradoxically, the interpretation of silence was also difficult and is known to affect all observational research. (114) It was difficult as observers for us to rate whether a lack of input was constructive or not, and whether silent team members were assenting or dissenting to decisions. There was no way of knowing with certainty the thoughts of team members other than through their vocal contribution. For clarity in the studies described here, a low mark was recorded for silence. However, in reality such silence during an MDT meeting is sometimes necessary to permit ordered discussion. In addition, the unsystematic presentation of information and contribution to team discussion that I observed made data capture difficult. Information on pathology or radiology was often presented within the case history, not by the expected or appropriate professional (i.e. the Histopathologist or the Radiologist), which at the start was difficult for the non-medical observer to tease out. However, learning curves were apparent across the course of the study, which implies that observers can eventually learn to separate the information from the contribution.

12.4.2.3 Multi-stage intervention study

The most apparent limitation of the findings of Chapter 11 is the lack of a control group, which makes it difficult to attribute causation to the intervention itself, rather than to other factors which may have been in effect at the same time. Unfortunately the recruitment of a control MDT was beyond the means of this PhD. In order to eliminate the potential effects of factors that may have an effect on my outcome measures, my analysis has taken into consideration the effects of meeting characteristics. Meeting characteristics were found in
Chapter 10 to be associated with changes in Decision Score, Information Score and Contribution Score. Previous studies that have looked at the effect of quality improvement interventions, which also have not used a control group, have used interrupted time series analysis to take account of the effect of any naturally occurring change in the baseline performance. (115) However, interrupted time series analysis relies on data collected at regular intervals, usually as a result of mandatory retrospective data collection, such as data on infection rates or prescribing trends. Unfortunately it was not possible to impose such conditions on a working MDT, and data collection was not always possible at regular intervals, which prohibited interrupted time series analysis. I have no reason to suspect that the team was undergoing any change in performance over time prior to the present study as the study team was a long established team with a stable membership and consistent patterns of referral. Furthermore, the study presented in Chapter 11 is limited by restrictions to tumour type, single institution and sample size, which have all been previously described in more depth.

12.5 Implications

12.5.1 Implications for clinical practice/ MDT meetings

12.5.1.1 Lack of patient-centred information

A number of implications that have emerged from the results of this thesis require further discussion. Firstly, although I have found that MDT members and patients agree that comprehensive information is both desirable and necessary for good decision-making, I have found consistently that information relating to the patients disease is more frequently
available and better presented than that which related to the patient as a person. Mandatory minimum data sets for information relating to radiological and pathological investigations, comorbidities and the patients views and circumstances might ensure that every case discussed has the foundations necessary to make a good clinical decision. Thus the requirement for minimum data sets may provide quality assurance to the process of decision-making. Moreover, standardised data requirements might make the decision-making process more transparent allowing patients to better understand the reasons for certain decisions.

12.5.1.2 Efficacy of decision-making

By prospectively assessing and quantifying the decision-making process in Chapter 11, and relating it to decision-making efficacy, I have been able to identify factors that are associated with improved decision-making. My finding that a decision could be reached in 85% of cases is in line with previous findings. A study of 344 patients with lung cancer discussed at an MDT meeting in France found that a decision was possible at the first discussion for 47%, with an additional 33% made at the second meeting, 15% and the third and 5% thereafter.(62) A retrospective analysis of 324 cases discussed at a head and neck MDT in Sweden found that 73% of cases could reach a decision at the first discussion. In the latter study the authors were able to relate failure of decision-making to a lack of imaging (42%), requirement for extra staging information (30%), histological problems (7%), extra information on comorbidity needed (6%), and more than one of the above (16%).(52) My own analysis of failure of decision-making in Chapter 11 is consistent with that above and underlines the importance of comprehensive information at the point of decision-making. Standardised
minimum data sets for radiological and pathological information, which are already being piloted in the UK, may improve the efficacy of decision-making.(116;117)

12.5.1.3 Structuring MDT meetings and standardisation of discussion

Just having information present at MDT meetings may not be sufficient to ensure that team members make use of such information or contribute to discussion. It may be that standardisation of the whole MDT case discussion is needed to ensure that all necessary information is presented and relevant team members contribute. One improvement to MDT working by participants reported in Chapters 4 and 6 was to work in a more structured way. Adopting a standardised and structured method of discussing cases might give MDT members who are less inclined to input a mandate with which they can contribute information and opinion. Working in a more structured way may also help to make meetings run more efficiently by defining what should be prepared before meetings and eliminating what is not relevant. An intervention such as MDT-*QuIC* may be one way of standardising case discussion. Standardising the MDT discussion might also provide an audit trail for departments who want to evaluate the standard of their own decision-making. In my mind MDT-*QuIC* has two advantages over such decision-aids. Firstly, the MDT-*QuIC* does not attempt to replace the judgment of healthcare professionals (which would be entirely undesirable), but only to ensure they have the tools necessary to make high quality decisions. Secondly, as cancer care is complex this checklist covers only the steps that are critical for good decision-making leaving complex decision-making to healthcare professionals. Moreover, although I found only a modest negative association between cases towards the end of meetings and the ability to reach a decision, it is of concern as currently there is no
standardised way of structuring MDT meetings or prioritising cases. In the study reported in Chapter 11, specialist cases were discussed at the start of the MDT meeting before the local cases. It follows that specialist cases are better worked up, and require the input of greater numbers of specialists. However, many local cases are complex and also require a high standard of information, discussion and decision-making. It may be reasonable to order cases discussed at MDT meetings such that more difficult cases get prioritised in order to increase the chances of a higher quality discussion.

12.5.1.4 Role of nurses in cancer MDTS

I have found evidence consistent with that of previous studies that Clinical Nurse Specialists play a crucial and unique role in MDTs by coordinating care, bringing the patient’s views and psychosocial aspects of care, and acting as advocates for patients.(44;72) Recent research has highlighted the importance of decision-making as a key skill for effective nursing.(118) The differences between professional groups that I have found in qualitative and quantitative studies may reflect the previously described hierarchy that is apparent in MDT discussion and decision-making.(56;92;98) It has been well documented that nurses are often marginalized by their medical colleagues and have least input into decision-making.(56;57;98) In addition, the information that nurses bring to the clinical decision-making process, such as information about the patient’s lifestyle, their social circumstances, and any emotional or psychological effects of illness is frequently overlooked.(56;57;97;98;119) Lack of consideration of these issues is linked with non-implementation of MDT decisions (i.e., lower efficacy) – therefore, these factors ought to be taken into account in the decision process. Furthermore, the role of nursing personnel within MDTs should be reviewed and strengthened in the MDT structure
including the development of the skills needed to take prominence in MDT meetings.(52;63;120)

12.5.1.5 Introducing red-lines to stop discussion

One implication of the findings reported in my thesis so far is whether there are circumstances in which case discussions should not proceed. Personal knowledge of patients is required for high quality clinical decisions that are clinically appropriate and acceptable to patients. After all, it would not be appropriate to start an operation without the right equipment being available. Similarly, it maybe that discussion of a patient at the MDT meeting should not proceed without a minimum dataset for clinical information, information about the patient’s circumstances, or their views, or even without the presence of a team member who has met the patient. Indeed, participants in the study described in Chapter 5 intimated that they would rather discussion of their case was deferred if there was no one present who knew them personally. Further research is needed to assess the feasibility of such an approach in view of the demands of service provision.

12.5.1.6 Disagreement in decision making

My finding from Chapter 4 that MDT members recognize that disagreements should be recorded, and can be discussed with the patients is reassuring, and requires further investigation. As a minimum, the process of recording MDT outcomes, particularly when disagreement arises, should be defined, and guidance offered to MDT members.
Additionally, such a measure may be introduced as a standard against which teams’ compliance is measured in the peer review, or any coming form of self-assessment process.

12.5.2 Implications for engaging patients

12.5.2.1 Patients like MDTs

The idea of being treated by a MDT is popular among the patients involved in the study reported in Chapter 6. However, I found that at the time of diagnosis and treatment the awareness of patients of the existence and purpose of the MDT was low. Patient satisfaction is increasingly important as a marker of performance in healthcare. (121;122) Promoting the aspects of care that patients find appealing may improve the experience of patients and increase their satisfaction with healthcare services.

12.5.2.2 Need for patient contact prior to MDT meeting

A second implication is that the cancer care pathway must be arranged to provide sufficient time and patient contact for team members to gather comprehensive information that is required for decision-making. At present, pressure to manage patients quickly means that medical and nursing team members have little time to discuss the patients’ investigations, medical or social background. The need for prompt investigation and diagnosis must be balanced against the need for comprehensive information gathering, which may require some healthcare providers to change the format of their pre-MDT services.
12.5.2.3 Representation of patients in MDT meetings

The question of how best to bring patient preferences and values into the MDT is a complex one. Chapter 5 suggests that patients value nurses as the team member with whom they can relate to and who can act as an interface between the patient and the healthcare system. The importance of the CNS to patients is reinforced by the results of the UK Cancer patients’ survey, which showed that the only feature that predicted patients’ ratings of cancer teams was the number of CNSs in the team. (123) Furthermore, it is widely held by healthcare professionals that nurses, by virtue of their skill in gathering and assimilating patient-centred information into decisions, should play a central role in clinical-decision making at the MDT meeting. (44;57;58;72;98;118;119) My findings from Chapter 4 provides additional evidence that healthcare professionals think that the clinical nurse specialist is the preferred team member to represent the patient in meetings, but that the Consultant and other team members who know the patient well could also share this duty. However, recent research has suggested that the advocacy role of CNS can become compromised by an increasing administrative workload. (124) Restructuring of the role of the CNS to reduce administrative workload and strengthen the role of CNS as patient advocates, and representatives in MDT meetings might increase patient satisfaction as well as the quality of MDT decision-making and thus patient care.

12.5.2.4 Need for supportive care

A patient-centred approach to MDT discussion and decision-making should be extended to the whole cancer pathway. Many of the improvements in patient outcomes in recent years have been achieved as a result of an emphasis on the treatment of disease. However, living
with a diagnosis of cancer places significant physical and emotional burdens on patients and their families. (125) Many of these patients will not be cured, and will therefore continue to feel the distressing impact of their illness on their physical and psychological health in the long term. (126) As well as treatment, supportive care is needed to help patients and families cope with the effects of the disease. Supportive care involves providing physical and emotional care, and encouraging and supporting participation in decision-making. (127) NICE states that supportive care should be given equal priority alongside diagnosis and treatment. (128) A patient-centred decision-making process at the MDT meeting that recognises supportive aspects of cancer care should underpin a holistic cancer pathway, and reflect the needs of patients.

12.5.3 Implications for training and assessment

12.5.3.1 Modification of the content of current assessment programme

Currently, peer review is concerned with standards of organisation of cancer services and duties of MDT members, and aside from attendance standards, requires very little of MDT meetings or the decision-making process. (3) These features of MDT working are included in the current assessment programme because they are measurable. (3) These existing standards are necessary for effective MDT working, but not sufficient. This thesis has shown that clinical decision-making by the MDT is also influenced by the availability and sharing of information, team members’ behaviour and contribution to the decision-making process. I have demonstrated that such features in cancer MDT meetings are also measurable and could therefore be improved. These elements should be part of the assessment process in order to assure comprehensive standards of care.
12.5.3.2 Modification of the method of current assessment programme

There is currently a growing evidence base on valid, reliable and structured tools to assess such non-technical skills for applications across a range of healthcare specialties. (19;24;129) Such tools have been shown to improve teamworking and are well received by the teams who use them. (130) Robust measures of cancer MDT performance can give an increased understanding of how these teams work, allowing identification of factors that improve performance as well as those which are potentially detrimental. The evidence that I have presented in this thesis has shown that observational and self-assessment of team decision-making in MDT meetings are feasible, valid and reliable methods of assessing performance. Moreover, I have developed a set of tools for MDTs, which with further research and development might be used to evaluate performance as part of the National Peer Review programme.

12.5.3.3 The use of self-assessment

Throughout the studies presented in this thesis, there is evidence that cancer care professionals have insight into their own team’s functioning. As I have reported in Chapter 8 however, participants had a tendency to over-rate aspects of their performance compared to an external assessor in relation to patient-centred information (comorbidities, psychosocial issues and patients’ views). Furthermore, the increased variability seen in patient-centred categories of self-assessment may suggest that there is disagreement within the team about what constitutes good and bad performance in these areas. If this discrepancy is not due to inconsistencies in the measurement between self-report and expert assessment (which further research could elucidate), then it follows that re-education of MDT members may be required.
into the nature and importance of patient-centered information when making clinical decisions. If this discrepancy can be rectified, there is an implication that self-report assessment tools could be used to complement existing means of assessing MDT

12.5.3.4 Decision efficacy marker for performance

The data that I have presented in my introductory Chapters, along with that from my empirical studies provides further evidence that the ability of an MDT to reach a decision at case presentation appears to be useful marker of the effectiveness of the MDT. It is widely held that traditional outcome measures, such as data on survival or complications, give a good account of the effectiveness and safety of interventions. However, for complex processes, such as the cancer care pathway, of which the MDT meeting is one part, it may not be possible to relate changes in such outcomes to the effect of the MDT meeting.\(^1\)(113;131) Clinical outcomes remain a robust measure of effectiveness in healthcare, and should be included when assessing MDT performance, but other short-term process measures (such as Decision efficacy, time from first referral to diagnosis, to the first treatment, and costs reductions), might also be useful for assessing performance alongside current measures included in Peer Review.

12.5.4 Implications for the organisation of cancer services

12.5.4.1 Organisational factors also necessary

Data from the studies presented in this thesis reveal that although adequate non-technical skills are necessary for optimal MDT functioning, on their own they are not sufficient.
Support from the hosting institution, i.e., the local hospital is also required in the form of protected time in the participants’ job-plans to prepare for, attend, and action the workload of the meeting. This is a key issue, as it suggests that addressing MDT members’ team skills alone will likely not improve team functioning unless the team is also supported at an organisational level. If MDTs want to ensure good attendance, then time for the MDT should be incorporated into members’ job plans. Job plans should include time before the meetings to prepare, work that is particularly key for Histopathologists, Radiologists and others to prepare cases, adequate time for the meetings and time after the meeting to action the work that the MDT has generated.

12.5.4.2 The cost of multidisciplinary care

With the recent economic downturn, cost effectiveness in healthcare is becoming increasingly important alongside clinical effectiveness as a marker of performance. The cost of MDTs has not been formally assessed. The costs of getting several consultant grade doctors, specialist nurses, administrators and others together for a few hours per week represents a considerable amount. Of course, the equipment costs—video conferencing, updating radiological archiving systems, microscopy equipment and modified IT systems—will be a large up-front. However, the recent NCAT survey found that 88% of respondents agreed or strongly agreed with the statement that a good MDT can save time elsewhere in the period between meetings, which may provide the basis for cost-effectiveness arguments. Furthermore, the initial costs may be offset by optimising the team’s ability to reach management decisions, and maximising the quality of treatment decisions, which might reduce the 1.4-15.1% of MDT decisions that are not implemented.
Further research is needed to assess whether efficiency could be further improved by streamlining the MDT pathway to prioritise more complex cases with less time spent on cases in which the care plan is straightforward.

12.5.4.3 Tumour types may need specific guidance

Although the areas of difference between tumour types presented in Chapter 4 are few, they do suggest that in areas of case selection, preparation for/organisation of meetings, and clinical decision-making the recommendations/guidelines for MDT working should be sensitive to tumour type (Figure 5). Implementation of MDT working in different tumour types may need to be adjusted accordingly to ensure that the mode of MDT working adopted is beneficial to patients and healthcare professionals. Similarly, the requirement of different tumour types regarding patients with advanced or recurrent disease and the need for re-presentation at the MDT, or the involvement of palliative care services may need to be agreed individually to reflect the differing workload and clinical characteristics of different tumour types.(133)

12.5.5 Implications for research

12.5.5.1 Develop tools for other tumour types

Whilst I have sought to validate MDT-\textit{MOD}e for use in urology MDT meetings, it remains to be seen whether its use can translate to other tumour types, and even non-cancer MDT meetings. Such a programme of research would need to examine whether the types of information and behaviours assessed by MDT-\textit{MOD}e are necessary and sufficient for other
types of MDT meeting, and the tool even feasible for use. Subsequent research could then adapt and evaluate interventions that were piloted in Chapter 11, including MDT-QuIC, for use in other tumour types. Chapter 4 suggests that the model for effective MDT working is common across major tumour types, which suggests that assessment tools and quality improvement interventions could also be used across tumour types. In Chapter 11 MDT-QuIC was used by the MDT to prepare cases and to add structure to information presentation. However, the evaluation of MDT-QuIC in Chapter 10 suggested that such an intervention could be used in a variety of other ways. It would be interesting to evaluate the utility of MDT-QuIC for a variety of uses including case preparation, formal structuring of case discussions, informal use as an aide memoire and as a structured record of the case discussion and outcome. In addition, such interventions could be assessed on a variety of process and outcome measures (see below).

12.5.5.2 Investigate implementation of decisions

In this thesis I have used the ability of the MDT to reach a decision, along with Information and Contribution Scores as markers of decision-making quality, which represent one aspect of decision-making quality. The implementation of decisions is related to the patient-centredness of decision-making, rather than the quality of biomedical information, and is another marker of decision-making quality, against which the interventions assessed in Chapter 11 could be assessed.(33;52;58;59;62;63) Future research also needs to evaluate the validity of other measures of performance related to the patient (satisfaction, survival), the team (self rating of satisfaction, participation) and the organisation (time from first referral to diagnosis, time from diagnosis to the first treatment, and costs reductions).
12.5.5.3 Investigate patient views further

In Chapter 5 I have taken the initial steps to investigate patients’ views on MDT working and decision making, which has only scratched the surface of an important area for future research. The development of patient related outcome and experience measures and interventions is needed to measure and improve participation of patient in and satisfaction with the MDT decision-making process. Measures of patient satisfaction that have been developed for use in other domains of heath care might be validated for use in relation to multidisciplinary cancer care. Such objective outcome and experience measures could be used to assess the strengths and weaknesses of teams’ interactions with their patients and to inform areas for improvement. Similarly, there are currently no tools for MDTs to assess the ‘patient-centeredness’ of their decision-making process and future research should aim to inform teams of the desirable aspects of patient-centeredness, and how these can be assessed and improved.

12.5.5.4 Assessment of leadership

Although touched upon in various Chapters, a detailed assessment of leadership in MDTs was not possible within the time and resources that were available to me. Leadership has a strong effect on the performance of all healthcare teams, including MDTs, and the role of MDT chair is recognized as key to the performance of the team as a whole, including implementation of any changes to team functioning deemed necessary following team (self-) assessment.(46;79;134) Further research should be carried out to assess the effect of leadership on MDT performance, which is likely to be significant.(135) Such an evaluation should include assessment of the current models of leadership used in MDTs and other...
healthcare teams, development of metrics to objectively assess leadership quality and its effect on clinical decision-making, as well as interventions to improve MDT outcomes through enhancing leadership.

12.5.5.5 Time per case and quality

The relationship between the time per case and the quality of discussion is unclear at present. The mean time per case in the study presented in Chapter 7 was 3 minutes 13 seconds, which is consistent with a mean time per case of 3 minutes in Chapter 8, but more than that of 2 minutes and 13 seconds in Chapter 11. (92) Several factors may influence the time per case including the complexity of individual cases, how well the case is prepared and presented, how concise the discussion is, and equipment- including videoconferencing. A further possible consequence of the rate of case discussion is its influence on the ability of an observer to make an accurate assessment. In Chapter 7 I found that the correlation between observers appeared to decline when the rate of case discussion was at its highest, a point consistent with previous research. (26;92) Further research is also needed to determine the effect of strategies to reduce the case load in MDT meetings on the quality of decision-making, including managing some, perhaps simpler cases by chair’s action according to clearly defined protocol. It remains to be determined whether this would have any effect on those cases that did not receive full MDT discussion, or those left in the MDT meeting, as well as the perceptions of team members and patients.
12.6 Personal reflections

Prior to starting this PhD I had very little experience of research. With the guidance of my supervisors and more experienced colleagues I have gained an understanding of the research methods used in behavioural sciences applied to healthcare. I have designed and conducted qualitative and quantitative studies, collected data from patients and healthcare professionals and used qualitative and quantitative methods of analysis. In addition I have learned to write, which is something that I have done unconsciously, but can now appreciate as I write these latter Chapters. In addition, I have taken courses in literature searching, study design, statistics, and research governance. Now that I have gained the experience detailed in this thesis I have found that I have also learned to think critically. I am better able to critique the planning, execution and results of my work, which is a skill that I will be able to apply to good effect as I return to clinical work.

As a clinical researcher, I have discovered that research skills are necessary but not on their own sufficient for undertaking an effective programme of research. During my research I have moved from assisting other people in their projects, to running my own small projects and running multiple studies in parallel and recruiting and managing more junior researchers to help me. Research skills must be coupled with skills in project management. Specific experience such as applying for ethical approval, seeking external help with data analysis, collaborating with researchers outside my institution have all been challenging, but are experiences that I have learned from. I have also learned how to prioritise tasks, taking into account importance as well as urgency. Through the research governance course ‘Good clinical practice’ I have been able to ensure that my research is ethical, transparent, and
accountable and focussed on the patients’ well being. These project management skills will allow me to work independently in the future, possibly supervising post graduate students and managing my own projects.

During my time as researcher I have been part of the Urology registrar on-call rota, which has given me experience of managing urological emergencies and in-patients. In addition I have helped to develop a service for the diagnosis and treatment of patients with suspected urological cancer, including the use of photodynamic diagnosis. Through these activities I have learned about the management of patients with urological tumours and the way the MDT functions along the care pathway feeding into and actioning plans from the MDT meeting. This experience has helped me to keep my research grounded in good clinical practice with a focus on improving care for patients. These activities have also meant that I have maintained my clinical skills, which will help me as I return to full time clinical work. The flexibility of life as an academic has also allowed me to develop my skills in teaching, communication and information technology through courses and practical experience at St. Mary’s Hospital.

Most profoundly during my time at Imperial I have become a father, twice. This experience, with the guidance and support of my wife, has helped me to learn to prioritise, to manage multiple tasks simultaneously and cope with a modicum of sleep deprivation. Most importantly, my family has given me a motivation to work hard and succeed in my PhD.
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APPENDICES
Appendix 1: Evidence from other research into complex decision-making

There is a significant body of work from the fields of psychology and social science that has examined decision making by individuals, and more recently by teams in complex environments. A useful definition of team decision-making is given by Orasanu and Salas as, “the process of reaching a decision undertaken by interdependent individuals to achieve a common goal. What distinguishes team decision making from individual decision making is the existence of more than one information source and task perspective that must be combined to reach a decision. While ostensibly working towards the same goal, participants may have differing agendas, motives, perceptions and opinions that must be melded into the shared products.” The authors go further do distinguish team decision making from that of groups as teams tend to have highly differentiated and interdependent members, where as groups are consist of homogeneous and interchangeable members. Moreover, for successful accomplishment of the tasks performed by teams as opposed to groups (either the decision-making itself, or that which results from the process of decision making) such multiple, interdependent participants are a necessity.[136]

Evidence from the fields of psychology and management studies have shown that the type, structure and format of team discussion, the amount of information exchanged, as well as leadership style can all affect the quality of team decision-making. Adequate sharing of clinical information between medical team members and the presence of dissent have been shown to improve decision-making in psychological experiments on teams.[137–140] Further, psychological research has also shown that information that is shared is more likely
to be discussed and to be part of the decision making process,[140] and that team-members of higher professional status tend to have a significantly stronger role and say in the team’s decisions – thus making team leadership and meeting chairing critically important to cancer MDTs.[136;139;140]

This research has led to different theoretical models of how teams make complex decisions. The concept of shared mental models refers to organized knowledge shared by team members. The mental model shared by team members facilitates communication about systems, and provides ready terms of reference, for example norms of behaviour and roles of team members. The result is that team members can carry out their roles in a timely and coordinated fashion without the need for every detail to be negotiated (Figure 18).[141] Another theoretical framework is the team mind, based on the concept that teams use the same decision strategies as individual decision-makers when making decisions (Figure 19). Teams, like individuals use their experience to assess a situation and produce the most plausible response based on their interpretation of the situation, before assessing the adequacy of their chosen option by using mental simulation of its outcome. Depending on the adequacy of the outcome following mental simulation, the option is either implemented or the situation reassessed until a more appropriate option if found. Crucially, despite expanded cognitive resources, teams did not adopt a more analytic strategy than individuals in similar situations.[136;142]
A comprehensive review by Jones and Roelofsma describes the biases that can occur in team decision making on three levels: that of individual cognitive limitations, that of the social context, and at the organizational level.[143] The authors suggest that logistical factors (which are decided at an organizational level: the timing of meetings, number of cases; job plans of members allowing attendance) and social factors (information pooling and team member contribution to decision-making) may affect decision-making in MDT meetings. Concerning social factors, specific biases described by Jones and Roelofsma that may affect team decision-making include false consensus (a tendency for team members to see their own behaviour or judgments as typical), group think (a tendency for teams to produce poorly reasoned decisions), group polarization (the response of the group after discussion being more extreme than the initial average responses of group members), and escalation of commitment (teams having a greater tendency than individuals to continue to support a course of action despite evidence that it is flawed).

Jones and Roelofsma concluded that teams are affected by these biases in different ways and to varying degrees depending on the specific features of tasks and environments in which they function. Research using expert panels shows that team decision-making is influenced by clinician specialty and the panel membership, which suggests that research is needed to investigate the effects of the format for information exchange and discussion, as well as the mechanisms for aggregating opinion, the effect of individual personality, or the occasional presence or absence of particular experts.[144;145]
Interestingly, from a team psychology perspective, dissent is not detrimental to a team – in contrast, teams where no-one ever dissents are at risk of ‘false consensus’ or ‘group-think’ biases, where dissent exists but it is never openly expressed.[136;146] Such attitudes may indicate lack of open communication within the team and have been shown to lead to poor decision-making.[136;140;147] Psychological research shows that team decision making can be improved by some level of standardization that ensures all issues are addressed, team-members feel psychologically ‘safe’ within the team, the impact of hierarchy is controlled
and a shared view of the task and each others’ roles is held within the team.[136;140] Clinical evidence also shows that such approaches do improve shared understanding within clinical teams and their performance.[13]

Consideration must also be given to the way in which the component sub-teams within larger teams interact to achieve different goals. Multi team systems (MTSs) have been described as two or more teams that interface directly and interdependently in response to environmental contingencies toward the accomplishment of collective goals.[149;150] MDTs can be thought of as multi team systems that bring surgical, oncological, nursing, radiological, pathological teams and others together to work collectively to manage cancer patients. These teams must complete intra-team processes to accomplish proximal goals (e.g., secondary review of radiological investigations by the radiologists with preparation of a minimum dataset to present to the MDT), as well as cross-team processes to complete collective goals (e.g., incorporating the different modalities of information into a decision about treatment).

However, during the MDT meeting, the teams function predominantly to accomplish collective goals. Intra-team processes, such as taking a biopsy, or carrying out an operation, appear to be conducted before and after the MDT meeting. Such theories might lend support to my use of OTAS as the basis for MDT-MODE. OTAS considers processes that occur within sub-teams (i.e. nursing, anaesthetic, surgical) as well as collective processes.

Moreover, OTAS is one of the most widely validated observational tools for teamworking in healthcare, and has been validated for use in urological surgery.[18;19] Furthermore, on a practical note, my department has many years of experience in the development, validation, and use of OTAS, as well as training others to use it. Such expertise is invaluable in behavioural research.
Interest in shared decision-making between clinicians and patients is increasing. Projects such as those at the Center for Informed Choice at the Dartmouth Institute, USA, and ‘MAking Good decisions In Collaboration with patients’ (MAGIC) in the UK have helped to increase the understanding of healthcare providers and policy makers on how best to engage patients in clinical decision-making.[151;152] Overall, however, patient preferences can be volatile [153] and little is known about how patients want their needs and preferences to be represented in MDT meetings, which are important issues requiring further exploration.

Certain limitations of the evidence for team decision-making must be acknowledged. In particular, much of this work has been performed in experimental that are simplistic and do not reflect the complexity of the real life situations, which they are meant to simulate. Moreover, whether a team is a real team, with a history of working together, or an ad hoc team assembled for an experiment will have an impact on a team’s behaviour and decision making, which could limit the interpretation of research findings. In addition, although associations have been found between factors such as decision quality, team behaviours and safety practices, it has not been possible to attribute a causal relationship between decisions and task performance. Furthermore, such experimental research in healthcare has failed to translate into changes to diagnosis and treatment of patients.[136]

This research into team decision-making, however, has yet to be translated into the field of cancer MDT working and there is currently no consensus regarding best practice in these areas. What does appear to be clear is that many of the factors that are part of MDT working - communication, resources, knowledge, team interaction and professional hierarchy- have all
been found to affect team decision-making.[136] Therefore, addressing some of these issues in the context of decision-making in MDT meetings may provide evidence on which MDTs can develop and improve their practice.
### Appendix 2: Quality scoring for quantitative papers

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Appendix 3: Quality scoring of qualitative papers

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Appendix 4: Participant information sheet for patient focus-group

Study Title:

Patients’ perspectives on MDT decision making: a focus group study.

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read this information leaflet and ask us if there is anything that is not clear, or about any further information you want. Participation is entirely voluntary and if you do not wish to take part you do not have to do anything further. If you would like to take part please contact us directly with the details at the bottom of the leaflet, or via your group representative.

What is the purpose of this study?

Patients with diagnosed or suspected cancer are cared for by multidisciplinary teams (MDTs), which are made up of the doctors (including surgeons, oncologists, radiologists and pathologists), specialist nurses and other healthcare professionals (including radiographers, social workers and dieticians) who treat patients for cancer. Patients who are being looked after by such teams are discussed by the MDT members in a meeting, where test results are examined and recommendations for treatment are made. The decisions made in the MDT meetings have an important effect on patient care. Healthcare providers realise that it is important to understand what patients think about the care they have received, or may receive in the future. However, little research has been carried out to assess what patients think of, or understand about the role of the MDT in cancer care. The aim of this study is to discuss any experiences that patients may have of cancer care, and to assess patients’ views about MDTs. The way I would like to discuss these issues with you is in a focus-group. A focus-group is a small group of about five to ten people who are asked questions by a researcher, and who are free to answer them how they like, including having a discussion with the researcher and the other participants. Focus group discussions allow researchers to discuss a range of issues with participants, and to talk in depth about anything that is of particular interest.
**Why have I been chosen?**

Patients who have been treated for cancer in the past are being recruited to take part in this study. You have been asked to take part because you belong to a patient group and your group representative has suggested you might like to participate.

**Do I have to take part?**

It is up to you to decide whether to take part. If you want to take part you have to reply to the email inviting you to participate and state that you would like to participate (by replying to this email or calling 0207549727). If you do not want to take part you do not have to do anything. If you do not respond it is assumed that you are not happy to participate.

**What will happen if I take part?**

You will be given a copy of the information sheet to keep. If you are happy to take part then the researcher will require you to give written consent at the focus group. The researcher will lead a discussion that will focus on participants’ experiences of cancer care, and their opinions about multidisciplinary teams. Between seven and ten people will participate in each group, all patients. The group will last between one and two hours. You will be free to leave at any time. The discussion will be recorded on a digital voice recorder. Before you leave you can ask the researcher any questions you may have. Refreshments will be provided. Travel expenses incurred as a result of your participation in the study can be reimbursed after the study. Please contact the researchers for further details on how to claim.

**Procedures, medical tests and tissue collection:**

No procedures, medical tests or tissue collection is required for this study.

**What are the disadvantages of taking part?**

Cancer is an emotional subject that can often be upsetting to discuss, particularly for patients who have or have had cancer, and their families. By taking part in the discussion you may...
choose to discuss your own experience, or hear about the experiences of others, which may be distressing. If you are distressed as a result of participating in the focus group, or would like to discuss this further please contact the researchers (contact details below), or your patient group facilitator, who will be able to provide support.

**What are the benefits of taking part?**

I hope the study will ultimately help to make cancer MDT’s more focussed on patients’ needs. Participants may gain information about how cancer is treated.

**What will happen to the results?**

After the data from the focus-group has been analysed results from the study will be written up as part of the researcher’s thesis and perhaps in a journal.

**Will my taking part in the study be confidential?**

The focus group discussion will be recorded on a digital voice recorder, but none of the data will have information that could identify participants (such as names or addresses). Obviously the other members of your focus-group will know that you have participated as they will be present at the same meeting. However, no one outside the focus-group will know that you have participated. Participants will be asked to ensure the discussion remains confidential by not sharing it with anyone outside the focus-group, or identifying anyone who has participated. The signed consent form with your name on will be kept in a locked cupboard in the researcher’s office separately from the data from meetings.

**What if something goes wrong?**

If you are harmed by taking part in this research project, there are no special compensation arrangements. If you are harmed due to someone’s negligence, then you may have grounds for a legal action. Regardless of this, if you wish to complain, or have any concerns about any aspect of the way you have been treated during the course of this study then you should...
immediately inform the Investigator Dr Benjamin Lamb, Clinical research Fellow, Imperial College London (020 7594 9727 or benjamin.lamb@imperial.ac.uk), or Dr Nick Sevdalis, Senior Lecturer in Patient Safety, Imperial College London (020 7594 3431 or n.sevdalis@imperial.ac.uk). The normal National Health Service complaint complaints mechanisms are also available to you. If you are still not satisfied with the response, you may contact the Imperial College Joint Research Office.

Who is organising and funding the research?

This research is organised by Imperial College London, and is funded by the National Institute of Health Research; and Whipps Cross University Hospital NHS Trust R&D Department. The researchers are not being paid for including and looking after subjects in the study.

Who has reviewed the study?

South East London (5) Research Ethics Committee has reviewed this study and given it a favourable ethical opinion.

Who can I contact if I have any questions or a problem?

If you have any questions about this study or a problem please contact the research team:

Dr Benjamin Lamb, Clinical research Fellow, Imperial College London
020 7594 9727 benjamin.lamb@imperial.ac.uk

Dr Nick Sevdalis, Senior Lecturer in Patient Safety, Imperial College London
020 7594 3431 n.sevdalis@imperial.ac.uk
Appendix 5: Topic guide for patient focus-group

Establish ID of who I’m speaking to

Introduce myself

Introduce project – State aim of the interview, confirm receipt of PIS

Ask permission to tape interview, assure anonymity, and collect signed consent forms

Questions to initiate discussion:

- What is your experience of cancer diagnosis and/or treatment
- Have you ever heard of a multidisciplinary team (MDT)? Do you know what they are?
- Do you have experiences of being treated by/ interacting with a cancer MDTs
- What information did you want to be considered by the MDT during your illness?
- What factors should be considered by MDTs when they make clinical decisions about treatment for cancer patients?
- Would like to attend your own MDT discussion? What might be the potential benefits and problems with attending? If you don’t attend, who would be best suited to represent you?
- How was the outcome of any MDT decision communicated to you? Would you change anything?
# Appendix 6: Topic Guide for Interview study

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<th>MDT interview protocol</th>
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<tr>
<td>Establish ID of who I'm speaking to</td>
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<tr>
<td>Introduce myself</td>
</tr>
<tr>
<td>Introduce project – State aim of the interview</td>
</tr>
<tr>
<td>Ask permission to tape interview, assure anonymity</td>
</tr>
<tr>
<td><strong>Identify present system</strong></td>
</tr>
<tr>
<td>I would like to talk to you about multidisciplinary team meeting in urology.</td>
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<tr>
<td>Do you attend MDTM? (How many? How often?)</td>
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<td>Do you get allocated time/sessions for the MDTM? (Are you covered for other work you might be doing at that time? Who covers? What other work would it be?)</td>
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<td>What do you find good about MDTMs? (ask for examples)</td>
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<td>At the MDTM is every patient's case history presented? (Who presents? Is it useful? What are the possible problems, or problems you've encountered in your experience?)</td>
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<tr>
<td>What format is the information available in? (Are the notes present? Is there a summary? Is it prepared beforehand? By whom?)</td>
</tr>
<tr>
<td>At the MDTM are the x-ray images presented? (For all patients or certain ones?)</td>
</tr>
<tr>
<td>At the MDTM are the path slides presented? (For all patients or certain ones?)</td>
</tr>
<tr>
<td>At the MDTM are the patients other problems presented? (Morbidity and social problems who knows them?)</td>
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<tr>
<td>At the MDTM are the patient's wishes presented? Wishes in general, or for specific treatment options. (Who knows them? Who by?)</td>
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<td><strong>Leadership</strong></td>
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<td>At the MDTM is there a chair person? (What is the chair's background?)</td>
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<td>What is the ideal role of a chair?</td>
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<td>If not, why not?</td>
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<td><strong>Improvements</strong></td>
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<td>Can you identify something that would make your MDTM work better? Is there something you would change?</td>
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<td><strong>Questions</strong></td>
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<tr>
<td>Do you have any questions? Anything else you would like to add?</td>
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Appendix 7: Example transcript from interview study

So just for the transcription, Mr [REDACTED], you’re a consultant urologist?
That’s right.

Is that, where do you work mostly, which Trusts do you work for?
Well, I work half at Newham, half at Barts.

And talking about the local MDT meeting, do you attend
Yes.

The local urology MDT?
Yes.

Where do you attend that?
Mostly at Barts, ... at Barts and I ... I attend from Newham.

And are they separate meetings or are they linked up?
No, it’s a video link.

Video link. And to attend those meetings do you, is that incorporated into your job plan ...?
Kind of, kind of, well it’s a lunchtime thing, so it’s, it’s rather, it’s a grey area as to whether it’s part of the job plan, because it’s

And when, the cases that are discussed at that local meeting, can you choose whichever cases you’d like to go on them or are there protocols as to which cases are discussed?
Oh, there’s a protocol in every meeting, so it’s discussed, plus people who have suspected cancers, so suspected renal cell cancers or people who’ve had extensive general anaesthetic prostate..., when they get discussed at the local MDT.

And where is that MDT held, the local one, is it?
Well it’s on three sites, with a video link between the three.

Are they good facilities on the different sites?
Yes.
Have they got purpose built conferencing facilities?

Well, the video conferencing facility at each site is ... like in, at Homerton there's a special room, at Barts it's a library, at Newnham there's like an academic centre room, because it is, it's fixed and static, so at each site people go to that particular venue for that, for that time allocated.

And are there ever any problems with the video conferencing on the ...?

Yeah, at times, yeah, at times the links don't work very well, or at times the looking at slides doesn't work well at times, you can't see other people's xrays. But generally speaking it works, the local MDT works pretty well in terms of the video links.

Do you think those disruptions ever affect the decisions that are made about patients or the outcome of the meeting?

Rarely, very rare.

So you can manage to work around them?

Sure.

Do you think with video conferencing, does that affect the communication within the meeting?

It can do, it can do, in that at times you get extraneous sounds, which you wouldn't notice if you were physically sat, sitting in a room with someone, but over the video link it ... picks up various sounds, so. So often what we do now is if we're not physically talking, we'll switch, we'll put the mute function on, so as any scrapings or puffings or noises are not transmitted over, on the link.

That sounds good. Do you think people have to behave differently when it's a video conference?

Not really.

No?

Not really, but except that perhaps it might need more discipline, in terms of not more than one person speaking at once. And at times there's a delay.

So it's difficult to know when to step in and speak?

Yes, yes.
When it comes to all the information that’s presented at the local MDT meetings, is, do you find that the patient’s case history is always presented by someone who knows the patient?

It’s rarely, rarely is that the, rarely is that the case. Well it depends, at the Barts, it’s usually one of the SHO level doctors presents the cases, which they’ve gleaned from, from the notes or from the information sent to the MDT co-ordinator, but it’s rare that they would actually have personal knowledge of the patients. At Homerton, quite often at Homerton, one of the people there has, actually knows the patients and at Newham, half the time the person presenting, well probably bit less than that, perhaps a quarter of the time the person presenting may know the actual patient, but it can, not overall, not generally speaking.

Do you think not having a personal knowledge of the patient affects the quality of the presentation or the information that they can give to the meeting?

At times, at times it does, where the situation arises where the patient’s performance status may be relevant as to what their routine might suggest or the patient’s social, domestic or psychological circumstances may have a bearing on what we would recommend. So that can influence, not knowing the patient, yeah.

Do the junior doctors who present those cases, you mentioned they go through the notes or through the information

Respondent indicates agreement

Do they have time before the meeting to do that, or is that done at the meeting?

Yes, they only have time before the meeting.

And do you find that enables them to produce a good summary of information?

Generally speaking, yes.

And are the notes available at the meetings too, if …?

Usually, not always, but usually.

What about radiological images, are they always presented at the local meeting?

Yes.

So, always have access to viewing them
Yeah.

**As required?**

Yes.

**And what about pathology slides?**

At times we see the slides, at other times the *guy* just, will just read us the report, so, but the slides are available, yeah.

**And who decides whether you see the slides or not, is it?**

Sorry?

**Is it the pathologist who decides?**

Yes.

**Yeah?**

Sure.

**What about patient’s comorbidities or if they have social or psychological problems, is that brought, often brought to the meeting?**

It is where it’s known, yeah, where it’s known it’s, when it’s relevant it’s brought to the meeting.

**Would it always be, would that information always be requested or is it just if it’s presented it’s presented and if not**

No, if it's

**No?**

If it’s presented, then if it’s presented, if the presenter has the information to hand.

**What about any wishes the patients may have expressed regarding their treatment, or any preferences?**

At times, at times that comes, yeah, at times that comes into play, if the presenting doctor knows that or if the consultants or one of the registrars happens to be there, if he knows the particular patient preference, so that’s a variable, sort of, and gets fed into the process or not.
When it comes to chairing or leading the local MDT, what's the background of the Chair of the local meeting you attend?

The Chair, it's chaired by a consultant neurologist.

And does the Chair rotate at all, or is that a fixed combination?

The Chair I think, the Chair doesn't rotate, it's one person, Mr, Mr Nargon, but if he's away or operating, then one of the other, either myself or Miss Petty will, will chair the meeting.

And what do you see as the ideal role for the Chair of the MDT?

Just keeping the process moving along.

What qualities do you think are needed to do that well? Do you think it's, is it personality qualities, or is it clinical experience and skill?

All those things, clinical experience, but I think it's more, I think it's more a skill in, it's a generic skill in chairing a meeting and keeping things moving, because you could spend half an hour discussing something, but time is very limited that we have available, the most important skill is having some discussion but not, but terminating it and then moving on.

What are some of the positive aspects your Chair brings to your local meeting?

Clinical knowledge.

Yeah?

Yeah.

And if you were Chair, would you, or when you are Chair if Mr Nargon's away, do you do anything differently, would you do things in a different way?

Oh yeah, I tend to, to move the meeting along quicker, so not spend so long discussing somewhat arcane things.

When it comes to the discussion about cases, who tends to contribute to that discussion, which specialities or which professional groups?

All the groups, the doctors and nurses, the neurologists, the pathologists, really just everyone who feels that they want to contribute, contributes.

And are you happy with your own contribution at the local MDT?
Yes.

Are there any problems that you've encountered at the local meeting with people contributing or not contributing, or even dominating the discussion?

Well, it can happen that there are disagreements as to, differences of opinion, as to how something should be managed, so that happens from time to time, which is to be expected and, but generally, generally it works, yeah, reasonably, pretty well.

And when it comes to having an outcome from the meeting, is there always a plan that lets you move forward with treatment, or do patients

Yes.

Have to be re discussed because of problems with …?

Well, at times patients are re discussed because the MDT may say, well we need another scan or we need further information or, yeah, so it’s, or they’re having a biopsy or something else, or the MDT says they need a biopsy of the lymph gland, it’s discussed after that’s been done. So, so it’s, at times that, at times that happens.

Do you think patients should have all the information ready before they come to MDT …?

Sorry, do I think …?

Do you think all their tests, all the radiology, all investigations done before coming to MDT, or is that difficult to?

Well, no they do, but the MDT may decide they need something in addition. So, but everything, everything, everything at that standard has been done prior to MDT, but MDT may decide we’ll observe this, this lump in the testicle, so, or we discuss this three months after they’ve had another scan or

So bringing it back for a subsequent MDT isn’t necessarily a failure of

No.

Making a decision on?

No, no, no, at times a particular member may need to be present to have their own, a discussion, and that person’s away, so at times it has to be deferred until the following week when that person is there. But generally speaking, if a case is re discussed, it’s for good clinical grounds, or there’s further tests or further suggestions of things to further investigate that need to be done. They can’t just be cancers that we’re discussing, we’re discussing suspected cancers as well.
When it comes to the, if I move on now to the network MDT, or the specialist MDT, do you attend that

*Respondent indicates agreement*

The network MDT?

Yes, yes …

Where is that held?

Well

Or where do you attend from?

Well, I either attend from Whipps Cross or I attend from Barts, so probably two thirds of the time I'd go to Whipps Cross and the third, I'd go to Barts.

Is there any difference in your experience of the meeting, like what you get out of it depending on whether you're at the Cancer Centre Whipps Cross, or at one of the other hospitals?

Well, I would dispute whether in fact, well possibly it's the Cancer Centre, the joint centre. So no, I don't get anything different out of them all, I don't get anything different depending which site I attend.

And do you get allocated time in your job plan to attend the specialist meeting?

No.

Do you have to put off other work in order to attend?

Well, the meeting is, it's 8am, it starts at 8am, it goes on till nine or 9.30, so it's before the, before the day starts so it's an additional hour to the day. I have to put that into my job plan, which is going to be discussed in a few day's time, so I'm going to put that, put that time down.

Do you think if these, if the MDT meetings, both the local and the specialist, were part of your programmed activities or in your work

Yes.

Do you think that would be a beneficial thing?

Sure.
Would it mean other

Sure.

Work had to be covered at other times, or what would happen?

Yes, it would, it would, it would, because if one’s got, you don’t have time, idle time doing nothing, we all have, well full job plans and full job descriptions, so which has been the case for years and so if they suddenly decide to allocate a whole session to an MDT, then something else has to go and, in fact, the plan is to have Tuesday mornings as MDT morning, so they’re going to have the specialist MDT followed by the local MDT, so that’s likely to take up the whole of Tuesday morning, which will have to be job planned.

Is that a good thing in your mind or a bad thing?

I think it’s probably a good thing as far as the service is concerned. I think for me it’s a bad thing, personally it’s a bad thing, but I think for the greater good it’s a good thing.

At the specialist MDTs, are there ever problems with the video linking between sites then?

Yes, yes, probably half the time, well in fact some problems are permanent and other problems are half the time. So, half the time we cannot link up between Whipps Cross and Barts and the Homerton, so quite often each site does its own specialist MDT discussion, so that happens about half the time, then all the time we cannot see each other’s xrays or slides, or

How does that affect the quality of the discussion about patients?

Well, it’s an adverse effect, because no-one, the other centres can’t have any input, because they can’t see them. So, it does enter the quality of the interaction, plus you get bored, because you can’t, one centre’s discussing their image and you can’t see it, so.

So none of the

Inaudible

None of the radiology can be seen across sites?

No …

What about histopathology?
Well, that can’t be seen either and furthermore, Newham can’t link in to the specialist MDT at all, which is why I physically have to go to Whipps Cross, physically have to go to Barts and then because I have a session at Newham following that, so I then have to go

All the way back.

Back to Newham.

That’s difficult.

Incredibly unsatisfactory.

Do you think the information that’s presented at the specialist MDT, does that differ from a local MDT?

No.

So the same factors

Well it only differs, well in fact, it does differ in so far as at the local MDT they provide images of prostate cancer and they will then say, well … this patient needs an MRI scan before we can decide what treatment and my last case is done six weeks later and then what we’ll say is that, that case will now be discussed at the specialist MDT in six week’s time following the MRI, so the special MDT would have that, that information, which the local MDT wouldn’t have. But we don’t re discuss it at the local MDT, having discussed it again at special MDT.

What do you think the case history, is presented as well as it is, or better even, at the specialist MDT?
I think it’s presented just as well.

Yeah?

Respondent indicates agreement

And are other factors, such as patient choice or psychosocial issues or comorbidities, are they taken into account in the same way?

To a certain extent, yes, to a certain extent, it depends on the case, depends on the patient, depends on who knows the patient, and also time is limited, we have an hour, hour and a half maximum, to discuss an awful lot of cases, so the time is limited, it’s, what, how much detail you can go into or find social factors, then patient wishes.

Do you think, are, do you follow protocol for referring patients to the specialist MDT, is there a set
Yeah.

**Protocol for refer**

Yeah.

**Set cases in the discussion?**

Yeah.

Do you think, does that make the most of the time, or do you think it could be better spent on different cases?

No, I think it's, I think it's fine as it is.

When it comes to chairing the specialist MDT, is there

Yeah.

Is there one Chair, or does that Chair rotate?

Tends to be one Chair, tends to be one of the Whipps Cross consultants, Mr Hine, because he's the lead, so he'll chair the meeting from Whipps Cross, given the link between Whipps Cross and Homerton and Barts is up, and if he's away one of his colleagues at Whipps Cross will chair the meeting …

And that's always, it doesn't rotate between sites?

No.

It stays at Whipps?

Yeah.

And do you think the ideal role of the Chair of the network meeting is the same as the local meeting?

Yes.

Do you think those generic skills are needed as well as the clinical skills?

Sure, yes I do.

Are there any difficulties that you've experienced with the procedure of chairing the network meeting?
Well, the difficulties have come where there’s differences of opinion as to, as to what’s, as to the course of, course of action, of course it’s magnified because there’s a lot more people. So, but that can be, and at times, apart from clinical differences, there may be personal …

**Sorry, I missed that, I've got …**

Personal differences, you know, like members may not, may not get on and, therefore, that can negatively impact on the discussions.

**If and when there are differences, how are they resolved?**

There’s no set way, at times it’s, they agree to differ and move on, five or ten minutes can be, can be wasted and someone else may say, well let's just move on or

**Would you**

So, yeah.

**Who would decide on the final plan for that case, would it be the Chair of the centre in inverted commas, or the local consultant looking after the patient?**

Oh, it’s the local consultant. The MDT can only, can only make recommendations or endorsements, but they’re not actually seeing the patient, so with the special M, well the special MDT may say, well someone we’ve seen before like that … for example, but the patients have got their … through of going, of undergoing surgery, so the special MDT is only advising, today, if a consultant’s looking after the patient, he has the responsibility to the patient, and the decision, function of the patients, with guidance from the special MDT or at least an agreement that the course of action is not contraindicated.

**And when it comes to that discussion in the meeting, who contributes to the discussion at the network meeting?**

It tends to be consultants, neurologists, radiologists, pathologists, there’s not, not so much nursing input.

**Is that, do you think it’s a bad thing?**

Don’t think it’s a, I don’t think it’s a good thing, but I don’t think, I don’t think it’s a bad thing, yeah.

**And is the discussion shared equally between the sites, or do**

Yes, yes.
So each site attending gets their chance to contribute?

Sure, sure.

Have you encountered any problems other than the ones you mentioned, with the discussion at the specialist MDT?

I think, I think nothing that I wouldn't expect. I think the thing about the specialist MDT, is that probably I reckon probably three quarters is a, is a complete waste of time and well, maybe even more than three quarters is largely a waste of time, because, and what the key issues of specialist MDT, then we have at a local MDT, it's just more people and we're only dealing with three or four cancers and the treatment options are pretty, are ... and so actually you can make decisions perfectly well yourself, which, it's not a huge number of cases that the wider discussion is, is of, is of additional value. There are advantages, or I wouldn't abolish it, but it's pretty, it's pretty limited, it's got, it's got a, I don't know, prostate cancer I guess is they're, is a big one and it's, and it's, for example, and it's, it's organ confined, it's localised in need, well the special MDT will say it's their associates or for A, B, C or D, it's also send issue E, and then you as the local consultant discuss if A, B, C or D with the specialist MDT, which would have done in any case. So it's largely a rubber stamped exercise that's, that we're told we have to do, it's ...

Are there any changes you could make to make it more efficient or, in terms of time and resources?

No, what you could do is, is you could say, bring to the specialist MDT those cases that are actually clinically problematical, which would cut it down tremendously. I think it's because of our local circumstance and the fact that we have a joint kind of, going back, at our local MDT meetings every, we have all the specialities there anyway, we have oncology, we have pathology, we have radiology, we have the nurses, we have the doctors. So for our local, so locally all our special MDT, all it adds is more bodies, we don't obviously have any different expertise of conducting all the various therapies, they're all, they can all be conducted by the people who are present at our local MDT in any case. I think it's different in other areas where there is a very clear divide between what's, over what can be done locally and what needs to be centralised, we're kind of, we're kind of in a different situation. So, for example, at Whips Cross, have the local MDT, the local and special MDT occur all at, all at the same time, and they have the special MDT link and then when we're gone then they do the local MDT. It's, I don't think there's any, it's rarely, there's rarely added value from having the whole network discuss, discuss the case. Of course, the other point to be made is that we're supposed to have a network wide special MDT that's joining with Queen's Hospital, that was tried a few times and defeated by the video conferencing on facilities.

So they

So
Do they have any input into the network at all?

No, no, they do their thing, or we do our own local and they do their own specialist MDT, I guess because they have all the expertise already. But the plan was to have, was to join the whole thing, so we have one specialist MDT and that would occupy like a whole morning and the whole two, the technology doesn't allow us to do that. So after three or four abortive efforts, we're doing our own specialist MDTs.

Separate ways, yeah.

Yeah.

That's great, that's run up to half an hour now.

Yeah.

So I'll press stop on my machine.

END OF INTERVIEW
Appendix 8: Sample participant information sheet for observational study

Study Title:

The effect of training on MDT decision making: an interventional study.

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read this information leaflet and ask us if there is anything that is not clear, or about any further information you want. Participation is entirely voluntary and if you do not wish to take part please contact us using the contact details below.

What is the purpose of this study?

Cancer care in the UK is coordinated by multidisciplinary teams. The decisions made in the MDT meetings have an important effect on patient care. Some research has shown that decisions within the MDT can be improved. However, the best way to improve the quality of the decisions is not known. The aim of this study is to test the effect of a training exercise on the quality of decision making by the MDT and get an idea of how it affects this process.

Why have I been chosen?

Members of the Whipps Cross University NHS Trust Urology MDT are being recruited to take part in this study. James Green, The Cancer Lead for Urology has invited us to see whether you would like to take part.

Do I have to take part?

It is up to you to decide whether to take part. If everyone on your team agrees to take part then an associate of the researcher will attend your MDT meeting and ask you all to sign a consent form. You can decide not to take part at any time. If you want to take part you have to reply to the email inviting you to participate and state that you would like to participate (by
replying to this email or calling 0207549727). If you do not want to take part you do not have to do anything. If you do not respond it is assumed that you are not happy to participate.

What will happen if I take part?

You will be given a copy of the information sheet to keep. If all MDT members are happy to take part then the researcher’s associate will require all team members to give written consent then the MDT meeting will go ahead as normal. The researcher will observe from a discreet position. The observer will be taking notes, but these will not have any patient information, or identifiable information about participants. After the meeting the researcher will leave. Before he leaves you can ask any questions you may have. After 6 MDT meetings have been observed you will be invited to attend a 3 hour workshop on decision-making with your MDT. It will involve listening to a lecture, discussing some mock MDT cases and some group discussion. The workshop will be facilitated by the researcher and a trained psychologist and will take place at Whipps Cross Hospital, probably in the Medical Education Centre. A free lunch and refreshments will be provided. In the weeks after the workshop the researcher will attend 6 more MDT meetings to make observations. After the study has finished the researcher will present the results to the MDT to check that they find them true to their experience.

Procedures, medical tests and tissue collection:

No procedures, medical tests or tissue collection is required for this study.

What are the disadvantages of taking part?

There are no anticipated disadvantages or risks of taking part in the study.
What are the benefits of taking part?

We hope the study will ultimately help to improve the decision making process in MDT’s. The results may help your MDT to improve some aspects of your own MDT decision making.

What will happen to the results?

After the data from the meeting has been analysed results from the study will be written up as part of the researcher’s thesis and perhaps in a journal.

Will my taking part in the study be confidential?

None of the data from the meetings will have information that could identify participants. Obviously the other members of your team will know that you have participated as they will be present at the same meeting. However, no one outside the meeting will know that you have participated. The signed consent form with your name on will be kept in a locked cupboard in the researcher’s office separately from the data from meetings.

What if something goes wrong?

If you are harmed by taking part in this research project, there are no special compensation arrangements. If you are harmed due to someone’s negligence, then you may have grounds for a legal action. Regardless of this, if you wish to complain, or have any concerns about any aspect of the way you have been treated during the course of this study then you should immediately inform the Investigator Dr Benjamin Lamb, Clinical research Fellow, Imperial College London (02075949727 or benjamin.lamb@imperial.ac.uk), or Dr Katrina Brown, Clinical research Fellow, Imperial College London.02075949727 or katrina.brown07@imperial.ac.uk . The normal National Health Service complaint complaints mechanisms are also available to you. If you are still not satisfied with the response, you may contact the Imperial College Joint Research Office.
**Who is organising and funding the research?**

This research is organised by The Clinical Safety Research Unit, which is affiliated with the Centre for Patient Safety and Service Quality at Imperial College Healthcare NHS Trust and is funded by the National Institute of Health Research; and Whipps Cross University Hospital NHS Trust R&D Department. The researchers are not being paid for including and looking after subjects in the study.

**Who has reviewed the study?**

This study is undergoing ethics review by Riverside Research Ethics Committee and by Whipps Cross R&D department. The study will not proceed until approval from both has been received.

**Who can I contact if I have any questions or a problem?**

If you have any questions about this study or a problem please contact the research associate:

Dr Katrina Brown, Clinical research Fellow, Imperial College London.

02075949727 or katrina.brown07@imperial.ac.uk
Appendix 9: Self-report survey tool

1. About you

1. What is your professional group?
- Administrator
- Cancer Manager
- Chaplaincy
- Clinical Nurse Specialist
- Dietician
- MDT Coordinator
- Other (please specify)
- Medical Oncologist
- Oncologist
- Palliative Care Specialist Nurse
- Pathologist
- Pathways Navigator
- Physiotherapist
- Radiologist
- Research Nurse
- Social Worker
- Surgeon

2. What is your gender?
- Female
- Male

3. How old are you?
- 18-29
- 30-39
- 40-49
- 50-59
- 60-

4. Where do you work?
- All the specialist cancer centre
- At a satellite hospital
- Both

2. About your MDT meeting

1. At the MDT meeting, how many other MDTs link in via videolinks?
- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 6+

2. How many different hospitals refer patients to your MDT?
- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 6+

3. Do you always get protected time to attend the MDT meeting?
- Yes
- No
- Other (please specify)

4. How often do you attend the urology MDT meetings?
- More than once a week
- About once a week
- Every two weeks
- Monthly
- Less than once a month
- Never
### 2. Discussion at the MDT meeting

#### 1. How frequently are the following types of information presented?

<table>
<thead>
<tr>
<th>Information Type</th>
<th>Always</th>
<th>Nearly Always</th>
<th>Usually</th>
<th>Half of the time</th>
<th>Sometimes</th>
<th>Not Often</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case history</td>
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<tr>
<td>Radiological</td>
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<td>Pathological</td>
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<tr>
<td>Comorbidities</td>
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<td>Psychosocial issues</td>
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<tr>
<td>Patients' views</td>
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</tbody>
</table>

#### 2. At the specialist MDT meeting who contributes to the discussion?

<table>
<thead>
<tr>
<th>Professional Type</th>
<th>Always</th>
<th>Nearly Always</th>
<th>Usually</th>
<th>Half of the time</th>
<th>Sometimes</th>
<th>Not Often</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator</td>
<td></td>
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<tr>
<td>Cancer Manager</td>
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<td>Chaplaincy</td>
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<tr>
<td>Clinical Nurse Specialist</td>
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<td>Dietician</td>
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<td>MDT Coordinator</td>
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<td>Medical Oncologist</td>
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<td>Oncologist</td>
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<td>Palliative Care Specialist</td>
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<td>Nurse</td>
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<td>Pathologist</td>
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<td>Pathway Navigator</td>
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<td>Physician</td>
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<td>Radiologist</td>
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<tr>
<td>Research Nurse</td>
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<tr>
<td>Social Worker</td>
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<tr>
<td>Surgeon</td>
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</tbody>
</table>

Other (please specify): 

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Appendix 10: Checklist Evaluation

Thank you for participating in my research.
I hope you find it interesting.

Benjamin Lamb

Instructions

Please read the paragraph below and look at the diagram of the ‘MDT Discussion Tool’. Please then answer the questions on the following two pages, giving us your opinions of the ‘MDT Discussion Tool’.

Background to the MDT Discussion Tool

Studies have shown that failure to consider patient-centred information, such as comorbidities and patients’ views, reduces the quality of decision-making by MDTs. Previous research also shows that involvement of all MDT professionals in discussion, especially Nurses and Allied Healthcare Professionals, favours patient-centred decision-making. Clinical decision-making in MDT meetings is often rapid, and sometimes lacks the necessary information, or professional involvement to ensure that the correct recommendations are reached.

Our initial investigations have shown that many MDT members would favour a means of having more structured case discussion. One idea is to use a ‘template’ or a ‘discussion tool’ to assist clinical decision-making. Our pilot MDT Discussion Tool is set out below. Please take a look and answer the following questions to tell us what you think.
Do you already have a structured way of discussing MDT cases? (e.g. a structured proforma or structured electronic record)

Tick one answer

- No
- Yes (please describe below)

Yes (please specify)

---

Do you think a more structured way of discussing MDT cases would aid decision-making?

Tick one answer

- Yes
- No

Other (please specify)

---
If the MDT Decision Tool is used in MDT meetings, in your opinion how could it be used?

Tick any applicable answers

- As a memory aid to guide discussion
- In patients' notes as a record
- As a check-list to structure discussion for each case
- With the MDT proforma to help prepare cases
- With the MDT outcome to structure the record
- None of the above
- Other (please specify)

If the MDT Decision tool is used during meetings, who should be responsible for making sure that it is used?

Tick any applicable answers

- MDT Chair
- MDT Coordinator
- Surgeons
- Oncologists
- Radiologists
- Nurses
- Researchers
- Allied healthcare professionals
- Pathologists
- All MDT members should use it
- None of the above
- Other (please specify)
For the questions below please select the answer that best reflects your opinion:

The discussion tool...

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither disagree nor agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is a good idea</td>
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<td>Will be useful in my work</td>
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<tr>
<td>Is easy to use</td>
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<td>Would increase my involvement in the MDT</td>
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<td>Would allow me to contribute more to the MDT</td>
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<tr>
<td>Would improve the way my MDT runs</td>
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<tr>
<td>Would make the MDT more patient-focused</td>
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<td>Would benefit all MDT members</td>
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<td>Would benefit patients</td>
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<tr>
<td>Is something that I would like to introduce in the MDTs I attend</td>
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<tr>
<td>Is something that I would recommend to my colleagues</td>
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</tbody>
</table>

What are the 3 best thing about the decision tool?

1. 

2. 

3. 

Please suggest 3 improvements to the decision tool

1. 

2. 

3. 

Any other comments?

[Blank space for comments]
What is your professional group?
- Allied healthcare professional (please specify below)
- MDT Coordinator
- Non-clinical (Manager/Administrator)
- Nurse
- Oncologist
- Pathologist
- Physician
- Radiologist
- Surgeon
- Other/Not applicable (please specify)

Which tumour type do you work primarily?
- Breast
- Colorectal
- Gynaecological
- Haematological
- Head and Neck
- Lung
- Skin
- Upper GI
- Urological
- Other/Not applicable (please specify)

Do you ever chair your MDT?
- Yes
- No
- Other (please specify)
Are you a trainee?

- Yes
- No

Other (please specify)

Roughly how many MDT’s have you attended?

- >20
- 20-100
- >100

What is your gender?

- Female
- Male

Other (please specify)

Where do you attend the MDT most often?

- At the cancer network specialist centre
- At a satellite hospital

Other (please specify)

Thank you for your time.

If you have any questions or comments, please email me:

benjamin.lam@imperial.ac.uk

Appendix 1: Evidence from multi-component intervention: team training intervention

Quality Assurance in MDT Decision-Making

Benjamin Lamb MRCS
Urology Research Registrar
Department of Urology
Whipps Cross University Hospital
Centre for Patient Safety and Service Quality
Department of Surgery and Cancer
Imperial College London

- MDTs
- Quality in Healthcare
- A ‘systems approach’
- Technical factors
- Non-technical factors
- Practical measures
- Conclusion
Quality Assurance in MDT Decision-Making

- MDTs
  - Decisions made by a team
  - Accepted model of cancer care
  - Little evidence for improved clinical outcomes
  - Complex process
  - Anecdotally decisions not always high quality

Quality Assurance in MDT Decision-Making

- Quality in Healthcare
  - Increasing interest in safety and quality
  - Research from other industries
  - Applied to healthcare:
    - Technical skills
    - Patient factors
    - Teamwork
    - Non-technical skills
    - Environment
  - ‘SYSTEMS APPROACH’
Quality Assurance in MDT Decision-Making

- A ‘systems approach’ to MDTs

[Diagram of Quality Assurance in MDT Decision-Making]

Quality Assurance in MDT Decision-Making

- A ‘systems approach’ to MDTs

[Diagram of Quality Assurance in MDT Decision-Making]
Quality Assurance in MDT Decision-Making

• Technical factors
  • Inputs
    • Information
      • Affects ability to make a decision
      • Including: co-morbidities, radiological, pathological
  • Facilities
    • Telemedicine

Quality Assurance in MDT Decision-Making

• Technical factors
  • Processes
    • Expert review
      • Quality control/improved consistency
    • Consideration of various types of information
      • Doctors and Nurses are different
      • Combining biomedical and patient centered information
Quality Assurance in MDT Decision-Making

• Technical factors
  • Outputs
    • Implementation of decisions
    • Problems when information not considered
      • Co-morbidities
      • Clinical Information
      • Patient preference
    • Documentation of decisions

Quality Assurance in MDT Decision-Making

• A ‘systems approach’ to MDTs
Quality Assurance in MDT Decision-Making

- Non-technical factors
  - Inputs
    - Attendance of team members
    - Team diversity
    - Protected time

Quality Assurance in MDT Decision-Making

- Non-technical factors
  - Processes
    - Leadership
      - Avoid leadership conflict
      - Have a number of leaders
    - Team working
      - Avoid hierarchies
      - Collaboration, trust and respect
Quality Assurance in MDT Decision-Making

- Non-technical factors
  - Outputs
    - Reaching consensus
    - Communicating with patients
      - Medical and Nursing roles
      - Communication with Primary care

Quality Assurance in MDT Decision-Making

- A ‘systems approach’ to MDTs
Quality Assurance in MDT Decision-Making

- Practical measures
  - 1. Expert review of Radiological and Pathological information
     - Minimum data-set
     - Use of PACS and telemedicine

Quality Assurance in MDT Decision-Making

- Practical measures
  - 2. Explicit consideration of all factors affecting decision
    - Co-morbidities
    - Psychosocial problems
    - Patient choice
Quality Assurance in MDT Decision-Making

- Practical measures
  - 3. Encouragement of good team-working
    - Consensus of decision making

Quality Assurance in MDT Decision-Making

- Conclusion
  - Decision making increasingly complex
  - Emphasis on quality
  - MDTs provide a means of improving decisions
  - Systematic approach may help
Quality Assurance in MDT Decision-Making

Thank you

Any Questions?