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Explaining Health Managers' Information Seeking Behaviour and Use

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This report contains transcripts of interviews conducted in the course of the research and contains language which may offend some readers.

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Glossary of terms/abbreviations

AHP – Allied Health Professional

ASSIA – Applied Social Sciences Index and Abstracts

CHILL – Confederation of Independent Health Libraries in London

CINAHL – Cumulative Index to Nursing and Allied Health Literature

DoH – Department of Health

NHS – National Health Service

NICE – National Institute for Health and Clinical Excellence

NIHR – National Institute of Health Research

N-Vivo – Qualitative data analysis software

ONS – Office for National Statistics

PALS – Patient Advice and Liaison Service

PCT- Primary Care Trust

PQMethod – Q method data analysis software

PubMed – Life Sciences and Bio-medical database

QIPP – Quality, Innovation, Productivity and Prevention

R&D – Research and Development

REC – Research Ethics Committee

RIO – NHS electronic care record system

SDO – Service Delivery and Organisation

SHA – Strategic Health Authority

SPSS – Statistical data analysis software

SUS – Secondary Uses Service

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Professor Christine Edwards: Chief Investigator and Lead Applicant, who oversaw the progress and development of the project, undertaking case study interviews, data analysis and was the lead contributor in the writing of the final report.

Dr Rebekah Fox: Research Fellow involved in all aspects of the project.

Dr Steven Gillard: Co-applicant. Set up user panel and advised on user involvement process, advice on qualitative analysis, review and revision of report.

Dr Stephen Gourlay: Co applicant involved in initial project development and literature review for the report.

Dr Pinar Guven: Involvement in all stages of the project, secured access and undertook interviews for East of England cases. Analysis and writing up of case studies, review and revision of report.

Professor Charles Jackson: Responsible for the design and analysis of the national survey of health managers and the survey of librarians. Author of the sections of the report presenting the survey findings.

Professor Mary Chambers: Co-applicant, involved in initial project design, development stages of the project. Review and revision of the report.

Professor Vari Drennan: Co-applicant, involved in initial project design, development stages of the project. Review and revision of the report.

Executive Summary

Background

The term information behaviour covers the range of activities from awareness of a need for information or evidence to inform decision-making, through to the activities of searching, collecting, evaluating and using such information. It also includes the role that information intermediaries (knowledge managers, librarians) play in such processes.

It is widely accepted that managers will make better decisions if their decision making process is based on good quality information. However, although the concept of evidence based practice is well established in relation to clinical practice, what little research there is suggests that health managers largely rely on experience and intuition. While there are studies of clinical professionals, health services managers' information behaviour has not been investigated systematically. This project contributes to improved knowledge and thus provides grounding for better practice.

The study concerned anyone who has managerial responsibilities as all or part of their job, and included clinical and professional staff as well as general managers.

Aims

The aims of the project were to analyse the information behaviour of health service managers in decision-making, to identify the facilitators and barriers to the use of information, and to develop guidelines for improving practice.

Methods

The study employed a mixed methodology in two phases:

Phase I: Qualitative and background data collection.

Case studies of five innovative projects were made in five Trusts – mental health, acute and primary. These covered a range of Trust investment in information use resources. Projects were selected to illustrate contrasting tasks and contexts and to capture variation in information behaviour. In depth interviews were held with 54 managers involved in the projects. The interviews provided rich descriptive evidence, operant categories of perspectives on information behaviour, and informed the construction of the surveys in Phase 2. Documentary evidence relating to the participating Trusts and projects was also collected.

Interviews were transcribed and analysed by theme. Statements were extracted for use in a Q sort exercise where 33 managers prioritised them

in relation to their own information use. Analyses of sorts were used to identify attitudinal statements for use in the two surveys.

Phase 2: National survey of managers and a survey of librarians

The managers' survey (n=2092 across 59 Trusts) was used to generalise information about managers' information behaviour derived from Phase 1. The intermediaries' survey (n=151) informed us about services and resources available to managers, and managers' use of them. Analysis was performed to identify associations between information behaviour and personal characteristics, attitudes, job and tasks, and Trust culture, type, and performance.

There was user/participant input at the design and analysis stages of each phase in order to draw on their expertise and to ensure authenticity of the results. An SDO management fellow was seconded from a local Trust for one year as a full member of the core research team.

It was not possible to calculate a response rate, as the size of the populations of managers and librarians invited to participate were unknown, but there was good coverage of Trust type and performance, and professions and job roles. This is the most comprehensive study of health managers information use undertaken in the UK. The research probably included a disproportionate number of managers with high information needs and usage, but these are a key target group for action.

Results

Virtually all managers see information use as important, and are engaged not only in seeking but also passing on information. Those involved in strategy/long-term planning and/or the management of major change have even greater information needs.

Only one third found it easy to find information relevant to their work as a manager. They also found it difficult to access information either through lack of time, information overload, or not knowing where to find it.

Training in information search was helpful, but those with significant expertise in search and research based sources – librarians and medical staff – reported most difficulty in finding information related to management. However, those who have studied management find it easier, indicating that grounding in management knowledge is important for effective search, selection and application.

Managers used a variety of different sources, online, written, people/ networks, and education and training courses. Internet/online sources were very widely used, but personal contacts are more important, and there was also a heavy use of internal Trust data.

A great deal of information is passed on verbally and acquired through direct observation such as visits to other Trusts, "doing" (experiential

learning), and contact with frontline staff and service users. For most managers, seeing "what works" is critical information.

Most decision-making and information gathering is performed in groups or teams and these were mechanisms for knowledge sharing, and repositories of information. In addition, formal and informal networks, both internal and external to Trusts, are a primary source of information for all managers and these important knowledge sharing relationships were being disrupted by organisational and service restructuring.

There has been growth in NHS and healthcare evidence-based sources, although only a few Trusts and libraries have significant management collections. Whereas some managers were frequent and enthusiastic users, many were unaware of these sources.

Managers did not report a great deal of direct use of library services, but some make very heavy use. There was much good practice, but resources and services offered varied considerably. Libraries were often seen primarily as repositories of clinical or research based information, and this was a minor source for most managers.

Sources used varied substantially by job role and profession, as did the ones managers found most useful. In particular, there were specific sources that were rarely or never used by most respondents, but were used frequently by people in certain job roles.

Overall, job role and task accounted for the most significant variations in behaviour. The only personal characteristic associated with variation was level of education, with those who had studied at postgraduate level being far more active, finding it easier to find information, and being more likely to use academic sources and those external to the Trust.

There were differences between Trusts in terms of the degree to which the culture supports information seeking and use. There was, however, little evidence linking use of information sources to measures of performance in the Trust in which respondents worked.

Models of information behaviour, while useful, underplay the importance of social and organisational processes. These are best studied through qualitative methods and investigation not bounded by a particular theoretical framework.

Quantitative data gathered in the surveys, on the other hand, were important for generalisation and testing relationships between variables. Triangulation of the three data sets proved invaluable, both in validating findings and in covering the topics from a variety of perspectives.

Conclusions

Managers are overwhelmed with too much information of various types and quality, yet often cannot find the information they need. They use many different sources, but personal experience and seeing what works can be

more influential than academic or formal sources. However, the research illustrates the difficulty of transferring models of good practice into different contexts. If managers do not have a sound set of criteria and the skills for assessing the effectiveness of what they observe, they are vulnerable to the latest fad or fashion. They need guidance in the critical evaluation of management knowledge. This is provided in some postgraduate programmes in management, but usually focuses on academic research. It needs to be extended to encompass all types of source, and input into general postgraduate education. The extent to which courses currently do so varies and requires further investigation.

Large differences were found in the types of information used and valued by job role and profession. This can be particularly problematic in such a diverse organisation as the NHS, where disagreements on the validity of different types of information can impede effective decision making. Training in critical evaluation, search, and management training undertaken in mixed groups might be expected to promote mutual understanding.

The fact that much clinical innovation has implications for management suggests that recommendations for clinical innovation should also include information relevant to management.

Other people are a major information source for managers, and mechanisms for knowledge exchange take many forms. Managers need to consider how groups, teams, learning sets etc can be used to enhance information collection and exchange.

Radical restructuring of organisations and services can lead to information loss and this suggests that measures to facilitate and replace information networks should be an important consideration in the design of new services. More research is needed on how best to meet this challenge.

While managers under pressure can benefit considerably from evidence informed toolkits, extensive use and rigid guidelines could stifle innovation. Actions to promote awareness of a range of different sources, and linkages between health care information sources and websites are required to increase use. Online and other providers have a heavy responsibility to ensure content meets high standards of validity as well as relevance. How this might be best achieved requires further investigation.

Librarians would benefit from greater expert knowledge in management and working more closely with managers in order to understand their information needs and raise awareness of the resources and services they offer. More detailed research is required on which services are most useful to managers and how to improve them.

1 Introduction

The focus of this study is the information behaviour of managers in NHS Trusts. Managing change and innovation is a central and continuous activity in Trusts, and therefore a context in which there are very high needs for good quality evidence to inform decision making. Managers' use of information in decision-making should enhance their potential for making high quality judgments that improve organisational efficiency and effectiveness. While the concept of evidence-based practice is well established in relation to clinical practice, what little research there is suggests that that managers rely on experience and intuition rather than evidence. Currently, we know very little about health managers' information behaviour in NHS Trusts, and not much about managers elsewhere, thus the need for research.

In this section we introduce the study and provide an overview of the research and structure of the report. We start with some definitions followed by the rationale for the research – the importance of the subject matter and the need for further knowledge.

1.1 Defining terms

1.1.1 Information and information behaviour

There is no agreement in the literature on definitions of "information", "evidence" and "knowledge" and what might distinguish them (Isetta 2008). For example, you can argue that the term "evidence" implies some kind of assessment made by the user on the validity of information by suggesting it is "objective" or independent (Culyer & Lomas, 2006). "Information" on the other hand is a broader term indicating anything from empirical research findings to gossip. However, in practice (as our study shows), whether information is accepted as "evidence" is ultimately subjective, and varies according to the value judgements of the user. Similar arguments can be made about what information is accepted as "knowledge" (Brechin and Siddell, 2000). The terms are contentious, and what counts as "evidence" or "knowledge" is socially constructed (Nutley et al 2007). They were used interchangeably by the individual managers we interviewed in the study. Information, therefore, is defined as any data presented in a context that gives meaning and relevance. It varies from such items as gossip and personal experience to research evidence, benchmarks or performance data.

Following Wilson (1991) the term information behaviour covers the range of activities from awareness of a need for information or evidence to inform decision-making, through to the activities of searching, collecting, evaluating, and using such information. It also includes the role that

information intermediaries (knowledge managers, librarians etc.) play in such processes.

1.1.2 Managers

From the perspective of a researcher, deciding who is a manager is essentially problematic. Management has been conceptualised variously as an institutional process – a hierarchy for co-ordination and control of collective activities – or as a set of individual practices, tasks or relationships (Tsoukas 2000). However, research into what people called managers actually do has found infinite variation, and that formal hierarchical position and job titles are poor predictors of the tasks and relationships involved (Hales 1999; Linstead 1997). This is particularly so in the NHS where general management as an occupation was not introduced until the mid 1980s and managerial responsibilities are widely dispersed. While general and specialist management roles are now well established, a great deal of "management" is undertaken by professionals – hybrid managers who combine both organisational decision-making and clinical or other professional roles (Kitchener 2000; Llewellyn 2001). Such individuals are also involved in operational management, strategy and policy development. The approach taken in this research therefore was essentially pragmatic using elements of both the "Institutional" and individual task definitions. It included staff on salary level at band 5 and above who had some kind of managerial responsibility as part of their role, such as managing staff, budgets or services, planning, coordinating etc. Thus the study includes a wide range of individuals with management as all or part of their job, such as clinical directors, nurses and hospital consultants, as well as general and specialist managers. It also included those whose primary role is to provide information: librarians, knowledge and information managers.

1.1.3 Managerial decision-making

The initial focus of the study was information behaviour related to management decision-making. Managerial decision-making is a highly complex area and a basic working definition was employed in the study based on Simon's (1977) three dimensions of managerial decision-making:

- Identifying the need for a decision
- Inventing, developing, and analyzing possible courses of action
- Choosing a particular course of action from those available

We were also aware of an additional dimension – non decision-making: protecting the status quo and suppressing the articulation of alternative perspectives (Lukes 1974).

1.2 Rationale for the research

The aims of the study were to analyse the information behaviour of health service managers in decision-making in innovative change projects, to identify the facilitators and barriers to the use of information, and to develop guidelines for improving practice. The assumptions underpinning the need for the research project are threefold:

First, it is widely assumed that if managerial decision-making is informed by evidence, managers will make better decisions, be more effective, and more innovative or creative (Barney, 1991, 2001; Kovner & Rundall 2006; Shortell, Rundall, Hsu 2007). This proposition is pertinent to Health Services' management which takes place in a complex and volatile environment and, where it is argued, evidence-based decision-making can reduce uncertainty, and improve practice and overall performance (Jbilou et al 2007; Nutbeam 2004). However, the concept of "evidence based management" has been questioned in some quarters: for example, Arndt and Bigelow (2009) argue that there is little evidence that it does improve practice, while others point out that what actually constitutes management evidence is contested (Tranfield *et al* 2003). Nonetheless, it seems reasonable to accept, Crilly, Jashapara & Ferlie's (2010 p231) conclusion to their scoping review of research into knowledge utilisation that:

"while management knowledge may be contested, there is a variety of developing knowledge bases on which to build. The implication for practitioners is that they need to consider carefully which form of management knowledge is most important and helpful to them and to prioritise their activity on that basis. They cannot do everything: but they should do something."

Thus despite the caveats above, gaining a better understanding of managers' information behaviour would be a step towards assisting them in this endeavour.

The second assumption is that managers do not make sufficient use of the knowledge that is available. Over 20 years ago Weiss noted that health care managers seldom use libraries or information systems (Weiss, 1986 cited in Thuriaux et al. 1987) and little seems to have changed since then (Walshe & Rundall 2001; Kovner 2005; Innvaer et al., 2002). Like managers generally (de Alwis et al. 2006), health service managers rarely use good sources of decision-making evidence and research to inform their decision-making.

Research into barriers to use has concentrated on the inadequacies of the user and the quality, quantity and relevance of the supply of information. Management research generally has been criticised in terms of its quality, accessibility and relevance to practice (Tranfield 2003). What little evidence there is suggests the same problems apply to health management research: Innvaer et al's (2002) systematic review of health services policy makers' information-seeking behaviour found that perceived timeliness and relevance were the most widely reported inhibiting factors affecting use of

evidence, and they tended to rely on personal contacts, intuition and experience rather than conduct exhaustive searches for information. As recently argued by Exworthy (2011), health managers' own personal experiences are used as a form of evidence through illness narratives in health management. The paper calls more research in this field. Dobbins et al.'s (2001; 2007) research suggests that format may be important in finding that managers liked systematic reviews, executive summaries, and practice implication information rather than research reports. In contrast, Lavis et al (2005) revealed mixed views on the subject of practice-based recommendations, and the managers they studied wanted contextually decision-relevant information, and reviews that can be easily scanned (see also Perley et al 2007). Others have identified the problem of researcher practitioner communication and the ambiguous nature of much management research as a reason why research-based information is underused in health service decision-making (Shapiro et al 2007; Black 2001).

On the side of the user, the "readiness" (or "unreadiness") and the ability of managers and organisations to absorb and utilise the knowledge which is available has been identified as an issue (Sher & Lee, 2004; Cinite, Duxbury and Higgins 2009, Lenox & King 2004; Nutley et al 2007). Niedźwiedzka (2003a) concluded that managers' information skills are poor, or they believe there is little relevant information. Attitudes and perceptions also critically affect health managers' information behaviour (Niedźwiedzka 2003a), a trait they share with managers and professionals generally (Cheuk 1998; Wilson & Streatfield 1980; Wilkinson 2001). De Alwis et al.'s (2006) review of managers' information preferences found that they were affected by organizational, work-related, personal, and informational factors.

The third assumption is that there is a lack of research evidence in this area, and in consequence we have poor understanding of how "evidence" or information is selected, transferred and used in health managers' decision-making processes (Mitton et al. 2007; Dobbins et al. 2007). Research into information use in healthcare has focused largely on the needs of clinical professionals, and patients, to judge by a search of such databases as PubMed, CINAHL, and ASSIA, while the NHS Knowledge Service Plan (Gray 2006) also appears to say little about managers' information needs.

While the studies cited above have provided some understanding of aspects of information use none offers a comprehensive explanation of managers' information seeking behaviour. Most are focused on policy makers rather than managers in organisations directly involved in the delivery of services. Those that have included managers tend to be small scale, of limited scope in terms of the range of behaviour covered and managerial roles included, and most were conducted outside the UK: hence the need for further investigation.

1.3 Overview of the research

There is a growing literature on knowledge transfer and utilisation but there is not a great deal of robust empirical work or theoretical models of information use on which to base further study (Gourlay 2007; Mitton et al. 2007). We concur with Beverley et al's (2007) conclusion that information behaviour models offer better frameworks for analysis. We, therefore, adopted a framework proposed by Niedźwiedzka (2003b) based on Wilson's (1991) general model of information behaviour as the starting point for the research. This goes beyond the usual consideration of the process of search and application to include the personal, organisational and environmental factors that may influence the various aspects of behaviour. It also has the advantage that the model has been applied to health managers (Niedźwiedzka 2003a), and includes knowledge intermediaries. The model is described in detail in the literature review.

1.3.1 Research design and method

The study employed a mixed methodology and comprised four phases. Phase I consisted of in-depth case studies of projects in five Trusts – mental health, acute and primary care. The Trusts were selected to cover a range of investment in information use resources. Data collection focused on information behaviour relating to decisions made on innovative projects in order to provide rich descriptive evidence, to discover operant categories of perspectives on information behaviour, and to inform Phase 2. The interviews covered information search relating to decisions around the projects, and managers' behaviours and attitudes as well as documentary analysis. In depth interviews were held with managers and information intermediaries. In Phase 2 Q-methodology was employed for the discovery of operant categories of attitudes and beliefs, using data extracted from the qualitative interviews. This yielded information that was useful in itself, and which was also used in the development of the attitudinal items used in the national survey in phase 3.

Phase 3 and 4 comprised two surveys, one of managers, and one of formal information intermediaries. The managers' survey was used to generalise the findings on managers' information behaviour derived from Phase 1, and to test the association with the intervening variables in the model (environment, personal and role). The intermediaries' survey provided information about services available to managers and managers' use of them. Results were compared with the managers' survey data.

There was user/participant input at the design and analysis stages of each phase in order to draw on their expertise, and involve them in the project to ensure authenticity of the results.

1.3.2 Research aims

1. To analyse health service managers' use of information in decision-making in selected contexts in order to identify the barriers to, and facilitators of, information use.
2. To develop a method for evaluating managers' information use more widely.
3. To propose practice guidelines for improving managers' use of evidence in decision-making.

1.3.3 Structure of the Report

Chapter 1 provides a rationale for the research and overview of the main stages and methods of the project, and outlines the structure of the report.

Chapter 2 reports in more detail on the literature underpinning the project and introduces the theoretical framework that informed the research questions and design.

Chapter 3 provides a description of the research design, methods and approach to data analysis

Chapter 4 reports on the findings of the qualitative case studies of six innovative projects in the five Trusts

Chapter 5 presents the findings of the national survey of health managers

Chapter 6 presents the findings of the survey of formal information intermediaries

Chapter 7 summarises the main findings and explores some of the main themes that arose from a triangulation of findings from the different stages. It also discusses the implications for supporting managers' use of information.

2 Literature review

2.1 Introduction

The focus of this project is on the use of information by health managers, specifically in the context of making decisions. Information search and use with respect to making decisions is only one aspect of information use by managers which also include, for example, seeking information to keep up to date (see e.g. McDiarmid et al. 2007), which is also captured in the study. Information use cannot be considered apart from the activities of searching, collecting, evaluating, and using such information. This whole set of activities and processes has been termed "information behaviour" (Wilson & Streatfield 1980): more formally defined as "the totality of human behaviour in relation to sources and channels of information, including both active and passive information seeking and use" (Wilson 2000, p.4; Robinson 2010). Information behaviour studies form part of the discipline of information science, which is an appropriate conceptual context for this study because it is the broad disciplinary area "concerned with the use of information by humans. ... And it is concerned specifically with the way in which humans search for information, systematically as well as unsystematically..." (Hollnagel 1980, p.184; cited in Wilson 1981).

Information behaviour in its widest sense has been studied in many disciplines often using other technical terms or concepts. Backer (1991) noted that one allied field, knowledge utilization, itself comprised numerous sub-fields including: technology transfer, information dissemination and utilization, research utilization, innovation diffusion, the sociology of knowledge, organizational change, policy research, and interpersonal and mass communication (Backer 1991, pp.227–8). Managers typically use information in the context of making decisions (see e.g. Baker et al. 2004), and the information use aspects of decision-making were reviewed by Lindquist (1988). Organizations have themselves been conceptualized as information processing systems, a view that has informed much research into managers' information behaviour conducted from an organizational and management studies perspective (see Daft & Macintosh 1981). Other fields and disciplines that could be added to this list include personality, psychology, consumer behaviour, health communication and information requirements analysis (Wilson 1997), not to mention knowledge management and evidence-based practice research. Conceptually this study draws largely on information behaviour literature and models. This field is also a vast one with a variety of competing and complementary models and perspectives (see Fisher et al. 2005; and Case 2007 for reviews). While information behaviour is itself a sub-field of the Library and Information Science disciplines (Pettigrew & McKechnie 2001), it is also a multi-disciplinary endeavour that draws on a wide range of disciplines and studies (Wilson 1994). It follows that any literature review in this area has to be highly selective. The purpose of this short review is to explain the

conceptual background to the study and to outline the more recent empirical work that has been conducted on health managers' information behaviour.

2.1.1 Health managers

The focus of the project is on the information behaviour of managers, a term that therefore needs some introduction because of ambiguities about the role or job. There is no clear all-encompassing definition of the term 'manager'. Instead it is a general term indicating that the person designated as or performing the role of 'manager' is likely to have some resources at their disposal, may be in charge of a number of subordinates, and is likely to be held responsible for certain decisions – they are required to exercise higher degrees of discretion than perhaps their subordinates do. Their work is likely to involve high levels of communicative activities, much inter-personal interaction, and the cultivation of soft skills and intra- and inter-organizational networks of contacts (see e.g. Mintzberg 1973; Keen 1981; Hales 1986; de Alwis et al. 2006).

Another complication is the fact that different kinds of managers make different kinds of decisions in health care contexts. Walshe and Rundall (2001) distinguished "managers" from "clinicians" using the latter term to refer to people who make decisions about the treatment of individual patients. Health treatment related decisions are also made by people referred to as 'policy-makers', although their decisions affect patients. They are not concerned with individuals in the way clinical decision-makers are. Increasingly, however, in practice this distinction is blurred as many clinicians have managerial responsibilities and there has been an expansion in a category referred to as "hybrid managers", such as the modern matron, who formally undertake both clinical and managerial roles (Savage and Scott 2004). The focus of this project is on people who make the decisions relating to policy and practice in NHS Trusts. Decision-making in Trusts operates within the constraints set by strategy and policies determined by policy makers at the national and regional levels.

2.1.2 Extent of research

This section is an account of the empirical studies of health managers' information behaviour. The focus is on studies of information behaviour rather than the more ubiquitous studies investigating why managers appear not to use research.

In clinical/medical health care practice, acceptance of using research to inform decisions gained ground from the 1990s and could be said to be well established a decade later in the UK (NHS) and to some extent in the US (Walshe & Rundall 2001). Around the turn of the century the question began to be raised: if clinicians have to justify their decisions, why should not managers and policy makers do the same (Walshe & Rundall 2001, p.436)? Implicit in this question, as is apparent from the limited research conducted to date, managers in health care institutions generally do not

practice research or evidence-based management. Indeed, Rousseau has charged health managers with being out of step with good practices established in other human service sector organizations, and has suggested that health care organizations are characterised by "disconnected and often mutually opposing management practices" (Rousseau 2005, pp.36–7).

Research into health managers' information behaviour is in its infancy. There is widespread agreement that we have only a limited understanding of how "evidence" or information is transferred and used in health managers' decision-making processes (Mitton et al. 2007; Dobbins et al. 2007; MacDonald et al. 2008a; Jbilou et al. 2007). Lavis et al (2005, p.39) found that "... the research evidence about decision-making by health care managers and policy makers is not that plentiful, rigorous ... or consistent ...". Other researchers concur, making additional points. Jbilou et al (2007, p.186) argued that previous research had concentrated on "processes-information systems, development of capacities, structural reorganisation, organisational determinants, type of use · ·" and had not given due attention to individuals' behaviour. Research using information behaviour informed perspectives has only recently begun (e.g. MacDonald et al. 2008a; 2008b; 2011; Niedźwiedzka 2003b). Lavis et al (2005) in their review of the field also noted that there were fewer studies of healthcare managers (7) than of policy makers (10); and that the studies of managers were quite limited methodologically. Indeed, research into information use in health care contexts has focused largely on the needs of clinical professionals, and patients (Walshe and Rundall 2001). Nutley *et al* (2007) in considering the academic study of research utilisation concluded the area of managers in organisations, i.e. at the 'meso' level, is under-explored. Thus there is a need for more research into those managers most closely involved in the design and delivery of services.

In the next section we outline the main studies that have been made of health managers at the organisational level. A search of databases including PubMed, CINAHL, and ASSIA found few reports of empirical research. The studies identified are so diverse in focus and methodology that a thematic treatment of the literature would be difficult. The presentation is thus largely in terms of the findings of each article.

2.1.3 Research on Health managers' information behaviour

Four studies have been identified where the key informants included managers at the top of, or working within, a health care organization such as a hospital or health centre (Kovner & Rundall 2006; McDiarmid et al. 2007; Gallego et al. 2008; Crump 2002). A fifth study (Lavis et al. 2005) included some top level health care organization members, but policy makers (civil servants; political office staff) were also interviewed. Finally, a sixth study (Elliott & Popay 2000) looked at health authority managers and GP fund holders in one region of the NHS, and thus like Lavis et al (Lavis et al. 2005) appears to focus on top-level managers, while including some working at more operational levels. These studies were conducted in

Canada (McDiarmid et al. 2007), Canada and the UK (Lavis et al. 2005), the UK (Crump 2002; Elliott & Popay 2000), Australia (Gallego et al. 2008) and the USA (Kovner & Rundall 2006). Crump conducted a case study, while all the others used interviews to collect data. All these studies provide information about information behaviour even though some were concerned with finding ways to improve the uptake of research evidence (e.g. Lavis et al. 2005).

Lavis et al (2005) interviewed 29 managers at or above the top levels of health care organizations in Canada and the UK. Their focus was on the potential or actual use of systematic reviews, but they also reported aspects of their interviewees' actual information behaviours. Neither managers nor policy makers made much use of research. Managers relied on internal information, such as expenditures and utilization rates. Policymakers used a wider range of information sources and apparently assumed that policy analysts had sufficient "expertise to provide informed advice" (Lavis et al. 2005, pp.39–40) – implying perhaps that 'policy analysts' are the people who actually read (some) research. Elliott and Popay (2000) investigated evidence-based policy making "at a local level" in the NHS, conducting case studies of social research projects initiated by health authority manager or GP fund holders. The fact that some of them had commissioned the research suggests they felt research to be valuable. However, they were strongly of the opinion that 'research' could not provide answers and relatively little use was apparently made of the projects. How managers at this level behave when the opportunity to commission research was not available is illustrated by the next two studies.

Kovner and Rundall (2006) reported on an interview study of 68 managers of non-profit health centres throughout the USA, focusing on a set of high level management decisions. They said these managers made little use of an evidence-based approach to decision-making. Health care websites were used, but not management journals. Some said their culture did promote the use of evidence, but it was clear that 'evidence' meant "their own experience, anecdotes that had been communicated to them, information from internet sites, and advice from consultants and advisory organizations such as the Health Care Advisory Board", (Kovner & Rundall 2006, pp.14–15).

McDiarmid et al (2007) conducted telephone interviews with 35 hospital CEOs in Ontario, Canada. A primary interest in this study was the extent to which use was made of hospital librarians, and what information was sought, and what barriers perceived, as well as whether personality affected information behaviour. The CEOs reported needing information for a wide variety of activities, such as report writing, and in relation to technology, human resources, and legislation. In addition, they also reported needing information to keep up to date, to confirm something, or just because they were curious! They used a wide variety of sources or channels, with the internet being a firm favourite, ranked top amongst information sources. Other sources used include other people (experts,

colleagues, staff, librarians, and conferences), journals, books and databases, and professional bodies. Most said they practiced evidence-based decision-making, but their views on 'evidence' were very diverse. Some questioned whether management literature really provided any evidence for them to act on, while others said they did look at literature on standards and best practice and adapted it. Certain kinds of information were difficult to get, even internal information, due to issues like incompatible formats, cataloguing deficiencies, the lack of, for example, benchmarking data, and so on. Most had an on-site library, and made some use of it.

Gallego et al (2008) interviewed 16 managers involved in local level decision-making, focusing on acquisition of health care technology. The sample was stratified to cover a range of managers including "senior", "middle" (clinical service managers), medical clinicians, and nurse managers. Unlike the other studies therefore, this one included clinician managers alongside non-clinical managers. The study also clearly focused on managers within a health care organization below the level of CEO and other top level managers. Information needs appear to have varied considerably and to have been dominated by questions about the budget and potential impact of the technology, emphasising the importance of the context in which they were working. It seems little or no other kinds of information were sought. It was assumed that knowledge about using the technology already rested with the people making inquiries and in local clinicians networks; safety and efficiency were important considerations, but it was assumed these had already been determined elsewhere; and health technology company representatives provided demonstrations, and implicitly were influential in the purchasing decisions. While business plans were required for larger purchases, the interviewees apparently showed little understanding of economic issues, and they said economic evaluations were generally introduced after the event to justify a decision.

Crump's (2002) case study was the only in-depth qualitative investigation. Like Gallego et al, the focus was managers and clinicians within a hospital. The study was an investigation of the creation of an integrated care pathway in a hospital. Following a Government initiative, policy makers in the hospital decided that an integrated care pathway should be created. A pilot for the project was identified, and later the project leader briefed the professionals involved. Through meetings the team leaders quickly found that working practices were quite different for the same clinical procedure. This was apparently well known, but the differences only became relevant when integration was proposed. The team leader then effectively engaged in some research, collating together all the paperwork used for the process, which she used to create a new integrated process. For a variety of reasons the pilot was eventually abandoned. There is no reference to any explicit information search, and we can infer from the detailed account Crump provided that the information needs were all perceived to be local, and were either met by inter-personal contact, or through reviewing internal paper process documents. It might be thought that this was a

comparatively simple and straightforward issue, requiring little information other than what was apparently sought or collated. Crump's point, however, is that even such an apparently simple technical issue was organizationally quite complex, involving as it did the introduction of new ways of working for established professional groups, and therefore might have been expected to stimulate more information search.

Niedźwiedzka's (2003b) study focused on directors of health planning institutions but also included hospital chief executives, medical directors, and chief nurses. She conducted a national survey in Poland but also used interviews, focus groups and documentary evidence. She found that the principal sources of information were national policy documents, cost-benefit analyses of interventions; and clinical practice guidelines. In addition, policy makers sought and used data about local health priorities (Niedźwiedzka 2003, p.108); financing rules, legal information, health services market data, and technology assessment. It seemed they made little use of research evidence and face to face communication was held in highest esteem. Her study identified intermediaries, both formal and informal, as significant information sources.

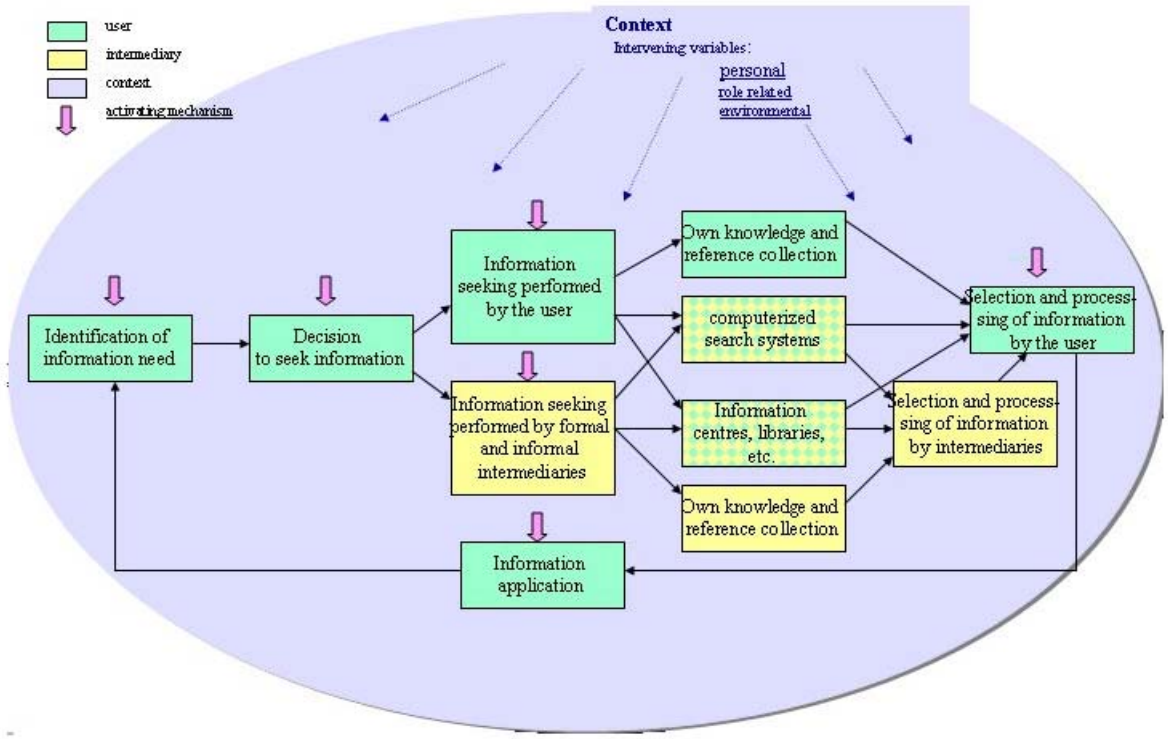
The studies are so varied in method and scope, and are based on small samples of managers that we can only draw impressionistic conclusions. It would seem that managers have many reasons to seek information, including keeping up to date, as well as to facilitate decision-making (McDiarmid et al. 2007). Internal financial, budgetary, local process and resource use information was important to them (Lavis et al. 2005; Elliott & Popay 2000; Gallego et al. 2008; Crump 2002), but often they do not appear to have used (or to be aware of having used) research-based information (Kovner & Rundall 2006). While some did claim to practice evidence-based or informed decision-making, their interpretation of the term 'evidence' is very broad (Kovner & Rundall 2006). There are some indications of librarians (McDiarmid et al. 2007), product suppliers (Gallego et al. 2008) and people generally (Niedźwiedzka 2003), acting as information intermediaries. Some managers actually commissioned research, as did policy makers (Lavis et al. 2005; Elliott & Popay 2000), but such studies only formed part of the information input to decisions. Thus, existing research suggests similarities with the behaviour of managers elsewhere in that they do not carry out extensive search for information. However, distinctive aspects of the health context suggest there will be differences in what information they seek and how they use it.

2.2 Theoretical framework

In this section the conceptual background to the study, drawn principally from information behaviour theories, is described. Current research on health managers suggests their information seeking behaviour is much like that of managers generally. However, while these studies have provided some understanding of aspects of information use, none offers a comprehensive explanation of managers' information seeking behaviour in

the context of health services. Indeed, research generally in the area of knowledge transfer has failed to provide robust models of information use on which to base further study (Gourlay 2007; Mitton et al. 2007; Crilly, Jashapara and Ferlie 2010) and we argue that information behaviour models offer better frameworks for analysis (Beverley et al 2007). Of particular interest is Wilson's (2000) problem-solving model which has been applied to health managers (Niedźwiedzka 2003a), and has been extended by Niedźwiedzka (2003b) to include knowledge intermediaries (Figure1). The model presents an advance on many in that it acknowledges the importance of context on the process of seeking and use of information, and the intervention of environmental, role related and personal variables. It reflects assumptions apparent in much of the practice-related discussion of information use and knowledge transfer, but is overly simplistic and does not capture the complexity and ambiguities of the process (Mitton et al 2007). It provided a convenient framework from which to begin to explore information behaviour, but did not constrain a wider ranging and critical investigation.

Figure 1. The Niedźwiedzka model



2.2.1 The process

The model places information behaviour in context, and begins with the stimulus to search for information i.e. identification of information need. While it is generally accepted that needs arise when someone faces uncertainty or ambiguity, needs are always related to context and perceptions: health service managers see situations differently from clinicians, and one health manager from another (Crump 2002). If

managers feel they have sufficient knowledge, they will not initiate information search, which begins when a desire to avoid mistakes, a concern for rules, or the degree of financial responsibility, for example, trigger a search decision (Wilson & Walsh 1996). The information behaviour literature has tended to assume people actively seek information to facilitate decision-making, but Godbold (2006) and Case et al. (2005) note that destruction and avoidance of information can also be manifested. Thus understanding when, and if, information search starts, and what prompts its maintenance or discontinuance is an important starting point for this study.

Once the decision to seek information has been made, managers can search for information themselves, delegate the task to intermediaries (Niedźwiedzka, 2003b), or combine these methods (Lomas 2007; Stefl-Mabry 2003; Widén-Wulff & Ginman 2004). In clinical health contexts the role of "informationist" has recently been proposed involving librarians functioning as information intermediaries (Coumou et al 2006; Florance et al 2002; Rankin et al. 2008). Intermediaries may have formal roles – librarians, knowledge managers, consultants, educators or trainers, or informal – team members, colleagues, acquaintances or friends.

Intermediaries and users may find information in their own collections, from information centres or libraries, or online. The next stage in the model is one of sifting and processing the information collected by both user and intermediary. The impact of intermediaries in this search and selection process is under-researched, they are often portrayed in a positive light, but may act as gatekeepers owing to the information asymmetries of manager and intermediary (Grabher and Ibert 2006 Lee & Cho 2005; Howells 2006; Adams et al 2005).

The final stage is application of the information selected. As we have seen from the review above not a great deal is known about how and why health managers utilise information. Finally, application or use may stimulate need for more information, starting the cycle again.

2.2.2 Context and intervening variables

In the model intervening variables relate to the person, role and environment. However, drawing on the wider literature, there is a plethora of potential factors that may be expected to influence behaviour. These can be examined at the level of the task, person, group or organisation.

Tasks

In the context of work, *tasks* have been identified as a critical determinant of information seeking, and of what counts as information to the task performer (Byström 2000; 2002; Byström & Hansen 2002; 2005). Whitley and Frost discovered systematic differences regarding information behaviours between research scientists (working on scientific concepts, models, and empirical research), scientists involved in improving existing facilities (extension work), and those performing "responsibility tasks" of a

more administrative nature (Whitley & Frost 1972; 1973). Other organisational research has drawn attention to the influence of perceptions of task on information behaviour (Tushman 1979; Tushman & Romanelli 1983; O'Reilly 1982). Wilson and Malik (D. O. Wilson & Malik 1995) noted that these studies had concluded that "Based on their perceptions of high [task] uncertainty, organizational members engage in increased information searching " (D. O. Wilson & Malik 1995, p.33).

Recent research has investigated the specific characteristics of work tasks and how they influence information behaviour. A task can be seen as a set of physical, affective, and cognitive actions undertaken in pursuit of a goal (Byström & Hansen 2005, p.1051). Byström and Hansen (Byström & Hansen 2002; 2005) reviewed models of task performance activities and distinguished three phases of generic sub-tasks which they labelled construction, actual performance, and completion. Task construction is of critical importance since it concerns the development of an understanding of the task goals, and of how to attain them, on the part of the task performer. It is a planning or orienting type of activity or set of activities (depending on the initial clarity or otherwise of task goals), and it occurs not just at the beginning of a task, but throughout performance and completion (Byström 1999; Byström & Hansen 2002; 2005). Vakkari (2001) also found that the information sought, judgements of information relevance and task performance, depended on the stage of task performance.

Personal characteristics

There has been very limited research into the effect of individual characteristics. For example, there is virtually no evidence regarding any ethnic, age and gender differences in information behaviour propensities, and no research on women managers' information behaviour. Further, while Wilson and others (Dobbins et al 2001, 2007; Lavis et al 2005) have commented on the shortcomings of the information available to support evidence-based practice, much less attention has been paid to the motivation, capacity and ability of managers to understand and use management research. Perceptions of the value of the information and preferences for different types, modes of presentation and sources have not been systematically examined in relation to intervening variables such as managers' professional' background or expertise, training in information search, or the time and facilities available, important considerations, therefore, for this study.

Recent research highlighted the importance of variations in the mental models that individuals possess. Vakkari (2001) found that mental models influenced information seeking. He later argued that searchers have a "more or less developed mental model of the type of information required" relative to the task at hand, and assess potential information sources in the light of this model (Serola & Vakkari 2005). The implications of this are straightforward: mental models often have a conservative effect - to the extent someone perceives a current situation as like a past one, they will treat it like the past one (e.g. Visser & Boschma 2004).

Groups

Mental models are implicit in the personal or psychological aspects of the information behaviour context indicated in the Niedźwiedzka model. However, since mental models at work are not uniquely possessed, individual employees' mental models will be shared with others at work giving rise to team (group) mental models (Carley 1997). Rico et al (2008) conclude that team members "hold similar mental models regarding taskwork and teamwork, and this will predispose them to select, codify, and retrieve information in a like manner" (Rico et al. 2008, p.171). Thus one consequences may be to subconsciously filter out information that challenges team, group or professional values and practice as in the case of "group think" (Janis, 1972; Chapman 2006); or inhibit information sharing between professional groups or "communities of practice" (Tsoukas & Vladimirou 2001; Ferlie et al 2005). The Niedźwiedzka model does not acknowledge the key role of group decision making and processes in information behaviour. Given the strength of professional groups and the fact that so much work in health and social care is collaborative and conducted in teams, this is an important point to be included in this study. Thus a further contextual factor for the research was whether managers are acting individually or as part of a team, and the influence of the group on their information behaviour.

Organisations

Previous studies have paid little attention to the organisational structure, culture and resources which support or constrain the use of evidence (but see de Alwis et al 2006). Organisational factors, such as the large scale, rigid, bureaucratic structures typical of health service organisations, may impede information flow. The hierarchy and degree of autonomy that managers are allowed may also be significant. For example, senior managers may have more autonomy than middle and line managers, who will tend to get what is perceived as necessary information handed to, or made available to them, and who have limited scope for making their own contribution (Dobbins 2007).

Tsoukas and Vladimirou (2001) suggest that the mental maps or meanings learned in groups or communities of practice can become shared organisational norms and that an organisation can be conceived as "a densely connected network of communication through which shared understandings are achieved" (p 981). Such understandings may encourage or restrain the search for new information. Thus others have concentrated on the capacity of organisations to promote learning. An organization that is a "learning organisation" should in principle promote good use of evidence for decision-making (Choo 1998). Sheaff and Pilgrim (2006) however have questioned whether the NHS can support organizational learning, suggesting this is an important dimension in managers' information behaviour.

The Wilson/Niedźwiedzka framework underplays the wider information context and tends to assume that information seekers apply rational selection criteria (McKenzie 2003). The tendency is for managers to apply

minimal rather than fully rational choice criteria (to 'satisfice' – Simon 1960; Prabha et al. 2007), and we would expect it to apply to health managers. Managers also rely on rules-of-thumb (Bazerman 1998), and the social context of decisions is critical (Gore et al 2006). Thus, while we used this model as the starting point for our study, we recognised the need to have an open and wide ranging approach in our research, especially at the developmental stages of the project.

2.3 Conclusion

Studies of health managers' information activities have focused on the 'downstream' activities of search and use, but have not considered identification of needs, or the search decision, nor have they systematically considered the role of intermediaries, or taken the wider context into account. The framework outlined here does so, and provides the conceptual tools for conducting a realistic study of health service managers' information behaviours as a basis for providing guidance for improved practice.

The purpose of this literature review has been to lay out the theoretical framework which informed the study aims and design. It established that there are few methodologically robust empirical studies of the information behaviour of managers in general and very few indeed of managers working in health at the organisational level. It is also argued that the environment in which managers' work is important and there are distinctive aspects of the NHS context which make it different from others, namely a high degree of political control, multiple stakeholders, and a history of continuous organisational restructuring and change. Thus, it is a topic justifying further investigation. The general field of information behaviour is a vast one with a variety of competing and complementary models and perspectives. Thus, while we used the Niedźwiedzka model designed to explore library users' information search behaviours to inform the research, we also draw much more widely on the studies of information users' attitudes and behaviour in general outlined above. Thus there are some a priori assumptions which may shape the study derived from a variety of other studies.

2.4 Key research questions

The review above indicated gaps in knowledge and was used to identify the specific research questions to be addressed in the investigation. These are summarised below. In the next section we describe the research design and methods employed to answer them.

1. To what extent and in what circumstances do managers seek information rather than rely on experience and intuition? What triggers information needs, search decision, mode of search (direct, via intermediaries), selection, and use? What are managers' perceptions of relevant information behaviours?

2. What information, from what sources, do managers seek and use in what kinds of decision contexts?
3. How do managers acquire decision-making information? What are the formal and informal processes of information search; when are intermediaries used, why and to what effect?
4. Who are managers' information intermediaries; what are the characteristics of their information behaviour? Which intermediaries are most frequently used, and which perceived to be the most useful?
5. What is the nature of expertise in managerial decision-making in this context, and how is it acquired? At what levels and what kinds of information and decision-making expertise found?
6. What are the organisational, professional, positional and demographic factors which influence information seeking behaviour and use? How are information behaviours associated with performance outcomes?

3 Research design and method

3.1 Research design

The research used a mixed qualitative and quantitative approach undertaken in two phases. The first phase involved in-depth case studies and analysis, conducted using time-line critical incident interviews (Dervin 2003, Du Preez 2008), and q-methodology (McKeown & Thomas 1988). This provided insight into the processes and detailed examples of information behaviour. It also informed construction of the second phase national surveys of managers and information intermediaries. Findings of first stage data analysis were presented at a user workshop to aid interpretation and further analysis.

The second phase involved a national survey of managers working in the NHS and was used to generalise our understanding of managers' information behaviour derived from qualitative research undertaken in Phase 1. This was supported by a second smaller survey of librarians in their role as formal information intermediaries that aimed to inform us about services available to managers and managers' use of them.

A steering group met three times and received reports over the course of the project. A user panel and management fellow seconded from a local Trust were involved throughout

3.2 Phase one

3.2.1 Planning and preparation

The study commenced with an up-date on literature/research reports; key NHS strategic initiatives, etc. This enabled consolidation of the conceptual framework, and development of data collection instruments for the case studies. The Advisory Board and User team members were introduced to the project and agreed a mode of working. Trusts known to be engaged in major change programmes and with a variety of information sources were identified.

3.2.2 Case Studies

The study involved in-depth Case Studies of innovative change projects in five NHS Trusts (one acute and a PCT in the East of England, and a PCT, acute and mental health from the Greater London area).[1] The Trusts were

[1] Four case studies were mentioned in the original proposal, however after consultation with the programme manager we recruited a second Primary Care Trust due to problems of recruitment in the original PCT because of the change of government and subsequent re-organisation.

selected for variation in type, size, location, performance measures and investment in information resources. The decision to focus on innovative change projects was based upon the assumption that information behaviour is likely to be heightened in unfamiliar situations where there is strong motivation to reduce accompanying uncertainty (Dobbins et al. 2001; George & Jones 2001). A brief profile of the Case Study Trusts is shown below:

Trust	Type of Trust	SHA Region	Urban/ rural	Number of staff	Foundation Status	Overall quality 2008/2009	Financial Management 2008/2009
AL	Acute	London	Urban	6000	Applied	Fair	Fair
MH	Mental Health	London	Urban	2700	Applied	Good	Good
PCT	PCT	London	Urban	589	No	Good	Good
AN	Acute	East of England	Rural	6245	Yes	Fair	Good
PN	PCT	East of England	Rural	347	No	Fair	Fair

The CEO and managers leading change in five Trusts were invited to take part in the research, all of whom agreed. After relevant Research Ethics Committee (REC) and R&D permissions had been granted discussions were held with those involved in Transformation/Service Development roles within the Trusts to gather information on current innovative change projects. One or two projects were selected within each Trust to cover a range of different projects and contexts, and key individuals identified within the projects for interview. Relevant documents about project decision-making were collected to complement related information from interviews i.e. to facilitate 'triangulation'.

Participants were recruited via snowballing methods, starting with the project leader and more senior managers in key roles within the projects, and cascading down to managers implementing them on a practical level. This gave us an opportunity to compare information use both across and within projects based upon factors such as age, experience, role and level. In addition to recorded interview material, participants were asked to complete a demographic information sheet giving background information on their position and experience. Relevant written information relating to the projects (Trust strategic documents, guidelines, proposals, funding applications, decision-making etc) was also gathered to provide background data on the case studies and 'triangulate' with the information from the interviews.

The interview schedule was designed based upon extensive reading of the literature and development of the theoretical model, with additions to take into account the particular NHS political/cultural context. The original schedule was extensively revised and discussed by the team, Management Fellow and the User Panel, and two of the Trust project leaders to ensure its clarity and relevance to NHS change projects. It was intended to hold focus groups of managers in order to inform construction of the interview schedule, but we were advised that this would be impossible, given the constraints on managers' time. Instead it was piloted on ten managers from the Management Research Fellow's own Trust and re-revised following their comments. Finally, it was discussed and reviewed by both the User Panel and the Advisory Board before being submitted for approval by the Research Ethics Committee.

In total 54 interviews were conducted, 10 pilot interviews with managers, 39 formal interviews with managers associated with the projects, and 5 informal interviews with senior managers to gain background information and to assist with project selection. Interviews focused on decision-making in relation to a particular innovative change project in which the manager was involved. The interview schedule comprised seven sections based on the theoretical model: the interviewee's current job, their experience, the history of project initiation, design and implementation, and associated decision-making processes and outcomes , the strengths/weaknesses of the project, risk/complexity/uncertainty involved in the project, their formal and informal networks, how they searched for information, what they used, and perceived barriers and facilitators to use (see Appendix 1 for the interview schedule). The interviews had some set questions to prompt discussion, leaving the respondent to direct the line of conversation and tell the 'story' of the project, as well as the experience of seeking and using information from their own perspective, whilst also steering discussion around particular topics relevant to the study. The interview schedule was constantly revised throughout the interview process with and adaptations made where necessary.

Interviews were conducted from January 2010 to April 2011.They took approximately one hour to complete (although this ranged from forty minutes to almost two hours depending upon the amount of time the respondents had to spare). Potential participants were contacted by email or telephone initially to ask whether they were willing to take part, and none refused. However, appointments once made were often cancelled and rescheduled owing to work pressure, and some managers moved on and were not replaced. Participants gave written informed consent to take part in the study and were also made aware that if they did not wish to answer any particular questions, there was no obligation to do so, and that all information provided was strictly confidential and anonymous.

Semi-structured interviews were also conducted with seven 'knowledge intermediaries' to provide contextual information regarding managers' information use. These included four librarians (one from an Acute Trust, one Mental Health, one PCT and one from an external organisation), as well

as a Knowledge Manager from a PCT and a Management Consultant who worked on one of the case study projects. Intermediaries were asked questions about both their own information behaviour and also their perceptions of managers' information behaviour. In addition, they were asked questions about information resource support within the Trust, the service they provide, available resources and training, facilitators and barriers to information searching and cultures of information use in the NHS, as well as suggestions for ways in which to improve access to and use of information amongst managers.

The research was undertaken at a time of restructuring and radical change. Trusts were undergoing significant retrenchment exercises and the managers that we had identified for inclusion were under a great deal of pressure. The PCT staff were being reorganised into larger units and were also under threat of abolition in the UK Coalition Government's plans for the NHS. Interviews dates once secured were frequently changed and the process of securing interviews became extended well beyond the planned dates for completion. Several of the London area PCT staff scheduled for interview left the Trust, thus it was decided to include an additional PCT in the East of England. The staff there had identical roles and were also under stress of reorganisation, and only three were available for interview. However, after 15 preliminary and 39 formal interviews the team found they had reached saturation point in terms of new information; and we were satisfied that we had in secured sufficient numbers around each project to gain the information required. It was planned to involve some of the managers interviewed in phase one in the Q sort analysis, however by then most had moved on from their posts, and only 6 took part in a Q sort exercise, and so were used as a pilot. It was decided to use a different, readily available cohort of managers – those about to attend a postgraduate management programme, and those in the second year of study on this programme. This had the advantage of extending the research to a wider range of managers in preparation for the national survey.

3.2.3 The Q Sort Analysis

Q-methodology (Stephenson 1953, McKeown & Thomas 1988) is a technique for studying beliefs, attitudes and viewpoints. It is used to clearly understand participants' own perspectives as these are the basis for understanding what happens, and for considering how to respond to or change behaviours. Q-methodology allows researchers to identify operant viewpoints, functionally significant categories of ideas held by actors in a situation. (Traditional surveys allow researchers to place actors in researcher-defined categories). These characteristics have commended its use in policy studies (Brown 2002), particularly by those endorsing a post-positivist approach (Durning 1999), and in decision-making research (Durning & Brown 2007). It has also been used in health management and evidence-based practice studies (Thompson et al 2004, 2005; Cross 2005a, b; Baker et al 2006; McCaughan et al 2002; Wong et al 2004; McKeown et

al 1999; Barbosa et al 1998). It has also been used in a study of information seeking (Meloche 2006). NHS managers enrolled on, and those about to start, the part time MSc in Leadership and Management in Health at Kingston University were invited to complete the Q sort. A total of 33 managers from years 1 and 2 agreed to take part, gave written informed consent, and attended sessions where the study was explained and the sort completed. The two cohorts provided an interesting comparison between those with management training and those about to embark upon it. Comparison of the two cohorts showed no significant differences with the exception that those in the second year were more likely to agree with the statement that "I am the person people tend to come to if they want information." These were all managers working in NHS Trusts in a variety of roles including matrons, consultants, general and specialist managers, with varying degrees of seniority, from first line to senior managers, and with an age range of 25 to 60 plus.

Q-sort method

The first stage was to derive the viewpoints of the sample to produce a manageable set of statements about the topic that represented the diversity of expression of views. Initial manual coding and analysis of the case study interviews were used to develop statements for the Q-sort. Verbatim statements were drawn out from the interviews using a coding schedule relating to the theoretical model. Additional statements not covered in the model, but relating to emergent themes such as politics and NHS policy were included. The statements (direct quotes) were edited, sorted, discussed and discarded until 56 statements remained, representing a wide range of opinions and beliefs regarding information use at work. Statements were numbered and printed on individual cards. Participants were then individually asked to place these statements on a forced 56 point grid with a scale of +6 to -6 (see Appendix 2). This scale ranged from 'most agree' to 'least agree' in relation to the question 'Which of these most reflect your experiences of finding information at work?'

Q-sorts took approximately one hour to complete and participants were free to move cards around into different orders until they were satisfied with their rankings on the grid. Participants were then asked to discuss their placement of the cards, or comment on their interpretation of individual statements on the comment sheet provided. The results were then analysed using factor analysis in the PQMethod programme and SPSS to identify the statements that most and least reflected managers' information use and variations according to job title, level etc. This process was invaluable in converting a large quantity of qualitative interview data into concrete statements that could be used in the development of a relevant National Survey.

3.2.4 Analysis of the case study material

In addition to informing the development of Phase 2 and Q sort, the material from the interviews was further analysed using N-Vivo to draw out in-depth material relating to the case studies. All interviews were digitally recorded

and transcribed verbatim. After reading through all transcripts, coding and analysis were performed by a research assistant and the lead investigator who had also conducted or been present at most of the interviews. Over 50 initial themes were identified and then further sub themes added. They include a priori themes that related to the model and literature review, and also themes that emerged from the data. The purpose of the analysis at this stage was elucidation rather than quantification as the focus was on the projects and preparation for the national survey.

3.3 Phase 2: National Survey of Managers and a Survey of Librarians

This phase of the research had two components:

1. A national survey of managers working in NHS Trusts
2. An exploratory survey of librarians/information professionals in their role as formal information intermediaries

The aim of the national survey was to enable us to generalise information about managers' information behaviour derived from the case study research to a large sample of managers working in NHS Trusts, while the survey of librarians aimed to inform us about services available to managers and managers' use of them.

A full description of the methodology used for both surveys is given in Appendix 3 but the main points are summarised here. Copies of both survey questionnaires are available from the main author.

3.3.1 National Survey of Managers Information Behaviour and Use

The initial intention was to obtain replies from at least 500 managers from a representative sample of 50 NHS Trusts in order to be confident that we had captured the diversity of managers' experience in a nationally representative range of work settings. The aim was to survey a variety of different types of Trusts: Acute/PCT/Mental Health, both Foundation and non-Foundation, with different sizes, geographical locations and performance statistics.

However, this strategy proved impractical as we were dependent on the efficiency of R & D offices in passing on our requests to Trusts and also the goodwill and/or resources available within the Trusts to assist us with the survey. Instead, and with time running out to complete the study, it was decided to approach all NHS Trusts in England to ask for their assistance. This resulted in a total of 59 Trusts participating in the survey: 21 Acute, 21 Primary Care (PCT), 15 Mental Health and 2 Ambulance (see Appendix 3 for a full list of participating Trusts).

The survey was conducted online and we arranged to have a separate survey link for each participating Trust. This had two advantages as it allowed us to:

1. Link respondents to their Trust without having to ask them detailed questions about where they worked
2. Match performance and other data about the participating Trusts to individual survey respondents.

3.3.2 Defining a manager

Discussion with managers and other NHS personnel suggested that anyone graded Band 5 or above on the Agenda for Change pay scale might have managerial responsibilities. However, as it was not always practical or possible for the Trusts to send targeted emails, we decided that the first survey question would be a filter question that asked potential respondents whether their work involved management responsibilities.

Those respondents who answered 'No' to this question were filtered out of the survey, but not before they were given a second chance to continue the survey if they were a manager.

3.3.3 Questionnaire development

The survey questionnaire drew on both lessons learnt from the case study research and the Q-sort study. Categories derived from the Q-sort research permitted the development of questions that more accurately reflected actual opinion types than traditional questionnaire design methods. It was particularly helpful for the development of the attitudinal questions.

3.3.4 Survey response

The survey was open from February to July 2011 as we gradually recruited Trusts to participate in the research study and worked towards our target of 50 participating Trusts. By the time the survey closed, 2,394 people had answered some of the survey but 290 only completed the first section which asked about their employment and, therefore, were excluded from the analysis as they provided no data about their information use. A further 12 respondents had substantial amounts of missing data, that is had failed to answer more than three-quarters of the questions, and were also excluded from the analysis.

This response pattern is typical for an online survey and, in fact, the drop-out rate for those who started the survey, 290 out of 2,394 (12%) is relatively low for a relatively long and complex survey.

As participation in the survey was completely anonymous, we did not have contact details for any individual managers and so it was not possible for us to carry out any follow-up of non-participants to understand more fully why they did not complete the survey questionnaire or to obtain any background information about them to compare non-respondents with those managers who completed the survey.

However, some analysis was carried out of the replies to the employment questions to compare the employment background of those that did not go on to complete the survey with those who completed some or all of the survey. It showed:

- No obvious differences between these groups of respondents in terms of job roles.
- A weak trend for respondents who partially completed the survey or only completed the employment questions to be more junior with 24% and 30% respectively in Bands 5 and 6 compared to 20% of those who completed the whole survey

We collected a certain amount of background information on individual Trusts (see Appendix 3 for full details). This showed that no Trusts in the South Central SHA region participated in the study and we had a particularly high participation from NHS Trusts in the East of England SHA region owing to the efforts of the R & D and Trust offices there.

Overall, 10 of the Acute Trusts had foundation status as did 11 of the Mental Health Trusts and one of the Ambulance Trusts. Foundation Trusts had higher average performance scores in terms of both overall quality and financial performance than non-Foundation Trusts.

3.3.5 Survey representativeness

Our main goal, and one that was achieved, was to obtain respondents from more than 50 Trusts. We saw this as the main way of obtaining a representative sample of managers. The fact that we also obtained many more responses than initially expected was a bonus and had no cost implications.

Our survey response is likely to be biased towards those who are comfortable with online surveys and have an interest in the subject matter. For example, the majority of the managers studied said that passing on information is an important part of their role. Thus the research probably included a disproportionate number of managers with high information needs and usage.

However, this remains the largest and most comprehensive study of health managers' information use undertaken either in the UK, or internationally as far as we are aware. Moreover, it can be argued that understanding the information behaviour, and the barriers and facilitators of use, of managers with high information needs and usage is particularly important.

Comparison with data reported by Powell et al (2012) on their survey and with national data (see Appendix 3) suggests that our sample broadly corresponds to the population in terms of gender, ethnicity, age and the percentage of respondents with clinical qualifications but has fewer respondents working in PCTs.

3.4 Survey of information intermediaries

A second smaller exploratory survey of formal information intermediaries, librarians/information managers, was also conducted. It was clear from the case studies and manager's survey that information is passed on through a variety of intermediaries. They also found that many managers do not make much use of libraries and librarians. The NHS has invested significant funds in these services, and thus the survey focussed on librarian/ information professionals and the services they provide. There was no simple way to identify librarians/information professionals working in the NHS but based on advice from librarians who had been interviewed or contacted, Librarians and information professionals were contacted via a number of discussion lists that had been set up for members of the UK medical and health care library community and other interested information workers. Information about the survey was also circulated to regional library leads in England, to members of the Confederation of Independent Health Libraries in London (CHILL) and to the Head of Information at the King's Fund.

It is difficult to evaluate how representative respondents to the survey are of all librarians and information professionals working in the NHS in England when using such a multipronged strategy for contacting potential participants. However, the purpose of the survey was mainly to inform us about the nature of the information and library services available to managers' and their use of them.

The survey also aimed to see to what extent issues that had been identified in the case studies and interviews with librarians as well as the larger scale national survey of managers were also perceived in the same way by people working in the NHS as information intermediaries and to generate insights into what knowledge and expertise librarians and information specialists had about management issues. Thus it hoped to provide a means of validating some of the responses in the national survey and case studies. The initial aim was to get replies from 50 to 100 librarians/ information professionals via this exploratory survey.

The survey was conducted as an online survey between April and June 2011 and received 151 replies from librarians working in the NHS or in a similar job. Analysis of replies showed that 91% respondents were working in England and 7% in other parts of the UK, while four (3%) provided no information about their work location or employment (see Appendix 3 for full details). Replies were received from all ten English SHA regions. Most (60%) of respondents worked in NHS Acute Trusts with only 10% of respondents working in PCTs, 9% in Mental Health Trusts and 8% in Higher Education.

The survey, therefore, achieved a good response both in terms of numbers and geographical spread. It was also important that the survey not only received responses from people working in the NHS but also from

respondents working in universities and charities that also run library and information services used by NHS staff.

3.5 Survey analysis

Completed survey responses from both surveys were downloaded and imported into IBM SPSS Statistics 18® software for analysis. After initial data cleaning and quality checks more detailed statistical analysis was carried out taking advantage of the range of analysis options available within SPSS.

For the survey of health managers data about individual Trusts was merged with the survey data from individuals. This enabled analysis to be carried out by Trust type, foundation status, etc and allowed us to link individual survey responses to Trust performance data.

Further information about the analysis is presented in the relevant sections of the report concerned with the surveys and in the Appendices.

3.6 User participation and review

Users were involved in all stages of the study. An NIHR SDO Management Fellow was seconded from a local Trust full-time for one year. He was involved in the development of the project and in setting up the user panel, conducting the pilot study interviews and questionnaire construction, and on return to his Trust gave advice throughout the study.

Towards the end of the research, in November 2011, all participants in the study and the user panel were invited to a presentation by the research team to discuss the initial findings of the surveys and case studies. They were asked to comment in terms of what surprised them, what was left out, and what questions should be pursued in the analysis. We also raised questions where we were unsure of interpretation. The discussion was lively, positive and very constructive giving us confidence that the research had covered the salient aspects of the subject area.

4 Findings

4.1 Introduction

This section reports on the findings of the analysis of the case study interview data and documentary evidence on the Trusts and the projects. Selection criteria and detailed information about the Trusts can be found in Chapter 3. The aim of the case studies was to twofold: to gain an in-depth understanding of the processes of information search and of behaviour in relation to a variety of innovative projects and contexts; and to inform and gather material for the construction of the online survey questionnaire.

It starts with descriptions of the five projects illustrating different aspects of information behaviour. This is followed by a general discussion of the findings drawn from across the cases.

4.2 Project 1: The Together Project

In the London Acute Trust a "transformation team" was engaged in a major change programme involving over 20 projects. The context was one of tightening financial constraint and the team were tasked with identifying ways of reducing costs and improving quality of care as the Trust prepared to apply for Foundation status. Two contrasting projects were selected as the starting point for study. In each case the leader and key project team members were interviewed.

The Together project aimed "to develop a culture of excellent colleague to colleague service and colleague to patient service, focusing particularly on building esteem and capability within staff Bands 1-4 through the idea of the 'service chain.'" The trigger for the project was the annual staff survey reporting bullying and harassment in bands 1-4 at above average levels benchmarked against the national NHS staff survey data. In seeking to find a solution the HR transformation team member discussed the issue with a highly trusted external management consultant who reframed the issue, explaining that poor relationships between staff was indicative of a more general problem of how people treated each other including patients, and would have a negative impact on the quality of customer (patient) service. He suggested a methodology to tackle the issues that he had developed whilst working for a major supermarket and which he had used successfully. This involved training staff to be change leaders – a process that involved going out "on safari" to experience the good and bad customer service offered by retailers for themselves, and then identifying ideas for change in their own workplaces. Lessons from this experience were shared in feedback discussions and by writing accounts on stickers that were prominently displayed on the walls of in the "Customer Service" office. This was a glass sided room in a main thoroughfare of the hospital and the display was open to passers by for inspection.

An interesting aspect of this case is that the only source of information informing the choice of project was a management consultant. When asked about the sources of information he used, he cited his own experience in the private sector and that of partners in the consultancy who had conducted similar projects. He admitted no systematic evaluations of the long-term impact had been made, or research evidence sought to support it.

"*If somebody challenged me and said why that is a good idea I would draw on the fact that 90% of private sector companies do things like that… And you know the other argument here is this programme is specifically for Bands 1 to 4, people who've been hugely missed out in the development chain and by allowing them to do something very different, taking them out of their day to day environment….. It's a real challenge for them and a real eye opener. Suddenly they come back going 'ah that's what it feels like to be a patient here because that's what it felt like for me to be a customer and people were ignoring me – I feel faceless'…. So to answer your question I suppose I would base it on experience, and yeah, having seen some amazing transformations in people before." (External management consultant)*

The Trust project leader was a Human Resources specialist, but did not seek any research evidence or information to confirm the management consultant's conclusions. However, he did point out that it "made sense" in terms of his academic study of human resource management, that the consultant had a track record of successful interventions at the Trust and elsewhere, and further, the proposed project won significant external funding and had attracted national interest. At a later stage, lack of tangible evidence of the impact of the programme in terms of patient outcomes was problematic when resources and wider co-operation were needed to extend the programme:

"You know, the only negative thing is that when people ask us whether we can prove that it's worked or not, I'm stuck." (Union member, Together)

In the absence of hard data on improvement in patient outcomes or staff satisfaction, the main "evidence" for the "rollout" was the experience of those who had undergone the training. A video was made of the consultant that included trained front line staff speaking enthusiastically about the benefits they had experienced, which was used to some effect. Moreover, lack of any other information on effectiveness did not detract from the project's intuitive appeal as this comment on visits from Human Resource specialists from other Trusts illustrates:

"They liked Together [project] a lot and they want to do it in their Trusts… So there's an opportunity possibly in the future to go there and help them start it up. So we talked about building a sort of tool kit for other Trusts to start it up. So, you know, the possibilities are infinite really." (Union member, Together)

Thus despite the absence of any systematic evaluation of the project, or its effect beyond the initial application, the experience was being drawn on as evidence by other Trusts.

In terms of the model, the case demonstrates a situation where initiation of a major project did not stimulate search for information beyond the advice given by a trusted intermediary. It also illustrates the significance of personal experience as the main information source at both the initiation and implementation stage of the project in a context within which long term behavioural outcomes were difficult to measure. The managers interviewed were accessing other types of information in their work – for example the Human Resource project lead used a specialist Human resource library and the Union representative frequently consulted a colleague who had completed an employment law Masters degree. However, in relation to decision-making around this project, the consultant was the information source and there had been no other information search performed. Internal management data (the staff survey) that can be compared with national benchmarks was used, but apart from that, stories about 'what works' were the main evidence used. Experiential learning, personal narratives and advocacy delivered by colleagues in an appealing visual format were employed to pass on information and convince staff of the efficacy of behavioural change. In this context, trust of the source was an important factor, illustrated by the involvement of an authority figure – the union representative, and co-workers to deliver the 'message' in order to avoid potential resistance from front line staff. Finally, acceptance of the "evidence" was ultimately attributable to the fact that it "made sense" to the receiver, rather than any research based validation.

4.3 Project 2: The productive operating theatre

The second project in the London acute Trust was aimed at increasing the efficiency of operating theatres as part of the strategy to redesign services in order to reduce costs. The "the productive operating theatre" was designed from a tool kit that is part of the 'Productive' series developed by the NHS Institute for Innovation (2011).

It is based upon "Lean Thinking" management models and experience from 6 pilot sites across the country where it has been successfully implemented. It consists of an information pack of modules that are followed prescriptively. The implementation method includes a series of training workshops involving staff investigating various areas of productivity and patient pathways using Trust data. The transformation team project leader did not seek out further evidence other than that provided in the pack, but he and senior managers involved visited two pilot sites to observe and discuss implementation. He also commented that he was familiar with the advantages of "lean" management practice as part of his MBA; hence his confidence in the project. The sole information source used by everyone involved in initiating the project was the toolkit- highly praised as providing "everything you needed to know all in one place".

"It's a tool kit. It was all done...and you read through it and there was nothing in there that didn't apply to our Trust…Very visual, very diagrammatic. You knew what section to go to was relevant to you…. The things that you've always wanted to do and people on transformation are doing now was done for you in one big document and you came out of it and you thought straight away I know what my actions are. It's all been risk assessed. I know the issues. And this is what we've got to do to fix it as opposed to start with a blank piece of paper and thinking where do I start on this? And thinking there's probably more out there that I don't know about. And how would I know about it?" (Estates/Facilities manager)

Managers also discussed the project at the implementation stage with a clinical Consultant within the Trust who was a member of the national body that had developed the tool kit:

"I'm quite lucky in that one of our anaesthetists is actually seconded to the Institute and has been involved with this at a national level so a lot of it in his head and I distilled that into the business case". (Theatre manager)

However, there was a need to convince theatre staff of the need to change and the process began with 'Visioning Event', where all theatre staff and senior management were released for half a day to listen to endorsements from the CEO and Board (to add authority), and to work in groups to share information and ideas for improvement. Internal management data on theatre productivity were collated to identify problem areas, but the IT systems were not in place to collect them, and the validity of data collected manually was hotly contested:

"*We actually haven't been able to produce any good robust information and unless it's robust, it's actually quite difficult to affect change with certain groups of staff. I mean, if you want surgeons to turn up on time, you've got to show them that perhaps they're not turning up on time; you've got to have robust data. The manual data that theatre staff collect, surgeons tend to contest quite a lot." (Clinician Theatre Manager)*

Particularly controversial was the proposal to centralise and standardise theatre supplies to facilitate more efficient use and to bulk buy equipment whereas hospital consultants traditionally chose their own. The manager who procured equipment had previous experience of the cost savings to be gained from such centralisation in a former career managing a hospitality chain, but had no clinical expertise: he therefore became an avid reader of the British Medical Journal, went to observe theatre operations, and read clinical evaluations of equipment in order to assess arguments for individual consultants' preferences. However, he also appreciated the need to personally explain the reasons for his decisions in order to get his rationale for change accepted:

"I actually go scrub up and watch operations 'cause I want to know where the stuff is that I'm buying, where it's going. I probably spend about 2 hours in there, rest of the time in medical support. Just gotta motivate them and make sure they get it 'cause procurement have a really, really,

really, really bad time...I've gotta get them to trust me." (Procurement Manager)

More generally, he cited his own staff as an important information source, for example, there was one staff member who everyone asked to do online search, and another who had accumulated invaluable tacit knowledge over the years:

"You know one of my buyers, she's been with us 28 years, and she's got a wealth of knowledge but was never asked to use it. I take her to every single meeting I go now, on site or not, and get her face up 'cause she knows – can't sit in her seat for 28 years and not know!" (Procurement manager)

The case demonstrates the way in which perceived information need varies at different stages of projects. The availability of a well designed toolkit limited the perceived need for extensive search at the initial decision-making stage. However, this did not guarantee acceptance of its implementation at the Trust where local adaptation was dependent on the interpretation of Trust data. The importance of having good quality internal management data, their reliability and acceptance as a valid information source, is underlined. Finally, the information search behaviour of the procurement manager illustrates the difficulty of identifying what is "management" as opposed to clinical information, when clearly they overlap and both impact on management decision-making.

4.4 Project 3: East of England QIPP Project

In the East of England Acute Trust, top managers were engaged with implementation of a Quality Innovation Productivity and Prevention (QIPP) project. The aim was to achieve target financial savings and to demonstrate improvements in service quality. These expectations within the QIPP project were imposed on them centrally and enacted locally through the regional Strategic Health Authority. The initial trigger for information search in this project was therefore external to the Trust. This externally-induced challenging task implied for top managers passively acquiring the need for information search. Their reaction towards this was to spend considerable time and effort to understand what was expected of them and how actually they would undertake this task. This resulted in managers searching for information through NHS policy guidelines and official documentation initially. During this process several interviewees referred to e-mails and NHS websites as an important source of reference.

"In the initial stages of the project I get information through the internet, Department of Health website or via Google I look at various NHS Trust websites. Lots of e-mails would go around, I'd say they are probably the main ways I'd get information. Certainly there is not a gap in information as I say…it's the opposite, there's too much information. It's not hard to find out what is going on." (Divisional Manager)

There were 8 clinician-managers and 5 non-clinician managers in the project selected by the Executive team. All managers interviewed sought information both internally and externally at this early stage. They were closely attached to their professional networks and consulted past colleagues or familiar/knowledgeable colleagues from other organisations. They also spent considerable time to read and understand what was expected in the policy directives as well as other relevant policy guidance. They then undertook a series of discussion meetings and sharing of ideas between themselves as well as in their own specialties, so that they would agree on some common understanding of the top down policy documentation.

Following the informal initial stage, the information search and use activity became a routine and formal process where each manager was expected to regularly report and discuss progress. These formal inter professional weekly discussions indicated that some reorganisation of selected clinical processes was essential and supported by clinician-managers in the project. This was a challenging task. Managers, particularly newly appointed ones, with specific responsibilities in relation to the project described themselves in 'immediate need for information'. A service manager with 20 years of clinical background in Nursing expressed her initial reaction to lead the department for a redesign responsibility as follows:

"When I was first appointed and got involved with the project I was so new in the role, had so much to learn immediately and landed right in the middle of business planning for redesigning the service. I have not had much time and got so frustrated. I think I've come into one of the departments in particular where they've had lots of issues. The service development for a number of years that haven't been successfully put through, and I'm getting on the tail end of that frustration while still struggling to learn all about how my patient target list works, how the processes for outpatients work, and learning about all the information reports that we have so that I can use them more proactively." (Divisional manager)

At the stage of service redesign managers were in a state of anxiety and were having difficulty in convincing staff of the need for change, and seeking information to justify it. Service leads who were clinicians were more inclined to make use of internal management information and mentioned regularly consulting a database that they called 'internal management intelligence' that non-clinician managers did not consult to the same extent. A clinician manager described the IT services of the Trust as a 'superb' information source:

"The information services department is absolutely superb. In fact I put them forward for our staff awards because during the project if I ask them for a report or something, they'll actually ring up and say 'yeah we can do that but have you thought about x,y,z? Would it be helpful to include this, that or the other?' and then the way you get it presented is you can mix

and match, just tick and un-tick items …I just can't praise them enough…" (Divisional manager)

These clinician-managers had to relieve themselves of the daily clinical activities that they used to be heavily engaged in and start to undertake very different responsibilities as change managers. Some inevitably felt it difficult to adjust to this new role. One newly appointed service manager for surgical specialties commented:

"I'm not going to start to get any satisfaction to the role if I cannot actually make a difference. And I think that's to do a bit about moving from a clinical role into managerial one you know… In my old role the lead would go off, oh 'ZX you've got a really sick patient can you come and help, junior doctors are struggling, we don't know what to do', and you can go in there, you'll be absolute that you know, you're the expert, confident, know what to do, it feels good, it's a buzz, and I haven't had any buzz since I've been appointed as a manager to the department… I used to save lives you know..." (Service manager, surgical)

Professional differences in relation to notions of information search and source were apparent in this case. In addition to reliance on internal data bases, clinician managers were trying to find the exact piece of information at the moment that it was needed and then use it effectively to achieve desired outcomes, just as they might in clinical practice. A CEO's comments in relation to different attitudes of clinical and non-clinical managers were as follows:

"Clinician-managers are wonderful in the sense that they find practical quick solutions to the problem there and then. But what about the long-term view? How will this impact us a few months or years from now on? We need a balance between now and future…" (CEO)

They were frustrated by the nature of managerial practice where information selection and use could not be characterised as linear and quick but rather as a non-linear, multi layered, dynamic and political process.

"We prepared the report and put down what needs to be changed but when it was discussed at the group meeting it was decided that the change might not be possible. You need to consider impact on other services, changes in infrastructure, what might happen in a few years if we do this change. Then it becomes multi layered and the management intelligence could not provide all the answers." (HR manager)

This case demonstrated some of the differences in attitude of clinician and non clinician managers towards information search and use. This highlights the fundamental differences in perceptions and professional views of information. For a clinical manager a piece of information could be considered as vital and sufficient to drive decisions as they are highly motivated by strong and quick decisions where outcomes could be achieved and measured regularly. On the other hand, for non clinician managers realities of organisational context, long-term and short term concerns associated with use of evidence made information search and use a

lengthy, iterative and political process, where difficult to measure outcomes are usually delivered over long periods of time. There seemed to be a need to

recognise these and keep them in balance in organisational settings so that a healthy and supportive information search environment could be maintained.

4.5 Project 4: Peer Support Workers in the Mental Health Trust

The external context for this project was a changing culture of Mental Health Care in the UK promulgated in a series of strategic initiatives from the Department of Health designed to improve the way in which health and social care are delivered (DoH 2006b, 2006c, 2008c; Skills for Health 2006; Pietroni, Winkler and Graham 2003; Wilson, Buck and Ham 2005).

Strategies for "recovery and social inclusion" required mental health services to move away from a reliance on medication and direction to one of supporting service users to self-manage their condition in partnership with professionals across the spectrum of health, social and community care. The case study Trust was ahead of national policy in implementing Recovery and Inclusion concepts, and change in the external culture and national strategy enabled rather than triggered the innovative project that was the focus of the interviews. The innovation was to employ current or recent service users who were "experts" in managing their own long-term condition to deliver mainstream services. These 'Peer Support Workers' would replace up to 50% of clinical staff leading to cost savings of 20% over 5 years, and perform a wide range of roles from case management and service-user support duties to training staff and service users. The project was led by senior board members, senior staff including consultants, the Head of Nursing, Head of Service Development and other members of the Service Development Team. They were a dedicated and tightly knit sub group within the Trust which could be described as a "Community of Practice" (Lindkvist 2005 p1189) – individuals who through working together had developed a shared understanding of what constituted good mental health care and how it is best delivered. At first sight there appeared to have been little systematic search for evidence on which to base this radical proposal. The final decision to embark on the project was made after senior members of the Board and project team visited a mental health facility in the USA where 70% of staff employed were peer support workers. There had been very little systematic evaluation of the outcomes of such experiments available either in the USA or the UK. However, interviews revealed that the proposal was the result of a complex, long term process of accumulating "evidence" and decision-making. A small number of senior managers at the Trust with clinical backgrounds had been interested in the principles underpinning Recovery for many years. One explained how she had gradually acquired bits of evidence from personal observation and working with service users,

conferences, overseas study tours, international experts, research from and visits to Australia and Canada etc, and a UK network of like-minded practitioners. She gradually became convinced of the efficacy of the approach, and in particular of using the expertise of service users to deliver care; but she had to wait many years and for a sea change in national policy and culture before such evidence was considered relevant and accepted by colleagues. Nonetheless, she eventually became a nationally recognised expert on the topic through her advocacy and publications, and was a member of the national body that developed the strategy for recovery and inclusion.

"*We believed that the expertise of lived experience is critical to running mental health services. So back in 1994, I set up something called the user employment programme, which was a programme explicitly designed to help people with lived experience of mental health conditions to get ordinary existing posts within the Trust…. Now it seems rather ordinary but at the time the English National Board of the United Kingdom Central Council for Nursing, Midwifery and Health Visiting (UKCC) said it was lowering the status of the nurse, community care and the social work profession said it was a danger to clients… Now of course it's what's everyone's supposed to be doing." (Service Director)*

The proposal to employ professionally unqualified service users on the basis of expertise in "lived experience" is radical even in this new climate, but the Trust had already experimented with employing professionally qualified service users, and more recently, unqualified service users in an externally funded pilot project. The pilot had been evaluated as part of an academic research study. Thus the roots of the decision to use Peer Support Workers in mainstream services go back over many years and were based on the personal experience of a group of Trust staff who had become known nationally as "experts" in Recovery, and Trust experience of employing service users. The overseas visit to observe such a system in action was the final bit of evidence required to convince senior managers and Board members of its operational viability:

"That was a kind of hearts and minds element for them to actually see it, touch it, feel it, and get a real sense of it. And be able to quiz the senior management there to kind of say 'that's very nice but we still surely have targets to hit' and really be able to talk through those angles on it." (Senior Manager)

The implementation stage required information search and dissemination to overcome potential opposition from clinicians, other professional staff, and from service users. A two page summary of the academic research literature supporting the proposal was targeted at clinicians and other professionals. The team, however, recognised that they had to use different methods of communication if they were to persuade all stakeholders:

"*Certain things work for certain audiences. So medics you know, research evidence will be their favourite thing that will work for them. For social workers they have different motivations, so it's kind of working out what*

are their motivations and what's going to help them in terms of understanding this. The same with occupational therapists, and so with users and carers... you don't go doing full blown research presentations to users and carers, unless you really want to wind them up." (Senior service manager)

Second, was the employment of current service users as trainers to "educate" staff and service users, and provide an intimate understanding of what the new recovery approach to care means for their roles and relationships:

"A lot of people who work in mental health don't see people when they have recovered and a lot of people don't go round saying, "Oh by the way, I had a mental illness," because it's not the kind of thing you tend to say. So people when they see me looking normal they sometimes have difficulty in believing that I was ill, that I was actually in hospital." (Peer support educator)

This case highlights the fact that substantial research evidence on which to base innovation is often not available, especially in the case of a pioneering project of this nature. Managers did seek out research, and indeed had conducted research and published accounts of their experience which had gained them national reputations as experts in the field.

"Believe me nobody shares more than I do. I present, I mean this year I've had 3 journal articles, I've got 4 collaborative research papers, 4 opinion pieces in my plan at the moment, which we do lot of to raise people's awareness of policy and how to put it into . I feed back to the AHP lead; every strategic health authority has an AHP lead also I feed back to the managers about what we're doing …So we share as much as we can." (*Senior manager therapy*)

However, while all those interviewed were heavily involved in passing on information in the Trust and nationally, they also acknowledge that there was a significant political filtering process by the Board that determined what was disseminated throughout the Trust:

"Lots of information comes in all the time, we're overwhelmed by the bloody stuff, and then it gets filtered through. What gets put down the system, the recovery board are gonna play quite a key role in that…In the filtering element. And also to select the messages from the information they choose to use. The board are pretty keen in terms of what does and what doesn't get passed on information wise and how it's used." (Senior manager)

Much of the information presented as evidence to support innovation in this case is based upon the 'lived experience' of service users and on managers' personal experience of working in mental health, rather than systematic investigation. One interviewee explained that for her this was the best "evidence" and that randomised controlled trials were incapable of capturing the complexity of mental health problems, a view shared by several colleagues (the same observation as that of Gabbay and Le May

2004, on the use of evidence by primary care workers). Another noted that, although clinicians liked research evidence, "they do not believe it until they see it." Evidence, therefore takes a variety of forms, often working in combination.

It also illustrates the long-term and complex nature of decision-making, the variety of what constitutes "evidence", and how bits of "evidence" accumulate over time. Culture and context are shown to be important determinants of what information is considered to be valid, useful, relevant or acceptable at any one time: change in mental health culture, in terms of values and beliefs about what constitutes good quality care and the rights and role of service users in the design and delivery of care, was a significant factor in giving legitimacy to certain types of "evidence" supporting the case for change.

4.6 Project 5: PCT Commissioning

The final project concerns the work of PCT commissioners, knowledge managers and public health specialists from a London PCT commissioning arm. Owing to the turbulence round these organisations and consequent difficulty in accessing managers, further interviews with a knowledge manager and commissioner in an East of England PCT engaged in similar activities were included. In London, the initial focus of interviews was part of a 5 year overall strategic plan aimed at "Transforming Healthcare" for the locality in line with Darzi recommendations (Oborn, Barrett and Exworthy 2011; DoH, 2008). The objective was to improve local commissioning of services to better match the needs of the local population and increase cost efficiency. This was done by close monitoring of local needs through public health data analysis and identification of 8 key care pathways. The project leaders and the Director of Transformation worked with commissioners, project managers and clinical leads including GPs who collaborated on the various elements of the project to achieve world-class local commissioning of services (DoH, 2007). In contrast with the previous projects, data collection, analysis and evaluation were at the centre, if not the primary task of the PCT staff interviewed. In many respects their roles were akin to those of a researcher and involved the access and secondary analysis of national and local data sets. They were, therefore, large consumers of information of various types, including academic research, but drew particularly on public health data sets from the London Observatory, comparator websites such as Dr Foster and ONS, as well as Trust data from RIO and SUS, and other provider performance and outcome data. They also collected their own data in collaboration with Trusts and GPs, and two had published research findings in peer reviewed journals. Those qualified in public health had undergone rigorous training in information search and use, as had the knowledge managers, but they still experienced problems in finding what they needed:

"It's all over the place and trying to keep on top of it it's very hard ... there's never anything in one place. The health observatories have been

trying to work towards that quite a bit so they just developed a new test version where they have all their practice information in one place and that's a really good start but it's not enough. I don't think it will ever." (London commissioner)

"Time... What I need is information available in an easy to understand, quick format. Cause I get bombarded with so much information, nobody can process it all, from activity to waiting lists, to targets to finance to patient experience, patient outcomes to Department of Health to research...you just can't do it. It's impossible." (GP PCT panel chair)

The East of England PCT also expressed frustration with the lack of information sharing from key stakeholders when trying to assess local needs. Good quality input from Hospitals, GPs local and district councils and the police was sought but was often not available. For example:

"I would argue that we don't actually have a lot of the data that we need (to make the best decisions) so for instance we struggle to get a hold of GP data, a lot of the GPs use different systems, they just do not share it with us, we have to pay for it in certain circumstances. The hospitals, you know they have very expensive data systems, and hospital data they don't share, like the Dr Foster analysis they keep it for themselves." (East of England PCT Commissioner)

They relied heavily on each other's expertise and made use of formal and informal networks:

"My last role was continuing care we had network meetings through NHS London, would link all 32 commissioners in London together, quarterly. We'd get together, discuss the hot topics, and just know one another. So you could pick up the phone, you could have a round robin. Got this situation, has anyone dealt with this before? What's the outcome? And, is that the best?" (London PCT Commissioner)

These networks were breaking down as PCTs were being amalgamated and public health staff re-assigned to local authorities, and others were leaving in anticipation of PCT abolition. In both PCTs staff did not have library facilities but commended the services of a librarian from a local Trust who visited the PCT premises once a week. In short, the culture was one where research based evidence was an expectation of any proposal put forward.

Staff in the London PCT were part of a recently formed commissioning arm and were still developing their roles. One commissioner described the job as:

"*Being responsible for four or five pathways, service improvement, service re-design work. Then on top of that, finance, really tidy, keep control of the budget, which is difficult, then just the day to day you know commissioning cycle work, analysing need, commissioning, contracting, contract monitoring and evaluation."*

The primary emphasis by PCT managers was on data collection and analysis, but responsibility to disseminate was also acknowledged:

"I think my main purpose is to make sure that I get the knowledge out there because you can work behind a computer, getting a lovely understanding of the local population without necessarily getting other people to be aware of it, so I think the key thing is making sure that this knowledge is going to transfer. And you have to have different ways of doing that: you have to get out there and talk to people and you have to make presentations and I can't say by any means that we have excelled on that yet, but I think we're working towards you know making that the bread and butter of what we do." (East of England PCT Commissioner)

The GP chair of the London commissioning panel interviewed described a search process much more in line with a rational model of search describing how their proposal for long term care was developed:

"It's very difficult to get a good baseline for your evidence because you're relying on NHS collected datasets which are inevitably not particularly robust and so much of the evidence is descriptive and evaluative rather than empirical, which is partly why we started by collecting our own evidence…

..We started with an empirical data collection exercise to look at patient flows to various different outlets and collected that data and analysed and tried to understand what that told us. We then looked at examples of how care is currently provided and looked at the data that flowed from that…. We commissioned the literature search, but actually we searched, we extracted all the information we could from the literature and we did a sort of search of the grey literature by commissioning a study of innovative practice elsewhere and then we pulled that all together into a proposal." (GP chair local commissioning panel)

A London commissioner described his role as providing evidence of patient need:

Every single commissioning decision is evidence based on need. So if you're commissioning for one individual, it's what that need of that individual is. If you're doing a population, it's what the needs of the population. And that's your evidence?" (London PCT Commissioner)

"If you're writing a business case then I would expect to see some evidence base within a business case…. you know what's been out there before, what's been successful, how has it been successful, has it been cost saving, has it improved patient experience or patient outcomes. There's a whole raft of different things you can use for evidence. But you know I wouldn't want to see hundreds of different papers but we've people who can highlight one or two within a business case and I would look into that." (London PCT Commissioner)

However, this did not guarantee that commissioning decisions were based on the evidence based proposals provided by the PCT. Final decisions were made by panels consisting of different stakeholders, each with a different perspective, and bringing different types of information into the group decision-making process:

"It was a group… of about six people, we had a clinical lead, I had the pathway Director there, a commissioner, and we had two people from public health, and then I had one person from family care. So it was about everyone bringing something to the table: this is what we have to do, and the commissioner goes like 'no we can't do because from a paying point of view this is how it's done'. The commissioner is trying to save money, then the clinician's saying 'no this is what the patient needs'…. It wasn't me making my own decisions; it was a group making decisions. Most of the decisions were by the group, I wouldn't say by any individual." (GP panel lead London)

Furthermore, acceptance also depended on who sponsored a proposal, as one frustrated commissioner commented, "if you want to get something accepted get a 'white coat' to present it, not a 'suit'."

The PCT case stands out in contrast to the others in that information search and analysis are a central function for managers and for the organisation. Their very high need for accurate information generated extensive and systematic search and data analysis activity. This was apparent in both the commissioners and the public health specialists; the latter finding is at odds with Forsetlund & Bjorndal's (2002) finding that that public health physicians in Norway did not use research evidence. The PCT staff interviewed were specifically trained in research skills, and their role was akin to that of a researcher in many respects. However, despite advanced search skills they complained about the quality of information available, and sometimes of not having access to the information they required. For example, they were tasked with assessing health needs in their locality, but there was no system for intelligence collection and sharing across the community amongst the public and voluntary sector service providers and consumers. The case also underlined the highly political nature of the commissioning role. Evidence based proposals could be rejected or revised in negotiation with stakeholders who brought different kinds of evidence to the bargaining table. Finally, with so much activity devoted to information collection, analysis and sharing, they could be characterised as an information intermediary organisation.

4.7 Discussion

The analysis of the cases has revealed a wide range of search behaviour. In this concluding section, we discuss the implications for models of information behaviour.

4.7.1 Search process

Niedźwiedzka's (2003b) model of information behaviour, discussed in the literature review, is set within the context of decision-making and assumes a sequential process of search starting with an individual user identifying an information need, a decision to seek information, either by the user or through an intermediary, information search, filtering and processing, and

finally, application. Our analysis, however, revealed a much more complex process. Firstly, the process was ongoing, interactive, and with no apparent pattern, rather than logical and sequential. It was often difficult to identify an event or decision that triggered information need, or a beginning or end to the process of information search and application. Change programmes involve a continuous decision-making process which does not end at the decision to apply innovation, but continues, becoming more distributed and diffuse during implementation. While patterns are difficult to discern, there appeared to be different search behaviours and sources being used at the initiation, design or development stage, and that of implementation, with the latter being much more focussed on internal Trust data and visual and experiential evidence of "what works".

Second, distinction between information that is applied in decision-making, and that found in the process of routine up-dating is in practice a false one. Decisions made over time may facilitate or constrain the scope of decisions that follow (Lukes 1974). The process of information search can also seen to have a similar complexity: it takes place over a significant length of time, and often starts well before any decision-making related to it is perceptible, as in the case of the mental health Trust's decision to employ service users as permanent employees. There had been a gradual build up of knowledge and experience over time, for both individuals and the Trust, and from a variety of sources; no one of which in itself may be seen as the "evidence base" for specific action, but which cumulatively created tacit knowledge and understanding on which decisions were made (or not made) with little further search. Moreover, as we have seen, a great deal of information search and transfer is not made to inform decisions but to persuade, instruct and even counter the formation of alternative views. Indeed, managers' work is not simply about making or taking decisions (and it is hard to point to examples of such instances), but rather to persuade and encourage and, in many cases, to reach consensus (see Walshe and Rundall, 2001).

4.7.2 The user

A great deal of the research on managers' information behaviour has focused on the individual decision maker as user (de Alwis et al 2006). However, it was apparent that decision-making and information search on these major projects was a group rather than an individual activity. Groups could be formally constituted boards, committees, project teams, or, informal permanent or temporary subgroups working together on a particular task or issue. In short, decisions of any significance were rarely made alone. The process of information gathering and exchange within groups was also shared with contributions from members ranging from reliance on a single individual to full scale consultation exercises. The nature and composition of groups had implications for information seeking behaviour in terms of deciding whether and what type information was needed, where to look for it, and who was to search for it. Filtering then was apparent even before search commenced as well as in processing and selecting the information after collection as in the Niedźwiedzka model.

Views about what constituted good evidence, moreover, varied with closely knit groups with shared values narrowing search, while those such as the PCT GP panel comprised diverse stakeholders brought in a wide range of different types of "evidence" into the decision-making process.

4.7.3 Intermediaries

The Niedźwiedzka model assumes that information search may be performed by formal or informal intermediaries who are not involved in the decision-making process. Formal intermediaries are generally librarians, information or knowledge managers, but can include researchers and consultants. With a few exceptions, we found surprisingly little spontaneous reference to librarians, information specialists or knowledge managers. When asked directly, response was very mixed, some reporting not using them at all, a few citing their librarian or in the case of the East of England Acute Trust, their information manager, as being extremely helpful. This did not seem to be related to resources or physical location, but rather to task (as in the case of the PCTs) and individual preferences and personal relationships with librarians. External management consultants were rarely used, and with the exception of the Together case where the consultant had a pivotal role, the views on and experiences of using consultants were very negative. Academic researchers were rarely mentioned, and assessments of their value varied, with one PCT manager recounting the problem of employing an academic team who missed vital deadlines.

Formal intermediaries' roles are easily identified. However, if informal intermediaries are defined as individuals who find and pass on information to others, then virtually all of our interviewees qualified. The extent of this activity, however, varied enormously by individual and role; it could be argued that for the PCT commissioners and public health specialists knowledge exchange was a formal part of their role, and transformation team leaders were particularly active. There were also people acting as "change champions", who were boundary spanners, or centrally positioned in social networks who were also heavily involved in knowledge exchange (Currie, Finn and Martin 2007). In most cases there were inputs and exchange from several members of the teams around the projects. There were formal knowledge sharing arrangements, as in the QIPP project committees, the productive operating theatre visioning events, and various forms of consultation and negotiation. However, much was informal. There was a tendency for some individuals to be more active, and who were relied on to supply information either because they were considered to be an expert, were regularly engaged in active online search, or were members of external networks or national bodies. They had not had a particular role in relation to information provision or any particular training, profession or personal characteristics apart from a willingness to help others, natural curiosity or emotional commitment, but had developed a reputations as "the person to ask". There are some indications from findings of the Q sort analysis that individuals known to be attending management courses were likely to be targeted as an information source.

Given the focus on major change programmes, a relatively high level of knowledge brokering might be expected, but several individuals were also actively involved in knowledge production. Managers in the PCT and mental health team published widely in academic and professional journals. These individuals were not only knowledge brokers but also producers of information and therefore a "source" in their own right. The concept of knowledge intermediary was further blurred by the fact that "people" were the most frequently cited source of information. Information was harvested from them internally within the Trusts either through the formal committees, meetings and consultation and negotiation exercises described above, or informally through talking with colleagues, superiors, subordinates or service users. External contacts with past colleagues, people with similar roles in other Trusts, academic and professional experts, and membership of formal and informal networks of professionals, were significant sources of information.

4.7.4 Accessing information

The Niedźwiedzka model identifies three means of accessing knowledge; the users own reference collection, libraries and information centres, and computerised search. In these cases, there was little physical use of libraries or information centres. In contrast to research published a decade ago (Walshe & Rundall 2001; Kovner 2005; Innvaer et al., 2002), that concluded that managers do not make much use of online information, all managers were using intranets and online search as part of daily activity. One reason why managers do not to use library services is that they can access information online for themselves. This reflects changes in the role of libraries which are explored in Chapter 6. The model also understates the importance of verbal and visual modes of accessing information. As explained above, people were a major information source and "seeing it for yourself" – a very influential form of evidence. Site visits, observation, doing and experiencing it, and surrogates for experience, such as narratives, videos, and film, were all employed to good effect. Even service users and frontline staff were used as exemplars, and to tell the story of their own "lived" experience.

4.7.5 Sources

Initially, we asked interviewees to discuss the information that they used in their role as a manager as opposed to their profession. In fact, few referred to using general management sources or research evidence, and not many more to those relating specifically to health management. The exception was some specialist managers in finance, estates management and Human Resources who referred to using professional journals and websites. However, it was pointed out that a distinction between clinical and management sources was not useful. For example, new clinical procedures often have implications for the design and delivery of services, staff skills and utilisation, whilst clinical data on patient outcomes or drug use were cited as essential information for performance and financial management.

Thus a distinction between management and professional information was not made in practice.

Interviews revealed a great deal of ongoing personal search activity as well as that directly related to the projects. Sources were many and various, including information gleaned from reports, professional journals and websites, contacts with national and international experts both practitioner and academic, and networks of individual practitioners and colleagues. There was a great deal of use of internal management data, which varied in quality, and some use of national benchmarking data. Only half the managers used NHS-specific sources, such as the National Institute for Health Improvement or NICE, and only one a general management journal, and there was not much reference to academic research. The choice of source appeared to be determined by the task, individual experience and professional training. For example, specialist managers used their professional websites or libraries, but pointed out the problems of transferring practice derived from private sector research and experience into the NHS context. The PCT commissioners and information managers also relied heavily on Trust national data sets, and benchmarking websites. Beyond this however, no pattern was discernible in terms of task or type of project. Paramount, however, was personal experience and direct observation of "what works" for them. Judgements about how and what to do were then made in terms of what "made sense" in terms of this accumulated knowledge and experience (Weick 1995). A significant element of such experience was gained through formal education. Most managers had undertaken postgraduate study, including in some cases an MBA and specialist health management masters. Five individuals mentioned that they drew on their management courses for theoretical models rather than direct research evidence, and acknowledged the importance of having embedded an analytical perspective – a different way of approaching a problem as a result of their study. For almost all managers postgraduate programmes were the only source of training in terms of information search. However, it was apparent that even in the cases where radical change was proposed few individuals engaged in extensive or systematic research for evidence.

4.7.6 Selection and processing

Selection was an ongoing process apparent at every stage not just after collection as the Niedźwiedzka model suggests but through to application. Managers complained of time restraints and having too much information, so a great deal of selection was taking place, starting with the decision where to search and what to search for, and who was to perform it. Assessments of what constitutes good evidence and sources varied by experience, group culture and task. For example, there were clear differences between public health specialists, commissioners and medical staff, who used more research and data-based sources than those in management roles seeking evidence of operational viability.

The majority of those we interviewed were senior managers either leading or on a group of managers leading change projects. The process of change management is essentially political, and the way in which they used information reflected this. This manifested itself at all stages in the decision-making process. The scope of search was constrained by what was politically achievable or acceptable: disagreement provoked search for particular types of information, and the medium for delivery was carefully chosen to transfer it. Thus search was selective, and information collected was sieved, repackaged, reframed, negotiated and adapted in order to propose something that was politically viable within the current context.

The mode and method of information transfer was also selective. The authority and credibility of the information communicator was said to be critical. Senior budget holders were seen to be particularly influential, especially at the early adoption stage of projects, as was endorsement by prominent national figures. However, other influential individuals were also seen as credible sources. For example, the Together project management group included a well regarded union representative who was the main conduit for information to frontline staff, while the PCT managers recommended getting a "white coat" (doctor) to present evidence rather than "suit" (manager), if you wanted to convince doctors. The type of evidence used also varied according to target group. So for example, the Together team used anecdotal accounts by "model" colleagues to persuade front line staff to improve customer service; medical staff were presented with a written report based on research evidence, and senior managers at the mental health Trust to a practical demonstration of "what works" by visiting an innovative Mental Health facility. Some of the most active search and explicit use of information, therefore, came at the implementation stage of the project in order to overcome any resistance, and to motivate as well as to inform staff on how to adopt the new systems.

The central role of people as information sources in this political environment opens up the prospect of information gate keeping and manipulation to serve the interests of individuals or groups. However, while an important aspect of information behaviour, it was not the case that all selection was politically motivated, and previous experience, professional values, education, task and time were all factors influencing the process.

4.7.7 Application

The fact that there is no beginning or end to information search and that information is being accessed, filtered, processed and transferred at every stage makes it difficult to identify whether it is actually used or applied. For example, even in the apparently straightforward case of the Productive Theatre toolkit there was significant information search, local adaptation and negotiation during implementation, a process which is still ongoing. Further, knowledge and understanding is built up over time, and drawn from multiple sources, so pieces of information may combine and have long term impact as in the case of the Recovery project. As the Niedźwiedzka

model suggests, such knowledge can stimulate further search, but our research suggests it may also constrain and direct it.

As explained above, whether information is accepted as evidence, and whether it is acted upon is influenced by factors such as the overall culture of care, organisational, professional and group subcultures. A multiple and diverse range of internal and external stakeholders including, increasingly, the service user, have to be considered. Moreover, not only do these different groups have different values and standards for assessing evidence, but its acceptance or rejection is decided by political expediency, the need for consensus, and assessments of "what works". So, for example the carefully constructed research based proposals of the PCT commissioners could be disregarded in the politics of the commissioning process, or countered by stories based on GPs' personal experiences. Tracing the impact and usefulness of any single source consequently is, in most cases, impossible. The overall conclusion, therefore, is that the status and use of evidence in the context of management decision-making is very different from that of medical practice. Information based on high quality research and evaluation is only one of many considerations to be taken into account in the decision-making process.

4.7.8 Contextual variables

Most models of information behaviour start with an activation mechanism – an event that triggers information need in a decision-making context. In this study it can be seen that there were various triggers both internal and external to the Trusts. However, most can be directly or indirectly attributed to external pressure from the Department of Health (DoH) to innovate in order to increase productivity and improve the quality of patient care. Within this overarching external context, immediate triggers within Trusts were various, such as QIPP targets, responses to a staff survey, and individual enthusiasms. As this study focused on major change programmes, the gap between what was known and what information was needed was always evident. However, gaps did not necessarily mean that significant search took place, or change what to look for in terms of evidence, how search should be carried out, who should do it and how much activity should be devoted to it. A range of potential intervening variables are suggested in the literature to account for this variation. Some were found to have effect in the case studies and this question is pursed more systematically in the findings of the national survey below. These factors are broadly categorised as external environment, organisation, group, individual and task.

The effect of external factors such as the Department of Health strategy, the changing culture of care, and the interests of external stakeholders were apparent in the cases. Given the small number of Trusts, organisational differences which had impact were difficult to identify. However, the case of the PCT stands out as having an organisational culture that supported research based decision-making and enquiry. There were instances of the influence of groups, communities of practice and teams in terms of the value

attributed to certain types of "evidence" and what was considered acceptable and relevant. Interviewees attributed significant differences in the approach and culture of the professions, with doctors requiring research-based evidence, and personal experience of "what works" said to be more important to managers with responsibility for operational management, but analysis of interviewees' own reported behaviour found that they rarely conformed to the stereotypes suggested. There were large differences between individuals. While the majority were active users, they varied in the amount of search, type and range of information sought and selected, most particularly, in their use of research, external, and international sources. At one end, some engaged in very active search and even knowledge production, while at the other, it was confined to internal data, immediate colleagues and professional updating. Such differences were not related to personal characteristics, such as gender or age, however, some individuals were motivated by personal curiosity, and emotional investment in the issue, as well as the demands of task at hand. Information seeking and use was a significant expectation of some roles or jobs, especially those leading transformation teams and in the PCT commissioning arms. Librarians said that managers attending courses were most likely to use their services.

This supports the view that task is a significant factor. However, it was expected that if the task had strategic priority, was more complex, and the outcome was risky or uncertain, it might stimulate more search, but there was no apparent connection in our data. People flagged up time and budget limitations as being important. In two cases, information use seems almost serendipitous – the presence of the trusted consultant in the Together project, and national experts in the cases of the Productive Operating Theatre and Recovery projects.

Finally, stakeholder interests of various kinds could be seen to stimulate information search for specific types of evidence. The political nature of the decision-making process and its consequences for search, therefore, was evident, although it should be recognised that the projects constituted examples where stakeholders had significant interests in the outcomes.

The in-depth qualitative studies have revealed a great deal about the processes involved in information behaviour, and revealed them to be more complex than typical models of information search suggest. However, the cases were focussed on situations where high need and active search might be expected, and many more are required to allow for generalisation. This was the purpose of the national survey.

5 National survey of health managers

This section of the report summarises key findings from the national survey of health managers that was conducted between February and July 2011. The survey was designed to be completed by any Trust employee with management responsibilities as all or part of their job.

The analysis of health managers' information behaviour and use is based on replies from 2,092 managers. As noted earlier (see Section 3.3.4), respondents who were ineligible because they were not managers and/or who gave incomplete survey responses were excluded from the analysis.

While the case studies set out to discover how managers use information in innovative change projects, one of the main conclusions is that acquiring and using information is an on-going process and not one that is suddenly triggered by the need to make a decision or manage a service innovation. The survey, therefore, set out to understand the broad approach managers take to using information and to explore what influences their information behaviour more generally.

The survey questions were based on the case study findings and related to the process of decision-making as outlined in the Niedźwiedzka model, which sought to identify need for information, the decision to search, who performed the search, the sources, how information was selected and what was applied. The findings below are therefore organised under these headings. This is followed by a broader consideration of attitudes towards information behaviour. We also report on cross analysis to explore the relationship between aspects of information behaviour and potential intervening variables related to person, role, task, and the organisation. The section starts with examining the profile of the respondents before turning to examine these topics in detail.

5.1 Profile of respondents

5.1.1 Job role and personal characteristics

The Niedźwiedzka model and other literature identifies role and personal characteristics as potential contextual influences on managers' search behaviour. In particular, Job Role has been identified as a key differentiating factor in information use in the literature, and we employ it in the analysis of the findings throughout the report. Half the respondents worked in clinical roles with the five largest staff groups, making up nearly three-quarters of the respondents, being:

- Clinicians (Nursing/midwifery): 553 (26%)

- Clinicians (Allied Health Professional): 330 (16%)
- Specialist Managers[2]: 329 (16%)
- General Managers: 163 (8%)
- Information/Knowledge Managers and Librarians: 153 (7%)

In addition, there were 104 (5%) Clinicians (Medicine) and 88 (4%) Transformation/Change/Service Development managers among the survey respondents. The small number of Scientific/Technical staff were all based in Acute Trusts.

A complete breakdown of the number of survey respondents by main job role and salary band is shown in Appendix Table 1. Respondents in bands 8c, 8d and 9 and Medical and Senior Manager/Directors and certain Non-Medical staff not in PCTs were combined into a single group for analysis purposes. Overall, nearly half (49%) of respondents were in Band 8a and above.

Thus respondents represent a broad cross-section of occupational roles and were mainly at middle and senior management levels.

In terms of personal characteristics two-thirds of respondents were female and nearly three-quarters (72%) were aged over 40. Although the proportion who were male increased with salary band, the majority (52%) in bands 8c and above were female.

The age and gender profile of respondents did vary by job role and analysis was carried out to see whether, when job role was controlled for, age or gender influenced replies to certain key questions. This analysis, while not exhaustive, suggested that the impact of gender and age on replies to key questions was very slight, which is consistent with the little research that has been conducted in this area.

5.1.2 Educational and professional background

Education and professional training have been identified in the literature as major influences on how managers approach information search. Key points to note about the respondents are:

- Half had a postgraduate degree and nearly a quarter (23%) an undergraduate degree as their highest educational qualification
- 90% of respondents had a professional qualification with nearly a third (32%) having a managerial, financial or HR qualification
- One in six (17%) respondents had more than one professional qualification with 40% of those with a Managerial/Financial/HR qualification having another professional qualification

[2] Specialist managers include: Estates and Facilities (60), Finance (89), HR (56), Training (41) and others in similar roles (83).

- 69% of respondents had had some management training with the likelihood of having had management training increasing with salary band. Respondents in higher salary bands were more likely to have had management training at postgraduate level
- The vast majority (89%) reported having had some specific training in how to find information with 70% having had specific training in how to find information as part of their professional training/education and an equal proportion having had help from colleagues. 41% had been on a short training course or workshop
- 40% had only worked in the NHS (with those in the main clinical groups being more likely to have only worked in the NHS), while a further 11% had worked in only one other sector, but nearly half (49%) had worked in two or more sectors with nearly all (92%) this group having worked elsewhere in the NHS at some point

These findings indicate that the managers participating in the study were well educated and that most had had some form of training in information search and in management. They also suggest that a significant number were hybrid managers with both a clinical professional qualification and a management one. Further analysis also found that a quarter of those with Nursing qualifications were no longer working as Nurses and that 11% of those with Allied Health Professional qualifications were also no longer in clinical or scientific/technical roles. However, less than one third of respondents had undertaken in-depth study of management leading to a qualification, and this might be expected to influence their search behaviour in terms of, for example, selection and interpretation.

5.2 Information need

The first stage of the Niedźwiedzka model is identification of information need. In this section we look at need in terms of the importance of information to respondents, and the factors associated with it.

5.2.1 Importance of information

In order to understand how great a priority was finding information, both for themselves and for others, respondents were asked:

- How important is finding information as a priority in your work?
- Is finding information for others an important priority in your work?

Replies were rated on a six point rating scale from not at all important to extremely important.

Table 1 shows that virtually all respondents rated finding information as an extremely or very important priority in their work with half rating it extremely important. Finding information for others, an example of a knowledge-brokering role, was also an important priority for all but 10%, although only 29% rated it as extremely important.

Table 1. Importance of information-related activities: Percentages (N = 2,092)

	Extremely important	Very important	Important	Quite important	Not very important	Not at all important	Not answered
Finding information as a priority in your work	50	36	11	2	1	0	1
Finding information for others	29	38	22	7	3	0	0

Source: National Survey of Information Behaviour, 2011

Very few respondents rated these activities as quite, not very or not at all important. In subsequent analysis, respondents using these ratings are grouped together and labelled as 'Less important'.

More than a quarter (26%) of respondents rated both these activities as extremely important priorities and replies to these two questions were strongly correlated (Pearson correlation = 0.53, $p < .001$) indicating that many respondents not only searched for information themselves but also acted as information intermediaries.

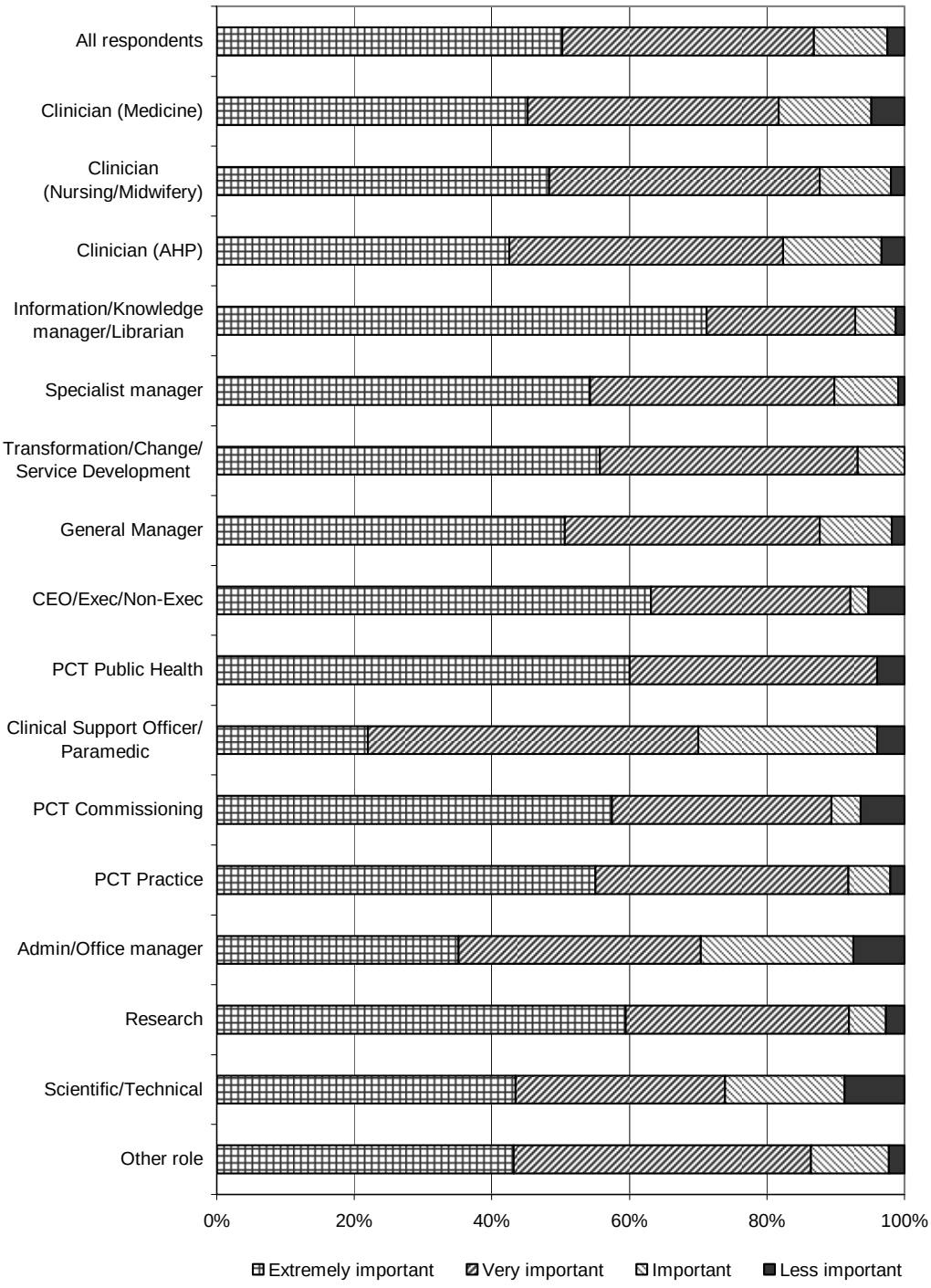
5.2.2 Variation in need by job role

The case studies demonstrated that job role is likely to have a major impact on information need. Figures 2 and 3 break down replies to each of these questions by main job role. These confirm the case study findings showing clear differences by job role in the relative importance given to each of these activities.

Although half the respondents rated finding information as an extremely important priority in their work, the proportion varied from 71% of Information/Knowledge Managers/Librarians and 63% of CEOs/Execs/Non-Execs to 22% of Clinical Support Officers/Paramedics and 35% of Admin/Office Managers (see Figure 2). However, there was little variation in the importance attached to finding information by salary band, although it appeared to be slightly less important to respondents in bands 4 to 6 than to other respondents.

Finding information for others was generally a less important activity for respondents but it was extremely important for the majority of Information/ Knowledge Managers/Librarians (54%) and Researchers (51%) (see Figure 3), highlighting their role as information intermediaries.

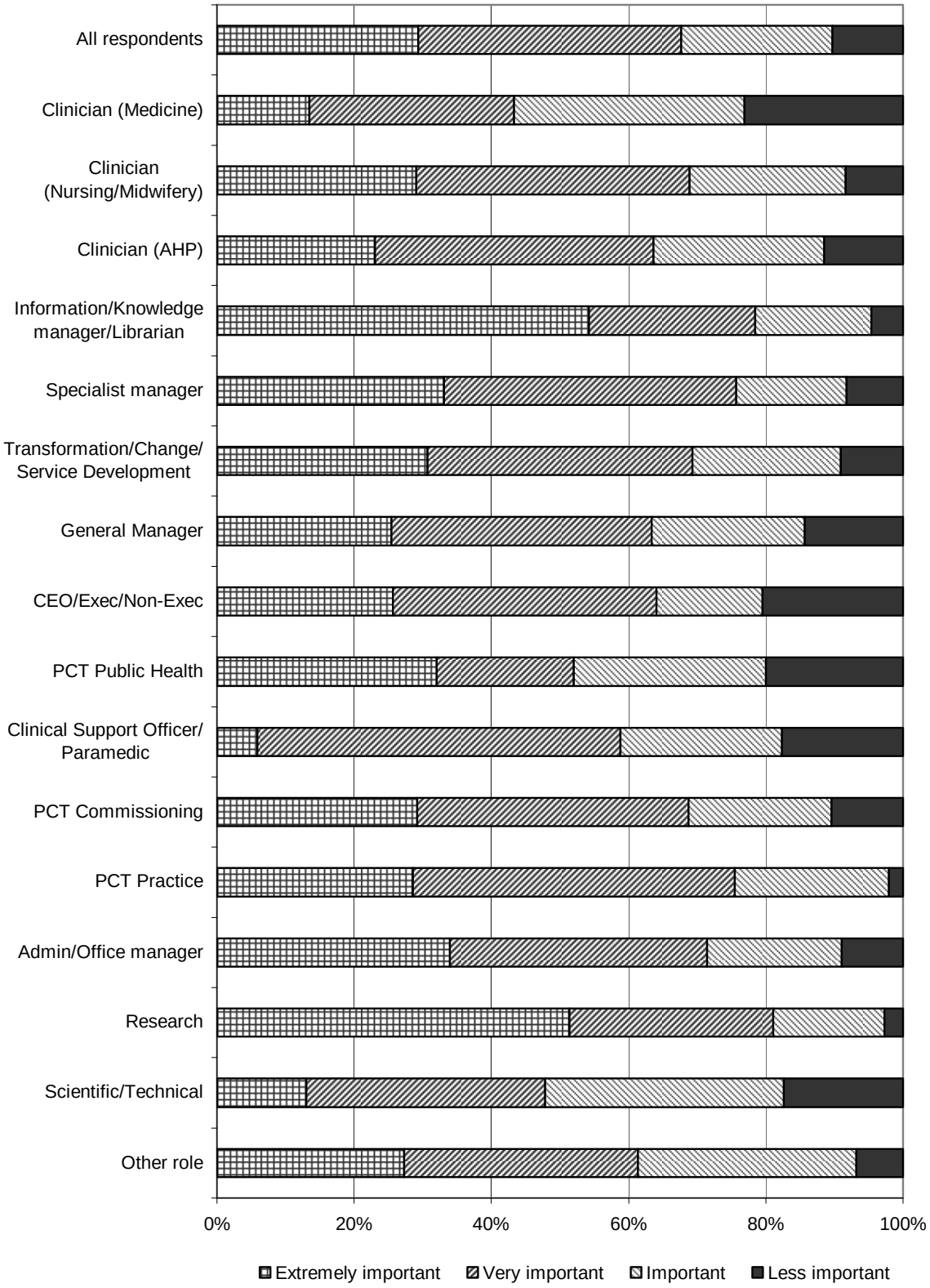
Figure 2. Importance of finding information as a priority in your work by main job role: Percentages (N = 2,077)



Source: National Survey of Information Behaviour, 2011

Finding information for others was also important to most of those working in several other roles. These included: Specialists Managers (76% rated it very or extremely important), PCT Practice Managers (76%), Admin/Office Managers (70%) and Transformation/Change/Service Development Managers (70%).

Figure 3. Importance of finding information for others as a priority in your work by main job role: Percentages (N = 2,087)



Source: National Survey of Information Behaviour, 2011

Finding information for others was less important for several groups of respondents, notably Clinicians (Medicine) (23%), CEOs/Execs/Non-Execs (21%), PCT Public Health professionals (18%), Clinical Support Officers/ Paramedics (18%) and Scientific/Technical staff (17%). Once again, there was little variation in the importance of finding information for others by salary band, although it was less important to 17% of those in Bands 8c and above (probably reflecting the fact that it was less important to Clinicians (Medicine) and CEOs/Execs/Non-Execs who nearly all fall in this category).

This finding reinforces the point that, while some job roles have a major function as information intermediaries, passing on information is a major component of several other job roles. This suggests that respondents were not that different from the case study managers, and that knowledge brokering is a significant activity for many NHS managers.

5.3 Variation in need by task

The framework for understanding information behaviour emphasises both specific and general factors influencing managers' behaviour and how they approach their work. Most models of information search start by considering an event that triggers the process of information search. The individual is seen to perceive a gap between what they need to know and what they already know. Gaps are likely to occur in situations which are novel. However, as we have seen in the case studies, whether or not search is initiated relies on a number of factors including its importance in relation to task and job role. Therefore next, we examine the impact of these factors.

5.3.1 Variation in need and job role

As the case studies suggested being involved in strategy development and major change projects were likely to stimulate information need, the survey, therefore, asked:

- How important is strategy/long-term planning in your work?
- Are you currently involved in the management of any major changes such as service reorganisation, innovative projects or major culture change?

Slightly over a third (34%) reported that strategy/long-term planning was extremely important in their work, while 64% were currently involved in the management of major change. As might be expected, respondents currently involved in the management of major change were also significantly more likely to report that strategy/long-term planning was extremely important in their work (42% compared to 22% of those not currently involved. Chi-square = 143.8, df = 5, $p < .001$).

5.3.2 Strategy and planning

Figure 4 shows that the majority of CEOs/Execs/Non-Execs (77%), PCT Public Health professionals (72%) and Transformation/Change/Service Development Managers (58%) rated strategy and long-term planning as extremely important in their work, whilst very few Clinical Support Officers/Paramedics (14%) or Admin/Office Managers (11%) did.

Not surprisingly, importance of strategy/long-term planning also increased with grade with 50% of those in salary bands 8c and above describing it as extremely important in their work compared to 23% in bands 4 to 6. It was also less important to the small number of respondents on PCT scales or other Non-Medical pay bands.

As expected, importance of strategy/long-term planning was also correlated with the priority given to finding information (Pearson correlation = 0.34, $p < .001$) and to a slightly lesser extent to the priority of finding information for others (Pearson correlation = 0.22, $p < .001$). However, while these are positive, they are not high correlations indicating that other factors also influence information needs.

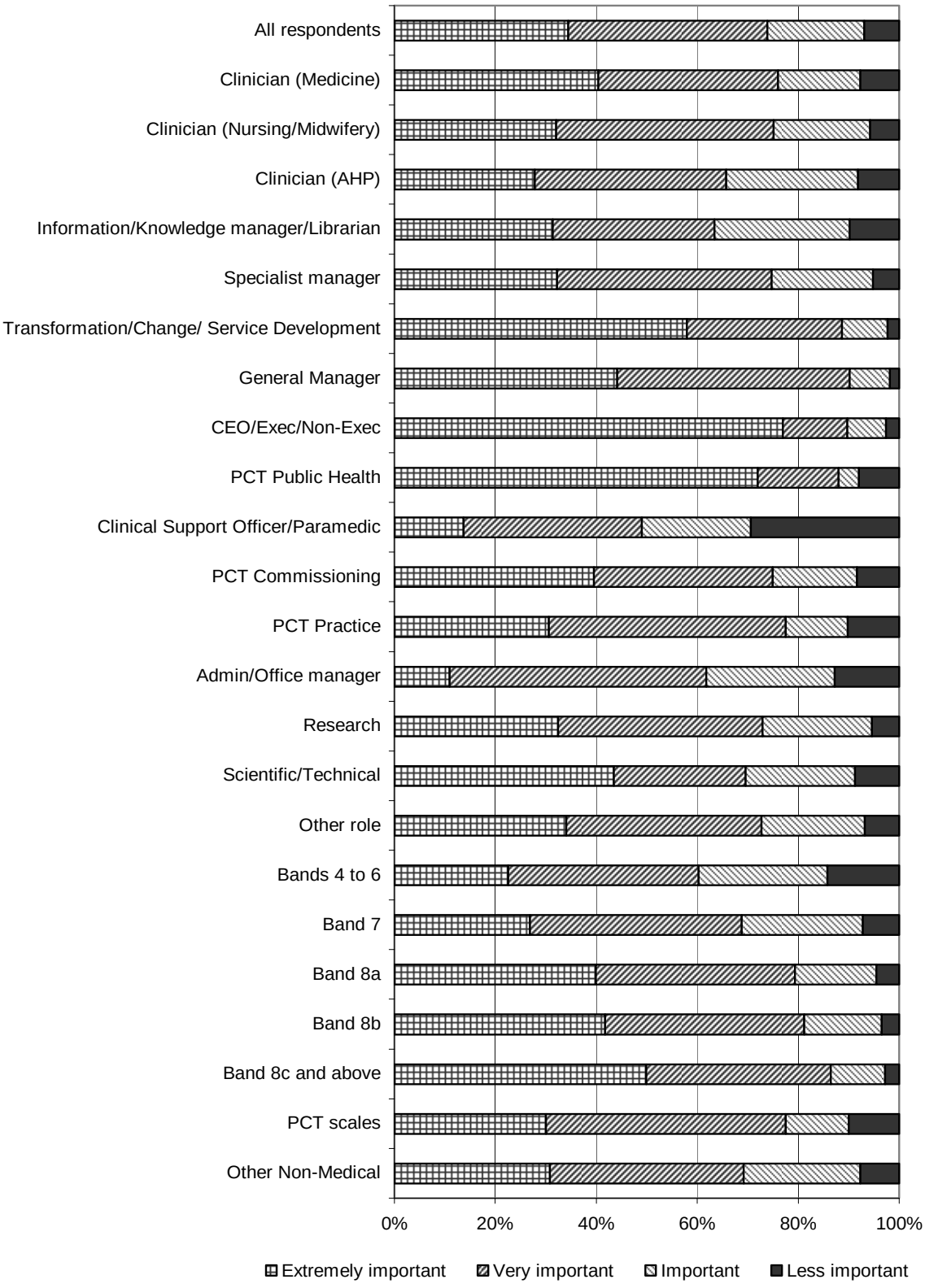
5.3.3 Need and involvement in major change projects

Figure 5 shows the proportion of respondents by job role and salary band involved in the management of a major change. Nearly all, CEOs/Execs/ Non-Execs, Transformation/Change/Service Development Managers and PCT Public Health professionals were involved in the management of major change, while only a minority of Admin/Office Managers, PCT Practice Managers and Clinical Support Officers/Paramedics were. Likelihood of being involved in the management of major change was also statistically related to salary band with those in higher salary bands being more likely to be currently involved in the management of major change (Chi-square = 228.2, df = 4, $p < .001$).

Respondents currently involved in the management of major change were also more likely to report that finding information was an extremely important priority in their work (55% compared to 44%). However, there was no difference in the importance of finding information for others between those involved or not involved in the management of major change.

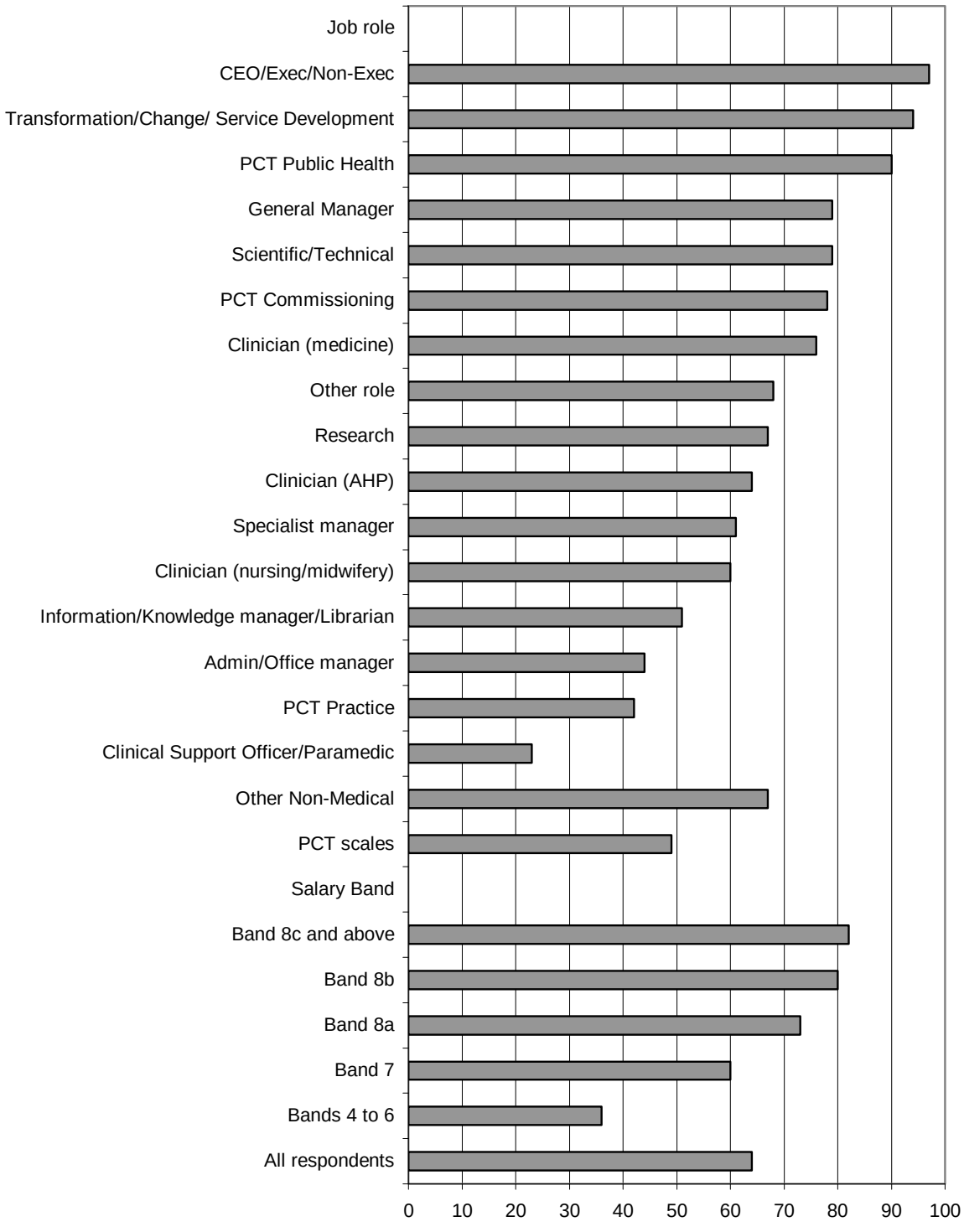
Thus, as expected, higher information needs are related both to tasks involving novelty, such as managing major change, and the importance of strategy/long-term planning in a manager's work.

Figure 4. Importance of strategy/long-term planning by main job role and salary band: Percentages (N = 2,090)



Source: National Survey of Information Behaviour, 2011

Figure 5. Involvement in the management of a major change by job role and salary band (N = 1,921)



Source: National Survey of Information Behaviour, 2011

Table 2. Need for information seeking highest: All respondents: Percentages (N = 1,921)

	Most important	2	3	4	5	6	Least important	No answer
If a task has high priority or importance I am more likely to seek information to make sure I get it right	32	18	14	12	8	7	3	7
I am more likely to seek information if the task is new to me	30	15	12	11	9	12	5	6
The higher the risk the more likely I am to seek evidence to back up what I do	28	18	13	12	10	8	4	6
The more complex the task, the more likely I am to seek information	20	19	15	13	13	9	4	6
I am more likely to seek information if it is an issue that personally concerns me	17	9	7	6	7	11	37	6
If there is disagreement or conflict about what to do I seek information to back up my position	15	12	12	11	13	17	14	7
I am more likely to seek information if the outcome is uncertain or unpredictable	11	11	14	15	17	14	12	7

Source: National Survey of Information Behaviour, 2011

5.3.4 Highest Information needs and task

Having established the importance of finding information in tasks involving novelty and the nature of their task and job role, the survey set out to explore when respondents' need for information seeking tended to be highest.

Table 2 summarises respondents' replies to the question about the tasks in which their need for information-seeking is highest. Respondents were asked to rank order their need for information in seven situations in which they might find themselves seeking information. This means that respondents should only rate one of these situations most important and that each column in the table should total to 100%. In practice, while a few

respondents gave tied ranks, a number of others tended to rank all the situations 'Most important' and this distorts the results somewhat. In spite of this, it is clear that the three situations when respondents' need for information-seeking was highest were:

- If a task has high priority or importance I am more likely to seek information to make sure I get it right (50% rank 1 or 2)
- I am more likely to seek information if the task is new to me (45% rank 1 or 2)
- The higher the risk the more likely I am to seek evidence to back up what I do (46% rank 1 or 2)

Respondents were least likely to seek information if the outcome is uncertain or unpredictable (22% ranked 1 or 2). This may seem slightly unexpected but being uncertain or unpredictable may possibly be associated with both novelty and being higher risk.

There was a general consensus among respondents regardless of job role or salary band that their need for information seeking was highest if a task has high priority or importance to make sure they get it right. However, respondents in the highest salary bands (8c and above) and in a number of job roles (Information/Knowledge Managers/Librarians, Transformation/ Change/Service Development managers, General Managers, CEOs/Execs /Non-Execs, PCT Commissioning managers, Admin/Office managers and Scientific/Technical staff) rated their need for information seeking as higher when the task was more complex than if it was new to them.

CEOs/Execs/Non-Execs, Clinicians (AHP), Scientific/Technical staff and those in other roles rated their need for information as greatest in situations with higher risk. In these situations they were more likely to seek evidence to back up what they do. These findings no doubt reflect to some degree on respondents' work situations and the types of task for which they are likely to seek additional information.

5.4 Information seeking: ease of finding information

Having confirmed the importance of job role and task in information need, we turn to the next stage of the model which is information seeking.

5.4.1 Ease of finding information relevant to their role as a manager

A great deal has been written about the inaccessibility of management research, and some participants in the case studies also reported difficulty with internal management information. However, around three-quarters or more of respondents, reported that they could find the information they require relevant to their work as a manager at least adequately, although only 31% said they could find it very or quite easily. Researchers, CEOs/Execs/Non-Execs, Information/Knowledge managers/Librarians and

Table 3. Ease of finding information relevant to your managerial role by job role: Percentages (N = 1,921)

	Very easily	Easily	Adequately	With difficulty	With great difficulty	No answer
Research	22	36	33	8	0	0
CEO/Exec/Non-Exec	6	41	44	0	6	3
Information/Knowledge manager/ Librarian	10	30	45	8	1	6
PCT Public Health	14	24	48	10	5	0
Transformation/Change/ Service Development	8	29	49	8	2	2
Specialist manager	6	27	52	10	1	4
Clinician (nursing/midwifery)	7	26	49	10	1	7
Admin/Office manager	12	21	44	17	0	6
Other role	10	23	58	5	5	0
General Manager	5	26	56	9	1	3
Scientific/Technical	0	26	58	11	0	5
Clinician (AHP)	5	20	54	19	0	3
PCT Commissioning	7	15	59	15	0	5
Clinician (medicine)	4	16	49	22	4	4
Clinical Support Officer/ Paramedic	4	15	56	17	0	8
PCT Practice	12	7	53	21	0	7
All respondents	7	24	51	12	1	5

Source: National Survey of Information Behaviour, 2011

PCT Public Health professionals were the groups most likely to report that they can find this information easily or very easily (see Table 3).

Clinicians (Medicine) stand out as the least satisfied group. Just over a quarter (26%) reported that they could find the information they need for their work as a manager only with difficulty or great difficulty.

It is surprising that only 10% of Information/Knowledge Managers/ Librarians reported that they found it very easy to find information they need for their work as a manager. This suggests that it is not a matter of having technical search skills or access to resources.

We looked at a number of other factors which might be correlated with ease of finding information. It was not related to:

- Respondents' grade with similar proportions of respondents in all pay bands reporting that it was easy or very easy to find the information they require
- The type of Trust in which respondents were working or whether they were working in a Trust which had achieved foundation status.

There was, however, some indication that those experiencing difficulty in finding management information also had problems with other types of information. Respondents who found it easier to find the information they require as a manager were less likely to feel that it is difficult to find information in the NHS as indicated by the correlation with the scale that measured perceptions of it being difficult to find information in the NHS ($r=0.38$, $p<.001$)(see Section 5.11).

Ease of finding information relevant to their work as a manager was only weakly related to the importance to respondents of the three key activities – strategy/long-term planning, finding information and finding information for others. Respondents who rated each of these activities as more important were slightly more likely to report finding it easy to find the information they require for their work but the correlations were all low (less than 0.15).

However, respondents who were involved in the management of a major change did report finding it easier to find the information they required for their work as a manager with 36% reporting that they found it easily or very easily compared to 28% of those not involved in a major change.

There is some indication that training in information search is helpful. Those who had had no specific training in how to find information were the most likely to report having difficulty or great difficulty in finding information (25% compared to 12% of all respondents), and those who had had one-to-one training by their Trust were the most likely to report finding information easily or very easily (43% compared to 33% of all respondents and 25% of those without any training).

Thus while the majority report they can find information relevant to management they need at least adequately, it is worth noting that only 31% overall found it very or quite easy.

5.5 Information seeking: evaluating quality and reliability

5.5.1 Evaluating the quality/reliability of information

In the Niedźwiedzka model selection of information occurs after collection. However, the case studies showed that selection is an ongoing process and influences what to look for and where to search for it, as well as whether to apply it. Respondents were asked to rank in order of importance six factors

Table 4. How evaluate quality/reliability of information: All respondents: Percentages (N = 1,921)

	Most important	2	3	4	5	Least important	No answer
Authority of source	39	23	13	10	5	4	6
Own experience / common sense	30	24	18	12	6	4	7
Usefulness for my work	19	26	20	12	9	7	7
Ease of understanding	11	13	18	20	13	18	7
Trusted colleague approves of it	7	12	15	16	24	18	7
Senior colleague approves of it	5	10	11	14	25	29	7

Source: National Survey of Information Behaviour, 2011

that they might use to evaluate the quality or reliability of information. Although the ranking is distorted slightly by tied rankings, it is clear that respondents considered the authority of the source and their own experience/ common sense as the most important factors for evaluating the quality/ reliability of information. Whether trusted or senior colleagues approved of the information were the two least important reasons (see Table 4).

In general, there was little difference in how respondents in different job roles or in different salary bands evaluated the quality/reliability of information. The same three factors were always identified as the most important.

However, those in some job roles were more likely to say that their own experience/common sense was the most important factor ahead of the authority of the source. In particular, Clinical Support Officers/Paramedics, Admin/Office managers, Scientific/Technical staff and staff in other roles all rated their own experience/common sense ahead of the authority of the source. An equal percentage (38%) of Specialist managers rated own experience/common sense and authority of source as the most important factors.

Respondents in lower salary bands (Agenda for Change bands 4 to 7 and on PCT scales) gave less importance to authority of source and more importance to senior colleagues approve of it and ease of understanding as factors for evaluating the quality/reliability of information than those in higher salary bands (8a and above). However, they still rated authority of source as the most important factor.

In general, there appeared to be no difference in how respondents evaluated the quality and reliability of information by whether they were involved in the management of major change or not and only a slight

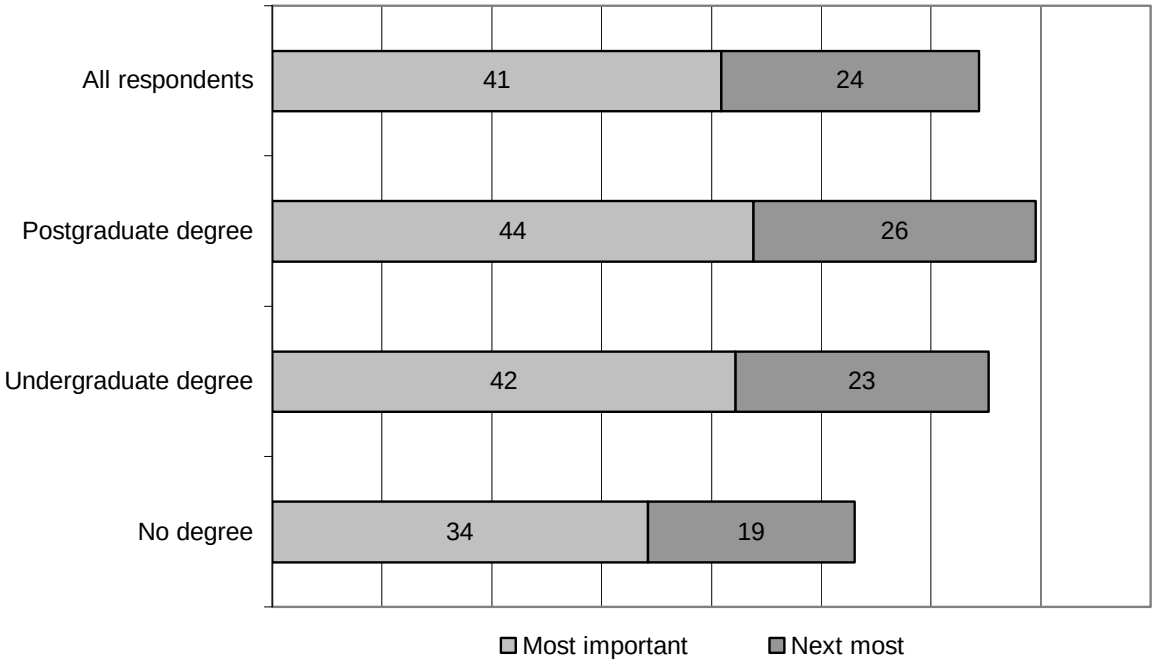
difference related to the importance of strategy/long term planning in respondents' work. Respondents who said that strategy/long term planning was extremely important in their work were slightly more likely than other respondents to rate authority of source as the important for evaluating the quality/reliability of information (62% rated 1 or 2 compared to 55% of those who rated strategy/long term planning as very important and 53% of other respondents).

There were, however, differences by level of educational qualification with respondents with postgraduate degrees being slightly more likely than those with only undergraduate degrees or without a degree to rate authority of source as more important. Those without a degree were also less likely to rate ease of understanding as important (see Figures 6 and 7).

Roughly one in nine (11%) of respondents had had no training in how to find information and these respondents were more likely to report that own experience/common sense was more important to them (66% rated 1 or 2) and authority of source less important (55% rated 1 or 2) in evaluating the quality/reliability of information than other respondents.

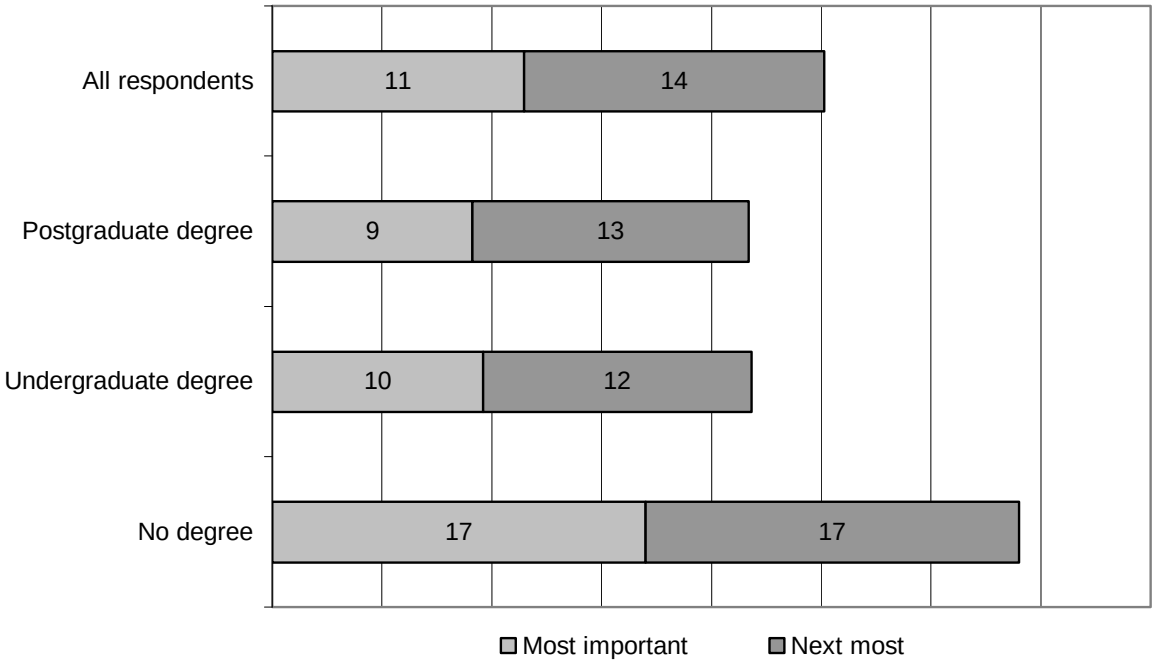
These findings suggest that both level of education and training in how to find information can affect the criteria respondents' use to evaluate the quality and reliability of information.

Figure 6. Importance of authority of source in the evaluation of the quality/ reliability of information by highest educational qualification: Percentages (N = 1,786)



Source: National Survey of Information Behaviour, 2011

Figure 7. Importance of ease of understanding in the evaluation of the quality and reliability of information by highest educational qualification: Percentages (N = 1,786)



Source: National Survey of Information Behaviour, 2011

5.6 Information behaviour and task: the use of information in the management of a major change

As we have seen, being involved in a major change project is associated with higher information need; we therefore decided to look more closely at the search behaviour of those involved in major change projects. This also facilitated asking questions about whether information collected was applied or not.

5.6.1 Information seeking in change projects

Respondents who were involved in the management of major change were asked if they had specifically sought extra information in relation to this project (see Table 5). Most (88%) had, with the proportion varying from nearly all of those involved in the management of major change in several job groups to 65% of Admin/Office managers. The majority (85%) searched for it themselves, and over a third (37%) had asked a colleague to find it for them. This is a clear indication of the perceived importance of additional information in the management of change.

The vast majority had sought this specific extra information themselves but CEOs/Execs/Non-Execs (59%) and General Managers (51%) were the two groups most likely to have asked colleagues to find the information for them as well as seeking it themselves.

Table 5. Percentage specifically seeking extra information by job role (n=1,226)

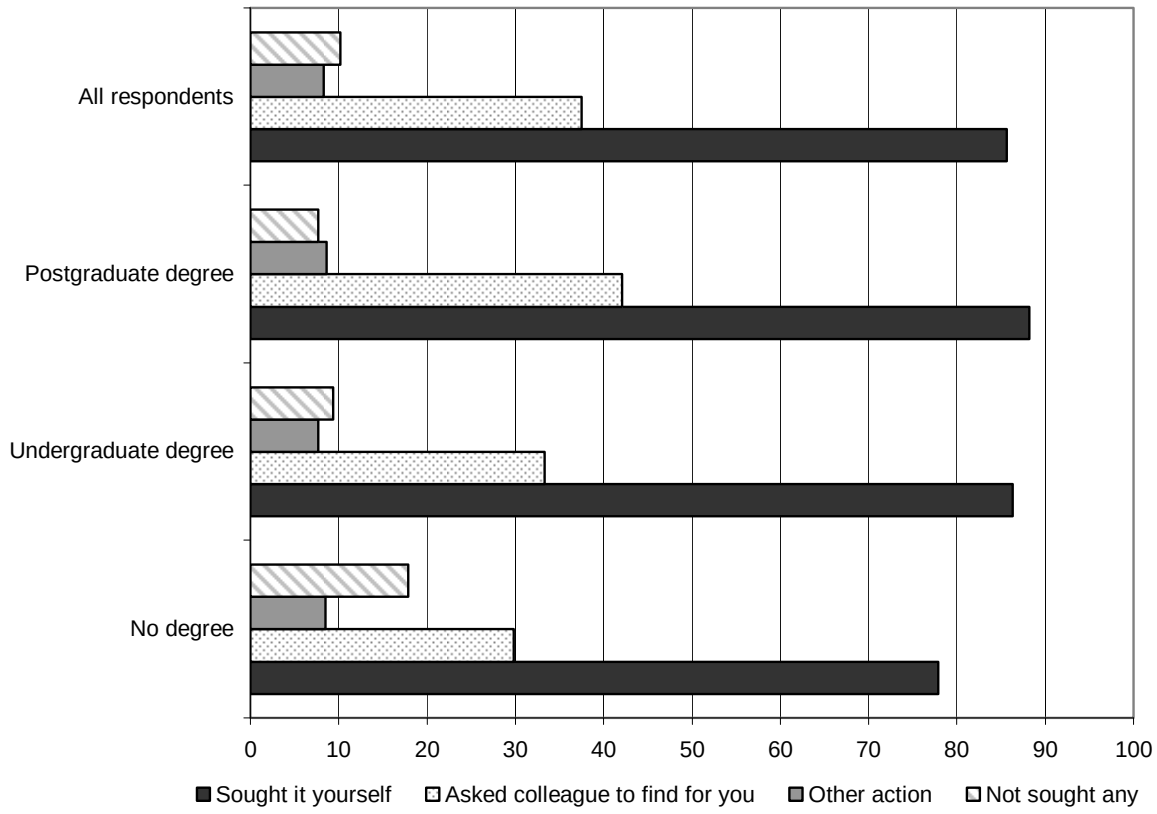
	Sought it yourself	Asked a colleague to find it for you	Other action	Not sought any
Clinician (medicine)	80	41	5	15
Clinician (nursing/midwifery)	80	28	8	17
Clinician (AHP)	83	39	8	10
Clinical Support Officer / Paramedic	73	36	0	27
Information/Knowledge manager/Librarian	85	29	6	7
Research	96	42	13	4
Specialist manager	88	36	8	10
Transformation/Change/Service Development	94	45	10	5
General Manager	90	51	8	7
CEO/Exec/Non-Exec	85	58	18	9
PCT Public Health	79	37	21	16
PCT Commissioning	97	50	9	3
PCT Practice	89	33	0	11
Admin/Office manager	61	13	4	35
Scientific/Technical	80	20	0	13
Other role	89	30	7	7
All respondents	85	37	8	12

Source: National Survey of Information Behaviour, 2011

About one in twelve (8%) reported other actions they had undertaken. Sometimes this was just a description of the project or a report of how they had sought the information, for example by visiting other NHS Trusts or organisations. In other cases, they reported how they had worked with other people and organisations. It appears that generally they were using observation and discussion at other organisations or Trusts as a source of ideas.

Level of education also seemed to have some influence on information search among respondents involved in the management of major change with those without a degree (18%) being more likely than those with either a postgraduate (8%) or undergraduate (9%) degree not to seek any extra information (see Figure 8). On the other hand, those with a postgraduate degree were more likely to have a colleague seek the information for them

Figure 8. Percentage specifically seeking extra information by level of education (N = 1,136)



Source: National Survey of Information Behaviour, 2011

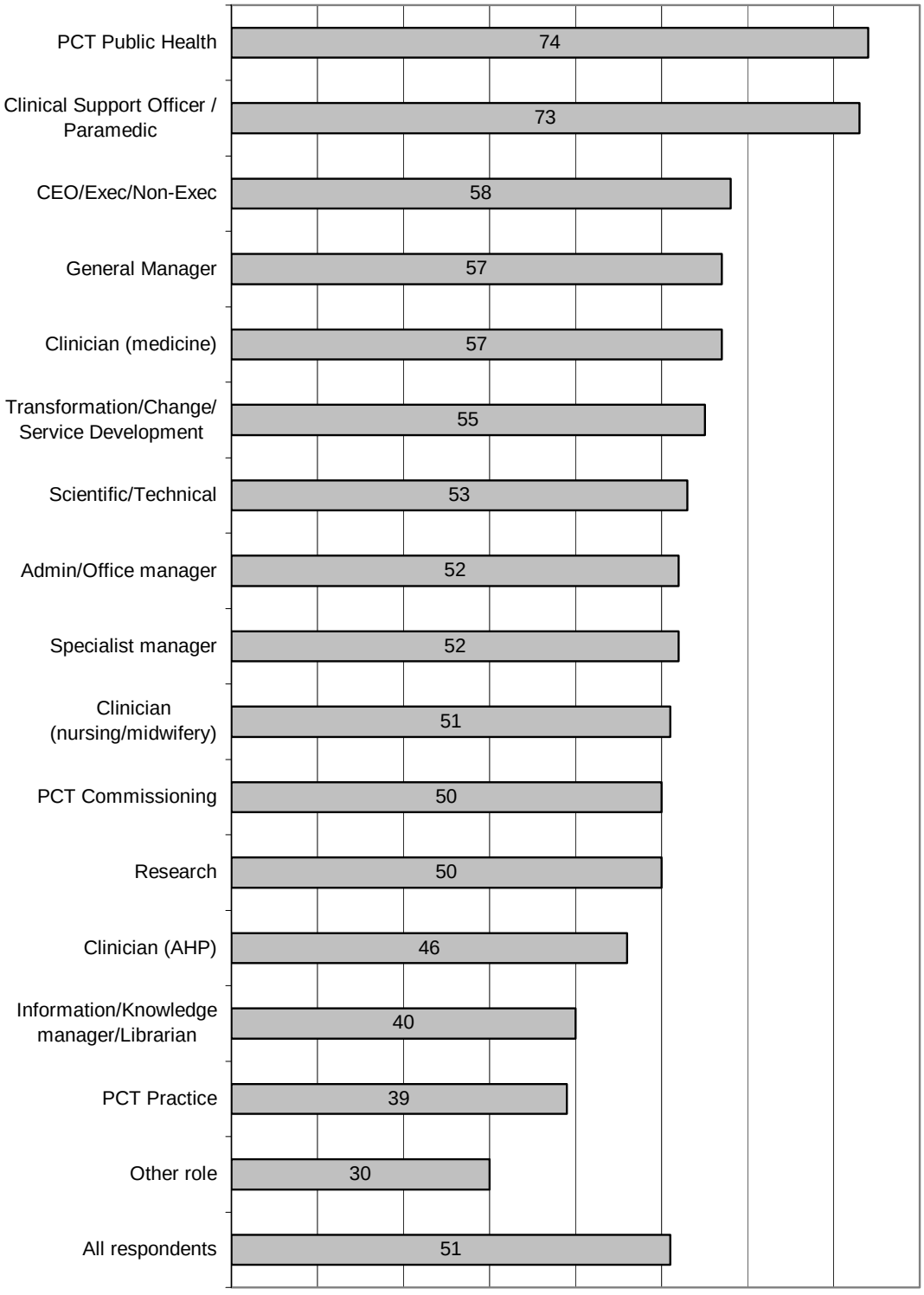
(42%) than those with an undergraduate degree (33%) or no degree (30%). However, there was no difference in the likelihood of respondents using the information provided by their highest level of education. It should be remembered that level of education, and in particular having a postgraduate degree, is linked to seniority (i.e. salary band).

Information training did not appear to have an effect on managers' likelihood of seeking extra information. However, those managers (16%) who had received one-to-one training in information search were more likely than those with no training (12%) to ask a colleague to find information for them (47% compared to 32%) and to use the information provided (59% compared to 48%).

5.6.2 Information use in change programmes

Only 51% of the respondents involved in the management of major change had used the information provided. The proportion varied from nearly three-quarters of PCT Public Health professionals (74%) and Clinical Support Officers/Paramedics (73%) to 40% of Information/Knowledge managers/Librarians, 39% of PCT Practice Managers and 30% of those in other job roles (see Figure 9). This suggests that the information found

Figure 9. Percentage of respondents involved in major change that had used the information provided by job role (N = 1.226)



Source: National Survey of Information Behaviour, 2011

has not always been useful. Whether this is a function of poor information search, lack of skills in finding relevant information, the information simply not being available, is unclear. However, as the case studies show, the reasons for selecting and using specific kinds of information are subject to many influences including acceptability and negotiation.

Being involved in a major change project therefore does trigger information need and search. The fact that just under a half of this information is not used indicates an active selection process is taking place. There is also a degree of dependence on others to find information. This confirms the experience of the case study projects.

5.7 Information Sources

Having established the factors that influence need and search, in general and in the context of major change projects, we move to the next stage of the Niedźwiedzka model and examine aspects of information behaviour that are to do with the various sources used.

5.7.1 Types of Source used

The model identifies different sources of information, both formal and informal, that people use and the case studies revealed a wide variety. A major part of the survey was, therefore, concerned with collecting data about respondents' use of different information sources. All respondents were asked how often they used certain:

- Written sources (paper or online versions)
- Online sources
- People/networks as sources of information
- Education/training sources

Within each category the list of potential sources drew on sources that had been identified in the case study research and from the research literature. In addition, respondents were also asked to how often they used specific NHS and Health-related sources to gather information. For each group of sources they were also asked which ones they found most useful as the most frequently used sources are not necessarily the most useful ones.

Table 6 summarises the use of all the different types of sources of information that were considered under the four headings. The two right hand columns show the percentage of respondents using each source daily/weekly and on a yearly or less basis. Responses have been ordered in terms of frequency of use on a daily/weekly basis. In addition, responses above 50% have been highlighted in these two columns.

The five most frequently used sources – views/experiences of colleagues, search engines, front-line staff, NHS websites and email discussion lists and

Table 6. Frequency of use of different information sources: Percentages (All respondents N = 2,092))

	Daily	Weekly	Monthly	Quarterly	Yearly	Rarely/ Never	No answer	Daily/ weekly	Yearly or less
Views / experiences of colleagues	***64***	25	7	2	0	1	0	***90***	1
Search engines (e.g. Google)	***54***	31	9	2	0	2	1	***86***	2
Front line staff	***45***	30	14	5	1	4	1	***75***	5
NHS websites	30	***43***	19	4	1	2	1	***73***	2
Email discussion lists and alerts	***37***	29	13	5	1	13	2	***66***	14
Trust bulletin board, dashboard, share point or other online staff information system	23	***41***	17	6	1	11	2	***64***	12
Trust policies and practice guidance	22	***38***	26	10	2	1	0	***61***	3
Formal meetings / team meetings with colleagues	11	***48***	33	4	1	1	2	***59***	2
Internal Management information (Performance, HR data etc)	20	***33***	26	9	3	7	1	***53***	10
Views / experiences of service users	***26***	24	23	12	6	7	1	***50***	13
Informal networks (e.g. family, friends, former colleagues)	21	***28***	22	11	3	14	1	48	18
Professional journals / magazines / websites	10	***35***	34	10	3	6	1	46	9
Professional networks	11	29	***35***	15	3	6	1	40	10
Past formal education (e.g. Degree, MBA)	27	12	12	9	8	***28***	4	39	35
Official national publications (e.g. Dept of Health, NICE guidelines)	8	31	***37***	16	4	3	1	39	7
Trust library or electronic resources	8	21	***25***	15	5	23	3	29	28
Academic books / journals (Clinical)	5	22	25	12	5	***26***	5	27	30
Current formal education (e.g. Degree, MBA)	17	9	8	6	5	***43***	12	26	48
Work-based training courses	13	13	23	***26***	16	8	1	26	24
Internal Trust management consultancy / service development / transformation teams	4	14	24	16	9	***32***	2	17	40
Patient surveys / complaints	4	11	***24***	22	15	23	2	15	37
Conferences / workshops	6	8	17	***33***	24	10	2	14	34
Academic books / journals (Managerial)	2	13	25	19	9	***28***	4	14	37
Patient representatives	3	8	22	21	11	***33***	3	11	43
Librarians / information specialists	2	8	21	22	10	***37***	1	10	46
PALS / complaints handlers	2	8	20	19	11	***37***	3	10	48

	Daily	Weekly	Monthly	Quarterly	Yearly	Rarely/ Never	No answer	Daily/ weekly	Yearly or less
Union or staff representatives	2	7	19	15	9	***46***	2	9	***55***
Academic researchers	2	5	11	14	11	***56***	2	7	***67***
National experts on the subject	1	6	16	21	19	***35***	2	7	***54***
International experts on the subject	1	3	7	11	15	***60***	2	5	***75***
Staff surveys	1	4	13	24	***36***	21	1	4	***57***
Case studies of other organisations	1	4	15	25	17	***36***	2	4	***52***
Management consultants	1	2	6	8	11	***71***	1	3	***82***
Other written sources	10	11	8	6	2	27	36	21	29
Other specialist library / electronic resources	7	11	14	8	3	30	27	18	33
Other people / networks	5	8	12	7	2	29	38	13	31
Other education / training sources	10	8	10	8	6	25	34	18	31

Source: National Survey of Information Behaviour, 2011

alerts – were used by more than two-thirds of respondents on a daily/ weekly basis and were a combination of people and online sources of information. Trust policies and practice guidance were the most frequently used written source of information, while past formal education was used by just over a quarter (27%) of respondents on a daily basis.

Highlighted figures in the main part of table indicate the modal (most frequent response) and can be used to identify particular sources with different patterns of use, such as past or current formal education used daily by some respondents but rarely by others.

Note that it is likely that the pattern of replies for several sources of information, e.g., formal/team meetings with colleagues, conferences/ workshops, staff surveys, may reflect the frequency with which they occur. Other sources, e.g., current formal education, will only be potential sources of information to a small number of respondents, such as those currently engaged in education.

As a consequence quite a number of sources have a bimodal distribution with many respondents rarely or never using them but others using them quite frequently. Examples include:

- Past formal education (e.g. Degree, MBA)
- Current formal education (e.g. Degree, MBA)
- Academic books / journals (Clinical)
- Internal Trust management consultancy / service development / transformation teams

- Patient surveys / complaints
- Patient representatives
- Librarians / information specialists
- Union or staff representatives
- PALS / complaints handlers
- Academic books / journals (Managerial)

In terms of where managers get their information, it is striking that more than a quarter of respondents used certain academic sources yearly or less. In particular, sources that were infrequently used included: Trust library or electronic resources (28% used yearly or less), Academic book/journals (Clinical) (30%), Librarians/information specialists (46%), Academic researchers (67%) and Academic books/journals (Managerial) (37%). It appears therefore that these managers are similar to managers generally in their lack of direct use of academic research.

5.7.2 Sources: job role and frequency of use

This initial analysis indicated that use of these sources of information differed in a variety of ways. Table 6 showed that it was possible to distinguish sources of information by the frequency with which they were used. In particular, sources that were used frequently (daily or weekly) by respondents could be distinguished from those that were used only occasionally (monthly or quarterly) or even less frequently (yearly). In addition, there were sources, notably management consultants, international experts and academic researchers, who were rarely or never used by most respondents.

Analysis was, therefore, carried out to see whether staff in some job roles typically used more sources frequently or occasionally (i.e. at least quarterly) than others. There were significant differences by job role with some groups using not only more sources overall but also more of each of the different types of sources (i.e. written, online, people/ networks and education/training) than others.

Further analysis was, therefore, carried out to see how the frequency with which particular sources were used varied by main job role. In order to simplify the analysis, the six frequency ratings were combined into three categories:

- Daily/weekly: sources used regularly
- Monthly/quarterly: sources used occasionally
- Yearly or rarely/never: sources used less often

Appendix Table 2 shows the percentage of each staff group using these information sources on a daily/weekly basis. Key points from this analysis are summarised below.

Clinical staff

Sources used more frequently by staff in clinical roles are listed below.

1. **Clinicians (Medicine)**: Academic books/journals (Clinical) (68% used daily or weekly) and Professional journals/magazines/websites (66%).
2. **Nurses/Midwives**: Trust policies and practice guidance (74%) and the views and experiences of service users (69%).
3. **Allied Health Professionals**: Academic books/journals (Clinical) (40%).
4. **Clinical Support Officers/Paramedics**: Internal Management information (73%), Trust policies and practice guidance (84%), Trust bulletin board, dashboard, share point or other online staff information system (84%), Academic books/journals (Clinical) (43%), Trust library/ electronic resources (41%), Views and experiences of service users (69%), front-line staff (90%) and Union/staff representatives (27%).

Managers

Managers also used certain sources more than other respondents and these are listed below.

1. **CEOs/Execs/Non-Execs**: Formal/team meetings with colleagues (90%), Internal Management information (82%), NHS websites (85%), Official National Publications (67%), Internal Trust management consultancy/service development/transformation teams (62%), Professional journals/magazines/websites (59%), Academic books/ journals (Managerial) (28%), PALS/complaints handlers (28%) and Librarians/Information Specialists (21%).
2. **General Managers**: Formal/team meetings with colleagues (78%), Internal Management information (76%), Internal Trust management consultancy/service development/transformation teams (30%), Patient surveys/complaints (29%) and PALS/complaints handlers (22%).
3. **Specialist Managers and Admin/Office Managers**: Did not use any source significantly more frequently than other respondents.
4. **Transformation/Change/Service Development Managers**: NHS websites (90%), Internal Management Information (64%), Internal Trust management consultancy/service development/transformation teams (57%), Official national publications (50%) and Academic books/journals (Managerial) (31%).
5. **PCT Practice Managers**: Union/staff representatives (20%)

Other groups

Some of these groups also made more use of certain sources.

1. **Information/Knowledge managers/Librarians**: Trust library/ electronic resources (43%) and Librarians/information specialists (29%).

2. **Researchers**: NHS websites (86%), Trust library/electronic resources (43%), Official National Publications (57%), Academic books/journals (Clinical) (43%), National experts on the subject (27%) and Academic researchers (49%).
3. **Public Health Specialists**: NHS websites (88%), Email discussion lists and alerts (80%), Professional journals/magazines/websites (60%), Official national publications (60%), Professional networks (52%), Academic books/journals (Managerial) (28%) and Librarians/Information Specialists (24%).
4. **PCT Commissioning**: NHS websites (92%) and Official national publications (71%).
5. **Scientific/Technical Staff**: Formal/team meetings with colleagues (74%).

This analysis shows that people in different job roles, perhaps unsurprisingly, used certain sources of information to a greater extent than others and use of information sources can be differentiated to some extent by job role. There were specific sources that were rarely or never used by most respondents but were used quite frequently by people in certain job roles. For instance, internal Trust management consultancy/service development/transformation teams were used frequently by CEOs/Execs/ Non-Execs and Transformation/Change/Service Development Managers but hardly at all by other respondents, and are an example of an information source that can be considered quite specialised in terms of its users.

5.7.3 Sources: use of internal and external sources

As well as looking at how individual sources were used by different groups of respondents, it might be expected that different groups of respondents relied more heavily on information from certain types of source. In particular, the sources of information listed in Table 6 could be classified into one of three groups:

- sources of information internal to the Trust (14)
- sources of information external to the Trust (16)
- other sources that give access to both internal and external information sources (3)

Table7 lists the information sources under these headings.

Table 7. Classification of Internal and external sources of information

Internal sources of information	External sources of information	Other sources of information
Views / experiences of colleagues	Search engines (e.g. Google)	Email discussion lists and alerts
Front line staff	NHS websites	Work-based training courses
Views / experiences of service users	Past formal education (e.g. Degree, MBA)	Trust library or electronic resources
Trust bulletin board, dashboard, share point or other online staff information system	Informal networks (e.g. family, friends, former colleagues)	
Trust policies and practice guidance	Current formal education (e.g. Degree, MBA)	
Formal meetings / team meetings with colleagues	Professional journals / magazines / websites	
Internal Trust management consultancy / service development / transformation teams	Official national publications (e.g. Dept of Health, NICE guidelines)	
Patient surveys / complaints	Conferences / workshops	
Patient representatives	Academic books / journals (Clinical)	
Librarians / information specialists	Academic researchers	
Union or staff representatives	Academic books / journals (Managerial)	
PALS / complaints handlers	International experts on the subject	
Staff surveys	National experts on the subject	
	Management consultants	
	Case studies of other organisations	

5.7.4 Predictors of use of sources

In order to identify other variables that might be associated with greater use of information sources, correlation coefficients were calculated between the number of different sources used and a range of variables. The detailed results are shown in Appendix Table 9.

In terms of the use of the different types of information source key points to note from the table are:

1. Overall use of these information sources is most strongly correlated with the following attitude scales statements/variables: importance of strategy/long-term planning in your work, looking abroad for innovative ideas about how we could change things here (agreement), and my sources of information are mainly internal to the Trust (disagreement). This suggest heaviest use of information is made by those with a more strategic, outward facing orientation
2. Use of internal information sources is most strongly correlated with currently being involved in the management of major change, the importance of strategy/long-term planning in your work, and learning a lot from talking to front-line staff and finding out their opinions (agreement). This is in line with the findings of the case studies which demonstrated the importance of internal information at the implementation stage of projects
3. Use of external sources is most strongly correlated with: my sources of information are mainly internal to the Trust (disagreement), looking abroad for innovative ideas about how we could change things here (agreement), and the importance of strategy/long-term planning in your work. Those with planning or strategic roles are more likely to seek information outside of the Trust – a characteristic found in strategic leadership and research related roles (including PCT commissioners) interviewed in the case studies.

5.7.5 Use of academic sources

Another significant grouping is what might be called 'academic' sources of information. These are: Past formal education, Current formal education, Trust library or electronic resources, Academic books/journals (Clinical), Academic books/journals (Managerial), Academic researchers, Librarians/ information specialists, International experts on the subject and National experts on the subject. While some of these are quite specific sources for finding information, others (e.g. past formal education) can be used both as a source of particular knowledge/information and more generally in terms of a learnt approach to analysing situations or making decisions.

Use of academic sources is most strongly correlated with the following attitude statement: my sources of information are mainly internal to the Trust (disagreement), looking abroad for innovative ideas about how we could change things here (agreement), and academic research is often difficult to understand and apply (disagreement).

5.7.6 Impact of being involved in major change on sources used

It is clear from the discussion above that roles with significant strategic, planning and research responsibilities are likely to be associated with different search behaviour. One major trigger for information use is being involved in the management of major change. The survey sought to understand how involvement in major change influenced respondents' use

Table 8. Average number of information sources used by whether involved in management of major change: All respondents

Types of sources used	Currently involved in major changes	N of cases	Average number used	Std. Deviation	t	df	Probability
All sources	Yes	1226	24.8	5.4	11.66	1919	p< .001
	No	695	21.7	5.9			
Internal	Yes	1226	10.6	2.4	12.45	1919	p< .001
	No	695	9.1	2.6			
External	Yes	1226	10.4	2.8	9.33	1919	p< .001
	No	695	9.2	3.0			
Academic	Yes	1226	4.7	2.3	7.14	1919	p< .001
	No	695	3.9	2.4			

Source: National Survey of Information Behaviour, 2011

of resources. Table 8 indicates that respondents involved in the management of major change used significantly more of all types of source (internal, external and academic) on a regular basis (i.e. at least quarterly) than those not involved in major change. All these differences are statistically significant and this finding suggests that being responsible for, or involved in, the management of major change may trigger information search.

5.7.7 Impact of education on information sources used

As might be expected education did have an effect on the sources used. Table 9 illustrates how, for all respondents, level of educational qualification influenced use of past and current formal education information sources. Nearly half (48%) of those with a postgraduate degree reported that they used their past formal education on a daily or weekly basis compared to 26% of those with O or A level (or equivalent). Over half (54%) of this group rarely or never used information sources from their past formal education compared to just 17% of those with a postgraduate degree.

There was a similar pattern in relation to current formal education, although the proportion rarely or never using information sources from their current education was higher – no doubt reflecting the fact that many respondents were not currently involved in formal education.

There was a similar trend across all the other 'academic' sources of information with those with postgraduate degrees being more likely to use all these sources than those with undergraduate degrees and they, in turn, being more likely to use them than those without degrees.

Table 9. Frequency of use of past and current formal education by highest level of educational qualification: Percentages (All respondents)

Past formal education	Daily	Weekly	Monthly	Quarterly	Yearly	Rarely/ Never	N of cases
O / A Level or equivalent	17	9	8	6	6	54	415
Undergraduate degree	30	12	13	7	10	27	401
Postgraduate degree	33	15	14	13	9	17	868
All respondents	28	13	12	10	8	29	1684
Current formal education							
O / A Level or equivalent	12	6	7	5	6	65	398
Undergraduate degree	20	10	8	5	5	51	365
Postgraduate degree	23	12	11	8	6	39	780
All respondents	19	10	9	7	6	49	1543

Source: National Survey of Information Behaviour, 2011

5.7.8 Influence of Trust type and performance on sources used

There was some variation in use of information sources by Trust type with respondents from PCTs, in particular, tending to use slighter fewer of all the different types of information sources than respondents working in other types of Trust.

As explained in the introduction, it is widely assumed that if managers use evidence to inform decision making, then they will make better decisions. Ceteris paribus, this might be expected to result in better Trust performance.

However, there were no statistically significant differences by overall Trust quality rating and only slight differences by financial performance rating. There was a weak general trend for respondents from better performing Trusts to use slightly more sources of information. However, the correlations between performance ratings and overall use of information sources were always very modest with correlation coefficients less than 0.1.

Table 10. Frequency of use of health related information sources: Percentages (N = 2,092)

	Daily	Weekly	Monthly	Quarterly	Yearly	Rarely/ Never	No answer	Daily/ weekly	Yearly or less
Department of Health website	5	27	***36***	19	5	7	2	32	12
NICE guidelines	7	18	***29***	20	8	16	2	25	24
NHS Evidence	8	19	***25***	14	6	***25***	3	27	31
Health Service Journal	2	17	22	15	7	***34***	3	19	41
NHS Institute for Innovation and Improvement	2	12	22	17	10	***35***	3	14	44
NHS information centre	2	5	14	15	10	***51***	3	7	61
Kings Fund	1	4	11	14	12	***56***	3	4	67
NHS Confederation	1	2	8	12	10	***64***	4	3	73
Doctor Foster	1	3	7	10	8	***68***	4	4	76
Other source	5	6	4	3	1	31	50	10	32

Source: National Survey of Information Behaviour, 2011

5.8 Use of NHS and health related sources

A great deal of effort has been made in the NHS to increase the supply of relevant knowledge for health professionals generally, and some progress towards providing sources specifically relevant to managers. Table 10 summarises the replies from all respondents regarding their use of the NHS and Health-related specific sources of information. Two points to note are:

- Several sources were rarely or never used by the majority of respondents
- The three most widely used sources were only used on a daily or weekly basis by between a quarter and a third of respondents.

The distribution of replies regarding usage of several of these sources of information was also bimodal with several sources being used moderately by some respondents, perhaps at least monthly or quarterly, but infrequently by many others. This reflects the findings of the case studies where some managers were frequent users of some of these sources but a significant minority, even when prompted, were not aware of their existence.

The other point to note is that even the three most frequently used of these sources were used much less frequently than many of the other information

sources. This might suggest that they were being used for somewhat different purposes and/or in different ways.

5.8.1 Use of health related sources by main job role

Use of these NHS and Health-related sources of information also varied considerably by main job role (see Appendix Table 3). It is clear that some groups of respondents used these sources much more frequently than other groups. Key points to note about the most used sources are outlined below.

Department of Health website: Used most frequently by PCT Public Health (68% used daily or weekly), PCT Commissioning Managers (60%), CEO/Execs/Non-Execs (51%) and Transformation/Change/Service Development managers (47%) but also used by Researchers (38%), Information/Knowledge managers/Librarians (38%) and Clinicians (Nurses/Midwives) (37%).

NICE Guidelines: Used most frequently by Clinicians (Nurses/Midwives) (42%) and Clinical Support Officers/Paramedics (41%).

NHS Evidence: Used most frequently by PCT Public Health (48% used daily or weekly), PCT Commissioning Managers (44%) but also used by PCT Practice Managers (36%) and Clinicians (Nurses/Midwives) (36%).

Health Service Journal: Used most frequently by CEO/Execs/Non-Execs (62% used daily/weekly) and PCT Commissioning Managers (44%).

NHS Institute for Innovation and Improvement: Used most frequently by Transformation/Change/Service Development managers (42%) and to some extent by PCT Commissioning Managers (31%).

Among the remaining and less frequently used sources, the main users were:

- **NHS Information Centre**: PCT Commissioning Managers (25% used daily/weekly), PCT Public Health (24%) and Information/Knowledge managers/Librarians (20%).
- **Kings Fund**: PCT Commissioning Managers (15% used daily/ weekly) and PCT Public Health (12%).
- **Doctor Foster**: PCT Commissioning Managers (15% used daily/ weekly).
- **NHS Confederation**: CEOs/Execs/Non-Execs (26% used daily/ weekly).

5.9 Information application

The final stage of the Niedźwiedzka model is application of the information selected. As noted earlier, just knowing which sources managers use or how frequently they use them does not indicate how useful they found particular sources. Nor does it necessarily indicate that the information

collected was actually applied in decision making or used for any other purpose. Actual use can only be established in relation to specific items of information, and as we have seen in the case studies, such is the long term nature and complexity of decision making and information acquisition this is very difficult to trace and beyond the scope of the survey.

5.9.1 Most useful sources of information

In order to get some indication of potential application we asked respondents for each of the four types of information source to identify the one or two that they found most useful. This means that, while it is possible to identify the most useful sources of written information, it is not possible to compare the importance of sources across the four types to identify, for example, the single most useful source of information.

The full results of this analysis are shown in Appendix Tables 4 to 8 and the main findings are summarised below.

There are several points to note about the different types of information source.

1. For three of types of information source – online, people/networks and education/training – one particular source was dominant for nearly all staff groups but the second most useful source varied somewhat.
2. For written sources, different sources were important to different staff groups but it was possible to see a clear pattern between the sources and the relevant staff groups.
3. A similar pattern was also found for the specific NHS and Health-related sources but, although a single source tended to be rated most useful, a variety of other sources were also rated useful.

Written sources: No single source dominated but Professional journals/ magazines/websites and Trust policies and practice guidance were the two most frequently mentioned sources. However, Official national publications, Internal management information and Academic books/journals (Clinical) were also frequently mentioned as one of two most useful sources by some staff groups (see Appendix Table 4).

- Professional journals/magazines/websites were most frequently mentioned by Clinicians (AHP), Specialist Managers, CEOs/Execs and Non-Execs, PCT Practice managers, and Scientific and Technical staff.
- Trust policies and practice guidance were most frequently mentioned by Clinicians (Nurses/Midwives), Information/ Knowledge managers/Librarians, Clinical Support Officers/ Paramedics, Admin/Office Managers, Scientific and Technical staff and staff in other roles.
- Official national publications were most frequently mentioned by Transformation/Change/Service Development managers, PCT Public Health professionals, PCT Commissioning managers and Research staff.

- Academic books/journals (clinical) were most frequently mentioned by Clinicians (Medicine).
- Internal management information was most frequently mentioned by General Managers.

Online sources: Search engines and NHS websites were the two online sources most frequently mentioned by respondents in nearly all staff groups (see Appendix Table 5). Clinical Support Officers/Paramedics and Scientific/Technical staff mentioned their Trust bulletin board, dashboard, share point or other online staff information system as a most useful source more frequently than the NHS website.

People/networks: Views and experiences of colleagues were most frequently mentioned as one of the two most useful sources of information by all staff groups. Professional networks were mentioned next most frequently and were particularly important to Clinicians (medicine), Clinicians (AHP), PCT Public Health professionals, PCT Commissioning managers and Researchers. Views/experiences of service users were mentioned frequently by Clinicians (Nursing/ Midwifery), Transformation/ Change/Service Development managers and PCT Practice managers, while Front-line staff were mentioned frequently by General Managers and Clinical Support Officers/Paramedics (see Appendix Table 6).

Education/training sources: Conferences/workshops were most frequently mentioned as the most useful education/training information source for all staff groups except for Clinical Support Officers/Paramedics and Admin/Office managers who mentioned work-based training courses most frequently (see Appendix Table 7). No doubt, this in part reflects level of opportunity with some groups being more able than others to attend conferences/workshops.

NHS and Health-related sources: NICE guidelines were the most frequently mentioned source for all clinical staff groups (Medicine, Nursing/Midwifery, AHP, and Clinical Support Officers/Paramedics) and Scientific/Technical staff. All other staff groups mentioned the Department of Health website most frequently (see Appendix Table 8). However, NHS Evidence was also mentioned frequently by staff working in PCTs (Public Health professionals, Commissioning managers and Practice managers), Clinical Support Officers/ Paramedics and Researchers. The Health Service Journal was the second most frequently mentioned source by CEOs/Execs/Non-Execs, while the NHS Institute for Innovation and Improvement was the second most frequently mentioned source by Transformation/ Change/Service Development managers.

Once again this analysis tends to confirm the view that usefulness is only partially related to frequency of use. There are marked differences among staff in the sources of information they find most useful.

5.10 Attitudes to information behaviour

Our discussion so far has followed the main components of the Niedźwiedzka model. In this section we broaden the perspective on information behaviour and explore respondents' attitudes through four questions that asked respondents to rate a series of attitude statements derived from the case studies. Each question focussed on a different aspect of information behaviour.

5.10.1 Experience of finding information

The first question asked respondents to rate 12 statements about how they find information in their work as a manager. The statements were all rated on a five point scale from (1) Disagree strongly to (5) Agree strongly. Replies for all respondents are summarised in Table 11 which lists the statements in descending order of agreement.

As factor analysis indicated that these items could not be correlated into scales, the analysis focused on replies to individual items, although there are some underlying themes among the set of items.

The two items that most respondents agreed or agreed strongly about both related to information sharing:

- I learn a lot from talking to frontline staff and finding out their opinions (88% agreed or agreed strongly)
- My colleagues often forward relevant bits of information to me without being asked (85% agreed or agreed strongly)

Two other items confirm the case studies finding that some individuals are more critical than others in finding and communicating information:

- I am the person people tend to come to if they want information (74% agreed or agreed strongly)
- In my experience there is usually one person within a group or team who keeps up to date with new ideas and developments (50% agreed or agreed strongly)

A number of the other items were about whom individuals rely on for finding or providing them with information. This suggests that individuals who conduct their own research may be less dependent on others for information. In particular, we find that the majority agreed that:

- My colleagues and/or I will visit other Trusts to learn from their experiences (65% agreed or agreed strongly)
- I look at my experience from different jobs / industries to see if there are things that could be applied here (76% agreed or agreed strongly)
- My colleagues and/or I will visit other Trusts to learn from their experiences (65% agreed or agreed strongly)

Table 11. Attitudes to Finding Information: All respondents: Percentages

	Disagree strongly	Disagree	Neither	Agree	Agree strongly	N of cases
	%	%	%	%	%	
I learn a lot from talking to frontline staff and finding out their opinions	1	3	8	59	29	1914
My colleagues often forward relevant bits of information to me without being asked	1	5	10	65	20	1909
I look at my experience from different jobs / industries to see if there are things that could be applied here	2	8	14	57	20	1909
I am the person people tend to come to if they want information	0	4	22	54	19	1913
If the information I need is not available I collect my own data	1	8	19	59	14	1910
My colleagues and/or I will visit other trusts to learn from their experiences	4	12	19	54	11	1908
In my experience there is usually one person within a group or team who keeps up to date with new ideas and developments	2	18	30	43	7	1911
I look abroad for innovative ideas about how we could change things here	10	27	27	28	9	1909
I ask my staff or junior colleagues to do an information search for me	10	30	28	29	3	1905
I tend to rely on my boss or another senior colleague for information	12	32	26	25	6	1912
My sources of information are mainly internal to the trust	11	39	22	25	4	1910
Management consultants can often provide easily applicable solutions that we can use	17	30	42	10	1	1910

Source: National Survey of Information Behaviour, 2011

- I look at my experience from different jobs / industries to see if there are things that could be applied here (76% agreed or agreed strongly)
- If the information I need is not available I collect my own data (72% agreed or agreed strongly)

On the other hand they tended to disagree that:

- I tend to rely on my boss or another senior colleague for information (44% disagreed or disagreed strongly)
- My sources of information are mainly internal to the Trust (50% disagreed or disagreed strongly)

5.10.2 Main differences in attitudes to finding information between job roles

Further analysis using one-way analysis of variance was undertaken to identify the individual attitude items where there was greatest difference in mean scores between respondents in different job roles. This illustrates how attitudes and experiences of finding information can be related to job role.

All but one of these items showed statistically significant differences by job role.[3] The four items showing the greatest range of difference were:

- I learn a lot from talking to frontline staff and finding out their opinions ($F=8.85$, $p < .001$)
- My colleagues and/or I will visit other Trusts to learn from their experiences ($F=11.61$, $p < .001$)
- I look at my experience from different jobs / industries to see if there are things that could be applied here ($F=5.81$, $p < .001$)
- My sources of information are mainly internal to the Trust ($F=8.10$, $p < .001$)

Mean scores for these four items for each job role are shown in Appendix Table 10. The main differences in attitudes by job role were that the percentage agreeing that:

- I learn a lot from talking to frontline staff and finding out their opinions varied from 98% of Clinical Support Officers/Paramedics to 67% of PCT Public Health professionals. In particular, respondents in clinical roles along with CEOs/Execs/Non-Execs and Transformation/Change/ Service Development managers were most likely to agree with this statement.
- My colleagues and/or I will visit other Trusts to learn from their experiences varied from 100% of CEOs/Execs/Non-Execs to 25% of Clinical Support Officers/Paramedics. Other staff in clinical roles and staff in more junior management roles were also less likely to agree with this statement.
- I look at my experience from different jobs / industries to see if there are things that could be applied here varied from 88% of respondents in other roles to 53% of Scientific/Technical staff. Staff in clinical roles,

[3] The exception was the item: In my experience there is usually one person within a group or team who keeps up to date with new ideas and developments.

who were less likely to have worked outside the NHS, were also less likely to agree with this statement.

- My sources of information are mainly internal to the Trust varied from 75% of Clinical Support Officers/Paramedics to 3% of Researchers. Other staff groups where two-thirds or more of respondents disagreed with this statement included PCT Public Health, PCT Commissioning, Transformation/Change/Service Development managers and CEOs/ Execs/Non-Execs. Admin/Office managers, PCT Practice managers and Clinicians (Nurses) were the other groups where less than 50% disagreed with this statement.

It should be noted that these four attitude statements were among those identified as being correlated (either positively or negatively) with using more information sources (see Section 5.7.5). Full details of this analysis are summarized in Appendix Tables 11 to 14 where the roles have been ordered in descending order of agreement with each attitude statement.

One implication of these findings is to suggest that respondents in different job roles do have different attitudes towards, and experiences of, finding information and, as we have already seen, that attitudes to finding information can be linked to overall information use.

5.10.3 Attitudes to information use

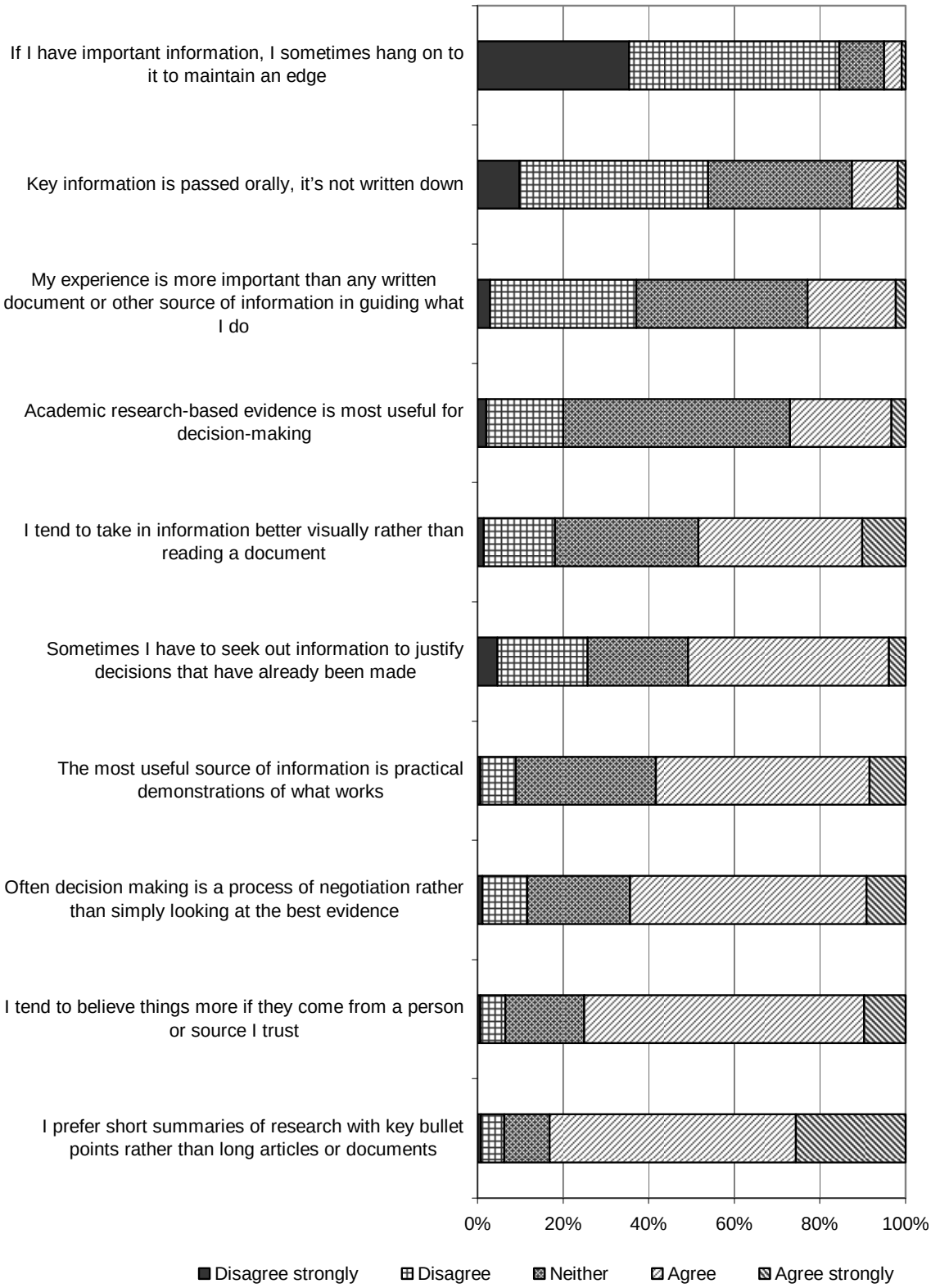
The next question in the survey asked respondents to rate 10 statements about their attitudes to the use of information. These statements were also rated on a five point scale from (1) Disagree strongly to (5) Agree strongly. Replies for all respondents are summarised in Figure 10 which lists the statements in descending order of agreement.

Factor analysis also indicated that these items could not be correlated into scales and so the analysis has focused on replies to individual items. Nevertheless there appeared to be some underlying themes among the set of items.

One theme related to practicality and ease of use:

- I prefer short summaries of research with key bullet points rather than long articles or documents (83% agreed or agreed strongly)
- I tend to take in information better visually rather than reading a document (48% agreed or agreed strongly)
- The most useful source of information is practical demonstrations of what works (58% agreed or agreed strongly)
- Academic research-based evidence is most useful for decision making (only 23% agreed, or agreed strongly)

Figure 10. Attitudes to Information usefulness: All respondents: Percentages (Minimum N = 1,894)



Source: National Survey of Information Behaviour, 2011

A second theme related to the importance of tacit knowledge:

- My experience is more important than any written document or other source of information in guiding what I do (only 37% disagreed or disagreed strongly)
- Key information is passed orally, it's not written down (54% disagreed or disagreed strongly)

The third theme related to the "political" use of information:

- If I have important information, I sometimes hang on to it to maintain an edge (85% disagreed or disagreed strongly)
- Sometimes I have to seek out information to justify decisions that have already been made (51% agreed or agreed strongly)
- I tend to believe things more if they come from a person or source I trust (75% agreed or agreed strongly)
- Often decision making is a process of negotiation rather than simply looking at the best evidence (64% agreed or agreed strongly)

These findings confirm the importance of experience and tacit knowledge to managers, the lower value placed on research-based evidence and their desire for practical advice and 'hands-on' experience. In addition, these findings highlight the political nature of information, and the potential for influence by trusted intermediaries.

One-way analysis of variance was undertaken to identify the individual attitude items where there was greatest difference in mean scores between respondents in different roles. All the items showed some level of significant difference between respondents in different job roles and the two showing the greatest difference were:

- Often decision making is a process of negotiation rather than simply looking at the best evidence ($F=5.66$, $p < .001$)
- Academic research-based evidence is most useful for decision-making ($F=5.99$, $p < .001$)

Mean scores on these two items for each job role are shown in Appendix Table 15. Replies to these two statements broken down by job role are summarised in Appendix Tables 16 and 17 which show that the percentage agreeing that:

- Often decision making is a process of negotiation rather than simply looking at the best evidence varies from 86% of Researchers and PCT Public Health professionals to 43% of Clinical Support Officers/ Paramedics. CEOs/Execs/Non-Execs were the group most likely to disagree with this statement.
- Academic research-based evidence is most useful for decision-making varies from 54% of Researchers to 11% of Scientific/Technical staff. A

third of CEOs/Execs/Non-Execs and PCT Public Health specialists disagreed with this statement.

These findings suggest that respondents in different job roles have different attitudes to information and its use in making decisions. The first of these statements reminds us that politics and power relationships influence decision-making, while the second suggests that some groups of respondents value academic research-based evidence more than others.

5.10.4 Attitudes: barriers to information seeking

The next question asked respondents about their views about information seeking. Respondents rated 11 items on the same five point scale. Replies for all respondents are summarised in Figure 11 which lists the statements in descending order of agreement.

Most of these statements related to the difficulty of finding information either because of information overload, not knowing where to look or lack of time. However, the difficulty of understanding academic research was also an issue for some respondents.

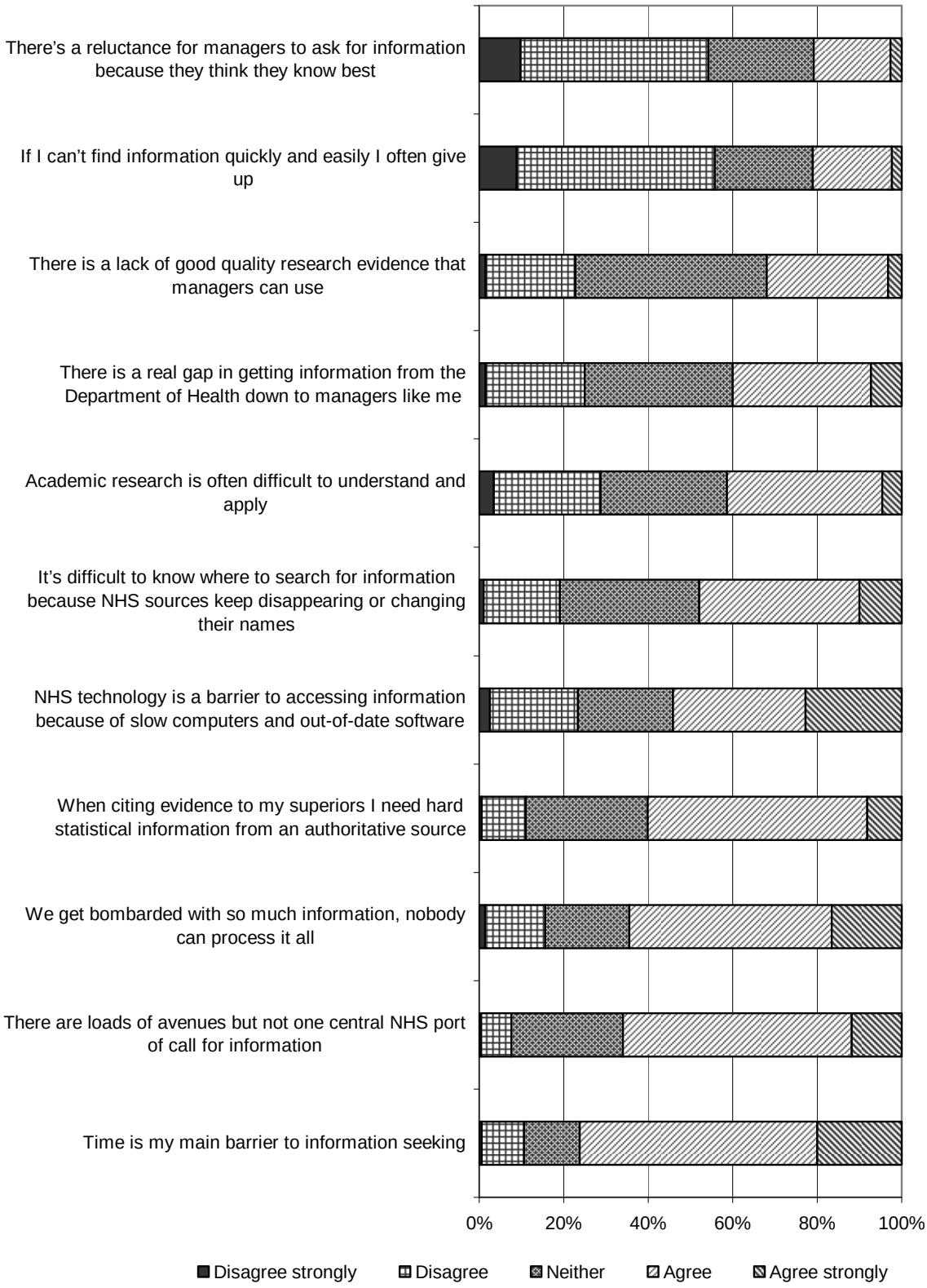
Factor analysis[4] indicated that five of these statements could be used to form a scale:

- We get bombarded with so much information, nobody can process it all (65% agreed or agreed strongly)
- Time is my main barrier to information seeking (76% agreed or agreed strongly)
- There is a real gap in getting information from the Department of Health down to managers like me (40% agreed or agreed strongly)
- It's difficult to know where to search for information because NHS sources keep disappearing or changing their names (48% agreed or agreed strongly)
- There are loads of avenues but not one central NHS port of call for information (66% agreed or agreed strongly)

These statements are all concerned with the difficulty of finding information either through lack of time, information overload or not knowing where to find it.

[4] Technical details of the two scales are shown in Appendix 4.

Figure 11. Barriers to Information Seeking: All respondents: Percentages (Minimum N = 1,897)



Source: National Survey of Information Behaviour, 2011

Table 12. Difficulty of finding information by Foundation status (Acute Trusts)

Trust status	N of cases	Mean	S.D.	T (probability)
Foundation (10)	369	3.49	0.66	-2.35 (p<.05)
Non-Foundation (11)	403	3.59	0.59	

Source: National Survey of Information Behaviour, 2011

All staff groups scored above the mid-point on this scale indicating that the majority of respondents in all staff groups tended to agree with the statements that make up this scale. There were no differences between respondents by Trust type, although respondents working in Acute Trusts with Foundation status had lower mean scores on this scale than respondents in Acute Trusts without Foundation status (see Table 12). This suggests that Foundation Trusts might be managing the information flow more effectively.

Scores on this scale were also related to the importance of strategy/long-term planning in respondents' work. Respondents who reported that strategy/long-term planning was more important had lower scores on this scale than those who reported it was less important. This suggest that they experience less difficulty in finding the information they want, a significant point, as they are a group with high information needs.

However, the main message from this analysis is that the majority of respondents feel quite strongly that it is difficult to find information. As we have already noted, scores on this scale correlated with views on how easy it is to find information required that is relevant to your work as a manager (see Section 5.7.4).

Eight of the eleven statements showed significant differences by job role. The one item that showed the greatest difference between respondents based on their job role was:

- There's a reluctance for managers to ask for information because they think they know best ($F=5.38$, $p < .001$) with the proportion of respondents disagreeing with this statements varying from 79% of PCT Practice Managers to 39% of Information/Knowledge Managers/ Librarians and Researchers (see Appendix Tables 18 and 19).

Other groups where less than half disagreed with this statement included: Transformation/Change/Service Development managers (42% disagreed), Clinicians (Medicine) (41%), Specialist managers (48%), Admin/Office managers (43%) and Clinical Support Officers/Paramedics (40%).

Two of the items in this set related to academic sources of information – 'Academic research is often difficult to understand and apply' and 'There is a lack of good quality research evidence that managers can use'. Although only a minority of respondents agreed with these statements, it is should

be noted that agreement with these statements is associated with using fewer academic sources of information (see Section 5.5.3 and Appendix Table 9).

5.10.5 NHS and Trust culture of information seeking

The final set of 11 attitude statements asked about respondents' views on the culture of information seeking in the NHS. Replies are summarised in Figure 12 in descending order of agreement.

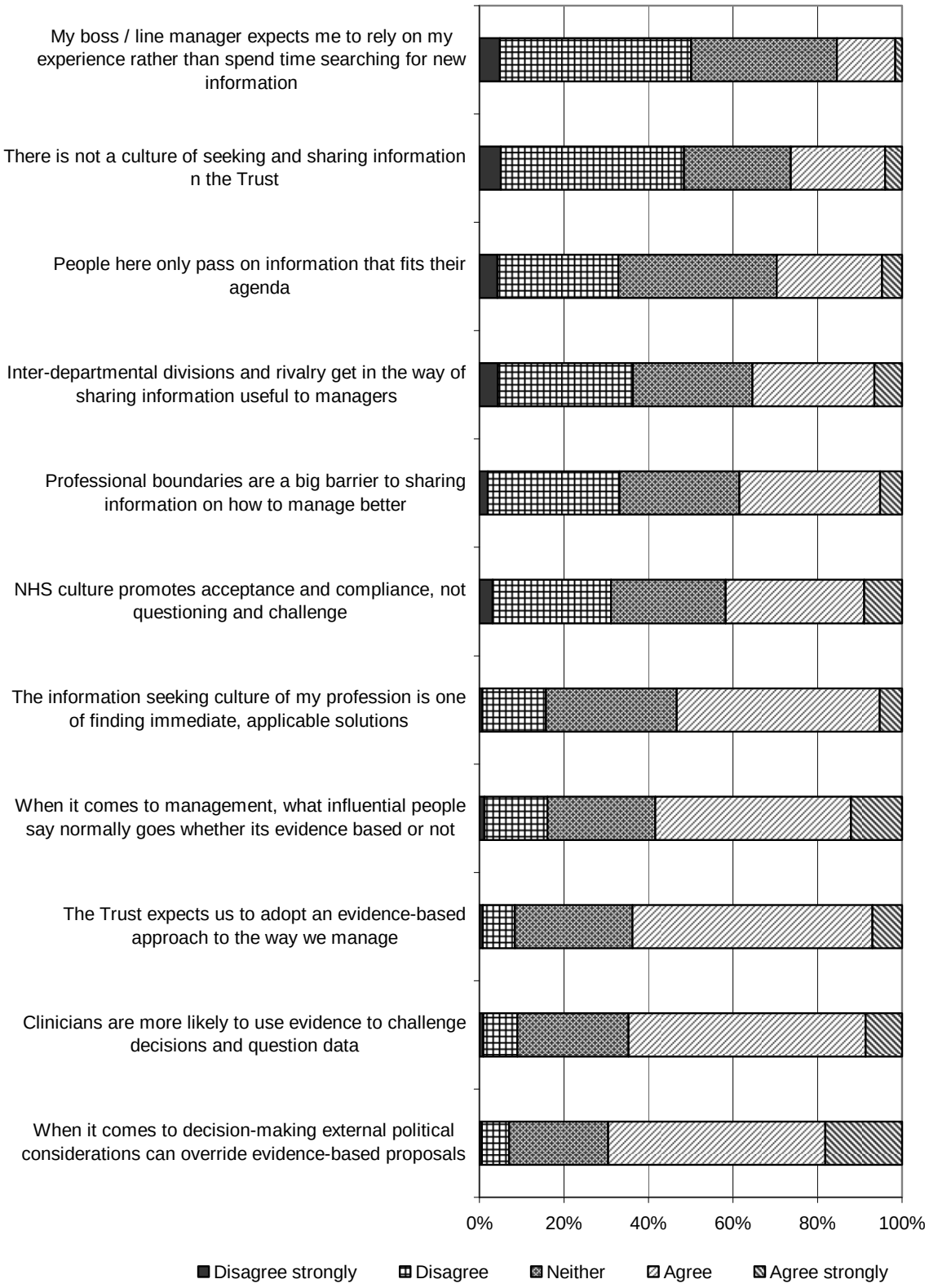
Many of these items related to the political and organisational aspects of NHS culture and their impact on how information is used. Factor analysis indicated that seven of these items could be grouped into a scale along with one item 'There's a reluctance for managers to ask for information because they think they know best' from the previous set of items.

The seven statements were:

- Professional boundaries are a big barrier to sharing information on how to manage better (38% agreed or agreed strongly)
- There is not a culture of seeking and sharing information in the Trust (26% agreed or agreed strongly)
- When it comes to management, what influential people say normally goes whether it's evidence based or not (58% agreed or agreed strongly)
- Inter-departmental divisions and rivalry get in the way of sharing information useful to managers (35% agreed or agreed strongly)
- NHS culture promotes acceptance and compliance, not questioning and challenge (42% agreed or agreed strongly)
- When it comes to decision-making external political considerations can override evidence-based proposals (70% agreed or agreed strongly)
- People here only pass on information that fits their agenda (30% agreed or agreed strongly)

Agreement with these items suggests political and institutional factors often inhibit the way information is used and is consistent with the case study findings and much of the literature on the subject. Average scores on this scale, which measure aspects of organisational culture, were above the mean for all staff groups indicating that more respondents agreed than disagreed with these statements. Transformation/Change/Service Development managers and Clinicians (Medicine) had the highest scores and perhaps not surprisingly, those managers at the top of Trusts, the CEOs/Execs/Non-Execs the lowest.

Figure 12. Attitudes, Trust and NHS Culture: All respondents: Percentages (Minimum N = 1,891)



Source: National Survey of Information Behaviour, 2011

Two of the remaining items showed the greatest difference by job role (see Appendix Table 20). These were:

- The Trust expects us to adopt an evidence-based approach to the way we manage ($F=5.07$, $p < .001$)
- Clinicians are more likely to use evidence to challenge decisions and question data ($F=5.01$, $p < .001$)

While almost two thirds of respondents agree with that their Trust expects an evidence-based approach to management, agreement is far from uniform across job role. Appendix Tables 21 and 22 summarise replies by job group and show that the percentage agreeing that:

- The Trust expects us to adopt an evidence-based approach to the way we manage varies from 85% of CEOs/Execs/Non-Execs to 42% of Admin/Office Managers. PCT Public Health specialists, Clinicians (Nursing/Midwifery) and Clinicians (AHP) were other groups where more than 70% agreed with this statement.
- Clinicians are more likely to use evidence to challenge decisions and question data varies from 86% of Clinicians (Medicine) to 37% of Scientific and Technical staff. PCT Public Health specialists and Information/Knowledge managers/Librarians were the two other groups where less than 50% agreed with this statement.

It is not surprising that staff in clinical roles were more likely to agree with this statement but it is another indicator that staff in clinical roles tend to have different attitudes than non-clinical ones towards how information is used.

Although scores on the scale measuring organisational culture correlated weakly (and negatively) with information use, it should be noted that agreement with the statement, 'My boss/line manager expects me to rely on my experience rather than spend time searching for new information' is negatively correlated with information use and correlates slightly more negatively with use of external and academic sources of information (see Appendix Table 3). Even though these correlations are small, they are indicative that immediate job context, in this case the views of a particular line manager, can impact information behaviour.

5.11 Conclusions to national survey

In this section, we review both the survey process and the key findings from the survey.

5.11.1 The survey process

Other researchers (e.g. Powell et al. 2012) have noted the difficulties of conducting a survey of NHS managers. There are problems both in terms of identifying who is a manager and then generating a representative sample for a survey. There is also the issue of obtaining a good response rate from

those invited to participate in an online survey. Although it is difficult to calculate a response rate for this survey, it had good coverage of different regions, professions and job roles, and a substantial number of respondents that enabled statistically robust comparisons to be made. It also had respondents from a wide range of Trusts.

We conclude that, while the survey may not be representative and be biased towards those interested in the research topic, respondents are clearly likely to be those with highest information need. Nevertheless, it covered a wider range of managers in terms of jobs and level and in information behaviour than was possible in the qualitative phase of the study. Moreover, in evaluating the survey findings, we were able to triangulate, comparing their replies with data from the librarians' survey and our case studies, and found that they provide convergent validity for each other.

5.11.2 Summary of main findings

Most respondents to the survey were highly educated and professionally qualified with many also having management qualifications and/or other training in management. They were also working in job roles where information search was a high priority. Significantly, the study has also identified that acting as an informal information intermediary was an important work priority for many respondents, and not just those in formal roles, such as knowledge/information managers/librarians or researchers.

A high proportion of respondents were also involved in strategy/long-term planning and/or the management of major change with those in higher salary bands being more likely to be involved in these activities than other respondents. These managers had even greater information needs than other respondents.

The survey has also identified that tasks in which the need for information is highest are those that are important, novel or involve risk. Both level of education and training in how to find information appeared to affect the criteria respondents used to evaluate the quality and reliability of information. Most said it was the authority of the source that was most important.

Just under a third (31%) of respondents found it easy to find information relevant to their work as a manager, with librarians and medical staff having most difficulty. Therefore, it is not just having the technical skills or access to resources which governs how easily managers can find the information they need. Those managers engaged in major change projects, were more likely to find the information they wanted but only used about a half of it; confirming the case study findings that information use is highly selective.

Data from the survey also confirmed the case study finding that major change projects stimulate information search, but the survey findings also

suggest that level of education influences the likelihood of engaging in information search.

The survey also set out to gather more general information about the sources used by respondents and to identify not only which sources were used most frequently, but also which were viewed as most useful. Managers use a variety of different sources, online, written, and people/ networks, and education and training courses. Overall, internet/online sources were widely used but there is a heavy use of other people – colleagues, contacts and networks, and of internal sources. Little direct use was made of research or formal knowledge intermediaries. It seems that the informal intermediary role taken on by many managers is more important than formal ones. Personal experience and seeing what works can also be more influential than traditional academic or formal sources. However, the sources used varied substantially by job role, as did the ones they found most useful. In particular, there were specific sources that were rarely or never used by most respondents but were used quite frequently by people in certain job roles.

Thus in terms of the contextual and intervening variables indicated in the model, the survey found that job role and task accounted for the most significant variations in behaviour. The only personal characteristic associated with variation was level of education, with those who had studied at postgraduate level being far more active, finding it easier to find information, and being more likely to use both academic sources and sources external to the Trust.

There were some differences between Trusts in terms of the degree to which the culture supports information seeking and use. There was, however, little evidence that linked use of information sources to measures of performance of the Trust in which respondents worked. This may be because any linkage is just too diffuse given the uneven response from individual Trusts and respondents' varied job roles. However, there was some evidence that, among respondents working in Acute Trusts, those in Foundation Trusts had less difficulty finding information. This might suggest that Foundation Trusts manage information flow more effectively.

Finally, a major part of the survey explored respondents' attitudes to key aspects of information behaviour. This identified that most respondents found it difficult to access information, either through lack of time, information overload or not knowing where to find it. However, it also showed that some key attitudinal differences could be related to information search. For example, it found that replies to certain attitude statements could be linked to use of internal and external sources of information.

5.11.3 Conclusion

These findings give insight into managers' preferences as to how they would like to receive information, the political nature of some organisational

decision-making and the differing value put on academic research-based evidence. Overall they confirm the findings of the case studies. There were minor differences, the main being that the political aspects of information behaviour do not emerge so strongly, except for transformation managers and medical staff – perhaps because they are at the forefront of change.

6 Survey of librarians

This section of the report summarises the main findings from a survey of librarians[5] that was conducted between April and June 2011. Although the research literature stresses the important role of information intermediaries, both the case studies and national survey of health managers found that librarians and library resources were not widely used. In this section we seek to explore this finding further from the perspective of individuals whose formal role is an information intermediary.

Seven in-depth semi-structured interviews were also conducted with 'knowledge intermediaries' including four librarians, a Knowledge Manager and a Management Consultant who worked on one of the case study projects. These interviews were used both to inform analysis of the case study projects and in the design of the survey of librarians.

The purpose of the survey was to generate a better understanding of the role of librarians working in the NHS and elsewhere as information intermediaries for health managers. Information was collected about the respondents' job, employment and training, and about their library service and its resources with a particular emphasis on resources and expertise related to management. Respondents were also asked about the use made of library resources by managers.

Several questions asked about the librarians' experience of finding and using information in the NHS in order to generate an understanding of some of the influences on managers' information behaviour. Many of these mirrored those asked to the health managers.

Information was also collected about how the librarians evaluated the quality and reliability of information relevant to managers, how they are kept informed about major changes and service redevelopment in their Trust/organisation, and the literature and information searching they do for managers. This was intended to generate insights into key aspects of their work and how they interact with managers in their organisations.

6.1 Survey response and profile of respondents

This was a small scale and exploratory survey and the analysis is based on replies from 151 librarians working in the NHS or in a similar job, for example in a university or health charity. Respondents who were ineligible because they were not librarians and those who gave incomplete survey responses were excluded from the analysis.

[5] For convenience, all respondents to this survey are referred to as librarians even though some of them do not use the term 'Librarian' in their job title.

Nearly all (91%) the respondents were working in England but a few (7%) worked in other parts of the UK, while the remainder provided no information about their work location or employment. The vast majority (83%) were working in the NHS in England. Most (60%) worked in NHS Acute Trusts with only 10% of respondents working in PCTs, 9% in Mental Health Trusts and 8% in Higher Education. Numbers are too small to allow comparisons by type of employer, although separate results for respondents from NHS Acute Trusts are presented where relevant.

Just over half (54%) of those working in the NHS in England were employed in Foundation Trusts and 56% in a teaching Trust.

Slightly more than three-quarters (77%) of respondents were female and 71% were aged over 40. Respondents in NHS Acute Trusts tended to be slightly younger with 33% aged 40 and under and only 36% aged over 50 compared to 24% and 46% respectively among those working elsewhere.

6.1.1 Employment information

Overall, 81% of respondents described their work as involving managerial responsibilities and nearly three-quarters (72%) of respondents working in the NHS in England were on Agenda for Change salary bandings 6 or 7. Two-thirds of the Information/Knowledge managers/Librarians who responded to the main survey were on Agenda for Change salary bandings 7 or below (see Appendix Table 1) which suggests that the two groups were broadly similar in terms of job level.

Over half (58%) the respondents had worked for their present employer for 6 years or more and nearly half (47%) had been in their present position for at least 6 years. On the other hand, about one in seven (14%) had worked for their present employer for less than 3 years and a fifth (21%) had been in the current position less than 3 years.

Nearly two-thirds (64%) had previously worked elsewhere in the NHS and just over half (52%) elsewhere in the Public sector. Nearly half (48%) had worked in Higher Education and just over a third (35%) in the Private sector, while about one in ten (11%) had worked in the Voluntary sector.

6.2 Education and training

The survey of health managers found that education and training seemed to have a significant impact not only on the information sources managers used but their overall approach to information search.

The librarians responding to this survey were well qualified. Two-thirds (66%) had a postgraduate degree and nearly all (94%) had a librarianship professional qualification. However, it is interesting to note that a quarter (24%) of respondents working in NHS Acute Trusts had a professional qualification in Education compared to 6% of those working elsewhere. Overall, just over a quarter of survey respondents (27%) had more than one professional qualification.

Very few respondents had studied management. Only (15%) had a Managerial/Financial/HR qualification and a small minority had received management training as part of their undergraduate (10%) or postgraduate training (12%), but 46% reported that they had received other management training. However, 38% had not received any management training with those without management responsibility being less likely to have received any management training (48% compared 66%).

These findings suggest that the respondents to this survey were at least as well qualified as the health managers responding to the main survey with a higher proportion of respondents to this survey having a postgraduate degree (66% compared to 50% of health managers). However, slightly fewer of them had received management training and, in particular, fewer had received management training as part of their undergraduate or postgraduate education. This suggests that a significant minority may not have the expertise needed to identify and advise on relevant and useful information sources in this area.

6.3 Scope and size of library services

The survey asked about the size and scope of respondents' library services. We also visited a number of libraries in the first phase of the research. These varied from large buildings with multiple study spaces and PCs to a single room no larger than an office with two PCs and a small collection of books and journals. Some sites had no facilities at all.

6.3.1 Staffing

The survey found that over half of respondents (55%) worked in library services with 5 or fewer staff, 30% in services with between 6 and 10 staff and 15% in services with more than 10 staff. Foundation Trusts and teaching Trusts tended to have more staff than other Trusts. 56% of respondents from Foundation Trusts worked in services employing more than 5 staff compared to just 32% of those in non-Foundation Trusts. Comparable figures for respondents from teaching and non-teaching Trusts were 55% and 30%.

None of the libraries were providing services exclusively for NHS staff. However, 83% of librarians employed by the NHS reported that all staff in their service dealt directly with NHS staff. In the larger services (with more than five staff), all respondents reported that five or more staff dealt directly with NHS staff.

Among those not working in the NHS, a third of respondents reported that all the staff in their library service dealt directly with NHS staff and a further 39% that five or more staff in the service did. This finding offers confirmation that respondents to the survey not directly employed in the NHS were working in library services providing services to NHS staff and health managers.

6.3.2 Library sites

The majority (80%) of respondents worked in library services providing services to several Trusts or organisations with 42% providing a service to between two and five Trusts/organisations and 38% to more than five.

Most (79%) respondents also worked at Trusts/organisations with multiple sites. Roughly equal proportions of respondents working in services with multiple sites reported that there were library facilities at all sites (33%), only at some sites (30%) and at one centralised site (34%). The vast majority of respondents (83%) reported that staff in their Trust/ organisation had access to libraries/information resources at other Trusts/ organisations.

6.3.3 Budgets

Budgets for library resources (excluding staff) varied very considerably but a third of respondents either did not know or did not answer this question. Among those that reported a budget figure, 16% reported that it was up to £10K (with 6% reporting a zero budget), 43% a budget between £10K and £50K, 23% a budget between £50K and £100K, and 19% a budget of more than £100K. Respondents working in Foundation or teaching Trusts reported bigger budgets than those not working in these types of Trusts. The majority of respondents in Foundation Trusts (60%) and in teaching Trusts (57%) reported annual budgets for resources of greater than £50K compared to 32% of those working elsewhere.

While these data cannot be used as a basis for describing the size or scope of individual library services as some respondents were likely to be working in the same service as other respondents (and the larger the service the more likely this is), they indicate the diversity of librarians' work situations and that the size and scope of library services varies considerably.

Nevertheless, they can be used to identify whether respondents in larger services and/or working in different types of organisation have different experiences.

6.4 Library facilities

Respondents were also asked to provide some information about the facilities their library service offered. Nearly all respondents reported that their library had study spaces (96%) and PCs (97%) but respondents from NHS Acute Trusts were more likely than other respondents to report that their libraries also had teaching/seminar rooms (61% compared to 46%) and social space (57% compared to 34%). However, there were no differences in terms of facilities by whether a respondent worked in Foundation or teaching Trust or not.

Virtually all (99%) respondents said that their library had resources relevant to management with the vast majority having professional books and journals (86%) as well as academic books and journals (79%). Most of

those working in NHS Acute Trusts (89%) also reported that their service held the NHS core collection as did 64% of those working in other NHS library services. However, only a third of those working in non-NHS libraries reported that their service held this collection.

6.4.1 Use of library facilities

A substantial number of respondents (40%) thought that managers did not make much use of their library's management resources but over half (58%) thought they made either a great deal of use (11%) or used the resources to some extent (47%). However, extent of use was not affected by level of resource available with no significant differences in the use of resources by managers in services by whether these resources were felt to be sufficient or not.

Respondents were asked to identify from a list of possible reasons what the barriers to use of services might be (see Figure 13).

The three main barriers to use of these resources were seen to be:

- Lack of awareness of available resources (80%)
- Perceptions that the library is mainly a medical/clinical resource (77%)
- Lack of time (70%)

Reluctance to ask for help was also felt to be a barrier by half (51%) of respondents, while 40% of those working in NHS Acute Trusts felt that managers were doing their own searches online without the assistance of the library. 39% thought that managers lacked competence in how to properly use resources.

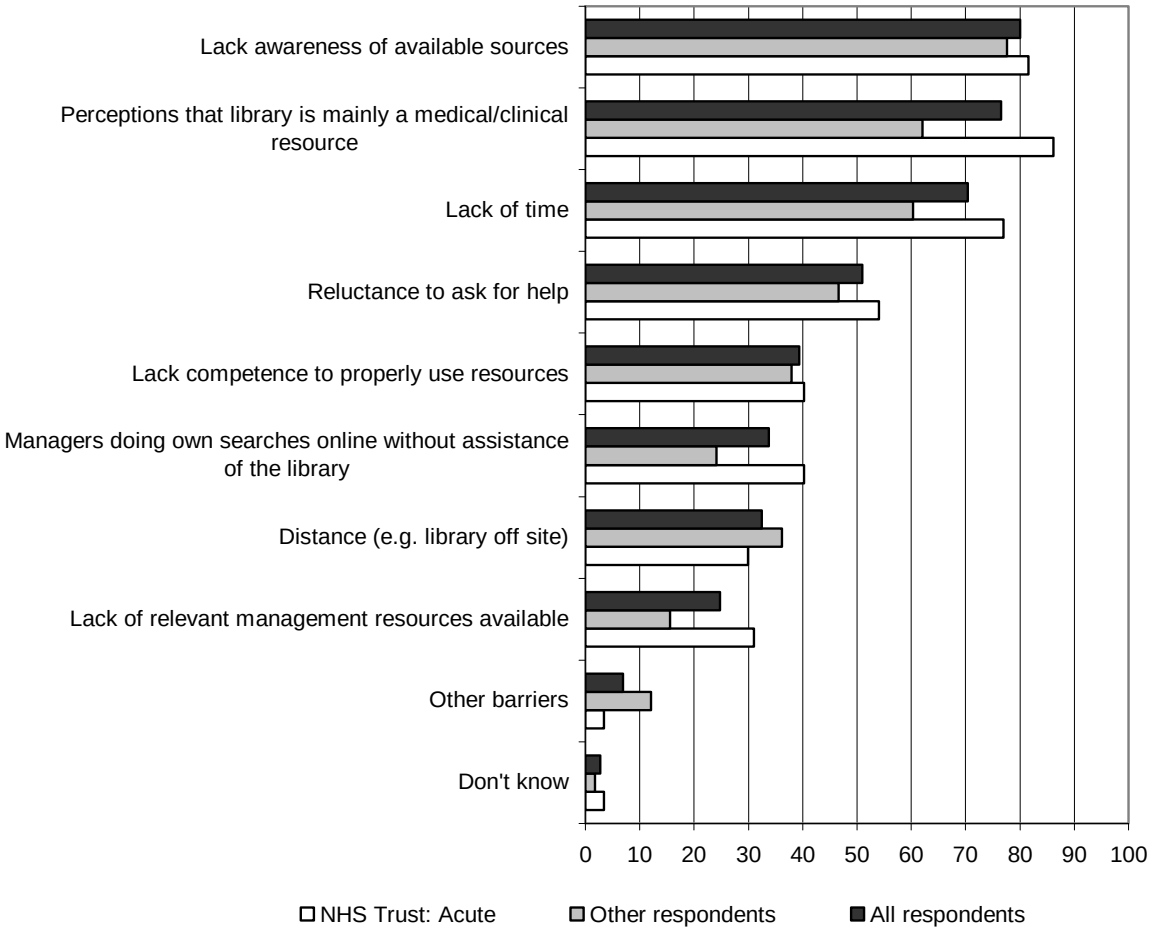
The dispersed nature of many Trust sites means that a great deal of contact with managers is often via email rather than face-to-face.

"I mean one thing I didn't say earlier on is that we don't expect people to visit our library 'cause it's not that sort of service .... because we cover the whole county. So a lot of it is about electronic access. Our staff definitely have a changed role because they have a lot more... less interface with people and more dealing with them by email." (Librarian, PCT).

However, where facilities were available on site, managers did drop in to discuss things informally or to ask for help or advice.

"We have quite a lot of people come and work in it because it's a protected environment for them to do some work. And quite a lot of people pop to collect things. Because it's convenient. And quite a lot of people come in just because they like coming in. Having a chat about what they're working on 'cause face- to-face contact is always better." (Librarian, Acute Trust).

Figure 13. Barriers to use: Percentages (N = 145)



Source: Survey of Librarians, 2011

6.4.2 Expertise and responsibility for management resources

Many (43%) respondents reported that no one in their team had specific responsibility for resources relevant to management, although nearly a third (32%) of those working in NHS Acute Trusts reported that this was a responsibility they shared with colleagues or that they had (18%).

Slightly under a third (30%) reported that they personally had no expertise, qualifications or training relevant to management. However, respondents were more likely to report that they, rather than their colleagues, had the expertise (46% compared to 26%), the qualifications (34% compared to 13%) and the training (46% compared to 26%) relevant to management.

6.4.3 Purchase decisions

Individual user demand was the most important factor in purchase decisions with 36% of respondents describing it as extremely important and 38% as very important. Other major influences on purchase decisions were: user representative/committee recommendations (56% very or extremely important) and National Guidelines (54%). The least important influence was Strategic Health Authority Lead recommendations (15% rated as extremely important and 24% as very important).

Interestingly, National Guidelines were less likely to be rated as extremely important in purchase decisions by Librarians working in Acute Trusts than elsewhere (18% compared to 30%), while individual user demand was more important for those in Acute Trusts than elsewhere (40% compared to 28%).

6.4.4 Training

One-to-one training on request was by far the most common form of training on information searching relevant to management with 80% of respondents from Acute Trusts providing this and 61% of respondents working elsewhere. Nearly a quarter (23%) of respondents also provided regular training courses available to all staff and a roughly equal proportion (22%) also provided training as part of induction for particular groups but only a minority (13%) provided it as part of all staff inductions. No training on information searching relevant to management was offered by 13% of respondents in NHS Acute Trusts and 33% of respondents elsewhere.

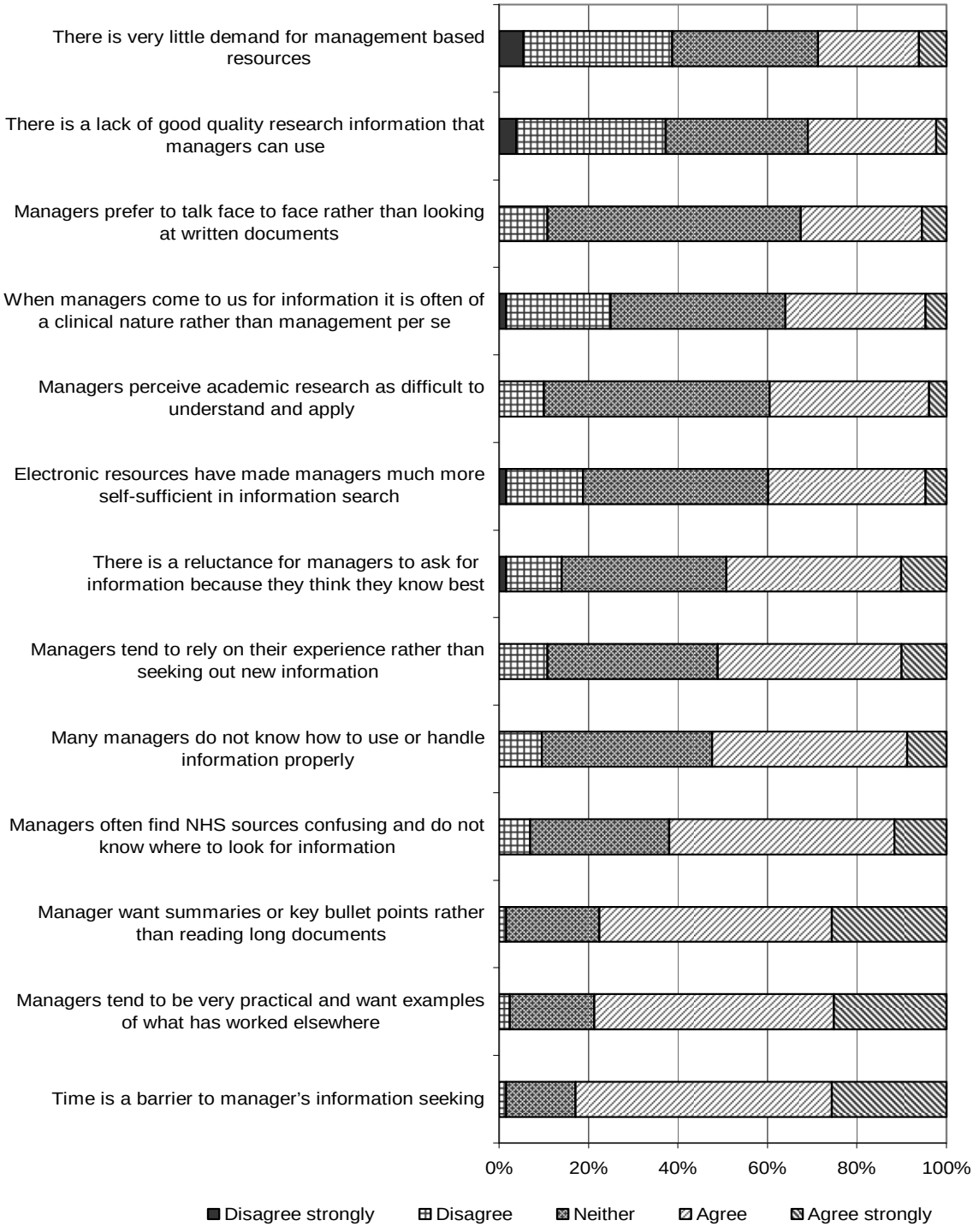
Over half (54%) the respondents in NHS Acute Trusts reported that training courses were not well attended by staff with managerial responsibilities compared to 28% of those working elsewhere.

It is interesting to note that, among those respondents who reported that their library service provided training courses, respondents who felt that training courses were not well attended were less likely to offer training courses as part of all staff inductions (8% compared to 22%), or as part of inductions for particular groups (14% compared to 39%), but slightly more likely to run regular training courses available to all staff (33% compared to 25%).

6.5 Attitudes to managers' use of information

In addition to providing detailed information about their library services and its facilities, respondents were also asked to rate 12 statements about their attitudes towards managers' use of information. These statements were rated on a five point scale from (1) Disagree strongly to (5) Agree strongly. Replies for all respondents are summarised in Figure 14. Views did not differ much by where respondents worked.

Figure 14. Attitudes to managers' use of information: All respondents (Minimum N = 126)



Source: Survey of Librarians, 2011

It was generally agreed by the vast majority of respondents that:

- Time is a barrier to managers' information seeking (83% agreed or agreed strongly)
- Managers tend to be very practical and want examples of what has worked elsewhere (79% agreed or agreed strongly)
- Manager want summaries or key bullet points rather than reading long documents (78% agreed or agreed strongly)

More respondents disagreed than agreed with the following two statements:

- There is a lack of good quality research information that managers can use (37% disagreed while 31% agreed)
- There is very little demand for management based resources (38% disagreed while 28% agreed)

A majority also agreed that:

- Managers often find NHS sources confusing and do not know where to look for information (62% agreed)
- Many managers do not know how to use or handle information properly (53% agreed)
- Managers tend to rely on their experience rather than seeking out new information (51% agreed)

In general, there was little difference between replies from respondents working in NHS Acute Trusts and those working elsewhere. The largest differences were on the following three items:

- Managers perceive academic research as difficult to understand and apply (30% agreed or agreed strongly in NHS Acute Trusts compared to 54% of those working elsewhere)
- There is a reluctance for managers to ask for information because they think they know best (54% agreed or agreed strongly in NHS Acute Trusts compared to 42% of those working elsewhere)
- When managers come to us for information it is often of a clinical nature rather than management per se (41% agreed or agreed strongly in NHS Acute Trusts compared to 29% of those working elsewhere)

These differences may well reflect the different organisational context in which respondents work with, for example, respondents in NHS Acute Trusts being more likely to work with clinical staff.

Several of these items were identical or very similar to items asked to the managers directly. Replies were quite similar and this suggests that these librarians have a good understanding of the issues affecting managers' use of information. On several items, replies were quite comparable:

- Time is a barrier to managers' information seeking (76% of health managers and 83% of librarians agreed or agreed strongly)
- Managers tend to be very practical and want examples of what has worked elsewhere (58% of health managers and 79% of librarians agreed or agreed strongly)
- Manager want summaries or key bullet points rather than reading long documents (83% of health managers and 78% of librarians agreed or agreed strongly)
- There is a lack of good quality research information that managers can use (32% of health managers and 31% of librarians agreed or agreed strongly)
- Managers perceive academic research as difficult to understand and apply (42% of health managers and 40% of librarians agreed or agreed strongly)

These findings were backed up by the interviews with intermediaries. They felt that library services were largely underused by managers within the NHS for a variety of reasons such as lack of time, lack of relevant resources, lack of training/inclination to use libraries, proximity/distance, or availability of electronic resources which meant that managers were 'hidden users' who collected their own published information elsewhere (though this may be recorded through Athens use, etc).

For example, a librarian in one of the Acute Case Study Trusts produced statistics to show that only 2.7% of loans and 1.03% of photocopying in the library was done by managers/administration staff. When asked about managers' use of information she gave the following explanation:

Librarian: Honestly I don't think many of them actually use our service to be perfectly honest...

Interviewer: Why do you think managers' behaviour is so different than say consultants towards information?

Librarian: Maybe it's the way they're trained. I don't know. Doctors obviously when they're doing their training, the libraries are very important part of their training and maybe not so for managers. It's a mindset I suppose?

The fact that NHS libraries were mainly seen as a medical/clinical resource and used mainly by doctors, nurses and other Allied Health Professionals was reinforced by several of the interviewees.

*"Nurses, doctors, doctors are the main … it's just that they seem to be more library-orientated." (*Librarian, Mental Health Trust*).*

*"(They think) it's the medicine doctors' library. There's nothing for me here." (*Librarian, External Organisation*).*

Nevertheless librarians recognised that their resources were more focused upon medical/clinical issues and that they did not always have the sort information available that managers required:

*"I must admit it's mostly the textbooks. We have a management course, CMS or something course, which XXXX actually did, my deputy, so we've got more management stuff than we used to, the textbooks around, I've got a very good relationship with our training department manager but it's the people who are doing the course rather than managers who have you know sort of there's no sort of postgraduate stuff, it's people who are learning that sort of stuff." (*Librarian, Acute Trust*).*

Or that librarians did not know what was required:

*"So yeah maybe there's not stuff here that's relevant to them. I don't, which is another issue but if we don't know what they want, we can't, with them asking us for it, we won't get it." (*Librarian, Acute Trust*).*

However, the distinction between clinical/management information is often blurred in the NHS as managers are often clinicians themselves and/or working in a role to improve clinical services.

"People in their management role as sort of ward manager or department manager or sort of you know with a case load of patients, they'll come all the time and I have those all the time, but they might, their information requests could be anything, and are not necessarily pure management information that they're after, it's you know could be I need information on a particular condition or that sort of thing." (Librarian, Mental Health Trust)

It was also felt that sometimes managers were reluctant to ask for help, or go into a space that they felt was alien for them.

*"Sometimes with managers it's you know I don't want to look stupid going into a library and asking for something. You think they're all looking at you, saying what are you doing in here? Who let you in? That must happen in people's mind. They'll rather not come in here actually. I'm a person of authority, I'm a senior manager, I come into some place to be patronised by some grade three librarian you know. No I'm not going to do it." (*Librarian, External Organisation*).*

In fact where managers did use library services it was often through remote access to electronic journals rather than actually physically visiting the library.

"They use the library, they don't necessarily come in. They come in if they're in this building. But they are library users. I mean you could track everybody back by the use of Athens passwords … they do a lot of their own searching 'cause they end up with a very high level of computer literacy skills and information literacy skills of their own. So they will only come when they can't get an article." (Librarian, Mental Health Trust)*.*

"A lot of them are much more self-sufficient with information as a result of the ... access that they've got." (Librarian, PCT)*.*

Librarians also recognised that perhaps managers had other means of collecting information that were more familiar and comfortable to them and yielded quicker results than searching for academic information.

"I don't think people will naturally go and look for the evidence. I don't think managers are that way. It's not a criticism. Managing is about doing." (Librarian, Acute Trust).

"I would say how managers get information is very anecdotal. They tend it to be practical, they tend to want, they wanted to know what other people are doing, people tended to talk face-to-face, people felt, they might change sometimes, people felt they should be going somewhere or getting something regularly to keep themselves up-to-date, they wanted something easy, that was relevant and that they could easily translate to their work, they wanted it. And often there wasn't." (Librarian, External Organisation).

However, such information use was not unique to managers and librarians themselves admitted that anecdotal or verbal evidence could often take priority over written forms in their own decision-making.

Librarian: Well I know which one should be more influential, which is the written one. But probably the anecdotal evidence from colleagues is quite often the one you listen to because it's more relevant.

Interviewer: Why do you think the written one should be more?

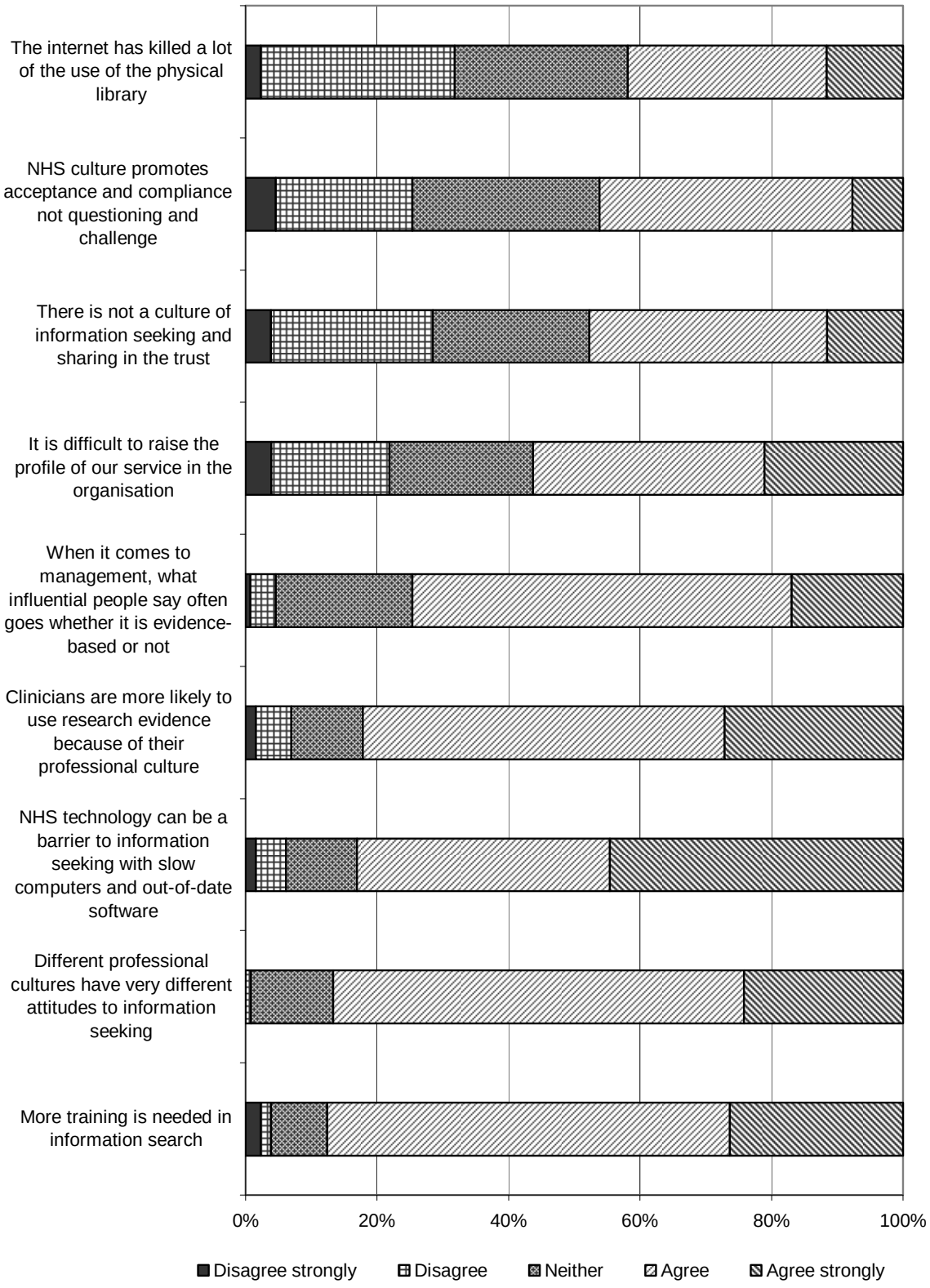
Librarian: Well you just assume because it's been published that it's more likely to be correct than something that's... talked about. You know the hierarchy of evidence … where anecdotal is sort of right at the bottom whereas you know published information is higher up.…The two are important but I might be more inclined to take note of the anecdotal stuff. ... Because it's been done and they see it works so therefore it must be OK. Whether it was written down or not.

6.6 Attitudes to information seeking in the NHS

Respondents were also asked to rate nine statements about information seeking in the NHS. The replies are summarised in Figure 15 It shows that respondents overwhelmingly agreed with five of these statements:

- Different professional cultures have very different attitudes to information seeking (87% agreed or agreed strongly)
- More training is needed in information search (87% agreed or agreed strongly)
- NHS technology can be a barrier to information seeking with slow computers and out-of-date software (83% agreed or agreed strongly)

Figure 15. Attitudes to information seeking in the NHS: All respondents (Minimum N = 128)



Source: Survey of Librarians, 2011

- Clinicians are more likely to use research evidence because of their professional culture (82% agreed or agreed strongly)
- When it comes to management, what influential people say often goes whether it is evidence-based or not (75% agreed or agreed strongly)

It is particularly striking that 45% of respondents agreed strongly that NHS technology can be a barrier to information seeking with slow computers and out-of-date software.

On the remaining items, opinion was more divided, although more respondents agreed than disagreed with each statement. However, more than a quarter of the respondents disagreed with the following three statements:

- The internet has killed a lot of the use of the physical library (31% disagreed)
- There is not a culture of information seeking and sharing in the Trust (29% disagreed)
- NHS culture promotes acceptance and compliance not questioning and challenge (26% disagreed)

The three items showing the greatest difference between respondents working in NHS Acute Trusts and those working elsewhere were:

- It is difficult to raise the profile of our service in the organisation (63% agreed or agreed strongly in NHS Acute Trusts compared to 47% of those working elsewhere)
- When it comes to management, what influential people say often goes whether it is evidence-based or not (68% agreed or agreed strongly in NHS Acute Trusts compared to 83% of those working elsewhere)
- The internet has killed a lot of the use of the physical library (37% agreed or agreed strongly in NHS Acute Trusts compared to 49% of those working elsewhere)

It is particularly interesting that, while raising the profile of the library service seems to be more difficult in NHS Acute Trusts, respondents working in NHS Acute Trusts were less likely to agree that policy is determined by what influential people say. The fact that in NHS Acute Trusts fewer respondents think that the internet has killed a lot of the physical use of the library may reflect differences in the work environment with the library potentially being a haven away from the busy clinical work environment.

Several of these items were identical or similar to ones used in the survey of managers and it is interesting to see that more librarians tended to agree with these statements. In particular:

- Clinicians are more likely to use research evidence because of their professional culture (65% of health managers compared to 82% of librarians agreed or agreed strongly)

- NHS technology can be (is) a barrier to information seeking with slow computers and out-of-date software (54% of health managers compared to 83% of librarians agreed or agreed strongly)
- When it comes to management, what influential people say often goes whether it is evidence-based or not (58% of health managers compared to 75% of librarians agreed or agreed strongly)
- NHS culture promotes acceptance and compliance not questioning and challenge (42% of health managers compared to 46% of librarians agreed or agreed strongly)
- There is not a culture of information seeking and sharing in the Trust (26% of health managers compared to 48% of librarians agreed or agreed strongly)

This highlights where there were, and were not, significant differences of opinion between the health managers and the librarians as information intermediaries. In particular, it seems that the librarians tend to have more negative attitudes about how information is used and the barriers to accessing it.

Responses from the librarians' interviews showed that NHS culture was seen as one of the major barriers to managers' information seeking. Constant re-organisation and change meant that managers often felt that they did not have time to seek out new information.

*"It's partly because we're constantly re-organising in the NHS … and then you change the government and then you change the budgets so actually people are so intent on getting from A to B that they don't actually realise that there might be a short cut or there might be a bus to help them from there, if they looked on the intranet for the quicker way to do something and lots of people will only look if they know there's a specific thing that they want on there." (*Librarian, PCT*)*

"Time is always the issue and as I say time that could be purely because there is too much work or it could be because of the way that people are working. Lack of interest on some people's part. Lack of understanding as to why they should be looking for information and again this comes back down to the fact that information skills are not a priority in the NHS. Every so often something comes up that says oh you know we should have information champions this that and the other, and then nothing happens." (Librarian, Acute Trust)

Political forces also played a role, with certain types of information being given a priority over others. Despite best 'evidence' to the contrary what an important individual or government/Department of Health says often goes and it may not be worth a managers' time to find information to the contrary.

"So ... but in the sense of you know hierarchically I'm going to my boss on Tuesday and I don't want to say to him this is what some brilliant scholar that manages the university said, he wants to say, Department of Health

*(information), politically, you know we better do this or you're toast. You want to be able to say that sort of thing." (*Librarian, External Organisation*).*

Where managers seek and find information they may also be unwilling to share their sources for political reasons, giving themselves an 'edge' over others.

"In a sense some people will keep this source secret. People wanting to keep themselves up-to-date and have an advantage in their organisation." (Librarian, External Organisation)

6.7 Using the library

Respondents were asked what the main prompts were for people to come to them for information relevant to management. Nearly all (94%) respondents reported that people doing a degree/course was the main prompt. Three other reasons were mentioned by two-thirds or more of respondents: people starting a new project (70%), service improvement/ change (75%), and people being asked to find particular information by a senior colleague (67%). General updating was only mentioned by just under a quarter (23%) of respondents (see Table 13).

Respondents had tried a number of different initiatives to encourage the use of management research amongst staff with management responsibilities. In NHS Acute Trusts the most popular initiatives were: newsletters/bulletins (55%), raising awareness (e.g. on intranet) (51%), compiling lists of relevant management resources (47%), and email alerts about new publications (42%).

Elsewhere, the main initiatives were email alerts about new publications (70%), raising awareness (e.g. on intranet) (59%), and newsletters/ bulletins (44%). Although similar methods were used by respondents in different settings, it is interesting that email alerts were much more popular outside NHS Acute Trusts, while compiling lists of relevant management resources (30%) was not offered very often outside NHS Acute Trusts.

Further analysis suggests that, where librarians judge that managers make more use of resources on management, there have been more initiatives to encourage the use of management research. Not only were respondents who reported that managers use resources a great deal or to some extent more likely to have initiatives than those who reported that managers use resources not very much or not at all (93% had initiatives compared to 79%), but they were also more likely to have used all the different types of initiative (see Figure 16). They were particularly more likely to send email alerts about new publications (63% compared to 40%) and to compile lists of relevant management resources (47% compared to 28%). However, it should be noted that this finding compares the subjective views of library staff to their reports of the use of publicity initiatives.

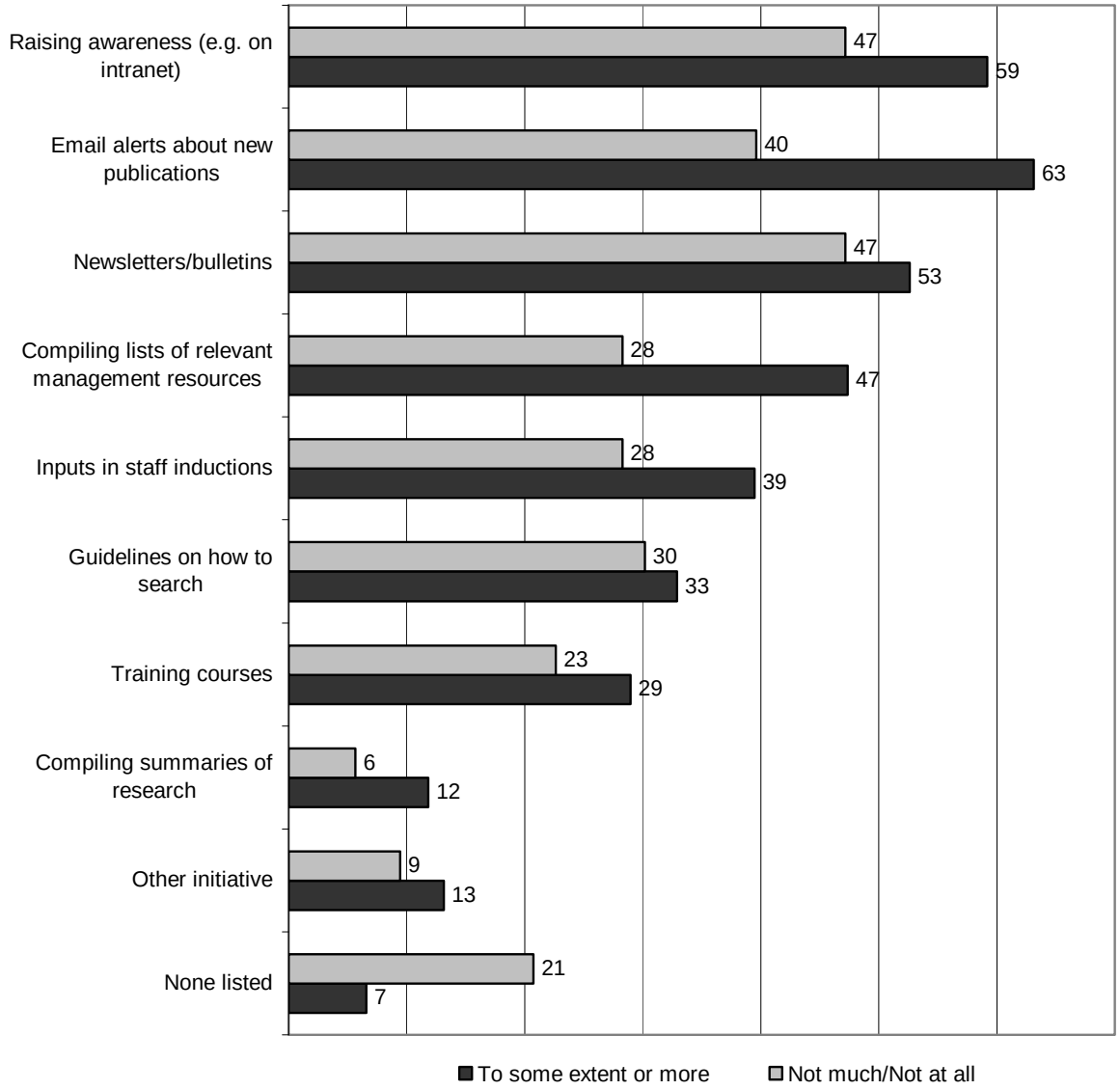
Table 13. Prompts and initiatives: Percentages

Prompts	NHS Trust: Acute	Other respondents	All respondents
People doing a degree/course	95	93	94
People starting a new project	73	65	70
Service improvement/change	75	75	75
People asked to find particular information by a senior colleague	65	69	67
General updating	25	22	23
Other prompt	4	7	5
Total cases	*77*	*55*	*132*
Initiatives			
Training courses	26	26	26
Guidelines on how to search	30	33	32
Raising awareness (e.g. on intranet)	51	59	55
Email alerts about new publications	42	70	54
Compiling lists of relevant management resources	47	30	40
Compiling summaries of research	7	13	9
Inputs in staff inductions	36	33	35
Newsletters/bulletins	55	44	51
Other initiative	13	9	12
None listed	13	11	12
Total cases	*76*	*54*	*130*

Source: Survey of Librarians, 2011

Whether respondents had had any management training also had an impact on the range of initiatives they reported running, although it was not as pronounced and not as might be expected. Respondents without any form of management training were more likely to raise awareness (e.g. on the intranet) (60% compared to 51% of those with training), to send email alerts about new publications (60% compared to 49%), to compile lists of relevant management resources (47% compared to 36%) and to use newsletters/bulletins (58% compared to 45%).

Figure 16. Percentage of respondents using particular initiatives by how much managers use library resources on management (N = 129)



Source: Survey of Librarians, 2011

All intermediaries involved in the qualitative interviews had also tried various ways in which to encourage managers to use more information and were keen for suggestions of how to improve things further. The external organisation provided twice weekly email news alerts providing a list of key health management documents and policy developments, however those who subscribed to these were generally only senior managers (around 3,000 in total across the country), or librarians wishing to keep themselves up–to-date and act as intermediaries. Some Trusts also provided internal intranet sources to keep managers up–to-date with key developments and links to relevant articles. However, all recognised that further measures were necessary and that information needed to be provided in a format that managers were likely to use.

"We need to find some way of keeping managers up-to-date in a way that they find acceptable. Online, forget the assumption that people will come in and ask something, old doctors do that and nurses do that, and managers who are nurses or doctors do that, main managers don't." (Librarian, External Organisation).

Managers do not necessarily have the time or inclination to search for articles and would prefer 'the google of the library world' where they could be directed to key literature.

"What should I be reading? What do my colleagues think I should read? I think the majority of people they'll want some sort of guidance. I think in some ways it's about managing peoples' anxieties around this is where, if you don't read anything else, these are the four things you must read this week." (Librarian, External Organisation).

They also recognised that managers may not wish to read full articles and preferred summaries and key bullet points where they could quickly and easily get the core information they needed.

"Academics don't. Totally the opposite. More documents. Managers, yeah that's great having all that background to show you've done the work, but now I want to know what to do. Give me the key points. The bullet points. But also tell it. Tell me what to think." (Librarian, External Organisation).

Another suggestion was to create discussion forums where managers could discuss case studies and successes/failures, facilitating informal knowledge exchange.

"Well if we are the information intermediaries, we ought to create, I think, the forum for people to be able to discuss this and you know I don't know how you get them to do this, discuss their failures as well. It's a big thing." (Librarian, External Organisation).

6.8 Literature and information searching

Most (82%) respondents (or their staff) did literature searches for managers with 38% doing them monthly, 20% daily or weekly and 23% less often than monthly. Respondents not working in NHS Acute Trusts reported doing literature searches for managers more often (26% daily or weekly compared to 15% for those working in NHS Acute Trusts) (see Table 14).

"I do a lot of searching for people, but also supplementing the searching they've done, so you know a lot of people are very computer literate but I've sort of hopefully got a bit more expertise than they do… have you thought of so and so...and I'll just suggest something else … do you know we get the King's fund database?, do you know we got those as well?, and so I suggested some other ways round to the same thing." (Librarian, Mental Health Trust).

Table 14. Literature and information searching: Percentages

		NHS Trust: Acute	Other respondents	All respondents
Do literature searches for managers	Daily	1	7	4
	Weekly	14	19	16
	Monthly	38	39	38
	Quarterly	20	15	18
	Yearly	7	4	5
	Rarely/Never	20	17	18
	Total cases	*76*	*54*	*130*
Ever send people information without being prompted	Daily	1	11	6
	Weekly	25	32	28
	Monthly	27	30	29
	Quarterly	25	11	19
	Yearly	4	0	2
	Rarely/Never	18	15	17
	Total cases	*73*	*53*	*126*
Search for information on management topics yourself	Yes	78	78	78
	No	22	22	22
	Total cases	*76*	*54*	*130*

Source: Survey of Librarians, 2011

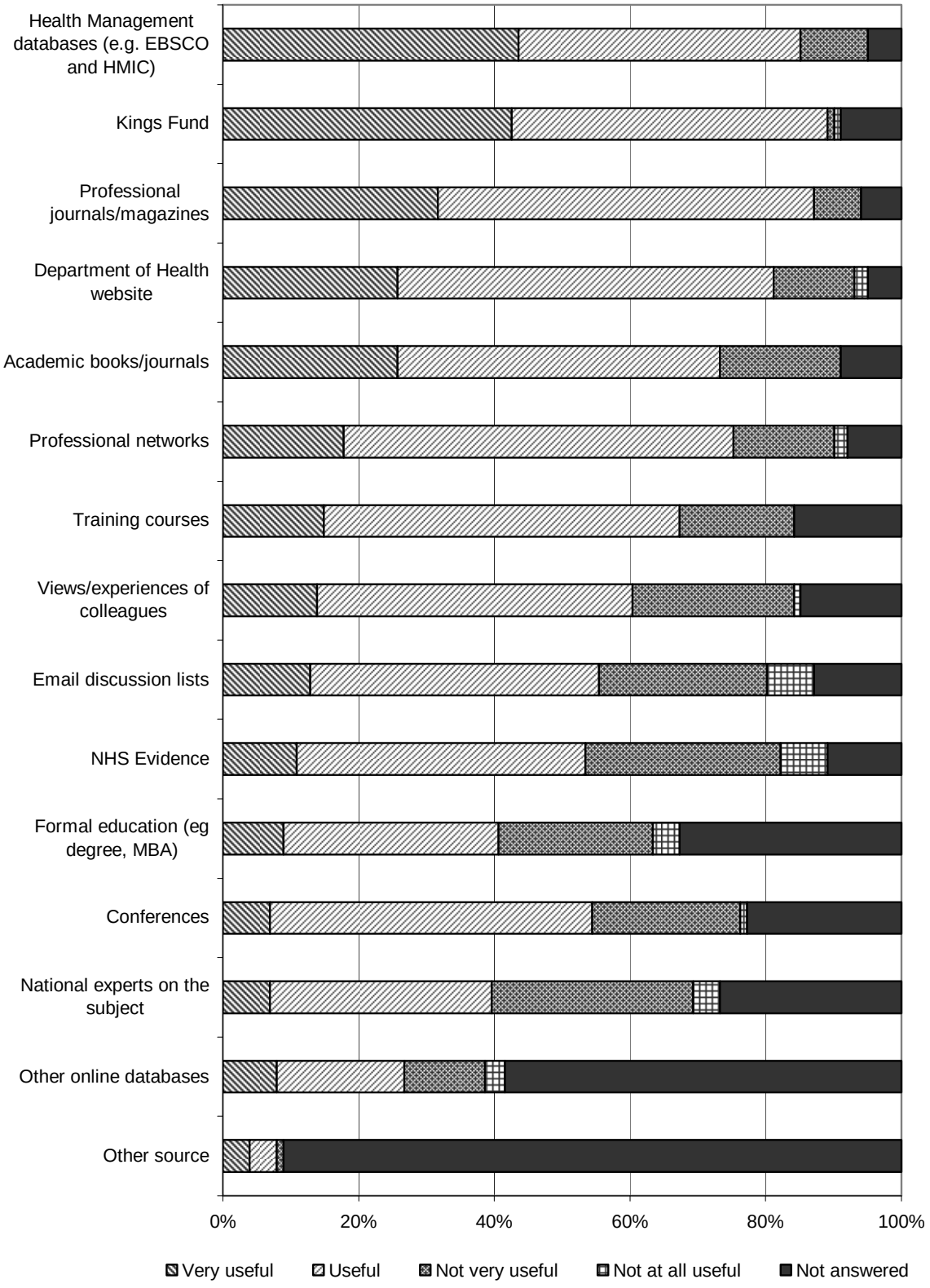
Respondents (or their staff) also frequently send people information that they think might be relevant without being prompted. Once again respondents not working in NHS Acute Trusts did this more frequently than those working in Acute Trusts (43% daily or weekly compared to 26%).

Where information was not readily available to them via normal search methods, such as information on unpublished case studies, they also use their own networks to try to find more informal information sources to assist managers.

Librarian: A lot of people come and ask if we can find how things are done elsewhere. Or if they've heard of a particular technique like that one I mentioned, they might ask if we can find out what other PCTs or mental health Trusts are doing. We have a network of librarians working in public health across the region, five different services and quite like to say do you know how to do this, or ask this question, chances are somebody else might have known about it.

Interviewer: So you sort of get in touch with them and ask?

Figure 17. Most useful sources of management information: All who search themselves (N = 101)



Source: Survey of Librarians, 2011

Librarian: Yes. And then there's things like the lists like there's a primary care list discussion. There's medical discussion lists. So there are places to ask questions if you can't find an answer.

Over three-quarters (78%) also search for information on management topics themselves. Among these respondents by far the most useful sources of management information were the Kings Fund (43% rated very useful and 47% useful) and Health Management databases (44% rated very useful and 42% useful) (see Figure 17).

Other sources rated very useful for information on management topics by more than a quarter of these respondents were: professional journals/ magazines (32%), academic books/journals (26%), and the Department of Health website (26%).

Sources rated not very or not at all useful by more than a third of these respondents were: NHS Evidence (36%) and national experts on the subject (34%). Note that more than one in five of these respondents did not rate the usefulness of national experts, formal education, conferences or other online databases.

6.9 Quality and reliability of information

Respondents were asked how they evaluated the quality/reliability of information relevant to managers. Authority of the source was the most frequent way that respondents evaluated the quality and reliability of information. Their own experience/common sense and professional expertise were the two other main ways most often used. Other ways were much less frequently mentioned; although ease of understanding was mentioned by 37% of respondents in NHS Acute Trusts (see Table 15).

Respondents were also asked how easy/difficult they find it to evaluate the quality of information on management topics. Most respondents working in NHS Acute Trusts found it quite difficult (56%), difficult (12%) or very difficult (5%) to evaluate the quality of information on management topics with only 27% finding it quite easy (24%) or easy (3%). The majority (55%) of other respondents also found it quite difficult (26%), difficult (23%) or very difficult (6%) to evaluate the quality of information on management topics but far more of them found it quite easy (40%) than respondents working in NHS Acute Trusts.

Respondents with some form of management training were more likely than those without any management training to report that they found it very easy, easy or quite easy to evaluate the quality of information on management topics (38% compared to 28%). This might suggest that lack of knowledge about management is a factor affecting librarians' ability in this area.

Table 15. Quality and reliability of information: Percentages

		NHS Trust: Acute	Other respondents	All respondents
How evaluate quality/reliability	Own experience/ common sense	74	67	71
	Professional expertise	71	59	66
	Authority of source	86	80	83
	Usefulness for my work	24	20	22
	Ease of understanding	37	20	30
	Senior colleague approves of it	22	15	19
	Trusted colleague approves of it	29	31	30
	Not answered	3	4	3
	Total cases	*76*	*54*	*130*
How easy/difficult do you find it to evaluate the quality of information on management	Very difficult	5	6	5
	Difficult	12	23	16
	Quite difficult	56	26	44
	Quite easy	24	40	30
	Easy	3	4	3
	Very easy	0	2	1
	Total cases	*75*	*53*	*128*
Guide managers on the quality/ reliability of information	Yes	58	60	59
	No	42	40	41
	Total cases	*74*	*52*	*126*

Source: Survey of Librarians, 2011

Most (59%) respondents reported that they attempt to guide managers on the quality/reliability of information relevant to management. However, more librarians with some form of management training (63%) attempted to do this than those without management training (45%). This can be considered as further evidence of how management training assists librarians in this aspect of their work.

Table 16. Handling of change

		NHS Trust: Acute	Other respondents	All respondents
Kept informed about major changes and service redevelopment in the organisation/Trust	Yes	32	39	35
	To some extent	58	46	53
	No	11	15	12
	Total cases	*76*	*54*	*130*
How kept informed	Membership of Trust committees	48	30	41
	Meetings	76	72	75
	Staff bulletins	93	88	91
	Intranet	88	79	85
	Word of mouth	72	70	71
	Other way	3	9	5
	Total cases	*67*	*43*	*110*

Source: National Survey of Librarians, 2011

6.10 Handling of change

Only a small minority (12%) did not feel they were kept informed about major changes and service redevelopment in their organisation/Trust (Table 16). Most (53%) respondents reported that they were kept informed about major changes and service redevelopment in their organisation/Trust to some extent, while over a third (35%) felt they were kept informed.

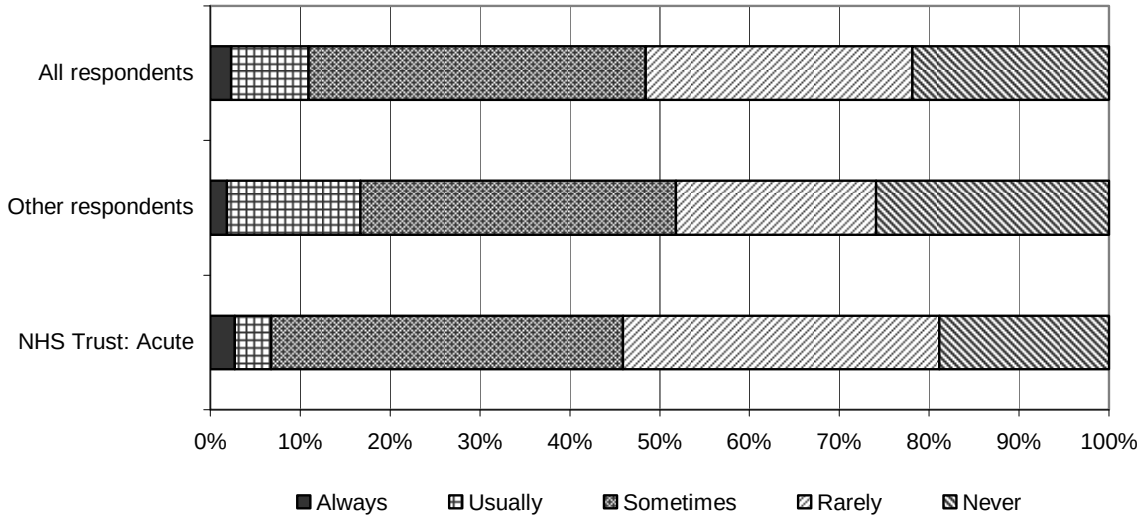
There were four main ways that respondents felt they were kept informed about major changes and service redevelopment in their organisation/ Trust:

- Staff bulletins (91%)
- Intranet (85%)
- Meetings (75%)
- Word of mouth (71%)

Clearly information comes to most respondents in a variety of ways but only a minority (41%) reported that they were kept informed through membership of Trust committees, although nearly half (48%) of respondents working in NHS Acute Trusts were kept informed in this way.

Two-thirds (68%) of respondents only sometimes (38%) or rarely (30%) looked ahead at upcoming changes and put together resources with

Figure 18. Forward planning: Percentage who look ahead at upcoming changes and put together resources with research for managers (N = 128)



Source: Survey of Librarians, 2011

research for managers to use in implementing them, and just under a quarter (22%) never did this (see Figure 18).

However, 15% of respondents not working in NHS Acute Trusts reported that they usually did this compared to just 4% of those from NHS Acute Trusts. Likelihood of looking ahead was not related to whether respondents had any form of management training but the small number of librarians without management responsibility were more likely to report that they rarely or never look ahead than those with managerial responsibilities (64% compared to 49%).

Interviewer: When a change project is ongoing in your Trust are you aware of that at all?

Librarian: Not really I wouldn't say. I mean things are publicised maybe on our intranet.

Interviewer: But you're not in their working group or?

Librarian: No. I might become aware of it if I see something like at the moment it's QIPP, and we've got a manager who's responsible for QIPP and I don't know if that's, you know those sort of projects going on, saving money thing, and ... the direction of something that I'd seen, might even have been on NHS Evidence, there's a section on QIPP, which she wasn't aware of and thanked me for doing it. So if I do see anything that I think might be relevant to something you know I would forward it on.

6.11 Conclusions

The national survey of librarians and associated interviews with information intermediaries largely reinforced the messages of the main survey

regarding health managers' information behaviour. Although the research literature stresses the important role of intermediaries, both the case studies and national survey found that librarians and library resources were not widely used by NHS managers. The purpose of the librarians' survey was to generate a better understanding of the role of librarians as information intermediaries and the facilitators and barriers to the use of library services amongst NHS managers, in order to look for ways in which access to information could be improved.

Similar issues arose in the intermediaries interviews to those across the project more generally around defining 'managers' and 'management information'. Indeed those interviewed were often managers themselves with their own sources and methods of seeking information, making it hard to generalise. It also appeared that librarians tended to be very focused on managers' use of formal or written information sources, whereas the project more widely showed information use often tended to be of a more informal or verbal type which is harder to pin down and quantify. Much of the discussion during these interviews focused on managers' use of library services, rather than information use more widely. However, even librarians did admit that other forms of information were important in their own decision-making.

Both the qualitative interviews and survey showed that library services were largely underused by managers within the NHS, possibly for a variety of reasons such as lack of time, lack of relevant resources, lack of training/ inclination to use libraries, distance from physical library resources, or availability of electronic resources which meant that managers were 'hidden users' who collected their own published information elsewhere (though this may be recorded through Athens use etc). Whilst 11% of respondents in the survey felt that managers used their library services a great deal, 47% felt that they only used them to some extent and 40% felt that did not make much use of them at all.

Main barriers to information use were seen as lack of time, lack of awareness of available resources, reluctance to ask for help and perceptions that the library was mainly a clinical/medical resource. The size, budget and available library resources varied vastly between Trusts; however this did not seem to have a great effect on library use and availability of management resources. A small number of respondents thought that their libraries did not have sufficient resources on management available to meet demand, but over half felt that resources met demand only to some extent. Whilst many of the librarians surveyed were highly qualified (two-thirds having a postgraduate qualification), very few had a specific management qualification, meaning they found it difficult to judge the quality and reliability of management information or advise managers in this area. However almost all acted in a formal intermediary role, performing literature searches for managers, or guiding them in their use of information.

Attitudes to managers' information seeking were similar to those of managers themselves, showing that managers lacked time and tended to

want key bullet points or summaries (rather than long articles), or practical demonstrations of what had worked elsewhere. NHS culture was also seen as something of a problem, with confusing information sources, out-of-date or slow technology and political pressures that meant influential people or external forces could override evidence of best practice.

Clinicians were seen as greater users of information than general managers, though the blurring of distinctions between managers/clinicians and management information/clinical information in the NHS makes this difficult to judge. Main prompts for formal information seeking seemed to be people doing a degree/course, starting a new project or service development, once again highlighting the role of change in the decision to seek information.

Overall, librarians seemed to have a good understanding of the issues involved in NHS managers' information behaviour. However, their focus on formal information sources and intermediaries meant that on average they tended to have a more negative attitude than that of managers themselves, who perhaps focused on their other networks and sources of information rather than lack of use of formal written evidence. Almost all had tried various initiatives to increase use of library resources, such as newsletters/ bulletins, raising awareness (e.g. on intranet), compiling lists of relevant management resources and email alerts about new publications. However the main issue seems to be finding a way to give access to the types of information managers use (e.g. case studies, research summaries) in a format that is accessible to them (e.g. email alerts or online discussion forums), and redefining the concept of 'information' and 'intermediary' to include more flexible, informal networks and information sources.

7 Conclusions and implications for practice

The aims of the project were to analyse the information behaviour of health service managers, to identify the facilitators and barriers to the use of information, and to develop guidelines for improving practice. The case study and survey findings were successful in achieving the first two objectives. However, they demonstrate the complexity of information behaviour and how information need varies by individuals, contexts, and over time. Attempting to develop specific guidelines in these circumstances would clearly be inappropriate and counterproductive. The value of the study lies in providing greater understanding of the barriers to and facilitators of information use that can inform but not prescribe the development of better practice. Thus, in this concluding section we offer a discussion of the findings, the implications for practice, and for further research.

7.1 How useful are models of managers' information behaviour?

The Niedźwiedzka model provided a useful starting point for the research, but it was apparent that it could not capture the complexity of the management tasks and processes that we observed. The process of information use is much more complex, multi-layered, interactive and haphazard than such models imply.

Generally, models of information behaviour need to be seen in a social context and as part of social/organisational process – i.e. influenced considerably by the social psychology of organisations – how people interact, political processes, beliefs, tactics, etc. These processes are best studied through qualitative methods and investigation that is not bound by a particular theoretical framework. In this research, in depth case studies exposed the importance of factors not apparent in the model, such as the political nature of information and the importance of groups. They also gave insight into the complex processes and relationships that affect information use. The quantitative data, on the other hand, were invaluable for generalisation and testing relationships between variables. Triangulation of the three data sets proved invaluable, both in validating findings and in covering the topic from a variety of perspectives.

7.1.1 Implications

The study reveals a process of information search and use that is much more complex than the "rational" models of decision making and information use on which most information provision is based. This complexity presents a significant challenge for the implementation of "evidence informed practice" in healthcare management.

7.2 What is valid and useful management information?

Virtually all managers see information use as important, and are engaged not only in seeking but also passing on information. Those involved in strategy/long-term planning and/or the management of major change have even greater information needs.

The kind of information sought and used by health managers took a variety of forms, and very little was research based. Managers use multiple kinds of information in combination and select information to suit different purposes. Use varies with stages of design, development and implementation. The degree to which different types of information are accepted as valid and used also varies significantly by job role and education, which are closely linked to professional experience and training. The study found very little direct use of management research overall, although a small minority of managers were heavy users and even producers of research. However, in that most information is passed through intermediaries and accumulated over time it is difficult to trace the impact of any single source. Further, it is apparent that even where research findings are available, they are only one of many sources that may be used.

The managers interviewed pointed out that all types of information were relevant to them; not just that directly focused on management theory and practice. Implementing clinical innovation, for example, can entail service redesign, staff re-training or redeployment, and project management. Not only does this require managers and clinicians to work closely together, and to understand each other's roles, but also to have information relevant to both the clinical and management implications of the proposed innovation.

7.2.1 Implications

For those working in multidisciplinary, multifunctional teams and contexts there is potential for misunderstanding and conflict. Open discussion to promote awareness of these differences and agreement on how they can be reconciled might assist, as would joint training in critical evaluation and search. Also, management training undertaken in mixed groups might be expected to promote mutual understanding.

The fact that much clinical innovation has implications for management suggests that recommendations for clinical innovation should also include information relevant to management.

7.3 Seeing is believing

The mode of information transmission is changing rapidly and the study found very high use of remote online sources. Nonetheless, a great deal of information is passed on verbally (via colleagues and contacts) and acquired through direct observation, and "doing" (experiential learning). Of particular interest is the use of people – frontline staff and service users – as trainers, exemplars and messengers. In the view of the mental health

managers in the case studies, these provided better understanding and insight into mental health conditions and service user needs than reading any research report. Direct observation and site visits were made by all managers, sometimes in combination with other information sources, and where these were not practical videos were used as surrogates. Pilot projects are frequently employed as a means of testing innovation. However, pilots are subject to varying degrees and quality of evaluation - very little is conducted long term, and systematic evaluation may be absent altogether. Factors that secure the success of pilots and projects – ring fenced funding, charismatic leadership, specialist expertise and a supportive organisational structure and culture, may not be replicated in other sites, or be sustainable over time.

7.3.1 Implications

For most managers in this survey (even doctors) seeing for yourself "what works" was critical information. However, if managers do not have a sound set of criteria and the skills for assessing the effectiveness of what they observe, managers could be vulnerable to the latest fad or fashion. This underlines the importance of a good grounding in both management and critical evaluation of practice. The caveat that bad as well as good practice may be shared needs to be taken into account when publicising and disseminating other Trust's "good" practice.

7.4 Is management education the answer to "better" information use?

The findings suggest that training in information search is helpful and many receive this as part of their professional and academic education. However, there are limitations. Those with significant expertise in search and the use of research based sources – librarians and doctors – are the most likely to report difficulty in finding management information. However, those who have studied management find it easier, indicating that grounding in management knowledge is important for effective search, selection and application.

Management education, particularly at postgraduate level is cited as a source of information, and of embedding useful analytical perspectives. The case studies, Q sort and the national survey showed those individuals known to be attending, or having completed, these programmes were often being used as a source of information for others. However, the extent to which teaching on management programmes is evidence informed and the rigor with which research and critical evaluation skills are taught vary substantially (Charlier, Brown & Rynes 2011). Further, programmes run by Business Schools have been accused of "peddling" the latest "best practice" solutions, which may be inappropriate to many contexts in the NHS and can become distorted in their application (Morris and Lancaster 2006; Addicott, McGivern and Ferlie 2007). Moreover, while some management

programmes teach how to critically evaluate research, this does not extend to other forms of information that managers frequently use.

7.4.1 Implications

A number of the above mentioned topics have implications for management education. One is that management programmes should provide skills in the critical evaluation of all forms of information used by managers, and that they should be encouraged to use a wide range of sources. There are also advantages in managers in different job roles and professions studying together in order to promote mutual understanding and bring a variety of perspectives. Overall, it appears training in information use should be delivered in the context of management knowledge and there is a case for strengthening the input into professional and management education.

7.5 Magic bullets and one stop shops

Managers quoted time as being the major reason why they do not seek information, and also complained of information overload and a lack of information relevant to management and the NHS. Recently, there has been significant development of NHS and healthcare evidence-based resources, although only a few organisations have a significant collection specifically for management. Both the case studies and survey found that whereas some managers were frequent users, many were unaware of these sources. Furthermore, managers complained about the sudden disappearance of familiar websites as organisations and departments were shut down or individuals moved on in the wake of NHS restructuring. Some yearned for a single website with material relevant to the NHS that provided "everything in one place".

There was general agreement that managers want clear guidelines and easy to apply solutions, and organisations such as NICE and the NHS Institute for Innovation have been at the forefront of supplying information of this kind. The use of a tool kit in one of the case studies illustrates the advantages, but also that solutions, even if tailored to the NHS context, are not easily implemented. Moreover, three points should be kept in mind – those adopting it did not seek any information on alternatives, or question its validity before adoption. This places a heavy responsibility on suppliers to ensure offerings are evidence-informed (not an easy task since so much management research information is ambiguous and contested), and that there has been systematic evaluation of implementation in the NHS. Second, is the risk of stifling innovation by providing a one stop shop filled with preferred solutions, thus curtailing consideration and development of innovative alternatives. In short, it may be self-defeating if its effect is to encourage busy managers always to opt for the ready-made safe solution. A third question is whether "best practice" is an achievable or desirable objective especially in the multi-stakeholder environment. It raises the question of which practice is "best". As we have seen in the case studies, managers have to take into account the interests of many parties and

negotiate, and sometimes compromise – and indeed many change management texts recommend such an approach. Following a rigidly prescribed path in these circumstances can lead to failure in implementation. Further, even well founded prescriptions can fail in the rapidly changing environment of the NHS.

7.5.1 Implications

While there are some disadvantages to one stop shops, they nevertheless have an important role to play in providing targeted health-related management information. This presents a challenge to site providers to ensure content meets high standards of validity as well as relevance. However, while managers under pressure can benefit considerably from evidence-informed toolkits, extensive use and rigid guidelines could stifle innovation. Thus there is a need for collaboration between providers to create linkages between health care management information sources to encourage wide ranging search.

7.6 Intermediaries, networks and change: a risk of information deficit?

Virtually all managers are engaged in not only seeking, but also passing on information, and many see it as an important part of their job. The research also shows that people are a primary source of information for all managers. Dependence on intermediaries has a positive effect in building a bank of shared knowledge within an organisation – for example we found that individuals on management courses are often seen as sources. However, dependence on people may also have negative consequences as information, inevitably, is subjected to selection and processing in its passage. Further, in the highly political context of the NHS many suppliers of information are stakeholders or private service providers pursuing their particular interests.

There is also the question raised above about the effect of organisational restructuring that breaks up networks and cuts posts and people. For example, by the end of our project the Transformation team in one Trust had been disbanded in the wake of cuts, and the PCT commissioning arms were disappearing. Thus, significant repositories of information, expertise and experience can be lost. As we have seen, much management information is gained through informal contacts, is owned by the person, tacit, and not codifiable.

Networks of people – internal across organisations and sectors, national and international – were found to be important sources of information in the cases and the survey. Many of these were informal, and varied from well established groups of specialists who, for example, routinely exchanged systematically collected benchmark data, to loose circles of individuals interested in a particular subject. Hartley (2008) has suggested that informal networks are more efficient than formal ones in diffusing

innovation. The case studies found many instances in the current organisational turbulence in the NHS, where owing to individuals being moved on or posts being removed, the usefulness of a network was diminished or it had ceased to exist. These networks are based on goodwill, personal contacts and the collaborative exchange of information, and the question arises as to how the new plans for the NHS (passed by the UK government in March 2012), which could lead to fragmentation of services and which intends to increase competition amongst providers, will affect these collaborative networks.

Commissioners already experienced difficulty securing the local intelligence necessary to assess health needs. Information gathering is impeded by the multiple agencies and organisations involved, not all of which had the capacity or motivation to supply the information required. Commissioners relied heavily on colleagues' expertise in public health and data management, and were centrally placed in networks across the communities they served, and nationally to other commissioners and experts. These information sharing arrangements, both formal and informal, take time and much effort to establish. Clearly, the breakup of PCT commissioning arms, which concentrate expertise in one place and which build up banks of knowledge and experience, as well as collaborative informal networks, may have consequences for the quality of commissioning decisions. As will the handover to GPs, who as our case illustrated, have a very different concept of what information is relevant and useful (see also Gabbay and LeMay 2004). While commissioning could be dismissed as an extreme case, many other services rely on information supplied through informal cross-sectoral and other collaborative relationships, and these may be put at risk by organisational change.

7.6.1 Implications

The implication of this finding is that the reducing the risk of information loss and the facilitation of informal information sharing should be an important consideration in the design of new services and organisational restructuring.

7.7 Groups and teams as repositories of information

As we have seen most decision-making and information gathering is performed in groups. These can be multi-professional providing a very wide range of information, as in the PCT commissioning project, and may be seedbeds of innovation, as in the case of the Mental Health Trust. However, tight knit groups may have excluding cultures, and those based on communities of practice or professions may create barriers to knowledge exchange. Nonetheless, they can enhance knowledge sharing and act as repositories of information. Moreover, those that cross professional, departmental, disciplinary, organisational or sector boundaries have the potential to expand the quantity, quality and diversity of organisational knowledge.

7.7.1 Implications

Managers need to consider how groups, teams, learning sets and so on can be used to enhance information collection and exchange.

7.8 Librarians and knowledge managers: intermediary or business partner?

In the scenario described above, formal intermediaries set apart from the political process, notably librarians and information specialists, would appear to have an important role to play as neutral parties in providing information. Managers did not report a great deal of direct use of library services: most use was made by those undertaking education and those whose job role or tasks were most research orientated. Nonetheless, the case studies revealed very heavy use of services by some managers who had established close working relationships with their librarians. However, libraries are often seen primarily as repositories of clinical or research-based information, and this is a minor source for most managers.

It was clear that training, often provided by library staff, is helpful to search. However, generic technical search skills, while useful, do not guide users to management sources or assist them in critically evaluating the usefulness of the information found. It is important to note that librarians themselves did not find it easy to find information relevant to management.

Being set apart from the organisation (physically or in terms of involvement in organisational processes) may impede their ability to be more proactive in the services they offer to managers. As we have seen, information is understood in relation to a specific context or task, and understanding that context is necessary to anticipate managers' information needs. Further, lack of deep expertise in management means that some may have difficulty in identifying information relevant to managers, and it was clear from the survey that the management collections and resources they offer vary considerably.

The role of libraries has been changing rapidly. There is a great deal of "good practice" but the survey shows variability in terms of what services and management sources they offer. However, estimating the effectiveness of these was outside of the scope of this study.

7.8.1 Implications

One important recommendation would be for librarians to have greater expert knowledge and more understanding of the practice of management in NHS Trusts. In organisations in all sectors, there has been a trend to draw specialists, such as Human Resource professionals, more closely into mainstream management as "business partners". While a looser relationship may be more appropriate for librarians, involvement in or attachment to change programmes or project teams could raise the profile of what they can offer and their own understanding of what is required.

7.9 Recommendations for research

While this study has added to the research on this topic, it also raises a number of questions that justify further investigation. There are four suggestions for further research:

1. Libraries, and the services they offer, vary considerably: further systematic study and evaluation is required to identify the most effective practices.
2. There is a strong argument for increasing the provision of research informed management education and training and expanding its contribution to professional programmes of study in general. However, research is necessary to establish the extent and effectiveness of the training and education provided.
3. The role of health related online sources, and how they can best meet the needs of managers for independent good quality management information requires further investigation.
4. Radical restructuring of organisations and services may result in the loss of repositories of expert knowledge, and break up the informal and formal networks that managers rely on for information; research is required to evaluate the extent of this loss and the measures that might be taken to remedy it.

Owing to the substantial amount of data collected, this report can only provide an overview of the findings. Dissemination through presentations and articles focused on specific aspects of information behaviour will follow.

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Appendix 1 Interview schedule for case studies

Note: This schedule forms a checklist for questions that we wish to ask in relation to the project. They will not necessarily be asked with these exacts wordings or in the same order.

Your job

1) Please could you describe your current role?
2) What are your main tasks / responsibilities?
3) How many people report to you directly / indirectly?
4) What are their roles (clinicians, nurses etc)?
5) Who do you report to?

Your experience

1) How long have you been working in your current role / job?
2) How long have you been working in this Trust (or its predecessors)?
3) How long have you been working in the NHS?
4) What previous sectors have you worked in (private / public / voluntary)?
5) What is your career background?
   a) Your clinical and/or professional qualifications (including management qualifications)
   b) Your current professional registration (s)
6) What is your education and training?
7) Do you do any other job in addition to your current role? (e.g. private consultancy)

The project

1) Please could you tell me a little about the project you have been involved in?
2) When and why was it started?
3) What are the main aims of the project?
4) What is the context for the project –scale, budget, time limitations, politics etc?
5) What stage is the project at? How far has it been implemented?
6) What is your role within the project?
7) At what stage in the project did you become involved?
8) What specific tasks were you given?
9) Do you have specific time dedicated / ring-fenced for the project?

Strengths / Weaknesses of Project

1) What priority does the project have in relation to overall Trust strategy / your role?
2) How important is it for the Trust for project to be successful? Why?

3) How important is it to you personally for the project to be successful? Why? (probe emotional involvement in project)
4) Will the outcome of the project affect you personally? (appraisal etc)
5) What would you see as the strengths and weaknesses of the project?
6) Was there any opposition to the project?
7) How much agreement / disagreement was there initially about what should be done and how to do it? How was this resolved?
8) What benefits (if any) do you hope to see from the project?
9) How will the project be evaluated (if at all)?

Risk / Complexity / Uncertainty

1) How much influence did you feel you could have over the project aims / outcomes?
2) How comfortable did you feel about making decisions in relation to the project? Why / why not?
3) Have you been involved in any similar projects before?
4) Was this experience useful in helping you decide what to do?
5) Did the project involve ideas / actions that were new to you?
6) How clear were you about what you were trying to do and how best to do it?
7) Did you feel that what you had to do was difficult / complex?
8) Were there any risks involved? (for you /colleagues / service users / the Trust)
9) How were these managed?
10) Do you feel you have been able to influence the project in the way you hoped? Why / why not?

Formal / Informal Networks

1) Who else is involved in the project?
2) What are their roles / tasks?
3) Who has overall responsibility for the management / success of the project?
4) How do you operate as a project team? (formal meetings etc)
5) How do you communicate in terms of the project? (Meetings, written documents, email etc)
6) Who do you discuss your work in relation to the project with?
7) Do you discuss the project informally with people outside the project (e.g. friends / colleagues / professional networks)
8) Are any external people involved in the project? (e.g. Consultants, service users, commissioners)
9) In what ways were they involved?

Information

1) What information were you provided with in relation to the project? (e.g. strategy documents)
2) Did you feel you (or the group) had the necessary information to understand and make decisions regarding the project?
3) Did you seek out other information in relation to the project?
4) How did you go about this?
5) Where did you go to find this?

(Note: Types of information: Internal versus external, Clinical versus Managerial)

Checklist for prompting:

a) Research information (academic, peer reviewed, electronic or paper versions)
b) Management information – e.g. HR, financial, Trust data warehouse)
c) Clinical information (e.g. BMJ etc)
d) Official national publications (e.g. Dept of Health, NICE guidelines)
e) Local (i.e. Trust) policies and practice guidance
f) Case studies of similar projects from other Trusts / overseas visits
g) Information about stakeholder opinions and preferences (service users, staff survey etc)
h) Information about norms for this kind of service (benchmarking)
i) Views / experiences of colleagues
j) Views / experiences of service users
k) Formal training
l) Previous education / training (e.g. MBA)
m) External consultants / knowledge intermediaries
n) Search engines (e.g. Google)
o) NHS evidence website

6) Why did you choose these particular sources? (accessibility: cognitive and physical, Trust etc)
7) Were they useful?
8) How do you evaluate the quality / reliability of information you receive?
9) How easily were you able to find the information you needed?
10) Was there any information that you felt you needed that you were unable to attain?
11) Was anyone specifically designated to find information in relation to the project?
12) Did you ask anyone else to find information for you? (knowledge intermediaries)
13) Was this satisfactory? Why / why not?

General information use / barriers to information seeking (to be asked if time permits)

1) What sources of information /evidence do generally use in your everyday work?
2) Have you ever had any specific training in information seeking?
3) Who do you talk to if you need help / information?
4) Is there anyone within the Trust with a formal responsibility for helping with information seeking (e.g. librarian)
5) Do you feel there are any barriers / constraints to your use of information?
6) How could these be improved?

Appendix 2 Instructions for Q-Method Study

Explaining Health Managers' Information Behaviour and Use

1) Please read the information sheet provided and complete the consent form and demographic information sheet. These are for sampling purposes only and all responses will be completely anonymous.
2) In front of you, you have a pile of 56 cards showing statements regarding information behaviour and use. Please consider these cards in relation to your behaviour **as a manager** rather than a student on this course.
3) We are interested in **which of these statements most reflect your experiences of finding information at work?**
4) Read each card carefully and sort into three piles – those you agree with, those you disagree with and those which you don't have any particular feeling about (neutral / not relevant)
5) Referring to the blank grid in front of you, arrange the cards into the shape of the grid, according to the extent that you agree with the statements in relation to your role as an NHS manager. So for example, place the statement that you agree most strongly with in the +6 position on the grid and the one that you disagree most strongly with in the - 6 position.

   You may find it useful to begin with the 'agree' pile and sort in order of relevance, before doing the same with the 'disagree' pile and finally placing the 'neutral' cards in the remaining spaces in the middle of the grid. Cards in the same columns carry the same weight – it does not matter if they go above or below.
6) When you have placed all the cards in the shape of the grid go over the distribution once more and shift cards if you want to
7) Once you are happy with the sort, please enter the number on each card into the space where you placed it on the blank grid.
8) If you have time (or in your own time) please look at the attached sheet of statements and comment on what they mean to you and why you agree / disagree with those you feel most strongly about.

Thank you very much for taking part in our study.

Q Method Statements

Which of these most reflect your experiences of seeking information at work?

1. **People**
   a) **Internal**

Number	Statement
1	If I need information I tend to discuss things informally with colleagues and kick a few ideas around
2	I ask my boss or another senior colleague if I'm not sure of something
3	I learn a lot from talking to front line staff and finding out their opinions rather than being stuck in an office
4	My colleagues often forward relevant / interesting bits of information to me without being asked
5	Clinicians are a useful source of research evidence
6	Service users are a good source of information

   b) **External**

7	I try get in touch with national experts on the subject
8	There are people I speak to in other organisations and check whether they are doing something similar and how it worked for them
9	I discuss things with family and friends

   c) **Knowledge Intermediaries**

10	I have a particular colleague who I know reads a lot and is up to date on new research and ideas
11	I am the person that people tend to come to if they need information
12	I ask our internal information department to find information for me
13	Management consultants can provide easily applicable solutions that we can use
14	When I want references and can't find something I get a librarian to give me a summary or pull out articles for me

2. **Networks**
   a) **Formal**

15	We have formal team meetings where we bring together expertise and decide how to proceed
16	I have formal professional networks where I can get advice

b) Informal

17	I look abroad for innovative ideas about how we could change things here
18	I speak to my current /former academic supervisors and /or colleagues from my course

3. Sources

a) Internet

19	I use Google as my first point of call for anything
20	I'm not from the IT generation. Sometimes I don't know how to source information online
21	I look at the internal Trust intranet for information

b) Written

22	I use the Trust or another specialist library
23	My main source of information is instructions from my managers about what I need to do
24	If I wanted to find out about something new I would do a literature search
25	I read professional journals
26	For managers the Health Service Journal is a good source of information for keeping up to date with politics and strategy
27	I use national documents and guidelines on how to implement projects / policies
28	I prefer short summaries of research with key bullet points rather than long articles / documents
29	Most academic research is difficult to understand and apply

c) Internal data

30	I look at internal target / performance data
31	I look at staff / patient surveys
32	If the information I need is not available I collect my own data or go through the records to collate it myself

d) Case studies / Site visits

33	Myself or my colleagues visit other Trusts to learn from their experiences
34	We have been on international visits to see how things are done elsewhere
35	The most useful source of information is practical demonstrations of what works. I think people only really believe things when they see it with their own eyes
36	Key information is passed orally. It's not written down.

e) Workshops / Conferences

37	I find conferences / workshops an effective way of gathering information

f) Courses / training

38	I go on a lot of training courses where I get information about my work
39	I learnt a lot from my university / college course

g) Past experience

40	My values and experience are more important than any written document or other source of information for guiding what I do
41	I look at my experience from other industries / jobs to see if there are things that could be applied here

4. Quality of information

Number	Statement
42	I believe things more if they come from a source or person I trust
43	I use my own experience and common sense to judge the quality of information
44	NHS data sets are generally not very good or easy to use
45	What influential people say normally goes whether it is evidence based or not.
46	There is less reliable research information on how to manage than there is clinical evidence

5. Barriers to information seeking

47	As a manager I find it hard to influence medical professionals because I do not have the necessary clinical evidence base
48	We get bombarded with so much information, nobody can process it all
49	There is a real gap from the Department of Health getting information down to managers like me
50	It is difficult to know where to search for information. NHS sources are constantly disappearing or changing their names. There are loads of avenues but not one central NHS port of call for information
51	I don't have time within my role to search for information in the way I would like
52	If I can't find information quickly and easily I often don't bother

6. Task

53	I am more likely to seek information if it is an issue that really concerns me
54	I am more likely to seek information if the task is new / unfamiliar to me
55	The more complex the task the more likely I am to seek information
56	If the task has high priority / importance I am more likely to seek information

Appendix 3 Survey methodology

This appendix reviews the methodology of the two online surveys that were conducted for Phase 2 of the research study. It also addresses statistical issues related to the interpretation of the survey findings.

National survey of information behaviour and use

The national survey was designed to generalise information about managers' information behaviour derived from the case study research to a large sample of managers working in NHS Trusts. It was clear that these managers would have to be contacted via their Trusts and this presented two challenges:

1. How to select a representative sample of Trusts
2. How to identify managers within each participating Trust

Selection of Trusts

Our initial intention was to obtain replies from at least 500 managers from a representative sample of 50 NHS Trusts in order to be confident that we had captured the diversity of managers' experience in a nationally representative range of work settings. We aimed to survey a variety of different types of Trusts: Acute/PCT/Mental Health, both Foundation and non-Foundation, with different sizes, geographical locations and performance statistics.

In order to recruit this sample we initially contacted a total of 55 NHS Trusts, five from each of the ten Strategic Health Authorities (SHAs) in England (East Midlands, East of England, London, North East, North West, South Central, South East, South West, West Midlands, Yorkshire and the Humber) in order to obtain geographical spread. Within each of these areas we contacted two acute, two primary care and one mental health Trust with a variety of Foundation status, sizes, urban/rural locations and performance statistics, based upon the 2008/2009 CQC (Care Quality Commission) scores for Overall Quality of Services and Financial Management. Initial contact was made with the named Research and Development (R&D) contact within each Trust, explaining the research and asking for their assistance in distributing it to managers within their organisation.

However, we were dependent on the ability of R&D offices to pass on our requests to Trusts and also the goodwill and/or resources available within the Trusts to assist us with the survey. While some R&D offices and Trusts were exemplary in their assistance, others were very slow indeed to respond, and with time running out to complete the study, it was decided to approach all NHS Trusts in England to ask for their assistance. This resulted in a total of 59 Trusts participating in the survey: 21 Acute, 21

Table 1: List of participating Trusts by type

Trust type	Number and Name of Trusts	Number of respondents
Acute	**21 Trusts**	
	North Bristol NHS Trust	168
	Southend University Hospital NHS Foundation Trust	103
	Chelsea and Westminster Hospital NHS Trust	92
	The Pennine Acute Hospitals NHS Trust	67
	York Teaching Hospital NHS Foundation Trust	51
	East and North Hertfordshire Hospitals NHS Trust	41
	The Queen Elizabeth Hospital King's Lynn NHS Foundation Trust	41
	Colchester Hospital University NHS Foundation Trust	39
	Plymouth Hospitals NHS Trust	34
	The Hillingdon Hospital NHS Trust	32
	University Hospitals Coventry and Warwickshire NHS Trust	32
	West Hertfordshire Hospitals NHS Trust	30
	North Lincolnshire and Goole Hospitals NHS Foundation Trust	26
	Brighton and Sussex University Hospitals NHS Trust	22
	Kings College Hospital	21
	Norfolk and Norwich University Hospitals NHS Foundation Trust	17
	West Suffolk Hospital NHS Trust	14
	Basildon and Thurrock University Hospitals NHS Foundation Trust	12
	Taunton and Somerset NHS Foundation Trust	11
	Barking, Havering and Redbridge University Hospitals Trust	6
	St Georges NHS Healthcare Trust	1
	Total	**860**
PCT	**21 Trusts**	
	NHS South West Essex	61
	NHS North East Essex	42
	NHS South East Essex	31
	Central Lancashire PCT	31
	NHS Western Cheshire Commissioning	26
	Sandwell PCT	26
	Sunderland Teaching PCT	18
	Medway Community Healthcare CIC	18
	NHS Norfolk	17
	Solihull PCT	12
	NHS West Essex	12

Trust type	Number and Name of Trusts	Number of respondents
	NHS Mid Essex	10
	Birmingham East and North Primary Care Trust	9
	NHS County Durham and Darlington	9
	NHS Walsall	8
	North Lancashire Teaching PCT	7
	NHS Sutton and Merton	3
	Dudley PCT	2
	NHS Tees	2
	Heart of Birmingham Teaching PCT	1
	NHS Hertfordshire	1
	Total	**346**
Mental Health	**15 Trusts**	
	Coventry and Warwickshire Partnership Trust	235
	Lincolnshire Partnership NHS Foundation Trust	85
	North Essex Partnership Foundation Trust	63
	Tees, Esk and Wear Valleys NHS Foundation Trust	54
	Northumberland, Tyne and Wear NHS Trust	43
	South Essex Partnership University NHS Foundation Trust	42
	Bedfordshire and Luton Partnership Mental and Social Care NHS Trust	42
	South West London and St Georges Mental Health Trust	42
	Cheshire and Wirral Partnership NHS Trust	30
	Devon Partnerships NHS Trust	30
	Derbyshire Healthcare NHS Foundation Trust	28
	Sandwell Mental Health	24
	Dudley and Walsall Mental Health Partnership Trust	14
	South London and Maudsley NHS Foundation Trust	13
	Hertfordshire Partnership Foundation Trust	1
	Total	**746**
Ambulance	**2 Trusts**	
	North East Ambulance	27
	South West Ambulance	113
	Total	**140**

Primary Care (PCT), 15 Mental Health and 2 Ambulance (Table 1 lists all the participating Trusts). Ambulance Trusts were not approached initially as it was felt their information needs were too different from those of other Trusts, however replies to our initial requests often came from R&D consortia that covered several different types of Trusts in a particular region and it was, therefore, decided to include them where permission was granted. Inclusion of Trusts in the survey was also determined by the efficiency R&D offices in processing and passing on our application, (some responded after the survey was closed), and by whether Trusts had the resources to take part.

As the survey was to be conducted online, we arranged to have a separate survey link for each participating Trust. This allowed us to:

1. Link respondents to their Trust without having to ask them detailed questions about where they worked
2. Match performance and other data about the participating Trusts to individual survey respondents.

Defining a manager

As explained in the introduction, the approach taken in this research to deciding who was to be included in the survey was essentially pragmatic. After discussion with managers and other NHS personnel it was decided that anyone graded 5 or above on the agenda for change pay scale may have managerial responsibilities. Ideally, therefore, participating Trusts would have sent an email with the link to the online survey to all staff graded 5 or above. However, this was not always practical or possible for the Trusts and we therefore decided that the first survey question would be a filter question that asked potential respondents whether their work involved management responsibilities.

In order to provide some guidance to respondents, we also included a short description of who the intended participants for the survey were: "Note that this survey is intended for NHS employees with some kind of management responsibilities (whether they be staff, budgetary or strategic) as all or part of their work. This includes both clinical and non-clinical managers, nursing staff/consultants that have management responsibilities in addition to their clinical role, those who have strategic responsibilities but may not directly manage staff, executive and non-executive directors and anyone else who defines themselves as a manager in some way."

Respondents who answered 'No' to this question were filtered out of the survey but not before they were given a second chance to continue the survey if they were a manager.

Questionnaire development

The survey questionnaire drew on both lessons learnt from the case study research and the Q-sort study. Categories derived from the Q-sort research

permitted the development of questions that more accurately reflected actual opinion types than traditional questionnaire design methods. It was particularly helpful for the development of the attitudinal questions.

The survey questionnaire was divided into the following main sections:

1. Information about employment and job role
2. Use of different sources of information
3. Experience of information seeking in the NHS
4. Involvement in management of major change
5. Background information (including education and training)

The survey questionnaire is available from the main author.

Survey response

The survey was open from February to July 2011 as we gradually recruited Trusts to participate in the research study and worked towards our target of 50 participating Trusts. By the time the survey closed, 3,744 people had clicked on the survey link to participate. However, 375 said they were not managers and so were ineligible to participate and were filtered out of the survey, while a further 605 did not start the survey. This meant that 2,394 people answered some of the survey but 290 only completed the first section which asked about their employment and, therefore, were excluded from the analysis as they provided no data about their information use. It is possible that some of both these groups of respondents may have made a second attempt to complete the survey at a later date. A further 12 respondents had substantial amounts of missing data, that is had failed to answer more than three-quarters of the questions, and were also excluded from the analysis.

This response pattern is typical for an online survey and, in fact, the drop out rate for those who started the survey, 290 out of 2,394 (12%) is relatively low for a relatively long and complex survey.

As we did not have contact details for the individual managers who were contacted about the survey, it was not possible for us to carry out any follow-up of non-participants to understand more fully why they did not complete the survey questionnaire or to obtain any background information about them to compare non-respondents with those managers who completed the survey.

However, some analysis was carried out of the replies to the employment questions to compare the employment background of those that did not go on to complete the survey with those who completed some or all of the survey. It showed:

- No obvious differences between these groups of respondents in terms of job roles.

- A weak trend for respondents who partially completed the survey or only completed the employment questions to be more junior with 24% and 30% respectively in Bands 5 and 6 compared to 20% of those who completed the whole survey

A certain amount of background information on individual Trusts was also collected. In particular, whether participating acute, mental health and ambulance Trusts had foundation status as well as ratings of overall quality and financial management (see Tables 2 and 3).

Table 2 indicates that no Trusts in the South Central SHA region participated in the study and that we had a particularly high participation from NHS Trusts in the East of England SHA region owing to the efforts of the R&D and Trust offices there.

10 of the Acute Trusts had foundation status as did 11 of the Mental Health Trusts and one of the Ambulance Trusts. Foundation Trusts had higher average performance scores in terms of both overall quality and financial performance than non-Foundation Trusts.

Table 2: Trusts participating by Region, Foundation status and type

SHA Region	Acute	PCT	Mental Health	Ambulance	Total cases
East Midlands	0	0	2	0	2
East of England	8	7	4	0	19
London	5	1	2	0	8
North East	0	3	2	1	6
North West	1	3	1	0	5
South East Coast	1	1	0	0	2
South West	3	0	1	1	5
West Midlands	1	6	3	0	10
Yorkshire and Humberside	2	0	0	0	2
Foundation Trust					
Yes	10	0	11	1	22
No	11	0	4	1	16
Not applicable	0	21	0	0	21
Total cases	21	21	15	2	59

Source: National Survey of Information Behaviour, 2011

Table 3: Quality and Financial Performance by Trust type

Overall quality 2008/9	Acute	PCT	Mental Health	Ambulance	Total cases
Weak	2	0	1	0	3
Fair	4	10	4	0	18
Good	11	9	6	2	28
Excellent	4	0	4	0	8
No data	0	2	0	0	2
Financial management 2008/9					
Weak	1	0	1	0	2
Fair	5	13	2	0	20
Good	9	6	4	2	21
Excellent	6	1	8	0	15
No data	0	1	0	0	1
Total cases	21	21	15	2	59

Source: National Survey of Information Behaviour, 2011

Survey representativeness

Identifying the population base for the survey proved difficult as reliable statistics on management are not available. For example, Walshe and Smith (2011) comment: "We know remarkably little about the NHS management workforce – how many managers there are and what they do." Their own figures, based on a commercial database, estimated there were 33.500 in England in 2010 which is similar to the NHS Confederation's estimate of 36,000 (NHS Confederation 2007). The majority of those delivering services work in acute, mental health, community and primary care organisations. Although our response of 2,092 represents only a small proportion (5% approximately) of the population, if it had been a random sample of managers, it would be more than enough to paint an accurate picture of the information behaviour of managers working in NHS Trusts (see section 1.3 below)

Our main way of achieving representativeness among our respondents was to obtain responses from a large of Trusts. However, it is not possible to calculate a conventional survey response rate as we do not know how many managers were invited to participate in the survey by their Trusts. The qualitative research focussed on those engaged in major change programmes where gaps in knowledge would stimulate information search. The national survey is inevitably biased towards those who are comfortable with online surveys and have an interest in the subject matter. The majority of the managers studied said that passing on information is an

important part of their role. Thus the research probably has a disproportionate number of managers with high information needs and usage. Nonetheless, this remains the largest and most comprehensive study of health managers information use undertaken either in the UK, or internationally as far as we are aware.

Moreover, it can be argued that understanding the information behaviour, and the barriers and facilitators of use, of managers with high information needs and usage is particularly important.

We compared our sample with that reported by Powell et al. (2012, page 104) which included comparisons with 'best estimates' of key background characteristics of NHS managers. This suggests our sample broadly corresponds to the population in terms of gender, ethnicity, age and the percentage of respondents with clinical qualifications but has fewer respondents working in PCTs.

Table 4: Characteristics of survey respondents

	National Survey (2011) N of cases = 2,092		Powell et al (2012) N of cases = 556		NHS Managers
Gender (% female)		67%		67%	59%
Ethnicity (% BME)		8%		6%	7%
Age	40 and under:	27%	Under 40:	26%	30%
	41 to 50:	42%	41 to 49:	44%	39%
	Over 50:	30%	50 and over:	30%	31%
% Clinical qualification		49%		34%	50%
% Organisation Type	Acute Trusts:	41%	Trusts:	50%	54%
	PCT:	17%	PCT:	38%	35%
	Mental Health:	36%			
	Ambulance:	7%			

A challenging survey process

Our experience highlights the difficulty of conducting a large scale survey of individuals in the NHS. Our initial strategy of selecting a representative sample of Trusts in which to conduct the survey was thwarted by the low response rate from Trusts. Even when we decided to approach all Trusts, this meant that we had to obtain approval from each Trust or consortium. This was a time consuming process and is the main reason that the survey was open for such a long time.

However, the help and assistance that we obtained from NHS Trusts and research consortia has meant that the overall sample obtained is large, even if it is slightly geographically skewed.

Survey of information intermediaries

A second smaller survey of information intermediaries was also conducted. It was not straightforward to identify librarians/information professionals working in the NHS as we were advised that many would not be members of the Chartered Institute of Library and Information Professionals (CLIP). Based on advice from librarians who had been interviewed or contacted in the first phase of the research, Librarians and information professionals were contacted via a number of discussion lists that had been set up for members of the UK medical and health care library community and other interested information workers. Information about the survey was also circulated to regional library leads in England, to members of the Confederation of Independent Health Libraries in London (CHILL) and to the Head of Information at the King's Fund.

It is difficult to evaluate how representative respondents to the survey are of all librarians and information professionals working in the NHS in England when using such a multipronged strategy for contacting potential participants. However, the purpose of the survey was mainly to inform us about the nature of the information and library services available to managers' and their use of them.

A main aim of the survey was to see to what extent issues that had been identified in the case studies and interviews with librarians as well as the larger scale national survey of managers were also perceived in the same way by people working in the NHS as information intermediaries. It also sought to generate insights into what knowledge and expertise librarians and information specialists had about management issues. Thus it hoped to provide a means of validating some of the responses in the national survey and case studies. A main concern, therefore, was to generate a sufficiently large sample of respondents. The initial aim was to get replies from 50 to 100 librarians/information professionals via this exploratory survey.

The survey was conducted as an online survey between April and June 2011 and received 151 replies from librarians working in the NHS or in a similar job. Tables 5 and 6 give a breakdown of the Strategic Health Authority (SHA) Region and/or Country and by employer. They show that 91% respondents were working in England and 7% in other parts of the UK, while four (3%) provided no information about their work location or employment. Replies were received from all ten English SHA regions. Most (60%) respondents worked in NHS Acute Trusts with only 10% of respondents working in PCTs, 9% in Mental Health Trusts and 8% in Higher Education.

Table 5: Strategic Health Authority region/Country

	All respondents	
	Number	%
East Midlands SHA	10	7
East of England SHA	9	6
London SHA	20	13
North East SHA	6	4
North West SHA	24	16
South Central SHA	6	4
South East Coast SHA	10	7
South West SHA	12	8
West Midlands SHA	24	16
Yorkshire and The Humber SHA	14	9
England (not specified)	1	1
Scotland	7	5
Wales	2	1
Other UK	2	1
Not answered	4	3
Total cases	151	100

Source: Survey of Librarians, 2011

The survey, therefore, achieved a good response both in terms of numbers and geographical spread. It was also important that the survey not only received responses from people working in the NHS but also from respondents working in universities and charities that also run library and information services used by NHS staff.

Survey questionnaire

The questionnaire used for the survey of librarians/information professionals had the following main sections:

1. Employment information
2. Information about the library service
3. Responsibility for resources relevant to management
4. Attitudes to and experience of managers' use of information
5. Background information (including education and training)

Table 6: Employer

	All respondents	
	Number	%
NHS Trust – Acute	90	60
NHS Trust – Ambulance	2	1
NHS Trust – Mental Health	13	9
NHS Trust – Primary Care	15	10
NHS Trust – Other	9	5
Higher Education Institution	12	8
NHS Scotland	3	2
NHS Wales	1	1
Other (e.g. Charity, Non-NHS, etc)	6	5
Total cases	151	100

Source: Survey of Librarians, 2011

It drew on both the research conducted in Phase 1 and the survey of managers. The survey questionnaire can be obtained from the main author.

Statistical issues

Before most surveys were done online, cost considerations effectively limited sample sizes as much as statistical considerations. Printing, distribution and postage costs were often a major factor in research costs. Nowadays the main issue for many surveys is about how best to contact the target population. This is especially problematic for researchers external to organisations who are dependent on co-operation from inside an organisation to reach their target audience.

As outlined above (see section 1.1.1), our initial intention was to work with a nationally representative sample of Trusts and in that way to sample across work settings. This would have been, in effect, a two stage sampling strategy where a more representative sample is obtained by stratification on key variables.

Regrettably, this approach proved impossible to implement in practice in the time available. As a result we had to adopt an opportunistic approach to getting Trusts to participate in the study. This involved contacting all NHS Trusts in England and, once the necessary ethical approval had been obtained, getting the link to the survey questionnaire distributed via email to managers in those Trusts that agreed to be involved.

This might be considered a quasi-random process if time for an organisation to respond and grant permission is not considered to be

influenced by other factors. In which case, it could be argued that we had a random sample of Trusts participating in the main survey.

However, there is no doubt that response rate within individual Trusts also varied considerably. Some Trusts were able to identify managers eligible to complete the survey, while others sent information about the survey to all staff. In addition, Trust managements will have varied in the extent to which they promoted the survey in their Trust and this is also likely to have influenced response rates.

Finally, as noted in the Section 3.3 of the report, whether individual managers completed the survey is likely to be influenced by how comfortable they are completing an online survey and their interest in the subject matter.

Our main goal, and one that was achieved, was to obtain respondents from more than 50 Trusts. We saw this as the main way of obtaining a representative sample of managers. The fact that we also obtained many more responses than initially expected was a bonus and had no cost implications.

Comparison with nationally available data suggests that at an aggregate level, the sample we obtained is broadly representative of the NHS management population on some key variables (see Table 4). Nevertheless, assuming that our survey response can be treated as if it were either a simple random sample or a stratified one is questionable. If we treated it as a simple random sample and in the worst case of a 50/50 split, the standard error for a sample size of 2,092 would be 1.1%. This means that 95% confidence limit would be 2.2% (twice the standard error).

A similar calculation for the survey of librarians/information professionals would indicate a standard error of 4.1% and a 95% confidence limit of 8.2% if it was a simple random sample.

As our sampling strategy is at best quasi-random, it is probably safer to double these figures in both cases. However, the main concern is to estimate the magnitude of effects and not just whether two results are significantly different from each other.

Appendix 4 Information survey: attitude scales

Scale 1: Difficulty of identifying relevant information (5 items)

Cronbach's Alpha: 0.735

Items and relevant stats:

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
We get bombarded with so much information, nobody can process it all	14.14	6.596	.462	.264	.704
Time is my main barrier to information seeking	13.93	6.922	.460	.261	.703
There is a real gap in getting information from the Department of Health down to managers like me	14.57	6.502	.513	.307	.683
It's difficult to know where to search for information because NHS sources keep disappearing or changing their names	14.41	6.242	.582	.401	.654
There are loads of avenues but not one central NHS port of call for information	14.08	7.201	.473	.274	.699

Scale 2: Information culture (8 items)

Cronbach's Alpha: 0.811

Items and relevant stats:

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
There's a reluctance for managers to ask for information because they think they know best	22.36	20.423	.461	.223	.799
Professional boundaries are a big barrier to sharing information on how to manage better	21.86	20.546	.457	.246	.799
There is not a culture of seeking and sharing information n the Trust	22.18	19.643	.556	.333	.785
When it comes to management, what influential people say normally goes whether its evidence based or not	21.42	19.999	.554	.338	.785
Inter-departmental divisions and rivalry get in the way of sharing information useful to managers	21.94	19.061	.601	.369	.778
NHS culture promotes acceptance and compliance, not questioning and challenge	21.79	19.335	.556	.323	.785

When it comes to decision-making external political considerations can override evidence-based proposals	21.15	21.661	.407	.224	.805
People here only pass on information that fits their agenda	21.98	19.477	.609	.377	.777

Appendix tables

Table 1: Salary band by main job role: All respondents

Job role	Bands 4 to 6	Band 7	Band 8a	Band 8b	Band 8c and above	PCT scales	Other Non-Medical	N of cases
Clinician (medicine)	0	0	0	0	104	0	0	104
Clinician (nursing/ midwifery)	141	246	113	36	17	0	0	553
Clinician (AHP)	28	91	85	61	62	0	3	330
Clinical Support Officer/ Paramedic	45	5	1	0	0	0	0	51
Information/knowledge manager/Librarian	54	47	23	13	15	1	0	153
Research	8	9	6	6	8	0	0	37
Specialist manager	75	93	66	53	36	0	6	329
Transformation/Change/ Service Development	4	18	27	22	16	0	1	88
General Manager	7	24	47	39	46	0	0	163
CEO/Exec/Non-Exec	0	0	1	1	35	2	0	39
PCT Public Health	2	7	4	4	8	0	0	25
PCT Commissioning	5	16	12	8	7	0	0	48
PCT Practice	4	2	1	3	4	35	0	49
Admin/Office manager	49	3	0	0	0	2	2	56
Scientific/Technical	2	4	4	10	3	0	0	23
Other role[6]	7	16	13	5	2	0	1	44
All respondents	431	581	403	261	363	40	13	2092

Source: National Survey of Information Behaviour, 2011

[6] Other roles include: Commissioning managers not in PCTs (16), Practice managers not in PCTs (8), Public Health Managers not in PCTs (4), Social Care Managers (11), Others (5).

Table 2: Percentage of respondents using each source on a daily/weekly basis by main job role (N = 2,092)

	Clinician (medicine)	Clinician (nursing/midwifery)	Clinician (AHP)	Information/Knowledge manager/Librarian	Specialist manager	Transformation/ Change/Service	General Manager	CEO/Exec/Non-Exec	PCT Public Health	Clinical Support Officer/ Paramedic	PCT Commissioning	PCT Practice	Admin/ Office manager	Research	Scientific/ Technical	Other role	All respondents
Views / experiences of colleagues	81	92	93	84	90	97	91	92	84	94	85	78	91	73	96	84	90
Search engines (e.g. Google)	81	85	83	93	87	94	86	85	96	76	92	88	80	95	74	82	86
Front line staff	73	88	86	56	58	73	77	74	16	90	46	78	70	65	78	86	75
NHS websites	56	73	63	78	77	90	82	85	88	55	92	71	71	86	48	75	73
Email discussion lists and alerts	58	71	64	58	64	64	66	69	80	67	65	73	61	54	57	80	66
Trust bulletin board, dashboard, share point or other online staff information system	43	71	58	64	67	65	67	74	40	84	44	18	70	59	70	73	64
Trust policies and practice guidance	43	74	52	47	60	57	69	64	44	84	38	47	54	51	52	68	61
Formal meetings / team meetings with colleagues	55	56	57	58	64	68	78	90	68	8	60	27	38	46	74	66	59
Views / experiences of service users	46	69	51	42	41	38	42	59	20	69	21	53	39	16	26	52	50
Informal networks (e.g. family, friends, former colleagues)	50	59	45	27	43	53	57	38	48	45	50	47	43	43	57	32	48
Professional journals / magazines / websites	66	48	49	46	40	51	40	59	60	35	48	39	16	51	30	39	46
Professional networks	38	45	42	41	31	39	35	41	52	37	42	37	23	46	30	50	40
Past formal education (e.g. Degree, MBA)	24	44	46	35	36	40	39	49	48	24	40	16	21	38	43	43	39
Official national publications (e.g. Dept of Health, NICE guidelines)	40	40	29	39	38	50	39	67	60	37	71	27	16	57	30	45	39
Trust library or electronic resources	28	32	24	43	25	24	27	23	36	41	33	20	23	43	30	36	29

	Clinician (medicine)	Clinician (nursing/midwifery)	Clinician (AHP)	Information/Knowledge manager/Librarian	Specialist manager	Transformation/ Change/Service	General Manager	CEO/Exec/Non-Exec	PCT Public Health	Clinical Support Officer/ Paramedic	PCT Commissioning	PCT Practice	Admin/ Office manager	Research	Scientific/ Technical	Other role	All respondents
Academic books / journals (Clinical)	68	36	40	16	9	16	8	13	36	43	19	18	2	43	30	30	27
Current formal education (e.g. Degree, MBA)	17	32	30	21	22	25	21	21	32	24	29	16	18	24	22	27	26
Work-based training courses	18	36	25	18	23	27	21	15	8	31	13	12	20	16	17	30	26
Internal Trust management consultancy / service development / transformation teams	15	13	6	15	20	57	30	62	16	6	17	2	16	14	9	23	17
Patient surveys / complaints	10	22	8	5	11	17	29	26	0	4	8	24	13	3	0	14	15
Academic books / journals (Managerial)	15	12	9	18	13	31	19	28	28	8	17	16	5	22	4	11	14
Conferences / workshops	11	19	16	12	10	14	12	13	8	10	10	12	5	11	13	16	14
Patient representatives	9	19	7	5	5	17	12	15	8	6	8	10	7	0	0	16	11
PALS / complaints handlers	4	14	5	4	8	11	22	28	0	10	8	6	11	0	0	9	10
Librarians / information specialists	8	7	9	29	6	7	10	21	24	4	8	6	11	14	0	7	10
Union or staff representatives	11	6	8	6	13	7	14	15	4	27	2	20	4	0	4	9	9
National experts on the subject	4	7	5	11	5	15	4	5	8	6	6	4	5	27	0	14	7
Academic researchers	10	7	6	7	2	10	6	0	12	8	4	4	4	49	0	7	7
International experts on the subject	5	5	4	8	3	9	4	0	4	4	4	6	5	8	0	7	5
Staff surveys	3	4	1	6	7	9	7	5	0	2	0	2	5	8	0	9	4
Case studies of other organisations	4	3	2	9	3	14	4	10	12	0	13	2	2	8	0	2	4
Management consultants	3	6	2	4	2	1	2	8	0	0	2	2	2	3	4	2	3
Other written sources	19	20	17	28	20	30	23	18	40	12	15	29	11	38	22	27	21

	Clinician (medicine)	Clinician (nursing/midwifery)	Clinician (AHP)	Information/Knowledge manager/Librarian	Specialist manager	Transformation/ Change/Service	General Manager	CEO/Exec/Non-Exec	PCT Public Health	Clinical Support Officer/ Paramedic	PCT Commissioning	PCT Practice	Admin/ Office manager	Research	Scientific/ Technical	Other role	All respondents
Other education / training sources	16	19	20	20	15	22	14	23	16	18	15	20	14	14	13	18	18
Other specialist library / electronic resources	28	16	16	23	16	16	13	15	40	12	25	27	7	49	9	14	18
Other people / networks	9	14	11	11	12	23	14	15	32	0	17	14	11	27	0	18	13

Source: National Survey of Information Behaviour, 2011

ts using each specific source on a daily/weekly basis by main job role (N = 2,092)

	NHS Evidence	Health Service Journal	Doctor Foster	NICE guidelines	Department of Health website	NHS Institute for Innovation and	Kings Fund	NHS information	NHS Confederation	Other source
	18	12	0	***29***	16	5	3	3	1	10
	36	18	4	***42***	37	19	4	7	1	8
	23	11	1	***23***	20	8	2	2	1	7
rian	25	22	7	14	***38***	14	8	20	6	18
	21	15	2	8	***31***	8	3	7	6	15
opment	27	28	7	24	***47***	42	7	11	5	16
	26	31	7	18	***33***	14	7	6	4	7
	15	***62***	8	13	51	18	5	5	26	15
	48	28	0	28	***68***	12	12	24	4	16
	20	2	0	***41***	16	4	2	4	2	6
	44	44	15	33	***60***	31	15	25	6	6
	37	20	2	18	12	2	0	6	0	12
	9	13	4	11	***16***	9	0	2	2	4
	32	16	0	16	***38***	5	0	5	0	24
	9	9	0	***22***	13	0	0	0	0	4
	36	23	7	34	41	16	7	5	7	5
	27	19	4	25	***32***	14	4	7	3	10

Table 4: Most important written sources used to gather information in your work by main job role: Percentages[7] .

	Academic books / journals (Clinical)	Academic books / journals (Managerial)	Professional journals / magazines / websites	Official national publications	Trust policies and practice guidance	Internal Management information	Staff surveys	Patient surveys / complaints	Case studies of other organisations	Other written sources	None of the above	No answer	N of cases
Clinician (medicine)	***55***	3	***48***	33	20	13	1	3	1	5	4	7	104
Clinician (nursing/midwifery)	24	5	***44***	24	***54***	18	2	13	3	5	1	3	553
Clinician (AHP)	35	3	***49***	32	***36***	16	3	5	2	7	2	4	330
Information/Knowledge manager/Librarian	7	8	***37***	35	***39***	30	2	3	5	12	9	6	153
Specialist manager	4	4	***43***	37	***40***	29	4	5	6	11	5	5	329
Transformation/Change/Service Development	10	14	***39***	***43***	19	30	1	5	15	8	7	3	88
General Manager	3	7	31	***38***	42	***45***	1	9	9	6	2	3	163
CEO/Exec/Non-Exec	5	18	***41***	***38***	10	***38***	0	15	15	8	5	3	39
PCT Public Health	24	8	***52***	***60***	8	4	0	0	16	20	0	4	25
Clinical Support Officer/Paramedic	***55***	2	29	14	***75***	16	0	0	2	4	0	2	51
PCT Commissioning	10	8	***48***	***54***	6	19	0	8	21	4	2	6	48
PCT Practice	6	14	***53***	12	37	22	4	18	0	14	4	6	49
Admin/Office manager	0	4	7	14	***75***	***46***	5	16	5	13	7	2	56
Research	***43***	16	38	***57***	16	11	3	0	3	11	3	0	37
Scientific/Technical	22	4	***57***	9	***57***	35	0	0	4	13	0	0	23
Other role	16	9	27	***36***	***43***	***36***	5	2	2	11	5	0	44
All respondents	20	6	***42***	32	***41***	24	2	8	5	8	3	4	2092

[7] This series of tables show the percentage of respondents in each main role group rating sources as one of the two most useful (except for education/training sources where respondents were only asked to identify one most useful source). In each row of each table the two most frequently mentioned answers are highlighted. This is a simple way of highlighting the differences between staff groups

Table 5: Most important online information sources by main job role: Percentages

	Search engines (e.g. Google)	NHS websites	Email discussion lists and alerts	Trust library or electronic resources	Trust bulletin board, dashboard, share point or other online staff information system	Other specialist library / electronic resources	Other online	No answer	N of cases
Clinician (medicine)	77	46	15	17	10	21	3	4	104
Clinician (nursing/midwifery)	69	61	13	16	19	11	2	4	553
Clinician (AHP)	74	49	18	16	18	9	5	4	330
Information/Knowledge manager/Librarian	76	59	16	16	8	15	2	3	153
Specialist manager	75	65	13	7	13	13	5	4	329
Transformation/Change/Service Development	82	66	13	6	14	13	0	3	88
General Manager	75	67	10	12	17	7	1	5	163
CEO/Exec/Non-Exec	82	56	21	13	13	0	8	3	39
PCT Public Health	88	72	12	4	0	16	0	4	25
Clinical Support Officer/Paramedic	78	33	12	22	37	10	0	2	51
PCT Commissioning	69	79	4	6	0	15	8	8	48
PCT Practice	82	69	12	14	0	18	0	2	49
Admin/Office manager	64	54	16	14	30	2	11	4	56
Research	78	54	5	24	11	16	0	5	37
Scientific/Technical	74	22	26	26	30	9	4	4	23
Other role	55	48	27	16	23	18	11	0	44
All respondents	73	58	14	14	16	12	3	4	2092

Source: National Survey of Information Behaviour, 2011

Table 6: People/networks found most useful as sources of information by main job role: Percentages

	Views / experiences of colleagues	Views / experiences of service users	Professional networks	Informal networks (e.g. family, friends, former colleagues)	Librarians / information specialists	Management consultants	Academic researchers	National experts on the subject	International experts on the subject	Front line staff	Union or staff representatives	Patient representatives	PALS / complaints handlers	Formal / team meetings with colleagues	Internal Trust consultancy/ service development/ transformation teams	Other people / networks	No answer	N of cases
Clinician (medicine)	71	16	49	8	4	2	5	4	3	13	0	0	0	13	1	0	6	104
Clinician (nursing/midwifery)	71	40	27	5	2	1	2	2	0	20	0	1	0	16	2	0	5	553
Clinician (AHP)	72	26	42	3	1	0	2	4	1	18	1	1	0	14	3	1	5	330
Information/Knowledge manager/ Librarian	63	23	27	3	14	2	1	7	1	15	0	3	1	21	4	2	7	153
Specialist manager	79	19	31	5	2	2	0	2	0	14	2	1	1	22	6	2	5	329
Transformation/Change/Service Development	64	35	27	6	1	1	2	7	2	22	1	2	1	13	5	2	5	88
General Manager	67	31	20	4	2	1	1	4	1	36	0	2	1	21	1	1	4	163
CEO/Exec/Non-Exec	79	23	33	0	0	3	5	3	5	15	0	8	0	15	8	0	0	39
PCT Public Health	56	16	52	0	12	4	4	16	0	0	0	0	0	4	12	8	8	25
Clinical Support Officer/Paramedic	92	18	18	4	0	0	4	2	0	37	4	0	0	4	0	4	6	51
PCT Commissioning	60	23	40	4	6	0	4	4	0	13	0	2	0	10	8	2	10	48
PCT Practice	61	37	24	6	0	0	0	0	0	33	0	2	0	12	4	0	10	49
Admin/Office manager	73	23	9	9	0	0	2	2	2	25	0	0	2	30	7	0	7	56
Research	57	11	46	8	0	3	19	5	0	8	0	0	0	16	14	0	8	37
Scientific/Technical	96	17	30	13	0	0	0	9	0	17	0	0	0	17	0	0	0	23
Other role	55	25	30	5	2	0	7	7	0	34	0	0	0	16	2	7	5	44
All respondents	71	28	31	5	3	1	2	4	1	20	1	1	0	17	4	1	5	2092

Table 7: Most important education/training as a source of information for your work by main job role: Percentages

	Work-based training courses	Conferences / workshops	Past formal education (e.g. Degree, MBA)	Current formal education (e.g. Degree, MBA)	Other education / training sources	None of the above	No answer	N of cases
Clinician (medicine)	18	51	4	2	5	7	13	104
Clinician (nursing/midwifery)	28	39	7	6	7	2	12	553
Clinician (AHP)	20	44	11	7	6	3	10	330
Information/Knowledge manager/Librarian	22	39	9	5	10	3	11	153
Specialist manager	18	39	11	7	5	9	11	329
Transformation/Change/Service Development	15	41	14	7	10	7	7	88
General Manager	20	36	18	3	9	2	12	163
CEO/Exec/Non-Exec	10	46	23	5	5	5	5	39
PCT Public Health	20	40	12	16	4	0	8	25
Clinical Support Officer/Paramedic	57	16	2	6	8	4	8	51
PCT Commissioning	8	52	13	13	2	0	13	48
PCT Practice	10	61	4	0	14	2	8	49
Admin/Office manager	29	20	14	7	4	7	20	56
Research	14	49	16	14	8	0	0	37
Scientific/Technical	22	39	13	0	9	4	13	23
Other role	23	30	18	7	7	5	11	44
All respondents	22	40	10	6	7	4	11	
Total cases	459	839	214	126	142	86	226	2092

Source: National Survey of Information Behaviour, 2011

Table 8: Most important Health-related sources used to gather information in your work by main job role: Percentages

	NHS Evidence	Health Service Journal	Doctor Foster	NICE guidelines	Department of Health website	NHS Institute for Innovation and Improvement	Kings Fund	NHS information centre	NHS Confederation	Other source	None of the above	No answer	N of cases
Clinician (medicine)	26	13	6	71	26	8	6	0	0	15	10	7	104
Clinician (nursing/midwifery)	35	14	2	58	49	12	3	2	0	6	5	4	553
Clinician (AHP)	35	11	1	55	44	10	6	1	1	7	9	6	330
Information/Knowledge manager/Librarian	23	18	7	14	59	7	4	17	1	20	14	4	153
Specialist manager	24	17	3	14	59	10	2	5	6	21	17	5	329
Transformation/Change/Service Development	24	18	3	20	56	42	6	5	2	8	8	1	88
General Manager	26	26	5	29	60	13	6	1	2	8	8	6	163
CEO/Exec/Non-Exec	23	49	5	15	51	13	13	0	18	10	0	0	39
PCT Public Health	48	8	0	36	52	12	8	16	0	16	4	0	25
Clinical Support Officer/Paramedic	39	12	0	82	27	0	0	0	0	12	10	4	51
PCT Commissioning	40	17	10	27	52	10	4	6	2	10	0	8	48
PCT Practice	43	29	0	39	47	2	2	2	0	22	4	4	49
Admin/Office manager	11	11	4	23	57	11	5	4	2	7	30	13	56
Research	35	19	0	19	59	11	8	0	3	32	8	3	37
Scientific/Technical	17	17	0	48	48	0	0	0	0	0	35	17	23
Other role	36	11	0	36	57	11	0	2	2	7	18	2	44
All respondents	30	16	3	41	51	11	4	3	2	12	10	5	2092

Source: National Survey of Information Behaviour, 2011

Table 9: Correlations between number of sources used and selected variables[8]

		All sources	Internal	External	Academic
Salary band	Pearson Correlation	.182	.183	.174	.106
	Sig. (2-tailed)	.000	.000	.000	.000
	N	2039	2039	2039	2039
Highest educational qualification	Pearson Correlation	.181	.097	.230	.244
	Sig. (2-tailed)	.000	.000	.000	.000
	N	1786	1786	1786	1786
How important strategy / long-term planning	Pearson Correlation	**-.293**	**-.266**	**-.259**	-.212
	Sig. (2-tailed)	.000	.000	.000	.000
	N	2090	2090	2090	2090
How important finding information as a priority in your work	Pearson Correlation	-.198	-.125	-.184	-.162
	Sig. (2-tailed)	.000	.000	.000	.000
	N	2077	2077	2077	2077
Is finding information on behalf of others an important priority in your work?	Pearson Correlation	-.136	-.084	-.112	-.107
	Sig. (2-tailed)	.000	.000	.000	.000
	N	2087	2087	2087	2087
Currently involved in major changes	Pearson Correlation	-.257	-.273	-.208	-.161
	Sig. (2-tailed)	.000	.000	.000	.000
	N	1921	1921	1921	1921
How easily are you able to find the information you require relevant to your work as a manager	Pearson Correlation	-.162	-.114	-.154	-.143
	Sig. (2-tailed)	.000	.000	.000	.000
	N	1834	1834	1834	1834
I learn a lot from talking to	Pearson	.155	**.203**	.087	.094

[8] In this analysis correlations were calculated for all the attitudinal variables in the survey and other key questions where either a rating scale was used or ordinal categories (e.g. salary band, highest educational qualification) were used. Only variables with a correlation greater than 0.1 have been included in the table and for each type of information source, the three highest correlations (shown in bold font) have been identified. Note that a negative correlation coefficient indicates disagreement with an attitudinal item using an agree/disagree rating scale but a positive relationship with items using an importance rating scale where a low score indicated greater importance.

		All sources	Internal	External	Academic
frontline staff and finding out their opinions	Correlation				
	Sig. (2-tailed)	.000	.000	.000	.000
	N	1914	1914	1914	1914
I look abroad for innovative ideas about how we could change things here	Pearson Correlation	**.289**	.170	**.319**	**.304**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	1909	1909	1909	1909
My colleagues and/or I will visit other Trusts to learn from their experiences	Pearson Correlation	.229	.171	.219	.171
	Sig. (2-tailed)	.000	.000	.000	.000
	N	1908	1908	1908	1908
My experience is more important than any written document or other source of information in guiding what I do	Pearson Correlation	-.090	-.064	-.090	-.106
	Sig. (2-tailed)	.000	.005	.000	.000
	N	1894	1894	1894	1894
My sources of information are mainly internal to the Trust	Pearson Correlation	**-.281**	-.108	**-.341**	**-.304**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	1910	1910	1910	1910
I look at my experience from different jobs / industries to see if there are things that could be applied here	Pearson Correlation	.134	.052	.157	.129
	Sig. (2-tailed)	.000	.023	.000	.000
	N	1909	1909	1909	1909
I prefer short summaries of research with key bullet points rather than long articles or documents	Pearson Correlation	-.080	.022	-.137	-.165
	Sig. (2-tailed)	.001	.347	.000	.000
	N	1901	1901	1901	1901
If I can't find information quickly and easily I often give up	Pearson Correlation	-.152	-.074	-.165	-.169
	Sig. (2-tailed)	.000	.001	.000	.000
	N	1897	1897	1897	1897
Academic research-based evidence is most useful for decision-making	Pearson Correlation	.109	.028	.146	.175
	Sig. (2-tailed)	.000	.229	.000	.000
	N	1896	1896	1896	1896
Academic research is often difficult to understand and	Pearson Correlation	-.157	-.041	-.227	**-.254**

		All sources	Internal	External	Academic
apply	Sig. (2-tailed)	.000	.072	.000	.000
	N	1900	1900	1900	1900
There is a lack of good quality research evidence that managers can use	Pearson Correlation	-.058	-.018	-.090	-.111
	Sig. (2-tailed)	.011	.436	.000	.000
	N	1899	1899	1899	1899
There is a real gap in getting information from the Department of Health down to managers like me	Pearson Correlation	-.106	-.108	-.094	-.102
	Sig. (2-tailed)	.000	.000	.000	.000
	N	1902	1902	1902	1902
If I can't find information quickly and easily I often give up	Pearson Correlation	-.152	-.074	-.165	-.169
	Sig. (2-tailed)	.000	.001	.000	.000
	N	1897	1897	1897	1897
There is not a culture of seeking and sharing information in the Trust	Pearson Correlation	-.075	-.114	-.036	-.028
	Sig. (2-tailed)	.001	.000	.118	.224
	N	1902	1902	1902	1902
The Trust expects us to adopt an evidence-based approach to the way we manage	Pearson Correlation	.119	.119	.094	.085
	Sig. (2-tailed)	.000	.000	.000	.000
	N	1900	1900	1900	1900
When it comes to management, what influential people say normally goes whether its evidence based or not	Pearson Correlation	-.084	-.104	-.051	-.044
	Sig. (2-tailed)	.000	.000	.026	.057
	N	1898	1898	1898	1898
My boss / line manager expects me to rely on my experience rather than spend time searching for new information	Pearson Correlation	-.112	-.065	-.144	-.141
	Sig. (2-tailed)	.000	.005	.000	.000
	N	1899	1899	1899	1899
People here only pass on information that fits their agenda	Pearson Correlation	-.076	-.111	-.039	-.025
	Sig. (2-tailed)	.001	.000	.092	.277
	N	1891	1891	1891	1891
Difficulty of finding information (Scale)	Pearson Correlation	-.094	-.068	-.096	-.105
	Sig. (2-tailed)	.000	.003	.000	.000

		All sources	Internal	External	Academic
	N	1883	1883	1883	1883
NHS culture (Scale)	Pearson Correlation	-.070	-.107	-.044	-.032
	Sig. (2-tailed)	.003	.000	.057	.167
	N	1858	1858	1858	1858

Source: National Survey of Information Behaviour, 2011

Table 10: Mean scores on selected items related to experience of finding information by job role

Job role		I learn a lot from talking to frontline staff and finding out their opinions	My colleagues and/or I will visit other Trusts to learn from their experiences	I look at my experience from different jobs/ industries to see if there are things that could be applied here	My sources of information are mainly internal to the Trust
Clinician (medicine)	Mean	4.14	3.30	3.48	2.67
	N of cases	98	99	98	99
	Std. Deviation	.609	.909	.944	.979
Clinician (nurse)	Mean	4.29	3.46	3.78	2.83
	N of cases	509	508	509	507
	Std. Deviation	.641	1.026	.851	1.042
Clinician (AHP)	Mean	4.21	3.53	3.73	2.63
	N of cases	299	298	296	299
	Std. Deviation	.574	.888	.951	1.013
Information/ knowledge manager/ Librarian	Mean	3.67	3.75	4.04	2.77
	N of cases	141	140	140	139
	Std. Deviation	1.033	.882	.913	1.259
Specialist manager	Mean	3.90	3.61	3.97	2.73
	N of cases	302	302	303	303
	Std. Deviation	.832	.937	.837	1.054
Transformation/ Change/ Service Development	Mean	4.22	4.09	4.06	2.28
	N of cases	83	81	83	83
	Std. Deviation	.716	.616	.846	1.004
General Manager	Mean	4.15	3.82	4.02	2.66
	N of cases	148	147	147	148
	Std. Deviation	.684	.808	.763	1.007
CEO/Exec/Non-Exec	Mean	4.21	4.35	4.18	2.29
	N of cases	34	34	34	34
	Std. Deviation	.687	.485	.999	1.060
PCT Public Health	Mean	3.81	3.71	3.81	2.00
	N of cases	21	21	21	21
	Std. Deviation	.814	.784	.680	.894
Clinical Support Officer Paramedic	Mean	4.38	2.67	3.23	3.69
	N of cases	48	48	47	48
	Std. Deviation	.703	.996	.960	.903
PCT Commissioning	Mean	3.85	3.80	3.90	2.45
	N of cases	41	41	41	40
	Std. Deviation	.792	.715	.889	.932
PCT Practice	Mean	4.23	2.88	3.81	2.95
	N of cases	43	42	43	43

Job role		I learn a lot from talking to frontline staff and finding out their opinions	My colleagues and/or I will visit other Trusts to learn from their experiences	I look at my experience from different jobs/ industries to see if there are things that could be applied here	My sources of information are mainly internal to the Trust
	Std. Deviation	.649	1.064	.880	1.112
Admin/Office manager	Mean	4.13	3.12	3.87	3.24
	N of cases	52	52	52	51
	Std. Deviation	.886	1.199	.929	1.106
Research	Mean	4.00	3.92	4.06	1.92
	N of cases	36	36	36	36
	Std. Deviation	.676	.806	.791	.806
Scientific/Technical	Mean	4.16	3.84	3.37	2.47
	N of cases	19	19	19	19
	Std. Deviation	.688	.501	.895	.964
Other role	Mean	4.13	3.53	4.05	2.50
	N of cases	40	40	40	40
	Std. Deviation	.992	.960	.959	1.261
Total	Mean	4.12	3.56	3.84	2.71
	N of cases	1914	1908	1909	1910
	Std. Deviation	.751	.962	.894	1.075

Source: National Survey of Information Behaviour, 2011

Table 11: I learn a lot from talking to frontline staff and finding out their opinions by main current role: Percentages (N = 1,914)

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
Clinical Support Officer/ Paramedic	2	0	0	54	44
Clinician (nurse)	1	0	5	58	37
Clinician (AHP)	0	1	5	66	28
Clinician (medicine)	0	2	6	67	24
CEO/Exec/Non-Exec	0	3	6	59	32
Transformation/Change/ Service Development	0	4	6	55	35
Research	0	6	6	72	17
General Manager	0	3	9	59	29
PCT Practice	0	0	12	53	35
Other role	5	3	5	50	38
Admin/Office manager	2	4	10	48	37
Scientific/Technical	0	0	16	53	32
Specialist manager	1	6	14	59	20
PCT Commissioning	2	2	17	63	15
Information/Knowledge Manager/ Librarian	6	9	13	56	16
PCT Public Health	0	5	29	48	19
All respondents	1	3	8	59	29

Source: National Survey of Information Behaviour, 2011

Table 12: My colleagues and/or I will visit other Trusts to learn from their experiences by main current role: Percentages (N = 1,908)

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
CEO/Exec/Non-Exec	0	0	0	65	35
Transformation/Change/ Service Development	0	2	7	69	21
Scientific/Technical	0	5	5	89	0
Research	0	8	11	61	19
PCT Commissioning	0	7	15	68	10
General Manager	1	7	14	63	14
Information/knowledge manager/Librarian	4	6	16	62	13
PCT Public Health	0	10	19	62	10
Specialist manager	4	9	20	57	11
Clinician (AHP)	3	10	24	56	7
Clinician (nurse)	5	16	19	50	10
Other role	5	5	35	43	13
Clinician (medicine)	4	16	27	51	2
Admin/Office manager	13	15	27	35	10
PCT Practice	7	33	31	21	7
Clinical Support Officer/ Paramedic	8	44	23	23	2
All respondents	4	12	19	54	11

Source: National Survey of Information Behaviour, 2011

Table 13: I look at my experience from different jobs / industries to see if there are things that could be applied here by main current role: Percentages (N = 1,909)

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
Other role	5	3	5	58	30
Transformation/Change/ Service Development	1	6	7	57	29
CEO/Exec/Non-Exec	3	6	6	41	44
General Manager	0	6	10	61	24
Information/knowledge manager/Librarian	2	6	9	51	31
Specialist manager	1	7	11	58	24
Admin/Office manager	6	0	15	60	19
PCT Commissioning	2	5	15	56	22
Research	0	3	19	47	31
PCT Practice	2	7	14	60	16
PCT Public Health	0	5	19	67	10
Clinician (nurse)	2	8	16	60	15
Clinician (AHP)	4	8	17	55	16
Clinician (medicine)	3	13	26	49	9
Clinical Support Officer/ Paramedic	4	23	17	55	0
Scientific/Technical	0	21	26	47	5
All respondents	2	8	14	57	20

Source: National Survey of Information Behaviour, 2011

Table 14: My sources of information are mainly internal to the Trust by main current role: Percentages (N = 1,910)

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
Clinical Support Officer/ Paramedic	2	13	10	65	10
Admin/Office manager	4	29	16	41	10
PCT Practice	12	23	28	33	5
Information/knowledge manager/Librarian	16	36	13	26	9
Clinician (nurse)	8	35	26	26	4
Other role	25	35	10	25	5
Specialist manager	9	41	21	25	4
General Manager	9	43	22	24	2
Clinician (AHP)	11	41	23	22	2
Clinician (medicine)	8	42	27	19	3
CEO/Exec/Non-Exec	24	44	12	21	0
Scientific/Technical	16	37	32	16	0
PCT Commissioning	10	53	23	13	3
Transformation/Change/ Service Development	19	51	17	10	4
PCT Public Health	29	52	10	10	0
Research	28	58	11	0	3
All respondents	11	39	22	25	4

Source: National Survey of Information Behaviour, 2011

Table 15: Mean scores on selected items related to attitudes to information by job role

Job role		Often decision-making is a process of negotiation rather than simply looking at the best evidence	Academic research-based evidence is most useful for decision-making
Clinician (medicine)	Mean	3.91	3.03
	N of cases	98	98
	Std. Deviation	.788	.925
Clinician (nurse)	Mean	3.44	3.27
	N of cases	503	504
	Std. Deviation	.851	.786
Clinician (AHP)	Mean	3.65	3.05
	N of cases	298	297
	Std. Deviation	.796	.743
Information/knowledge manager/Librarian	Mean	3.62	3.03
	N of cases	139	140
	Std. Deviation	.793	.739
Specialist manager	Mean	3.61	2.87
	N of cases	299	300
	Std. Deviation	.797	.696
Transformation/Change/ Service Development	Mean	3.84	3.12
	N of cases	83	83
	Std. Deviation	.904	.771
General Manager	Mean	3.71	3.00
	N of cases	146	147
	Std. Deviation	.779	.721
CEO/Exec/Non-Exec	Mean	3.24	2.71
	N of cases	33	34
	Std. Deviation	1.119	.871
PCT Public Health	Mean	3.90	2.95
	N of cases	21	21
	Std. Deviation	.625	.865
Clinical Support Officer Paramedic	Mean	3.19	3.40
	N of cases	47	45
	Std. Deviation	.900	.809
PCT Commissioning	Mean	3.69	3.18
	N of cases	39	39
	Std. Deviation	.731	.914
PCT Practice	Mean	3.60	3.00
	N of cases	43	43
	Std. Deviation	.821	.787
Admin/Office manager	Mean	3.90	3.00
	N of cases	50	51
	Std. Deviation	.735	.693
Research	Mean	4.08	3.57
	N of cases	36	35

Job role		Often decision-making is a process of negotiation rather than simply looking at the best evidence	Academic research-based evidence is most useful for decision-making
	Std. Deviation	.692	1.065
Scientific/Technical	Mean	3.58	2.89
	N of cases	19	19
	Std. Deviation	.961	.567
Other role	Mean	3.50	2.95
	N of cases	40	40
	Std. Deviation	.906	.876
Total	Mean	3.61	3.08
	N of cases	1894	1896
	Std. Deviation	.837	.789

Source: National Survey of Information Behaviour, 2011

Table 16: Often decision making is a process of negotiation rather than simply looking at the best evidence by main current role: Percentages (N = 1,984)

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
Research	0	3	11	61	25
PCT Public Health	0	5	10	76	10
Clinician (medicine)	1	7	8	67	16
PCT Commissioning	3	5	15	74	3
Transformation/Change/ Service Development	1	10	13	55	20
General Manager	1	8	22	60	10
Admin/Office manager	0	0	32	46	22
Information/knowledge manager/Librarian	1	9	23	60	6
Specialist manager	1	10	24	58	7
Clinician (AHP)	0	10	25	55	10
PCT Practice	0	9	33	47	12
CEO/Exec/Non-Exec	6	27	9	52	6
Other role	5	5	33	50	8
Clinician (nurse)	1	14	29	50	5
Scientific/Technical	5	0	42	37	16
Clinical Support Officer/ Paramedic	4	17	36	40	2
All respondents	1	10	24	55	9

Source: National Survey of Information Behaviour, 2011

Table 17: Academic research-based evidence is most useful for decision-making by main current role: Percentages (N = 1,896)

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
Research	6	6	34	34	20
Clinical Support Officer/ Paramedic	0	16	33	47	4
Clinician (nurse)	1	13	48	33	5
PCT Commissioning	5	13	46	31	5
Clinician (medicine)	4	24	40	28	4
Other role	5	25	40	30	0
Transformation/Change/ Service Development	0	18	58	18	6
General Manager	1	23	52	23	1
PCT Public Health	0	33	43	19	5
PCT Practice	7	9	60	23	0
Clinician (AHP)	1	18	59	19	3
Information/knowledge manager/Librarian	3	15	61	19	2
CEO/Exec/Non-Exec	12	21	53	15	0
Specialist manager	2	24	59	14	1
Admin/Office manager	2	14	71	10	4
Scientific/Technical	0	21	68	11	0
All respondents	2	18	53	24	3

Source: National Survey of Information Behaviour, 2011

Table 18: Mean scores on selected item related to attitudes to information seeking by job role

Job role		There's a reluctance for managers to ask for information because they think they know best
Clinician (medicine)	Mean	2.85
	N of cases	98
	Std. Deviation	.945
Clinician (nurse)	Mean	2.43
	N of cases	503
	Std. Deviation	.948
Clinician (AHP)	Mean	2.54
	N of cases	298
	Std. Deviation	.964
Information/knowledge manager/Librarian	Mean	2.94
	N of cases	140
	Std. Deviation	1.019
Specialist manager	Mean	2.74
	N of cases	304
	Std. Deviation	.944
Transformation/Change/ Service Development	Mean	2.88
	N of cases	83
	Std. Deviation	1.064
General Manager	Mean	2.45
	N of cases	148
	Std. Deviation	.985
CEO/Exec/Non-Exec	Mean	2.41
	N of cases	34
	Std. Deviation	.957
PCT Public Health	Mean	2.48
	N of cases	21
	Std. Deviation	.928
Clinical Support Officer Paramedic	Mean	2.68
	N of cases	47
	Std. Deviation	.810
PCT Commissioning	Mean	2.56
	N of cases	39
	Std. Deviation	.882
PCT Practice	Mean	2.16
	N of cases	43
	Std. Deviation	.949
Admin/Office manager	Mean	2.75
	N of cases	52
	Std. Deviation	1.007
Research	Mean	2.97
	N of cases	36
	Std. Deviation	1.108

Job role		There's a reluctance for managers to ask for information because they think they know best
Scientific/Technical	Mean	2.32
	N of cases	19
	Std. Deviation	.885
Other role	Mean	2.30
	N of cases	40
	Std. Deviation	.966
Total	Mean	2.59
	N of cases	1905
	Std. Deviation	.761

Source: National Survey of Information Behaviour, 2011

Table 19: There's a reluctance for managers to ask for information because they think they know best by main current role: Percentages (N = 1,905)

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
Information/knowledge manager/Librarian	5	34	29	26	6
Transformation/Change/ Service Development	7	35	27	25	6
Research	6	33	31	19	11
Clinician (medicine)	4	37	34	21	4
Specialist manager	4	44	28	20	4
Admin/Office manager	10	33	35	19	4
Clinician (AHP)	11	46	23	19	1
General Manager	15	45	20	19	1
PCT Public Health	10	52	19	19	0
PCT Commissioning	8	46	28	18	0
CEO/Exec/Non-Exec	15	47	21	18	0
Other role	18	53	13	18	0
Clinician (nurse)	13	50	21	14	2
Clinical Support Officer/ Paramedic	6	34	45	15	0
Scientific/Technical	16	47	26	11	0
PCT Practice	19	60	12	5	5
All respondents	10	45	25	18	3

Source: National Survey of Information Behaviour, 2011

Table 20: Mean scores on selected items related to attitudes to information by job role

Job role		The Trust expects us to adopt an evidence-based approach to the way we manage	Clinicians are more likely to use evidence to challenge decisions and question data
Clinician (medicine)	Mean	3.54	4.02
	N of cases	97	97
	Std. Deviation	.693	.677
Clinician (nurse)	Mean	3.78	3.72
	N of cases	501	500
	Std. Deviation	.719	.702
Clinician (AHP)	Mean	3.70	3.69
	N of cases	299	296
	Std. Deviation	.754	.771
Information/knowledge manager/Librarian	Mean	3.34	3.37
	N of cases	138	139
	Std. Deviation	.815	.800
Specialist manager	Mean	3.50	3.49
	N of cases	304	302
	Std. Deviation	.745	.793
Transformation/Change/ Service Development	Mean	3.61	3.59
	N of cases	83	83
	Std. Deviation	.853	.976
General Manager	Mean	3.57	3.61
	N of cases	147	148
	Std. Deviation	.759	.900
CEO/Exec/Non-Exec	Mean	3.88	3.79
	N of cases	34	34
	Std. Deviation	.537	.729
PCT Public Health	Mean	3.86	3.33
	N of cases	21	21
	Std. Deviation	.727	1.065
Clinical Support Officer Paramedic	Mean	3.52	3.81
	N of cases	48	48
	Std. Deviation	.684	.532
PCT Commissioning	Mean	3.51	3.56
	N of cases	41	41
	Std. Deviation	.840	.709
PCT Practice	Mean	3.60	3.79
	N of cases	40	39
	Std. Deviation	.672	.801
Admin/Office manager	Mean	3.29	3.54
	N of cases	52	52
	Std. Deviation	.723	.779
Research	Mean	3.47	3.44
	N of cases	36	36

Job role		The Trust expects us to adopt an evidence-based approach to the way we manage	Clinicians are more likely to use evidence to challenge decisions and question data
	Std. Deviation	.971	.877
Scientific/Technical	Mean	3.53	3.37
	N of cases	19	19
	Std. Deviation	.697	.684
Other role	Mean	3.58	3.53
	N of cases	40	40
	Std. Deviation	.781	.847
Total	Mean	3.62	3.63
	N of cases	1900	1895
	Std. Deviation	.761	.789

Source: National Survey of Information Behaviour, 2011

Table 21: The Trust expects us to adopt an evidence-based approach to the way we manage by main current role: Percentages (N = 1,900)

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
CEO/Exec/Non-Exec	0	3	12	79	6
PCT Public Health	0	5	19	62	14
Clinician (nurse)	0	6	19	65	10
Clinician (AHP)	1	6	22	63	8
Other role	3	5	30	58	5
Clinician (medicine)	1	7	30	61	1
Transformation/Change/ Service Development	2	6	30	51	11
General Manager	0	10	29	55	6
PCT Practice	0	5	35	55	5
PCT Commissioning	0	15	27	51	7
Research	3	14	28	44	11
Specialist manager	0	10	36	49	5
Clinical Support Officer/ Paramedic	0	6	40	50	4
Scientific/Technical	0	5	42	47	5
Information/knowledge manager/Librarian	3	9	42	42	4
Admin/Office manager	2	10	46	42	0
All respondents	1	8	28	57	7

Source: National Survey of Information Behaviour, 2011

Table 22: Clinicians are more likely to use evidence to challenge decisions and question data by main current role: Percentages (N = 1,895)

	Disagree strongly	Disagree	Neither	Agree	Agree strongly
Clinician (medicine)	1	1	12	66	20
CEO/Exec/Non-Exec	0	12	3	79	6
Clinical Support Officer/ Paramedic	0	0	25	69	6
Clinician (nurse)	0	6	22	64	7
PCT Practice	0	8	21	56	15
Clinician (AHP)	1	7	23	60	9
PCT Commissioning	0	12	20	68	0
General Manager	2	11	22	53	11
Other role	3	10	25	58	5
Research	3	14	22	58	3
Transformation/Change/ Service Development	2	11	29	41	17
Admin/Office manager	2	6	35	52	6
Specialist manager	1	8	39	44	8
PCT Public Health	0	29	24	33	14
Information/knowledge manager/Librarian	1	14	38	43	4
Scientific/Technical	0	5	58	32	5
All respondents	1	8	26	56	9

Source: National Survey of Information Behaviour, 2011