

Introducing Research Initiatives into Healthcare: What Do Doctors Think?

Lucy Wyld,¹ Sian Smith,¹ Nicholas J. Hawkins,² Janet Long,³ and Robyn L. Ward^{1,4}

Background: Current national and international policies emphasize the need to develop research initiatives within our health care system. Institutional biobanking represents a modern, large-scale research initiative that is reliant upon the support of several aspects of the health care organization. This research project aims to explore doctors' views on the concept of institutional biobanking and to gain insight into the factors which impact the development of research initiatives within healthcare systems.

Methods: Qualitative research study using semi-structured interviews. The research was conducted across two public teaching hospitals in Sydney, Australia where institutional biobanking was being introduced. Twenty-five participants were interviewed, of whom 21 were medical practitioners at the specialist trainee level or above in a specialty directly related to biobanking; four were key stakeholders responsible for the design and implementation of the biobanking initiative.

Results: All participants strongly supported the concept of institutional biobanking. Participants highlighted the discordance between the doctors who work to establish the biobank (the contributors) and the researchers who use it (the consumers). Participants identified several barriers that limit the success of research initiatives in the hospital setting including: the 'resistance to change' culture; the difficulties in engaging health professionals in research initiatives; and the lack of incentives offered to doctors for their contribution. Doctors positively valued the opportunity to advise the implementation team, and felt that the initiative could benefit from their knowledge and expertise.

Conclusion: Successful integration of research initiatives into hospitals requires early collaboration between the implementing team and the health care professionals to produce a plan that is sensitive to the needs of the health professionals and tailored to the hospital setting. Research initiatives must consider incentives that encourage doctors to adopt operational responsibility for hospital research initiatives.

Introduction

WHILE RESEARCH IS ESSENTIAL in achieving continuous health improvement,¹ it will not deliver improved patient outcomes without the input of patients and clinicians, and the support of health care organizations. Unfortunately, modern health care systems are under increasing financial pressure, and this restricts the resources and infrastructure available to facilitate high-quality research.² Healthcare policies and financial incentives are one way of supporting and promoting research initiatives in health care systems.³⁻⁶ However, it is also important to understand the interpersonal and organizational factors that impact on the development of research initiatives within the hospital setting. To do so, we performed a qualitative research study on one such research initiative,

namely the implementation of a biobanking strategy within public hospitals.

Institutional biobanking is the organized collection of biological materials and associated information for the purposes of research, and these materials are collected as part of routine health care workflows.⁷ It is an example of a research innovation, the success of which requires the support of several aspects of a health care system.⁸ Institutional biobanking has been chosen for this study as it represents a modern, large-scale research initiative of global significance.^{9,10}

The molecular revolution has driven demand for high-quality annotated biospecimens as an essential resource in improving our understanding of disease.¹¹ Accepted biobanking models are changing in response to this demand, with small-scale, investigator-driven, and study-specific biobanks

¹Prince of Wales Clinical School, ²School of Medical Science, ³Australian Institute for Health Innovation, University of New South Wales, Sydney, Australia.

⁴Cancer Centre, Prince of Wales Hospital, Sydney, Australia.

being superseded by large, institutional biobanks embedded in routine hospital practice.¹² These changing practices aim to improve efficiency by reducing redundancy of specimen collection, processing, and administration.

While the ‘institutionalization’ of biobanking has achieved many of its goals, it brings a new set of challenges.¹³ Successful integration of research initiatives into health care systems relies upon a significant culture shift, complex system reorganization, and the cooperation of professionals from all areas of translational medicine.¹⁴ This qualitative research study aims to explore these issues from the perspectives of hospital doctors involved in biobanking and the stakeholders responsible for the implementation of the biobanking strategy. The key aims of the study are (1) to explore doctors’ and stakeholders’ views on the concept of institutional biobanking, and (2) to gain insight into the factors that impact its implementation in a hospital setting.

Methods

Design and setting

The Health Science Alliance (HSA) Biobank is an institutional biobanking initiative established by a consortium of researchers and clinicians, with financial support from their institutions and the state government. The initiative began in April 2012 at two public teaching hospitals in Sydney, with the long-term goal of expansion to hospitals throughout New South Wales (NSW), Australia. Typically, consent is obtained by the nursing and medical staff involved in the routine care of the patient. Tissues for biobanking are selected within the pathology department, under the supervision of pathology staff. Participant tissues and data are stored in the Lowy Biorepository, a purpose-built biobanking facility adjacent to the hospital at UNSW. Biobank staff act as honest brokers in the distribution of tissues to third party researchers nationally.

Participants and recruitment

In January 2013, study participants were recruited from two teaching hospitals in Sydney using purposive sampling, to ensure differing levels of seniority and a range of specialties. Eligible participants were medical practitioners at the specialty trainee level or above, who worked in a specialty directly related to biobanking, including Anatomical Pathology, Hematology, Medical or Radiation Oncology, and Surgical Oncology. In order to gain a wider perspective, we also interviewed four key stakeholders responsible for the design and implementation of the institutional biobanking initiative. Participants were recruited by e-mail invitation based on a list of potential participants provided by each department head.

Ethics statement

Written informed consent was obtained from all study participants. The research study was approved by the South Eastern Sydney Local Health District Human Research and Ethics Committee (12/260(LNR/12/POWH/468)).

Interview process

Semi-structured interviews were conducted, with participant data (demographics, level of seniority, professional title, and active involvement in research) collected at the start of

each interview. A topic guide was designed to explore participants’ views and experiences of the biobanking initiative. Open questioning was used, followed by more targeted questioning in response to the participants’ comments. Reflexive questioning was employed to ensure clarity of interpretation. All interviews were conducted face-to-face, in the participant’s office. Interviews were audio-recorded and verbatim transcripts were checked independently by LW and JL. Interviews continued until thematic saturation was achieved as indicated by data redundancy (i.e., when participants no longer raised novel themes).¹⁵

Transcript analysis

Researchers (LW and JL) independently reviewed transcripts, developed codes in an iterative process, and applied these to identify themes. Adopting iterative analysis enabled the researchers to refine questions, develop, and challenge assumptions and pursue emerging avenues of inquiry in later interviews.

Analysis was informed by ‘Framework’, a method comprising five stages which deductively compiles questions drawn from the aims, and inductively identifies themes arising from the data:

1. *Familiarization with data*: Researchers (LW and JL) independently read and re-read the transcripts to identify themes.
2. *Developing a coding framework*: A framework of themes and subthemes was created to code the data.
3. *Indexing*: The researchers independently applied the framework to the transcripts and met to discuss any inconsistencies.
4. *Charting*: All transcripts were coded using the framework, and synthesized within a set of thematic matrix charts, where each participant is assigned a row and each subtheme a column.
5. *Mapping*: Similarities and differences regarding participants’ experiences were sought.^{16,17}

Participant responses were analyzed to look for trends or disparities between professional specialization and seniority levels, and between doctors and stakeholders.

Results

Sample characteristics

Thirty-one individuals were invited to participate, of whom 25 accepted (Table 1). Reasons for declining participation included clinical commitments or annual leave at time of data collection. Interviews lasted between 19 and 58 minutes (mean duration of 42 minutes). Relevant participant quotations are provided to support observations (Tables 2–4).

Concept of institutional biobanking

All participants appeared to support the concept of institutional biobanking strongly, with most basing this view on its potential to facilitate research developments. Several participants reported that institutional biobanks were an essential research resource in response to the genetic revolution, and provided specific examples in which specimens could be used to refine genetic techniques or to help develop targeted therapies. Many of the surgeons discussed the

TABLE 1. CHARACTERISTICS OF THE 25 STUDY PARTICIPANTS

Variable	Number (%)
Specialty	
Anatomical Pathology	5 (20)
Hematology	5 (20)
Radiation/Medical Oncology	6 (24)
Surgical Oncology	5 (20)
Stakeholder*	4 (16)
Sex	
Male	17 (68)
Female	8 (32)
Position	
Consultant (Staff Specialist)	13 (52)
Clinical Fellow/Specialist Trainee	9 (36)
Stakeholder*	4 (16)
Active participant in research**	12 (48)

*Stakeholder refers to individuals who are deeply engaged in the institutional biobanking initiative, but who do not have a role within the hospital. **Active participant in research refers to individuals who are currently involved in conducting or supervising medical research.

important role of biospecimen research in supporting the move to personalized medicine. In contrast, some anatomical pathologists and oncologists supported the concept of institutional biobanking as it gave the hospital the opportunity to be actively involved in research.

Beneficiaries of institutional biobanking

Participants unanimously identified the researcher as the primary beneficiary of biobanking (Table 2). They conceptualized the benefit to researchers in terms of streamlined biospecimens accrual and increased efficiency of processing.

Some participants discussed patient benefit, but emphasized these benefits would be long term. The majority of doctors thought patients would value the opportunity to participate. Several surgeons recalled their experiences of discussing biobanking with patients, and discussed the rarity of patient refusal to consent.

Some senior doctors reflected broadly on the benefits that participation in biobanking may bring to their department and the hospital at large (Table 2). Only one doctor mentioned a potential benefit for hospital doctors. In contrast, other doctors saw little benefit for themselves and felt that this reduced their motivation to participate in the initiative. In addition, the stakeholders were unable to describe any ways in which the hospital doctors may benefit, albeit recognizing this as a barrier to the implementation process.

Balancing the beneficiaries with the benefactors. For many, broaching the subject of benefit led to participants highlighting the issue of discordance between the doctors who work to establish the biobank (the contributors) and the researchers who use it (the consumers) (Table 2).

Anatomical Pathologists and Hematologists (the departments with the biggest role in specimen accrual) repeatedly expressed disappointment with the lack of recognition received for their individual and collective contributions to the biobank. Many were aggrieved by the initiative’s failure to recognize and acknowledge the level of pathology input required to create a biobanking resource. Several pathologists

were concerned that the initiative may jeopardize their current communication with researchers and ultimately undermine the value of their profession (Table 2). In comparison, they felt that the existing small-scale biobanking models enabled the pathologist more autonomy and recognition. Among pathologists and surgeons, the dissatisfaction with lack of recognition was exacerbated by the failure of researchers to appreciate the lengthy processes of tissue preparation (Table 2).

Suggestions for how best to acknowledge contributors included recognition as co-partners of the initiative, or being named authors on publications resulting from the biospecimen research.

All but one of the stakeholders discussed this same mismatch between the biobank contributors and consumers and felt this to be a major barrier to engaging the doctors in the initiative. However, while the contributors suggested ways of achieving acknowledgement, the stakeholders took a more pragmatic view, seeing the difficulties in acknowledging contributors as an inevitable consequence of institutional biobanking.

Barriers to the implementation of institutional biobanking

Many participants discussed practical transitory challenges to the implementation of the biobank, such as the lack of a single point of contact with whom to raise issues and the difficulty in finding consent forms and tracking consent. Although these logistical details could impact significantly on the success of an initiative, the focus of this article is on the more fundamental issues affecting the implementation process.

Difficulties in engaging clinicians in the implementation process. Doctors and stakeholders were acutely aware of the difficulties in establishing and maintaining engagement with hospital staff regarding the biobanking initiative (Table 3). Doctors felt that a greater effort should have been made to engage them at all stages of the implementation process, and that regular communication and feedback opportunities would have created awareness within the hospital and improved the participation of hospital staff (Table 3). Stakeholders reflected on the difficulties in targeting such a diverse group of professionals and found large-scale presentations to be the most effective means of communicating. In contrast, most doctors favored face-to-face, individual discussions rather than presentations and information sessions. They felt that discussions offered the chance for two-way communication between the implementing team and the doctor, giving them a valuable opportunity to make suggestions to the implementation team who as a result could benefit from their knowledge and expertise.

Some doctors felt they should have been more involved in the initiative at the early phases of design and planning. Amongst those who held this view, it was clear that if the desired steps were not taken in the early phase to engage them, then they would subsequently lose all enthusiasm for the initiative (Table 3).

Resources. All but one respondent expressed concern about the resourcing of the biobank (Table 3), although this issue was not raised by fellows or specialist trainees. Two main themes emerged. First, participants recognized the long-term nature of a biobanking strategy and its limited ability to attract funding in the early years. Second, the respondents, and in particular the surgeons, were concerned about the impact

TABLE 2. PARTICIPANT VIEWS ON THE BENEFICIARIES OF BIOBANKING AND THE NEED TO RECOGNIZE THE BENEFACTORS

<i>Concept</i>	<i>Quotation</i>
The researcher will benefit the most from institutional biobanks	So researchers can apply to a centralized system instead of going through multiple different channels and departments to obtain tissue (3, Anatomical Pathology, Fellow/Specialist Trainee) Researchers will be provided with a sustainable source of samples so they don't have to go around various departments seeking consents to obtain them. (17, Medical Oncology, Fellow/Specialist Trainee)
Patients may benefit	Of course patients at the end point of the research, the whole reason the research is done. (2 Medical Oncology, Consultant) One could be altruistic and say all patients in the future (24, Surgical Oncology, Consultant).
The wider concept of benefit	The hospital system as a whole, can be seen to be innovative and doing something really worthwhile. (5, Anatomical Pathology, Consultant) Ultimately it is a public library and so everyone stands to benefit. (8, Medical Oncology, Consultant) It is an opportunity to do something bigger than ourselves and may raise the profile of our department. (25, Hematology, Consultant)
Patients support the concept of biobanking	Patients clearly want to do this, they have got the disease and they want research to fix it, they want us to learn how to prevent, diagnose and treat it better. (1, Surgical Oncology, Consultant) I think a lot of patients feel great, as they have been able to help someone. (14, Hematology, Consultant) I think people with cancer particularly see this as a good thing as they want to see something good come of their cancer (12, Medical Oncology, Fellow/Specialist Trainee)
The mismatch between the creators of biobanks and those who benefit from them.	Researchers are the winners as they can just use it without any direct negative effects. (21, Radiation Oncology, Consultant) There is a mismatch between the users who contribute nothing to the generation of it but merely consume and the contributors who get nothing out of it. (23, Anatomical Pathology, Consultant)
Ways to acknowledge the creators of biobanks	Our contribution is not recognized and certainly not rewarded, we are providing the tissue and the diagnoses to be effectively sold to researchers and we get nothing for it. I would suggest academic contributions so we can say we are a founding contributor. (20, Anatomical Pathology, Consultant) Yes it is a great idea, but what is in it for me? As it has not been set up as a partnership between those groups who are doing the work and therefore we are reluctant to contribute (25, Hematology, Consultant)
Risk of not acknowledging contributors	If our intellectual contribution is not recognized, pathologists are in danger of being thought of as merely a tissue transit and processing facility. (5, Anatomical Pathology, Consultant)

The table shows both the typical responses and the range of views expressed. Quotations are labeled by participant number, specialty, and seniority.

the extra workload would have on their departments. However, all doctors interviewed felt that the initiative had made little difference to their own clinical workload.

Responsibility. When asked to discuss the barriers that have slowed or prevented implementation, all stakeholders and some doctors introduced the issue of responsibility (Table 3). They recognized the large gap between enthusiastic reception of the initiative, and actual adoption by doctors of operational responsibility. All participants expressed enthusiasm and support for the concept of institutional biobanking, and all envisaged future growth of this research tool. However, there were mixed views of their role in developing and sustaining this resource, with no clear differences based on specialty or seniority. The majority viewed biobanking as a researcher's responsibility, since researchers benefitted from the resource. Others felt that it should be led by enthusiasts within the hospital (Table 3).

In the same vein, participants were asked to discuss their views of the doctor's role in research (Table 3). Many participants felt passionately about this, becoming more animated during this part of the interview and more loquacious in their answers. All doctors agreed that research should play an integral role within teaching hospitals, although opinions were divided as to the doctor's role in that research. Senior members of departments were more likely to dispute the proposition that doctors are obliged to engage in research. They justified this view by discussing the negative service implications of having too many researchers within a department. Opinions regarding the role of doctors in research were not influenced by the respondent's own involvement in research. Many of the doctors not active in research said they would like to be when they had more time.

The hospital environment. Participants discussed several barriers that the hospital environment presents to new

TABLE 3. PARTICIPANTS' VIEWS ON THE BARRIERS TO IMPLEMENTATION OF THE BIOBANK

<i>Concept</i>	<i>Quotation</i>
Early engagement and active involvement of participants	It is important to consult people at all levels to find out what works and what doesn't, rather than just telling them it's going to happen. (7, Hematology, Fellow/Specialist Trainee) If the implementers had been more proactive in reaching out to us then we would have been more involved and would have felt included. Now we feel completely divorced from the whole process. (6, Surgical Oncology, Consultant) You need to involve people in the design, the governance and the glory that comes with it. (19, Hematology, Consultant)
Need for resources to support the initiative	Our department is not staffed to do research, they are staffed to purely get through the clinical workload, and every hour spent doing research is an hour we need to make up at the end of the day. (20, Anatomical Pathology, Consultant) In reality it depends on resourcing; if a department is short staffed then they are going to just get the basic clinical work done, and so if a new initiative that comes in on top of that, people will be resentful of it. (9, Surgical Oncology, Fellow/Specialist Trainee)
Doctors don't want to take responsibility for biobanking	Doctors are quite happy to listen to an idea and say yes as long as it doesn't involve any extra work. (6, Surgical Oncology, Consultant) The big problem is finding doctors who will take responsibility for a certain step, that is where you meet resistance (15, Stakeholder)
It is someone else's responsibility to make it happen	It should be the responsibility of the end users, the researchers. (14, Anatomical Pathology, Consultant) It should be the responsibility of people who want to do research. (1, Surgical Oncology, Consultant) I am sure we would bank 100 per cent of samples if the practice were completely independent of us. We all said "yes, absolutely fine, bank as many samples as you can if someone just organizes the consent for us and do the banking." (24, Surgical Oncology, Consultant)
Research is part of a doctor's role	It's definitely the role of a doctor to do research and that is why I actively support projects like this biobank. (6, Surgical Oncology, Consultant) I think research should be part of every teaching hospital just like teaching should be. Consultants should not join a teaching hospital just to sit there and do their job, they should all have an active role in research (5 Anatomical Pathology, Consultant)
Healthcare cannot support all doctors doing research	In a better world, one would argue that this is part of our job. However in reality it should not be obligatory, not everyone in the department needs to be keen on research.(19, Hematology, Consultant) We are not paid to do research and to be honest the running of a department is dependent on some individuals not engaging in research. (23, Anatomical Pathology, Consultant)
Difficulties in changing hospital practice	Some of us are a bit wary, as this is all new. (9, Surgical Oncology, Fellow/Specialist Trainee) People in the hospital are not receptive to anything that changes their current way of working. (15, Stakeholder) You have to successfully change practice and even with such a minor change you have to have the infrastructure to cope with it. (21, Radiation Oncology, Consultant) Some practices have gone on for a long time and so to try to introduce change into those will be very hard. (24, Surgical Oncology, Consultant)

The table shows both the typical responses and the range of views expressed. Quotations are labeled by participant number, specialty, and seniority.

initiatives, including its culture of 'resistance to change' (Table 3). Stakeholders gave in-depth accounts of the obstacles presented by the institutional nature of their hospital. Several stakeholders reflected on the difficulty in establishing changes in modern health care systems where multiple departments and professionals are involved in each stage of the patient journey. In contrast, only a few doctors, mostly those with experience in implementing hospital-wide changes, raised this issue.

Implementation strategies

Views of participants regarding strategies to better implement institutional biobanking are shown in detail in Table 4. *Champions.* The most common strategy suggested by participants, to encourage clinician involvement in biobanking, was the establishment of departmental champions (Table 4). Anatomical pathologists consistently reported the way their departmental champion had driven the implementation and

TABLE 4. PARTICIPANTS' VIEWS ON STRATEGIES TO HELP IMPLEMENTATION OF INSTITUTIONAL BIOBANKING AND THE FUTURE OF BIOBANKING

Concept	Quotation
The value of champions	(Name) continually pushed the project and was there to quell people's concerns and take the lead on things (5, Anatomical Pathology, Consultant) A champion is needed who understands the day to day running of the department and is on site to answer any questions and concerns as they present. The champion needs to continually push the initiative to stop it from falling of the agenda. (4, Hematology, Fellow/Specialist Trainee) You have to have a sort of champion who is going to drive the process; they are rare but when you get people like that, they really make the difference. (2, Medical Oncology, Consultant) Firstly it is a matter of targeting the right groups of people within the hospital, general e-mail is not effective. You need to recruit people who have the inclination to support the project and who will be involved in championing it in their specialty, this is easier said than done (8, Stakeholder)
The need to combine different approaches during implementation	The approach needs to be multi-faceted; you need the buy in from the top but also the active involvement on the ground to change the culture. You need to encourage people at all levels of the health system, from administrative staff, nurses, and doctors to governing bodies. (1, Surgical Oncology, Consultant) The 'top-down' approach is important but not on its own, as it is heavily reliant on people disseminating the information. (19, Hematology, Consultant)
Biobanking will continue to grow	It is just going to continue to expand, there is a genetic revolution going on as well as the new era of personalized medicine and so more and more tissues will be needed. (3, Anatomical Pathology, Consultant) I think it should be universal; it would be ideal if it comes to the point that everybody stepping into a medical facility knows that, unless they object, their tissue is going to stored and used for research under the appropriate governance. (14, Hematology, Consultant)

The table shows both the typical responses and the range of views expressed. Quotations are labeled by participant number, specialty, and seniority.

motivated colleagues. Doctors from other specialties recognized the importance of champions, but could not identify one within their department. The stakeholders also recognized the theoretical value of champions and discussed the difficulties in establishing these key individuals.

Approach. Participants were asked to reflect on the relative merits of two common approaches in the implementation of the biobank. First, the 'top-down' approach which involves initial engagement with senior staff members and executives, and subsequent dissemination of information and tasks to subordinate staff. Overall, doctors saw the advantages of this approach but felt that if the initiative was endorsed solely by high-level staff within the hospital, it could lead to indifference by those on the ground. However, several doctors recognized that this 'top-down approach' may be required for ethico-legal reasons and the purposes of formality.

In comparison, most participants favored a 'bottom-up' approach, where the skills and experiences of those on the front line could be used to develop the most effective implementation program.

Future of biobanks. All participants agreed that biobanking would continue to grow, with several participants discussing the development and expansion of international biobanks. Some doctors discussed the possibility of moving towards an "opt-out" consent process. However, in the face of this changing environment, several Anatomical Pathologists emphasized the need to maintain the focus on the patient. "Whatever direction biobanking takes in the future, we need to be careful that we are protecting the interests of the patient at every step" (3, Anatomical Pathology, Fellow/Specialist Trainee).

Discussion

Biobanking, similar to many research initiatives, presents a problem to implementers, as there is an inherent mismatch between those who contribute to the generation of the resource and the end users.²² This study provides evidence of dissatisfaction amongst doctors with this model, since it requires their input and support without any tangible benefits. Despite the enthusiasm for biobanking amongst doctors, the lack of incentives to contribute to this initiative ultimately results in their de-motivation and disengagement. This has been observed in other studies exploring clinicians' participation in a range of research-related activities.²³⁻²⁷ To overcome this barrier, clear incentives for doctors are needed. These may be difficult to provide in resource-poor environments. Interestingly, however, the results of this study show that doctors do not expect financial incentives, but merely recognition for their intellectual and practical contributions.

This study describes the challenges that originate from the nature of the hospital environment. Study participants acknowledged the "resistance to change" culture that exists within well-established organizations, and the need to create a supportive infrastructure to implement change. These challenges echo those of previous research, which document the difficulties in achieving and sustaining change within organisations.^{28,29} In addition, this study highlights the importance of champions in facilitating this implementation process.

The successful integration of research into hospitals relies upon collaboration between researchers and clinicians. This study highlights how many doctors would like to become

more involved in research, yet at present feel their contributions are undervalued by both the researchers and the stakeholders implementing the research programs. These sentiments inevitably create a divide between the researchers and the doctors. This study also demonstrates how the introduction of large-scale research initiatives, such as institutional biobanking, can risk worsening this divide. As small collaborations between researchers and doctors are superseded by large-scale initiatives, doctors may fear a loss of established links with colleagues in research. To overcome these issues, doctors in this study felt that the skills and experiences of clinicians should be used to develop the most effective implementation program. The importance of establishing and maintaining communication links between the implementing team and the health care professionals during the implementation of new research initiatives was stressed in order to prevent disengagement.

Strengths and limitations

The qualitative design is strength of this exploratory study, as in an area of scant research, it allowed unanticipated findings to emerge. While the generalizability of findings is limited in a study of this size conducted at only two sites, it is reassuring that those results broadly reflect the existing literature.

Conclusions

International policies recognize the growing importance of research innovation in modern health care systems. Also the qualitative literature clearly indicates that patients see biobanking and other research initiatives as an opportunity to help others and contribute to medical research.^{18–21} However in practice, the health care environment presents a significant challenge to incoming research initiatives. Our findings show that successful integration of research initiatives into hospitals relies upon early collaboration between the implementing team and the health care professional. This early collaborative approach would enable the implementation of a strategy that is both sensitive to the needs of health care professionals and tailored to the hospital setting. This study suggests that initiatives must acknowledge the contributions of doctors in order to encourage them to adopt operational responsibility for hospital research. It is clear that enthusiasm for research exists among doctors, but this must be acknowledged and directed to enable the successful integration of research activities within health care systems to be achieved. However, the question remains as to who should be ultimately responsible for conducting research within health care systems.

Acknowledgments

The authors thank the participants who kindly gave their time and shared their views and experiences, and A/Prof Bettina Meiser for reviewing drafts of the manuscript. This work was supported by the Cancer Institute NSW through block funding to the Translational Cancer Research Network.

Author Disclosure Statement

None of the authors have an institutional or commercial affiliation that poses a potential conflict of interest with respect publication of this article.

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Address correspondence to:
Professor Robyn Ward
Prince of Wales Clinical School
University of New South Wales
Level 1 Edmund Blackett Building
Randwick
Sydney NSW 2031
Australia
E-mail: robyn.ward@unsw.edu.au