87073567

Discussion Paper

Research in infection control practice: a proposed collaborative model

Debra Creedy • RN BA (Hons) M Ed PhD

Professor of Nursing & Health

Faculty of Nursing & Health, Griffith University, Kessels Road, Nathan Qld

Sarah Winch • RN BA (Hons) PhD

Director of Nursing Research

Princess Alexandra Hospital, Ipswich Road, Woolloongabba Qld

Joy Vickerstaff • RN RM BA MCS, Dip (Nurs Admin), Dip (Nurs Ed)

Executive Director Nursing Services Southern Zone

Princess Alexandra Hospital, Ipswich Road, Woolloongabba Qld

Abstract

The provision of health care services by specialist practitioners has implications for professional development particularly in relation to research skills and scholarship. Infection control practitioners (ICPs) are well placed to conduct and promote research that examines existing practices and introduces cost-effective approaches to service delivery.

However, there has been no coordinated approach to infection control research and ICPs undertaking research have operated in isolation, with poor infrastructure support and many cultural and organisational barriers to overcome. In the absence of a critical mass of researchers, productivity has been limited and the contribution of evidence based infection control research to clinical practice is yet to be realised.

This discussion paper proposes a model that will assist ICPs to provide leadership in relation to evidenced-based research and proactively respond to clinical priorities and goals and improve clinical outcomes.

From a review of available literature and drawing on experience of hospital-tertiary collaboration, a model to promote infection control research will be discussed that addresses the two key factors hindering evidence based practice – the production of high quality nursing research and the translation of research findings into practice.

The proposed model includes: developing research capacity and critical mass; coordination of infection control research in health agencies to achieve strategic cross-district partnerships and brokerage processes; mechanisms for support (infrastructure, workplace education, mentorship); developing programmes of research; and sustainability.

Acknowledgement

This paper was adapted from a paper presented at the Australian Infection Control Association Second Biennial Conference 2002, *Rethinking our Vocabulary*, Brisbane 5-7 June 2002.

Introduction

There is an increasing need for health care to be informed by sound evidence, yet many workplace practices continue to be based on tradition rather than research findings.

Evidence based practice (EBP) involves integrating current best research evidence with clinical expertise and patient values to make decisions about the care of patients¹. In this way, research is an important vehicle to improve practice and outcomes². The National Health Service (NHS) in the United

Kingdom illustrated the importance of EBP in effecting workplace change and yet many professionals continue to use workplace rituals that have no bearing to outcomes.

While the NHS³ acknowledged that research utilisation requires considerable developmental work, they only focussed on national performance measures and indicators, and did not address issues confronted by individuals in the conduct of research and adoption of findings in the workplace. The work of the NHS illustrated that a variety of strategies is needed to effect what is basically a behavioural change – getting health professionals to read, enquire, critically appraise and incorporate research evidence into their practice.

In Australia, two factors frustrate the move toward evidence based health care – the production of high quality research and the subsequent translation of these findings into practice. Several authors^{4,5} have identified a lack of clinically based research for practitioners to guide practice across all specialties. In Australia the opportunities for practitioners to obtain research funding to produce the high quality evidence needed to influence practice are severely constrained. In an analysis conducted by Winch⁶, it was found that very few researchers from nursing and related disciplines had received research funding by the Australian Research Council (ARC), with even fewer gaining financial support from the National Health and Medical Research Council (NHMRC). The fierce competition from all disciplines for research money in Australia creates a hostile environment for the still fledgling scholarly aspirations of the infection control community who may wish to work independently from more experienced health researchers.

In the current health care environment, health professionals need to know the effectiveness of interventions so informed decisions can be made about the use and distribution of limited resources. There is, however, limited understanding of ICP' attitudes towards research, level of research activity and research-based scholarship. A national survey of Australian Infection Control Association members (n=993) assessed the extent to which practitioners undertook and published research. Murphy & McLaws⁷ found that only 21.5 per cent (135/630) of respondents were conducting research and very few (37/135) were publishing their research findings. Surveys of other practitioner specialist groups have identified that clinicians are reluctant consumers, conductors and publishers of research^{8,9} and it is reasonable to assume that similar conclusions may also apply to ICPs.

There has been no coordinated approach to infection control research¹⁰ and ICPs undertaking research have operated in isolation, with poor infrastructure support and many cultural and organisational barriers to overcome. In the absence of a critical mass of researchers, productivity has been limited and the contribution of evidence based infection control research to practice is yet to be realised^{7,10}.

Barriers to the use of research findings by practitioners across the spectrum include inadequate educational preparation in relation to research^{4,11-14}, wider organisational factors¹⁵⁻²⁰ and negative attitudes of individuals²¹⁻²⁴. This discussion paper presents a proposed model that has emerged from a review of the literature and practical activities by the authors to facilitate research and hospital-university collaborations. A range of strategies and processes are identified to match the perceived barriers to the conduct and use of research.

Procedure

A search of two major databases (Cinahl 1982-2002 and Medline 1966-2002) was undertaken to retrieve English language publications using search parameters that were a combination of key words by which relevant studies might be indexed. The key words used were infection control practitioner, research, collaboration, clinical development units and joint appointments. Reference lists of all relevant articles obtained were checked and additional potentially relevant articles retrieved.

Of the 107 studies identified in Cinahl using the term 'joint appointment', the vast majority related to some aspect of clinical teaching, theory-practice gap, professional practice and collaborative teaching models. Twenty two papers related to the research role of joint appointments, but none reflected a clinical trial methodology or systematic review and were predominantly descriptive in nature. Thirty four papers were identified using a combination of terms related to 'infection control practitioner research'. However, the majority of these papers related to specific clinical research studies by practitioners, scope of infection control practice and task analysis of practitioners.

Although 158 studies were identified on Medline for 'research collaboration', many related to well established collaborative teams involved in multi-site studies, while few specifically discussed the development of infection control research collaboration. The available literature was critiqued by two researchers, summarised, assessed for content and analysed in terms of strategies to promote infection control research.

Analysis and discussion

The accessed literature consistently identified a collaborative approach to research by clinicians and academics. The major reasons why research needs to be carried out were addressed, while at the same time the barriers to research in the clinical setting were acknowledged such as lack of familiarity with the research process and organisational culture. It was noted that collaborative efforts can result in improved patient care and practice but such evaluations were rarely based on economic analyses.

Drawing on the literature and our own experiences of research collaboration, we have discerned component parts of a collaborative research model that include:

- Developing research capacity and critical mass.
- Coordination of infection control research in health agencies to achieve strategic cross-district partnerships and brokerage processes.
- Mechanisms for support (infrastructure, workplace education, mentorship).
- Developing programmes of research.
- Sustainability.

The model is outlined in Figure 1. Clearly no one single action will suffice, and any selected strategy should involve a range of processes and key stakeholders. While the proposed model has not been evaluated, it is hoped that these ideas are presented to promote debate and provide a framework for research activity by ICPs.

Components of the model

Developing capacity and critical mass

The first component of the model relates to developing capacity, both in terms of individuals' skills (capacity) and the number of people engaged in research activities (critical mass). Currently in infection control practice, there is a high demand for research-based skills^{7, 10, 25}. Engaging in research activity requires a range of specific knowledge and skills including literature retrieval, the ability to critically review the literature, develop answerable research questions, understand appropriate research methods and designs and synthesise results and existing literature to advance knowledge and develop practice⁹.

While many ICPs have completed postgraduate programmes, relatively few have studied research methods or completed dissertations, resulting in a mismatch of expectations and

Figure 1. Collaborative research model and outcomes.

Collaborative Strategies	Outcomes
Capacity building <ul style="list-style-type: none"> • Identify issue or problem • Talk to colleagues • Retrieve & critically appraise available literature • Clinical-university staff development programmes 	Staff generating research questions Staff reading the literature Questioning practice
Critical mass <ul style="list-style-type: none"> • Joint appointments • Mentoring among researchers • Structures & processes: Clinical Development Units (CDU) • Research teams 	↑ Nos research projects ↑ Collaborative projects ↑ Funding
Coordination <ul style="list-style-type: none"> • Networks – agency, district, state, national • Secure funds from local sources • Share projects and resources • Brokerage – linking interested persons to projects 	Duplication avoided Infrastructure shared Costs shared
Mechanisms for support (infrastructure, workplace education, mentorship) <ul style="list-style-type: none"> • Diffusion • Dissemination • Implementation • Research network 	More infrastructure able to be developed Clinicians' track record Changes to policies and procedures
Developing programmes of research <ul style="list-style-type: none"> • Collaborate with colleagues and agency stakeholders to identify priority areas • Identify small, achievable projects that build on each other • Involve colleagues – multi-disciplinary, cross-agency • Develop activity plan that specifies responsibilities and timeframes. 	Research priorities identified and targetted Issues of clinical relevance addressed
Sustainability <ul style="list-style-type: none"> • Dissemination and publication • Keep management informed • Generate solutions and costs savings through research outcomes 	Sharing of track records increases funding opportunities Publication syndicates sharing the writing load

capacity. In contrast, there has been a dramatic increase in the number of nurse academics with research and professional doctorates²⁶⁻²⁸ which reflects achievement of both capacity and critical mass. However, the role of research in practice is different from its role in academia^{27,28}.

Clinicians need research to give them pragmatic answers, whether these be predictive or explanatory, in order to contribute to best practice, while academics need research to generate new generalisable knowledge, but do not have access to clinical populations to extend theoretical work into practical applications²⁹⁻³⁵. Clearly, there are benefits from a coalition of clinicians and academics in the conduct of research. Such coalitions could foster the formation of a critical mass of research teams working within a coordinated programme of research, enhance the level of research activity as well as provide opportunities for research mentorship and develop workplace programmes to foster research skills.

There are many examples of successful clinical research programmes^{31,33,36-39}. Several programmes follow a research mentoring process. Clinicians with an identified clinical problem and the support of their agency apply for available funding to go off line and work with experienced researchers to critically appraise the literature. If adequate research exists, the clinician develops practice recommendations or, if there are inadequate research findings, they develop a research proposal to answer the question.

Such supportive programmes can be developed at other sites or be extended to enable infection control clinicians to work with experienced peers to develop specific skills in methods such as randomised controlled trials, post-discharge surveillance, survey methods, audit programmes and change strategies for practice.

Coordination of infection control research

Many ICPs work in isolation from each other, therefore a coordinated strategy is required to promote collegiality, capacity, critical mass, as well as foster a programme of research^{10,25,39}. Collaborative partnerships can ideally be formed within agencies or across health districts with other clinical areas that would benefit from an infection control component to research projects.

The NHMRC⁴⁰, as the principal fund of health and medical research and researchers in Australia, proposes that research should reach across the spectrum (molecules, systems, people

and populations), and across disciplines (e.g. molecular and cell biology, the integrative and clinical sciences, epidemiology, social and behavioural sciences). For practitioners, this advice provides a strategic direction towards building research teams which link infection control expertise in the care delivery sector to the tertiary sector and extend more widely to nursing, allied health and medicine. In this way, practitioners can be more successful in obtaining the type of funding that produces high quality research and guides practice.

For example, infection control clinicians could conduct post-discharge surgical site surveillance to determine the effectiveness of patient education or different dressings on wound healing. Coordination across agencies could facilitate multi-site studies and enable a number of clinicians to work together on the same project, ideally under the mentorship of an experienced researcher in the team. This approach enhances quality outcomes.

A coordinated team approach to research facilitates the development of well-designed proposals, the likelihood of recruiting a large sample or number of cases and obtaining small amounts of funding from each agency to complete projects, timely completion of the project due to the combined effort of team members and the effective dissemination of results across settings and within scholarly journals.

Mechanisms for support (infrastructure, workplace education, mentorship)

To increase the use and conduct of research throughout the workplace, a number of issues need to be addressed. The NHS³ suggests a broad 'diagnostic analysis' to identify influential factors. While there is agreement in broad terms about the barriers to research, the identification of facilitators of research and the use of evidence are less clear but likely to include the culture (attitudes of the end users of research) and tradition within the particular organisation^{5,10,17,23,24,32}. These are important considerations in the development of support mechanisms for an infection control research programme.

Support can also be provided through education. A programme of workplace education and mentorship was conducted by Gerrish & Clayton⁴¹ who implemented a coordinated programme with a group of researchers, administrators and staff in a large acute hospital to promote the application of research in practice. The approach was

informed by an assessment of practitioners' perceptions of barriers to the use of research, a survey of work practice, and random chart audit to assess the extent to which practice reflected recommended guidelines. Having identified the areas of practice that merited change and perceived barriers, the researchers worked with staff to develop organisational change strategies. The authors, however, did not report any quantitative evaluation of these initiatives or outcome measures to indicate the success or otherwise of the various programme components.

High quality research needs to move from the 'kitchen table' (familiar to many practitioners who have tried to undertake research after hours in addition to their clinical responsibilities) to a resource rich infrastructure that enables research to take place. Once again, team work, collaboration and strategic partnerships can deliver practitioners the resources they need. Tertiary sector partners from a variety of disciplines can provide access to recent literature via computerised data bases, internet access, as well as information about available grant opportunities^{29, 30, 33, 42}. Mutli-disciplinary teams can provide expertise on methodology, grant proposal writing, epidemiology and statistics. In addition to the direct contribution of various forms of expertise, strategic, multi-disciplinary research teams are more likely to gain research funding to purchase any additional infrastructure requirements.

Programmes of research

In order to focus research activity to produce the most clinically relevant outcomes, ICPs as a unified group need to develop a research plan. Programmes of research reflect a systematic plan of projects so that activities are focused, complementary and accumulative^{10 43}. In the selection of research topics, priority should be given to the relatively rapid delivery of tangible results in a few areas. Given the well established communication networks of the Australian Infection Control Association, a programme of infection control research based upon agreed priorities and targets should not be too difficult to establish.

An example of a programme of research relates to MRSA-associated outbreaks and subsequent measures directed at its elimination. ICPs experimented with various measures including surveillance, isolating MRSA-positive patients, cohort nursing, environmental disinfection, restriction of antibiotics and enforcement of hand washing⁴⁴⁻⁴⁶. Each study

contributed towards a better understanding of prevention effectiveness.

A coordinated programme of research in infection control would have a number of benefits for consumers and stakeholders alike. The development of capacity and concentration in key areas of infection control research will enable researchers to develop a track record and assist in negotiating the often hostile external competitive grants environment. By the very nature of their expertise, infection control researchers are ideally placed to form the multidisciplinary broad spectrum teams that are favoured by our research funding organisations. By harnessing and targeting resources, the development of an 'evidence based' body of infection control research can proceed more quickly.

Greater numbers of researchers across a range of facilities enables larger sample sizes and multi-site trials of interventions. This approach reflects more closely the 'gold standard' for the development of evidence which is required to change clinical practice. In addition, a statewide programme of infection control research can increase efficiency of resource utilisation by avoiding duplication and providing support in the form of infrastructure, workplace education and mentorship. Strategic cross-district partnerships and brokerage processes can then be used to greater effect by establishing more widely the collaborative links between the university sector and infection control staff undertaking research.

Sustainability

Any approach to clinical research needs to attend to factors that enhance the likelihood of sustainability. Two approaches to sustainability are outlined here. Using a macro approach, a key factor in sustainability, is ongoing research funding. This is most likely to occur in multi-disciplinary research teams focused on key priorities which have statewide and national significance.

In Queensland, steps have been put in place to move towards a coordinated approach to nursing research in a number of key areas in order to build capacity and increase opportunities for funding. Drawing on directions from the NHMRC, a statewide network for nurse researchers is planned which will include a sustained approach involving all of Queensland Health facilities. This network will aim to identify people and facilities interested in participating,

capture areas identified by stakeholders as priorities and match these to funding priorities, generate knowledge and knowledge exchange and promote EBP. It is envisaged that this network will have a number of programmes which reflect clinical interests including infection control.

Sustainability at the local level within facilities can benefit from the same approach. Research teams drawn from a number of health disciplines can promote and advocate for research activities in different forums. Clearly, clinicians work within the politics of large organisations. It may be that some service managers and directors have limited experience of conducting and using research and may need to be informed of the research process, but also regularly updated on progress and outcomes. One indicator of quality is the dissemination of results through presentations, reports, practice guidelines, and scholarship in professional and international peer-reviewed journals. Publications ultimately foster the reputation of the health service and represent an important quality indicator of a 'learning organisation'^{43,47}.

Sustainability of research activities can also be fostered by working with people who influence others^{33,43,47}. Successful clinical researchers manage 'up' and 'down' in organisations. Managing up involves being responsive to organisational needs and priorities, producing outcomes and influencing practice. Managing down involves being helpful to the people who can change practice and benefit from the outcomes of research. Indeed, these people will be the strongest advocates for research if they can see direct benefits for practice, client outcomes and cost-savings.

Conclusion

It is evident that ICPs must become agents for change through EBP. In the last decade, and one suspects in the next to follow, health practice – a broad rubric which encompasses both nursing and infection control – is moving towards an evidence base to inform the way health services are delivered and organised. Strategies to enhance the conduct of research and the use of evidence are priorities of ICPs yet continue to be problematic.

Despite a number of difficulties in obtaining research funds, beginning levels of expertise and developing infrastructure, there is a way forward in the provision and utilisation of evidence based infection control knowledge. Using the collaborative model outlined here – which focuses on

building capacity through multidisciplinary and multi-site teams, sharing resources and avoiding duplication, and developing and targeting mutually agreed priorities – there are many opportunities for ICPs to be active researchers and lead clinical practice innovations based on evidence. This coordinated, multi-layered approach is sustainable and can only enhance infection control research while being mindful of the constraints of the practice and broader research environment.

References

1. Sackett D, Strauss SE, Richardson WS, Rosenberg W & Haynes RB. Evidence Based Medicine: How to Practice and Teach EBM (2nd ed). London: Churchill Livingstone, 2000.
2. Ingersoll GL. Evidence based nursing: what it is and what it isn't. *Nursing Outlook* 2000; 48:151-2.
3. NHS Centre for Reviews and Dissemination 1999. *Effective Health Care*, York
4. Veeramah V. A study to identify the attitudes and needs of qualified staff concerning the use of research findings in clinical practice within mental health settings. *J Adv Nurs* 1995; 22:855-61.
5. Kajermo KN, Nordstrom G, Krusebrant A & Bjorvell H. Barriers to and facilitators of research utilisation as perceived by a group of registered nurses in Sweden. *J Adv Nurs* 1998; 27:798-807.
6. Winch S. Bibliometric Analysis of Nurse Researcher Outputs 1995-2000. Unpublished Report, Princess Alexandra Hospital, Brisbane, Qld, 2001.
7. Murphy CL & McLaws ML. Australian Infection Control Association members' use of skills and resources that promote evidence-based infection control. *Am J Infect Cont* 2000; 28:116-22.
8. Retsas A. Barriers to using research evidence in nursing practice. *J Adv Nurs* 2000; 31:599-606.
9. Plumb R. Midwives attitudes to research-based practice. *MIDIRS* 2002; 12:171-3.
10. Garcia R, Barnard B & Kennedy V. The fifth evolutionary era in infection control: intervention epidemiology. *Am J Infect Cont* 2000; 28:30-43.
11. Dunn V *et al.* Using research for practice: a UK experience of the Barriers Scale. *J Adv Nurs* 1998; 23:462-70.
12. Funk S, Champagne M, Wiese RA & Tornquist EM. Barriers: the barriers to research utilization scale. *App Nurs Res* 1991; 4:39-45.
13. Parahoo K. Research utilisation and attitudes towards research among learning disability nurses in Northern Ireland. *J Adv Nurs* 2000; 31(3):607-13.
14. Pearcey PA. Achieving research based nursing practice. *J Adv Nurs* 1995; 22:33-39.
15. Walsh M. Perceptions of barriers to implementing research. *Nursing Standard* 1997; 11:34-7.
16. Chapman H. Why do nurses not make use of a solid research base? *Nursing Times* 1996; 92:38-9.

17. Hicks C. A survey of midwives attitudes to and involvement in research: the first stage in identifying needs for a staff development program. *Midwifery* 1993; 9:51-62.
18. Lacey EA. Research utilisation in nursing practice – a pilot study. *J Adv Nurs* 1994; 19:987-95.
19. Lewis SL *et al.* National Health Service Executive promoting clinical effectiveness. NHSE, Leeds, 1998.
20. Retsas A & Nolan M. Barriers to nurses' use of research. *Int J Nurs Stud* 1999; 36:335-43.
21. Rodgers S. An exploratory study of research utilisation by nurses in general medical and surgical wards. *J Adv Nurs* 1994; 20:904-11.
22. Hicks C. A study of nurse's attitude towards research: a factor analytic approach. *J Adv Nurs* 1996; 23:373-9.
23. Thompson P *et al.* Overcoming barriers to research-based practice. *Med Surg Nurs* 1999; 8:59-64.
24. Champion VL & Leach A. Variables related to research utilisation in nursing. *J Adv Nurs* 1989; 14:705-10.
25. Larson E, Boylard E & Vlahov D. The infection control practitioner as investigator of clinical phenomena. *Am J Infect Cont* 1987; 15:215-220.
26. Jennings B & Loan L. Misconceptions among nurses about EBP. *J Nurs Schol* 2001; 33:121-7.
27. Wilkes L, Borbasi S, Hawes C, Stewart M & May D. Measuring outputs of nursing research and development in Australia: The researchers. *AJAN* 2002; 19:15-20.
28. Roberts K & Turnbull B. From apprentices to academics: are nurses catching up? *Collegian* 2002; 9:24-30.
29. Downie J, Orb A, Wynaden D, McGowan S, Zeeman Z & Ogilvie S. A practice-research model for collaborative partnership. *Collegian* 2001; 8:27-32.
30. Campbell M & Taylor JR. Academic and clinical collaboration. *Contemp Nurs* 2000; 9:211-19.
31. Govoni A & Pierce L. Collaborative research among clinical nurse specialists and staff nurses. *J Cont Educ* 1997; 28:181-7.
32. Beattie J, Cheek J & Gibson T. The politics of collaboration as viewed through the lens of a collaborative nursing research project. *J Adv Nurs* 1996; 24:682-7.
33. Robinson J. Taking the initiative: supporting nursing research in an acute trust. *Nurs Researcher* 1999; 6:41-50.
34. Reed J & Proctor S. *Practitioner Research in Health Care*. Chapman Hall: London, 1995.
35. Mulhall A. Nursing research: what difference does it make? *J Adv Nurs* 1995; 21:576-83.
36. Dunn SV & Yates P. The roles of Australian chairs in clinical nursing. *J Adv Nurs* 2000; 31:165-71.
37. Greenwood J. Clinical development units: issues surrounding their establishment and survival. *Int J Nurs Prac* 2000; 6:338-44.
38. Lumby J. View on Australian clinical chairs. *Contemp Nurs* 1996; 5:2-3.
39. Pittman L, Warmuth C, Gardner G & King J. Developing a model for collaborative research. *Aust J Adv Nurs* 1990; 8:34-40.
40. National Health & Medical Research Council. *Developing National Research Priorities: An Issues Paper* (<http://www.health.gov.au/nhmrc.pdf>) accessed July 2002.
41. Gerrish K & Clayton J. Improving clinical effectiveness through an evidence based approach: meeting the challenge for nursing in the UK. *Nurs Admin Quart* 1998; 2:55-6.
42. Larrabee JH. Achieving outcomes in a joint appointment role. *Outcomes Manage Nurs Pract* 2001; 5:52-6.
43. Greenwood J & Gray G. Developing a nursing research culture in the university and health sectors in Western Sydney. *Australia Nurs Educ Today* 1998; 18:642-48.
44. Saravolatz LD, Pohlod DJ & Arking LM. Community acquired MRSA infections: a new source for nosocomial outbreaks. *Ann Intern Med* 1982; 97:325-9.
45. Panlilio AL, Culver DH, Gaynes RP, Banerjee S *et al.* MRSA in US hospitals 1975-1991. *Infect Cont Hosp Epid* 1992; 13:325.
46. Goetz AM & Muder RR. The problem of MRSA: a critical appraisal of the efficacy of infection control procedures with a suggested approach for infection control programs. *Am J Infect Control* 1992; 20:80-4.
47. Brown GT, Greenwood J & Lysyk M. Writing for publication: the professional imperative. *Br J Occup Ther* 1999; 62:327-30.

AICA Presidency Expressions of Interest

In June 2002 the AICA Presidency will be vacated. In preparation for the process of nomination and election of a new AICA President, members with an interest in nominating for the AICA Presidency are invited to submit a brief introduction regarding themselves for inclusion in the December edition of the AICA Newsletter.

Submissions should not exceed 250 words. All submissions should be received by October 25, 2002. C/O AICA Secretary PO Box 322 Wilston, Qld, 4051.

Submission of an expression of interest is not a prerequisite for nomination for the AICA Presidency.