

FROM THE EDITOR - Heather Dawson-Byrne

MOVING ON: NEW DIRECTIONS FOR THE JOURNAL

This issue marks the retiring of the inaugural Editorial Advisory Board who have spent the last two years diligently monitoring quality control on the journal and providing much appreciated advice to the editor and publisher. I would, therefore, like to take this opportunity to thank Professor Lesley Barclay, Dr Herbert Biggs, Professor Alison Dixon and Associate Professor Sanchia Aranda. The directions suggested by this group of people have helped improve the journal immensely. During this time the journal has implemented many changes, such as the inclusion of the manuscript acceptance date, the inclusion of the Bits and Bytes segment and the change in appearance. I am sure most readers will agree with me that the inaugural committee has had a huge impact on the journal.

With the inaugural committee retiring I would like to welcome the new cohort. The current two year term sees Professor Kathryn Roberts of the Northern Territory, Professor Glenn Gardner of Canberra, Associate Professor David Arthur of Hong Kong and Associate Professor Rod Sims of Melbourne, take up their positions. I look forward to working closely with these people and to moving the journal onward and upward. Over the next few issues we will provide a brief on each of the board members.

One of the most attractive aspects of the *Australian Journal of Advanced Nursing* is the variety of topics which appear in print. The papers in this issue are not themed and are a cluster of eclectic topics that will provide interesting reading for nurses in many areas.

Anne Hofmeyer and Maggie Cecchin provide questionnaire development results that became evident during their research with international nursing students in undergraduate and postgraduate programs within Australia. Their research explored the issues impacting upon international nursing students' ability to achieve their study goals at an Australian university. This paper

principally describes the collaborative approach in designing the instrument.

Margaret Lett provides a scholarly paper discussing the use of chaos theory in nursing. She provides possible applications, and alerts the reader to the use of chaos theory as a framework for knowledge generation. Her comparison of Rogerian theory with chaos theory is enlightening.

Eleanor Hooke, Lydia Bennett, Robyn Dwyer, Ingrid van Beek and Carol Martin provide the results of research that examined the nurse practitioner role in client care, with a particular focus on the extended role of the nurse at the Kirkton Road Centre in Sydney. The results, which demonstrate that nurse practitioners were professionally appropriate in all of aspects of practice in over 95% of cases, are encouraging to the emerging nurse practitioner role.

John Doyle provides an excellent review of the literature examining the role, function and issues related to forensic nursing. He believes that forensic nursing is an emerging specialty area of nursing that has undergone substantive role development over recent years. He argues that forensic nurses are calling for greater recognition within the profession of nursing and that they are increasingly more and more in demand. Interestingly the literature provides a picture of forensic nurses as an integral part of the correction milieu.

The final article, by Heidi Silverston, provides a scholarly article focusing on the issue of rubber latex sensitivity and allergy as it relates it to the health industry. She outlines the cause, signs and symptoms associated with rubber latex and offers some ways forward. Health care workers in Australia and their managers should heed her concerns.

This month Bits and Bytes discusses newly developed I.T. teaching material and includes a review of the product by Joy Lyneham.

GUEST EDITORIAL - Anne McMurray

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LEADERSHIP FOR CHANGE

As nurses, we are never far from change; it is a hallmark of our profession. One of the opportunities of the new century is the impetus to stop and reflect on change, both past and future. Undoubtedly, our reflections would lead us to predict that the speed and magnitude of changes to health and health care in the last century will be greatly surpassed in the new one. Already, our roles, our tools, our knowledge and the way we are organised are being transformed in tandem with the physical, social and political milieu in which we work. The positive side of this is that we live and practise in interesting times, where the impact of new developments in health and health care often translates into better lives for ourselves and those entrusted to our care. However, change also brings challenges. Perhaps the main challenge for nurses, especially those in leadership positions, lies in keeping abreast of the pace and direction of change, to ensure that nursing takes its rightful place alongside other professions in securing and maintaining health and health services.

For this past year, my personal and professional reflections have been shaped by the opportunity to become involved in the International Nursing Council's (ICN) Leadership for Change (LFC) program. The program began in 1996 in response to ICN member countries' request for support in preparing nurses for leadership roles during health sector reform. Those planning the program envisaged that the 21st century would see selected nurses at country and organisational levels equipped with the knowledge, strategies and strength to lead and manage in health services undergoing major change. The focus was to be on policy development, management and leadership in nursing and health services, and the role of nurses in preparing future nurse leaders. With support from the W.K. Kellogg Foundation, ICN first developed the program for Latin American and Caribbean countries. By 1998, with funding from the New Zealand government, it was expanded to include the South Pacific. Next, LFC began in East, Central and Southern Africa as a joint venture between ICN and ECSACON, with funding shared between the Commonwealth Secretariat for East, Central and Southern Africa and ICN. In 1999, ICN also engaged in a joint venture with the Singapore Nurses Association to institute the LFC program in that country. In the year 2000 another collaborative sponsorship saw the program extend into Bangladesh, largely funded through

the WHO South East Asia Regional Office, with contributions from the Nursing Directorate of the Government of Bangladesh and ICN.

The LFC program components include a number of strategies, including mentoring by nurses and others, group workshops, individual development plans and team projects designed to mobilise and extend participants' personal knowledge of leadership and to share leadership strategies with others in the program. Currently, members of the evaluation advisory group are preparing what we believe will be a comprehensive and insightful analysis of the way nurses can have a powerful impact on personal, professional and health system development. My reflections on the program suggest a few lessons it has to offer our own nurse leaders.

First, the accounts of nurse leaders in other countries serve as a reminder that we belong to an extraordinary profession with strikingly similar influences and work pressures. In most countries of the world, nurses are dealing with the need to provide care that is adequate, accessible, continuous and culturally appropriate, in the face of constantly shrinking resources. The immediate challenge is to maintain a skill mix and patient allocation that will safely and effectively meet our carefully conceived professional standards for care. Further challenges lie in working within multi-disciplinary teams and demonstrating accountability to what are often non-clinical managers. This requires highly refined communication and negotiation skills designed to cultivate relationships both within, and external to, the profession. The heightened expectations of an informed public also require nurses who are well informed and able to communicate with people at their level, particularly in relation to ethical and legal obligations to patients and their families. And the rapid growth of health and health care knowledge mandates a need for adequate educational preparation for all nurses: our leaders, colleagues, and successors.

Leadership in health care can be many things, depending on a wide range of individual and contextual elements. Leadership in nursing is similarly dependent on context, but it also requires strategies for articulating nursing's contribution to change so that the work of nurses remains a visible part of the evolving health care landscape. This is an ongoing concern for many nurse

leaders, where current dilemmas and future uncertainties are often confronted in a frenetic professional environment with too few opportunities to garner support and input from other nurses. Our leaders and managers try to work through these issues, as do those in other health professions. A recent edition of the newsletter from the Caribbean nurses involved in the LFC program identifies the key attributes of modern nurse leaders as vision, strategic thinking ability, change management skills, strength, confidence, negotiation skills, well developed leadership attributes and a willingness to form strategic alliances (CNA 2000). I believe the key to nurturing these attributes is solidarity. There's a special bond between nurses that cuts across language, culture, specialist knowledge and practice circumstances, that allows us to share with one another our art, skill, knowledge and wisdom. I feel privileged to have read about the struggles of nurses in other countries, attempting to push through seemingly impenetrable ceilings, often in the face of natural disasters, epidemics, geographical barriers and a lack of both financial and educational resources.

The lessons I took away from their stories inspired my resolve to re-commit to this special profession of ours. Those of us in leadership positions need to make explicit what we do, to be transparent in how we navigate the changes to ensure that we leave safe and supportive places for our successors. And regardless of the type or magnitude of our needs, we need to share them with one another. We need our local, national and international nursing organisations to weave threads of coherence in our work, to facilitate opportunities for networking, mentoring and being mentored and to leave an informed legacy to the next generations of nurses. In short, we need each other, especially in times of change.

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Note: Information on the LFC program can be accessed at the ICN website: www.icn.ch

ENACTMENT OF VIRTUE ETHICS: COLLABORATION BETWEEN NURSE ACADEMICS AND INTERNATIONAL STUDENTS IN QUESTIONNAIRE DESIGN

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Key Words: International nurse education, second language, questionnaire design, virtue ethics, collaboration

ABSTRACT

Increased enrolment of international nursing students in undergraduate and postgraduate programs is predicted as Australian universities compete for students in the globalised university market. This study explored issues impacting on the ability of international nursing students to achieve their study goals at an Australian university (n=29). However, this paper principally describes the design of the instrument by two nursing lecturers and international nursing students (n=10) in a collaborative process, characterised by a pluralistic world view and the enactment of virtue ethics. The myth of the term 'ESL' is critiqued, and challenged. In designing the instrument, we argued it was essential to be cognisant of the conceptual attributes and embedded meanings of language for the unique study population, to ensure face and content validity.

INTRODUCTION

Design of the data collection instrument is usually described in one to two paragraphs of a research paper. However we believe the methodological issues specific to the process of the design of the instrument in a study entitled, 'On-campus International Nursing Students: experiences and reflections', warranted discussion in this discrete paper. The study built on previous research (Cecchin 1998) that examined the experiences of providers of education programs for international nursing students, revealing the need for nurse educators to have a greater understanding of the learning needs of nursing students from diverse cultural backgrounds. Given these findings, it was essential to also explore students' perspectives.

Using a questionnaire, this study explored the experiences of nursing students n=29 who left their homeland, family, employment and support networks to study in another country. It examined issues impacting on their ability to achieve their study goals and identified improvements in the learning environment for international nursing students. The study is to be reported in full elsewhere. In this paper, we describe the design of the data collection instrument used in the study. A key feature of the study was the collaboration between us, as the researchers, and the cohort of 1998 undergraduate and postgraduate international nursing students (n=10), in the design of the questionnaire.

Philosophical position

As nurse researchers, virtues reflected our philosophical positions which, in turn, shaped our interactions with the unique group of international nursing students. Virtue ethics reflects a disposition that

challenges one to reflect on the kind of person one is, and intends to be, in any given action. As Johnstone (1999) discusses, virtue theory recognises that qualities like respect, care, compassion, kindness, genuineness, warmth, trust and empathy are intrinsic to creating and maintaining sound interpersonal relationships and effective healing (p.134-6). This is in contrast, Yeo (1996:47) claims, to the traditional deontological and utilitarian ethical theories which are based on moral rules and principles to inform one's moral life. Our work with international nursing students required us to 'practice across borders', and to critically reflect upon the nature and meaning of cultural diversity and ethical pluralism. However, as Brody (1988:90) stated, 'virtue is not something possessed, but performed'. Hence we claim to have enacted this philosophical perspective through a collaborative process with the students in the design of a meaningful instrument in this study.

Another significant issue emerged as key words were identified in the literature review. We contend that a myth has been created and perpetuated through the labelling of international students as 'English as a Second Language (ESL)' or 'second language' students. The inherent difficulty with this label is that it advances the assumption that English is the second language for all international students. However, for some students, English is their fourth or fifth language. While this may seem a minor point to some people, our concern is that this is a form of stigmatisation and is therefore demeaning, patronising and privileges ethnocentrism (Anglo-American perspectives). As a consequence, we call into question the use of the term 'ESL'. As Yeo (1996:46-8) stated, 'living a moral life ... is responding thoughtfully to the myths and stories that have shaped us'.

Our transcultural ethical approach acknowledged pluralistic world views in the diverse student population, and further challenged us to examine various myths attributed to international students. We understood that words have embedded meanings that differ for students for whom English is not their first language. Thus the collaborative process in the design of the instrument was to ensure face validity and content validity of the questionnaire and collection of accurate data. The process was informed by an awareness that lexical (word) meaning differs across various cultures. Therefore, in designing the instrument, we contend it was essential to be cognisant of the conceptual attributes and embedded meanings of language for the study population, in order to understand how international students identify themselves in their language. This embedded understanding, combined with various strategies in questionnaire design, guided the development of questions which best illuminated the research question.

LITERATURE REVIEW

Overview of international nurse education

Nursing has a long history of practising across borders of country and culture to provide education that contributes to the advancement of nursing in other countries. In the twenty-first century, the nursing community will become increasingly global and international nurse education will increase (Cecchin 1999; Meleis 1985; Styles 1993; Leininger 1994). This phenomenon is aided by easy immigration and emigration (St. Clare and McKenry 1999), less restrictive country borders, greater ease of travel and increasing use of technology. However, providing international education is complicated and requires specific knowledge, skills and attitudes and affects what, where, when and how teaching occurs (Morris and Hudson 1995; Phillips 1994).

Australia's university sector is highly dependent on internationalisation for its long term financial wellbeing (Mazzarol and Hosie 1997). Therefore, it is important to acknowledge that the provision of international education is more than having international students in the student population (Cecchin 1998). It requires an understanding of the specific learning needs of international students and calls for innovative development in teaching and assessment methods. However, Australian research indicates that academics focus on the deficiencies of international students and tend to take a remedial approach to students' learning problems (Biggs 1997; Morris and Hudson 1995; Mullins et al 1995). Nurse educators providing teaching and learning curriculum for international nursing students need to be well prepared for this role, with a clear understanding of the unique issues and complexity of international students' experiences (Ryan et al 1998).

International students' experiences

There is a rapidly growing number of nursing students studying in Australian universities, representing diverse cultural and racial groups. Research shows that many international students (not specifically nursing) experience specific problems that other students do not encounter, including culture shock, adjustment problems, and psychological disturbances. These include, for example feelings of alienation, anxiety and depression, as a reaction to the drastic changes in their physical, social and educational environment (Mezger 1994; Kenyon and Amrapala 1993; Oei and Notowidjojo 1990; Javed and Shapiro 1992; Burns 1991). They are frequently ill-prepared to cope with adjustments to language; social, physical and cultural environments; limited finances; loneliness; academic pressures and difference. These factors impact on well-being, motivation, and ability to achieve their study goals. A South Australian study

reported students express fear of failure, doubts about academic ability and uncertainty about what academic staff expect in terms of academic work (Mullins et al 1995).

A Canadian study examined international nursing students' perceptions of their learning difficulties. The study compared perceptions of a cohort of students whose first language was not English, and a cohort of students whose first language was English. The study also examined the nursing faculty perceptions of international students (whose first language was not English), in relation to their learning difficulties, and the need for supportive programs for these students and faculty. Results indicated significant differences between the perceptions of faculty, and students' whose first language was not English, particularly in the area of learning difficulty (Jalili-Grenier and Chase 1997).

The experiences of international nursing students are unique and complex because, as reported in a United States study, students are more likely to be women, older than other students and established in their career (Wang and Lethbridge 1995). This study also found that some students are mothers who leave their children at home for periods of one or two years, and experience intense feelings of separation and guilt. However, when children do accompany the student, parenting frequently competes with study activities (Wang and Lethbridge 1995).

A number of studies have highlighted the relationship between students' experiences and their learning performance (Kayser-Jones and Abu-Saad 1982; Sharif 1994; Javed and Shapiro 1992). Factors and barriers influencing international students' academic success are of great interest to lecturers in nursing. However, here in Australia, there is a surprising lack of literature examining the learning experiences of international nursing students. Given this scarcity of nursing literature in Australia examining these issues, there is a compelling need for research uncovering those aspects which will enhance international nursing student learning. This knowledge will advance understanding, and guide the provision of culturally diverse, international nurse education.

THE STUDY

The purpose of this study was exploration and increased understanding about the experiences of nursing students who leave their homeland, their family, employment and support networks to study in another country. Using a questionnaire, this study examined various issues impacting on their ability to achieve their study goals, and identified improvements in the learning environment for international nursing students. Therefore, an interpretive approach was adopted in this study, and

accepted criteria for rigour in qualitative research guided the research (Lincoln and Guba 1985). The aims of the study were:

- To explore the experiences of international students enrolled in undergraduate and postgraduate nurse education programs, particularly issues that impact upon these students' ability to achieve their study goals;
- To identify ways to improve the environment for current and future international students studying in undergraduate and postgraduate nurse education programs at an Australian University.

The study is to be reported in full elsewhere. In this paper, we describe the design of the data collection instrument used in the study, that was developed in 1998 through a collaborative process between us, as the researchers, and a group of 'on campus' undergraduate and postgraduate international nursing students (n=10) from the Asian region, so to ensure face and content validity. We invited the cohort of 'on campus' students to volunteer to participate in the design process. It could be argued that a limitation of the study was the nature of the sample as only students from the Asian region collaborated in the design of the questionnaire. We are not claiming their responses can be considered reflective of all international nursing students, however, the questionnaire holds credibility for students from the Asian region. Moreover, we argue transferrability of this process of collaboration in instrument design between researchers and members of unique study populations.

Selection of the instrument

The aforementioned self-administered mail questionnaire was chosen as the appropriate data collection instrument in this study. Although self-administered mail questionnaires are cheaper to carry out than interviews, Dillman (1983) argued that cost should not primarily dictate the design of an effective data collection instrument (p.360). Further, Dillman (1983) argued 'response rates in excess of 80% have been achieved in surveys of university students using self-administered mail questionnaires' (p.360). Emphasis was placed on the design of the instrument because we considered the development of clear questions organised in a logical sequence as important as other aspects of the research process, such as ethical considerations and data analysis.

The importance of questionnaire design is supported by Dillman (1983) who stated 'the absence of an interviewer means there is no one to persuade respondents to complete boring lists of questions or to clarify confusing instructions' (p.376). The success of a questionnaire is also dependent on testing the instrument and Dunning and Martin (1996) claimed 'the preliminary testing of the draft

will identify problems with content, administration and scoring. By testing and revising the draft, the researcher can reduce random error, enhance the validity of the research and spend less time and resources on the study proper' (p.32). In our study, testing of the instrument was carried out by the international nursing students, and is discussed later in the paper.

Collaboration in the questionnaire design

We adopted an innovative approach in the study whereby we collaborated with members of the study population in designing the instrument to ensure content and face validity. The rationale for this approach reflected our commitment to enact virtue ethics and honoured the unique linguistic issues of the students. We were guided by the attributes of collaboration defined by Henneman et al (1995) as a 'joint venture, cooperative endeavour, willing participation, shared planning and decision-making, contribution of expertise, power as shared, based on knowledge or expertise' (p.105). In addition, the collaborative process was a search for understanding (Coeling and Wilcox 1994) where roles are complementary, rather than hierarchical and where one participant is not subordinate to the other (Fagin 1992). Antecedents influence whether or not collaboration and collaborative practice occurs, and in the study the researchers and the international students required a willingness to engage with each other in this interpersonal process.

Henneman et al (1995) identified that communication is a crucial antecedent to collaboration in that it 'serves as the vehicle for articulating other important precursors to collaboration such as respect, both for oneself and others, sharing and trust' (p.105). Commitment and time were also required to build the relationship between us and the international students to a point where collaboration in the design of the instrument could occur. This notion is supported by Daley et al (1999) who identified the need for an 'initial time investment' to establish collaborative relationships in nurse education. Throughout the semesters, there was contact between us and the students in relation to academic issues, and also more informally at group lunches each month to discuss any other issues. Rapport developed at these lunchtime meetings thereby enhancing the collaborative relationship.

Linguistic issues in the questionnaire design

We examined literature exploring linguistic issues and the cultural meaning of language. De Vaus (1991) discussed the design and evaluation of questionnaires in terms of their meaning for the study population and stated 'one of the problems in developing valid indicators is interpreting the meaning of people's responses' (p.57) and, 'to check to ensure that respondents understand the

intended meaning of the question' (p.100). Dunning and Martin (1996) advised researchers to 'use language that the study population understood' (p.32) in the design of the study instruments. Therefore, we explored the linguistic issues and the cultural meaning of language to inform the research process.

The manner in which international students use words in their language and how words are grouped together is of significance and conveys meaning in the communication. International students are not homogeneous and we recognised that words emerge from one's personal context and environment, and that words are cultural and changing in their meaning. As Keith and Shuttleworth (1997) noted, there are over half a million words in the English vocabulary and the majority are lexical or content words that are verbs, nouns, adjectives and adverbs. The second group of several hundred words are grammatical words that include conjunctions, determinates and prepositions (at, from, of, in) that are actually used more frequently than any particular lexical words (p.96-7).

Clearly, the development of language proficiency is a complex process. For international students using English in academic and professional contexts, the attainment of competency is essential in the areas of literacy, critical thinking, mathematics and statistics. Educators involved in various capacities with international students need to consider these factors in their expectations and interactions with students. As a consequence, it was important for us to understand how these students assigned meaning to words. This depth of knowledge was crucial for us in the collaborative process with the students in the design of a meaningful study instrument.

DISCUSSION

Collaborative process in questionnaire design

The collaborative process in questionnaire design was visible in the monthly meetings between us and the international nursing students. It was evident when the students completed the draft instrument to ensure instructions and phrasing of questions were clear and answerable. The development of the questions was informed by our experience in working with international nursing students over a number of years, input from the international nursing students, and relevant literature.

Verbal discussions to develop the questionnaire

We held meetings with the students to consider the language, layout, clarity, apparent internal consistency and face and content validity, as words can be interpreted in different ways according to cultural understandings of the meaning of words. For example, the students said they

could not attribute the descriptor ‘excellent’ to their experiences because in their cultures, the notion of excellence was rarely attained. Similarly, students had difficulty with the meaning of the word ‘satisfied’ as a descriptor of their experiences influencing their ability to achieve their study goals. Therefore, questions were organised with a 5-point Likert scale with descriptors of ‘not at all’ attributed to (1) and ‘serious problem’ attributed to (5).

Overview of the questionnaire content

The questionnaire contained open and closed questions, organised into five sections. Section one contained thirteen questions about students’ demographic characteristics, previous academic history and future employment plans. Section two contained two open-ended questions specific to their experiences on campus. Section three contained eleven questions rating the degree of difficulty in various study activities, using a five point Likert scale. Section four contained twelve questions, rating various issues affecting their ability to achieve their study goals. For example, questions in section three and four were designed as below, and students were asked to circle the number that best described their experience:

Have you had doubts about your academic ability?

Not at all 1 2 3 4 5 serious problem

Have you felt lonely?

Not at all 1 2 3 4 5 serious problem

Section five contained four open-ended questions asking how various university services could be improved for current and future international nursing students.

Testing of the questionnaire by students

The students were then given a copy of the draft questionnaire to complete. This manner of testing is supported by De Vaus (1991) ‘to evaluate how respondents interpret the question’s meaning and to check whether the range of response alternatives is sufficient’ (p.99). We reviewed the returned questionnaires and found sections one, two and five contained complete and comprehensive responses. However, in sections three and four limitations in the use of the Likert scale were revealed, as there were gaps in specific data about the international students’ experiences. It was revealed that 50% of the students scored ‘4’ in their response to questions revealing they had experienced difficulties in grammar and writing assignments, had doubts about academic ability, fear of academic failure, and had felt homesick. However, these data did not clearly reveal whether these difficult experiences affected their ability to achieve their study goals, which was an objective of the study. It was also unclear how the students differentiated between numbers 1-5, and indeed what the score of ‘4’ meant to the students.

Therefore, at the next meeting with international students, descriptive words were attached to each number to seek a better understanding of the meaning of the responses. For example:

Have you had doubts about your academic ability?

never	some of the time	unsure	most of the time	all the time
1	2	3	4	5

When did this happen

Has loneliness affected your ability to study?

never	some of the time	unsure	most of the time	all the time
1	2	3	4	5

Comment

In a study conducted in the United States by Kayser-Jones and Abu-Saad (1982) the experience of loneliness emerged as the predominant problem for all international nursing students, regardless of age, marital status or country of origin. Loneliness is usually an unpleasant experience and not a chosen personal state (unlike solitude) (p.302). Kayser-Jones and Abu-Saad (1982) further stated, ‘loneliness can be devastating and it can seriously interfere with students’ academic performance’ (p.312). Therefore, we decided to include clarifying questions in the questionnaire to seek greater detail of the international students’ experiences, particularly related to loneliness.

CONCLUSION

International nurse education presents many opportunities and benefits for nursing. Education that recognises culturally distinctive learning styles and develops effective learning environments and assessment methods that maximise learning opportunities for international students within, not separate from, the teaching system will enhance the learning of all students. Other nursing students will benefit from interactions with international nursing students because increased understanding of diverse cultures and contexts will better equip individuals for practice in the global health system. Nurse researchers are challenged to ‘practice across borders’, and to embrace collaborative opportunities to enhance understanding and tolerance between diverse groups in society. In conclusion, the collaboration by us, the researchers, with a unique population of nursing students in the design of a meaningful study instrument

enacted an ethical dimension in nursing education, practice and research.

Cecchin, M. 1999. *Beyond boundaries and barriers: Nursing in the 21st Century*.

RECOMMENDATIONS

1. Collaboration with distinctive study populations in instrument design

We argue the importance of collaboration in instrument design between researchers and members of unique study populations, to ensure face and content validity.

2. Enhanced cultural awareness of international nursing students

We call for enhanced cultural awareness in research activities with international nursing students. The collaborative process described was underpinned by a cultural awareness of students for whom English was not their first language, thereby acknowledging lexical meaning differences, conceptual attributes and embedded meanings of language existing across cultures. The students wanted to tell their story, which has potential to influence policy, and create innovative teaching, learning and assessment methods.

Fourth Annual Ethel Johns Nursing Research Forum Facing the Challenge:

Nursing in the 21st Century, Vancouver, Canada.

3. Research approach informed by relevant literature

Our approach to the research process reflects what several theorists and authors have advocated. We believe this broad use of literature from nursing and other disciplines enhanced the quality of this study.

4. Challenge to the profession

To make visible the myths, meanings, and stigmatisation embedded in the term, 'English as a second language', and to challenge nursing to lead the various disciplines in the authoring of a meaningful language which resonates a pluralistic world view.

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A CASE FOR CHAOS THEORY IN NURSING

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Key Words: chaos theory, nursing, knowledge development, nonlinear systems

ABSTRACT

This paper addresses the question of why nurses should understand chaos theory. A critique of the literature is used to demonstrate how chaos theory has been utilised in a number of disciplines, including nursing. Possible applications of chaos theory in nursing are proposed in order to demonstrate where it might assist nurses, in particular researchers, educators and policy makers. The appropriateness of the application of chaos theory as a framework for knowledge generation is also discussed.

INTRODUCTION

Chaos theory has been developed from the disciplines of mathematics, computer science and meteorology and stems from earlier work by a number of mathematicians. During the last two decades it has been identified as one of the new sciences (Gleick 1987). Chaos theory is a science of the global nature of systems which enables simple mathematical equations to model complex systems. Small differences in input can have dynamic responses in output. This phenomenon has become known as sensitive dependence on initial conditions (Gleick 1987 p.8).

Nursing practice involves complex dynamic systems and it can be argued that it would be amenable to analysis using the methods of chaos theory. However, few nursing articles use chaos theory as a framework for understanding the nursing context. This paper will argue that nurses would benefit from understanding chaos theory and through its application gain a greater understanding of their practice. A number of questions are addressed: What is chaos theory? How has chaos theory been applied within the nursing literature and is this an appropriate use of the theory? How can it assist nursing? Is it an appropriate theoretical construct for nursing knowledge generation?

Why should nurses understand chaos theory?

The question of why any researcher needs to understand chaos theory is one of importance. It can be argued that in order to gain new insights into phenomena of interest, underlying frameworks of analysis have to be understood. This is not unique to nursing. The newer sciences, such as quantum mechanics and chaos theory have been, and will increasingly be, used as such a framework. Chaos theory is argued by a number of nurse researchers to offer a new paradigm science perspective and to provide new ways to examine the world (Copnell 1998; Pediani 1996; Barker 1996; Coppa 1993; Phillips 1991). The theory must be understood before it can be applied to any nursing context. Without this understanding theory will be adopted without due regard to the

applicability of the concepts and therefore informed discussion, evaluation or critique becomes impossible.

New applications for chaos theory are being proposed and these will directly influence the knowledge base and practice of nurses. Chaos theory has already been used as a framework for research in areas such as physiology, demographics, economics and business planning, theology and leadership theory. Some of these have a direct effect on nursing.

What is chaos theory?

Chaos theory explains how complex systems behave. Gleick (1987) believes that chaos is not simple anarchy but that complex systems follow some very simple rules. Small changes can result in large differences, which are not proportional to the magnitude of the change. This creates a nonlinear relationship. For example, a small change in wind turbulence can lead to large changes in weather in another area. These changes are not random but can be predicted using computers and simple mathematics.

The nursing literature on chaos theory

On searching the computerised library databases for chaos theory in nursing, 49 articles were highlighted. A number of these had to be excluded on the grounds that they were not nursing related. Excluded were articles in the areas of homoeopathy, chiropody and rehabilitation counselling. A PhD thesis in nursing was also excluded on the grounds of availability. The earliest article found was published in 1991 and since then there has been a progressive increase each year. A selection of articles, from the 'Journal of Theoretic and Applied Chaos in Nursing', were included in this review. This particular journal is, as the name suggests, a very specialised journal devoted to chaos theory and its application to nursing. The first issue of this journal appeared in 1994. Murray (1997), supports the view that there is little nursing literature on chaos theory and has stated that there is minimal nursing-related material which deals with chaos, complexity or nonlinear dynamics. This could be used as supporting evidence for the notion that there is therefore no need for nurses to study chaos theory, but this is a short-sighted view. More articles are appearing each year and at this stage the possibilities chaos theory offers nursing have not been fully explored.

Since 1991 nurses who have made a contribution to the nursing literature on chaos theory include Murray (1997, 1992), Phillips (1992, 1991) and Vicenzi (1994) and Vicenzi et al (1997). In 1991, Phillips discussed the possibilities chaos theory offered to nursing research and particularly qualitative research. This discussion was based on the opinion that an understanding of naturalistic inquiry and nonlinear statistical models will enable nurse researchers to gain insights into the instability and

unpredictability of systems. This article provoked a rebuff from Puskar et al (1992) who reminded Phillips that chaos theory was a mathematical concept, and that they believed the greatest contribution that chaos theory could make to nursing research was in quantitative designs. Their reasoning would appear sound as statistical models provide quantitative data that enable researchers to model complex chaotic systems using simple mathematical equations. Phillips (1992) further explored chaos theory in his response to this rebuff and stated that they had failed to appreciate the beauty of nature's chaos, and had not understood linear thinking.

An article by Murray (1992) discusses the need for a critical care curriculum to include chaos theory. Murray (1992) has drawn upon the literature that uses chaos theory as a way to understand complex systems. He highlights the use of the theory by Goldberger et al (1990) to explain physiological systems but also asks the question: How might chaos theory be useful for nursing within critical care? He subsequently identified areas such as epidemiology, physiology and risk assessment. While at present he is unsure of chaos theory's usefulness due to a lack of available research evidence, he stated that nurses at least should have chaos theory as part of their knowledge base in order to critique the literature. Hence, he believes that chaos theory should be included in the critical care curriculum.

Analysis of the more recent nursing literature suggests that chaos theory has moved from being a possibility for nursing, to a theoretical approach that has been applied to nursing practice. The theory has been applied in three discrete ways by various disciplines, including nursing. For the purposes of this analysis three categories have been adopted; the mathematical constructs, the properties that chaotic systems exhibit (the tenets of the theory) and the notion of chaos.

Different nursing views on chaos theory

THE MATHEMATICS OF CHAOS

Complex chaotic systems can be computer-modelled using a number of mathematical equations. What was seemingly random behaviour can be demonstrated to have exhibited order. The mathematics of chaos can be illustrated in the areas of business and physiology. Legge (1990) has used the mathematics of chaos to formulate a business plan. Buchanan (1998) reports that a number of scientists are investigating the correlation of the beat of a diseased heart with the mathematics of chaos theory. He also reported that the respiratory system, and in particular Cheyne-Stokes breathing, was another area of interest.

There are a few nursing articles in which the mathematics of chaos has been used as a tool for analysis. One such example is that of Pollock (1997) who analysed

the patient census of an intensive care unit over a four-year period. Two forms of statistical analysis were used. The results of analysis, which relied upon nonlinear dynamics (Lyapunov exponent and fractal structure), were compared with traditional time series analysis. The researcher found that there was a chaotic pattern in the nonlinear analysis whereas the traditional analysis failed to establish a pattern of census. Other examples can be found in the specialty chaos journal previously mentioned.

THE TENETS OF CHAOS

The tenets of the theory are the principles or properties that chaotic systems exhibit. Principles such as the nature of a nonlinear system, the self-similarity and iteration demonstrated with fractals and the butterfly effect are all examples of these properties. These tenets can be illustrated within the leadership and management literature. As an example Wheatley (1992) has used the imagery of fractals and drawn a parallel to an organisation where a strong value system is evident, and where values are role modelled by leadership and repeated at all levels within the organisation.

Similarly, in the nursing literature Bellin et al (1997) have used the tenets of chaos theory and applied them to ecological health nursing. Interestingly, this article has appeared in 'Complexity and Chaos in Nursing Journal' where apparently a strict interpretation of chaos theory is not required, as this article uses what are described as the tenets of chaos theory but are actually a loose interpretation of these. For example, collaborating is likened to a dynamic relationship with an unpredictable pattern (this is presumed to be a property of a chaotic nonlinear system).

Goertz Koerner (1996) has identified some of the properties of complex systems (self-organisation, self-generation and self-renewable) to illustrate how in a post-modern world nursing can use some of the new sciences as a research methodology. Chaos theory, quantum physics and ecofeminism are some of the new sciences which she sees as being particularly helpful. She states that new discoveries in the social, religious and psychological areas are converging with the new sciences and providing new definitions of reality and being. In her article, self-organisation is equated with a sharing of the vision and for nursing as 'caring in the human health experience' (p.6). Self-generation is seen as the process used by organisations to 'manage information in life-giving ways' (p.7). While neither definition articulates with the notion of self-similarity and iteration found with fractals, the aim of her article was to broaden the worldview of nurses. This may have been achieved, but the principles of chaos theory have not been adequately represented.

The nature of a nonlinear system has also been misinterpreted in the literature. Gleick (1987 p.23) states

that a nonlinear relationship is not strictly proportional and that linear relationships can be captured with a straight line on a graph. In a nonlinear system the end point is not known because of the cascading effect of the intervention, whereas in a lineal system the end result is known.

In the argument presented by Haberecht and Prior (1997) spiritual chaos during a period of bereavement was traced using chaos theory. They believe this to be a nonlinear system because the period in the middle (the grief period) was chaotic. In this case the situation could be interpreted differently. If grief is the starting point and harmony or peace and acceptance the end point, then this concept of grief is a linear process, even if during the transition a period of chaos (or perhaps unpredictable behaviour) occurs. Haberecht and Prior (1987), present a broad interpretation of the nature of a nonlinear system.

THE NOTION OF CHAOS

Within the literature there are also instances of chaos theory being used to explain chaotic behaviour without a clear link to the principles of chaos theory. The notion of chaos has been linked with theory to provide theoretical substance. The notion of chaos (as opposed to chaos theory) can be illustrated by Peters (1987) who has written a very successful text about thriving on chaos. In his book chaos is viewed as the changes that are occurring at an unprecedented rate and the paradoxes that this change presents. This is not chaos theory per se, but an interpretation of change occurring at a chaotic pace.

This particular interpretation is repeated in the nursing literature. Dombeck (1996) has used chaos theory to help describe situations found during psychotherapy. The notion of spiritual disequilibrium has been seen as a demonstration of complex systems behaviour and discussed in a number of nursing situations. This article, while using chaos theory as a theoretical underpinning, has in fact failed to refer to the literature in the area of chaos and must be questioned for the accuracy of the theoretical underpinning.

Vicenzi et al (1997) have used chaos theory, and in particular, the notion of a complex nonlinear system, as a way for nurses to understand their practice. This has been illustrated by the view that an adverse event such as a nosocomial infection can be difficult to predict. The authors argue that nurses working in a changing world need to understand how to work within complexity and chaos. Strategies such as abandoning false notions of control and acceptance of the uncertainty of the future are proposed as means by which nurses can apply chaos theory to their practice. This understanding of a complex nonlinear system would appear to equate with understanding of the nature of change, and more accurately reflects the notion of chaos as opposed to chaos theory.

A critique of the way that chaos theory has been used in nursing

Chaos theory has been used to describe complex dynamic systems found in nature (Gleick 1987). The idea that chaos theory is directly applicable to every system is not established and needs to be questioned (Vicenzi 1994). This cautionary comment might be particularly relevant to nursing, which is concerned with the holistic nature of the person, health and illness, the environment and social factors. For example, it may not be appropriate for chaos theory to be used to analyse health care systems, or clinical systems of care. On the other hand, the environment, particularly where an ecological system (a natural system) is involved, is an area of interest for nursing theory development. Where the environment of the person is being studied then chaos theory would be an appropriate framework for analysis. Bellin et al (1997 p.15) used chaos theory as a frame to integrate individuals, families and communities into an aperiodic and holistic paradigm. Analysis demonstrates that this is an appropriate framework but it could be argued that they have not applied it correctly. It has been used to analyse the human dimensions of ecological health nursing as opposed to the ecological concepts.

The mathematics of chaos has been used with some satisfactory results and this has been demonstrated by the work of Pollock (1997). The correct application of the statistical methods will require both computer and strong quantitative data analysis skills, and nurses will need suitable academic preparation in these areas.

The tenets of chaos theory have to date been subject to a number of interpretations, some of which are questionable. Examples of misrepresentation are often centred around how a nonlinear system is defined. At this stage it is recommended that caution should prevail as not enough is known about chaos theory, and that chaos theory should only be applied in cases where a nonlinear system is operating.

The literature has also been used to demonstrate that what has been called chaos theory is in fact chaos. This is not acceptable and should be avoided. If nursing is to mature as a discipline with a definable knowledge base, there is no place for the incorporation of anything new for the novelty or gimmick value alone. This will only detract from the substantial gains which nurses have made in knowledge generation and validation. Hence nurses need to understand new theories in order for synthesis to occur.

Another issue identified in the literature search is the rapidly evolving nature of chaos theory and the ever-changing understanding of the nature of a chaotic system. Newer and quicker computers are being developed and the progress that this will generate in the future is hard to imagine. What is written today may be derided tomorrow,

but what will be important is that nurses keep abreast with new developments in order to stimulate debate and critique. Chaos theory should only be used to describe complex, natural nonlinear systems until such time as research demonstrates that it can be applied to other systems.

How chaos theory could be applied in nursing

Chaos theory has been developed from an understanding of natural systems. Nursing knowledge is composed of many systems, such as physiological systems, health care systems and human systems. Some of these are natural systems and it is because of this relationship to natural systems that chaos theory has many applications in nursing. Chaos theory has the potential to help nurse researchers using quantitative designs to analyse data in situations where a nonlinear system is operating. Chaos theory explains how seemingly random events have a pattern of association. The behaviour of a chaotic system can be predicted using nonlinear dynamics. This could be in the study of demographics, particularly where prediction of population growth is concerned, or in epidemiology where the prediction of disease patterns is difficult. For example, difficulties in prediction arise when a steady demographic rate is interrupted or sent into chaos following drought or during some other disaster created by nature or man.

Another area where an understanding of chaotic systems may be of help is in the area of nursing informatics. The rationale for this belief is based on the ability of the computer to model systems. The computer enables complex chaotic systems to be modelled using simple mathematical equations. Nursing informatics uses computer systems to collect, manage and analyse data in order to help nurses support the practice of nursing and the computer models this data. Although the chaotic system is nonlinear and the systems modelled in informatics or linear systems, in the future the computer may be able to deal with this application.

Nursing knowledge, particularly nursing theory, may also be further developed using chaos theory. Chaos theory consists of a number of tenets that explain the behaviour of chaotic systems which occur in nature. These tenets include the notion of a sensitive dependence upon initial conditions and the well-known butterfly effect. The area in which the tenets of chaos theory may be applied is nursing theory. The nurse theorist Martha Rogers (1990 p.7) has developed a nursing theory entitled 'The Science of Unitary Human Beings'. Her theory contains a number of key concepts which she has defined and a number of these definitions use the same terminology as in chaos theory. Examples include 'multidimensional' which is 'a nonlinear domain without spatial or temporal attribute,' and 'unitary human beings' as 'an irreducible, invisible,

multidimensional energy field identified by pattern ... which cannot be predicted from knowledge of the parts'. A nonlinear domain and the notion of identification of pattern would appear to resemble some of the tenets of chaos theory. Apart from the obvious face value similarity, a suggestion that chaos theory may be a way to 'ground' or research some of Rogers' ideas bear consideration. (Vicenzi 1994 p.39) also notes that, although Rogerian science and chaos theory differ in their underlying assumptions, both direct nurses towards longitudinal research designs which focus on change over time. Meleis (1997 p.326) states that Rogers' theory is difficult to operationalise due to the complex nature of her concepts and the level of abstraction. She also notes (p.327) that her theory 'is more congruent with chaos theories'. The notion forwarded by Meleis of a number of chaos theories differs from many writers in the field of chaos and is an interesting possibility.

An area of nursing where the tenets of chaos theory could also be of assistance is in the area of nursing management. One direct application is for those nurses who are setting plans for the allocation of resources in states of emergency or contingency planning. Chaos theory is helpful here as it states that 'the behaviour of a chaotic system is deterministic and bounded' (Legge 1990). Hence, the likely resource requirements are determinable. Another possible application of chaos theory in nursing could be for those working within a complex nonlinear system, for example in accident and emergency or intensive care units. It is in these environments that applications may exist where patterns of attendance, particular presenting illnesses or injuries seem to come in seemingly random ways.

The future: Nurses who use chaos theory in their practice will need to understand chaos theory

The question of who should know about chaos theory can be asked. It has been suggested that nurse managers and policy makers must be aware of chaos theory, as well as nurses working in informatics. Clinical areas in which chaos theory has application include intensive care and accident and emergency departments. Nurse researchers and educators may not directly apply chaos theory in their work but have a professional responsibility to be aware of alternate modes of thinking. Similarly, all nurses, as consumers of research should be aware of chaos theory. If other applications emerge in the future then the nurse involved will be required to study chaos theory.

CONCLUSION

This selection of the literature has examined a number of articles that have referred to chaos theory in a nursing context and has illustrated diversity in the interpretation

and application of chaos theory. As in other disciplines, there is also some evidence to suggest that chaos theory has been misapplied due to a fallacious understanding of chaos theory. Chaos theory is also being used as an explanation of reality, particularly a social reality, without consideration as to whether this is an appropriate application.

It has been argued that there are a number of applications in nursing for chaos theory. The tenets of chaos theory have been suggested as being sympathetic with Rogers' theory of nursing and it has been suggested that the mathematics of chaos theory could be used as a form of analysis in order to ground Rogers' theory. These are promising developments.

Chaos theory is an important new science which is increasingly being cited in the nursing literature as a framework for research, education and practice. There are a number of possible practice areas in nursing where chaos theory might be very helpful, these include accident and emergency departments and intensive care. This is an exciting development but caution must be observed. Nursing must ensure that new theoretical ideas are analysed, and synthesis of the material must proceed in an appropriate manner. New theory should not be adopted without a full understanding of the material. With these provisos it would seem appropriate to include chaos theory as a topic in the curriculum of nursing graduate programs. This would ensure that nurses had some knowledge of chaos theory and would therefore be in a better position to critique the literature.

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NURSE PRACTITIONERS: AN EVALUATION OF THE EXTENDED ROLE OF NURSES AT THE KIRKETON ROAD CENTRE IN SYDNEY, AUSTRALIA

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ABSTRACT

The aim of the present study was to formally evaluate the effectiveness, professional appropriateness and acceptability of the extended role of the nurse practitioner at the Kirketon Road Centre (KRC) in Sydney, Australia. Data collection consisted of client and staff surveys and case file review by two assessors (one medical and one nursing). This paper will report on one section of this research, namely the case file review section of the study. Total study subjects were 1046 'at risk' youth, sex workers and injecting drug users attending KRC for their primary health care needs between September 1994 and April 1995. Nurse practitioners (NP) saw 613 of the clients who presented over this period. The majority of these clients were women (77.3%). The majority of NP consults were related to STD (51%), gynaecological (17%) and hepatitis (16%) issues. The results demonstrated that nurse practitioners were professionally appropriate in all aspects of expected 'best practice' in over 95% of consultations.

INTRODUCTION

Context within which this study took place

The 1990s in Australia can be described as the decade of the emerging nurse practitioner. The broad aims of this movement were to recognise, measure and evaluate the skills of the nurse practitioner, to foster the retention of expert clinicians in their area of specialty, and to establish a system wherein these nurses could receive recognition of their status, function in an expanded nursing role and receive financial remuneration for their specialist skills. The areas of primary health and rural and remote nursing were key areas of focus.

The role of nurse practitioners in NSW was examined using a three-stage strategy of working parties and research projects spanning from 1992 to 1995. The three stages consisted of stage one (NSW Health Department, 1992) which investigated the role and function of nurse practitioners in NSW; stage two (NSW Health Department, 1993) which reviewed the role of nurse practitioners and examined ways in which to assess and implement the recommendations of the stage one working party; and stage three (NSW Health Department 1995) which examined evidence (through pilot projects such as this one) evaluating the competency, safety, efficiency and feasibility of nurse practitioners.

Definition of nurse practitioner

The title *nurse practitioner* 'is restricted to registered nurses who are authorised by the Nurses Registration Board of New South Wales under the Nurses Amendment (Nurse Practitioners) Act 1998 to practice as a nurse practitioner' (NSW Nurses Registration Board). A nurse practitioner is a registered nurse working at an advanced practice level leading into practice as an expert nurse, the characteristics of which would be determined by the context in which they have been accredited to practice (NSW Health Department 1998). Nurse practitioners in New South Wales (Australia) used this title *prior* to changes to the Nurses Act in 1998. Subsequent to these changes, nurses cannot use this title until they have fulfilled the requirements and have been registered as a nurse practitioner (NP) with the Nurses Registration Board.

Aims of this study

This study represents the first formal evaluation of the nurses' role at Kirketon Road Centre (KRC) in Sydney, Australia. This study broadly aimed to evaluate whether the nurse practitioner (NP) role was effective and clinically appropriate at KRC. The specific study aims were to describe the services provided by nurse practitioners at KRC, to assess whether nursing interventions were clinically appropriate for the clients receiving this service and to evaluate the extent to which nursing activities met the standards for 'best practice'. It was anticipated that the results would indicate whether modifications were required to the extended role of the NP and whether this extended role could be established in other primary health care (PHC) settings.

Background of nurse practitioners at Kirketon Road Centre

At the time of this study the Kirketon Road Centre (KRC) was a primary health care facility of the Sydney Hospital Complex (now named The Sydney Hospital and Sydney Eye Hospital). This centre (located in Kings Cross, Sydney) is primarily involved in the prevention, treatment and care of HIV/AIDS and transmissible infections among 'at risk' youth, sex workers and injecting drug users (IDUs).

Nurses have practiced within a multi-disciplinary team at KRC since the centre was established in 1987. During this time the nursing role has been developing and expanding to meet the needs of the target populations. Clinical services provided by the nurse practitioners during the time of this study included: assessment of primary health care needs, sexually transmitted disease (STD) screening of sex workers, Pap smears, family planning advice, venepuncture for HIV and hepatitis A, B and C, pre and post-test counselling, methadone administration and needle and syringe exchange. Nurse

practitioners also staffed the 'AIDS Bus', an outreach program to street sex workers, 'at risk' youth and IDUs which operated seven nights a week. In this setting nurses were involved in assessment of primary health care needs, the provision of information and education regarding HIV and other transmissible infections and emergency management of opiate overdoses.

The extended nurse practitioner role at KRC developed in part in response to the difficulties in attracting medical officers to this area of public health. Possible factors contributing to this may have been that public health is not as well remunerated as other areas of medical practice and that the specific fields of substance abuse and sex industry workers have low status within the medical profession. As a consequence of a shortage of medical officers, the nurses' role at KRC was developed and extended to meet clients needs. The expansion of the nurse practitioner role at KRC also arose in response to perceived client needs for a streamlined service that would result in shorter waiting times. Nurses who had completed the Family Planning Nurse Practitioner Certificate and/or had training in sexual health and venereology were encouraged to extend their roles, with support and backup from the medical officers.

Clients service choice related to Kirketon Road Centre

Clients do not have to produce any personal identification in order to access health care at KRC. At the time of this study there were no other medical services in the area where clients were not required to provide identification, Medicare card or fee for service. Such requirements often prevented this client group from accessing health care as this marginalised and often chaotic population frequently do not have health care cards or money. This assured client anonymity and confidentiality and further enhanced acceptability of the service.

KRC has demonstrated that an anonymous, non-judgemental service facilitates access to primary health care services by marginalised populations. Other services are following suit by providing easier access through measures such as 'drop in' systems. This has enabled KRC to increasingly focus on the needs of the more marginalised clients.

LITERATURE REVIEW

A major early study on the role of Nurse Practitioners (NPs) in Canada (Spitzer et al 1974) revealed that the random substitution of family physicians by NPs resulted in no significant differences in patient outcomes in physical, social or emotion based measures. Munding (1980) warned that nurses must also demonstrate an expansion of their roles and the complementary and helpful value of their services 'rather than their ability to

assume basic medical care functions only' (p. 131). Almost two decades later critics of NPs say they are merely doing the work doctors don't want, but Allen (1998) states NPs are educated, autonomous professionals, developing *nursing* rather than quasi medical roles.

Mundinger et al (2000) conducted a randomised trial between August 1995 and October 1997 where NPs had the same authority, responsibilities, productivity and administrative requirements, and patient population as primary care physicians. They found that in an ambulatory care situation in which patients were randomly assigned to either NPs or physicians, and, patients' outcomes were comparable they reported that 'no significant differences were found in patients' health status (nurse practitioners vs physicians) at 6 months ... No significant differences were found in health services utilisation after either 6 months or 1 year' (p.59, 2000).

US authors state that the nursing profession continues to debate the efficacy of blending or merging the clinical nurse specialist (CNS) and NP roles (Busen and Engleman, 1996). Establishment of managed care and the instability of the healthcare market have driven many CNSs in the USA into graduate programs to retool for more independent roles in primary care settings (Busen and Engleman, 1996). The same debate on the roles of CNSs, (titled clinical nurse consultants (CNCs) in New South Wales, Australia), and NPs is current in Australia and distinctions between multi-level CNCs with separate or additional career pathways for independent, acute care or primary health NPs may be the direction best suited to the current health care environment. Busen and Engleman (1996) state that in the US the roles varied mainly with respect to performing physical examinations, prescribing medications, performing and/or ordering laboratory tests, prescribing treatments, and making referrals. Busen and Engleman, (1996) cited Elder and Bullough (1990) in stating that the amount of time CNSs and NPs spent in direct patient care varied with 73% of time for NPs compared to 53% of time for CNSs. NPs were found to practice mainly in primary care settings while CNSs practiced in secondary or tertiary care settings, although roles overlapped in all settings.

A number of factors have been identified as barriers to the successful implementation of NPs. These include:

- (i) lack of role clarification and unclear responsibility;
- (ii) attitude towards the role and acceptance of the role by others;
- (iii) restriction on the scope of practice; and
- (iv) a high caseload (Dillon and George 1997; Kleinpell 1997; Sidani and Irvine, 1999).

The literature on protocols and policy development was examined to inform the evaluation of nursing practices at KRC prior to this study's commencement. Moniz (1992)

raises concerns regarding the development of protocols and standards that are the maximum for ideal care as this may precipitate potential malpractice problems by setting unrealistic/unachievable standards. This cautions the importance of establishing infrastructure to support and assess NPs so that they are working within realistic standards with strategies in place to provide specific education and training where necessary (Offredy, 1998, 1999, 2000). Recent reports on NPs working in primary health care suggests that sexual health is an ideal area in which to develop protocols since 80% of clients have an uncomplicated sexually transmitted disease (Allen, 1998).

METHODOLOGY

Policies and procedures

The policies and procedures used for this study were those already in operation at KRC. They were developed collaboratively by both medical and nursing staff with qualifications and experience in the areas of sexual health, venereology, women's health, family planning, substance abuse, public health and general practice.

The policies and procedures cover the areas of triage, female and male sexual health screening, Pap smear, bimanual examination, breast examination, pregnancy testing, emergency contraception, testicular examination, throat swabs, venipuncture, HIV pre and post-test counselling and treatment of genital warts and molluscum contagiosum.

Competency development

The competencies assessed in this project were developed by the clinical nurse consultant and the nursing unit manager of the Kirketon Road Centre in collaboration with the clinical nurse consultant, Sydney Sexual Health Centre, to provide for the special needs of nursing practice within the centre. They were modelled on the Australian Nursing Council Inc (ANCI) competencies. Further development of these competencies has been conducted in collaboration with appropriate professional associations such as ASHNA, the Drug and Alcohol Nurses Association (DANA) and the Australian Nursing Federation (ANF).

Appropriateness of the role of the Nurse Practitioner at KRC was assessed by reviewing clinical files and measuring:

- i) appropriateness of consultation
- ii) clinical judgement
- iii) pathology requests
- iv) treatment recommendation
- v) referral

vi) documentation

Professional appropriateness of the Nurse Practitioner

In aiming for professional appropriateness of nurse practitioners working in this broad area of nursing practice, expertise in a number of areas was considered to be desirable prior to employment. These included skills in the area of sexual health and venereology, women's and reproductive health, nursing related to alcohol and other drugs, psychiatric nursing and at least three years post-registration experience.

Each nurse at KRC was assessed as competent in the following skills prior to performance without supervision: venepuncture, intake, including pre and post HIV test counselling, asymptomatic female screen, asymptomatic male screen, Pap smear, bi-manual examination, breast examination, treatment of genital warts, pregnancy testing and counselling, morning after pill administration, contraceptive consultation, microscopy interpretation of wet film and of gram stain, post termination of pregnancy checkup, methadone administration after assessment for intoxication, and needle and syringe exchange.

Evaluation methods

The evaluation study design was a descriptive cross-sectional investigation of nursing practice at KRC utilising pre-existing data collection forms and regular case file review by two assessors.

Over the period September 1994 to April 1995, the KRC operated clinics between the hours of 9.00am and 7.30pm. All clients attending the clinic on Wednesdays for either a nursing or a medical consultation were considered part of the study. Wednesday was selected as it was the optimal day to facilitate data collection requirements (due to other commitments of staff and structures of activities within the centre on other days).

At the time the study commenced, an average of 40 clients attended the clinic per day. It was considered that one day per week of data collection over an eight month period would result in a sample size sufficient for valid conclusions to be drawn.

As part of standard procedure, all client visits were recorded on a visit sheet. This sheet recorded client details, practitioner status, investigations undertaken and the services provided. A 'triage' form was also developed for the study. This was initially completed by the client upon arrival indicating reason for visit and arrival time and then the practitioner recorded when the client was actually seen and the length of the consultation.

A file review form was developed to assess the appropriateness of the consultation. The form was completed for each identified problem by two file reviewers, the clinical nurse consultant (CNC) and the medical unit manager (MUM) four weeks after a

consultation thereby allowing time for any outcomes to be resolved.

Finally, upon completion of the data collection phase of the project, nurse practitioners were asked to reflect upon their understanding of the role of an NP, the purposes of the pilot project and what they thought the project meant for the nursing profession as a whole. Medical and counselling staff were also surveyed for their thoughts on the appropriateness of the NP role at KRC.

Characteristics of clients were analysed using the statistical package SAS (Version 6.04).

RESULTS

Demographic characteristics

Over the study period, a total of 1046 clients visits (including repeat attenders) were seen by Nurse Practitioners (613 clients) or medical officers (433 clients). Table 1 shows demographic characteristics of both Nurse Practitioner (NPs) and medical officer (MO) clients. The majority of clients seen by NPs were women (77.3%) with 21.4% men and eight (1.3%) transgender clients. Over half the NP clients (54.3%) were in the 20 to 29 year age range with 8% of clients aged 19 years or less. The largest proportion of clients seen by NPs were

Table 1: Characteristics of clients attending KRC between 14th September 1994 and 26th April 1995 (n=1046)

		NP Consults		MO Consults	
		n	%	n	%
Sex	Female	474	77.3	220	50.9
	Male	131	21.4	201	46.5
	Transgender	8	1.3	11	2.5
Age groups	15 - 19 years	51	8.3	53	12.3
	20 - 24 years	175	28.5	164	38.0
	25 - 29 years	158	25.8	102	23.6
	30 - 34 years	129	21.0	60	13.9
	> 35 years	100	16.3	53	12.3
Identified target group *	Parlour sex worker	419	68.4	210	48.6
	Street sex worker	124	20.2	195	45.1
	Sex worker - NESB	30	4.9	13	3.0
	Injecting drug user	284	46.3	332	76.9
Area of residence	Eastern Sydney area	264	43.1	207	47.9
	Central Sydney area	65	10.6	27	6.3
	Northern Sydney	46	7.5	13	3.0
	Southern Sydney	18	2.9	8	1.9
	Western Sydney	12	2.0	7	1.6
	South Western Sydney	11	1.8	29	6.7
	Other health region	10	1.6	23	5.3
	Interstate	15	2.4	4	0.9
	Missing postcode †	172	28.1	111	25.7

* Not all clients had target group identified and clients may belong to more than one target group of the then Eastern Sydney Area Health Service
 † Includes clients not providing a postcode and those with No Fixed Address

(43.1%).

Sixty-eight percent of NP clients identified as parlour sex workers, 20.2% identified as street sex workers and 46.3% identified as injecting drug users (IDUs). Nurse practitioners saw a higher proportion of parlour sex workers while medical officers were more likely to see IDUs and street sex workers.

Service provision

		NP Consults		MO Consults	
		n	%	n	%
Reason for presentation at KRC (n=766)	Sex worker checkup	210	87.9 [†]	29	12.1
	Results only	84	80.8	20	19.2
	Pap smear	33	86.8	5	13.2
	HIV test	89	76.7	27	23.3
	Medical condition	76	26.2	214	73.8
	Counselling	11	32.4	23	67.7
	Other (e.g. pregnancy test, methadone, dental)	32	60.4	23	39.6
Client waiting time*	0-10 minutes	132	48.7	53	41.4
	10-30 minutes	86	31.7	46	35.9
	> 30 minutes	53	19.6	29	22.7
Consultation times*	0-15 minutes	16	14.0	12	36.4
	15-30 minutes	44	38.6	13	39.4
	30 minutes-1 hour	44	38.6	6	18.2
	> 1 hour	10	8.8	2	6.1
Services provided (n=1317)	STD issues	264	43.1	207	47.9
	Gynaecological	65	10.6	27	6.3
	Hepatitis (information, monitoring, vax)	46	7.5	13	3.0
	General medical	18	2.9	8	1.9
	Counselling/ psychosocial	12	2.0	7	1.6
	Drug and alcohol issues	11	1.8	29	6.7
	HIV (information, monitoring)	10	1.6	23	5.3
Blood tests ordered	HIV	192	31.3	66	15.3
	Syphilis	190	31.0	61	14.1
	Hepatitis B	115	18.8	36	8.3
	Hepatitis C	54	8.8	31	7.2
Swabs taken	Chlamydia	302	49.3	49	11.3
	Gonorrhoea	301	49.1	53	12.3
	Wet film (assessed at KRC)	129	21.0	23	5.3
	Pap smear	74	15.6	19	4.4

[†] Percentages are percentages between NP and MO consults. All other percentages in table are calculated within either NP or MO consults.

* There was considerable data missing for both time client seen by practitioner and time client departed from service.

Table 2 outlines details of the services provided by both nurse practitioners (NPs) and medical officers (MOs). The majority of NP consults were related to STD (51%), gynaecological (17%) and hepatitis (16%) issues (predominantly vaccination). This pattern of service provision reflects the structure of KRC such that nurse practitioners perform the majority of routine sex worker screens thus freeing medical officers up for more complex clinical presentations. Routine sex worker STD screens are asymptomatic screens for gonorrhoea and chlamydia performed on a fortnightly basis. Every three months, blood is also taken for HIV and syphilis and hepatitis B and C where appropriate. KRC has detailed policies and

Identified problem	n	%
Routine screen	198	39.5
Results	67	13.4
STD issues (e.g. herpes, STD information, penile lesion)	48	9.6
Serology (STS, HIV, hepatitis A/B/C, LFTs)	39	7.8
General medical (e.g. nausea, sore eyes, constipation, proctitis)	36	7.2
Contraception issues	25	5.0
Hepatitis A and B vaccination	23	4.6
Pap smear	23	4.6
Pregnancy issues	17	3.4
Wounds/wound dressing	16	3.2
Gynaecological issues	16	3.2
Skin problems	12	2.4
Drug issues	8	1.6
Other	5	1.0

procedures for routine screens which NPs follow.

About 30% of all NP consults involved serology for HIV and syphilis while 50% involved swabs for gonorrhoea and chlamydia. Hepatitis B and C serology was not performed as frequently on sex workers as on injecting drug users.

Table 4: Clinical review of NP management of each identified problem (n=501)

	AGREE		DISAGREE		N/A	
	n	%	n	%	n	%
CLINICAL ASSESSMENT						
Presenting problem documented clearly	315	97.8	7	2.2		
Relevant health history documented clearly	306	95.6	5	1.6	9	2.8
Allergy status documented	303	95.9	8	2.5	5	1.6
Current treatment documented	54	17.3	1	0.3	258	82.4
Results of physical examination documented	232	72.7	8	2.5	79	24.8
Clinical findings documented	235	74.6	5	1.6	75	23.8
Protocol/s followed	458	91.4	25	5.0	18	3.6
Deviations justified	11	2.2	14	2.8	474	95.0
CLINICAL MANAGEMENT PLAN						
Protocol followed	472	94.2	28	5.6	1	0.2
Deviations justified	19	3.8	16	3.2	466	93.0
Appropriate investigations recommended	325	65.1	9	1.8	165	33.1
Appropriate consultation documentation	472	95.0	25	5.0		
Appropriate associated documentation	378	75.8	93	18.6	28	5.6
Alternatives appropriately documented	22	4.5	6	1.2	464	94.3
Appropriate referral recommended	146	29.3	11	2.2	342	68.5
Appropriate follow up recommended	367	74.3	23	4.7	104	21.1
NP satisfied with consultation	363	96.5	13	3.5		
MO satisfied with consultation	363	96.5	13	3.5		
Change in clinical management recommended	29	6.1	304	63.7	144	30.2
REVIEW OF CLINICAL OUTCOMES						
Expected outcomes for all identified problems	350	90.7	20	5.2	16	4.1
Is managing medications well	75	19.4	10	2.6	301	78.0
Improvement in functional status	253	65.5	34	8.8	99	25.6
No significant clinical event from identified problem	365	94.6	5	1.3	16	4.1
NP satisfied with clinical outcomes or progress	375	97.2	3	0.8	8	2.1
MO satisfied with clinical outcomes or progress	375	97.2	3	0.8	8	2.1

Clinical assessment and decision making

For the purposes of the present report, only NP cases were reviewed. A total of 501 separate issues were identified and assessed through file review. The range of health issues managed by NPs are outlined in Table 3. The majority of the reviewed NP caseload consisted of routine screens (39.5%), results (13.4%), STD issues (9.6%) and serology for HIV, HBV and HCV (7.8%). However, as can be seen, NPs at KRC also managed a wide range of other health issues over the course of the study period including contraception, pregnancy, gynaecological issues, skin problems, wounds and wound dressings.

Three aspects of the total management of each identified problem were evaluated through file review. Clinical assessment covered documentation of: presenting problem, relevant health history, allergy status, current treatment, physical examination and clinical findings. The two reviewers found that for each of these areas, NPs had not clearly or completely documented the relevant issues in less than 5% of cases (Table 4).

The second aspect of the practitioners' work to be evaluated was the clinical management plan. Again, for most components of the clinical management plan, reviewers agreed that the NPs acted appropriately and according to protocol in more than 95% of cases. The only aspect where there was substantial disagreement was in the appropriate associated documentation section (18.6% of cases). This was generally because the client contact sheet for results requiring urgent action had not been completed or updated appropriately. This was in fact a newly introduced documentation requirement and inadequacies were overcome by adding this task to the triage role.

For the clinical management plan overall, both the CNC and the MUM were satisfied in 96.5% of cases. Four of the cases where the reviewers were not satisfied involved poor/inadequate documentation, in two the reviewers felt the MO should have been consulted, in another two the reviewers felt that not all issues raised in the consultation had been dealt with, while only one was reported as wrong contraceptive advice given. All of these cases were before

Table 5: Medications recommended by NPs (n=197)

Recommended medications	n	%
Immunisation agents (Engerix, Haverix)	73	37.1
Contraceptives (OCP, Depo-provera, MAP)	37	18.8
Antibiotics	36	18.3
Topical vaginal medications	24	12.2
Antiseptics/anti-infectives/anti-parasitics	11	5.6
Anti-nauseants	6	3.0
Laxatives/anti-diarrhoeals	4	2.0
Analgesics/anti-inflammatories	3	1.5
Vitamins	3	1.5

December 1994 when the majority of the NPs were still involved with the orientation process and further training.

The final component of the consultation to be evaluated was clinical outcomes. Both reviewers were satisfied with clinical outcomes in 97.2% of cases. Reviewers were dissatisfied with clinical outcomes in three cases, which will be addressed in the discussion section of this paper.

Recommending medications

Table 5 outlines the types of medications recommended by the NPs. These medications were recommended by the NP and then the MO was consulted before administration. Over half the medications (55.9%) recommended by the NPs were for hepatitis B and A vaccination (ie Engerix and Haverix) or were contraceptive medications (Depo-provera, OCP or MAP). The recommended antibiotics were standard treatments for frequently encountered infections (eg Doxycycline for chlamydia, Trimethoprim for urinary tract infections). Topical vaginal medications (predominantly Canesten) were recommended for the frequently seen vaginal candidiasis.

Recommending diagnostic pathology

Ordering diagnostic pathology is a fundamental feature of the NP role at KRC given that NPs are responsible for routine sex worker screens. As such there were existing policies and procedures at the time of this study regarding their indications. NPs at KRC could order the following tests, without consultation, under the aegis of the medical director:

- Blood for HIV, hepatitis A, B and C, syphilis serology and LFTs (liver function tests, in conjunction with hepatitis C)
- Cytology for Papanicolaou smear
- Culture for chlamydia, gonorrhoea, candida, trichomonads
- Microscopy, culture and sensitivity for midstream urine (MSU), wound swab, throat swab

- Gram stain, wet film preparation

The clinical review process demonstrated that only 1.8% (n=9) of investigations recommended were inappropriate (Table 4). These all occurred prior to November 1994 when many of the NPs were newly employed and in the process of familiarising themselves with KRC policies and procedures. Two were for wound dressing and the problem identified by the reviewers was inadequate documentation such that the reviewers were unable to ascertain whether swabs taken were appropriate as no description of the wound was included. In another case, LFTs had not been ordered for a blood screen when it would have been appropriate to do so, while on another occasion, urinalysis was not undertaken when the client described symptoms consistent with a urinary tract infection (UTI). Two further cases involved symptomatic clients, one with possible vaginal thrush where the reviewers felt the NP should have undertaken a wet film preparation and another case of ongoing UTI where repeat MSU was indicated. A final case, occurring in the second week of data collection, involved perianal pruritis and the reviewers decided that the consult as a whole was inadequate as the MO should have been consulted.

DISCUSSION

The findings overall provide strong support for the ability of nurses to perform enhanced clinical practice and the results augur well for the future of nurse practitioners. The aim of the present study was to formally evaluate the effectiveness, professional appropriateness and acceptability of the extended role of the nurse practitioner at the Kirketon Road Centre. The results indicate that these nurse practitioners were appropriate and effective in their roles.

The findings indicate that according to both medical and nursing assessments NPs had clearly or completely documented the relevant issues in more than 95% of client cases. The aspects of the total management of each identified problem were evaluated through file review and clinical assessment. In the areas of documentation of presenting problem, relevant health history, allergy status, current treatment, physical examination and clinical findings the two reviewers found that for each of these, NPs satisfied the guidelines for 'best practice'.

Some of the areas in which 'best practice' was not achieved were due to inadequate documentation so that the reviewers were unable to ascertain whether the practice was appropriate. Further cases (less than 5%) that demonstrated less than optimal practice were most likely to occur in NPs who were new to KRC and occurred prior to November 1994.

Only 1.8% (n=9) of investigations recommended were considered to be inappropriate.

The reviewers agreed that the NPs acted appropriately and according to protocol in their clinical management plans in more than 95% of cases. Many of the problems identified involved poor documentation and all of these cases were before December 1994 when the majority of the NPs were still involved with the orientation process and required further training.

In the clinical outcomes component of the consultation both reviewers were satisfied with these in 97.2% of cases. Reviewers were dissatisfied with clinical outcomes in one case where the client tested negative for exposure to hepatitis B virus yet declined vaccination, in another where the client had abnormal results, yet the contact sheet had not been updated and in a third where, due to poor documentation of suture removal from a wound, the reviewers were unable to determine whether the wound had healed.

Concerns regarding the acquisition of skills and knowledge among newly recruited nurses to the level where they could be assessed as being competent to practice without supervision were experienced by the NUM and CNC during the term of this study. This situation and the NP feedback led to the conclusion that the process of orientation and ongoing education needed revision. Nursing reflections indicated that while most of the NPs believed that they had the prerequisite skills when they commenced at KRC, some of the NPs felt that these skills had to be learnt on the job. It is proposed that a more structured education programme be implemented to assist new NPs in gaining knowledge and understanding of relevant areas of practice and medical conditions and to assist all NPs in updating their knowledge base.

At the commencement of this study, the extension of limited prescribing rights for nurse practitioners was seen as a potential benefit of any evaluation. The medications most commonly recommended by NPs were in general the same as those recommended by NPs in their feedback regarding appropriate medications for limited prescribing rights. These included Egerix and Haverix (hepatitis B and A vaccination), Depo-provera, emergency contraception (MAP), repeat combined oral contraceptive administration and vaginal anti-fungal preparations. These medications were seen to be appropriate for standing orders as there is a limited choice of medications for the specific conditions. Establishment of the above medications as standing orders would increase nurse autonomy and would reduce the amount of unnecessary consultation time with medical officers thereby allowing both NPs and MOs to attend to the more complex issues.

Development of the competencies for this project was a difficult task as competencies were still being developed at a national level and had not yet been ratified in all special interest groups. It was acknowledged before commencement of this project that the competencies

used in this study were in the early stages of their development and required expansion. Therefore it was anticipated that these competencies would undergo further development in collaboration with the appropriate professional associations.

RECOMMENDATIONS AND CONCLUSION

An important recommendation arising from this study is that a more structured education program for new KRC nurse practitioners be implemented. This would serve to increase the NPs level of knowledge and understanding about relevant areas of practice and to assist all NPs in updating their knowledge base. The changes to the NSW Nurses Act (1998) will lead to more structured formalised programs to prepare nurses for registration as NPs with the NSW Nurses Registration Board.

It is also recommended that protocols be developed and application for standing orders undertaken for medications such as hepatitis A and B vaccination, emergency contraception, depo-provera, administration of repeat combined oral contraception, vaginal anti-fungal preparations based upon clinical signs and symptoms and wet film and gram stain confirmation.

These are commonly requested or commonly recommended medications and clear protocols can be developed and easily followed because there is limited choice of medication given for the particular presenting problem. The existence of standing orders for these medications would facilitate service delivery to the marginalised target populations by reducing the requirements for consultation with MOs and by freeing up MOs thereby allowing them to concentrate on the more complex issues.

It is recommended that the NPs competencies undergo further development in collaboration with appropriate professional associations such as the Australian Sexual Health Nurses Association (ASHNA), the Drug and Alcohol Nurses Association (DANA) and the Australian Nursing Federation (ANF).

Offredy reports that evidence from the Nurse Practitioner Project Report (NSW Health Department 1993), as well as discussion with NPs interviewed during the broader research program on NPs emphasized the need for advanced education programs according to the practice specialty of NPs (Offredy, 2000). The current requirement for registration of NPs will lead to the further development of structured education programs (developed in collaboration with university postgraduate nursing programs) to better prepare NPs for this role.

This research study indicated that NPs (as assessed by both nurses and physicians) were professionally appropriate in all aspects of expected 'best practice' in

over 95% of consultations. The results support the conclusion that the extended role of nurses at KRC is effective and professionally appropriate. This augurs well for the future of nurse practitioners in Australia.

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A CD-ROM TUTORIAL FOR PHYSICAL EXAMINATION

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ABSTRACT

In 1998 the Committee for University Teaching and Staff Development (CUTSD) awarded a grant of \$47,975 to develop an interactive CD-ROM tutorial program to facilitate teaching the process of physical examination of the abdomen, lungs and thorax, to students of nursing.

This program was developed to complement current teaching methods and make it possible for tutors to use the available class time to further address students' individual learning needs. It was developed to enable flexible delivery of content, to provide a front seat view of the demonstration of the procedures, and simulated practice opportunities in the safety and privacy of computer simulation. The program was not intended to replace hands-on practice as this learning medium does not address the kinaesthetic component of performing physical examination but it is expected to hasten the development of confidence in practice by strengthening the user's knowledge of the techniques and the sequence of physical examination. Through providing the opportunity to elicit inspection, palpation, percussion and auscultation examination findings in the context of 10 case studies of patients with health problems, it is also expected to facilitate recognition of abnormalities and their significance for health care students who have little clinical experience.

The program has been evaluated by senior nursing students for technical problems, effectiveness as a learning aid and user friendliness. Over all, 92% (n=38) of the students considered that the program assisted them to learn physical examination of the abdomen, thorax and lungs and 95% were satisfied with the quality of the product and found that the sounds and images helped their understanding. The content of the program was considered to be logically sequenced, to have assisted understanding, and the case studies were a valuable learning aid. The evaluation data from this trial also indicates that students would like to learn about physical examination of other body systems using this medium.

DESCRIPTION OF THE PROGRAM

This CD-ROM tutorial program is comprised of three sections. The first section presents the relevant anatomy of the thorax, lungs and abdomen. The second section is comprised of a demonstration of the examination procedures for each body system that incorporates presentation of abnormal examination findings and

concludes with a self-assessment multiple choice test. The third section, the practice section, requires the user to examine 'virtual patients' and record the findings. The student's assessment findings can then be compared with a list of significant assessment data that is presented at the end of each case. The practice section is unique as no other multimedia program on physical examination incorporates simulated physical examination.

The interface throughout the program is by 'point and click' using the mouse. The content is presented using voice, text, video, animation, photography stills and audio sounds. Student interaction is achieved with the mouse that activates hot spots on the screen to provide examination findings, image manipulation opportunities and feedback. Each section of the program is independent and students can navigate through it according to their individual learning needs. The time required to complete the entire program is two hours.

The platform

The CD-ROM has been developed as dual platform software. It can be operated on both Apple Macintosh and IBM compatible personal computers.

Background to the project

Since the Australian National Health and Medical Research Council has declared that nurses '... must be competent in comprehensive health assessment and teaching' (Reaby 1991), the physical examination skills (PES) of inspection (deliberate and purposeful observations), palpation (using the sense of touch), percussion (the production of sounds by striking the body surface) and auscultation (listening to body sounds using a stethoscope) have been taught in all undergraduate nursing courses. Nurses are expected to utilise these skills as part of their daily nursing practice to enable them to collect accurate information regarding patients' health status and deliver improved nursing care.

There is currently no alternative to the traditional teaching methods cited however this program is designed to form the tutorial activity for two of the body systems and will provide reinforcement of the learning required for the development of student competence and confidence.

Suitability for other educational programs

Physical examination is a generic skill for a range of health practitioners and this program is suitable for a range

of undergraduate health care students, the practitioner who needs to upgrade their knowledge and skills and the person returning to practice. It is also a program that is highly practical for distance learning.

Evaluation of the program

Thirty nine third year students volunteered to trial the program prior to developing the master copy of the CD. The program at this stage had been tested extensively by the authors for program glitches and editorial errors. The trial took place in a university computer laboratory during non-teaching time. A 35 item questionnaire adapted from a subject evaluation software package developed by Cowdell (1995) was used to elicit feed back. The questionnaire consisted of 31 positively phrased, items about six aspects of the program. These aspects included clarity of the content, usefulness of the program as a learning aid, effectiveness of the program as a motivational aid, assessment of learning and feed back, efficacy of the multimedia and the user friendliness of the program.

The five point Likert scale was used to elicit responses from students. In addition four open-ended questions were included at the end of the questionnaire. These questions aimed to identify the students' views about the program's strengths and weaknesses and sought for suggestions for improvement.

Results and discussion

Data were analysed using the 'Subject Evaluation Software, Griffith University' package. Descriptive statistics were used to analyse responses from the students. Particular attention was focussed on the mean score of each item. The mean score of each item was derived from the numerical scores for the responses (1 = strongly agree and 4 = strongly disagree) and items with a mean score higher than 3 could suggest problem areas. The results indicated that the highest mean score was 2.4 with a standard deviation of 1.1 for item 'Explained clearly' in the section on 'Evaluation of the clarity of the program'.

Over all, ninety two percent (n=35) of the students considered that the program assisted them to learn physical examination of the abdomen, thorax and lungs and ninety five percent (n=35) were satisfied with the quality of the product and found that the sounds and images helped their understanding. The content of the program was generally considered to be presented clearly, the case studies were effective in reinforcing the process of physical examination and feedback was relevant.

Four items from the questionnaire elicited some dissatisfaction. Approximately 40% of the participants did not feel 'actively engaged in learning,' 36% felt that the program was not explained clearly, 33% did not think that the case studies made good use of the images and sounds and 46% did not feel enthusiastic about the program. This

data is contradictory in light of the overall feedback and it is felt that this could possibly be due to the computer equipment, the students' attitude to computer assisted learning and the small sample size.

Analysis of the four open ended questions, revealed both positive and negative themes. There was general enthusiasm for the program's sound effects, visuals and diagrams. It was described as being 'easy to understand' and 'good for confidence to practice'. Numerous requests for 'more body systems' and 'more information' were also documented. Two types of criticisms predominated; computer equipment and content deficits. Some students found that the video and the sound were not co-ordinated (the computer equipment was too slow for the program's requirements) and some described poor quality colour. The perceived content deficits centred around the amount and extent of information available about the case study findings and the 'abnormal findings' section of the program. These particular criticisms are to be expected given the limited scope of the program, however this feedback may suggest that the program has stimulated curiosity about the next step in the problem solving process of making a diagnosis once the assessment data have been evaluated.

CONCLUSION

The CD-ROM 'Physical examination of the abdomen, thorax and lungs' was developed to support the teaching of physical examination skills to undergraduate students of nursing. During its development it was trialed by nursing students for technical computer program faults, user friendliness and effectiveness as a learning aid. The outcome of the trial not only indicated that it was an effective learning aid but that students would like to learn about physical examination of the other body systems using this medium. No programming problems were identified although some of the computers in the computer laboratories did not have the requirements needed to run the program smoothly.

It is planned to evaluate the CD-ROM for its efficacy as a learning tool to support conventional teaching and for distance learning in 2001. It is to be incorporated into the teaching program in 2001 and will be made freely available to the students through the general campus library. Dissemination of the product to the wider community will be undertaken later this year under the auspices of the School of Nursing, Victoria University, Melbourne, Australia.

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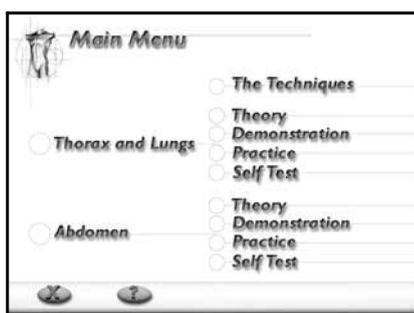
PHYSICAL EXAMINATION (ABDOMEN, THORAX AND LUNGS): A REVIEW

Joy Lyneham

This program, developed by Mary Huynh, Vera Brown and Michael Bauer, is well designed and programmed.

An initial difficulty in loading the program onto the computer (PIII, 500mhz, 192RAM) with higher than required system was experienced. This is related to unclear setup instruction, but was easily overcome. Essentially only minimal computer knowledge is required to proceed with setup so initial set up should not distract or deter the user.

Once at the main menu seen below the user can work through the process of physical examination.

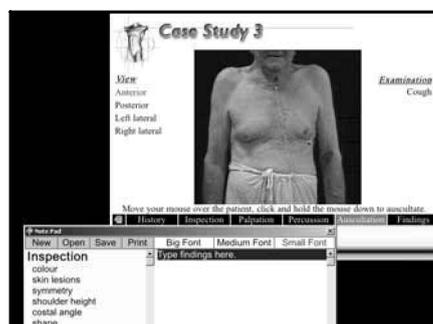


The graphics are clear and relevant to the process. The user can skip screens if and when necessary or return to the main menu. The use of still, movie and sound, enhances the learning process.



There is a good range of viewing options, eg, posterior, anterior. The practice section is systematic with clear and appropriate instructions. This is enhanced by the use of still and movie graphics. The sound of breathing etc is realistic and should enable the user to recognize these sounds in practice.

The practice section is composed of a number of case studies the user is to work through. There is the ability to record their findings and assistance is given with general prompts. On completion the user can obtain feedback. This section is enhanced by the ability to view two screens simultaneously.



The self-test section is simple. A set of multichoice questions is available and the user has the ability to go back and change answers.

While this section is good, an explanation as to why the answer is incorrect would improve it. However the program allows a review of the choices and a 'find' segment with the correct answer.

Overall, this is an excellent learning tool. Some areas are more suited for the postgraduate nurse. The undergraduate student may possibly find some aspects a little daunting at first. This program can be used in a multitude of learning environments such as the individual student, the clinical classroom and in on-line education.

I hope that this is the first of a complete series of physical assessment. This type of learning tool is long overdue.

FORENSIC NURSING: A REVIEW OF THE LITERATURE

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ABSTRACT

A review of the nursing literature reveals that forensic nursing is an emergent specialty area of practice that has undergone substantive role development in recent years. Forensic nurses have not only begun to write about the challenging and distinctive nature of their practice and their unique practice arrangements, but have commenced a concerted call to action for greater recognition within the nursing profession and correction and criminal justice system. The literature reveals an increasing demand for forensic nursing skills in a range of community and hospital based clinical settings. The problematic nature of caring for forensic clients in both correctional and less restrictive contexts of care remains a salient feature of forensic nurses' accounts of their practice.

INTRODUCTION

There is evidence in the published literature to suggest that forensic nursing is an emergent specialty area of practice which has undergone substantive role development in recent years.

The care nurses give in prisons and forensic institutions remains largely hidden from the public by the very nature of the places in which it is carried out. As correctional and criminal justice systems are often impervious to the reforms occurring in society, collectively forensic nurses have remained to some degree isolated from the mainstream of the nursing profession. However, they are gaining increasing international recognition for the challenging and distinctive nature of their practice and their unique practice arrangements (Peternelj-Taylor and Johnson 1995). In the past decade forensic nurses have not only begun to write about their practice more frequently (Peternelj-Taylor and Johnson 1996) but have commenced a concerted call to action for not only recognition within the nursing profession itself but a greater say in the ideological priorities of the organised provision of health care within society's correction and criminal justice system (Lego 1995). This article seeks to review the literature of a highly specialised and distinctive occupational cohort who deliver nursing care at those very points where society's intentions towards its criminal and offender elements are made known.

The challenge of caring for those persons who have committed offences against the law and whose treatment needs are met in prison, correctional or other secure settings has been hailed as one of the 'most exciting developments confronting the nursing profession this decade' (Peternelj-Taylor and Johnson 1995 p.12). The problems associated with the provision of quality nursing care to incarcerated offender and forensic populations have been identified as diverse, complex and pressing (Maeve 1997; Niskala 1987). Australia, like most developed nations, is experiencing a crisis of confidence in its ability and its willingness to either punish or to rehabilitate its criminal offenders. Decades of economic stringency, rapid social change and generational unemployment have been identified internationally as

resulting in the disproportionate over-representation of minority, disadvantaged and marginalised groups in the industrialised world's rapidly growing prison population (Lego 1995). The worldwide demand for the provision of specialised health care to increasingly diverse and expanding forensic inpatient populations in both hospitals and prisons has created 'a new and challenging frontier for the nursing profession' (Peternelj-Taylor and Johnson 1996 p.23).

The term 'forensic' however, when applied to nursing and to health related matters generally, is used with considerable latitude and in a wide range of diagnostic, clinical and medico-legal contexts. Before exploring the literature of this specialised area of nursing practice it is essential to identify what the descriptor 'forensic' implies when applied to nursing, and how such varied and seemingly divergent groups of nurses use it to describe their practice.

Forensic nursing defined

Statutory definitions notwithstanding, the term 'forensic' implies the link between anything medical or health related and the law, particularly criminal law and the science of criminology. Within nursing literature, 'forensic' is a rubric which describes the delivery of nursing care to persons who have been remanded or convicted of crimes; who have committed offences against the law and have been found to be 'not guilty' by virtue of their suffering a mental illness, or have been the victims of crime, neglect or abuse (Peternelj-Taylor and Hufft 1997). Known also as a 'correctional', 'corrections' or 'prison' nursing (Hennakem 1993; Paskalis 1993; Carmody 1988), forensic nursing care is delivered in a diversity of practice settings including prison hospitals and infirmaries secure or specialised units of public psychiatric hospitals, 'regional secure units', and purpose-built 'forensic hospitals'. Some forensic nurses are based in police watch-houses, locked units of general hospitals or undertake the supervision of paroled offenders in the community. Other forensic nurses have very little professional contact with offenders, working with the victims of crime and their families in detecting, documenting and reporting evidence of crimes against the person (Lynch 1993; Birk 1992). Internationally, forensic nurses have been identified as a distinctive occupational group who 'integrate nursing philosophy and practice within a socio-cultural context that includes the criminal justice system' (Peternelj-Taylor and Johnson 1996 p.18). Birk (1992) asserts that forensic nurses practice 'anywhere the worlds of law and medicine collide' (p.7). In Australia the nature of forensic nursing practice and practice arrangements have been defined in terms of both the distinctive presentation of morbidity encountered in institutional forensic populations (Paskalis 1993; Carmody 1988) and the unique environmental influences

of the forensic treatment milieu itself (Hennakem 1993). However, some commentators report that the devolution of the duty of care to mentally ill offenders to mainstream health service providers, and changes in mental health legislation has resulted in more Australian forensic nurses practising outside purely custodial or secure settings (Paskalis 1993).

While some authors have been forthright in claiming forensic nursing as a new sub-specialty of advanced psychiatric mental health nursing (Dunn et al 1996), others have emphasised its medical, surgical, primary health care and domiciliary nursing functions (Maeve 1997; Burrow 1993; Gulotta 1987; Niskala 1986; Lehman 1983). The literature reveals that the role development and professional 'consolidation' (Paskalis 1993 p.1) achieved by forensic nurses, within both the public health and correctional and criminal justice systems have served as a basis from which to expand their practice from purely custodial or institutional settings to less restrictive community-based contexts of care. Similarly, United States and Canadian forensic nurses have pushed the boundaries of their practice outward to construct independent practitioner roles in the detective and investigative functions of criminal justice, policing, accident, insurance and workers' compensation fields (Lynch 1993). Birk (1992) reports the development of forensic nursing roles in such diverse practice areas as accident and emergency and child care to collect photographic and material evidence from patients with signs or behaviours which might identify them as victims of crime or abuse. The highly specialised roles of forensic nurse coroner, death investigator, legal nurse consultant and even nurse attorney are also identified in the literature of forensic nursing (Dunn et al 1996; Lynch 1993).

An increasing demand for forensic nursing skills

A strong theme of the literature is that of an increasing demand for forensic nursing skills and experience by both publicly funded and private sector health service providers, correctional and criminal justice agencies (Maeve 1997; Peternelj-Taylor and Hufft 1996). Birk (1992) also reports a demand by hospitals for 'forensically educated nurses' (p.9) to identify, report and implement specialised interventions in cases involving sexual assault, child abuse, domestic violence, violent crime and addiction. While some nursing commentators (Lego 1995; Peternelj-Taylor and Johnson 1995) concede that this phenomenon is demand-driven, there has been no consensus reached in terms of its causes. Peternelj-Taylor and Johnson (1996) verify that 'the evolution of this specialty within nursing has seen forensic nurses providing the same standard of health care as to the community at large' (p.23). Most authors hold divergent views as to how this has occurred. However, the increasing demand for forensic nursing skills has been incrementally

linked to social and political changes in the way in which society's intentions towards its criminal elements are delivered (Drake 1998; Maeve 1997; Paskalis 1993; Maeve 1997). A hardening of community attitudes towards crime and punishment issues (Maeve 1997), the introduction of 'truth in sentencing' legislation (Lego 1995) and a willingness on behalf of the judiciary to hand down harsher prison sentences (Drake 1998; Osborne 1995) have all been identified as precipitating a crisis of overcrowding in the prisons of most developed nations. There is also a tendency to move away from the rehabilitation ideal in favour of a desire to punish or simply incapacitate the imprisoned offender as part of broader ideological changes in correctional and criminal justice philosophy. This has been cited by nursing commentators as fuelling the rapid expansion of prison building programs to accommodate the exponential growth in prison inmate numbers (Lego 1995; Paskalis 1993; Carmody 1988).

There is a strong conviction in the nursing literature that the ongoing responsibility of governments to meet their international treaty obligations to provide equitable and accessible standards of health care to prisoners has ensured a growing need for better correctional health services. An essential component has been identified as an incremental demand for specialised forensic nursing skills. This has been recognised as an essential requisite in meeting the health care needs of an incarcerated offender population which is elemental in its representation of those groups in society which are increasingly identified as the victims of social inequity and economic causation (Maeve 1997; Osborne 1995; Jenkins 1993).

The rising demand for forensic nursing skills has also been directly attributed to the disproportionate representation of the consumers of traditional mental health services in the correction and criminal justice system (Lego 1995; Caplan 1993; Hennakem 1993; Bernier 1991). For some commentators, as psychiatric hospitals have closed, prisons have simply taken their place as a repository for the mentally disturbed (Lego 1995; Paskalis 1993). Australian authors (Hennakem 1993; Paskalis 1993; Carmody 1988), while acknowledging the implications of this trend for nurses, are quick to point out that no direct correlation has been established in this country between the de-institutionalisation of the long-term mentally ill and their incarceration rates in the nation's prisons. Others, however, have been more forthright in their condemnation of de-institutionalisation as a policy when arbitrarily applied by governments. The Canadian Nurses Association (1995) has labelled the over-representation of the mentally ill in incarcerated inmate populations as 'the criminalisation of the mentally ill' (p.8). While the long-term verdict of nurses on the policy of de-institutionalisation is not yet in, United States nursing

authors have been emphatic in identifying prisons as 'becoming the 1990s' state psychiatric hospitals' (Lego 1995 p.174). Other nursing commentators have been quick to juxtapose the outcomes of de-institutionalisation of the long-term mentally ill and the decreased tolerance of society towards crime and deviant behaviour; an ethos resulting in the political expediency of harsher punishments, more prisons and subsequently more need for forensic nursing skills (Dunn et al 1996; Osborne 1995; Burrow 1993; Scales et al 1993).

By contrast, Peternelj-Taylor and Johnson (1996) view the rise of forensic nursing as having 'evolved as a consequence of increased violence, a major public health problem in North America' (p.23). Dunn et al (1996) have identified a national trend towards criminal justice issues in United States jurisdictions which has led nurses to increasing contact with forensic patients. The United States', having the highest incarceration rate in the world, currently has 1.6 million of its citizens in prisons or correctional institutions (Maeve 1997). Lego (1995) points to a range of other factors which have increased demand for forensic nursing services including racial bias in sentencing, mandatory incarceration for drug-related offences and the nature of maximum security prisons which have transformed death row into the 'back wards' (p.173) of the new millennium. In an Australian context of practice, increasing homelessness and incarceration rates of the long-term mentally ill have also resulted in an increasing demand for nurses with forensic experience.

A conviction of specialisation and a sense of 'uniqueness'

The literature of forensic nursing reveals two recurrent and interdependent themes; a conviction on the part of forensic nurses that their practice is highly specialised and a sense of 'uniqueness' in relation to its distinctive nature. In the early 1980s Lehman (1983) described the Canadian prison nursing experience as 'unique' (p.38), a view predicated on the duality of security considerations and the 'obscure' (p.38) locus of practice. Gulotta (1987) identifies a 'unique role' for nurses emerging internationally in the correctional setting (p.3). Scales et al (1993) go so far as to identify the existence among nurses who work in the whole criminal justice continuum of 'a palpable sense that their practice is unique' (p.40). The 'uniqueness' of forensic nursing practice is also verified by other commentators (Burrow 1993; Hennakem 1993; Fontes 1991; Felton et al. 1987; Niskala 1986), Hennekam (1993, p.1) describes prison nursing care as delivered in a 'unique situation'.

In the literature this notion of the uniqueness of forensic nursing practice is based on a number of distinguishing factors. These include the distinctive clinical presentation of health breakdown in the forensic

environment (Petryshen 1991), the high prevalence of certain types of morbidity in forensic populations (Hufft and Fawkes 1994) and the omnipresence of uniformed custodial staff and their ethos of correction in the practice setting.

The notion of specialisation is also strongly evident throughout the published accounts of forensic nursing. In the 1980s Niskala (1986) identified nursing practice in forensic settings as requiring 'specialised skills', (p.410) while Abeyta-Phelps (1983) concedes prison nursing practice as having 'challenged and expanded her clinical skills audit' (p.48). Having initiated the debate in an Australian context of practice over a decade ago, Carmody (1988) identified forensic nursing as 'a postgraduate specialty that nursing professionals in other parts of the world aspire to as a means to excellence' (p.1). The conviction of specialisation is broadly based on a widely-held view that forensic nurses call upon a specialised body of nursing knowledge that reflects the distinctive nature of their practice arrangements. Carmody (1988) asserts that the interface of nursing science and the criminological aspects of forensic practice produces a 'unique body of knowledge' (p.3). Specifically, Lynch (1993) maintains that forensic nursing 'constructs its own theoretical models in terms of its inter-relationships with other disciplinary bodies of knowledge including law, criminology and corrections' (p.1) while Brown (1992) delineates forensic nursing skills as distinct from nursing's 'common body of knowledge' (p.90). Paskalis (1993) identifies the need for forensic nurses to have, at the very least, a conceptual understanding of the complex relationship between morbidity, criminality and inpatient behaviour to survive professionally in the forensic setting. Dunn et al (1996) identify forensic nurses as having both the knowledge and skills to ensure balance in the treatment of offenders, and to 'create bridges between the health and criminal justice systems which are sometimes at odds' (p.372).

The forensic nursing literature also alludes to skills and procedures which are distinctly unfamiliar to nurses practicing outside the criminal justice system. These include determining competence to stand trial (Dunn et al 1996); pre-release, pre-sentencing and parole reports (Paskalis 1993); and a range of security functions including preventing contraband substances from entering the practice setting (Burrow 1993). While the literature does not offer any detailed descriptions of these forensic nursing functions, they are indicative of the specialised tasks associated with practice in correctional and secure settings.

Published accounts of forensic nursing practice are also significant in their commentary on the identifiable personal qualities required of forensic nurses. Dopson (1988) testifies that 'it takes special qualities to wear the

prison service uniform in very secure conditions' (p.37). Day (1983) calls for 'special qualities to deal with the unique environment of the correctional institution' (p.35) and Abeyta-Phelps (1983) for no less than 'a special mental attitude, fortitude and understanding' (p.48). Peternej-Taylor and Johnson (1995) identify nurses who, through their own volition, practice within the correctional environment as professionals who 'dare to be challenged' (p.17). Lego (1995) indicates that 'it would not be possible for a nurse to practice in the forensic setting without a thorough understanding of shame, guilt, frustration, rage and narcissism' (p.173). A high degree of autonomy in clinical judgment, a genuine concern for the welfare of offenders and clarity of personal and professional goals are also cited as inducing nurses to practice in forensic settings. (Drake 1998; Maeve 1997; Caplan 1993; Macdonald and Grogan 1991).

Recognition, emergence and role development

The nursing literature of the last two decades reveals a process of gradual but definitive change in the manner in which forensic nurses not only view the nature of their practice, but also their position within the correctional and criminal justice continuum. The nursing literature of the 1980's reports forensic nurses generally protesting the under-development of their role and the general lack of recognition accorded them, both within prison systems and by the nursing profession itself (Bernier 1991; Gulotta 1987; Niskala 1986; Alexander-Rodriguez 1983; Day 1983). Carmody's (1988) use of the colourful Australian metaphor in alluding to forensic nursing as the 'dag' on the sheep of public health care exemplifies the protest of this group of nurses at the impoverished status their practice had been conventionally accorded.

More recently these sentiments have galvanised the beginnings of a call to action by forensic nurses for not only greater recognition of their specialised role, but a greater say in the operational priorities of the correction and criminal justice system. Brown (1992) described forensic nurses as an occupational group 'requiring role development', calling on them to 'enhance the specialist concept and improve their profile' (p.90). Burrow (1993) cites the 'Official Secrets Act' type provisions of many governments as having 'prevented a more liberal and comprehensive discourse of professional nursing matters in this field' (p.39) but predicts the emergence of forensic nursing as a recognised specialty with their gradual abolition. While conceding that historically the role of nurses in prisons was limited, Fraser (1994) has demanded Canadian forensic nurses have a greater recognition for the consistency of their contribution to the health care and rehabilitation of incarcerated offenders and, indirectly, the welfare of the community itself. Drake (1998) makes the salient point that although historically forensic nurses have always cared for 'under served populations' (p.41), the

rapid growth of imprisoned populations and their need for specialised care justifies a greater recognition of the role of forensic nurses by the nursing profession itself.

The problematic nature of prison forensic nursing practice and practice arrangements

A significant preoccupation in the published literature of forensic nursing is the problematic aspect of the provision of quality nursing care in practice environments that are both distinctive and challenging. In an Australian context of practice, Carmody (1988) identifies problems in forensic clinical and administrative areas as 'peculiar to a correctional environment' (p.2), but does not elaborate. In identifying the often paradoxical nature of the oral and experiential traditions of prison forensic nursing, Maeve (1997) indicts the 'distorting and perverting effect prison systems have on the practice of nursing' (p. 495), going so far as to identify caring, the definitive core phenomenon of nursing as 'expressly denied' (p.507) in prison nursing practice.

The prison forensic practice environment itself is variously described in epithets ranging from 'perverse' (Maeve 1997 p.1), 'deprived and hostile' (Peternelj-Taylor and Johnson 1995 p.1), to 'Orwellian' (Paskalis 1993 p.1). It is of some concern that authors identify it as a place where violence and manipulation are inherent, and where failure to muster the 'ability to endure and triumph' is for the nurse 'to fall by the wayside as a victim, or to become an accomplice' (Peternelj-Taylor and Johnson 1995 p.13).

The concerns of prison-based forensic nurses expressed in the literature centre upon a number of salient themes. These include the often isolated nature of forensic nursing practice; the pathogenic influences of the forensic environment on client behaviour and the quality of nurse patient relationships; the stigma of caring for society's failures, and the sense of isolation associated with working in custodial institutions. The other singular most pervasive theme in the literature of forensic nursing is the intrusion of the operational priorities associated with the ethos of correction and criminal justice and its impact upon the therapeutic goals of nursing and nursing practice values (Maeve 1997; Burrow 1993; Hennakem 1993; Paskalis 1993). For most nursing commentators this has resulted from a historical legacy of dual administrative responsibility shared by criminal justice agencies and health service providers in prison systems, and the subsequent presence of custodial officers in the forensic treatment setting (Maeve 1997; Peternelj-Taylor and Hufft 1997; Carmody 1988).

Forensic nursing and the legacy of history

The literature is emphatic in its conclusion that the continued presence and historic role of forensic nursing within the correctional and criminal justice system is the product of the evolution of prison medical services, as

societies attempt to prevent outbreaks of infectious disease in its incarcerated offender populations. Carmody (1988) and Drake (1998) insist that nursing as a profession has not simply moved into and found a place for itself in prisons, but has become an integral part of the administration of correction and criminal justice within the prison system. Paskalis (1993) maintains that the provision of forensic nursing care to incarcerated offenders began inside the prison and essentially remains there. This has resulted in practice environments where uniformed prison officers, security or custodial staff are omnipresent. For some authors (Maeve 1997; Hennakem 1993; Paskalis 1993) it has also resulted in practice arrangements where nursing decisions and professional accountability are subordinate to the operationalised priorities of correctional administration.

A recurrent theme of the published literature is the loss of ownership of their practice by forensic nurses. Paskalis (1993) views prison-based forensic nurses having to constantly endure the ideological intrusion of the ethos of correction and criminal justice upon their practice values. For Maeve (1997), nursing in prisons is at best a perpetually negotiated compromise in order to mitigate or accommodate the philosophical priorities of correctional services: compliance, segregation, security, discipline, acquiescence, regulation and order. The literature cites some very poignant examples of these instances. Hennakem (1993) reports of prison officers being able to prioritise or 'cull' patients' requests for health care treatment, and nurses compromising their practice routines by having no alternative but to dispense medication through a trapdoor without visibly seeing the patient; any physical contact with patients being at the discretion of custodial staff. Other nurses report being continually subject to requests from prison officers to administer psychotropic and other sedative medications to prisoners for aggressive or antisocial behaviour in the absence of mental illness.

Forensic nurses writing about their practice (Keaveny and Zauszniewski 1999; Maeve 1997; Peternelj-Taylor and Johnson 1995) express the conviction that the attitudes and actions of custodial staff often reflect an arbitrary view of prisoners as incorrigible and recidivist. This negative attitude of prison officers circumscribes any constructive engagement by nurses with their prisoner patients, and can lead to prison officers questioning the validity of any nursing intervention which they view as going beyond that of the simply deterrent or punitive. Authors (Drake 1998; Maeve 1997; Paskalis 1993) also report that nurses are constantly exposed to the negative and often critical rhetoric of prison officers. The expressed attitudes of custodial officers to prisoner inpatients often reflects a despairing or frustrated sense of cynicism; an ad hoc amalgam of reformist, punitive or antithetical views (Paskalis 1993). Carmody (1988) maintains that prisoners are simply labelled by custodial officers as deceitful and

delinquent by nature; their incarceration itself being a validation of this view. The failure of prisoner inpatients to respond to nursing interventions is deemed by prison officers as indicative of a form of ingratitude. In the same way, a prisoner patient's relapse or recurrent illness is seen as recidivism or re-offending (Maeve 1997). Additionally, any form of psychiatric symptom shown by a prisoner attracts a derogative label of mental illness from prison officers. Nurse authors attest that this attaches considerable stigma to the mentally ill offender within the prisoner subculture and ensures a degree of ostracism from peers: an additional source of prejudice which nurses must attempt to ameliorate (Lego 1995; Bernier 1991).

While some commentators (Maeve 1997; Hennakem 1993; Galindez 1990) go so far as to advocate an organisational disengagement of prison nursing services from corrective services administrative control, others continue to insist that the dually administered prison treatment setting is still capable of furnishing the tangible means to achieve therapeutic outcomes to nursing interventions (Burrow 1993). Drake (1998) reports feeling 'secure' in the presence of custodial officers, seeing their presence in the practice setting as maintaining both 'structure and order' (p. 46). Carmody (1988) goes so far as to suggest that the presence of custodial staff in the forensic nursing practice environment generates instances where uniformed officers can provide positive role modelling and therapeutic interactions which complement and support nursing interventions.

Calls for a reconstruction, or at least some form of re-negotiation, of practice arrangements are part of a wider demand in the literature for forensic nurses to play a greater role in bringing about much-needed reform in the criminal justice system (Osborne 1995; Abeyta-Phelps 1983). While Lego (1995) asserts that forensic nurses 'bring humanity and reason to forensic settings' (p.173), Carmody (1988) testifies to an 'unshakeable belief that nurses can be instrumental in bringing about reform in correctional health care' (p.2).

A challenging client population

The published forensic nursing research reveals that forensic inpatient populations have distinctive characteristics that impact on the treatment environment and on the provision of nursing care (Keaveny and Zauszniewski 1999; Caplan 1993; Paskalis, 1993; Abeyta-Phelps 1983).

The evidence strongly suggests that despite the fact that prisoner inpatient populations are comprised predominantly of young males and females under the age of forty, morbidity and mortality in terms of chronic lifestyle diseases and mental illness are significantly higher than in non-prison populations (Maeve 1997; Paskalis 1993; Petryshen 1991). While many persons enter custody with a history of psychiatric disturbance, nursing

authors report that others experience their first episode of mental illness in prison (Caplan 1993; Carmody 1988; Hennakem 1993; Paskalis 1993; Carmody 1988; Abeyta-Phelps 1983).

From the nursing literature it would seem that a significant proportion of offender inpatients display behaviours associated with severe personality disorder, depression and psychotic type illness (Drake 1998; Maeve 1997; Peternelj-Taylor and Johnston 1996). Nursing commentators also report that within forensic inpatient populations drug and alcohol dependency are almost pandemic, with many clients requiring detoxification upon entry to prison and continuing to abuse mood-altering substances while incarcerated (Drake 1998; Paskalis 1993; Carmody 1988). Forensic nurses (Maeve 1997; Brown 1992; Petryshen 1991) report that in the overcrowded, less than optimal conditions of the prison, inpatient behaviours can present a range of professional challenges. Examples cited include constant harassment of nursing staff by prisoners for sedatives or analgesia for complaints of headache, anxiety, depression insomnia or other somatic distress. This often occurs in a climate of stress, tension and exasperation.

Authors also concede that failure to respond in a salutary fashion to inpatients' vague, generalised or poorly-defined complaints of somatic distress can lead patients to perceive nurses' clinical judgements as partisan and aligned with the punitive responses of the custodial staff (Maeve 1997; Paskalis 1993).

The 'isolation' of forensic nursing

A persistent theme in the literature of forensic nursing is that of 'isolation'. Paskalis (1993) reminds us that prisons are built for both geographical and symbolic isolation and Wilton (1992) identifies prison forensic nurses as 'physically isolated, either in their location within the gaol or remote locations which are on occasions completely inaccessible' (p.50). As Carmody (1988) points out, society neither wishes to see nor necessarily hear from those it employs to care for its offender elements 'out of sight and out of mind'. Despite being in a crowded and highly structured environment where all movement is regulated and every activity scrutinised, a number of authors testify to personal sense of isolation attached to forensic nursing practice (Burrow 1993; Hennakem 1993; Brown 1992). Some commentators have identified that they feel subject to the same restrictions as their patients, citing the use of locked perimeters, watchtowers, monitors and the artifice and technology of surveillance as compounding a sense of diminution and isolation (Drake 1998; Maeve 1997). Others link this very feeling of isolation in a crowded workplace with a sense of personal powerlessness in the face of a monolithic and impersonal criminal justice system embodied in the architecture and design on the prison practice setting (Paskalis 1993; Hennakem 1993).

Forensic nursing authors have also described themselves as isolated both socially and professionally because of the 'hidden' (Carmody 1988, p.1) nature of their practice, citing that society only wants those it pays to deal with its problematic elements to develop further techniques to treat and contain them. The theme of isolation is further pursued by Brown (1992) in terms of the historical insularity of forensic nursing, traditionally delivered within the closed, secure and indeed secretive world of the prison or institution and 'outside the mainstream of the nursing profession' (p.1).

Prison sub-culture and the unique influences of the correctional milieu

The nursing literature reveals that while some prisoners adapt reasonably well to the rigours of incarceration, others suffer tangibly or struggle visibly with their adjustment to the correctional environment (Keaveny and Zausniewski 1999; Bernier 1991). A confounding element of the forensic nursing practice environment is the omnipresence of a powerful, all-subsuming prison subculture with its own nihilistic values, distinguishing roles and secretive codes of behaviour (Burrow 1993; Paskalis 1993; Carmody 1988).

The literature reveals that much of the antipathy directed toward nurses by prisoners results from measures to maintain status within the prisoner sub-culture (Drake 1998; Paskalis 1993; Carmody 1988). Forensic nurse authors (Peternelj-Taylor and Johnston 1996; Burrow 1993; Phillips 1983) complain that regardless of the level of commitment, concern and professionalism shown; a proportion of clients remain uncooperative, unconcerned or subversive with treatment goals. For Paskalis (1993), inpatients' awareness of the limited capacity of the prison system to respond to their antipathy or passivity leads them to perceive nurses as vulnerable, visible and convenient representations of authority as embodied in the criminal justice system.

Similarly, the literature reveals that nurses' counselling or psychotherapy interventions are often identified by forensic clients as 'brainwashing' (Carmody 1988, p.3). It is evident that despite good will and professionalism, many offender inpatients view cooperation, self care and initiative in meeting nursing treatment goals as a form of collaboration with a system of enforced oppression. For some authors (Paskalis 1993; Carmody 1988) the propensity for prisoners to deem any form of nursing intervention as conspiring against the dignity of the individual, results in nursing interventions being disputed as either hypocritical palliatives or measures of repressive control.

CONCLUSION

The literature of forensic nursing is distinguished by a number of recurrent themes including a strongly held conviction that its practice is both unique and highly specialised. Many forensic nurse authors feel that their role within the criminal justice system deserves, and is now gaining, a greater degree of recognition by the nursing profession as an emergent specialty area of practice. These views are predicated upon the distinctive nature of forensic nursing practice and practice arrangements. It is evident from an exploration of the literature that forensic nurses have expanded the limits of their roles to make a professional contribution at many points on the criminal justice rehabilitation continuum, both in institutions and in the community.

A preoccupation in the literature remains the problematic aspects of delivering quality nursing care to incarcerated offender and forensic populations. Salient issues of concern identified by forensic nurse commentators include the isolation felt by many forensic nurses, the presence of custodial staff in the prison treatment setting, and the influences of the inpatient subculture and other forensic milieu factors upon nursing practice. Although this area of nursing has attracted only scant research attention to date, the diversity and professional challenges of forensic nursing practice revealed in the literature would seem to offer many interesting opportunities for future nursing research.

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LATEX SENSITIVITY AND ALLERGY: RAISING AWARENESS IN AUSTRALIA

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ABSTRACT

Natural rubber latex allergy is a public health issue that is yet to be addressed in many Australian hospitals. It is suggested that there is a widespread lack of awareness amongst hospital staff of the implications of this relatively new health problem. Natural rubber latex allergy is a cumulative, serious and incurable occupational health problem and a disabling disease. It can result in chronic illness, disability, loss of career and even death, for nurses and other health professionals. The serious risk that natural rubber latex allergy presents to staff health and patient safety, requires that hospital-wide strategies be developed to address the prevention and management of this condition as a matter of urgency. An overview of the problem of natural rubber latex allergy is presented, and strategies for addressing it suggested. The need for further research into the scope of the problem in the Australian context is emphasised.

INTRODUCTION

The terms 'latex allergy' and 'latex sensitivity' are used to describe an allergy or sensitivity to natural rubber latex, the sap of the Brazilian rubber tree, *Hevea brasiliensis* (Moore 1995). Proteins which occur naturally in rubber tree sap are thought to be allergens (Schilling 1994) and the etiologic agents for sensitisation (Groce 1996a p.172). These proteins are present in products manufactured from natural rubber latex. Chemicals added in the rubber manufacturing process (mercaptobenzothiazole, thiurams and carbamates) may also cause hypersensitivity and allergic contact dermatitis (Sussman and Beezhold 1995 p.44) and a causal relationship between powder added to natural rubber latex gloves and irritation, contact dermatitis and allergy development has also been established (Food and Drug Administration 1997).

Types of allergy to natural rubber latex

Reactions to natural rubber latex products have been categorised into three types, the most common of which is irritation, a non-allergic condition, characterised by dryness and crustiness and which resolves on cessation of contact (Moore 1995). There are two types of allergic reaction to natural rubber latex products: delayed hypersensitivity (type IV) and immediate hypersensitivity (type I) (Sussman and Beezhold 1995 p.43).

Delayed hypersensitivity (Type IV - allergic contact dermatitis)

Delayed hypersensitivity is the most common immunologic response. It is an allergy to chemical additives in natural rubber latex which presents as allergic contact dermatitis, initially characterised by vesicular lesions which develop a thickened, crusted appearance with continued contact (Sussman and Beezhold 1995 p.44). In latex glove wearers, this characteristically affects the glove-exposed areas, with swelling, redness, pruritis, skin cracking and eczema usually occurring within 48 hours of exposure (Potter undated). This reaction is not usually systemic, however skin cracks predispose to

further sensitisation to latex proteins, and contact dermatitis can accompany an immediate hypersensitivity reaction.

Immediate hypersensitivity (Type I)

Immediate hypersensitivity reactions are mediated by latex-specific immunoglobulin-E and may present as contact urticaria, occupational asthma, rhinoconjunctivitis, or anaphylaxis (Sussman and Beezhold 1995 p.44). Immediate hypersensitivity reactions may result from contact with, or inhalation of, latex proteins.

Sensitisation

The amount of latex exposure required to produce sensitisation or allergy is not known (Centers for Disease Control and Prevention 1997), however it has been suggested that cumulatively prolonged exposure to latex increases risk of sensitisation (Reddy 1998). Progression occurs from localised reactions such as contact urticaria, to systemic anaphylactic reactions, though the relationships between dose and response in exposure, sensitisation and allergic reactions have not been fully established (Leung 1998). Intraoperative anaphylactic shock has, however, been reported in individuals with no previous adverse reaction to latex exposure (Pasquariello et al 1993 pp.983-986) and positive correlation between duration and frequency of exposure to natural rubber latex and latex allergy has been suggested (Leung 1998).

Risk factors in the health care setting

A wide range of products are manufactured from latex including many household objects such as balloons, rubber bands, elastic and condoms (Reddy 1998). Exposure to latex allergens in the health care setting is largely through the use of latex gloves and latex-containing medical products including (among many others) adhesive tapes, urinary catheters and wound drains (Reddy 1998). Exposure to latex allergens is not limited to contact as latex proteins adhere to the cornstarch powder used in latex gloves and become airborne when gloves are donned or removed, generating an allergenic aerosol (Food and Drug Administration 1997). One study has suggested a threshold air level of $0.6\text{ng}/\text{m}^3$, above which, symptoms in latex allergic individuals are induced (Baur et al 1998 p.25). This study found concentrations of latex aeroallergens of between 0.4 and $205\text{ng}/\text{m}^3$ in air samples taken in 30 rooms of different hospital units and two doctors' offices and reported a significant association between latex allergy symptoms and latex aeroallergen concentration (Baur et al 1998 p.25).

Latex allergy caused by indirect exposure to latex aeroallergens has also been reported in a hospital administrative employee, who had never worn latex gloves (Vandenplas et al 1996 pp.452-453). Exposure (both direct

and indirect) to latex gloves thus constitutes a significant risk factor in the development of latex allergy among workers in health care settings.

Disruption to the skin barrier

It is thought that disruption to the skin barrier, such as occurs in individuals with hand dermatitis, may predispose them to developing latex allergy (Sussman and Beezhold 1995 p.43). According to Bernstein (1997 p.1911) 'Primary cutaneous sensitization occurs via solubilization by sweat of proteins that leach from gloves to the skin and could be facilitated by a disruption in the skin barrier.'

Other risk factors

Atopy

A history of atopy (predisposition to allergy) is thought to increase the risk of developing latex allergy (Santos et al 1997 p.1543; Slater 1997; Centers for Disease Control and Prevention 1997). One study has reported that 77% of individuals with latex allergy had a history of atopic illness (Taylor and Praditsuwan 1996 p.266) and another has reported that 100% of individuals with positive latex skin tests were atopic to common allergens (Leung 1998). In this latter study, a relationship between atopy and symptoms of latex allergy was not demonstrated (Leung 1998).

Cross allergies

Cross allergies with many fruits, including banana, avocado, chestnut, potato, tomato, peach, papaya, fig and kiwifruit have been reported (Beezhold et al 1996 pp.416-422; Sachs 1996 p.324; Blanco et al 1994 pp.309-314; Crisi and Belsito 1993 p.248; Fernandez de Corres et al 1993 pp.35-39; Rodriguez et al 1993 pp.31-34) and can be responsible for significant, life-threatening anaphylactic reactions (Kurup et al 1994 p.215; Lavaud et al 1992 pp.492-493).

Multiple surgical procedures

Individuals who have undergone multiple surgical procedures, especially myelomeningocele patients and those with urogenital abnormalities, are at high risk of sensitisation with prevalence possibly as high as 60% due to cumulative exposure to latex products (Reddy 1998). Intraoperative anaphylaxis without prior evidence of reaction to latex has been reported in patients who have undergone multiple surgical procedures (Pasquariello et al 1993) and is particularly concerning.

Epidemiology

Although dermatitis related to wearing of rubber gloves was identified as early as 1933 (Downing 1933 pp.196-

198) the first report of an allergic reaction to natural rubber latex was published in 1979 (Nutter 1979 pp.597-598). Subsequent to this report, only a few isolated cases were reported until the early 1990's when reports of latex-sensitivity and allergy increased markedly (Groce 1996a, p.170). It is widely thought that the advent of human immunodeficiency virus (HIV) in the 1980s, and the subsequent introduction of universal precautions, which markedly increased the use of latex gloves in the health care industry, may have contributed to a sharp rise in latex allergy (Reddy 1998; American Association of Occupational Health Nurses 1997; Bernstein 199 p.1911; Centers for Disease Control and Prevention 1997; Moore 1995; Sussman and Beezhold 1995 p.43). Changes in manufacturing processes, which may have resulted in lower quality and perhaps higher protein concentrations in products as manufacturers struggled to meet surging demand in response to the institution of universal precautions, are also thought to have contributed (Landwehr and Boguniewicz 1996 p.306; Moore 1995; Sussman and Beezhold 1995 p.43). By the end of 1992, the American Food and Drug Administration had received some 1000 reports of allergy and anaphylaxis and 15 anaphylactic deaths associated with the use of medical devices/products derived from latex (Schilling 1994). This figure had increased to over 1500 reports by August 1997 (Food and Drug Administration 1997).

Incidence and prevalence of latex sensitisation and allergy

Although a number of studies have reported the prevalence of latex sensitisation and allergy, the incidence of latex sensitisation is generally not known (Sussman et al 1998 p.171). One prospective study has reported an estimated incidence of sensitisation in hospital personnel using latex gloves of approximately 1% in a one-year period, although reductions in glove protein concentration during the study period may have influenced these results (Sussman et al 1998 p.178). The prevalence of latex sensitisation and latex allergy varies among populations studied and testing methodologies utilised. The following have been reported in the literature:

- Australia - 9% prevalence of latex hypersensitivity among dental workers in a Sydney dental school (Katelaris et al 1996 p.713).
- Canada - 12.1% prevalence of latex sensitisation among latex glove users in a Canadian hospital (Sussman et al 1998 p.172).
- Hong Kong - 6.8% prevalence of skin test positivity to latex extracts among health care workers in a large teaching hospital (Leung 1998).
- United States – estimated rates of latex allergy of less than 1% in the general population, 5% to 17% among

health care workers and 30% to 60% among patients with central nervous system malformations (Santos et al 1997, p.1544) have been suggested.

Latex allergy in Australia

While reports of sensitivity and allergy to latex caused alarm in the United States in the early 1990s, this condition is only just beginning to receive wider attention in Australia. Although the Australian Therapeutic Goods Administration (TGA) first issued information on latex allergy in 1994 (TGA 1994) and reissued warnings in 1996 (TGA 1996), the first Australian study of latex allergy was not published until 1996 (Katelaris et al 1996 pp.711-714). Despite TGA recommendations that suggested the best strategy to prevent latex sensitisation in staff and patients is avoidance of latex-containing devices and the use of non-powdered gloves (TGA 1996), powdered latex gloves remain commonplace in Australian health care facilities. However it is evident that latex allergy is beginning to receive wider attention in Australia. Significantly, following an extensive consultation process, the New South Wales Health Department has recently released a policy framework and guidelines for latex allergy prevention and management in NSW public health services (NSW Health 2000).

Management of latex allergy

Currently, the only effective treatment for latex allergy is avoidance of natural rubber latex (Landwehr and Boguniewicz 1996 p.310). However, the need to avoid all sources of latex has a dramatic and drastic impact on the individual's life (Free 1998 pp.42-43; Groce 1996b p.174) as it is estimated that natural rubber is present in over 40,000 products (Groce 1996a p.172). Total avoidance of such an enormous range of common articles can lead to an inability to leave the home, to work, or even socialise and individuals who have latex allergy can be so severely affected that they become confined to their homes, suffering social isolation, loss of career and financial hardship. Preventing sensitisation and subsequent allergy development also requires that exposure to latex allergens be minimised, though it is recognised that with the vast range of products that contain natural rubber latex, this can be very difficult to achieve.

Latex allergy in the Australian hospital setting

Although diagnosis of contact urticaria due to latex allergy has been reported by Australian hospital staff (albeit infrequently), powdered latex gloves remain in common use in Australian hospitals and continue to pose a significant risk to staff and patient health and safety. It is suggested that Australian hospital staff are largely unaware of the significant threat that repeated exposure to natural rubber latex allergens poses to personal health, patient health and individual careers.

Prevalence

Determining the prevalence of latex sensitivity or allergy among hospital staff is difficult, as occupational health and safety incident classification systems may not lend themselves to reporting or monitoring this condition. 'Cause of injury' categories in occupational health and safety reports relating to the cause of incidents into which latex sensitivity/allergy may fall may include 'contact dermatitis'; 'skin infection/allergy'; 'recurrence'; 'affected by indoor environment' and 'medical condition'. These categories do not discriminate by causative agent and are poor indicators of the prevalence of this condition. While occupational health and safety incident reports may indicate a problem of minor proportion when considered as a proportion of total hospital staff, it is this author's experience that hand dermatitis in particular, is significantly under-reported by nurses. This seems largely due to a perception that reporting mechanisms are both time-consuming and tedious and a prevailing belief that this condition is of minor significance. For example it is this author's experience that nurses frequently request the supply of alternative glove or hand-washing products without having considered either reporting, or seeking treatment for, hand dermatitis. Unless an alert manager actively encourages the reporting of hand dermatitis when such requests are made, many cases may not be reported.

Implications for hospital staff

Lack of awareness of the potential for development of severe allergy following sensitisation by latex proteins may contribute to dismissal of 'minor' skin irritations, particularly those which resolve over a period of a few days' absence from the workplace. Similarly, lack of awareness of a possible connection between environmental exposure to airborne allergens in the workplace and the development or exacerbation of asthma, may reduce the likelihood of reporting of respiratory complaints. Hospital managers who investigate occupational health and safety issues having only limited knowledge about the nature of latex allergy may implement ineffective strategies for dealing with latex allergic individuals in the workplace.

Implications for hospital patients

Lack of awareness about the nature of latex allergy and hypersensitivity also poses risks for hospital patients. As previously discussed, patients who are at highest risk of developing latex-sensitivity and allergy include current or former health care workers and individuals who have undergone frequent surgical procedures. Exposure to the hospital environment poses a serious threat to the health of latex allergic individuals who must avoid all contact (skin, mucosal and respiratory) with natural rubber latex. It is necessary to provide an environment free of latex aeroallergens and to have available, non-latex alternatives

to all medical products for these patients. As the ability of allergic individuals to avoid sources of latex in the hospital environment is dependent on staff awareness and knowledge of this condition, raising awareness and improving knowledge of hospital staff about latex allergy should be regarded as a matter demanding urgent attention.

Prevention strategies

Latex sensitivity and latex allergy are largely preventable conditions. The following strategies focus on both the primary and secondary preventative measures which can be undertaken in health care facilities to reduce the development of latex-sensitivity and allergy, and minimise the threat that exposure to latex poses to latex-sensitive and allergic staff and patients.

Primary prevention

Primary prevention aims to prevent sensitisation of individuals to natural rubber latex proteins. Achievement of this goal therefore requires that exposure to latex allergens be prevented. While it may be impractical, at least in current circumstances, to prevent *any* contact with latex from occurring, minimisation of exposure is an achievable goal.

Suggested strategies for minimisation of exposure and subsequent sensitisation include:

- Removal of powdered natural rubber latex gloves from all areas of the hospital and replacement with non latex alternatives.
- Decontaminating work areas from latex dust and monitoring latex dust levels.
- Raising staff awareness and knowledge about this potentially life-threatening condition.
- Encouraging early reporting of hand dermatitis and work-related asthma.
- Creating a 'latex allergy task force' with multi disciplinary and hospital-wide representation (Sussman and Gold 1996) to assist both in raising awareness and encouraging 'localisation' of this issue.

Secondary prevention

Secondary prevention aims to prevent the exposure of latex-sensitised and latex allergic individuals to latex antigens (thus minimising associated risks). Suggested secondary prevention measures include:

Development of hospital policies for the management of patients with latex sensitivity or allergy which involve:

- Introduction of systematic pre-operative screening of patients for history of latex allergy and fruit allergy.

- Development of policies for the management of latex allergic patients in all areas of the hospital, especially in high risk areas such as operating theatres, the emergency department, the intensive care unit, and the X-ray department (Sussman and Gold 1996).
- Provision of latex-free equipment for both routine and emergency management of latex-allergic patients.
- Preparation of a compendium of hospital products which contain latex proteins (Sussman and Gold 1996).

Development of hospital guidelines for the protection of latex allergic staff by the:

- Provision of staff education sessions to increase awareness and encourage early reporting of hand dermatitis, allergic reactions and respiratory problems. These should include information on recognising the signs and symptoms of allergic reactions in sensitised individuals and information on allergen transmission mechanisms, including air and touch.
- Refinement of occupational health and safety data collection to enable determination of the prevalence of latex allergy.
- Institution of routine screening for latex sensitivity in workers who report glove-related dermatitis.
- Removal of powdered latex examination gloves and replacement with non-latex alternatives (preferable), or low-protein non-powdered latex examination gloves.
- Cessation of the use of *all* powdered latex gloves in the identified high-risk areas of the intensive care unit, operating theatres, X-ray department and emergency department.
- Decontamination of work areas from latex dust and monitoring of latex dust levels.
- Improved accessibility to non-latex gloves, for use by latex-allergic staff. Access to these supplies should be provided in all areas where gloves are used.

In addition to the measures outlined above, it is suggested that research be undertaken to determine latex sensitisation rates among nurses and other populations of hospital staff, to assist in addressing the Australian research deficit and in determining the extent of this problem in Australian hospitals.

Issues associated with implementation of prevention strategies

Cost is the major issue likely to influence the implementation of prevention strategies. The cost differential between powdered latex gloves and their non-powdered alternatives is significant, as is the cost differential between most latex products and non-latex alternatives. This must, however, be weighed against the

potential costs associated with lost productivity and workers' compensation payments for staff who develop latex sensitivity and allergy through exposure to latex allergens in the workplace, and the risk posed to patients exposed to latex allergens in the hospital environment. Litigation has occurred in the United States, where some health care workers have successfully sued latex glove manufacturers for damages (Asplund 1998; Reuters 1998; Goldstein 1998 p.A12). Although litigation against glove manufacturers is unlikely to impact significantly on a hospital, failure to take steps to provide a safe environment for staff or patients with latex allergy, in an environment of well-documented evidence of association between exposure and life-threatening anaphylaxis, could well leave an organisation at risk of litigation.

Another issue requiring consideration is that of ensuring staff compliance with latex-minimisation strategies. Opposition to removal of latex gloves from hospital supplies may occur among some groups of staff, as powdered latex gloves are thought to have superior comfort, tactile and barrier qualities (Sussman and Beezhold 1995 p.43) on which many health care workers rely. Encouraging the participation of those likely to oppose latex glove removal in a 'latex allergy task force' may assist in raising awareness, localising this issue and encouraging staff to 'buy in' to these strategies.

CONCLUSION

Health care providers have a responsibility to safeguard the health and safety of staff, patients and the public at large. The threat that natural rubber latex allergy poses to the health and safety of patients, staff and visitors alike requires that this problem be afforded serious attention, particularly in the hospital setting. Although total avoidance of latex-containing products is difficult to achieve, minimisation of exposure is achievable if the significance of the risks associated with sensitisation and allergy are recognised. Natural rubber latex allergy is a life-threatening, disabling condition and as such, the need to raise Australian health professionals' awareness about latex sensitisation and allergy should be addressed as a matter of urgency. Strategies aimed at preventing sensitisation and minimising risks for both employees and patients of Australian hospitals should be developed as a matter of priority. Research designed to determine the prevalence of latex-sensitisation among Australian hospital staff would add significantly to an understanding of the extent of this problem in Australia.

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EVENTS AT HOME AND OVERSEAS

AUSTRALIA

MARCH 2001

March 15, 2001 - Sydney NSW

Launch of Alumni Association: Faculty of Nursing, University of Sydney. Membership: current and past staff and students. Associate membership; all members of the profession. Details: Judith Romanini, ph: (02) 9351 0614, email: romanini@nursing.usyd.edu.au, website: www.usyd.edu.au/nursing/pdu

March 15-16, 2001 - Canberra ACT

Explore and experience selected complementary therapies. Faculty of Nursing, University of Sydney. Details: Judith Romanini, ph: (02) 9351 0614, email: romanini@nursing.usyd.edu.au, website: www.usyd.edu.au/nursing/pdu

March 21-23, 2001 - Perth WA

Australian Association of Stomal Therapy Nurses Annual National Conference, *2001 Odyssey Embracing the Future.* Contact: Helen Simcock, ph: (08) 9349 6242, email: helensimcock@bigpond.com

March 29-30, 2001 - Port Macquarie NSW

Inaugural NSW Rural Community Nursing Conference. Contact: Norsesearch Conference Services, ph: (02) 6620 3932, fax: (02) 6622 1954, email: nursecon@scu.edu.au

APRIL 2001

April 26-27, 2001 - Sydney NSW

Advances in clinical assessment and nursing management of surgical patients. Faculty of Nursing, University of Sydney. Details: Judith Romanini, ph: (02) 9351 0614, email: romanini@nursing.usyd.edu.au, website: www.usyd.edu.au/nursing/pdu

MAY 2001

May 2-4, 2001 - Sydney NSW

5th Asia-Pacific Conference on Employee Assistance Programs, incorporating the 4th Alcohol and Other Drugs in the Workplace Conference. Organiser: IPS Employee Assistance in association with EAPA Australian Chapter. Contact John Tutty, IPS Employee Assistance, Level 3, Imperial Arcade, 85 Castlereagh Street, Sydney 2000, ph: +61 2 9221 1166, fax: +61 2 9232 5060, email: johnt@eap.com.au, website: www.eap.com.au

May 9-11, 2001 - Sydney NSW

Royal College of Nursing, Australia National Convention 2001. Contact: Royal College of Nursing, Australia, ph: 1800 061 660, fax: (02) 6282 3565, email: conf@rcna.org.au, website: www.rcna.org.au

May 24-26, 2001 - Brisbane Qld

Paediatric and Child Health Nurses Conference: *The dawn of a new era in children's health.* Contact: Royal College of Nursing, Australia, ph: 1800 061 660, fax: (02) 6282 3565, email: conf@rcna.org.au, website: www.rcna.org.au

JUNE 2001

June 27-28, 2001 - Canberra ACT

Health Outcomes 2001: The Odyssey Advances. Pre-conference workshops 26 June. The Australian Health Outcomes Collaboration. Website: www.health.act.gov.au/epidem/ahoc.html

June 28-30, 2001 - Brisbane Qld

Nursing Education and Employment Conference: *Regroup-Revive-Refocus.* Nursing Careers, Education and Employment Expo: 1 July 2001. Call for abstracts available. Contact: Royal College of Nursing, Australia, ph: 1800 061 660, fax: (02) 6282 3565, email: conf@rcna.org.au, website: www.rcna.org.au

JULY 2001

July 25-27, 2001 - Hamilton Island Qld

International Ethics Conference: *Health Ethics Futures: Multidisciplinary conversations conference.* Preliminary Program available. Contact: Royal College of Nursing, Australia, ph: 1800 061 660, fax: (02) 6282 3565, email: conf@rcna.org.au, website: www.rcna.org.au

AUGUST 2001

August 9-10, 2001 - Cairns Qld

3rd Joint Conference of Infection Control Practitioners Association of Queensland and Queensland Wound Care Association. Contact: ph: +61 7 3858 5538, fax: +61 3858 5510, email: wic01@im.com.au

August 29-31, 2001 - Cairns Qld

51st Director of Nursing Association Qld, (Inc) Conference. Contact: Royal College of Nursing, Australia, ph: 1800 061 660, fax: (02) 6282 3565, email: conf@rcna.org.au, website: www.rcna.org.au

SEPTEMBER 2001

September 13-15, 2001 - Melbourne Vic

2nd Medical/Surgical Nursing Conference. Contact: Royal College of Nursing, Australia, ph: 1800 061 660, fax: (02) 6282 3565, email: conf@rcna.org.au, website: www.rcna.org.au

September 19-21, 2001 - Brisbane Qld

Australian College of Midwives 12th Biennial National Conference. Contact: Tina Ashburner, ph: (07) 3854 1611, fax: (07) 3854 1507, email: tinaa@ozaccom.com.au

OCTOBER 2001**October 11-13, 2001 - Brisbane Qld**

Geriatric National Conference 2001: *Sustaining the changes: Directions in aged care.* Conference Organiser, ph: (03) 9380 1429, fax: (03) 9380 2722, email: conorg@ozemail.com.au

NOVEMBER 2001**November 1-2, 2001 - Canberra ACT**

Women's and Sexual Health Nurses Association 5th National Conference. Contact Susan Pier, ph: (02) 9716 6099

November 14-16, 2001 - Sydney NSW

4th International Neonatal Nursing Conference 2001, *Excellence knows no boundaries.* Contact: Royal College of Nursing, Australia, ph: 1800 061 660, fax: (02) 6282 3565, email: conf@rcna.org.au, website: www.rcna.org.au

OVERSEAS

MARCH 2001**March 9-11, 2001 – Wellington New Zealand**

Renal Society of Australasia National Conference - 2001 *Adequacy and beyond.* Law School, Victoria University. Organiser: Paardekooper and Associates, ph: 0011 64 4568 4576, fax: 0015 64 5684 4563, email: rsa@paardekooper.co.nz

JUNE 2001**June 10-15, 2001 - Copenhagen Denmark**

International Council of Nurses 22nd Quadrennial Congress: *Nursing: A new era for action.* Call for papers, deadline for abstracts 1 June. Contact: ICN, C/O DIS Congress Service Copenhagen A/S, Herlev Ringvej 2 C, DK-2730 Herlev, Denmark, ph: +45 4492 4492, fax: +45 4492 5050, website: www.icn.ch/Congress2001.htm

SEPTEMBER 2001**September 2-7, 2001 - Christchurch New Zealand**

Perioperative Nurses World Conference. Contact AORN, ph: 0011 1 800 755 7981, website: www.aorn.org