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ISSUES AND INNOVATIONS IN NURSING PRACTICE

A trial of nurse practitioner scope of practice

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Aims. The aim of this paper is to report a trial to investigate the feasibility of the nurse practitioner role in local health service delivery and to provide information about the educational and legislative requirements for nurse practitioner practice.

Background. Nurse practitioners have been shown to offer a beneficial service and fill a gap in health care provision. However, the lack of publications describing, critiquing, or defending the way that existing nurse practitioner roles have been developed may lead to a lack of clarity in comparing the nurse practitioner scope of practice internationally. In Australia, credible exploratory research is needed to realize the potential of nurse practitioners to bridge the divide of inequitable distribution of health services. A trial of nurse practitioner services in the Australian Capital Territory provided an excellent opportunity to investigate these scope and continuity issues.

Methods. This was an observational analytic study using multiple data sources. Four models of nurse practitioner service were chosen from a competitive field of applications that were evaluated according to efficacy, feasibility, and sustainability across specified selection criteria. Each model in the trial included a clinical support team, with the nurse practitioner candidate 'working-into-the-role' and collecting demographic, clinical practice, patient outcome, and health service and consumer survey data over a 10 month period.

Findings. The trial identified the broad potential of the nurse practitioner role, its breadth and limitations, and its impact on selected health services in the Australian Capital Territory. Data from individual models were compared highlighting generic elements, and formed the basis for the development of the scope of practice for the Australian Capital Territory nurse practitioner models.

Conclusions. This study has validated a research-based, iterative process for initial development of nurse practitioner scope of practice for any Australian specialization. Importantly, the study concluded with the scope of practice as a finding, rather than commencing with it a priori. Although general areas of health care need and under-servicing

were identified at the outset, the process tested both the expansion and parameters of the roles.

What is already known about this topic

- Nurse practitioners offer a beneficial service and fill a gap in health care provision.
- The nurse practitioner scope of practice varies from country to country.
- Australian nurse practitioners are well positioned to bridge the divide of inequitable distribution of health services not only between metropolitan and rural/remote areas, but also within metropolitan areas.

What this paper adds

- Research-based, iterative processes for development of clinical protocols that define the scope of practice for diverse nurse practitioner models.
- A test of both the expansion and parameters of the roles applicable for any Australian specialization.
- Systems and processes to inform health policy deliberations.

Expanding opportunities for postgraduate specialist education, health service restructuring, and technological advances have all had a significant impact on the nature of the nurse's role and scope of practice and their influence on the health care system. Nurses have embraced these changes and the opportunity they bring for 'extending the frontiers of practice' (Jones & Davies 1999, p. 187) by researching and developing a wide variety of advanced practice roles. Reveley (2001) argues that the consensus gradually emerging is that the nurse practitioner is evolving and developing globally as the most significant of these roles.

Nurse practitioners have been shown to offer a beneficial service and fill a gap in health care provision, both in primary and acute health care sectors. National and international experience demonstrates that they provide a specific service that is highly regarded (Brown & Grimes 1995, Sherwood et al. 1997, Kinnersley et al. 2000, Venning et al. 2000, Horrocks et al. 2002) and in demand (de Leon-Demare et al. 1999, Hand 2001). Nurse practitioner services are demonstrably effective in managing common acute illnesses and injuries and stable chronic conditions with an emphasis on both health promotion and disease prevention (Brown & Grimes 1995, Sherwood et al. 1997, Armstrong 2001, Australian Nursing Federation 2001, Hand 2001).

To date, however, there are few research publications that describe, critique, or defend the way that the various existing nurse practitioner roles have been developed and defined, especially in terms of role expansion and limitation, although the United Kingdom (UK) experience is well described in the final report of the ENRiP project (Read 2001). Even in countries where the nurse practitioner role is well established, there is often difficulty in interpreting its scope of practice, due in part to the broad interpretation of the term 'advanced practice' and its associated range of often confusing nomenclature (Dunn 1997, Hamilton 1998, Offredy & Townsend 2000, Woods 2000). In the United States of America (USA), for example, advanced practice and nurse practitioner roles are moving closer together, while in the UK the nurse practitioner role is not registered and partly coincides with the role of nurse consultant (Manley 1997). McGee (1998) argues that the UKCC (sic) definition implies a

certainty about advanced practice that does not exist, while Castledine (1998, p. 47) states that 'there is no universally accepted definition of a nurse practitioner'.

In Australia, where the nurse practitioner movement is still young, new nurse practitioner roles are similarly dogged by a lack of clarity in describing scope of practice. Australia, however, has entered the scene with different priorities when compared with other countries. For instance, recommendations for accreditation and education of nurse practitioners have been more comprehensive than in programmes developed elsewhere (Chiarella 1998). In addition, the collaborative nature of the nurse practitioner model (Reid 2001) and the importance of maintaining a nursing focus within the role (Chiarella 1998, ACT Government 2002) have been strongly highlighted. Distinctive to the nurse practitioner model in the Australian context is the recognition of 'a range of roles that revolve around a central core of expert clinical nursing judgement' (Hand 2001, p. 19). This range of roles has allowed the development of nurse practitioner models which aim to provide services not only in rural/remote (Hegney 1997, de Leon-Demare et al. 1999) and acute care areas (Reveley 1998), but also to provide care to many under-served groups such as sexual health clients (Hooke et al. 2001). Thus, Australian nurse practitioners are well positioned to bridge the divide of inequitable distribution of health services not only between metropolitan and rural/remote areas, but also within metropolitan areas. Nonetheless, original research reporting Australian nurse practitioner models is limited and so credible exploratory research is needed as a basis for realising this potential.

A trial of nurse practitioner services in the Australian Capital Territory (ACT) provided an excellent opportunity to investigate the scope and continuity issues outlined above. Health programmes in the ACT serve a discrete local population, and accept referrals from south-eastern New South Wales (NSW). Therefore, they must provide a broad range of inpatient, outpatient and community services, as well as specific health programmes to meet the special needs of marginalized groups. Here we report the process and outcome of this trial of practice.

Aims and objectives

The trial aimed to investigate the feasibility of the nurse practitioner role in health service delivery in the ACT. The research objectives were to:

- investigate selected nurse practitioner models according to the dimensions of the role and scope of practice;

- identify the impact of nurse practitioner services in the ACT on health care outcomes specifically in relation to access, safety, and clinical effectiveness;

- identify changes required at the level of education, policy, and legislation in the ACT that would be necessary to incorporate the nurse practitioner level of service delivery into the health care system.

Design

In 2000, a Nurse Practitioner Steering Committee was established to plan and oversee a project to explore the nurse practitioner level of service in the ACT health system. An

observational analytic design was used. The Steering Committee adopted the following definition for use in the trial:

A nurse practitioner is a registered nurse who works within a multidisciplinary team. The role includes extended practice in the autonomous assessment and management of clients, using nursing knowledge and skills gained through postgraduate education and clinical experience in a specific area of nursing. The role may include, but is not limited to, the direct referral of patients to other health care professionals, the prescribing of a designated and agreed list of medications, and the ordering of a designated and agreed list of diagnostic investigations. (ACT Government 2002, p. 11)

Process for trial of practice

There were three stages to the trial:

Selection of nurse practitioner models and candidates

Selection of the four nurse practitioner models and candidates for the trial was, to some extent, separate from the research process, but the criteria for selection were crucial to the successful completion of the study. Each potential model had to demonstrate a well-defined area of health service, including unmet or poorly met needs (demonstrated by letters of support from consumer groups or similar evidence), strong support from a multidisciplinary health care team including a medical practitioner, and a nurse practitioner candidate who had relevant formal education and clinical experience at an advanced level in a specialized area of nursing practice. ('Nurse practitioner candidate' was used to denote the student status of the role in the trial because the title 'nurse practitioner' is protected by legislation in most Australian states.) The four models were chosen from a competitive field of applications that were evaluated according to efficacy, feasibility, and sustainability across these selection criteria.

Trial of practice

The trial of practice process was based on the premise that we did not know, prior to conducting the research, what the scope of practice for a nurse practitioner might be within the potential clinical models. The four models selected were: sexual health with an outreach component; wound care; mental health consultation-liaison; and military primary care. The nurse practitioner candidates were employed by the participating institutions and were essentially 'nurse practitioners in training'. Their week consisted of 4 days of clinical practice and 1 day of structured education. Each worked as a member of a multidisciplinary team that also functioned as the clinical support team. Candidates provided services to their patient group that were an extension to the nursing role as currently determined by legislation. Aspects of the extended role that, at the time, lay outside the ACT's legislative framework for nursing practice (such as prescribing, referral, ordering of diagnostic tests, and some treatments) were monitored, supported, and reviewed by the specific model's clinical support team, with the legal requirements for these services being met by the medical mentor in the team. Whilst they worked within a team, each candidate functioned autonomously. One day every week the four candidates worked with two of the investigators to generate data on the educational requirements of the nurse practitioner role and to participate in formal teaching and learning activities. This aspect of the trial is reported elsewhere (ACT Government 2002, Gardner et al. 2004).

Data collection

All patients seen by the nurse in their capacity as a nurse practitioner candidate gave informed consent for treatment and inclusion in the trial and all clinical activities conducted were recorded as data. Data were collected from each service site over a 10 month period. A generic data set was established incorporating key aspects of nurse practitioner services common across all four models. This data set had commonalities with the format used in nurse practitioner trials in NSW and Victoria (NSW Health Department 1995, Victorian Government Department of Human Services 2000), with a view to contributing to a potential national nurse practitioner database. The data relating to outcomes reported here were:

- 1 demographic data relating to the patients/clients included in and excluded from nurse practitioner services;
- 2 clinical practice review incorporating ongoing formative evaluation of the candidates' skills and ability in (a) assessment and (b) management decisions for intact episodes of care;
- 3 details of therapies, diagnostics, and referrals recommended by the candidates;
- 4 data on patient outcomes including planned and unplanned re-presentation; adverse events; improvement in symptoms/functional status/self-management.

Data from items 2 and 3 informed the development of clinical protocols and medication formularies for each model. Clinical service and consumer satisfaction surveys were also conducted and are reported elsewhere (ACT Government 2002, MacLellan et al. 2002, O'Keefe & Gardner 2003/2004).

Candidates were responsible for generating data from each contact with a consenting patient. Contacts were categorized as either an episode of care (a new consultation for a health-related problem) or a visit (the follow-up consultation generated by the initial episode).

Population and sample size

ACT Health provides health services, including tertiary referral, for over 500,000 people in the ACT and south-eastern NSW. The demographic profile of the ACT is younger than other Australian states and territories but, as in Australia generally, is ageing. Compared with other Australian states and territories, the ACT population has higher than average incomes, the highest educational attendance rate, and the highest national proportion of post-school qualifications (ACT Government 2000). Within this population, the number of potential patient participants was determined by the nature and size of the patient population in each specialty area, the degree to which wider knowledge of the service facilitated referrals, and the constraints of the candidates' clinical timetables. The candidates were employed for 10 months and, appropriate to individual models, patient recruitment was tapered off at the end of the data collection period to enable completion of clinical management and attainment of desired outcomes. The military nurse practitioner candidate component of the trial was discontinued after 9 months, due in part to difficulties in developing the scope of practice within a primary nursing model. These difficulties could not be overcome within the trial time frame. However, the data were an integral component of the trial and are included here.

Patient recruitment process

Information posters and model specific information handouts were developed by the candidates in collaboration with investigators. Any patient who came under the care of a candidate during the course of their nursing work and who gave informed consent to be treated as part of the trial was recruited. This process included recruitment of patients referred from other health professionals, departments and clinical areas. For some models additional patients who did not or could not consent as research participants received care from the nurses in their capacity as advanced practice nurses. Limited data to demonstrate patterns of exclusion were retained.

Ethical considerations

The trial was approved by three human research ethics committees related to the practice sites being investigated. All patients seen by the nurses in their capacity as nurse practitioner candidates gave informed consent for treatment and inclusion in the trial. All patient data were anonymised.

Data analysis

The mixed methods approach to data collection provided a database comprising clinical, demographic, and experiential information. Analysis was iterative and triangulated, informing both generic and model specific dimensions of nurse practitioner roles, services and education. Descriptive statistics were used to identify the processes and outcomes of episodes of care across all models. Data were analysed in order to identify, describe, and categorize changes and extensions to established nursing roles and the impact of these on existing services.

Client data provided a comprehensive picture of the potential population served and the breadth of services delivered. We were able to identify the broad potential of the nurse practitioner role, its breadth and limitations, and its impact on selected health services in the ACT. Data from the individual models are compared highlighting generic elements, and these data form the basis for the scope of practice subsequently developed in the discussion section. Detailed descriptions of each potential model have been reported elsewhere (ACT Government 2002, MacLellan et al. 2002, O'Keefe & Gardner 2003/2004).

Demographic and social findings

Of the 318 patients invited to participate in the trial across the four models, 16 declined to consent, resulting in a total of 302 patients included. Reasons for non-consent included concerns about confidentiality and feeling too ill or distressed. Most patients gave written consent (61%, 185/302) but verbal consent was preferred by many sexual health and mental health patients.

Table 1 provides patient demographics and referral characteristics across the four models. Only one person identified as being of Aboriginal origin. The high percentage of male patients in the military model (84%, 51/61) reflects the predominantly male population of the Australian Defence Force (ADF). The sexual health candidate found language to be a barrier in brothels, where a number of sex workers were from Asian countries and many had little or no command of English. Interpreters were used for consultations with three patients. Forty-six patients (15%, n = 302) were receiving state benefit payments, with the remainder identifying

themselves as students, retired, doing home duties, or 'other' category. The mental health candidate had the highest percentage of unemployed patients (15%, 19/123) and the wound care model recorded the highest percentage of people receiving state benefits (50%, 21/42).

Table 1 Patient demographic and referral characteristics

Characteristic	Mental health <i>n</i> = 123 (%)	Military <i>n</i> = 61 (%)	Sexual health <i>n</i> = 76 (%)	Wound care <i>n</i> = 42 (%)	Totals <i>n</i> = 302 (%)
Sex					
Male	43 (35)	51 (84)	45 (59)	18 (43)	157 (52)
Female	80 (65)	10 (16)	31 (41)	24 (57)	145 (48)
Age (years)					
Median (range)	33 (15–90)	33 (20–54)	28 (18–58)	71 (11–88)	34.5 (11–90)
Patient status					
Public	83 (67)	Not applicable [†]	75 (99)	38 (90)	196 (65)
Private	40 (33)*		0	0	40 (13)
Other [‡]	0		1 (1)	4 (10)	5 (2)
Preferred language					
English	119 (97)	60 (98)	70 (92)	42 (100)	291 (96)
Other	4 (3)	1 (2)	6 (8)	0	11 (4)
Employment status					
Paid work	45 (37)	61 (100)	57 (75)	7 (17)	170 (56)
Other [§]	78 (63)	0	19 (25)	35 (83)	132 (44)
Health service access in last 12 months					
General Practitioner	107 (51)	57 (74)	29 (55)	38 (28)	231 (49)
Specialist Medical Officer	45 (21)	10 (13)	4 (7)	40 (31)	99 (21)
Hospital	28 (13)	3 (4)	2 (4)	27 (21)	60 (13)
Community	27 (13)	3 (4)	3 (6)	20 (15)	53 (11)
Other	3 (1)	1 (1)	11 (21)	4 (3)	19 (4)
Allied health	1 (1)	3 (4)	4 (7)	2 (2)	10 (2)
Total	211 (100)	77 (100)	53 (100)	131 (100)	472 (100)

Location of practice

Each nurse practitioner model operated from a clinical base, with candidates seeing patients from a variety of service areas within those settings. The role of the mental health consultation-liaison candidate was to provide a consultative role to staff and patients in the wards, units, and emergency department of a local community hospital, with most patients in this model being seen in the emergency department (66%, 81/123). The military candidate operated from a military base, providing primary care with health screening and health promotion for ADF personnel. Almost all patients in this model (95%, 58/61) were seen at the base medical centre with additional patients seen in the outpatients department of the local military hospital. The sexual health candidate provided sexual health screening, treatment, and education at a clinic based at the major regional hospital, where 62 patients (82%, *n* = 76) were seen. A major function of this model was to trial a sexual health outreach programme. This candidate held clinics in the central business district and at several brothels. Fourteen patients (18%, *n* = 76) were seen in this outreach programme. The wound care candidate was also hospital-based providing expert wound management care and advice to patients and staff. She also provided postdischarge advice in consultation with medical practitioners and community nurses, and participated in a nurse-led, multidisciplinary wound clinic. The biggest group of patients in this model were seen in hospital wards (48%, 20/42); some were seen as outpatients (36%, 15/42), and the remainder in other hospital departments. Both wound care and mental health candidates followed some patients as both inpatients and outpatients.

Knowledge of service, source of referral, and prior use of health services

Only 51 patients (17%, n = 302) indicated prior knowledge of the nurse practitioner service. Candidates received referrals for 168 patients (56%, n = 302) primarily from other health professionals within the institutions where the candidates were based. The mental health and sexual health candidates also received referrals from general practitioners (GPs) and community health and support agencies. The remaining patients were seen in the setting where each candidate was based.

Most patients in the mental health, wound care, and military models indicated that they had accessed some kind of health service at least once in the 12 months prior to seeing the nurse practitioner candidate. However, only 58% (44/76) of the sexual health model patients had accessed a health service during this period, half of which were GP services.

Consultations

Most patients (96%, 290/302) had only one episode of care, with 11 seeing the nurse practitioner candidate for a second episode and two returning for a third episode. The number of visits per episode ranged from 1 to 17, with 613 visits in total. The pattern of episodes and visits varied across models reflecting each specialty. For example, of the 123 mental health model patients, 120 (98%) attended for one episode only (mean 1.3 visits per episode). The wound care candidate saw fewer patients but, due to complex health care needs, this patient population had a mean of 4.5 visits per episode.

Of the 76 patients seen by the sexual health candidate, 36 (47%) returned for between two and six visits (mean 1.8 visits per episode). One-third had requested sexual health screening requiring a follow-up visit for test results or treatment. The military candidate provided a diverse range of primary health care for conditions ranging from head colds to respiratory infections, sprains, pregnancy advice, and vaccinations. Many patients returned for follow-up visits for test results or treatment (mean 2.1 visits per episode). Duration of consultation across the models varied considerably, from 5 to 195 minutes (median 40 minutes).

Table 2 Pathology requested by nurse practitioner candidates

Pathology	Mental health	Military	Sexual health	Wound care	Total (%)
Microbiology	5	0	140	31	176 (41)
Serology	0	5	168	0	173 (40)
Biochemistry	18	9	10	18	55 (13)
Haematology	6	2	3	6	17 (4)
Other*	6	1	2	2	11 (2)
Total tests per model	35	17	323	57	432 (100)

*Includes cytology

Management process

Nurse practitioner candidates recommended a total of 432 pathology tests for 110 patients (36%, n = 302). The majority were microbiology and serology tests, with the sexual health candidate recommending 75% of all pathology tests (Table 2). The wound care candidate recommended tests for 31 patients (74%, n = 42), predominantly wound swabs for culture and sensitivity. The military candidate recommended pathology tests for 12 patients (20%, n = 61) and the mental health candidate for 9 (7%, n = 123).

Imaging formed a minor component of the nurse practitioner candidate role, with tests recommended for only 20 patients (7%, n = 302). These included bone, computerized tomography, duplex, and Doppler ultrasound scans, magnetic resonance imaging, and plain X-rays. Twelve tests were recommended by the military candidate, reflecting the musculoskeletal injury component of this model.

From these processes, nurse practitioner candidates recommended medications for 188 patients (62%, n = 302). These formed a major component of the military, mental health, and sexual health models but only a minor component of the wound care model (Table 3).

Table 3 Medications recommended by nurse practitioner candidates

Mental health (n = 123)	Military (n = 61)	Sexual health (n = 76)	Wound care (n = 42)
<ul style="list-style-type: none"> • Antidepressants • Anxiolytics • Antipsychotic agents • Sedatives 	<ul style="list-style-type: none"> • Analgesics • Antimalarials • Antibiotics • Non-steroidal anti-inflammatories • Vaccines 	<ul style="list-style-type: none"> • Antibiotics • Antifungals • Antivirals • Topical steroids • Postcoital contraception • Vaccines 	<ul style="list-style-type: none"> • Analgesics • Topical antibiotics • Local anaesthetics • Topical corticosteroids

Referrals were recommended for 151 patients (50%, n = 302), with some having more than one referral. The majority (34%, 103/302) were made to medical specialists; 75 (29%, n = 302) were made to agencies such as mental health services, community nursing, counselling agencies, and the Drug and Alcohol Service. The candidates identified an unmet need for integrated care and a comparative lack of GP consultation when coordinating care.

Clinical reviews and clinical outcomes

Throughout the trial, the support teams undertook clinical reviews of candidates' assessments and management plans for patients. For the 396 completed clinical reviews across three nurse practitioner models, there were only three disagreements (due to termination of the military model before completion of the trial, this section does not include data from that model). No disagreements had severe or serious implications for the patient's treatment. Information about patient outcomes was not always available, and the support teams assessed a total of 185 completed clinical outcomes across the three models. In 15 cases (8.1%), the agreed desired outcome was not achieved. In all cases, the team considered that the circumstances were beyond the control of the candidate concerned, as the following example illustrates:

Nurse practitioner [candidate] recommended admission and medication, which patient and psychiatrist agreed to but then patient refused medication and was discharged by psychiatrist.

Trial of practice

The clinical data were used in two ways to develop the scope of practice for each model. First, on clinical practice days each candidate provided a new type of health service for their patient group. In consultation with their clinical support team, they expanded and extended the boundaries of nursing practice in their field. Over time, this 'working-into-the-role' created the knowledge and processes to define the scope of practice for that particular model.

Second, data relating not only to the clinical service but also to the learning needs and activities were collected. On the clinical study day, candidates participated in focus group work, formal teaching sessions, and individual literature research. While the primary focus for these days was to provide the education required for a nurse practitioner candidate to

function, the process also established conceptually the parameters of the nurse practitioner role.

This study has validated a research-based, iterative process for initial development of nurse practitioner scope of practice for any Australian specialization. Importantly, the study concluded with identification of the scope of practice for three nurse practitioner models as a finding, rather than this being defined in advance. Although general areas of health care need and under-servicing were identified at the outset, the process tested both the expansion and parameters of the roles.

Until very recently, establishment of nurse practitioner services in other Australian states and territories has been heavily influenced by specific under-servicing, most noticeably in rural and remote areas, due to lack of medical practitioner services (NSW Health Department 1995, South Australian Department of Human Services 1999, Health Department of Western Australia 2000, Offredy 2000, Victorian Government Department of Human Services 2000). Turner and Keyzer (2002) raise the issue of the nurse practitioner role being defined in terms of absence of medical staff and taking on minor medical roles. In these cases, nurse practitioners have started with previously developed protocols and formularies that directed their practice. A fundamental flaw in this process is that the source of these protocols and formularies is not rigorous exploration of need but a set of pre-judged standards.

The inhabitants of the ACT have been described as an affluent, urbanised population with consequent easy access to health care. This might suggest little need for a new level of health service. The ACT study challenged these assumptions and demonstrated that nurse practitioner levels of service augmented existing health care and satisfied unmet needs for several sectors of the community. This study evaluated nurse practitioners in a health care service well-endowed with medical staff, both specialist and GPs, and nonetheless demonstrated that there is a place for nurse practitioners. Importantly, the roles were not particularly defined by the three factors often cited as the way that nurse practitioners push the boundaries of nursing practice, namely investigating, referring and prescribing. Each candidate used only one or two of these extensions to practice as a defining feature of the model. The roles were developed very clearly within a nursing rather than a medical framework. This occurred because the clinical protocols that defined the scope of practice were very explicitly developed over the course of the trial, rather than being set down in advance. The iterative development process of protocols in the ACT trial ensured that each challenge to current nursing practice was examined and discussed by nurses and other members of a multidisciplinary team from both a clinical and research perspective. All extensions to practice were justified on the grounds of clinical health care needs only if there were data to support their inclusion.

Thus, interpretation and analysis of the data from each nurse practitioner service revealed patterns of clinical practice that could be systematized into key areas of clinical service for each model that completed the trial (Table 4). These areas defined the scope of practice for each model and, more specifically, informed the development of clinical protocols and medication formularies. The clinical protocols extended advanced practice nursing as described for Australia (Australian Nursing Federation 1997) to the nurse practitioner level of practice and clearly marked the parameters of the role (see Figure 1 for an example of a clinical protocol from this trial). The concept of extension to a new level has been discussed in a companion paper (Gardner et al. 2004); however, we accept that this is not necessarily a distinction made in other countries such as the USA or UK, where the nurse practitioner role

is seen as one of several advanced practice roles (Sutton & Smith 1995, Dunn 1997, Hamric et al. 2000). Thus, the clinical protocols with accompanying medication formularies forged flexible guidelines within which the nurse practitioners would provide autonomous clinical service.

The trial participants included patients with chronic health problems, episodic illness and health maintenance issues. Patient surveys strongly indicated that nurse practitioner services were highly acceptable to these community members (see ACT Government 2002, MacLellan et al. 2002, O'Keefe & Gardner 2003/2004). The findings indicated that nurse practitioner services improved access to health care. This was either through offering a new service, as with the sexual health model, or improved and timely coordination of care, as provided by the wound care and mental health models. Furthermore, the findings indicated that nurse practitioner services were provided within a nursing model of care with judicious and appropriate use of diagnostic and therapeutic resources. These findings were supported by data from clinical reviews of nurse practitioner services and the patterns of these services. Anticipated patient outcomes were achieved in 91.9% of cases where data were available. Thus, in addition to meeting an identified health care need, nurse practitioner services were safe and effective.

The findings illustrated the diverse health care needs that nurse practitioners can meet. For example, the trial included services for marginalized groups such as non-English-speaking brothel workers; for national health priority groups such as mental health and aged care (the latter in the wound care model); and across both acute and primary care services. This level of diversity replicated findings from other Australian states and internationally (Hegney 1997, Sherwood et al. 1997, Reveley 1998, Offredy 2000, Armstrong 2001). In particular, the study demonstrated that nurses can combine the roles of therapist and high-level case manager. Given the nature of working as part of a collaborative team, these 'referrals' might more properly be described as consultations undertaken as part of the integrated care provided for these patients with complex health care needs. Case management responsibilities as part of a nurse practitioner role have been usefully developed where the health problem is potentially chronic, complex, or long-term (Forsyth et al. 1998, Dougherty et al. 2000).

Limitations of the trial methodology

Investigation of a new kind of health service or intervention is usually guided by the standard of the randomized controlled trial (Sackett & Rosenberg 1995, Closs & Cheater 1999). However, protocol requirements of an experimental design were inconsistent with the range of factors that impinged on the practice settings involved in this project. Additionally, there was no identified scope of practice for the nurse practitioner level of service in the ACT, nor was there legal authorization and protection of such practice at the time. Until the role of the nurse practitioner is fully explored, described and legitimized, an experimental research approach is neither possible nor meaningful. Therefore, observational analytic methods were most appropriate for this study and contribute to the empirical research base of the nurse practitioner scope of practice (Black 1996).

Table 4 Key areas of clinical service for each model

Mental health	Sexual health	Wound care
<ul style="list-style-type: none"> • Management of emergency and immediate mental health presentations* • Mental health management for long-stay patients in a general ward • Management of drug and alcohol related mental health presentations • Medication formulary 	<ul style="list-style-type: none"> • Asymptomatic sexual health screening for men and women • Management of uncomplicated sexually transmitted infection and related genitourinary conditions • Opportunistic management for patients with sexual health problems • Contraceptive management • Medication formulary 	<ul style="list-style-type: none"> • Management of vascular ulcers • Management of complex wounds • Diabetic foot ulcer: case management • Minor surgical procedures for treatment and diagnosis in wound care

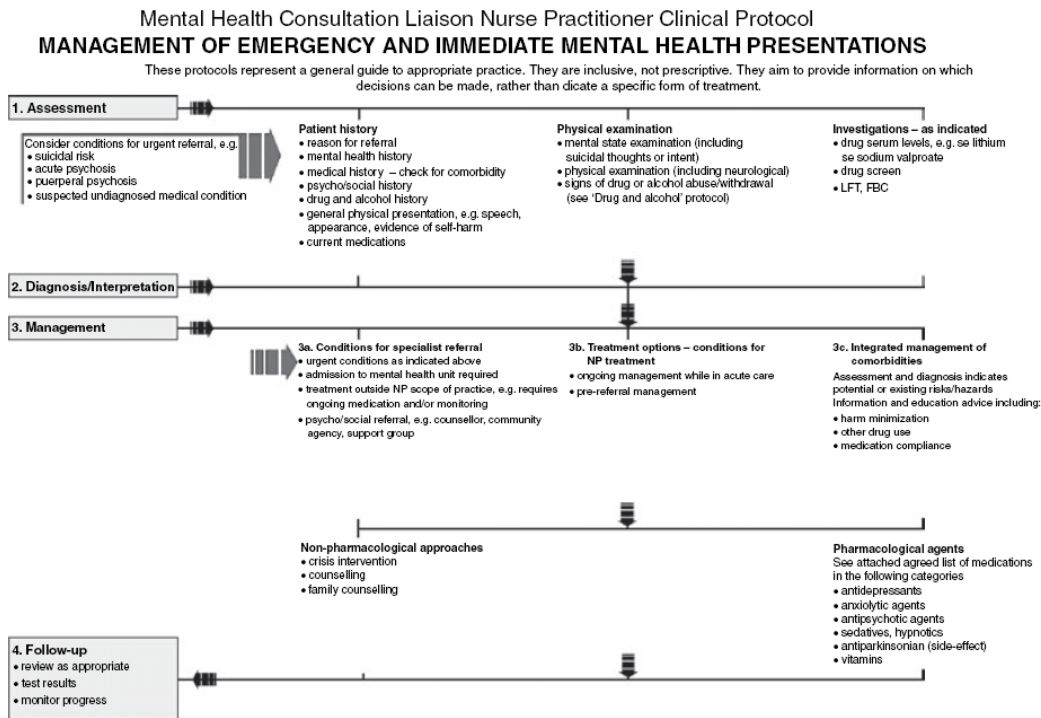


Figure 1 Example of a clinical protocol.

the practice settings involved in this project. Additionally,

Three researchers were employed by one of the funding bodies and so impartial steering committee members undertook some independent monitoring responsibilities. Clinical review of candidates was an integral part of the ongoing teaching process by clinical support team members. Academic rigour was ensured by the final assessment being undertaken by an independent review panel.

A further limitation to the project arose from a degree of resistance from sectors of the medical profession to the concept of nurse practitioner. Whilst this resistance was not universal, it did limit the scope of the project to those areas where medical support was available.

The trial has provided research-based, iterative processes for development of clinical protocols that define the scope of practice for diverse nurse practitioner models. Although general areas of health care need and under-servicing were identified at the outset, the process tested both the expansion and parameters of the roles applicable for any Australian specialization. This is an important development in ensuring that nurse practitioner practice is

grounded in innovative nursing models rather than merely being responsive to medical service delivery deficiencies.

The nurse practitioners provided health care as members of multidisciplinary teams comprising medical, nursing, and allied health professionals. While the results cannot be generalized in terms of research design, they have robust transferability to other health care settings and contexts. Furthermore, the systems and processes established in this trial have been demonstrated to be effective and apposite to inform health policy deliberations.

The steering committee overseeing the project recommended that

the nurse practitioner be recognized as a legitimate and autonomous health care provider;

local health authorities support the development of nurse practitioner models of practice;

legislation relating to registration, prescribing, referrals, and use of diagnostic processes be amended to enable a nurse practitioner level of service; and

local health authorities sponsor and support evaluation research into nurse practitioner services.

When nurse practitioners become incorporated into ACT health services a sustained evaluation programme will be needed. Consistent with recommendations from other Australian nurse practitioner trials, future research should encompass a range of methodological approaches to investigate specific practice outcomes and include a cost effectiveness analysis.

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