

TRIALING COLLABORATIVE NURSING MODELS OF CARE: THE IMPACT OF CHANGE

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ABSTRACT

Objective:

The aim of the project was to develop and trial a nursing Model of Care (MoC) and devise a framework to investigate the impact of nursing staff mix on patient outcomes and job satisfaction (nurses).

Setting and Subjects:

In 2001-2002 a pilot project was undertaken to explore issues related to the delivery of patient care by nurses on two medical inpatient wards, one acute and one subacute, at a referral teaching hospital in New South Wales (NSW), Australia. The framework employed was an adaptation of, and based on, the Clinical Practice Improvement (CPI) model developed by NSW Health.

Primary Argument:

Countries across the world are seeking solutions to a shortage of registered nurses and their ability to sustain quality care services. It becomes imperative that organisations develop strategies to attract and retain nurses in the health care system.

Conclusions:

Results of the project highlighted areas related to the quality of care delivery: clinical supervision; continuity of staffing; trust; employer of choice; more effective nurse to patient ratios; educational preparation; and recognition of prior experience.

INTRODUCTION

There is clear evidence that the nursing shortage is worldwide. Countries including Australia, Canada, the United Kingdom and the United States of America are reporting significant difficulties in maintaining an adequate nursing workforce. All countries are seeking solutions and reporting the impact of shortages on both public and private health care providers' ability to sustain quality care services (Forrester and Griffiths 2001). Forrester and Griffiths (2001) report that the initial response to the shortage, including changes to staff mix, has impacted on how health services deliver care but not on relieving the corresponding 'ever increasing burden on the provision of nursing care' (p.59). The implications of who should deliver care and how such care should be organised (models of care) has been highlighted by: (i) alteration to staff mix and introduction of different levels of skilled and unskilled care providers; (ii) the accompanying increase in the number of nurses required with a rise in part-time employment; and (iii) the expanding role of registered nurses.

Johnstone and Stewart (2003) highlight the fact that Australia like other countries is facing a 'crisis of recruitment and retention of nurses' (p.240), compounded by an insufficient supply of new graduate nurses to meet workforce demands. Such an imbalance of supply and demand further supports the need to develop models of care that include different levels of nurse (Nay and Pearson 2001).

A Model of Care (MoC) or nursing practice model (NPM) for the purpose of this paper refers to an operational model for redesigning nursing practice for the provision of patient care in an organisational setting, specifically at a clinical services unit level (ward). Such a MoC represents the structural and contextual dimensions of nursing practice. Furthermore, an explicit or implicit MoC governs the manner in which nurses organise work groups, communicate with work group members and with

other disciplines, interact, make decisions, and create an environment within which nursing care is delivered among care providers, and specify communication and coordination patterns necessary to support care.

The variation in nursing models of care arises because the term is often ill defined. For some it is based on a governance structure, others as a compensation scheme while others regard 'the term as reflective of a particular strategy of assigning patients to nurses' (Brennan et al 1998, p.27). Motivation to build a MoC stems from the need to attract and retain nurses; contain costs; increase nurses' job satisfaction; produce efficiencies in the delivery of care and, maintain a quality service. Patient outcomes currently focus less on morbidity and mortality and more on measures of patient centred issues such as perceived health status and process indicators including length of stay (LOS) (Weisman 1992).

BACKGROUND

A public hospital and principal teaching facility, St Vincent's Hospital, Sydney, NSW, provides a comprehensive range of inpatient, ambulatory and diagnostic services to the people of South Eastern Sydney and beyond. St Vincent's is affiliated with a number of universities, and has an average hospital occupancy rate over 90% with around 30,000 admissions per annum (including day procedures) and an inpatient bed capacity of approximately 320. In total, around 800 nursing

professionals are employed across St Vincent's Hospital, with over 80% of these nurses involved in the provision of direct patient care.

As a result of national challenges associated with a changing nursing workforce, St Vincent's Hospital, undertook a proactive role in exploring potential strategies to support safe delivery of patient care while sustaining professional autonomy and professional development for nurses. Initially, this involved a Nursing Workforce Forum in March 2001, followed by the establishment of a Steering Committee to plan and trial a collaborative 'shared care' model on two acute care inpatient wards within the hospital. Hence, the overall goal of this project was to explore the impact of a collaborative nursing MoC on patient outcomes and professional nursing practice through a trial implementation.

While acknowledging the challenges associated with nursing workforce issues, the objectives of trialing the collaborative model were defined as supporting and ensuring the delivery of safe and quality care to patients while at the same time enhancing professional satisfaction and professional development opportunities for nursing staff.

LITERATURE REVIEW

Restyling the Practice Environment

While organisations expend vast amounts of money to restructure the delivery of health care, nurse leaders are

Table 1. Examples of nursing care delivery models

Nursing care delivery models	Definition
Patient focused care	<i>A model used in the 1990s whereby RNs were designated as care managers with expanded roles including various assessment procedures, taking blood and ECGs. These RNs were usually assisted by unlicensed assistive personnel (UAP) (Seago, 2001). The aim of the model 'patient-focused care' was to create a delivery system to improve customer satisfaction and decrease costs (Burns 1998).</i>
<i>Example:</i> Baptist Hospital of Miami model of professional accountability	Based of Watson's theory of Transpersonal Caring. Watson's theory involves caring as central to the nursing role as 'it is our humanity that both wounds us and heals us, and those whom we serve' (Clark 2004, p.106).
Primary or total nursing care	<i>Usually consisted of RNs only providing all direct care to the same patient throughout the patient's stay in hospital and in some cases when they were readmitted (Seago 2001).</i>
<i>Example:</i> Individualised care model	Based on assessment of the correspondence between nursing activities and the patient's perceptions of individuality in care. This model was described and tested using structural equation modelling by Suhonen et al (2004).
Team or functional nursing care	<i>A model using the RN as a team leader and other classifications of nurses to perform activities of daily living (ADLs) such as bathing and feeding (Seago 2001).</i>
Magnet Hospital environmental/shared governance	<i>Based on shared decision making by RNs and managers. Features include: collaboration with other health care providers and RN autonomy with control of practice (Seago 2001).</i> The Magnet designation means that the hospital has created an environment that supports nursing practice and focuses on professional autonomy, decision making at the bedside, nursing involvement in determining the nursing work environment, professional education, career development and nursing leadership
<i>The quality-caring model (acute care)</i>	<i>Evidence-based practice process is merged with the caring processes of nursing (Duffy 2004).</i>
<i>Model for promoting process engagement (chronic illness)</i>	<i>A unifying model involving a process in which explanatory modelling, mutual goal setting, and motivational strategies are used to facilitate a client-focused approach to making sense of health information, sustaining health behaviour change, and managing transitional care needs within the context of chronic illness (Cumble et al 2004).</i>

being constantly challenged to 'create practice environments that foster multidisciplinary collaboration, professional development, and a culture of safety' (Ponte et al 2004, p.173). How factors in the practice environment are linked to patient outcomes is the subject of much research (McGillis-Hall et al 2004; Aiken et al 2002a; Aiken et al 2002b; Ritter-Teitel 2002). The research into nursing care and nurses supports the argument that nursing care and the nursing practice environment makes a difference in patient outcomes (Ponte et al, 2004; Hall et al 2004). Before undertaking great changes (restructure) to how nurses deliver care, an organisation should develop, implement and evaluate such nursing practice models, or models of care. Evaluation reflects the reasons for restructuring which can range from patient satisfaction to perceptions by staff of the practice environment such as communication and shared responsibility (Kinneman et al 1997). An important aspect in any restructuring is the change process itself.

Definitions of models of nursing care delivery

How nurses deliver care can be described in a number of ways, including the use of descriptors such as functional or team nursing. Briefly, team nursing usually comprises a 'leader' with major responsibilities for coordinating personnel, resources and patient activities for that shift or for a defined period of time. Functional nursing focuses on the assignment of tasks in either bulk or series rather than the assignment of comprehensive care to patients (Coakley and Scoble 2003). Examples of models of nursing care delivery are summarised in table 1.

Measures of nurse staffing and models of nursing care delivery

Research carried out during the 1980s, 1990s and early 2000s has produced mixed results in relating skill mix and models of care delivery to patient outcomes. According to a number of researchers, increasing skill mix has been associated with decreasing falls, length of stay, postoperative complications, nosocomial pneumonia, pressure ulcer rates, urinary tract infection, and postoperative infection (American Nurses Association Network Inc 2000, 1997; Kovner and Gergen 1998; Lichtig et al 1999). While other studies found skill mix to be unrelated to mortality (Robertson and Hassan 1999; Mitchell and Shortell 1997; Silber et al 1995; Zimmerman et al 1993); treatment problems; postoperative complications; unexpected death rates; or unstable condition at discharge (Wan and Shukla 1987). Similarly, in studies conducted in the 1980s and early 1990s, in which primary (all RN) and team (skill mix) nursing care delivery models were compared, there was no relationship between the percentage of RNs and quality of care as reported in the nursing notes (Wan and Shukla 1987), or between RN-to-patient ratio and incidence of falls (Tutuarima et al 1993).

Instigating change

To achieve a relatively smooth transition when introducing change, it is advisable that the team responsible for implementing new nursing practices or a MoC develop guidelines and work within a change management framework. Curtis and White (2002) explain that because change can disrupt the 'status quo' or balance within a group, resistance becomes inevitable. The reasons for individuals' resistance to change and an acceptance for the need to change range from increased stress; denial; self interest; lack of understanding; trust and ownership; uncertainty; motivation; and personality. Strategies for reducing resistance centre on slow introduction; participation; psychological ownership; education; facilitation; and development of trust (Curtis and White 2002; Fyffe and Fleck 1998).

Therefore, devising a program for change includes the need to understand the setting where the change will take place; gain organisational support; evaluate current practice and engage staff in the process (Wright and McCormack 2001). McCallin (2001) emphasises teamwork as an essential strategy defined by a common cause, which includes: acknowledgement of professional contributions; skills mix; recognition of the significance of interactional relationships related to the processes of communication; co-ordination; cooperation; and joint thinking. McQueen (2000) believes the essential ingredients for successful implementation include identifying the level of involvement of all participants; clarifying the function; and describing the different types of expected relationships.

METHOD

A collaborative 'shared care' model on two acute care inpatient wards

Within the original workforce forum participants (nurse clinicians) articulated a preference for a collaborative 'shared care' model. Essentially, this was described in practical terms as being a model whereby teams of staff were allocated to a specific group of patients with ward coordination led by the Nursing Unit Manager (NUM) or Team Leader with an 'in-charge' of shift role. The proposed collaborative model contained elements of patient allocation and team-nursing models of care in that it supported experienced nurses leading a body of less educated and technically skilled nurses, while maintaining a leadership and patient management role.

The two principles of the devised MoC were to:

- (i) allocate a dedicated 'care partner' to support less skilled members of staff; and
- (ii) maintain continuity of care for the patients while both care partners receive handover for their patient group, and allocate responsibility for care delivery within the group.

A key component of the MoC was the flexibility in implementation allowing patient and staff needs to be

addressed on a shift by shift basis. The core areas identified for development for the project included: rostering, flexibility and skill mix issues; education, culture and attitudes; communication structures and team impacts; role delineation; and accountability. Active involvement and effective communication from the participating clinical teams was identified as essential in supporting ownership of the model, its implementation review processes and ongoing development.

The trial plan was developed within a quality framework, an adaptation of the Clinical Practice Improvement Model (CPIM), and utilised the principles of change management.

Prior to implementation a number of extraneous factors were recognised as having potential influence on the trial and its outcomes (eg. differentiation in staffing profiles, ward activity and patient acuity levels). The need for ongoing review of trial elements in conjunction with the participating clinical teams was crucial to supporting the continued development of the collaborative MoC. In addition, a consistent and comprehensive approach to the trial was realised with the recruitment of a full time project assistant. The initial task involved the development of an action plan for the project, based upon the principles of the CPIM as illustrated in figure 1 (NSW Health 2002).

Planning Phase

1. to introduce the project officer (change agent) to the participating teams;
2. outline the project objectives, plans and timelines;
3. provide a forum to inform the teams of the role and responsibilities of both the project officer and the participating teams; and
4. determine expected outcomes for each phase.

The nursing sensitive outcome measures to be considered were derived from the works of Ingersoll, McIntosh and Williams (2000); Spilsbury and Meyer (2001); and Barkell et al (2002); and included staff satisfaction; patient satisfaction (Kinneman et al 1997); patient injury rate; nosocomial infection rates and maintenance of skin integrity (American Nurses Association's Report Card, in Barkell et al 2002).

The areas of practice which also acted as quality indicators (patient hygiene; patient nutrition and hydration; pressure sores/skin integrity; intravenous therapy; discharge planning; pain control; education/rehabilitation; elimination and IV therapy) where nurses have demonstrated significant influence over patient outcomes were measured utilising documentation audits and pre and post trial comparisons. Workforce data were also identified as a contributing factor to nursing practice delivery and were subsequently included in data collection and analysis.

Development phase

During this phase, the teams were presented with a proposed nursing MoC (NMoC). Process mapping was used to identify current nursing practice and possible implications of the proposed NMoC. These identified areas then formed the focus for the remaining education sessions. Participant involvement was encouraged and as the development phase progressed, both participating teams identified key elements for their unit-based NMoC.

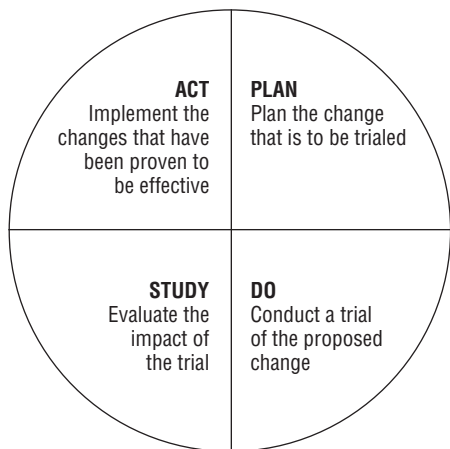
Implementation phase

Primary data collection was through non-participatory observation. Initially the project officer made frequent observations throughout the day (2 to 3 times). As the teams became more confident in implementing the collaborative model these observations were decreased to once a day, reducing again to two to three times a week for the remainder of the trial.

The project officer also facilitated regular debriefing sessions with each team where emerging practice issues were identified and explored, thus promoting team ownership of the NMoC for their respective ward and patient populations. Feedback from these sessions indicated that staff were able to reflect on their current practice and consider the potential impacts of the collaborative model.

Figure 1: The clinical practice improvement model

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What changes can we make that will result in an improvement?



The model involves the identification and diagnosis of a problem, measurement of the scope and size of the problem, identification of a number of interventions that may reduce the problem, implementation of the intervention(s) and re-measurement to ascertain whether the interventions have been effective. *The Clinical Practice Improvement Model (CPIM) taken from Easy Guide to Clinical Practice Improvement: a guide for health care professionals, 2002, p.4, NSW Health.*

The key aspects of the four phases (planning, development, implementation and evaluation) of the project are described in the following paragraphs.

Evaluation phase

The conceptual framework for the evaluation relied on a number of assumptions: (i) the practice environment is crucial to effective implementation of the NMoC; and (ii) improvements in the environment should be associated with increased satisfaction for both patients and nurses. Therefore, the project officer during the implementation phase facilitated regular debriefing sessions with each team, where emerging practice issues were identified and explored, thus promoting team ownership of the NMoC for their respective ward and patient populations. Feedback from these sessions indicated that staff were able to reflect on their current practice and consider the potential impacts of the collaborative model. All aspects of nursing care illustrated in the clinical documentation, were subsequently audited for this trial. The main focus of this report is the process and outcomes of the nursing care efficiencies identified during the trial. Throughout the evaluation phase data was collected through non-participatory observation, staff satisfaction surveys and staff focus groups.

FINDINGS

Overall, the staff implemented the agreed MoC with modifications made as the trial progressed to suit the individual needs of the participating wards. Following identification of the outcome indicators, data was collected for the trial period and compared to the same period in the previous year. This data served as a comparison to assist in evaluation of the effectiveness of the collaborative NMoC on nursing sensitive outcome indicators. The major themes affecting the NMoC delivery highlighted by the staff were: staff morale; bed management strategies; staffing levels; nursing skill mix; partnering of staff; planning and division of workload; communication (including handover); staff support and professional development; change; nursing issues/professional accountability; continuity of care; job satisfaction; and the shift co-coordinator/in-charge role.

Both passive and active resistance to change was encountered in participating teams. The application of change management principles to the process assisted the teams through this resistance. In order to reduce the impact of organisational factors on the model implementation, the nursing executive facilitated a reduced bed capacity on participating units and consistency in allocation of temporary staff during the trial. Professional scope of practice factors impacting on the trial involved participants who had experience in delivering nursing care within a patient allocation framework, and included a strong desire to avoid task allocation within the collaborative model as this was largely perceived as a retrograde step.

CLINICAL OUTCOMES

Quality indicator data for the trial period from both wards was compared to data from the previous year as

follows: (i) reported incident/accident results indicated an increase in reported incident/accidents; (ii) reported pressure areas (cases) were unchanged in both the participating wards; (iii) infection rates were noted to have increased in each participating ward.

Clearly more sensitive measurement is indicated for further work to determine if there was an actual increase or if there had been an improvement in the reporting culture. The documentation audits conducted pre and post trial on each unit measured compliance of documentation with the identified standards of nursing practice. These included standards that were supported in the literature as areas of practice where nurses have demonstrated significant influence over patient outcomes.

Team A indicated improved compliance in documentation in all 20 standards, while Team B indicated improved compliance in four. Overall, the teams demonstrated 70% and 50% improvement respectively in compliance with documentation post trial implying benefits of a collaborative NMoC. Again, more sensitive or rigorous measurements are required to determine if the results are indeed an outcome of the trial nursing MoC or a result of the Hawthorn effect (Adair 1984; Brenner 2002; Mangione-Smith et al 2002; Woodman 1980).

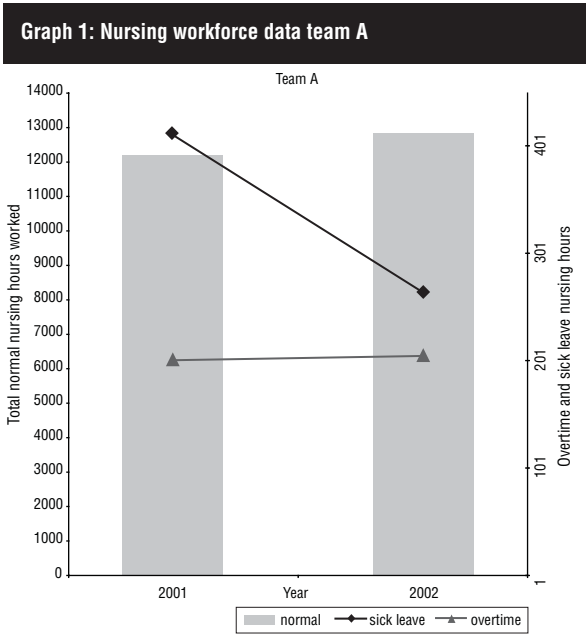
CLINICIAN OUTCOMES

Clinician surveys were conducted pre, mid and post trial. Staff were asked to indicate on a scale of 1-10, the effectiveness of their skills utilisation in four (4) key function areas. The four key function areas were: patient care; communication; education and professional development; and professional issues. Common themes emerging from the comments documented on the clinician survey supported those from the observational data analysis and debriefing sessions. Through analysis of survey feedback, common themes impacting on each team's ability to progress implementation of the model were identified. These included skill level of nursing staff and reduced availability of experienced staff; ineffective communication; availability of nursing staff (both permanent and temporary); and lack of time for experienced staff to educate both less skilled staff and patients were recognised (Dreachslin et al 1999). Although the limitations of the clinician survey included a relatively small sample size and poor to fair return rate, the data provided useful information to highlight the general level of satisfaction and sense of skills utilisation that existed within the participating wards. This information was then used by the teams to work through modifications to the MoC and make recommendations to hospital management.

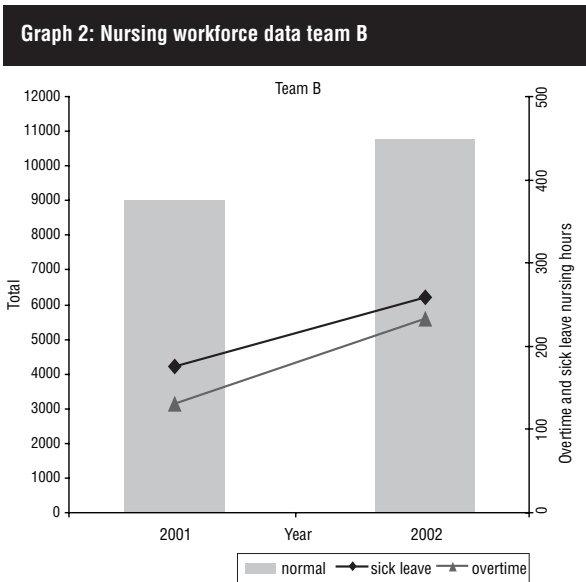
Workforce data

Workforce related data for the trial period were collected and compared with the same data for the equivalent timeframe during the previous year (graphs 1 and 2). The data were collected to provide insight into the

nursing skill mix and staffing levels worked during this time frame. Data collected were the number of hours worked and full time equivalent (FTE) positions filled for each category of nurse.



Comparison of total nursing hours (primarily Y axis) worked during the pilot (2002) with the same period 2001 as plotted against overtime and sick leave nursing hours (secondary Y axis). The most significant result is the reduction in sick leave taken.



Comparison of total nursing hours (primarily Y axis) worked during the pilot (2002) with the same period 2001 as plotted against overtime and sick leave nursing hours (secondary Y axis). The results for team B suggest an increase in both sick leave and overtime.

The demographics were restricted to the qualification of nurses and hours worked within the trial period (eg. RN, EN, CNS), and did not include the level of experience of the nurse. Subsequently, the data does not provide accurate information about skill mix related to level of experience

nor does it include data on the hours required and requested, only on the hours worked in each unit. Between the two participating wards, the nursing sensitive outcome indicators generally identified similar results with between 50-70% improvement in documentation compliance, a 100-400% increase in reported infection incidents and a 35-71% increase in reported accident/incidents in the post trial period, when compared with the same time period during the previous year.

However, the staff sick leave rate demonstrated a 46% increase in one unit with the other reflecting a 31% decrease during the trial period (graphs 1 and 2). Although the reasons for these mixed findings were not clearly identified, it is interesting to note there appeared to be some correlation between sick leave rates and the perception of the impact of change, combined with each team’s approach to incorporating these changes into practice.

SUMMARY

A nursing MoC within a shared care framework was developed with clinical teams on two inpatient wards and implemented on a trial basis. Pre-existing factors that impacted on the trial were identified as staffing (shortage), poor skill mix, low morale and high activity on the wards. These are all identified in the literature as agents that cause resistance to change and contribute to a decline in job satisfaction.

Different strategies were implemented to address these issues, including incorporation of principles of change management in all phases of the development and implementation of the NMoC, the closure of inpatient beds to reduce the clinical workload demands, and the involvement of hospital management to work with the teams to develop strategies to address the major issues facing the wards.

The clinical teams identified a NMoC within a shared care framework that facilitated a supportive environment for the staff while maintaining a high standard of patient care.

A key component of the NMoC is the flexibility in implementation allowing patient and staff needs to be addressed on a shift by shift basis. Although the benefits of this were demonstrated throughout the trial period, it was evident that clear guidelines around implementation were necessary to ensure consistency in the application of the NMoC.

Following the completion of the NMoC trial both teams have retained elements of the original model and have continued to further develop specific aspects in response to service needs. Although the trial results suggest that the revised NMoC had a direct impact on patient care delivery and professional nursing practice, exploration of the potential for formal research of the

relationship between the NMoC and nursing sensitive outcome measures is indicated.

In addition to ongoing progression of the collaborative model a number of organisational strategies have been implemented to address nursing workforce and scope of practice issues. These include employment of undergraduate student nurses as assistants in nursing (AINs); recruitment of experienced nurses directly into clinical nurse specialist (CNS) roles; increased employment of enrolled nurses (EN) across clinical areas, review and extension of clinical placements for trainee enrolled nurses (TENs) in acute care areas, and participation in state-wide initiatives that reconnect nurses back into the workforce (NSW Health 2004).

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