AN EVALUATION OF A DISSEMINATION INTERVENTION
TO ENHANCE REGISTERED NURSES' USE OF
CLINICAL PRACTICE GUIDELINES RELATED TO TOBACCO REDUCTION

by

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Clinical practice guidelines (CPGs) have been developed to support knowledge transfer in health care settings. Rigorous evaluations assessing the effectiveness of methods to disseminate and implement CPGs into nursing practice are scarce. A quasi-experimental, pretest, post-test design was conducted to examine the effect of a dissemination intervention on nurse adherence to CPGs on tobacco reduction and self-efficacy in treating tobacco use and dependence. A sample of 138 hospital-based registered nurses who provided routine pregnancy and postpartum care was recruited from two hospitals in one urban Regional Health Authority in mid-western Canada. Following randomisation of hospitals, the dissemination intervention consisting of academic detailing visits supplemented with a self-study package of print materials, a video, and a Smoking Cessation Interventions Record form, was administered to nurses in one hospital. Data were collected from self-administered, baseline and follow-up questionnaires and nurse documentation of their use of the CPGs during the 10-week intervention period. At three weeks post intervention, quantitative results indicated the dissemination intervention positively and significantly enhanced nurse adherence to the CPGs and boosted self-efficacy beliefs in treating tobacco use and dependence. Although nurses' perceptions of autonomy modified the effect of the dissemination intervention on change in beliefs in treating tobacco use and dependence, the intervention group demonstrated significantly improved self-efficacy scores in comparison to the control group. Multiple regression analyses revealed three significant predictors of nurse adherence to CPGs: receiving the intervention ($p<0.001$); baseline perceptions about using CPGs ($p=0.05$); and resource adequacy ($p=0.04$) and three significant predictors of self-efficacy: receiving the intervention ($p<0.001$); working full-time ($p=0.01$); and own value of research ($p=0.05$). This study demonstrated the efficacy of a multifaceted intervention on enhancing nurses' use of the CPGs in a hospital-based maternal child practice setting. Receiving the intervention was clearly the strongest predictor of self-efficacy beliefs in treating tobacco use and dependence and nurse adherence to the CPGs on tobacco reduction. The findings broaden our understanding of how to support hospital-based nurses in using the CPGs on tobacco reduction and provide direction for improving future dissemination strategies.
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CHAPTER ONE INTRODUCTION

Research Problem

Despite growing bodies of research evidence, the dissemination and utilization of research findings in nursing practice has lagged behind (Forbes & Phillipchuk, 2001). While a large body of literature on research utilization exists, much less attention has been given to the study of dissemination strategies (Dobbins, Ciliska, & Mitchell, 1998). The dissemination and research utilization literature in nursing is characterized by a lack of operational detail (Clarke, 1999) and a considerable amount is opinion-based or anecdotal in nature (Estabrooks, 1999a). Although there is a consensus that research findings should provide direction for clinical practice (Donaldson & Crowley, 1978; Gortner, 1990), little is known about these processes because systematic and sustained study in the field of research dissemination is lacking (Estabrooks, 1999a, 1999b; Kitson, Ahmed, Harvey, Seers, & Thompson, 1996).

Clinical practice guidelines (CPGs) have been developed to support knowledge transfer in health care settings. Much of the dissemination literature focuses on strategies for disseminating CPGs to physicians. Although CPGs are being introduced into medical practice using a variety of strategies, the use of CPGs has received less attention in nursing. Enabling the use of CPGs in nursing requires systematic study of the factors that influence dissemination strategies in settings where nurses practice. Given the differences in the nature and practice contexts between medicine and nursing, dissemination strategies that effectively promote behaviour change in medicine may not be directly transferable to nursing (Mead, 2000).

One promising approach to facilitating the use of CPGs in nursing is based on academic detailing. This approach has been highly effective in bringing about behavioural change in medical practice (Soumerai & Avorn, 1990). Research indicates that academic detail visits, particularly when combined with other interventions such as written materials, educational meetings, and clinician reminders, appear to be a promising way to modify health professional behaviour and improve compliance with CPGs (Bero, Grilli, Grimshaw, Harvey, Oxman, & Thomson, 1998; Grol & Grimshaw, 1999; Gross, 2000; Hanson, Tulsky, & Danis, 1997; NHS Centre for Reviews and
Dissemination, 1999; Oxman, Thomson, Davis, & Haynes, 1995; Thomson O'Brien, Oxman, Davis, Haynes, Freemantle, & Harvey, 2001a). Rigorous evaluations are clearly needed in nursing to understand the effectiveness of methods to disseminate and implement CPGs into nursing practice (Cheater & Closs, 1997).

Treating Tobacco Use and Dependence

Healthcare professionals who receive training in smoking cessation counselling are 1.5 to 2 times more likely to offer patients smoking cessation interventions than those who have not had training (Lancaster, Silagy, & Fowler, 2002). Given the significant number of women who continue to smoke in the prenatal and early postpartum periods, and the documented health risks to the mother and infant, it is important that obstetric and pediatric nurses in hospitals and clinics continue to assess smoking status and provide smoking cessation interventions at every encounter (Gebauer, Kwo, & Haynes, 1998; Gennaro, Dunphy, Dowd, Fehder, & Douglas, 2001a; Rice & Stead, 2001; Todd, LaSala, & Neil-Urban, 2001; Wewers, Ahijevych, & Sarna, 1998). Knowledge of the variables and processes that influence the dissemination and uptake of CPGs on treating tobacco use and dependence in nursing practice contexts is clearly an important issue.

Nurses are effective smoking cessation interventionists. Cessation rates from 5% to 32% can be achieved during pregnancy (Gebauer et al., 1998; O'Connor et al., 1992; Todd et al., 2001) and up to 14.5% in longer term postnatal follow up (Secker-Walker et al., 1994). Although Rice and Stead (2001) excluded pregnant smokers, their meta-analysis of nurses as interveners reported a modest positive effect for smoking cessation intervention by nurses in hospital settings. Nurses interact frequently with women during prenatal assessment, in the antenatal unit, in obstetrical triage, during birthing, and in the postpartum period. In this study, each of the participating hospitals had approximately 4000 births annually. Pregnancy and postpartum care, therefore presents important opportunities for nurse-led smoking cessation interventions. Evidence that nurses do not consistently use interventions to support tobacco reduction suggests that effective strategies are needed to disseminate and support the use of CPGs for treating tobacco use and dependence.
Research Purpose

The purpose of this study was to evaluate a dissemination intervention to enhance registered nurses' use of CPGs for treating tobacco use and dependence. The CPGs from the Agency for Health Care Research and Quality (AHRQ) for treating tobacco use and dependence were selected for this dissemination study because of the strength of the research evidence contained in the guidelines. The AHRQ guidelines are based on an extensive systematic review of 6000 research articles on treating tobacco dependence and contain efficacious counselling strategies for clinicians and other health care providers (Fiore et al., 2000a). The prevalence of smoking and the lack of guideline use in the clinical settings were reasons for addressing the problem. The AHRQ CPGs for treating tobacco use and dependence have been available on the internet since 1996, yet, there has been little attention on supporting clinicians' use of the guidelines. There is a significant need to identify effective strategies for disseminating these CPGs in nursing and evaluating nurses' use of the guidelines. A better understanding of the essential processes in disseminating CPGs will contribute to a better understanding of how nurses adopt and use practice guidelines.

Overview of the Report

Chapter One introduced the study and presented the research problem, the research purpose, and the significance of the study. Chapter Two follows with a summary of the literature pertaining to research utilization in nursing, CPGs and their dissemination, academic detailing, smoking prevalence and health consequences, tobacco reduction practices in pregnancy/postpartum, and factors influencing smoking cessation counselling and dissemination of smoking cessation programmes. Chapter Three presents the theoretical perspective underlying this study, the conceptual basis for the dissemination intervention, and the research hypotheses. Chapter Four describes the study design, research methods, and analysis procedures. Chapter Five reports on the major findings while Chapter Six presents a discussion of the findings and recommendations.
CHAPTER TWO REVIEW OF THE LITERATURE

Chapter Two provides a discussion of evidence-based practice to provide a context for this study. This literature review is presented in five sections. The first section presents research literature related to research utilization and factors influencing nurses' use of research. The second section discusses research on clinical practice guidelines (CPGs) and their dissemination. The third section presents research findings related to academic detailing, a major component of the dissemination intervention. The fourth section on tobacco reduction summarises research relevant to smoking prevalence and health consequences in pregnancy and postpartum. The CPG on treating tobacco use and dependence is discussed here. The final section addresses factors influencing smoking cessation counselling and dissemination of smoking cessation programmes.

Evidence-based Practice

In the current era of cost effectiveness, efficiency targets and continuous quality improvement initiatives, it is no longer acceptable to deliver care based on practices of ritual or past tradition (Donaldson, 1995; Hicks & Hennessy, 1997; Omery & Williams, 1999; Polit, Beck, & Hungler, 2001; Strickland, 1997). In Canada, the National Forum on Health's [NFH] (1997a) vision for evidence-based practice is one where individual and collective decisions about health and health care are made on relevant and high quality evidence. This national vision has highlighted the importance of using research-based evidence in decision making and has highlighted the need to improve the diffusion and uptake of information as evidence becomes available. The lack of dissemination and use of research findings is potentially costly to clients and to health care institutions (NFH, 1997a).

In their final recommendations, the Evidence-Based Decision Making Working Group called for the development of a culture of evidence-based decision making within the Canadian health care system (NFH, 1997a). A key recommendation was to find the best ways to promote the analysis, translation, and dissemination and uptake of research information into useful knowledge (NFH, 1997b). This national directive placed
a high priority on using scientific evidence in making practice decisions.

Evidence-based Practice and Medicine

Naylor (1995) traces the development of the current evidence-based medicine movement to the origins and outgrowths of the Cochrane Collaboration. The Cochrane Collaboration is an international network of individuals and institutions within 15 countries committed to preparing and disseminating systematic reviews of the effects of health care (Bero & Drummond, 1995; Humphris, 1999). Naylor notes the focus of the collaboration involves conducting meta-analysis of randomised controlled trials in all areas of medicine and disseminating the findings widely. Despite recognised limits to evidence-based medicine, Naylor suggests there is a fairly clear interpretation of what types of evidence are considered appropriate for guiding medical practice. Sackett, Rosenberg, Muir Gray, Haynes, and Richardson's (1996) definition refers to evidence-based medicine as the "conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients" (p. 71) and the practice of evidence-based medicine as "integrating individual clinical expertise with the best available evidence from systematic research" (p. 71). Systematic research refers to predominantly randomised controlled trials.

Evidence-based Practice and Nursing

Much of the current nursing literature related to evidence-based practice focuses on research findings as a form of evidence. Some authors view evidence-based nursing as encompassing research findings, quality improvement and standards, pathophysiological data and patient preferences, and nursing expertise (Goode & Piedalue, 1999; Mulhall, 1998; Stetler, Brunell, Giuliano, Morsi, Prince, & Newell-Stokes, 1998). Estabrooks (1998) considers research utilization to be a subset of evidence-based practice and differentiates two types of evidence used in nursing practice, research and non-research information. In a beginning critique of evidence-based practice, Mitchell (1999) and Colyer and Kamath (1999) concur that research evidence is only one source of information nurses use in practice. Nevertheless, there is general consensus that research-based evidence from randomised controlled trials forms an important part of nursing's knowledge base. Despite diverse interpretations of what evidence clinicians should use, nurses' interest in using research to improve
practice predates the recent national interest in evidence-based practice. The renewed interest in using research in practice imbedded in the notions of evidence-based practice offers nursing an opportunity to advance the field of research dissemination and utilization (Estabrooks, 1998).

Research Utilization in Nursing

The research utilization process is complex and is directed toward the transfer of specific research-based knowledge into practice to address an identified nursing care problem (Crane, 1985a, 1985b). According to Crane, the research utilization process includes a systematic series of activities that include identifying a research base, transforming this research-based knowledge into a format that specifies nursing actions to meet patient care problems in clinical settings, and implementing and evaluating nursing actions within nursing organisations through the use of a planned change process. Research that has focussed on dissemination and uptake of research evidence in nursing has been in the context of larger scale research utilization studies, many of which were conducted in the United States (Funk, Tornquist, & Champagne, 1989; Horsley, Crane, Crabtree, & Wood, 1983; Rutledge & Donaldson, 1995; Titler et al., 1994). A goal inherent in these large scale projects was to examine a number of models from the social science literature that were used to promote research-based change for applicability in nursing practice settings (Crane, 1995a).

One of the important outcomes of these projects was the development of models to support research utilization in nursing. These studies also contributed to an understanding of barriers and facilitators of research use, the complexity of the research utilization process, and the need for effective facilitation of organisational change at the local level for effective adoption. The importance of the organisational context and the nurse's understanding of the research and its relevance to their practice was noted. Following Kim's (1999) typology, the large scale research utilization studies and projects precipitated the development of three kinds of models to support research utilization in nursing: a) innovation diffusion models; b) facilitation models; and c) individual assimilation models.
Research Utilization Models

Diffusion models. Innovation diffusion models are orientated to disseminating new innovations (research knowledge) through organised processes. Early research utilization projects that were based on innovation diffusion models included Western Interstate Commission for Higher Education in Nursing (Krueger, Nelson, & Wolanin, 1978), Nursing Child Assessment Satellite Training project (King, Barnard, & Hoehn, 1981), the Conduct and Utilization of Research in Nursing (CURN) project (Horsley et al., 1983) and the moving New Knowledge Into Practice Project (Funk et al., 1989). More recent models of research utilization that focus on innovation diffusion include the Iowa model (Titler et al., 1994), the Orange County Research Utilization in Nursing project (Rutledge & Donaldson, 1995), and the Ottawa Model of Research Use (Logan, Harrison, Graham, Dunn, & Bissonnette, 1999). The dissemination strategies most often included educational strategies, such as continuing education (in person or by satellite) and networking opportunities among clinicians, managers, and researchers. An important contribution from the CURN follow-up evaluations was the development of research based clinical protocols and a detailed user guide intended to serve as examples that could be adapted for other projects. These protocols have served as templates for other research utilization projects such as the Canadian study on pressure ulcer prevention (Gupton, Goodridge, Loewen, & Sloan, 1998). The Iowa model includes a plan for monitoring patient, staff, and fiscal outcomes which assists in maintaining the practice change and facilitates feedback to staff.

Facilitation models. Facilitation models of research utilization are more globally oriented to knowledge assimilation and use (Kim, 1999). The Kitson, Harvey, and McCormack (1998) model of research utilization is one example of a facilitation model. The model includes three core elements to enable successful implementation of research into practice: evidence, context, and facilitation. In this framework, each of the core elements has equal standing, thereby offering a balanced perspective. Kitson et al. (1998) hypothesize that successful implementation of research may be enhanced in settings or contexts where staff are valued, roles are clear, teams are effective, leadership is transformational and performance feedback is available. Kitson and colleagues argue that unlike the innovation diffusion models, which tend to be linear
and unidimensional, their model represents the interplay and interdependence of the core elements that influence the uptake of research evidence into practice. A distinct strength lies in the model's ability to consider each of the core elements together when implementing research changes in practice.

**Assimilation models.** Unlike the facilitation or innovation diffusion models, individual assimilation models of research utilization focus on the individual practitioner as the primary target (Kim, 1999). Both Stetler (1994) and Brown (1999) provide diagramatic representations and extensive description of their models to assist practitioners in applying new evidence in practice. Stetler's model guides nurses through either cognitive application or instrumental use of research findings. Although her 1994 model lacks sufficient detail in advising on appropriate dissemination strategies, Stetler's (2001) latest refinements offer more explicit dissemination and change strategies for both individuals and groups. These revisions further clarify the dissemination aspect of research utilization toward the goal of facilitating evidence-based practice.

**Summary of Research Utilization Models**

Although these research utilization models have been developed to guide knowledge transfer in nursing contexts, there has been little published on the effectiveness of the use of these models in practice settings. In particular, operational detail regarding dissemination and implementation strategies supporting research utilization in nursing is lacking. Evaluations of research utilization interventions based on some models (e.g., CURN) have been conducted to determine effectiveness in sustaining change, however, most of the information is dated from the mid-1980s. Although the Iowa Model has spawned considerable interest locally, and over 30 studies have resulted from this model (Titler et al., 1994), this is the exception rather than the norm. Further research is required to support the continued development and evaluation of these nursing models of research utilization. Research in Canadian contexts is needed with specific attention directed toward evaluation of the dissemination and implementation strategies in a variety of nursing practice contexts.
Barriers and Facilitators of Research Use

Nursing has a growing body of research evidence on factors that facilitate or limit the use of research findings in practice. Barriers can be broadly grouped under categories described by Funk, Champagne, Wiese, and Tornquist (1991a). Drawing on the evidence on barriers to research use, researchers have used these factors to predict research use.

**Barriers to Research Use**

Funk et al.'s (1991a) mailed survey randomly sampled 5000 full-time registered nurses (RNs) from 22 states in the United States. Data from 1948 nurses (41% response rate) measuring barriers to research use were factor analysed and four factors accounted for 43.4% of the variance in the data. The factors parallel major concepts in Rogers' (1995a) innovation diffusion theory: characteristics of the adopter; characteristics of the innovation; characteristics of the communication; and characteristics of the organisation. The first factor in the Barriers to Research Utilization scale is characteristics of the adopter, and refers to the nurse's research values, skills, and awareness. Nurses reported a lack of awareness of research, feeling isolated from knowledgeable colleagues with whom to discuss the research, and not feeling capable of appraising research findings (Funk et al., 1991a). These findings have been supported by others (Brett, 1987; Coyle & Sokop, 1990; Le May, Mulhall, & Alexander, 1998; Omery & Williams, 1999). Hicks (1996) and Retsas (2001) reported nurses not seeing the benefit of research for themselves or for changing practice and were unwilling to change or try new ideas. In summary, these studies, which were primarily surveys based on self-report data, suggest that nurses' awareness, beliefs, and attitudes toward using research in practice are important influencing factors.

Funk et al.'s (1991a) second factor in the Barriers to Research Utilization scale is characteristics of the innovation or research and refers to methodological inadequacies in the research, the inappropriateness of the conclusions drawn from the research, the lack of replication of the research, conflicting results in the literature, the nurses' uncertainty regarding whether to believe the research results, and the slowness in publication of findings. Funk et al.'s third factor is characteristics of the communication of the research and refers to its presentation and accessibility. The six items within this
factor include lack of readability and clarity of implications for practice, lack of availability of research reports, unclear statistical analyses, scattered nature of the relevant literature, and the failure to communicate research in a way that is relevant to the nurse’s practice.

Funk et al.’s (1991a) fourth major factor in the Barriers to Research Utilization scale is characteristics of the organisation and refers to setting barriers and limitations. Nurses rated setting barriers as the most inhibiting (Funk, Champagne, & Wiese, 1991b). Nurses reported they had insufficient time on the job to read and implement research findings, and insufficient authority to change patient care procedures. They reported a lack of support and cooperation from nursing colleagues, physicians, and administrators to implement research findings as well as inadequate facilities and perceived lack of generalisability of the research to the setting. Similar organisational barriers have been reported in other studies (Retsas, 2001; Le May et al., 1998; Omery & Williams, 1999; Pettengill, Gillies, & Clark, 1994). For example, in the Retsas study on barriers to using research evidence, nurses reported the most significant barriers were having insufficient time to read research and implement new ideas on the job.

Facilitators of Research Use

Champion and Leach’s (1989) results of a correlational study of clinical nurses indicated that positive attitudes ($r=0.55$) and perceived availability of research findings ($r=0.52$) were strongly associated with research utilization and accounted for 42% of the variation in the regression model. Hatcher and Tranmer (1997) conducted a well designed descriptive survey in a large teaching hospital in Ontario. Their regression analysis revealed the variables of support from the work environment, nurses’ positive attitude, and availability of research findings were significantly associated with research utilization. Nurses’ positive attitude was the most important predictor of research use accounting for 52% of the variance. Although attitude and availability were stronger predictors of research use than support, organisational support independently accounted for 27% of the variance in the regression equation. Similarly, staff nurses’ positive attitudes toward research, access to research supports, and support of research activities significantly predicted research use, and accounted for 50% of variation in research use scores (Tranmer, Lochhaus-Gerlach, & Lam, 2002). Varcoe
and Hilton's (1995) survey of acute care nurses in British Columbia found that organisational context was influential in nurses' use of specific research findings, but individual factors such as nurses' value of, interest in, and expectations to use research were correlated with nurses' reports of general use of research.

**Summary of Barriers' and Facilitators' Literature**

Much of the research addressing barriers and facilitators has utilized cross-sectional surveys and therefore all associations are correlational. Although this body of literature is limited by the predominance of self-report and survey data, the past and current research suggests that a wide range of individual and organisational factors influence research use in nursing practice. There is little research that describes nurses' actual use of research in practice.

**Clinical Practice Guidelines**

An important development in the context of evidence-based practice has been the development of evidence-based practice guidelines to assist practitioners to integrate research findings into practice, to reduce inappropriate variation in practice and to promote evidence-based health care (Davis & Taylor-Vaisey, 1997; Hayward, Guyatt, Moore, McKibbon, & Carter, 1997; Thomas, Cullum, McColl, Rousseau, Soutter, & Steen, 2001; Worall, Chaulk, & Freake, 1997). Guidelines are systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances (Field & Lohr, 1990, 1992). Their purpose is to present health professionals, patients, and managers with easily understood recommendations based on the best available evidence. Tools such as care pathways (Denton, 1999), care maps (Winnipeg Regional Health Authority, 2000), and CPGs (Marek, 1995) are being used to facilitate dissemination of research findings. Rigorously developed guidelines may offer one means of bringing research into practice (Cheater & Closs, 1997).

**Clinical Practice Guidelines and Medicine**

The movement to develop and disseminate CPGs has been well established in medicine since the mid-1980s and is clearly linked to the evidence-based practice movement (Davis & Taylor-Vaisey, 1997). An underlying assumption of evidence-based
medicine is that practitioners are autonomous individuals, as most physicians are (Gennaro, Hodnett, & Kearney, 2001b). Although CPGs have the medical practitioner in mind, the adoption and use of guidelines in medical practice has not been as widespread as guideline developers intended. The primary finding in a survey of Canadian physicians was the low number of physicians who use CPGs and the fact that in the year before the survey fewer than forty percent (40%) had changed their practice as a result of guidelines (Hayward et al., 1997). Although generally positive about guidelines, many physicians (51%-77%) were not confident in guidelines issued by federal or provincial health ministries and were more confident in guidelines issued by physician organisations. Physicians also reported concerns related to loss of autonomy, guideline rigidity and decreased satisfaction with medical practice. Despite these concerns, improvements to medical practice and improvements to a variety of patient outcomes based on the use of CPGs have been clearly documented in the medical literature (Feder, Griffiths, Highton, Eldridge, Spence, & Southgate, 1995; Grandes, Cortada, & Arrazola, 2000; Sippel, Osborne, Bjornson, Goldberg, & Buist, 1999; Onion & Walley, 1995).

Grol, Dalhuijsen, Thomas, in’t Veld, Rutten, and Mokkink (1998) describe several important attributes of CPGs which influence their use in clinical decision making. In addition to a strong scientific basis, CPGs should be compatible with existing values and routines of the target group and not be too controversial nor demand too much change to existing routines. Guidelines should be defined precisely, with specific advice on actions and decisions in certain cases, and should provide the evidence in a straightforward manner. Grol et al.'s descriptive study indicated that effective implementation of CPGs is enhanced with precise definitions of recommended performance and by testing the feasibility and acceptance of CPGs in the target group. Overall, they concluded evidence-based recommendations are better followed in practice than recommendations not based on scientific evidence.

Research on Guidelines’ Dissemination in Medicine

There has been a growing body of research evaluating the most effective ways to implement CPGs (Canadian Medical Association, 1997; Davis & Taylor-Vaisey, 1997; Grimshaw & Russell, 1993) and this research has been the subject of three
systematic reviews of guidelines' implementation. Grimshaw and Russell (1993) and Grimshaw et al. (1995) systematically reviewed published evaluations of CPGs which used randomised controlled trials or other robust experimental or quasi-experimental designs. Their reviews focussed on the effects of guidelines on the process and outcome of care. Both systematic reviews included studies where CPGs were defined as systematically developed statements to assist practitioner decisions about appropriate health care for specific clinical circumstances, excluded patient oriented strategies for improving compliance with guidelines, and concentrated on physicians and medical practice. Of the 59 studies available for review in 1993, all but four detected significant changes in the process of care in the direction proposed by the guidelines while the size of the improvement varied considerably. Although the variety of guidelines was diverse (e.g., 27 on prevention, 24 on specific clinical conditions) Grimshaw and Russell concluded that the implementation of CPGs did improve clinical practice.

In 1995, Grimshaw et al. updated their 1993 systematic review to include another 32 studies, either previously unidentified or published up to June 1994. This systematic review examined the evidence on whether practice guidelines can change the behaviour of health professionals and how best to introduce them into clinical practice. Of the 87 studies that examined effects on the process of care, as measured by adherence to recommendations of practice guidelines, 81 reported significant improvements. Grimshaw et al. concluded that properly developed guidelines can change clinical practice and may lead to changes in patient outcomes. The evidence indicated that educational interventions requiring active participation by professionals (e.g., targeted seminars, academic detail visits, opinion leaders) are more likely to lead to change in behaviour. They also concluded that implementation strategies are more likely to be effective when they operate directly on the consultation between the professional and the patient (e.g., restructuring patient records). In other words, they noted that implementation strategies which are nearer the end user and integrated into the process of health care delivery are more likely to be effective. Due to insufficient evidence they were unable to reach firm conclusions about the effectiveness of different educational implementation strategies in different contexts.
Davis and Taylor-Vaisey (1997) did a systematic review of implementation strategies for CPGs that focussed on randomised controlled trials and trials that objectively measured physicians' performance or health care outcomes. Their findings indicated that qualities of the guidelines, characteristics of the health care professional, characteristics of the practice setting, incentives, regulations and patient factors affected the adoption of guidelines. Guidelines that were relatively uncomplicated and could be observed or tried by the clinician were more effectively adopted (Grilli & Lomas, 1994). The strongest interventions to facilitate implementation of the CPGs were academic detailing, clinician reminders and multiple intervention strategies compared to traditional continuing medical education methods such as conferences, workshops, and mailed materials. Davis and Taylor-Vaisey concluded that primary dissemination strategies must be accompanied by secondary implementation and education methods that are more practice-based (e.g., patient education materials, audit and feedback to clinicians, and reminders) and community-based (e.g., academic detailing and opinion leaders).

Surveys of Canadian physicians regarding the use of CPGs indicate that 30% to 40% of physicians change their practice on the basis of CPGs (Hayward et al., 1997; Lomas, Anderson, Domnick-Pierre, Vayda, Enkin, & Hannah, 1989). Implementing CPGs in practice may predispose physicians to change, however, they must be accompanied by strategies to encourage adherence (Hayward et al., 1997; Lomas, 1993; Lomas et al., 1989). The theme of an active implementation plan to accompany research dissemination of CPGs is supported by other systematic reviews of randomised controlled trials examining effectiveness of continuing medical education (Davis, Thomson, Oxman, & Haynes, 1992), other research (Hayward et al., 1997), and research review articles (Lomas, 1988, 1991).

Other systematic reviews into the effectiveness of continuing medical education on physician behaviour change contribute to our understanding of strategies to promote research-based nursing practice. These reviews included primarily randomised controlled trials of education strategies and interventions that assessed physician performance (Davis, 1998; Davis et al., 1992; Davis, Thomson, Oxman, & Haynes, 1995; Dobbins et al., 1998; Oxman et al., 1995). Generally effective strategies are the
more complex interventions such as the use of academic detailing, local opinion leaders and practice-based methods such as reminders, and patient-mediated interventions. Academic detailing as a dissemination strategy on its own or in combination with other strategies has been shown to be an effective strategy in changing physician behaviour for a variety of outcomes. Dissemination strategies such as conferences and mailing of educational materials have demonstrated little change in health professional behaviour when used alone (Bero et al., 1998; Ershoff, Quinn, & Mullen, 1995; Oxman et al., 1995; Sonnad, Moyer, & Bernstein, 2000).

Reminders are a useful behavioural approach when healthcare providers are faced with processing and documenting information and encourage recording of specific data items (Feder, Eccles, Grol, Griffiths, & Grimshaw, 1999; Grol, 1992). An assessment and documentation tool was reported to be an important motivator for change in other CPGs implementation studies (Feder et al., 1995; Howell, Foster, Hester, Vojir, & Miller, 1996). Previous research on the implementation of CPGs revealed a positive and modest improvement in provider adherence (Brown, Shye, McFarland, Nichols, Mullooly, & Johnson, 2000; Feder et al., 1995; Kim, Kristopaitis, Stone, Pelter, Sandhu, & Weingarten, 1999; Mascia, Koch, & Medicis, 2000; Neitzel, Hogan Miller, Shepherd, & Belgrade, 1999). The growing body of knowledge related to research on guidelines' dissemination in medicine highlights that educational interventions when combined with other practice and community-based strategies do influence the use of CPGs and improvements in professional practice.

Clinical Practice Guidelines and Nursing

Since the early-to-mid 1990s, CPGs are increasingly being developed using systematic methods including extensive reviews of the relevant research, discussion by members of expert panels, and reviews by peers. Several authors and organisations such as the American Nurses Association (Marek, 1995) have published developmental and evaluative frameworks and recommendations on how to develop evidence-based CPGs (Browman et al., 1995; Field & Lohr, 1990, 1992; Grimshaw & Russell, 1993; 1994; Stetler et al., 1998; Thomas, 1999). In addition to the considerable effort that has gone into developing CPGs for nursing, there is a growing interest and body of research-based information concerning the effectiveness of disseminating and using
CPGs in nursing practice (Cheater & Closs, 1997; Registered Nurses Association of Ontario, 2002; Thomas, 1999; Thomas, McColl, Cullum, Rousseau, & Soutter, 1999; Thomas et al., 2001).

Outcomes associated with the introduction of CPGs may be different for nurses, particularly for those who work in highly structured organisations with varying levels of autonomy and control over their practice. Many nurses do not practice autonomously and are subject to the rules and norms of the agencies that employ them (Gennaro et al., 2001b). Increasingly, a supportive organisational context is being acknowledged as very important to the transfer of research knowledge and promotion of clinician behaviour change (Dobbins et al., 1998; Kanouse, Kallich, & Kahan, 1995; Kitson et al., 1996; Kitson et al., 1998; Kitson, 2001; Orlandi, 1996).

Research on Guidelines' Dissemination in Nursing

Cheater and Closs (1997) reviewed the published literature to collate the available evidence on the effectiveness of methods of disseminating and implementing CPGs in nursing practice. So few research-based sources existed that the literature actually reviewed included opinion-based and descriptive reports of the current situation in nursing. This review of the published nursing literature drew attention to the absence of published research-based evaluations of dissemination and implementation strategies of CPGs in nursing.

Thomas et al. (2001) conducted a systematic review of 18 studies of professionals allied to medicine to determine the effectiveness and efficiency of introducing CPGs to promote improved practice and/or patient outcomes. The authors conclude that guideline-driven care can be effective in changing the process and outcome of care versus no guidelines. A strength of this review is the focus on nurses (17 out of 18 studies). The review is, however, limited in that only three studies explicitly compared two or more dissemination strategies. The results of these three studies suggest more active educational interventions (teaching sessions, opinion leaders, and computerised prompts) are more effective than passive approaches (printed materials or lectures) (Herman, Speroff, & Cebul, 1994; McDonald, Wilson, & McCabe, 1980; Seto, Ching, Yuen, Chu, & Seto, 1991). These findings should be interpreted with caution because the McDonald et al. study had a small sample size, and the Herman et
al. and Seto et al. studies had unit of analysis errors. The unit of randomisation was the provider but the unit of analysis was the patient.

Two studies published since Thomas et al.'s (2001) systematic review evaluated dissemination strategies to enhance the use of CPGs in nursing. In a test of the Ottawa Model of Research Utilization, researchers in Ontario evaluated the effectiveness of a series of awareness sessions and educational workshops to increase evidence-based decision making related to pressure ulcers (Logan et al., 1999). The extent of continued use of the CPGs was evaluated. Findings showed support for the dissemination strategies in that the CPGs were adopted at the policy level and continuing education training for nurses has become institutionalised in selected practice settings.

Nurse researchers in Minnesota evaluated the dissemination of CPGs on parenting and family violence prevention to public health nurses and their directors (Lia-Hoagberg, Schaffer, & Strohschein, 1999). The dissemination strategy consisted of an inservice session on the CPGs. The guideline manuals were presented to the public health nurses and they were instructed on how to use them. The evaluation consisted of a mailed survey six months after their participation in the inservice session. This strategy was generally ineffective in that 49% to 63% of the nurses had skimmed the guidelines, about 25% had discussed them with colleagues, and about 15% had applied them in their practice. About half of the directors had provided copies to their staff while only a few had used them to orient staff or incorporated them into clinical protocols. The study was limited by a 22% response rate, however, recommendations for future dissemination included a simplified format of CPGs, mentorship in the use of CPGs, and administrative support and structure to increase intentional use of CPGs. A strength of these two studies just mentioned was the use of Rogers' theory of diffusion of innovations which guided the timing and choice of dissemination strategies in the Logan et al. study and provided a framework for analysing the constraints to using CPGs in the Lia-Hoagberg et al. study.

Clinical Practice Guidelines in Nursing and in Canada

There has been some very important work done in Canada to promote research-based care and to develop and implement CPGs. This work is continuing. For example, Hodnett, Kaufman, O'Brien-Pallas, Chipman, Watson-MacDonnell, and Hunsberger
(1996) evaluated the effectiveness of a research-based dissemination strategy with nurses caring for labouring women in 20 Ontario hospitals. Drawing on marketing theory, nurse educational influentials were used in the role of dissemination agents to encourage use of research findings by their colleagues. The findings showed this marketing strategy was unsuccessful in improving patient outcomes. Nurse educational influentials commented that their colleagues reacted negatively about their designation as expert, although colleagues were responsible for their designation. Hodnett et al. commented that organisational factors such as unit culture and norms may influence nursing practice in more direct ways than they do for medical practice.

A Manitoba research utilization study used a comparative, descriptive, three-phase design to evaluate the impact of an educational intervention on the prevalence of pressure ulcers in 13 health care settings in the province (Gupton et al., 1998). The educational materials were developed from the Agency for Health Care Policy and Research (AHCPR) CPGs on pressure ulcer prevention and were disseminated via video, posters, and nurse pocket reference guides. The findings showed that prevalence rates could be reduced (3.8% reduction provincially) with improved staff knowledge about pressure ulcer prevention. This multi-site study drew on the CURN model and relied heavily on nurses who were familiar with their own sites. The local nurses were responsible for distribution of the educational materials and inservices.

Activities in three provinces demonstrate ongoing progress in the area of development and dissemination of CPGs for nurses. In November 1999, the Registered Nurses Association of Ontario (RNAO) launched the nursing Best Practice Guidelines Project with funding from the Ontario Ministry of Health and Long Term Care. The purpose of this multi-year project is to support Ontario nurses by providing them with best practice guidelines for client care. The project has been designed in multiple cycles. To date, the project team has developed and published 21 nursing best practice guidelines and 11 are under development (www.rnao.org). In December 2003, with Health Canada funding, the RNAO began to disseminate and implement nursing best practice guidelines to provinces and territories outside of Ontario. Dissemination strategies include publishing the CPGs on their website, workshops, newsletters, conferences, student placements, fellowships, partnerships with educational institutions
and publications. This development and dissemination of CPGs is commendable.

Two emerging initiatives deserve mention. In 2000 in Manitoba, Dr. Lesley Degner established a programme entitled *The Development of Evidence-Based Nursing Practices in Cancer Care, Palliative Care, and Cancer Prevention*. Framed within a joint PhD programme between the faculties of nursing and medicine, graduate students will be mentored in evidence-based practice. Development and dissemination of CPGs will be accelerated by networks of key decision makers linked to graduate students in the context of the graduate programme (L. Degner, personal communication, September, 2000). In 2001 in Alberta, Dr. Carole Estabrooks established the Knowledge Utilization Studies in Practice programme. The purpose of the Knowledge Utilization Studies in Practice programme is to develop knowledge and research utilization theory that can be used by nurses and other allied professionals to improve patient care and client health outcomes (www.nursing.ualberta.ca/kusp). An on-line searchable database of CPGs’ references is one of the many resources.

**Summary of Dissemination Research Literature**

There is an emerging body of nursing literature and a growing consensus regarding key factors known to facilitate the dissemination and uptake of CPGs. The implementation of CPGs is complex and multifaceted and can fail if the needed groundwork and buy-in from stakeholders is not secured (Cronenwett, 2002; Poe et al., 2001). The research evidence for a change in practice must be strong to justify its implementation (Grol et al., 1998; Kitson et al., 1998). Research evidence must be readable, accessible, and include the pros and cons of its implementation (Cronenwett, 1995; Funk, Tornquist, & Champagne, 1995). Dissemination strategies should be informed by a theoretical perspective (Grol, 1992; Moulding, Silagy, & Weller, 1999).

Dissemination of research evidence in the form of guidelines appears to be supported with more interactive implementation strategies such as ongoing education sessions and mentorship to facilitate uptake and use (Davis et al., 1992; Davis & Taylor-Vaisey, 1997; Grol, 1992; Lia-Hoagberg et al., 1999; Logan et al., 1999; Lomas, 1988, 1991; Mittman, Tonesk, & Jacobson, 1992; Thomas, 1999). The uptake of CPGs is likely to be more effective the greater the local ownership in the process, the more specific the educational dissemination intervention is and the more patient specific the
implementation trigger (Grimshaw & Russell, 1994).

Organisational characteristics appear to be more strongly associated with research use than either environment or individual characteristics (Dobbins et al., 1998). Organisational context is critical to include in studies of research transfer (Cronenwett, 1995; Davies & Hodnett, 2002). Leadership as part of the organisational context was identified as an element of success in Saks et al.'s (2001) research utilization study to implement AHRQ smoking cessation guidelines among pregnant women. It has been argued that knowledge about the dissemination process in specific contexts is required to better understand the interaction between the individual, the context, dissemination methods, and the evidence itself (Israel et al., 1995; Kitson et al., 1996; Kitson et al., 1998; Kitson, 2001; Norman et al., 1990). Further research is required into the most effective ways of disseminating and implementing CPGs in nursing (Cheater & Closs, 1997; Thomas, 1999; Thomas et al., 1999; 2001).

Academic Detailing

*Description of Method*

Academic detailing is a person-to-person approach to educational outreach developed by a group of doctors in the early 1980s (Avorn & Soumerai, 1983). Academic detailing involves one-on-one education usually by a pharmacist or physician who is trained to provide evidence-based prescribing information to clinicians in a user-friendly interactive educational encounter. The approach is modelled in part on pharmaceutical marketing programmes and based on the assumption that evidence-based prescribing and rational drug use could be enhanced by using the techniques of communication and behaviour change used by the pharmaceutical industry. Academic detailing has and continues to be effective in improving physician behaviour in various prescribing situations (Gonzaless, Steiner, Lum & Barrett, 1999; Soumerai & Avorn, 1990; Soumerai, Salem-Schatz, Avorn, Casteria, Ross-Degman, & Popovosky, 1993; Thomson O'Brien et al., 2001a; vanEijk, Avorn, Porsius, & DeBoer, 2001). The concept of *academic* detailing remains distinct from the visits of drug company representatives to physicians where the purpose is to increase sales of a company's product (Avorn & Solomon, 2000; Silversides, 1997).
Social marketing principles underpin the academic detailing approach. Social marketing has been defined as a process for increasing the acceptability of ideas or practices in a target group, a process for problem solving, a process to introduce and disseminate ideas and issues, and a strategy to develop effective communication messages (Lefebvre & Flora, 1988). Social marketing provides a practical and useful framework for identifying factors that drive and maintain behaviour and behavioural change (Glanz, Lewis, & Rimer, 1997). Key aspects of the social marketing approach include the benefits to individuals and society (Glanz, 1997), the focus on behaviour change and the target audience's primary role in the process (Lefebvre & Rochlin, 1997).

Techniques included in the social marketing approach to academic detailing are as follows: assessing the motivation for current practice and barriers to change; developing programmes for specific targets and their opinion leaders; having clear objectives; using concise educational materials; repeating essential messages; establishing credibility; encouraging clinician participation; and providing reinforcement through follow-up visits (Thomson O'Brien et al., 2001a). Similar principles have been advocated by others for designing and disseminating effective information packages to health care providers where effectiveness is defined as promoting behaviour change on the part of the practitioners to improve patient care (Kaluzny, Konrad, & McLaughlin, 1995; Kanouse et al., 1995; Soumerai & Avorn, 1990). In summary, academic detailing principles include face-to-face interaction, encouraging learner participation, repeating the message, making recommendations explicit and relevant to practice, and making use of opinion leaders and peer influence.

Research Literature on Academic Detailing

Thomson O'Brien et al.'s (2001a) systematic review of 18 randomised trials of academic detail visits examined physician behaviour and in three studies nurses were included. The behaviours targeted were prescribing practices (13 trials), preventive services (3 trials), and disease management (2 trials). All academic detailing visits included written materials, educational messages, and reminders. Audit and feedback complemented some visits. Although positive effects on practice were observed in all studies when academic detailing was combined with other interventions,
methodological inadequacies were evident. A risk of bias was present in all of the studies due to inadequate concealment of treatment allocation. Even after randomisation there were important differences between groups at baseline.

Academic detailing has recently been used in eight medical and nursing studies designed to examine its effectiveness in implementing CPGs. One multi-site randomised controlled trial of two-and-one-half years was conducted to detect the effects of academic detailing and continuous quality improvement teams in increasing compliance with national CPGs on the primary care of depression and hypertension (Goldberg et al., 1998; Horowitz et al., 1996). The results indicated that academic detailing had a limited effect in the percentage of depressed patients prescribed certain antidepressants. No intervention effects of continuous quality improvement were demonstrated at any of the sites with either disease condition. The researchers concluded that academic detailing and continuous quality improvement were generally ineffective in improving compliance with guidelines and clinical outcomes in the context of the primary care of hypertension and depression. The inability to demonstrate changes in certain behaviour with these two strategies may be related to several methodological problems. Of most importance is the fact that inconsistencies existed in the implementation of the intervention. The continuous quality improvement teams were asked to focus on the same recommendations from the guidelines. However, each team was allowed to base interventions on deficiencies unique to their site and the continuous quality improvement model was loosely followed. The academic detailing visits were inconsistently delivered across organisations with some physicians receiving 100% of the visits, while others received only 50% of the visits.

Brown et al. (2000) conducted two trials simultaneously to evaluate the effectiveness of the same implementation methods to encourage the use of CPGs related to treating depression: continuous quality improvement and academic detailing. The academic detailing study was a randomised controlled trial at the clinician level, and the continuous quality improvement study used a quasi-experimental design in two geographically distinct medical areas. In the continuous quality improvement study no statistically significant changes on care processes or patient outcomes were demonstrated. In the academic detailing study, clinicians' scores showed improvements
in the processes of care but no significant improvement in self-reported depressive symptoms among patients. In a secondary analysis, some patients showed a decline in two dimensions in functional status and less improvement in depressive symptoms than expected. Academic detailing was effective in changing drug prescribing behaviour, but only had a modest effect on behaviours such as counselling. The authors suggest the decline in patient global functioning may have been related to increased rates of drug side effects resulting from increased medication use, or a mismatch between the AHCPR guidelines and the chronically depressed cohort in which symptom change was measured. Also, the performance of the clinicians at baseline approached or exceeded the CPG conditions and may have limited the effect of academic detailing in this study.

Other researchers have demonstrated empirical support for academic detailing to facilitate the implementation of CPGs. In the Feder et al. (1995) controlled trial, academic detailing was used to disseminate local guidelines on diabetes and asthma management. Several aspects of diabetes and some aspects of asthma management were improved. In Kim et al.’s (1999) controlled trial, preventive practices pertaining to immunization for flu, pneumococcus, and tetanus were implemented. The investigators reported that the use of academic detailing to educate physicians positively, although modestly, influenced physician behaviour and patient satisfaction. In a prospective cost benefit analysis, academic detailing was used to promote the use of analgesic, sedation, and neuromuscular blockade to critically ill patients (Mascia et al., 2000). The use of guidelines resulted in safe, cost effective improvements to patients requiring ventilator management, and no untoward patient effects.

Academic detailing, operationalised as one-on-one expert to clinician transfer of evidence-based pain management principles, combined with an eight-hour educational programme was used to encourage the use of AHCPR clinical guidelines on acute pain management practices with nurses and physicians who cared for patients undergoing total hip and knee replacement surgery (Neitzel et al., 1999). At the follow-up evaluation, improvements in provider practice patterns were observed such as choice of recommended drugs, route, dosing, assessment, and communication of plans of care for managing pain, when compared to pretest assessments. The pretest post-test uncontrolled design, although user friendly in the clinical agency, limits the knowledge
claims that can be made based on this study.

Summary of Academic Detailing Literature

When combined with other strategies such as written materials and clinician reminders, academic detailing appears to hold potential for changing clinician behaviour and improving compliance with CPGs (Neitzel et al., 1999; Rabin, Boekeloo, Marx, Bowman, Russell, & Willis, 1994; Thomson O'Brien et al., 2001a). In some cases, patient care has been improved and in others it has remained unchanged. These differences may be explained by methodological inadequacies in some studies and by the variation in the intensity and timing of the academic detail visits among studies. The studies cannot easily be compared because of the range of the CPGs implemented and the range of provider and patient outcomes measured. Several of the studies were randomised controlled trials focusing on patient and provider outcomes and the factors influencing the process of dissemination and uptake may not have been captured. Overall, the majority of studies on academic detailing have been conducted in medicine. In view of the body of prior research assessing the efficacy of academic detailing and the current research supporting the potential effectiveness of academic detailing in nursing, further research to evaluate the effectiveness of academic detailing as a strategy for dissemination of CPGs is warranted.

Health Impact of Tobacco and Tobacco Reduction Practices

Smoking Prevalence

Premature death due to tobacco is the most important public health problem facing Canadians today (Ellison, Morrison, deGroh, & Villeneuve, 1999). In spite of the adverse effects of tobacco use, tobacco related disabilities and deaths are on the increase worldwide in response to the continued use of tobacco, mainly cigarettes (Rice & Stead, 2001). The trends among Canadian women are alarming. Makomaski Illing and Kaiserman (1999) report a 77% increase in the number of female smoking-attributable deaths rising from 9,009 in 1985 to 15,986 in 1996, while the number of deaths among males remained about the same. Among Canadian female smokers of childbearing years, in the years from 1989 to 1996 the percentage of smokers increased by 2.1% in the 15 to 19 year age group (from 6.8% to 8.9%) while smoking
among women aged 20 to 44 declined by 2.4% (from 59.9% to 57.5%). In Manitoba, in 1996, 9.6% (1 in 10) women aged 15 to 19 smoked cigarettes daily and 54.4% (1 in 2) women aged 20 to 44 smoked cigarettes on a daily basis (Statistics Canada, 2001). Based on 1995 data in the Winnipeg Regional Health Authority (WRHA), 28% of pregnant women smoked compared to 29% provincially and 24% of breastfeeding women smoked, which is close to the provincial average of 25% (Manitoba Health, 1997).

Eighty percent of Manitoba smokers expressed a desire to quit smoking and this was expressed more commonly in the young than the old (Gelskey, MacDonald, & Young, 1991). These provincial data reflect Canadian data where 75% of adult smokers would like to quit (Taylor & Dingle, 1994). Nurses caring for pregnant and postpartum women in the WRHA interact with a significant number of women who smoke and could be working with increasing numbers of women approaching childbearing years who began smoking in adolescence. Women who smoke in childbearing years are at higher risk for maternal and foetal complications during pregnancy and delivery and during the early postpartum period. Research attention must continue to be directed toward pregnant and postpartum women who require assistance to reduce tobacco consumption (Stewart, Potter, Dulberg, Niday, Nimrod, & Tiwagi, 1995; Ratner, Johnson, Bottorff, Dahinten, & Hall, 2000).

Health Effects

The health consequences of smoking to pregnant women and their infants have been well documented (Hartmann, Thorp, Pahel-Short & Koch, 1996; Lumley, Oliver, & Waters, 2000; Petersen, Handel, Kotch, Podworny, & Rosen, 1992). Pregnant women who smoke have an increased risk of tubal pregnancy, spontaneous abortion, hydramnios, premature rupture of membranes, pre-term labour (Meyer, Jonas, & Tonascia, 1976; Myhra, Davis, Mueller, & Hickok, 1992; Wainwright, 1983) and low birth weight babies (daSilva, 1994; Silins et al., 1985). Smoking is associated with low birth weight and perinatal death (Meyer et al., 1976), and with low rates of breastfeeding initiation and reduced duration of breastfeeding (Edwards, Sims-Jones, & Briethaupt, 1998; Horta, Victoria, Menezes, & Barros, 1997; O'Campo, Faden, Brown, & Gielen, 1992; Sayers, Burke, Corcoran, & Thornton, 1995). Mean milk volume and milk fat
decreases in mothers of premature infants and who smoke (Hopkinson, Schanler, Fraley, & Garza, 1992).

Research on smoking during and after pregnancy suggests smoking influences the incidence of lower respiratory tract illnesses in children through a congenital effect and to a lesser extent through passive exposure after birth (Taylor & Wadsworth, 1987). Sudden infant death syndrome (SIDS) occurs more frequently in infants of mothers who have smoked and asthma, bronchitis, colds, and pneumonia occur more frequently in infants of parents who smoke (Canadian Council on Smoking and Health, 1993; Canadian Cancer Society, 2000; Ashley, 1999; World Health Organisation [WHO], 2001). Exposure to tobacco smoke is an environmental risk factor for SIDS (McMartin et al., 2002).

**Smoking Cessation Practices**

It is estimated that 25% to 40% of women smokers try to stop smoking on their own for at least a brief time when they learn they are pregnant (Moner, 1994). Of those women who quit smoking in response to pregnancy, twenty-one (21%) percent relapse prior to delivery (Quinn, Mullen, & Ershoff, 1991). Approximately 40% of women who smoke stop just before becoming pregnant or when pregnancy was confirmed (O'Campo et al., 1992). Up to 75% relapse during the first six months of the postpartum period (Fingerhut, Kleinman, & Kendrick, 1990; McBride, Pirie, & Curry, 1992; Mullen, Richardson, Quinn, & Ershoff, 1997; Ratner, Johnson, & Bottorff, 1999). Two thirds of women who smoke during their first pregnancy also smoke during their second, exposing their first infant to tobacco smoke in utero and after delivery (Dietz, Adams, Rochat, & Mathis, 1997).

**Nurses’ Role in Smoking Cessation Counselling**

Pregnancy and postpartum are times when smoking cessation interventions should be offered (Fiore et al., 2000a; Mullen et al., 1997). Since nicotine replacement therapy and bupropion are not recommended for general use in pregnancy, the need for more powerful behavioural interventions and counselling to motivate and assist pregnant smokers to quit and sustain abstinence after delivery is important (Orleans, Johnson, Barker, & Kaufman, 2001; Pletsch & Morgan, 2002). For many women, the context of pregnancy is a time limited and clearly defined event during which tobacco
abstinence may be more easily maintained while the stress of the transition to parenthood can contribute to relapse (McBride et al., 1992). A focus on relapse prevention with new mothers is critical both to maintaining abstinence that has been established and to reducing infant exposure to the risk of environmental tobacco smoke (Albrecht, Rosella, & Patrick, 1994).

Clinicians caring for women in the prenatal and early postpartum periods interact frequently with women and have repeated opportunities to offer advice and counselling (Secker-Walker et al., 1994; Secker-Walker et al., 1995a; Secker-Walker, Solomon, Flynn, Skelly, & Mead, 1995b). As health professionals, nurses are seen as credible sources of health information (Gennaro et al., 2001b; Gupton, Thompson, Arnason, Dalke, & Ashcroft, 1995; Haines, 2002; Pletsch & Morgan, 2002; Todd et al., 2001). Their role in helping smokers stop smoking is one of the most important services they can offer (Canadian Nursing Association [CNA], 2001a; 2001b). Their potential to improve maternal and child health is clearly significant.

Clinical Practice Guidelines on Tobacco Reduction

The AHRQ guidelines on treating tobacco use and dependence (Fiore et al., 2000a) are heavily evidence-based, current, and comprehensive. The CPGs were developed by an expert committee convened by the AHRQ, a part of the United States Department of Health and Human Services, whose mission is to disseminate science-based information to medical practitioners and consumers (Gennaro et al., 2001b). These guidelines were compared to four national smoking cessation guidelines from Canada, the United Kingdom, New Zealand, and the United States. An explicit evidence base was detected for 100%, 89%, 68%, and 98% of the recommendations, respectively (Silagy, Stead, & Lancaster, 2001).

the AHRQ guidelines are the most complete assessment of interventions to treat tobacco use and dependence. They are congruent with Canadian national recommendations on providing smoking cessation assistance (Taylor & Dingle, 1994) and consistent with national nursing guidelines for RNs working with Canadians who use tobacco (CNA, 1997).

The 2000 guidelines continued to emphasise the scope of primary care clinicians to include physicians, nurses, dentists, and respiratory therapists and has expanded the focus to include a broader array of health care settings (e.g., clinic, hospital). Although the CPGs are most relevant to primary care clinicians, brief clinical interventions can be provided effectively by any clinician and interventions as brief as three minutes can increase cessation rates significantly (The Tobacco Use and Dependence Clinical Practice Guidelines Panel, 2000). Health care professionals, including registered nurses, can integrate these brief interventions into daily practice.

The CPGs highlight the chronic nature of tobacco use and dependence and emphasise the importance of repeated clinical interventions. The guideline recommendations have been peer reviewed and field tested to evaluate the validity, reliability, and utility in clinical practice. Treatment strategies consist of five main steps: ask the patient if she uses tobacco; advise her to quit; assess her willingness to make a quit attempt; assist her in making a quit attempt, and arrange for follow-up contact to prevent relapse. The CPGs recommend that interventions should be used with all populations to ensure every patient who uses tobacco is identified and offered at least a brief intervention at each clinical visit (Fiore et al., 2000a).

Smoking Cessation Counselling

Tobacco dependence is now increasingly being recognised as a chronic condition and one which requires ongoing assessment and repeated intervention (Fiore et. al., 2000a). Research evidence exists detailing effective strategies and treatments for providing smoking cessation counselling (Fiore et al., 2000a; Johnson, Ratner, Bottorff, Hall, & Dahinten, 2000; Ratner et al., 2000, 2004; Rice & Stead, 2001). Clinicians may assess smoking status, but the majority of women are not offered the
most effective interventions despite existing brief smoking cessation guidelines (Cooke, Mattick, & Barclay, 1996; Cooke, Mattick, & Campbell, 1998; Walsh & McPhee, 1992). For example, in a study of Australian midwives, Cooke et al. (1996) reported that few clinicians assessed their patients' motivation to quit or provided written materials. More than half recommended clients cut down smoking rather than quit. Least used interventions were counselling on how to quit, negotiating quit dates or offering follow-up and referral. Several studies show that nurse-led smoking interventions can be effective (Johnson, Budz, Mackay, & Miller, 1999; Johnson et al., 2000; Lumley et al., 2000; Rice & Stead, 2001).

Factors Influencing Counselling

Of particular interest to this study is research that explores clinician and manager beliefs regarding factors that support or inhibit their efforts to provide smoking cessation counselling. Doctors and midwives surveyed in large public hospitals in Australia reported factors that positively predicted the reported levels of smoking cessation counselling: perceived ability to counsel smokers about cessation; training for smoking interventions; and smoking intervention policy (Cooke et al., 1998). Although current smokers were less willing and perceived themselves to be less able to counsel smokers than former smokers and non smokers, there was no significant difference in the number of reported smoking interventions used by smoking and non smoking participants. The presence of specific procedures and training in smoking cessation appear to be the most important predictors of smoking cessation intervention.

A survey of Australian midwives indicated the main barriers to the use of smoking cessation interventions were low levels of experience and skill in smoking cessation counselling, insufficient time and staff, and a lack of smoking cessation intervention policies (Cooke et al., 1996). Midwives reported using more smoking cessation interventions when they worked in larger hospitals (>300 beds) and in hospitals which had a policy stating smoking cessation interventions should occur. In a British survey, general practitioners, obstetricians, and midwives said they experienced difficulty and lack of enjoyment while providing smoking cessation counselling (Clasper & White, 1995). Over half (53%) felt insufficiently trained and only 28% thought they possessed the necessary skills.
Similar barriers to smoking cessation counselling were reported in a survey of medical and nursing directors in Australian public antenatal clinics (Walsh, Redman, Brinsmead, & Arnold, 1995). The four most important barriers were lack of staff training in counselling smokers, lack of time, too few staff, and pessimism about the effectiveness of smoking advice. Other barriers included lack of staff confidence in their ability to counsel, lack of teamwork on smoking cessation interventions, staff believing that most pregnant smokers are not interested in counselling, staff unfamiliar with the role expected of them, staff being smokers themselves, and staff believing preventive medicine is not a major part of their role.

Similar constraints to clinician use of smoking cessation counselling have been reported in North America. In the United States, Kendrick et al. (1995) used a prospective randomised controlled trial to evaluate the effect of incorporating smoking cessation interventions into routine prenatal care. Low intensity interventions were provided on the effects of smoking on the foetus, the benefits of quitting, developing social support, preventing relapse and limiting exposure to environmental tobacco smoke. The findings demonstrated self-reported quitting was higher in intervention clinics than control clinics across three states. However, the cotinine-verified quit rates were not significantly different. The study was limited in that intervention protocols did not appear to have been fully implemented and that motivation to provide smoking cessation counselling varied among staff. The study revealed challenges to incorporating smoking cessation interventions due to workload demands on clinic staff.

Reports from doctors and nurses surveyed regarding smoking cessation counselling among pregnant and postpartum women found that greater smoking cessation knowledge, older age, and perceptions of smoking cessation as a priority were independently related to better counselling performance (Zapka, Pbert, Stoddard, Ockene, Goins, & Bonollo’s, 2000). A recent systematic review of ten randomised controlled trials, in which the intervention was training health care professionals in smoking cessation, found that health care professionals who had received training were more likely to perform tasks of smoking cessation than untrained controls (Lancaster et al., 2002).
Factors Influencing Dissemination of Programmes

Australian researchers have investigated the factors that influenced midwifery managers (Cooke, 2000; Cooke, Mattick, & Campbell, 2000) and doctors' and midwives' (Cooke, Mattick, & Walsh, 2001) adoption and uptake of a smoking cessation programme. In the Cooke et al. (2000) randomised controlled trial, 23 antenatal clinics were randomly assigned to receive the Fresh Start smoking cessation programme by simple dissemination (mail-out) or intensive dissemination (a mail-out plus personal contact with midwifery educators trained in the use of the Fresh Start programme). Significantly more of the programme components were adopted by the intensive dissemination group than by the simple dissemination group. Following the dissemination intervention, the managers believed the major barriers to the implementation of the Fresh Start programme were as follows: negative reactions of the clients; insufficient time for smoking cessation interventions; lack of support from professional colleagues; inability to provide follow-up to clients; staff turnover; and poor access and storage of materials. Evaluations were not sought from physicians or midwives providing direct care in the antenatal clinics.

Cooke (2000) surveyed midwives and physicians in the same 23 antenatal clinics 18 months after the dissemination of the Fresh Start smoking cessation programme. Sixty-six percent (n=187) of clinic staff completed and returned the survey. The results indicated that participation in decision making, working in the clinic at the time of dissemination, professional status (midwives adopted more components than doctors) and dissemination method (intensive > simple) were significant predictors of the use of smoking cessation interventions. Organisational factors, such as the clinics' formalised rules and centralised decision-making style, together with smoking intervention policies, were associated with increased awareness and programme adoption. Clinicians working in large urban complexes were less likely to be aware and less likely to adopt programme components than clinicians in smaller rural hospitals.

Cooke et al. (2001) surveyed 64 doctors and 118 midwives working in the same antenatal clinics one month prior to the dissemination and 18 months after the dissemination. Their purpose was to examine professional differences in programme awareness, initial adoption, and implementation when two different methods of
dissemination were used. Regardless of the method used to disseminate the programme (simple or intensive) both doctors and midwives increased the level of smoking cessation intervention at 18 months compared to baseline (mean difference = 2.8). The investigators noted the doctors' low rates of programme adoption and implementation compared to higher rates from midwives. These findings must be interpreted with caution as only 48% of the midwives and doctors at follow-up were working at the original clinic.

It is important to acknowledge efforts to encourage health care providers to increase smoking cessation activities in Canada. An exemplary programme to reduce the prevalence of smoking has existed in British Columbia since 1990. The British Columbia Doctors Stop Smoking Program assists physicians and other health professionals to implement proven methods of systematic tobacco reduction interventions into their practice. It does this through active recruitment by telephone and mail, training workshops, in-person presentations, medical conferences, and media contact. Within British Columbia, approximately 1600 physicians utilize the programme. Clinical and patient education materials are offered on-line from the programme website (http://www.bcdssp.com). The content is based on the 1996 AHCPR CPGs for tobacco dependence and updated regularly with research. The programme offers physicians with follow-up and consultation on clinical matters regarding smoking. This programme has served as a model to other smoking cessation programmes in Canada. In 1998 it became incorporated into the Society for Clinical Preventive Health Care.

Summary of Smoking Cessation Counselling

There is a growing body of research detailing effective strategies for nurse-led smoking cessation counselling. Despite the existence of effective strategies, several constraints exist. These constraints comprise clinician beliefs and characteristics such as lack of confidence and lack of interest in counselling, a lack of training, and personal smoking practices. Organisational constraints include a lack of policy on smoking cessation and workload pressures. Registered nurses require individualised support such as training in smoking cessation and organisational support such as smoking intervention policies in order to provide smoking cessation interventions to pregnant and postpartum women who smoke.
Summary of the Review of the Literature

The literature pertaining to factors influencing nurses’ use of research, guideline dissemination, smoking cessation counselling, and dissemination of smoking cessation programmes was reviewed in this chapter. A brief discussion was provided on the continuing high prevalence of smoking and adverse health effects among pregnant and postpartum women. More and less effective dissemination strategies were discussed. Research activity was evident across disciplines, although studies relating precisely to evaluating CPGs’ dissemination and implementation strategies in Canadian nursing contexts were scarce.

Because of the different nature of nursing practice from physician or midwifery practice, it is not known if the same factors facilitate or inhibit dissemination of smoking cessation programmes in nursing contexts. Strategies used in midwifery and medical practice cannot easily be transferred to nursing involvement in smoking cessation counselling. The rationale to evaluate a dissemination intervention was based on (1) the need identified in the literature for intervention studies to systematically and comprehensively evaluate the processes inherent in dissemination research (Cheater & Closs, 1997); (2) the evidence indicating the effectiveness of smoking cessation interventions with pregnant and postpartum women (Fiore et al., 2000a; Gebauer et al., 1998; O’Connor et al., 1992; Todd et al., 2001); and (3) the continuing need to address the adverse effects of smoking by focusing on nurses who routinely care for pregnant and postpartum women (Gebauer et al., 1998; Gennaro et al., 2001a; Rice & Stead, 2001; Todd et al., 2001; Wewers et al., 1998). Evaluations of dissemination strategies are needed to understand the effectiveness of methods to disseminate and implement CPGs on treating tobacco use and dependence into nursing practice. This knowledge can contribute to a better understanding of essential processes in disseminating CPGs and contribute to the development of efficacious strategies for nursing.
In this study the intervention was directed toward supporting the diffusion process and uptake of the clinical practice guidelines (CPGs) by promoting nurses’ awareness and encouraging utilization of the CPGs as intended. The theoretical perspective underlying this research draws on Rogers’ (1995a) innovation diffusion theory and Bandura’s social cognitive theory (1977, 1986, 1997). The innovation was the introduction of CPGs on treating tobacco use and dependence published by the Agency for Health Care Research and Quality (AHRQ) (Fiore et al., 2000a). Social cognitive theory was selected to provide theoretical support for the dissemination intervention because the CPGs call for nurses to learn and demonstrate new behaviours in treating tobacco use and dependence.

Innovation Diffusion Theory

Rogers (1995a) explains the main elements in the diffusion of new ideas involve an innovation which is communicated through certain channels over time among members of a social system. Rogers defines innovations as ideas or practices that are new or new to the individual. Theoretical dimensions most relevant to this study include Rogers’ views on perceived attributes of an innovation, the innovation-decision process, the role of the change agent, and the adopter categories. Empirical support for Rogers’ theory of innovation diffusion in nursing contexts has been demonstrated. Brett (1987) and Coyle and Sokop (1990) demonstrated that nurses moved through Rogers’ (1995a) innovation-decision stages when adopting nursing research findings in practice. Factors influencing nurses’ use of research findings in practice and adoption of CPGs are consistent with factors that Rogers identified as influencing the rate of adoption (Funk et al., 1991a; Funk et al., 1991b; Lia-Hoagberg et al., 1999). Rogers indicates that innovations are more likely to be adopted if they are not too complex, if they are compatible with existing practices, if the potential adopters can use them on a trial basis first, and if they seem to be an improvement to current practice.
Innovation Attributes

Rogers (1995a) identified five important attributes that influence the rate of diffusion, the degree of implementation, and the extent to which organisations will maintain an innovation over time. Relative advantage is the degree to which an innovation is perceived as better than previous ideas; the greater the perceived advantage, the more rapid the adoption. Compatibility is the degree to which an innovation is perceived as being consistent with existing values, past experience and adopter needs; a compatible idea will be adopted rapidly. Complexity is the degree to which an innovation is perceived as difficult to understand and use; new ideas that are easy to understand are adopted more quickly. Trialability is the degree to which an innovation may be experimented with on a limited basis; new ideas that can be tried will generally be adopted more quickly. Observability is the degree to which results of an innovation are visible to others; the easier it is for individuals to see the results, the more likely they are to adopt it. The findings of diffusion studies suggest the way potential adopters perceive the attributes of an innovation is critical, and these perceptions account for 49 - 87% of the variance in whether or not they adopt. Rogers (1995b) suggests CPGs that possess these attributes will be more rapidly and widely adopted.

Innovation-Decision Process

Rogers (1995a) conceptualises the mental processes and sequential stages an individual or organisation passes through in deciding whether to adopt an innovation as the innovation-decision process. The process begins with the knowledge stage where an individual becomes aware of an innovation and learns about how it works. Persuasion occurs when an individual forms a favourable or unfavourable attitude towards the innovation. It is at this early stage the perceived characteristics of the innovation influence the decision process. The individual then proceeds to make a decision to adopt the innovation and use it in practice, or reject it. Rogers’ last stage is termed confirmation where an individual seeks reinforcement of the decision made or reverses a decision to adopt an innovation on the basis of conflicting messages.
Change Agent

A change agent is an individual who actively influences a client's decision in a direction determined by the change agent (Rogers, 1995a, p. 27). Change agents promote ideas through selected communication channels. For example, in the knowledge stage, mass media channels such as posters, information sessions to create awareness and enlist organisational support are recommended. Face-to-face and interpersonal channels are more appropriate to persuade individuals in their decision to implement an innovation. Individuals who are homophilous or belong to the organisation and live and work in the same area may be more effective as a change agent. Rogers advises that change agents who are heterophilous or considered external to the change should use a stance of high empathy and seek out peers who may have used the innovation in practice and refer to their comments or experiences.

Adopter Categories

Adopter categories reflect the degree of innovativeness, or the degree to which individuals accept a new idea compared to other members of a social system (Rogers, 1995a, p. 261). According to Rogers theory, innovators (2.5% of a population) adopt the earliest. Early adopters (13.5%) adopt next. Early adopters are a respected group of individuals, are seen as opinion leaders and serve as role models for others in a social system. The early majority (34%) adopt new ideas willingly, but seldom lead and will often deliberate before adopting a new idea. The late majority (34%) remain somewhat sceptical and uncertain and will often respond to peer pressure when the uncertainty is removed. Laggards (16%) are last in a social system to adopt an innovation. They tend to be suspicious of innovations and may resist an idea. Hilz (2000) cautions that change agents should not discount resistance as fear of change and encourages further exploration of the resistance. Change agents need to plan for and recognise that social groups such as nursing units are comprised of RNs who will differ in the degree to which they adopt and progress through the innovation-decision process (Hilz, 2000; Rogers, 1995a).
Social Cognitive Theory

Social cognitive theory addresses both the psychosocial dynamics influencing health behaviour and the methods of promoting behavioural change (Bandura, 1986). Behaviour is considered dynamic and results from a continuing interaction among a person's characteristics, the behaviour of the person, and the environment within which the behaviour is performed (Bandura, 1986, 1997; Baranowski, Perry, & Parcel, 1997). Social cognitive theory explains how people acquire and maintain certain behavioural patterns and provides a basis for intervention strategies. Social cognitive theory has relevance to interventions focussed on individuals (Lewis, 1997) and allows for the application of theoretical ideas developed in other areas of psychology, thus benefiting from their insights (Baranowski et al., 1997).

Self-efficacy Concept

Self-efficacy is the most important prerequisite for behavioural change in social cognitive theory (Bandura, 1986). Unless people believe they can produce desired effects by their actions, they have little incentive to act. Efficacy belief, therefore, is a major basis of action (Bandura, 1997). According to Bandura (1997):

Self-knowledge about one's efficacy, whether accurate or faulty, is based on four principal sources of information: performance attainments; vicarious experiences of observing the performances of others; verbal persuasion and allied types of social influences that one possesses certain capabilities; and physiological states from which people partly judge their capableness, strength, and vulnerability to dysfunction (p. 399).

Perceived self-efficacy refers to beliefs in one's capabilities to perform a particular behaviour including confidence and commitment in overcoming barriers to performing that behaviour (Bandura, 1977, 1986; O'Leary, 1985). Bandura explains that efficacy beliefs may involve regulating one's own motivation, thought processes, affective states and actions, or it may involve changing environmental conditions. A high sense of efficacy in one activity domain is not necessarily accompanied by high self-efficacy in other activities (Bandura, 1997; A. Bandura, personal communication, November 6, 2001).
The self-efficacy concept encompasses the premise that if a person is to perform a particular behaviour, one must know what the behaviour is (knowledge of the behaviour) and how to perform it (Baranowski et al., 1997). Individuals' learning performance is enhanced through one of the four mechanisms noted above, and when excessive emotional arousal is minimised (Bandura, 1977, 1986, 1997; O’Leary, 1985). Strategies to minimise emotional arousal and defensive behaviours can reduce anxiety and make it easier for individuals to attend to learning. Reinforcement or feedback regarding successful performance also enhances behavioural capability. Social cognitive theory incorporates three types of reinforcement: direct (as in operant conditioning); vicarious reinforcement (as in observational learning); and self-reinforcement (as in self-control) (Baranowski et al., 1997). Social cognitive theory posits that enhancing perceived self-efficacy and behavioural capability through the previously stated mechanisms will contribute to actual behavioural change.

Conceptual Basis for the Dissemination Intervention

Theoretical concepts and propositions from Rogers' (1995a) innovation diffusion theory, Bandura’s (1997) social cognitive theory, and social marketing principles (Weinreich, 1999a, 1999b, 1999c, 1999d, 1999e, 1999f) were used to inform the development and implementation of the intervention. The substantive research regarding factors influencing nurses' use of research, and strategies known to be effective in disseminating CPGs and smoking cessation programmes in medicine, nursing, and midwifery were used to guide the development and evaluation of a dissemination intervention focusing on CPGs for treating tobacco use and dependence. Known barriers and facilitators to smoking cessation counselling were incorporated to enhance participant buy-in, and to inform and strengthen the intervention protocol. The primary outcome variable was the integration of the CPGs into practice, i.e., nurse adherence to the CPGs. A second outcome variable was nurse self-efficacy beliefs in providing smoking cessation counselling. Research indicates that organisational support, nurse attitudes toward using research in practice, and a supportive organisational climate are necessary for the awareness, adoption, and uptake of CPGs (Lancaster et al., 2002; Steckler, Goodman, McLeroy, Davis, & Koch,
Therefore, assessments of the organisational environment, nurses' attitudes toward research, and perceptions about using CPGs were made to control for these factors.

The conceptual model for this study is presented in Figure 1. Rogers' (1995a) stages in the innovation-decision process guided the researcher in the timing and choice of communication strategies. For example, mass media channels such as posters and awareness sessions were used in the knowledge stage to reach large numbers of nurses. Interpersonal and local communication channels such as academic detail visits and local opinion leaders were used to move nurses out of the persuasion stage to the decision-making stage, and again in the confirmation stage when nurses were anticipated to be validating their use of the CPGs. As a heterophilous change agent, the researcher sought out nurses who were viewed as opinion leaders to create awareness about the study and to encourage colleagues to participate.

Social cognitive theory guided the researcher in the choice of learning strategies and timing of feedback to the nurses. For example, individualised learning materials, role play, verbal persuasion, and provision of performance feedback were used to enhance behavioural capability and enhance self-efficacy expectations. The user friendly academic detail visits were designed to provide instruction, encouragement, and support. Social marketing principles were applied in preparing the educational materials and promoting their acceptance by the nurses. The materials were concisely, attractively, and individually packaged. Appendix A provides further details of the theoretical underpinnings and empirical support for the dissemination intervention.
Research Hypotheses

The purpose of this study was to evaluate a dissemination intervention that focussed on enhancing registered nurses' use of the CPGs for treating tobacco use and dependence issued by the AHRQ within the context of providing routine pregnancy and early postpartum care (Fiore et al., 2000a). The hypotheses were as follows:

H₁: at three weeks post intervention, intervention nurses' reported adherence to the CPGs on treating tobacco use and dependence will be significantly higher than at baseline and that of the control group;

H₂: at three weeks post intervention, intervention nurses' reported self-efficacy in treating tobacco use and dependence will be significantly higher than at baseline and that of the control group;

H₃: intervention nurses' perceived organisational support will be positively associated with adherence to the CPGs on treating tobacco use and dependence;

H₄: intervention nurses' positive attitudes to using research in nursing will be positively associated with adherence to the CPGs on treating tobacco use and dependence.
ROGERS' INNOVATION - DECISION PROCESS

Organisational Environment

Awareness Knowledge

Characteristics of Decision-Making Unit i.e. the RN

Perceived Characteristics of Innovation

1. Adoption
2. Rejection

Continued Adoption
Later Adoption
Discontinuance
Continued Rejection

BANDURA'S SOCIAL COGNITIVE THEORY

Information Sources

Behavioural Capability and Self-efficacy Expectations

1. Enactive Mastery Experiences
2. Vicarious Experiences
3. Verbal Persuasion
4. Physiologic / Affective States

Actual Behavioural Change

Self-Study Materials
- provide information in visually appealing, concise format
- emphasise advantages of CPGs, brevity, compatibility with current practice, and opportunity to use on trial basis
- video to demonstrate use of CPGs for vicarious learning

Academic Detail Visit #1
- provide instruction, encouragement, support
- offer practice opportunities
- encourage peer support
- emphasise advantages of CPGs
- Smoking Cessation Interventions Record form

Academic Detail Visit #2
- offer personalised instruction, encouragement, and support
- offer practice opportunities
- offer feedback on using CPGs
- clarify any misconceptions
- encourage peer support
- Smoking Cessation Interventions Record form

Figure 1. Conceptual Basis for the Dissemination Intervention
Chapter Four provides a description of the research design and study methodology. In the first section the setting, design, sample, and ethical considerations are outlined. In the second section the components of the dissemination intervention are presented and the study protocols are discussed. Data collection procedures are outlined in the third section. The scales and measures are described in the last section.

Setting

This study was conducted in the two largest health centres in the Winnipeg Regional Health Authority (WRHA). The study addressed a WRHA strategic goal for 2002: to develop strategies and partnerships to reduce the prevalence of smoking (WRHA, 2001). The WRHA was selected for several reasons. Firstly, it offered prenatal and postpartum health services to women throughout the region. Secondly, two similar sized hospitals offering comparable services were available in the region. Thirdly, the annual birth rate in each hospital was over 4000 and provided a sufficient number of women with whom the nurses could implement the clinical practice guidelines (CPGs) during the trial. Finally, the WRHA had a large enough group of nurses in each hospital to evaluate the dissemination intervention.

Prior to the study, both hospitals had closed their normal nurseries located on the postpartum units and were implementing new unit policies of 24-hour mother-baby contact or rooming in. Both hospitals were similar in terms of smoking policies. Patients and staff were not permitted to smoke inside the hospitals resulting from the hospitals’ compliance with the city’s smoking regulation by-law where no smoking in enclosed public places had been in effect since January 2, 2002. Although there was no formal policy that directed nurses to offer smoking cessation interventions to patients, some nurses offered patients some counselling regarding tobacco reduction.

Design

A quasi-experimental non equivalent control group before and after cohort
design was used to evaluate the dissemination intervention and uptake of CPGs. Quasi-experiments allow for examination of causality in situations where complete control is not possible (Burns & Grove, 1997; Cook & Campbell, 1979). This design was selected because random assignment of nurses to create treatment and control groups was not feasible due to the risk of information sharing among the nurses and contamination of the treatment intervention. Therefore, following baseline data collection, one hospital was randomised to the intervention group and the other to the control group. The elements of this design were random assignment of hospitals within the WRHA to treatment and control groups, exposing the intervention group to the dissemination intervention over 10 weeks, together with pretest and post-test measures. The design is represented in Figure 2, where R is the randomisation procedure, X represents the dissemination intervention, and O represents observations or data collection times.

\[ R \quad O_1 \quad \text{Hospital}_1 \quad X_1, X_2, X_3 \quad O_2 \]

\[ R \quad O_1 \quad \text{Hospital}_2 \quad O_2 \]

where:

- \( R \) = random assignment
- \( O_1 \) = baseline measures
- \( X_1 \) = self-study materials
- \( X_2 \) = academic detail visits, two weeks after \( X_1 \)
- \( X_3 \) = academic detail visits, three to four weeks after \( X_2 \)
- \( O_2 \) = post intervention measures, three weeks after \( X_3 \)

*Figure 2. Research Design: Quasi-experimental non equivalent control group before and after cohort design*
Sample

The study population consisted of hospital-based RNs who routinely provided care during pregnancy and the early postpartum. Selection criteria for the sample included the following: employed at either of the two WRHA tertiary hospitals; full- or part-time employment (no minimum EFT was required); or casual employment in a dedicated casual pool with at least 60 hours (0.4 EFT) of paid work in the last month prior to the study. RNs were recruited from the following nursing units: antepartum care; perinatal assessment unit; labour and delivery units; labour, delivery, recovery, and postpartum; and postpartum care. RNs were excluded if they worked in neonatal or intermediate care nurseries, or if they were temporarily reassigned to any of the clinical study units due to heavy workload.

Power Analysis

Sample requirements were calculated using Hassard's (1991) sample estimation formula and confirmed using Cohen's (1988) power tables for the statistics used: chi-square; t-test; repeated measures analysis of variance; and analysis of covariance. The following assumptions were used: (a) two-tailed alpha = 0.05; (b) power of 1-B = 0.80; (c) dependent variables measured at interval level; (d) normally distributed distributions; and (e) a small to moderate effect size estimation. Results from studies of dissemination interventions of smoking cessation programmes with doctors and midwives suggested moderate and positive effect sizes could be achieved (Cooke et al., 1996; Cooke al., 1998; Cooke et al., 2001). Based on the literature on dissemination and intervention strategies and CPGs, the reported effects on clinician behaviour, and by selecting a multifaceted and intensive dissemination strategy, a moderate, positive effect was predicted. Results of these calculations indicated a sufficiently powered study required 61 participants per group to conduct chi-square analysis; 46 participants to conduct t-tests; 64 - 99 per group to conduct analysis of variance and analysis of covariance and 44 per group to conduct correlations using Pearson's r. The sample size of 138 was adequate and met the requirements predicted from the power analysis: 67 in the intervention group and 71 in the control group. This sample size contributed to a sufficiently powered study.
Ethical Considerations

The study was approved by the Behavioural Research Ethics Board at The University of British Columbia and the Education and Nursing Research Ethics Board at The University of Manitoba. Institutional research access approvals were received from the two study hospitals and the Brandon Regional Health Authority for the pilot study. The researcher provided participants with information concerning the nature and purpose of the study, their role, what information and activities were required, and an estimation of their time commitment. Participants were made aware their participation was voluntary and would have no effect on their employment status. They were advised they were free to withdraw at any time. Written consent was obtained from each participant (Appendix B).

Dissemination Intervention Components

The dissemination intervention consisted of one-on-one brief, educational visits supplemented with a self-study package of a video and print materials, and a Smoking Cessation Interventions Record (SCIR) form. The intervention was designed to orientate participants to the CPGs on tobacco dependence and enhance self-efficacy by providing nurses with the knowledge and skills to offer brief smoking interventions to their patients. The intervention was delivered by the researcher and a trained research assistant who was also an experienced registered nurse. The academic detailers disseminated the CPGs, and informed and assisted the nurses in the application of the CPGs; the nurses determined how to integrate the CPGs into practice.

Self-study Package

The self-study package contained the CPGs, information on the smoking prevalence in Manitoba, the effectiveness of nurse-led smoking cessation interventions, the stages in the smoking cessation process, the adverse health effects of smoking to the woman and the infant, and patient education pamphlets (Appendix C). Nurse resource pamphlets included the Agency for Health Care Research and Quality (AHRQ) quick reference guide for clinicians on treating tobacco use and dependence (Fiore et al., 2000b), the Canadian Nurses’ Association (1997) guidelines for RNs working with Canadians affected by tobacco, and the Canadian Cancer Society (2000).
pamphlet on helping smokers quit. Patient pamphlets included the booklet *Start Quit Stay Quit* a self-help guide for smokers during pregnancy and postpartum (Hotz, Edwards, Sims-Jones & Cushman, 1999), pamphlets on children and second-hand smoke from the Canadian Cancer Society (2002), and a pamphlet created by the researcher on community resources on tobacco reduction (Hyndman, 2003).

The counselling strategies described in the self-study package were stage-matched, pregnancy specific, and were designed to be offered by nurses in a supportive and non-judgmental manner. Stage-matched meant that appropriate advice and assistance was to be offered to patients according to their assessed stage in the smoking cessation process (Naylor, Adams, & Mitchell, 2002; Prochaska & DiClemente, 1983). A 15-minute video included in the self-study package highlighted the printed information with four vignettes demonstrating the application of the CPGs with simulated patients. The vignettes portrayed current smokers who were unwilling to quit, willing to quit, a former smoker, and a non-smoker. Examples of completed SCIR forms to match the video vignettes were included.

*Academic Detailing*

The purpose of the academic detail visits was to provide one-on-one education in a user-friendly educational encounter. The objectives of these visits were to support and assist nurses with implementation, to problem solve as needed, and to document their experiences using the CPGs. The academic detailers reinforced what the nurses were expected to implement and document, gave feedback on what constituted good performance, and assisted the nurses in making self-judgements of efficacy. Learning to use the CPGs was facilitated by one-on-one personal interaction, verbal encouragement and praise, opportunities to practice interventions with the academic detailers, and receive feedback from the academic detailers from completed SCIR forms.

An academic detail visit guide and a minute-by-minute framework outlining research activities was developed to facilitate consistency during the visits and to contemporaneously document nurses’ progress (Appendix D). Additional information was recorded in field notes at the end of the academic detail visit (Appendix E). The data from the academic detail guide and the field note summary sheets were
essentially a short summary of the questions and topics addressed during the visit. This information served to re-orient the academic detailers when planning the second visit and provided descriptive detail of the nurses’ experiences in implementing the CPGs.

**Smoking Cessation Interventions Record Form**

RNs were encouraged to use the SCIR forms (Appendix F) throughout the trial period. The purpose of the SCIR form was to provide a quick and easy to use form for nurses to document their use of the CPGs. Specific interventions from the AHRQ CPGs were arranged according to the 5As headings (ask, advise, assess, assist, arrange) in the SCIR form in a simple checklist style. Nurses were instructed to check off, initial, and date the advice and counselling they offered to their patients. This contemporaneous recording of information provided for validation of nurses’ self-reported interventions.

**Pilot Study**

A pilot study to test the feasibility of the study protocol was conducted at the Brandon Regional Health Centre from January to June 2003. The pilot involved testing recruitment strategies, baseline and post intervention data collection, and pilot testing the intervention with one group of nurses working in three units. Data were collected from 14 RNs (30% participation rate). Analysis of the survey data, academic detail visit guides, and field notes indicated that revisions to clarify instructions were needed in both baseline and follow-up questionnaires and in the wording of the open-ended questions on the follow-up questionnaire. Two of the demographic questions were revised to enhance clarity. Nurses working in nurseries and outpatient fetal assessment units were excluded from the main study because pilot nurses’ experiences indicated the intervention protocol would need to be adapted for use in these areas. Feedback from pilot study nurses and comments volunteered from nurses who chose not to participate in the pilot study were used to develop more intensive recruitment strategies, and enhance the attractiveness of recruitment and retention strategies. Thus, the results of the pilot test were used to revise the main study protocol and the data collection measures (Hulley, Cummings, Browner, Grady, Hearst, & Newman, 2001). Data from the pilot study were not included in the main study.
Awareness Sessions

Presentations were made in late June 2003 to the nursing unit managers and directors, clinical resource nurses, and educators in each hospital. The researcher described the purpose of the study, how the study protocols would be implemented, requested their support, and responded to questions. Awareness sessions for staff were held in July and August 2003 at each hospital to introduce the study, and to create interest and excitement. Informational letters were also distributed to medical practitioners who were identified by nurse managers at each hospital.

In late July and early August 2003, inservice notices containing study information were distributed to all study nursing units at each hospital, followed by 59 short (5- to 10-minute) presentations over an eight week period to nurses working on the study units. Most of the nursing unit presentations were completed by mid-August. The researcher offered brief informal sessions (approximately 3-5 minutes) in both hospitals until late September to reach RNs and unit clerks who had recently returned from vacation. These presentations and informal sessions reached approximately 220 staff. Simultaneously, poster presentations were circulated on a rotating one-to-two day basis to each study unit at both hospitals to reach nurses and unit clerks who may not have attended an awareness session. The poster presentation was entitled *Promoting Best Practices in Tobacco Reduction* and was presented in a large tri-fold, table top display board. The information was identical to the researcher verbal awareness sessions and outlined the purpose of the study, and the opportunities and benefits of participating.

Research Advocates

A total of nine staff RNs from the study units in both hospitals were either nominated informally by their manager or personally invited by the researcher to act as research advocates for the study on their unit. Nurses who were seen as opinion leaders were sought. The research advocates were briefed extensively about the purpose and design of the study and asked to promote the study on their respective unit. Meetings were held either in person or by phone weekly to biweekly from August to the end of November. The research advocates assisted the researcher to plan appropriate times to visit the units, helped in creating awareness among their peers,
encouraged their colleagues to participate, and helped to communicate information about the study to the unit on an ongoing basis.

Nurse Recruitment

In July 2003, hospital administrative staff were designated by each hospital. The administrative staff reviewed the eligibility criteria, selected the appropriate nurses, prepared mailing labels, and distributed research materials to eligible nurses via internal hospital mail. Utilizing hospital administrative staff ensured nurses' right to privacy, and to voluntary and informed consent. The research materials consisted of a formal letter of invitation (Appendix G), two copies of the consent form, a baseline questionnaire (Appendix H), a contact information sheet (Appendix I), and an addressed return envelope.

Recruitment incentives. Although participants were not compensated monetarily, the following incentives were used to recruit and retain nurses. All nurses completing the baseline questionnaire received a complementary luncheon (valued at $4.00). All nurses completing the post intervention questionnaire received a complementary beverage (valued at $1.50-$2.00). Each nurse completing both questionnaires had a choice of a gift certificate for a manicure, a back massage, or a meal at The Keg (all certificates were valued at $15-$20) and had their name entered into a draw for one of two prizes: a one year paid subscription to the Association of Women's Health, Obstetric, and Neonatal Nurses and a draw for one of six lottery tickets from the Winnipeg hospital foundations' annual fundraising campaigns.

At the study onset, clerical support staff on each unit in the intervention hospital received a formal letter providing them with information about their role in the research study, directions for handling study materials, and a complimentary luncheon voucher. At the end of the study, clerical support staff at the intervention and control hospitals were formally thanked in a letter and each clerk received a complimentary beverage coupon valued at $1.50 - $2.00.

To sustain interest in the study and to acknowledge the nurses and the clerical support staff, unit incentives included Timbits parties for each nursing unit achieving a 25% RN participation rate and pizza parties for those units achieving a 50% or greater RN participation rate. A sunflower motif poster was constructed for each nursing unit in
black and white, and coloured in as participation rates rose. Weekly draws for small gifts were held for nurses during the implementation period at each hospital and for clerical staff at the intervention hospital. Draws for small gifts were held once at the control hospital to acknowledge clerical support and assistance in distributing information to the nurses.

**Baseline Data Collection**

In August 2003, following completion of most of the awareness sessions, the hospital administrative staff distributed the research packages via internal hospital mail under a hospital specific cover letter. Each baseline questionnaire was given a code number and hospital identification letter. Nurses were asked to complete and return one copy of the consent form and baseline questionnaire through inter-office mail in one envelope to a secure mailbox in each hospital’s nursing programme office. Nurses were asked not to put their name on the questionnaires. Participants were reminded that only grouped anonymous nurse data would be reported. Those RNs signing the consent kept one copy. A written reminder was sent out after 1 - 2 weeks to all RNs (see Appendix J). It served as a thank you for those who had responded, and as a friendly and courteous reminder for those who had not responded (Dillman, 1978).

A research assistant opened the nurses’ envelopes and placed signed consent forms in one envelope and the questionnaires in a separate envelope before returning them to the researcher. As the baseline questionnaires were returned, the research assistant created a code list comprised of the names of the nurses who consented to participate, linked to a returned questionnaire number. This list served as the basis for the second questionnaire distribution. The code list was kept in a locked file until completion of the study. It is acknowledged that the research assistant was not blind to the group assignment in either pre- or post intervention data collection points. At the end of the study, after the nurses’ names for eligibility incentives were determined, the code list was shredded.

**Study Protocols During Intervention Period**

After return of the first baseline surveys on 12 August 2003, one hospital was randomly assigned to receive the dissemination intervention and the other to the control group. Random assignment was done by the researcher with a coin toss witnessed by
the research assistant. The results of the randomisation were communicated via a letter to each of the study units with a copy to the respective nursing program managers. In the letter, participants in the control group were thanked for their participation and reminded they would be asked to complete a second questionnaire in approximately six months. Intervention group participants were thanked and advised the study would begin immediately.

Control group protocol. The control hospital nurses provided usual care to their patients during the study. Control hospital nurses received verbal information about the CPGs during awareness sessions held from July to September 2003. Written information about the CPGs contained in a poster display was available on the study units for nurses during recruitment in the months of August and September 2003. Academic detailing sessions and SCIR forms were not implemented at the control hospital. After all post intervention surveys were returned, each nurse at the control hospital received the same self-study materials and had the opportunity to attend an educational session provided by the researcher.

Intervention group protocol. After the baseline surveys were returned, each nurse willing to participate in the hospital randomised to the intervention group was contacted by phone to arrange distribution of the self-study package and to set up a timeline for the next contact. The first academic detail visit was planned within two weeks after the distribution of the self-study package. Prior to the visit, the RNs were contacted by phone to arrange the date and time and to confirm the nurses had reviewed the study materials. Each nurse was visited twice: at approximately two weeks; and again approximately three to four weeks after the first academic detail visit. At the conclusion of the intervention period the RNs were encouraged to continue using the guidelines.

The academic detailers (researcher and trained registered nurse) delivered the intervention protocol as previously described to eligible RNs in the intervention group from mid-August until mid-November. Training manuals enhanced consistency in the academic detail visits. The academic detailers met once weekly by phone or in person to review the study progress. One protocol was followed that included time frames for scheduling the visits, scripts to introduce the study kit, and each of the academic detail
visits, and a minute-by-minute framework for conducting the academic detail visits. These strategies helped to ensure that interventions were delivered consistently to all participants. A spreadsheet developed by the researcher was used to organise and monitor activities throughout the intervention (Davis, Broome, & Cox, 2002).

During the intervention period, unit clerks or nurses placed one SCIR form at the front of each patient admission file. The exact location and method of distribution was determined through consultation with the nurses and unit clerks in each area. Unit clerks or nurses removed patient identifiers from the SCIR form at patient discharge and placed forms in designated collection boxes or file folders near the unit clerk desks. The academic detailers provided multiple copies of the SCIR form to each study unit and collected all SCIR forms from the study units three to four times per week.

**Post Intervention Data Collection**

Post intervention data collection began in mid-November 2003 and ended in early February 2004. Post intervention questionnaires were distributed through the hospital mail beginning mid-November 2003 (Appendix K). Control hospital surveys were all distributed the same day. Intervention hospital surveys were distributed over three weeks. This time frame allowed each nurse to complete a 10-week trial of using the CPGs and for a three week interval between the second academic detail visit and the post intervention surveys. A written reminder (Appendix L) with $5.00 enclosed was sent within two weeks to remind those who had not responded. By the end of December 2003, 94% of control hospital surveys and 87% of intervention hospital surveys were returned. Christmas holiday schedules, vacations, and work schedules affected the length of the post intervention data collection period. By the end of January 2004, all participants who completed the baseline survey completed the post intervention survey.

**Feedback to Study Groups**

At the end of the study the researcher presented the study findings, conclusions and recommendations to the nurses in the study hospitals. Study summaries were mailed to each of the nurses who requested a study summary. Each research unit received a certificate of appreciation. A copy of the dissertation report was submitted to each of the study hospital libraries.
Data Collection

Baseline and Post Intervention

Data were collected from all participants using self-administered questionnaires before and after the intervention. The relationship of the study variables and the questionnaires is outlined in Table H1 (see Appendix H). Demographic and nurse characteristics were collected at baseline. Self-report data collected related to age, gender, ethnicity, formal educational preparation, prior training for smoking cessation, smoking status, length of time employed in the maternal child area, and specific practice setting. These data were collected to describe the sample and to allow for statistical control of differences in the intervention and control groups that may have occurred despite matching of hospitals. Research has shown that nurse attitudes toward using research in practice and organisational attributes are important variables supporting nurses’ actual use of research. The setting is an important dimension because a supportive climate is necessary for the awareness, adoption and uptake of CPGs (Lancaster et al., 2002; Steckler et al., 1992). Therefore, nurses’ attitudes toward research, organisational environment, and perceptions about using CPGs were assessed to control for these factors.

Baseline and post intervention questionnaires measured nurses’ reported adherence to the CPGs, self-efficacy beliefs in treating tobacco use and dependence, and perceptions about using CPGs. Two open-ended items in the baseline questionnaire assessed nurses’ awareness of the smoking prevalence in the patient population and their awareness of existing hospital policies related to smoking cessation interventions. Five open-ended items in the post intervention questionnaire assessed nurses’ experience with the dissemination intervention. Control nurses were directed to skip this section. Intervention nurses were asked to appraise each of the dissemination strategies and comment on those most and least supportive in using the CPGs. Additional comments or questions were sought from all nurses in an open-ended question of the end of the baseline and post intervention questionnaires. The internal consistency reliabilities of the scales used to measure the above variables were assessed using Cronbach’s alpha and are reported at the start of Chapter 5.
During Intervention Period

To provide more detailed information on the dissemination and uptake of the CPGs, the researcher collected quantitative and qualitative information (a) from intervention nurses’ documentation of their use of the CPGs in the SCIR forms and (b) from field notes during the academic detail visits. Qualitative data included nurses’ descriptive comments relating to the ways and times they implemented the CPGs, nurse information needs, and academic detailers’ descriptions of the feedback, support, and assistance offered. The narrative comments from the field notes and open-ended questions in the baseline and post intervention questionnaires were designed to enhance understanding of nurses’ experiences and to offer insight into the implementation processes (Miles & Huberman, 1994; Patton, 1987, 1990).

Instrumentation

Adherence to Clinical Practice Guidelines

In this study, nurses’ adherence to the CPGs was measured with the Cooke Scale (Cooke, 2000; Cooke et al., 1998), an instrument designed to assess the number of different types of smoking cessation interventions used. Three revisions were made to the Cooke scale for this study. First, minor wording changes were made to the items to be consistent with the AHRQ guidelines (Fiore et al., 2000a). Second, some items describing smoking cessation interventions were omitted and others were modified to be consistent with nurses’ use of smoking cessation interventions in a hospital setting. For example, the item referring to chart stickers was not used to identify patient smoking status in the intervention hospital. The item referring to follow-up discussions was not feasible because nurses did not have the opportunity for a repeat patient visit. The item about showing a video on smoking was not included because the smoking cessation interventions in this study were meant to be brief. The item related to referral was revised to clearly indicate this intervention meant providing information about self-help materials and community smoking cessation resources. One item, advising to cut down, was not used because it was inconsistent with the AHRQ CPGs. The total number of kinds of interventions was subsequently reduced from 13 to 12. Examples of items used included giving advice to quit as soon as possible, educating about the risks
of smoking on the woman's and baby's health, counselling about ways to stop smoking, and assisting patient (mother) to obtain social support at home.

The third change to the Cooke Scale involved a revision to scoring procedures. Cooke and colleagues (Cooke, 2000; Cooke et al., 1998; Cooke et al., 2001) used the sum of interventions to measure midwife- and physician-delivered smoking cessation interventions. In this study items were scored using a five point frequency-based Likert scale. Nurses in this study were asked to recall the last 10 women smokers they cared for in the hospital and to estimate how many women received smoking cessation interventions. The rationale for limiting reporting to the last 10 women who smoked was to elicit the most accurate recall. In relation to the last 10 smokers, nurses were asked to indicate how often they offered each smoking cessation intervention on a 5-point Likert scale from never (0 smokers out of 10) to usually (9-10 smokers out of 10). Responses were summed for each nurse resulting in a minimum adherence score of 12 and a maximum score of 60.

Smoking Cessation Intervention Record. Data collected from the SCIR forms (Appendix F) provided an objective measure of nurses' self-reported use of the CPGs and profiled the uptake and use of the CPGs over time. The items in the SCIR forms were derived from the AHRQ guidelines and organised using the 5As headings: Ask, Advise, Assess, Assist, and Arrange. Examples of items used included ask patient/mother about smoking status, congratulate and strongly encourage former smokers to remain quit, assess willingness to make a quit attempt within 30 days, negotiate a definite quit date, and facilitate referral to smoking cessation program.

SCIR data were coded and entered into SPSS to calculate totals and percentages of women who were offered specific interventions. The resulting statistics were estimates as SCIR data were not available for every patient because RN participation was voluntary, and there were times when no participating RN was on duty. Occasionally, when the nursing units were busy, clerks and nurses forgot to place a form on the patient chart. Health Records Department returned six SCIR forms found in patient discharge charts, indicating procedures for retrieving the forms on the units at patient discharge worked well. The SCIR forms returned from Health Records were included in the analysis. Comparisons were made of the numbers of SCIR forms
collected to actual monthly birth and discharge summaries to evaluate activity captured by the SCIR forms.

*Self-efficacy in Treating Tobacco Use and Dependence*

Because social cognitive theory posits that self-efficacy is a critical prerequisite for behavioural change, nurses' capability beliefs in offering smoking cessation counselling were measured using five items taken from the Readiness scale developed by the Center for Leadership Studies (1993) and modified by Cooke (2000). The Readiness scale has two subscales: perceived ability to counsel for smoking and willingness to do smoking cessation interventions. The five item subscale assessing perceived ability to counsel for smoking was used in this study to assess nurses' perceived self-efficacy beliefs in treating tobacco use and dependence. Cooke used this subscale in her research because it was a better predictor than the five item willingness subscale of the number of smoking interventions used by clinicians and because of multicollinearity in regression modelling (M. Cooke, personal communication, December 3, 2001).

The five items in the self-efficacy subscale required nurses to rate themselves on an eight point scale with descriptors anchoring each end, e.g., *Does not have the necessary knowledge* (1) to *Has the necessary knowledge* (8). All items were used with minor wording changes when deemed necessary, e.g., the term *smoking cessation counselling* was used instead of the term *quit smoking counselling*. Ratings were summed for each nurse resulting in self-efficacy scores in treating tobacco use and dependence that could range from a minimum of five to a maximum of 40. Higher scores indicated stronger self-efficacy in smoking cessation counselling. The entire Readiness scale demonstrated satisfactory internal consistency with reported Cronbach's alphas of greater than 0.7 when the measure was used with midwives and doctors in antenatal clinics (Cooke, 2000; Cooke et al., 1998).

*Perceived Value of Research in Nursing*

The value of research in nursing was measured with items derived from the Research Use in Nursing Practice questionnaire developed by Clarke (1991) and modified by Varcoe (1994). Six items in the Perceived Value of Research in Nursing scale assessed nurses' values of research in enhancing the nursing profession. Nurses
were asked to comment about their own perceptions of the value of research in nursing and asked to comment on their understanding of the value that research held for their department for each of the six items in the scale. Examples of items included in this measure were research enhances the profession’s accountability to the public and research-based knowledge assists the nurse to improve the effectiveness of nursing. Four point Likert scales from strongly disagree (1) to strongly agree (4) were used to score each item. The minimum score for each set of value statements was six (strong disagreement) to a maximum 24 (strong agreement). Minor wording changes were made to reflect current terminology. The Perceived Value of Research in Nursing scale was used previously with a population of hospital-based staff nurses and demonstrated acceptable internal consistency. In Varcoe’s study, Cronbach’s alpha ranged from 0.85 to 0.92.

Organisational Environment

Several factors identified in the nursing research utilization literature relate to organisational supports and these factors are predictive of nurses’ use of research. Facilitators of research use include the availability of research findings, the support, cooperation, and expectation from nursing colleagues and administrators to implement research findings, as well as the authority to change patient care procedures. Leadership, as part of the organisational context, was identified as an important element of success in implementing CPGs on smoking cessation.

Nursing Work Index - Revised Scale. In this study, attributes of the hospital work environment known to influence the use of research in practice were measured using the Nursing Work Index - Revised Scale (NWI-R) described by Aiken and Patrician (2000) and modified for use in Canadian contexts (Sochalski, Estabrooks, & Humphreys, 1999). Three subscales within the NWI-R assessing nurse autonomy, control over practice and resource adequacy, and nurse leadership were of interest in this study. The NWI-R is current and is specific to the hospital nursing practice environment and therefore was used to control for the influence of the above organisational environment factors on nurse outcomes (e.g., adherence to CPGs on treating tobacco use and dependence).

The participants in this study were asked to indicate the extent to which they
agreed that each of the practice environment characteristics were present in their current work environment. Four point Likert scales from strongly disagree (1) to strongly agree (4) were used to score each item. Minor editorial modifications were made to the NWI-R for use in this study, e.g., in item 14 the word who was inserted to enhance clarity: A chief nursing officer who is highly visible and accessible to staff. Item 21 was reworded to avoid the use of a double negative phrase. Examples of items used included a supervisory staff that is supportive of nurses, adequate support services allow me to spend time with my patients, praise and recognition for a job well done, and support for new and innovative ideas about patient care. Responses were summed to create subscale scores. Higher scores indicated the factors were present to a greater extent in the current work environment. Nurses' perceptions of the hospital work environment in the relevant NWI-R subscales were factor analysed to determine if the items clustered as expected from other reports of hospital-based nurses.

NWI-R Scale history and psychometric evaluation. The original NWI was designed by Kramer and Hafner (1989) from previous research on magnet hospitals, and includes factors reported by nurses to influence staff nurse satisfaction and quality of nursing care. Research conducted at these hospitals confirmed they shared a number of organisational attributes that served to attract and retain staff nurses in times of nurse shortages in other organisations: recognition of professional nurse autonomy, accountability, and responsibility for quality patient care; strong, effective, and visible nursing leadership; decentralised decision making to the unit level; adequate and flexible staffing (Kramer & Schmalenberg, 1991). The instrument has been used in several studies to measure organisational characteristics of hospitals as reported by staff nurses (Aiken, Lake, Sochalski, & Sloane, 1997; Aiken & Sloane, 1997a, 1997b; Aiken, Smith, & Lake, 1994). More recently the NWI-R has been used in an international study of nurse staffing and patient outcomes to measure attributes of the nursing practice environment to help explain differences in nurse and patient outcomes (Clarke, Laschinger, Giovannetti, Shamian, Thomson, & Tourangeau, 2001; Duncan et al., 2001; Sochalski et al., 1999).

Content validity has been established in the original NWI instrument in capturing important elements of professional practice environments (Aiken & Patrician, 2000;
Kramer & Hafner, 1989; Sochalski et al., 1999). Criterion related validity was demonstrated in three US studies where higher subscale scores on the NWI-R were associated with better nurse and patient outcomes (Aiken & Sloane, 1997a, 1997b; Aiken et al., 1994). For example, in the Aiken et al. study, a significantly lower patient mortality rate in *magnet hospitals* was attributed to greater nurse autonomy, greater control over support services and personnel, and enhanced nurse-physician relationships.

Previous reliability reports indicate the NWI-R scale is psychometrically sound in populations of hospital-based nurses. Cronbach's alpha for the entire NWI-R was 0.96 and subscale alphas were 0.75 for autonomy, 0.79 for control over practice and 0.76 for relationships with physicians (Aiken & Patrician, 2000). Data from a recent Canadian study (Estabrooks et al., 2002) indicated support for the three conceptually derived subscales reported by Aiken and Patrician. Cronbach's alphas for control over practice, nurse autonomy, and nurse-physician relationships were 0.78, 0.74, and 0.83, respectively. Clarke and colleagues' (2001) nurse leadership scale contained 11 items relating to effective and visible nursing leadership. Cronbach's alphas for the Clarke et al. Canadian study were 0.74 for control over practice and resource adequacy items, 0.74 for nurse autonomy, 0.82 for nurse-physician relations, and 0.76 for nurse leadership (H. Clarke, personal communication, February 17, 2004). The subscale on nurse-physician relationships was not directly related to this study and was not used in the analysis.

**Perceptions About Using CPGs**

The dissemination research literature has shown the implementation of CPGs is influenced by characteristics of the health care professional, the qualities of the guideline and the practice setting. In this study, nurses' perceptions about using CPGs in their practice were measured with the seventeen item version of the Measuring Perceptions of Innovation Adoption (MPIA) scale (Pankratz, Hallfors, & Cho, 2002). This scale draws upon Rogers' (1995a; 1995b) innovation diffusion theory and empirical work done by Brink, Basen-Engquist, O'Hara-Tomkins, Parcel, Gottlieb, & Lovato (1995) on the diffusion of tobacco prevention curricula and Moore and Benbasat (1991) on the adoption of information technology. The MPIA scale demonstrated
acceptable internal consistency with school coordinators; Cronbach's alpha was 0.85.

In this study, nurses were asked to express their level of agreement with attributes of CPGs anticipated to influence their adoption and use (i.e., relative advantage, compatibility, complexity, trialability, and observability). Modifications in wording were made to improve face validity. For example, *I think that using the principles of effectiveness fits well with the way I like to work* was changed to *I think that using CPGs fits well with the way I like to work*. Examples of other items used included *using CPGs will enhance my effectiveness on the job* and *it will be difficult to train nurses to use CPGs*. Items were scored using a four point Likert scale from *strongly disagree* (1) to *strongly agree* (4). Seven negatively framed items were reverse coded in the analyses. Items were summed to create an overall score for each nurse. The minimum score was 17 (strong disagreement) to 68 (strong agreement). High overall scores indicated favourable perceptions about using CPGs.

**Data Screening**

The data were reviewed to detect coding errors: outliers (outside the range of normal values) or wild codes (impossible codes). None were detected. Occasionally, nurses selected a range (i.e. 2 - 3 rather than 2 or 3). The midpoint of the range was entered consistently for all items. Missing data were handled as follows. The SPSS computer programme was programmed to construct frequency distributions for all variables in the data sets. Univariate descriptive statistics (e.g., mean, standard deviation, and range scores for each variable) were computed to determine the extent of missing data (Hassard, 1991; Munro, 2001; Polit et al., 2001). The researcher returned questionnaires to the nurses for completion of missing items. The above procedures ensured complete data sets for baseline and post intervention measures.

**Statistical Analysis Procedures**

One-way and two-way repeated measures analysis of variance (ANOVA) were used to analyse hypotheses one and two. Correlations using Pearson's *r* were used to assess relationships proposed in hypotheses three and four. Repeated measures ANOVA adjusts for the variation in the within-subjects measures taken at baseline and
post intervention, captures the effects of the passage of time and can be used in a multi-factor situation (Polit, 1996). Repeated measures generally reduces the error term and enhances the power of the analysis (Munro, 2001). These statistical analysis techniques were selected to permit analysis of group differences (one-way repeated measures ANOVA) and analysis where one factor was within subjects (i.e., self-efficacy beliefs) and the second factor was between subjects (i.e., employment status or nursing practice unit). The second technique (or two-way repeated measures ANOVA) is sometimes referred to as a mixed design (Polit, 1996). Repeated measures analysis of covariance (ANCOVA) was selected to control for initial differences among the groups and is appropriate for quasi-experimental designs (Munro, 2001). The application of the above controls to the quasi-experimental design enhanced statistical conclusion validity. Multiple linear regression analysis was used to examine all of the covariates simultaneously to assess their joint influence on the dependent variables at post intervention.

**Summary**

This chapter focussed on a description of the research design, study approach and methodology. Study protocols were presented. A detailed description was provided elaborating on the dissemination intervention components, and scales and measures used in the study. This non equivalent control group before and after cohort design was selected because of practicality and feasibility. Although quasi-experiments are considered weaker than true experiments because equivalency between experimental and control groups at the study outset cannot be assumed (Cook & Campbell, 1979; Polit et al., 2001) several controls were introduced in this study to enhance the rigour of the design and to minimise alternative explanations for post intervention differences. Although it was not feasible to randomise individual RNs to intervention and control groups, the hospitals were randomised. The assessment of the organisational environment at baseline allowed for an examination of work environment characteristics relevant to research use. The baseline comparison, statistical control measures, and use of valid and reliable data collection instruments enhanced internal validity.
In this chapter, study measures and sample characteristics are reported first, followed by a discussion of the bivariate analysis of group differences assessed at baseline. Next, the findings are presented in relation to each of the four research hypotheses. The last section reports on the descriptive findings from the study questionnaires and concludes with a summary of the findings.

Examining Psychometric Properties of the Scales

Before the scales and measures were used in the analyses, their psychometric properties were assessed. This first section reports the findings of the factor analyses of the items used to assess the main dependent variables of adherence to clinical practice guidelines (CPGs) and self-efficacy in treating tobacco use and dependence. The second section reports the findings of the factor analyses of items used to assess the following contextual variables: nurses' perceived value of research in nursing; organisational attributes of nurse autonomy, resource adequacy and perceived leadership approach (Nursing Work Index - Revised subscales); and perceptions about using CPGs. The Nursing Work Index - Revised (NWI-R) analyses were done using the subscale items reported in the Canadian context (Clarke et al., 2001).

As the scales were unidimensional, all factor analyses were done forcing a one factor solution. The exploratory principal components method of factor extraction was used because this method analyses all the variance in the observed variables, thus maximising variance (Polit, 1996). Items with loadings of 0.45 or higher were used to identify the content of each factor as recommended by Comrey and Lee (as cited in Tabachnick & Fidell, 1996). Those items that did not load according to preset minimum criteria were discarded. Factors were evaluated on eigenvalues of 1.0 and the scree plot (Munro, 2001; Polit, 1996). While ideally confirmatory factor analysis allows for a more precise test of an instrument's factor structure (Munro, 2001), the factor analyses of the scales and subscales in this study provide an indication of the conceptual congruence of the factors, and evidence of construct validity in the study population of hospital-based maternal child nurses.
Factor Analyses Results of Study Measures

**Adherence to Clinical Practice Guidelines**

The 12 items in the Cooke Scale (revised) were factor analysed and the results are presented in Table 1. The factor eigenvalue was 5.45. The items all had loadings of 0.48 or higher, accounting for 45.73% of the variance. The factor structure was clear and all items addressed aspects of adhering to the CPGs on treating tobacco use and dependence. All items were retained. Cronbach’s alpha for adherence to CPGs was good at 0.88.

**Self-efficacy in Treating Tobacco Use and Dependence**

The five items in the self-efficacy subscale of the Readiness Scale were factor analysed and the results are presented in Table 2. The factor eigenvalue was 3.45. The items all had loadings of 0.64 or higher, accounting for 69.37% of the variance. The factor structure reflects sources of nurses’ self-efficacy beliefs in offering smoking cessation counselling. Although Item 5 had a lower factor loading, it was important because actual performance of a behaviour is an important source of efficacy belief. Cronbach’s alpha for self-efficacy was good at 0.88.
Table 1

*Factor Loadings Cooke Scale (revised)*

<table>
<thead>
<tr>
<th>Cooke Scale (revised)* Items</th>
<th>Item Statement</th>
<th>Factor Loadings</th>
<th>Cronbach's α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a</td>
<td>Giving advice to quit smoking as soon as possible</td>
<td>0.71</td>
<td>0.87</td>
</tr>
<tr>
<td>3b</td>
<td>Educating about the risks of smoking on the woman's and baby's health</td>
<td>0.75</td>
<td>0.87</td>
</tr>
<tr>
<td>3c</td>
<td>Asking if the woman is willing to make a quit attempt</td>
<td>0.78</td>
<td>0.87</td>
</tr>
<tr>
<td>3d</td>
<td>Assisting with a quit plan</td>
<td>0.75</td>
<td>0.87</td>
</tr>
<tr>
<td>3e</td>
<td>Negotiating a definite quit date</td>
<td>0.56</td>
<td>0.88</td>
</tr>
<tr>
<td>3f</td>
<td>Counselling about ways to stop smoking</td>
<td>0.82</td>
<td>0.86</td>
</tr>
<tr>
<td>3g</td>
<td>Offering support while encouraging the patient in her quit attempt</td>
<td>0.67</td>
<td>0.87</td>
</tr>
<tr>
<td>3h</td>
<td>Assisting patient to obtain social support at home from her spouse/partner, friends/coworkers to help her in a quit attempt</td>
<td>0.73</td>
<td>0.87</td>
</tr>
<tr>
<td>3i</td>
<td>Providing information regarding the effects of smoking on the woman and the baby</td>
<td>0.67</td>
<td>0.87</td>
</tr>
<tr>
<td>3j</td>
<td>Giving pregnancy/postpartum specific self-help materials</td>
<td>0.58</td>
<td>0.88</td>
</tr>
<tr>
<td>3k</td>
<td>Referring the woman to a stop smoking group in the community</td>
<td>0.48</td>
<td>0.88</td>
</tr>
<tr>
<td>3l</td>
<td>Providing information regarding community resources and self-help materials</td>
<td>0.53</td>
<td>0.88</td>
</tr>
</tbody>
</table>

Note: Extraction method: exploratory principal components.
* Cooke Scale (revised) numbers correspond to questionnaire items.
### Table 2

**Factor Loadings Readiness Subscale**

<table>
<thead>
<tr>
<th>Readiness Subscale&lt;sup&gt;a&lt;/sup&gt; Items</th>
<th>Item Statement&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Factor Loadings</th>
<th>Cronbach's α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Does not have / has the necessary knowledge in smoking cessation counselling</td>
<td>0.87</td>
<td>0.84</td>
</tr>
<tr>
<td>D2</td>
<td>Does not have / has the necessary experience in smoking cessation counselling</td>
<td>0.88</td>
<td>0.83</td>
</tr>
<tr>
<td>D3</td>
<td>Has low levels / has high levels of skill in smoking cessation counselling</td>
<td>0.88</td>
<td>0.84</td>
</tr>
<tr>
<td>D4</td>
<td>Needs assistance or refers to others / requires little or no assistance for smoking cessation counselling</td>
<td>0.86</td>
<td>0.84</td>
</tr>
<tr>
<td>D5</td>
<td>Rarely / regularly counsels women on smoking issues</td>
<td>0.64</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Note: Extraction method: exploratory principal components.

<sup>a</sup> Readiness subscale numbers correspond to questionnaire items.

<sup>b</sup> Response Scale: D5 rarely counsels (1) to regularly counsels women on smoking issues (8).

---

**Nurses' Perceived Value of Research in Nursing**

**Own values.** The six items measuring nurses' own value of research from the Perceived Value of Research in Nursing Scale were factor analysed and the results are presented in Table 3. The factor eigenvalue was 2.84. The items all had loadings of 0.62 or higher, accounting for 47.3% of the variance. The items were all consistent with a professional orientation in nursing toward using research evidence in practice. Cronbach's alpha for nurses' own values was satisfactory at 0.77.
Table 3

*Factor Loadings for Own Values in Perceived Value of Research in Nursing Subscale*

<table>
<thead>
<tr>
<th>Own Values Subscale Itemsa</th>
<th>Item Statement</th>
<th>Factor Loadings</th>
<th>Cronbach’s α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1O</td>
<td>Research based knowledge assists the nurse to improve the effectiveness of nursing</td>
<td>0.70</td>
<td>0.74</td>
</tr>
<tr>
<td>A2O</td>
<td>Research enhances the profession’s accountability to the public</td>
<td>0.65</td>
<td>0.75</td>
</tr>
<tr>
<td>A3O</td>
<td>Research findings provide “the facts” needed to validate clinical practice decisions</td>
<td>0.62</td>
<td>0.76</td>
</tr>
<tr>
<td>A4O</td>
<td>The research process is essential for creating innovative, scientific nursing interventions</td>
<td>0.74</td>
<td>0.73</td>
</tr>
<tr>
<td>A5O</td>
<td>Research enhances nursing’s effectiveness in responding to new developments affecting health</td>
<td>0.75</td>
<td>0.72</td>
</tr>
<tr>
<td>A6O</td>
<td>Research findings enable nurses to use scarce health care resources more efficiently</td>
<td>0.66</td>
<td>0.75</td>
</tr>
</tbody>
</table>

Note: Extraction method: exploratory principal components.

*a Own Values Subscale numbers correspond to questionnaire items.

Perceived department value. The six items measuring nurses’ perceptions of the department value of research from the Perceived Value of Research in Nursing Scale were factor analysed and the results are presented in Table 4. The factor eigenvalue was 3.70. The items all had loadings of 0.67 or higher, accounting for 61.6% of the variance. All items were retained. Cronbach’s alpha was good at 0.87.
Table 4

Factor Loadings for Nursing Department Values in Perceived Value of Research in Nursing Subscale

<table>
<thead>
<tr>
<th>Perceived Nursing Department Subscale*</th>
<th>Item Statement</th>
<th>Factor Loadings</th>
<th>Cronbach's α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1N</td>
<td>Research based knowledge assists the nurse to improve the effectiveness of nursing</td>
<td>0.80</td>
<td>0.85</td>
</tr>
<tr>
<td>A2N</td>
<td>Research enhances the profession's accountability to the public</td>
<td>0.76</td>
<td>0.86</td>
</tr>
<tr>
<td>A3N</td>
<td>Research findings provide &quot;the facts&quot; needed to validate clinical practice decisions</td>
<td>0.78</td>
<td>0.85</td>
</tr>
<tr>
<td>A4N</td>
<td>The research process is essential for creating innovative, scientific nursing interventions</td>
<td>0.83</td>
<td>0.84</td>
</tr>
<tr>
<td>A5N</td>
<td>Research enhances nursing's effectiveness in responding to new developments affecting health</td>
<td>0.86</td>
<td>0.83</td>
</tr>
<tr>
<td>A6N</td>
<td>Research findings enable nurses to use scarce health care resources more efficiently</td>
<td>0.67</td>
<td>0.87</td>
</tr>
</tbody>
</table>

Note: Extraction method: exploratory principal components.
* Perceived Nursing Department Subscale numbers correspond to questionnaire items.

Nurse Autonomy

The six items in the Nurse Autonomy subscale of the NWI-R scale were factor analysed and the results are presented in Table 5. The factor eigenvalue was 2.82. The items all had loadings of 0.58 or higher, accounting for 46.9% of the variance. The factor structure was conceptually clear. All items addressed aspects of nurse autonomy and were retained. This result is consistent with Clarke et al. (2001) and similar to Aiken and Patrician (2000). Item 19 was not included in the Aiken and Patrician nurse autonomy subscale on nurse autonomy. Cronbach's alpha for nurse autonomy was satisfactory at 0.77.
Table 5

Factor Loadings for Nurse Autonomy Subscale

<table>
<thead>
<tr>
<th>NWI-R Items</th>
<th>Item Statement</th>
<th>Factor Loadings</th>
<th>Cronbach’s α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>A supervisory staff that is supportive of nurses</td>
<td>0.77</td>
<td>0.70</td>
</tr>
<tr>
<td>6</td>
<td>Nursing controls its own practice</td>
<td>0.68</td>
<td>0.74</td>
</tr>
<tr>
<td>17</td>
<td>Freedom to make important patient care and work decisions</td>
<td>0.73</td>
<td>0.72</td>
</tr>
<tr>
<td>19</td>
<td>The opportunity for staff nurses to consult with clinical nurse specialists or expert nurse clinicians</td>
<td>0.64</td>
<td>0.75</td>
</tr>
<tr>
<td>21</td>
<td>Staff nurses do not have to do things that are against nursing judgement</td>
<td>0.58</td>
<td>0.76</td>
</tr>
<tr>
<td>32</td>
<td>A nurse manager backs up the nursing staff in decision making, even if the conflict is with a physician</td>
<td>0.69</td>
<td>0.73</td>
</tr>
</tbody>
</table>

Note: Extraction method: exploratory principal components.

* Nursing Work Index numbers correspond to NWI-R questionnaire item numbers.

Resource Adequacy

The six items in the NWI-R subscale that measured Control Over Practice and Resource Adequacy were factor analysed and the results are presented in Table 6. The eigenvalue was 3.04. Five out of six items retained in this factor had loadings of 0.60 or higher, accounting for 50.7% of the variance. Item 43, opportunity to work on a highly specialised unit, failed to meet minimum factor loading requirements and was not included in the study subscale. Four items (1, 11, 12, 16) related to having access to sufficient time and human resources in the work environment, and one item (45) related to patient assignment and continuity of care. Although Item 45 has a lower factor loading than the other items, there are aspects of patient assignment and continuity of care that relate to the construct of resource adequacy. For example, increased opportunities for continuity of care reflect resource adequacy because it is associated with a stable, regularly employed workforce. Fully staffed workforces with fewer temporary nurse reassignments from other units and fewer casual nurse assignments
can be less disruptive and promote continuity of patient care. This result is similar to several previously reported studies (Aiken & Patrician, 2000; Clarke et al., 2001). Cronbach's alpha for this subscale was good at 0.82.

Table 6

Factor Loadings for Resource Adequacy Subscale

<table>
<thead>
<tr>
<th>NWI-R Items&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Item Statement</th>
<th>Factor Loadings</th>
<th>Cronbach’s α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adequate support services allow me to spend time with my patients</td>
<td>0.72</td>
<td>0.80</td>
</tr>
<tr>
<td>11</td>
<td>Enough time and opportunity to discuss patient care problems with other nurses</td>
<td>0.76</td>
<td>0.79</td>
</tr>
<tr>
<td>12</td>
<td>Enough registered nurses on staff to provide quality patient care</td>
<td>0.84</td>
<td>0.75</td>
</tr>
<tr>
<td>16</td>
<td>Enough staff to get the work done</td>
<td>0.84</td>
<td>0.74</td>
</tr>
<tr>
<td>43&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Opportunity to work on a highly specialised unit</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Patient assignments foster continuity of care</td>
<td>0.60</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Note: Extraction method: exploratory principal components.
<sup>a</sup> Nursing Work Index numbers correspond to NWI-R questionnaire item numbers. <sup>b</sup> Failed to meet factor loading requirement of 0.45 and was not included in study subscale.

Perceived Leadership Approach

Eleven items in the NWI-R subscale that measured nursing leadership were factor analysed and the results are presented in Table 7. The eigenvalue was 3.97. All eleven items in this factor had loadings of 0.45 or higher, accounting for 36.0% of the variance. All items were retained. The scree plot clearly indicated the presence of one underlying construct. Because all the items relate to nurses’ perceptions of the leadership approach in their work environment, this subscale will be interpreted in this study as Perceived Leadership Approach. This subscale demonstrated satisfactory internal consistency reliability with Cronbach's alpha of 0.81. The subscale items are consistent with the nurse leadership subscale reported by Clarke et al. (2001). Item 18 was not included in the Clarke et al. leadership subscale.
Table 7

Factor Loadings for Perceived Leadership Approach Subscale

<table>
<thead>
<tr>
<th>NWI-R Items</th>
<th>Item Statement</th>
<th>Factor Loadings</th>
<th>Cronbach’s α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Support for new and innovative ideas about patient care</td>
<td>0.67</td>
<td>0.78</td>
</tr>
<tr>
<td>13</td>
<td>A nurse manager who is a good manager and leader</td>
<td>0.72</td>
<td>0.78</td>
</tr>
<tr>
<td>14</td>
<td>A chief nursing officer who is highly visible and accessible to staff</td>
<td>0.68</td>
<td>0.78</td>
</tr>
<tr>
<td>18</td>
<td>Praise &amp; recognition for a job well done</td>
<td>0.63</td>
<td>0.79</td>
</tr>
<tr>
<td>28</td>
<td>A clear philosophy of nursing pervades the patient care environment</td>
<td>0.71</td>
<td>0.78</td>
</tr>
<tr>
<td>29</td>
<td>Nurses who actively participate in efforts to control costs</td>
<td>0.45</td>
<td>0.80</td>
</tr>
<tr>
<td>31</td>
<td>The nursing staff participate in selecting new equipment</td>
<td>0.49</td>
<td>0.80</td>
</tr>
<tr>
<td>38</td>
<td>Nursing care is based on a nursing rather than a medical model</td>
<td>0.53</td>
<td>0.80</td>
</tr>
<tr>
<td>41</td>
<td>Nurse managers who consult with staff on daily problems and procedures</td>
<td>0.67</td>
<td>0.78</td>
</tr>
<tr>
<td>47</td>
<td>Staff nurses actively participate in developing their work schedules</td>
<td>0.50</td>
<td>0.81</td>
</tr>
<tr>
<td>48</td>
<td>Each patient care unit determines its own policies and procedures</td>
<td>0.49</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Note: Extraction method: exploratory principal components.

* Nursing Work Index numbers correspond to NWI-R questionnaire item numbers.

Perceptions About Using Clinical Practice Guidelines

The 17-item Measuring Perceptions of Innovation Adoption (MPIA) scale used to measure perceptions about using CPGs was factor analysed and the results are presented in Table 8. Eight items (3, 4, 6, 7, 9, 11, 12, 15) had loadings less than 0.45 and were dropped from the scale. The final scale with an eigenvalue of 4.06 contained nine items loading at 0.45 or higher, and accounted for 23.9% of the variance. The nine items represented four out of five of Rogers’ guidelines characteristics: compatibility...
(1, 2); complexity (5); observability (8); and relative advantage (10, 13, 14, 16, 17). These items are clear, representative of Rogers’ constructs, and all contribute to assessing nurses’ perceptions about using CPGs. Cronbach’s alpha was satisfactory at 0.78.

Table 8

**Factor Loadings for Perceptions About Using CPGs’ Scale**

<table>
<thead>
<tr>
<th>CPGs Items</th>
<th>Item Statements</th>
<th>Factor Loadings</th>
<th>Cronbach’s α if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Using CPGs is compatible with other procedures or practices in my hospital unit</td>
<td>0.60</td>
<td>0.76</td>
</tr>
<tr>
<td>2</td>
<td>I think that using CPGs fit well with the way I like to work</td>
<td>0.64</td>
<td>0.75</td>
</tr>
<tr>
<td>3&lt;sup&gt;bc&lt;/sup&gt;</td>
<td>I believe that using CPGs would require my unit to make substantial changes to our present system of procedures</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>4&lt;sup&gt;bc&lt;/sup&gt;</td>
<td>It will be difficult to train nurses to use CPGs</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>5&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Overall, I believe that it will be complicated to implement CPGs</td>
<td>0.45</td>
<td>0.78</td>
</tr>
<tr>
<td>6&lt;sup&gt;bc&lt;/sup&gt;</td>
<td>I believe that nursing activities described in CPGs need to be implemented regularly</td>
<td>-0.40</td>
<td></td>
</tr>
<tr>
<td>7&lt;sup&gt;c&lt;/sup&gt;</td>
<td>I believe it is okay for me to try out new CPGs on a limited basis before fully implementing them</td>
<td>-0.02</td>
<td></td>
</tr>
<tr>
<td>8&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Nurses will not be able to see any changes in patient behaviour if CPGs are implemented</td>
<td>0.47</td>
<td>0.78</td>
</tr>
<tr>
<td>9&lt;sup&gt;c&lt;/sup&gt;</td>
<td>Patients will like the changes if CPGs are implemented</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Using CPGs will enhance my effectiveness on the job</td>
<td>0.70</td>
<td>0.75</td>
</tr>
</tbody>
</table>

*(table continues)*
Table 8  Factor Loadings for Perceptions About Using CPGs’ Scale (continued)

<table>
<thead>
<tr>
<th>CPGs Items</th>
<th>Item Statements</th>
<th>Factor Loadings if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>11&lt;sup&gt;c&lt;/sup&gt;</td>
<td>My nursing unit will lose resources if we do not use CPGs</td>
<td>0.33</td>
</tr>
<tr>
<td>12&lt;sup&gt;e&lt;/sup&gt;</td>
<td>Using CPGs will increase my ability to get resources for my unit</td>
<td>0.36</td>
</tr>
<tr>
<td>13</td>
<td>Using CPGs will increase the quality of care on my unit</td>
<td>0.70 0.74</td>
</tr>
<tr>
<td>14&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Using CPGs will have no effect on patient behaviours</td>
<td>0.49 0.77</td>
</tr>
<tr>
<td>15&lt;sup&gt;bc&lt;/sup&gt;</td>
<td>CPGs require more work than can be done with the current resources on my unit</td>
<td>0.35</td>
</tr>
<tr>
<td>16</td>
<td>Even if the hospital did not encourage the use of CPGs, I would like to implement them in my unit</td>
<td>0.63 0.76</td>
</tr>
<tr>
<td>17</td>
<td>Overall, I think using CPGs is advantageous for my unit</td>
<td>0.72 0.74</td>
</tr>
</tbody>
</table>

Note: Extraction method: exploratory principal components.

<sup>a</sup> Items numbers correspond to CPGs questionnaire items. 
<sup>b</sup> Negatively framed items were reverse coded prior to the analysis. 
<sup>c</sup> Factor loadings of less than 0.45 were dropped from study scale.

Summary of Psychometric Analyses and Instrument Reliabilities

A summary of all instrument reliabilities is provided in Table 9. All measures used in the subsequent analyses demonstrated acceptable internal consistency reliabilities with values greater than 0.70, which is considered the minimum acceptable value for research purposes (LoBiondo-Wood & Haber, 2003). The subscales of nurse autonomy, resource adequacy, perceived leadership approach, and perceptions about using CPGs were used as covariates in the subsequent hypotheses testing and analyses.
### Table 9

**Internal Consistency Reliabilities of Scales used in Questionnaires**

<table>
<thead>
<tr>
<th>Name of Scale</th>
<th>Variable Measured</th>
<th>Number of Items</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooke (revised) Scale</td>
<td>Adherence to CPGs on treating Tobacco Use and Dependence</td>
<td>12</td>
<td>0.88</td>
</tr>
<tr>
<td>Readiness Subscale</td>
<td>Self-efficacy in Treating Tobacco Use and Dependence</td>
<td>5</td>
<td>0.87</td>
</tr>
<tr>
<td>Perceived Value of Research in Nursing Scale</td>
<td>Value of Research in Nursing</td>
<td>12</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>Nurses' own value of research</td>
<td>6</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>Nursing department value of research</td>
<td>6</td>
<td>0.87</td>
</tr>
<tr>
<td>Nursing Work Index - Revised Scale</td>
<td>Resource adequacy</td>
<td>5</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>Nurse autonomy</td>
<td>6</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>Perceived leadership approach</td>
<td>11</td>
<td>0.81</td>
</tr>
<tr>
<td>Measuring Perceptions of Innovation Scale</td>
<td>Perceptions about using CPGs (baseline)</td>
<td>9</td>
<td>0.78</td>
</tr>
</tbody>
</table>

**Sample and Baseline Data**

**Participation Rates**

From the eligible nurses, 147 RNs were invited to participate from the intervention hospital and 142 RNs from the control hospital. Sixty-seven (45.5% participation) and 71 RNs (50.0% participation) were recruited respectively from each hospital. The eligible nurses who declined to participate did so because (a) they were not interested; (b) they were already involved in one or two ongoing studies; (c) they felt uncomfortable offering smoking cessation advice when they smoked themselves; (d) they were too busy with events in their personal lives; (e) they did not think this kind of study was applicable to their practice setting. A few nurses declined because of four week vacation breaks during the scheduled study implementation period.
Sample Demographic Characteristics

The participants \( (N=138) \) ranged in age from 22 to 62 years \( (M = 38.3; SD = 9.9) \), and all were female. The majority of the nurses \( (88.4\%) \) reported their ethnic background as White (Caucasian/European) while the remainder \( (11.6\%) \) described their background as Asian, Aboriginal, Black, or Latin American. The majority of the RNs worked part-time \( (53.6\%) \) while 39.9\% reported working full-time, and 6.5\% reported working on a casual basis. Eighty-two \( (59.4\%) \) of the participants graduated from diploma nursing programmes, fifty-five \( (39.9\%) \) graduated from baccalaureate programmes, and one nurse did not specify the kind of basic programme. The mean years since graduation from basic programmes was 15.9 \( (SD = 9.9; \text{range} = \text{several months to 35 years}) \). The majority of the sample \( (58.7\%) \) graduated more than 10 years ago. Over half \( (55.0\%) \) of the nurses had continued their formal education completing additional community college diplomas and receipt of the Bachelor's degrees while 42.0\% reported no additional formal education beyond receipt of their nursing diploma. One nurse with a Bachelor's degree in nursing also held a Master's degree.

Nurses from all study units participated with 28.3\% from antepartum (includes gynecology), 26.1\% from labour and delivery (includes obstetrical triage and perinatal assessment), 21.7\% from combined labour / delivery / recovery / postpartum units, and 15.2\% from postpartum. Length of employment experience varied from 13.1\% hired within the past year to 29.0\% who had worked more than 10 years. Overall, nurses were experienced with 80.0\% having worked on their unit more than two years.

Most participants \( (73.9\%) \) had received no training in smoking cessation counselling. The remainder had received some training in their basic nursing programme \( (26.1\%) \) while a few \( (2.1\%) \) reported training opportunities during inservices at work or continuing education programmes. The majority of participants \( (102) \) reported being non smokers \( (73.9\%) \), while nine nurses reported being current smokers \( (6.5\%) \) and 27 reported being former smokers \( (19.6\%) \).

Sample demographic comparison. Control and intervention groups were compared to assess their equivalency (see Table 10). The groups were not statistically significantly different in relation to age, ethnic background, basic nursing education, mean years since graduation, continuing formal education, length of employment,
training in smoking cessation, and current smoking status. The demographics of the two study groups differed with respect to current employment status and current area of nursing practice (see Table 10). The intervention hospital had a greater number of nurses in full-time positions and a greater number of nurses participating from postpartum and antenatal units than the control hospital. These differences were statistically significant and were controlled in the analysis. In the control hospital, 8.0% of RNs were based in a float pool for work assignments on antepartum, labour and delivery, and postpartum units. These differences reflect different patterns of obstetrical care provision and different hiring practices in the two hospitals.

Table 10
*Demographic Comparison of Control and Intervention Groups*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Control</th>
<th>Intervention</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age M years (SD)</td>
<td>38.0 (9.6)</td>
<td>38.7 (10.2)</td>
<td>0.37</td>
</tr>
<tr>
<td>Ethnicity f (%)</td>
<td></td>
<td></td>
<td>0.73</td>
</tr>
<tr>
<td>Caucasian</td>
<td>62 (87.3)</td>
<td>55 (82.1)</td>
<td></td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>9 (12.7)</td>
<td>12 (17.9)</td>
<td></td>
</tr>
<tr>
<td>Employment f (%)</td>
<td></td>
<td></td>
<td>32.14***</td>
</tr>
<tr>
<td>Part-time / casual</td>
<td>59 (83.1)</td>
<td>24 (35.8)</td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>12 (16.9)</td>
<td>43 (64.2)</td>
<td></td>
</tr>
<tr>
<td>Basic Education f (%)</td>
<td></td>
<td></td>
<td>1.34</td>
</tr>
<tr>
<td>Diploma</td>
<td>44 (62.0)</td>
<td>38 (56.7)</td>
<td></td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>27 (38.0)</td>
<td>28 (41.8)</td>
<td></td>
</tr>
<tr>
<td>Years Since Graduation M (SD)</td>
<td>13.0 (9.9)</td>
<td>13.0 (10.3)</td>
<td>-0.06</td>
</tr>
<tr>
<td>Continuing Education f (%)</td>
<td></td>
<td></td>
<td>1.60</td>
</tr>
<tr>
<td>No formal</td>
<td>25 (35.2)</td>
<td>17 (25.4)</td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>26 (36.6)</td>
<td>29 (43.3)</td>
<td></td>
</tr>
<tr>
<td>Degree</td>
<td>20 (28.2)</td>
<td>21 (31.3)</td>
<td></td>
</tr>
</tbody>
</table>

*(table continues)*
Table 10  *Demographic Comparison of Control and Intervention Groups* (continued)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Control</th>
<th>Intervention</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=71</td>
<td>n=67</td>
<td>t</td>
</tr>
<tr>
<td>Practice Area f (%)</td>
<td></td>
<td></td>
<td>9.68**</td>
</tr>
<tr>
<td>Antepartum</td>
<td>15 (21.1)</td>
<td>24 (35.8)</td>
<td></td>
</tr>
<tr>
<td>Labour &amp; Delivery</td>
<td>22 (31.0)</td>
<td>14 (20.9)</td>
<td></td>
</tr>
<tr>
<td>LDRP</td>
<td>17 (23.9)</td>
<td>13 (19.4)</td>
<td></td>
</tr>
<tr>
<td>Postpartum</td>
<td>5 (7.0)</td>
<td>16 (23.9)</td>
<td></td>
</tr>
<tr>
<td>Float pool</td>
<td>12 (16.9)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Length of Employment f (%)</td>
<td></td>
<td></td>
<td>1.42</td>
</tr>
<tr>
<td>&lt; 1 year</td>
<td>12 (16.9)</td>
<td>6 (9.0)</td>
<td></td>
</tr>
<tr>
<td>&gt; 1 yr to &lt; 2</td>
<td>13 (18.3)</td>
<td>12 (17.9)</td>
<td></td>
</tr>
<tr>
<td>&gt; 2 yrs to &lt; 5</td>
<td>21 (29.6)</td>
<td>19 (28.4)</td>
<td></td>
</tr>
<tr>
<td>&gt; 5 yrs to &lt; 10</td>
<td>7 (9.8)</td>
<td>8 (11.9)</td>
<td></td>
</tr>
<tr>
<td>&gt; 10 years</td>
<td>18 (25.4)</td>
<td>22 (32.8)</td>
<td></td>
</tr>
<tr>
<td>Smoking Cessation Training f (%)</td>
<td></td>
<td></td>
<td>0.33</td>
</tr>
<tr>
<td>Some</td>
<td>20 (28.2)</td>
<td>16 (23.9)</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>51 (71.8)</td>
<td>51 (76.1)</td>
<td></td>
</tr>
<tr>
<td>Smoking Status f (%)</td>
<td></td>
<td></td>
<td>2.70b</td>
</tr>
<tr>
<td>Non smoker</td>
<td>51 (71.8)</td>
<td>51 (76.1)</td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>7 (9.9)</td>
<td>2 (3.0)</td>
<td></td>
</tr>
<tr>
<td>Former</td>
<td>13 (18.3)</td>
<td>14 (20.9)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Continuing education: Diploma includes some university courses. Nursing practice area Antepartum includes gynecology and Labour and Delivery units include perinatal assessment. LDRP refers to combined Labour, Delivery, Recovery, Postpartum units.

*a*² does not include float pool, also Fisher’s Exact test for independence (Stat Exact), a² = 22.05, p<0.0001. *Fisher’s exact test (Stat Exact) used.

*p<0.05. **p<0.01. ***p<0.001.

Sample Comparison to Provincial Data

Study nurse demographics were compared to the population of Manitoba nurses who work in maternity settings. The College of Registered Nurses of Manitoba provided demographic data on active practising staff RNs who reported their practice area as maternal newborn for the 2003 registration year (R. Halford, personal communication, March 19, 2004). The maternal-newborn population of 614 nurses included both hospital-based and community nurses. It was not possible from the provincial data set to separate hospital-based nurses from those working in community settings. However,
an estimate of the proportion of nurses working in hospitals was obtained by examining the results of a recent Manitoba survey (Chalmers, Bramadat, Cantin, Shuttleworth, & Scott-Findlay, 2000). Chalmers et al. drew a random sample of 20% of the practicing nurses from the members list of the College of Registered Nurses of Manitoba \((n=2000)\). Approximately 80% of RNs were found to be employed within institutions and this suggests a majority of RNs in Manitoba who work in maternal newborn settings are hospital based. The College of Registered Nurses does not collect data on ethnic background, smoking status, or smoking cessation training. Study nurses smoking patterns were compared to the Chalmers et al. findings that investigated smoking history and patterns among registered nurses in Manitoba.

The study sample was similar to the provincial population of maternal newborn RNs in relation to age, gender, employment status, basic education in nursing, continuing formal education, and years since graduation from basic nursing programme (see Table 11). Slightly more of the study sample (39.9%) compared to the Manitoba maternal newborn nurses (29.0%) had earned baccalaureate degrees. The number of nurses in the study sample with baccalaureate degrees is consistent with employment trends in Manitoba and nationally. Across Canada, RNs in urban centres where this study was conducted, are more likely to have earned a degree in nursing (23.8%) compared to RNs in rural settings (18%) (Canadian Institute of Health Information, 2002). Nurses in the current study had more non smokers (73.9%), and fewer current (6.5%) and former smokers (19.6%) than Manitoba nurses working in maternity settings. In the Chalmers et al. (2000) survey, the majority of respondents \((n=545)\) reported being non smokers (64.5%), while 151 nurses reported being current smokers (12.1%) and 294 (23.5%) reported being former smokers. In conclusion, the study sample was similar to the population of Manitoba nurses who work in hospital maternity settings.
Table 11

*Comparison of Study Sample and Provincial Maternity Nurses*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total Sample</th>
<th>Manitoba Data&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=138</td>
<td>n=614</td>
</tr>
<tr>
<td>Age M years (SD)</td>
<td>38.3 (9.9)</td>
<td>40.6 (8.8)</td>
</tr>
<tr>
<td>Employment f (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part-time / casual</td>
<td>83 (60.1)</td>
<td>403 (65.6)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Full-time</td>
<td>55 (39.9)</td>
<td>203 (33.1)</td>
</tr>
<tr>
<td>Basic Education f (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>82 (59.4)</td>
<td>435 (71.0)</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>55 (39.9)</td>
<td>179 (29.0)</td>
</tr>
<tr>
<td>Continuing Education f (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree</td>
<td>41 (29.7)</td>
<td>126 (20.5)</td>
</tr>
</tbody>
</table>

Note:  
- Manitoba data includes nursing and non-nursing Bachelor degrees.  
- Six nurses (1.0%) did not report employment status.  
- Data from College of Registered Nurses of Manitoba, 2003.

Baseline Characteristics

Control and intervention groups were compared to assess their equivalency in relation to the dependent variables of adherence to CPGs and self-efficacy beliefs in treating tobacco use and dependence. Comparisons using t-tests were also made to determine equivalency in relation to contextual variables of perceived value of research in nursing, perceptions about using CPGs, and views about their present work environment. The groups were not statistically significantly different in relation to reported adherence to the CPGs, reported beliefs of the value of research for their own practice, and reported self-efficacy scores. The groups differed statistically with respect to beliefs about the value of research in their departments and their perceptions about using CPGs. The groups were also statistically significantly different in their views regarding nurse autonomy, resource adequacy, and perceived leadership approach (see Table 12).
Table 12

Comparison of Control and Intervention Groups: Baseline Characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Control</th>
<th>Intervention</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adherence to CPGs on Treating Tobacco Use and Dependence M (SD)</td>
<td>19.8 (7.7)</td>
<td>21.7 (7.4)</td>
<td>1.31</td>
</tr>
<tr>
<td>Self-efficacy Beliefs in Treating Tobacco Use and Dependence M (SD)</td>
<td>16.9 (7.4)</td>
<td>18.5 (7.6)</td>
<td>1.23</td>
</tr>
<tr>
<td>Perceived Value of Research in Nursing M (SD)</td>
<td>39.2 (4.0)</td>
<td>41.0 (4.2)</td>
<td>2.50*</td>
</tr>
<tr>
<td>Own value</td>
<td>19.9 (2.2)</td>
<td>20.2 (2.4)</td>
<td>0.78</td>
</tr>
<tr>
<td>Nursing department value</td>
<td>19.4 (2.9)</td>
<td>20.8 (2.6)</td>
<td>3.07**</td>
</tr>
<tr>
<td>Perceptions about Using CPGs M (SD)</td>
<td>26.2 (2.5)</td>
<td>27.2 (2.7)</td>
<td>2.27*</td>
</tr>
<tr>
<td>Perceptions of Organisational Environment M (SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse autonomy</td>
<td>15.2 (3.0)</td>
<td>16.9 (2.9)</td>
<td>3.33**</td>
</tr>
<tr>
<td>Resource adequacy</td>
<td>10.2 (2.8)</td>
<td>13.2 (3.2)</td>
<td>5.86***</td>
</tr>
<tr>
<td>Perceived leadership approach</td>
<td>27.2 (5.4)</td>
<td>30.0 (4.8)</td>
<td>3.27***</td>
</tr>
</tbody>
</table>

*p<0.05. **p<0.01. ***p<0.001.

Group Similarities

Adherence to Clinical Practice Guidelines

Control and intervention groups were not statistically significantly different in relation to reported mean adherence to CPGs at baseline. Group means and standard deviations were compared by intervention to elaborate further on the kinds of smoking cessation counselling being offered by both groups at baseline (see Table 13). The most frequently used interventions (fairly often, M>2.0) were educating about the risks of smoking on woman and infant health, advising the patient to quit smoking, asking the patient if she was willing to quit, and providing information about the effects of smoking. Interventions reported to be used sometimes (M=1.5-1.9) were offering support, counselling on ways to quit, and assisting patient to obtain social support. The interventions reported to be used the least (never, occasionally, M=1.0-1.5) were assisting with a quit plan, providing pregnancy/postpartum specific self-help information, arranging for follow-up support, and providing information about community
resources. Although there was one significant difference relating to one type of intervention on providing information about the effects of smoking, the mean difference was very small. An examination of the frequency distribution revealed a slight positive skew for the control group, meaning this particular intervention was used less frequently by the control group than the intervention group. Overall, the groups were not statistically significant different in their adherence to the CPGs.

Table 13
Adherence to CPGs Comparison of Control and Intervention Groups

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Control (n=71)</th>
<th>Intervention (n=67)</th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Advice to Quit</td>
<td>2.1</td>
<td>(1.2)</td>
<td>2.3</td>
</tr>
<tr>
<td>Educate About Risks</td>
<td>2.6</td>
<td>(1.2)</td>
<td>2.9</td>
</tr>
<tr>
<td>Ask if Willing to Quit</td>
<td>2.0</td>
<td>(1.2)</td>
<td>2.1</td>
</tr>
<tr>
<td>Assist with Quit Plan</td>
<td>1.3</td>
<td>(0.7)</td>
<td>1.2</td>
</tr>
<tr>
<td>Negotiate Quit Date</td>
<td>1.1</td>
<td>(0.6)</td>
<td>1.1</td>
</tr>
<tr>
<td>Counsel on Ways to Quit</td>
<td>1.6</td>
<td>(1.0)</td>
<td>1.7</td>
</tr>
<tr>
<td>Offer Support</td>
<td>1.9</td>
<td>(1.2)</td>
<td>2.2</td>
</tr>
<tr>
<td>Assist Patient to Obtain Social Support</td>
<td>1.5</td>
<td>(1.0)</td>
<td>1.6</td>
</tr>
<tr>
<td>Provide Information About Effects of Smoking</td>
<td>2.1</td>
<td>(1.1)</td>
<td>2.7</td>
</tr>
<tr>
<td>Give Pregnancy Specific Self-help Information</td>
<td>1.3</td>
<td>(0.7)</td>
<td>1.5</td>
</tr>
<tr>
<td>Refer to Community Stop Smoking Group</td>
<td>1.0</td>
<td>(0.2)</td>
<td>1.2</td>
</tr>
<tr>
<td>Provide information on Community Resources</td>
<td>1.1</td>
<td>(0.4)</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Note. Response Scale: Never(1) = 0 out of 10 patients, Sometimes(2) = 1-2 out of 10 patients, Fairly Often(3) = 3-5 out of 10 patients, Usually(5) = 9-10 out of 10 patients.
*p<0.05. **p<0.01. ***p<0.001.

Own Value of Research and Self-efficacy Beliefs

For both groups, nurses reported similar and high personal values regarding the
importance of research to enhance the practice of nursing (Table 12). Control and intervention nurses were not statistically significantly different in reported self-efficacy scores (Table 12). For both groups, over half of the participants (range = 56.5% to 68.1%) reported low levels of self-efficacy in smoking cessation counselling. Median values of 3 and 4, out of a possible 8, were reported for having the necessary knowledge, experience and skill in counselling, and for ability to counsel women. For both groups, sixty-five percent of RNs reported requiring assistance to counsel or referred their patients to others for smoking cessation counselling.

Additional Similarities

Control and intervention hospital nurses were not statistically significantly different in their experiences with respect to hospital smoking cessation policies ($\chi^2=5.3$, p=0.39). Among control hospital nurses, 98.6% reported their hospital had no policies to direct them to offer smoking cessation interventions, while 94.0% of intervention hospital nurses reported no hospital policies. Among the intervention nurses, two nurses indicated pamphlets were available on the unit, one nurse indicated there was positive encouragement for women to decrease the number of cigarettes, and one nurse was unsure.

Group Differences

Compared to the control hospital, intervention nurses' perceptions of the value of research in their department was higher (see Table 12). The intervention nurses reported more favourable perceptions than control hospital nurses about using CPGs in their hospital setting. The study groups also differed with respect to their views about their present work environment (see Table 12). Compared to the control group, the intervention group reported higher levels of autonomy, higher levels of having access to needed resources, as well as higher levels regarding their perceptions of leadership within their department.

Control and intervention hospitals reported different experiences with smoking rates among female patients. Intervention hospital nurses estimated an average of 51.9% ($SD=16.0$) of female patients had a history of smoking (range = 15.0% to 80.0%, mode = 50.0%, median = 47.5%). Control hospital nurses estimated an average of
37.4% (SD=16.9) of female patients had a history of smoking (range = 2.0% to 85.0%, mode = 50.0%, median = 49.0%). The mean scores differed significantly (t=5.1, p<0.01).

Baseline Comparison Summary

Control and intervention groups were equivalent in relation to the dependent variables of adherence to CPGs and self-efficacy beliefs on treating tobacco use and dependence. Both groups held similar beliefs of the value of research for their own practice and both groups reported working in hospitals with no policies directing them to offer smoking cessation interventions to their patients. The groups differed with respect to their perceptions of the value that research held for their nursing department and their perceptions about using CPGs. The groups differed in their views on the levels of nurse autonomy, access to resources, and perceived leadership approach within their work environments. These differences were controlled in the subsequent analyses.

Hypothesis One

At three weeks post intervention, intervention nurses' reported adherence to the CPGs on treating tobacco use and dependence will be significantly higher than at baseline and that of the control group.

A one-way repeated measures analysis of variance (ANOVA) (Polit, 1996) was conducted to examine the effect of the dissemination intervention on adherence to CPGs on treating tobacco use and dependence. Effect size for adherence was calculated using Cohen's (1988) formulae for treatment effect (d=1.746) and medium variability. The estimated effect size was 0.65 and can be considered a medium effect. While a medium effect was estimated in this study, it must be noted that other covariates may have contributed to this result.

At three weeks post intervention, the intervention nurses' reported adherence to the CPGs on treating tobacco use and dependence was higher (M=37.6, CI=35.3,39.9) than at baseline (M=21.7, CI=19.9,23.5), and higher than the control group at baseline (M=19.8, CI=18.0,21.5) and at follow up (M=21.1, CI=19.0,23.3). A significant F value, \( F(1,136)=103.47, p<0.001 \) (see Table 14) confirmed that the amount of change in adherence over time was different between the two groups. The control group
adherence to the CPGs remained the same while the intervention group adherence improved. The dissemination intervention did have an effect on nurses' adherence to CPGs on treating tobacco use and dependence, accounting for 43.2% of the variance in the dependent variable.

Table 14

Repeated Measures ANOVA for Change in Adherence to CPGs

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>172904.80</td>
<td>1</td>
<td>172904.79</td>
<td>1516.77</td>
<td>***</td>
</tr>
<tr>
<td>Group</td>
<td>5897.18</td>
<td>1</td>
<td>5897.18</td>
<td>51.73</td>
<td>***</td>
</tr>
<tr>
<td>Error</td>
<td>15503.37</td>
<td>136</td>
<td>114.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Within subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in Adherence</td>
<td>5102.14</td>
<td>1</td>
<td>5102.14</td>
<td>143.97</td>
<td>***</td>
</tr>
<tr>
<td>Change in Adherence</td>
<td>3666.71</td>
<td>1</td>
<td>3666.71</td>
<td>103.47</td>
<td>***</td>
</tr>
</tbody>
</table>

*p<0.05. **p<0.01. ***p<0.001.

Each of the baseline and work environment variables was examined for possible interaction effects with the change in adherence to CPGs. All tables with non significant findings relating to adherence to CPGs are contained in Appendix M. Because there were statistically significant differences at baseline in employment status (full-time and part-time/casual) and nursing practice units between control and intervention groups, a two-way repeated measures ANOVA (Polit, 1996) for adherence was conducted controlling first for employment status and then for nursing practice unit. The float nurse group was excluded from the analysis of practice unit because there was no comparable group at the intervention hospital. A non significant F value, \( F(1,134)=0.23, p=0.64 \), confirmed no interaction between change in adherence, employment status, and group (see Table M1). Nurses' employment status, i.e. working full-time or part-time/casual had no effect on change in adherence to the CPGs. A non significant F
value, $F(3,118)=0.21$, $p=0.89$, confirmed no interaction between change in adherence, nursing unit, and group (see Table M2). The nursing unit in which nurses worked did not differentially influence nurses' response to treatment, as measured by their adherence to CPGs on treating tobacco use and dependence.

Because there were statistically significant differences between control and intervention hospitals with respect to nurses’ perception of the value of research in their nursing department and nurses’ perceptions about using CPGs in their workplaces, repeated measures analysis of covariance (ANCOVA) was undertaken to account for each of these baseline differences. A non significant $F$ value, $F(1,135)=1.67$, $p=0.20$, confirmed that the effect of the intervention on change in adherence to CPGs did not vary with perceived value of research within departments (see Table M3). Non significant $F$ values at baseline, $F(1,135)=2.54$, $p=0.11$, confirmed no interaction when perceptions about using CPGs at baseline was introduced as a covariate (see Table M4). Nurses’ perceptions about using CPGs did not differentially influence their adherence to the CPGs on treating tobacco use and dependence.

To account for baseline differences with respect to perceptions of workplace environment factors of nurse autonomy, resource adequacy and perceived leadership approach, repeated measures ANCOVA was conducted controlling for each of these variables. A non significant $F$ value, $F(1,135)=1.07$, $p=0.30$ confirmed no interaction between autonomy and change in adherence to CPGs (see Table M5). Nurses’ perceptions of autonomy did not affect their adherence to the CPGs. A non significant $F$ value, $F(1,135)=0.17$, $p=0.68$ confirmed no interaction between resource adequacy and change in adherence to CPGs (see Table M6). Having adequate time and enough nursing staff did not influence nurses' adherence to the CPGs on treating use and dependence. A non significant $F$ value, $F(1,135)=0.63$, $p=0.43$ confirmed no interaction between perceived leadership approach and change in adherence to CPGs (see Table M7). Perceived leadership within the organisations did not influence nurses’ adherence to the CPGs.

Predicting Nurse Adherence to CPGs

In the preceding section, the baseline differences between control and
intervention hospitals were each analysed using repeated measures ANOVA and repeated measures ANCOVA to examine their individual influence on adherence to CPGs. The goal of the subsequent analyses was to determine the variables that contributed to the prediction of nurse adherence (Pedhazur, 1982). In this section, all of the covariate variables were examined simultaneously to examine their joint influence on the dependent variable of adherence to CPGs at post intervention. Before the regression was run, dummy coding was used to code the categorical variables of employment status and practice area into dichotomous variables, using codes of one and zero to represent the presence or absence of an attribute (Polit, 1996). For example, using employment status, full-time was assigned the number 1 and part-time/casual was assigned the number 0. Analyses were conducted using SPSS Regression, Version 13.0.

The rationale for selecting the set of variables for the regression included the statistically significant differences among groups in the sample baseline data (Tabachnick & Fidell, 1996), the statistically significant interactions previously identified, and thirdly, nurses' own value of research. This last variable was included in the model because of empirical support for nurses' valuing of research as a predictor of research use. The baseline differences between the two hospitals included employment status, practice area, perceptions about using CPGs, perceptions of the value of research in the nursing department, and workplace variables of nurse autonomy, resource adequacy, and perceived leadership approach. The practice area excluded the control hospital float nurse group. Three interaction terms were generated and entered as independent variables: intervention x own value of research; intervention x nurse autonomy; and resources x LDPNAU. The third interaction was included because of the lower scores on resources in this practice area. A correlation matrix of the above variables, excluding the interaction terms, used in the regression analysis was examined to assess for the possibility of collinearity problems (de Vaus, 2002). The Pearson's correlations ranged from -0.42 to +0.82. The majority of the variables were not highly correlated. The three strongest correlations were among the measures of the work environment: perceived leadership approach and resource adequacy (r=0.69, p<0.01); perceived leadership approach and nurse autonomy (r=0.82, p<0.01); and
resource adequacy and nurse autonomy \( (r=0.68, p<0.01) \).

**Regression Analysis Backwards Solution**

Multiple regression analysis using a backwards elimination solution was conducted to determine the variables associated with nurse adherence to CPGs at post intervention. A backwards elimination solution allowed for the use of categorical and continuous variables (Hassard, 1991; Munro, 2001; Polit, 1996). The predictor variables were those noted in the preceding section and the criterion variable was nurse adherence to CPGs at post intervention. In the backwards approach, the variables identified were entered as a block in the regression equation. Then, each variable was deleted, one at a time to see if the \( R^2 \) dropped significantly (Munro, 2001). In successive steps, all variables that failed to contribute to the regression (if entered last) were deleted (Pedhazur, 1982; Polit, 1996). The significance level below which variables were allowed to enter the model was 0.05. The significance level above which variables were removed from the model was 0.06.

The results of the full model are presented in Table 15. The statistically significant variables from the final step of the backwards approach were perceptions about using CPGs \( (p=0.03) \), resource adequacy \( (p=0.004) \), and the interaction between nurses' own values of research and the intervention \( (p<0.001) \). The above linear combination of variables, or the **trimmed model**, was highly statistically significant, \( F(4,121)=31.44, p<0.001 \). The sample multiple correlation coefficient was \( R=0.714 \) (adjusted \( R^2= 0.493 \)), indicating that approximately 49.3% of the variance in adherence to CPGs was accounted for by the predictor variables in the trimmed model.
Table 15

*Regression Analysis with Backwards Solution for Variables Associated with Nurse Adherence to CPGs*

<table>
<thead>
<tr>
<th></th>
<th>Full Model a</th>
<th>95% CI for β</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>SE b</td>
</tr>
<tr>
<td>(constant)</td>
<td>19.05</td>
<td>14.27</td>
</tr>
<tr>
<td>Own Value</td>
<td>-0.37</td>
<td>0.62</td>
</tr>
<tr>
<td>Department Value</td>
<td>0.18</td>
<td>0.34</td>
</tr>
<tr>
<td>Nurse Autonomy</td>
<td>-0.52</td>
<td>0.61</td>
</tr>
<tr>
<td>Resource Adequacy**</td>
<td>-1.44</td>
<td>0.45</td>
</tr>
<tr>
<td>Perceived Leadership Approach</td>
<td>0.41</td>
<td>0.31</td>
</tr>
<tr>
<td>CPGs at Baseline*</td>
<td>0.72</td>
<td>0.35</td>
</tr>
<tr>
<td>LDPNAU x Resource Adequacy</td>
<td>1.32</td>
<td>0.75</td>
</tr>
<tr>
<td>Intervention x Own Value Research***</td>
<td>1.16</td>
<td>0.78</td>
</tr>
<tr>
<td>Intervention x Autonomy</td>
<td>0.60</td>
<td>0.59</td>
</tr>
<tr>
<td>Nursing Unit d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antepartum Gynecology</td>
<td>0.54</td>
<td>2.57</td>
</tr>
<tr>
<td>LDPNAU e</td>
<td>-17.53</td>
<td>8.57</td>
</tr>
<tr>
<td>LDRP f</td>
<td>-0.79</td>
<td>2.71</td>
</tr>
<tr>
<td>Full-time</td>
<td>2.93</td>
<td>2.04</td>
</tr>
<tr>
<td>Intervention</td>
<td>-16.44</td>
<td>16.28</td>
</tr>
</tbody>
</table>

a Unstandardised coefficients. b SE = Standard error. c Multiple correlation coefficient. d Comparison group = Postpartum. e Labour and Delivery (including Perinatal Assessment Unit). f Labour, Delivery, Recovery, Postpartum Unit. *p<0.05. **p<0.01. ***p<0.001.

*Standard Regression Analysis for Adherence*

Standard regression was then used to determine the strength and nature of the relationships. The purpose of using standard regression was to describe the relative impact of each of the predictor variables on the criterion variable (de Vaus, 2002). The
variables that were statistically significant from the final step of the backwards approach, the intervention variable and nurses' own value of research variable, were entered into the standard regression in a single step. All variables were evaluated in relation to the criterion variable (adherence to CPGs) through the use of partial correlation coefficients (Munro, 2001).

LDPNAU was dropped because the p value was 0.06. The interaction variable own value of research x intervention was dropped from the solution due to multicollinearity. The variable inflation factor for this interaction variable was highest among the predictor variables at 81.46 (de Vaus, 2002). The results of the standard regression are presented in Table 16. The regression was highly significant, \( F(4, 133)=30.90, p<0.001 \). In the final model, the multiple correlation coefficient was \( R=0.694 \) (adjusted \( R^2=0.466 \)), indicating that approximately 46.6% of the variance in adherence to CPGs was accounted for by the predictor variables.

Table 16

**Standard Regression Analysis for Variables Predicting Nurse Adherence to CPGs**

<table>
<thead>
<tr>
<th>Model Predictors</th>
<th>( \beta^a )</th>
<th>SE( ^b )</th>
<th>( \beta^c )</th>
<th>( t )</th>
<th>( p ) value</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Zero-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>order (Partial(^2))</td>
</tr>
<tr>
<td>(constant)</td>
<td>-1.06</td>
<td>9.16</td>
<td>-0.12</td>
<td>0.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Adequacy</td>
<td>-0.57</td>
<td>0.27</td>
<td>-0.15</td>
<td>-2.13</td>
<td>0.04</td>
<td>-0.18</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.03)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.02)</td>
</tr>
<tr>
<td>CPGs at Baseline</td>
<td>0.64</td>
<td>0.33</td>
<td>0.14</td>
<td>1.94</td>
<td>0.05</td>
<td>0.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.03)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.01)</td>
</tr>
<tr>
<td>Own Value Research</td>
<td>0.56</td>
<td>0.38</td>
<td>0.10</td>
<td>1.48</td>
<td>0.14</td>
<td>0.18</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.02)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.01)</td>
</tr>
<tr>
<td>Intervention</td>
<td>17.42</td>
<td>1.79</td>
<td>0.69</td>
<td>9.73</td>
<td>***</td>
<td>0.66</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.42)</td>
</tr>
</tbody>
</table>

\( ^a \) Unstandardised coefficient. \( ^b \) Standard error. \( ^c \) Standardised coefficient.

\( *p<0.05 \). \( **p<0.01 \). \( ***p<0.001 \).
The bivariate correlations with the criterion variable, adherence to CPGs are presented in the zero-order column. All of the bivariate correlations between the predictor variables and adherence to CPGs were positive. The Beta coefficient is a standardised partial correlation coefficient and reflects the measure of the relationship between the predictor and criterion variable with the influence of the other predictor variables held constant (Munro, 2001). Pedhazur (1982) notes that standardised Beta coefficients should be used to compare the effects of different variables within a single population. Of the four predictor variables, three contribute significantly to the variance in nurse adherence to CPGs: resource adequacy ($p=0.04$); perceptions about using CPGs at baseline ($p=0.05$); and receiving the intervention ($p<0.001$).

Partial and semi partial (or part) correlations and their squared values are presented in the final two columns. Both indices are used to reach a decision about the importance of an individual predictor (Nunnally & Bernstein, 1994; Tabachnick & Fidell, 1996). Partial correlations are correlations between two variables while partialling out or controlling for the effects of other predictor variables in the regression (Green & Salkind, 2005). The semi partial (part) correlation gives the correlation between a predictor and criterion variable, partialling out the effects of all other predictors in the regression equation from the predictor but not the criterion (Green & Salkind, 2005). Thus, squared semi partial correlations express the unique contribution of the predictor variable to the total variance of the criterion variable (Tabachnick & Fidell, 1996). The partial and part correlations were both positive indicating that nurses’ perceptions about using CPGs were directly related to nurse adherence after partialling out the effects of the other predictors. From a review of the standardised Beta coefficients and the partial and part correlations in Table 16, the best predictors of nurse adherence to CPGs were receiving the intervention, nurses’ perceptions about using CPGs at baseline and resource adequacy. Receiving the intervention was clearly the strongest predictor.

**Applying the Regression Equation for Adherence**

The final model variables were resource adequacy, perceptions about using CPGs at baseline, own value of research, and receiving the intervention. The multiple regression equation was as follows:
Predicted adherence to CPGs ($\hat{y}$) = -1.06 - 0.57 (resource adequacy) + 0.64 (perceptions about using CPGs at baseline) + 0.56 (own value of research) + 17.42 (intervention)

The following scenario of a typical nurse from the intervention hospital demonstrates the usefulness of the multiple regression equation to predict expected nurse adherence to CPGs following the intervention. Values entered into the equation were the baseline mean scores for resource adequacy, perceptions about using CPGs at baseline, own value of research, and one (1) for the intervention group.

$$\hat{y} = -1.06 - 0.57 (13.2) + 0.64 (27.2) + 0.56 (20.2) + 17.42 (1)$$

= 37.56

The second scenario of a typical nurse from the control hospital demonstrates predicted adherence to CPGs without the dissemination intervention.

$$\hat{y} = -1.06 - 0.57 (10.2) + 0.64 (26.2) + 0.56 (19.9) + 17.42 (0)$$

= 21.04

The predicted adherence scores above were compared to the observed adherence scores reported in the findings preceding Table 14. Intervention nurses' observed mean adherence scores at post intervention were 37.6, while control nurses' observed mean adherence to CPGs scores at follow up were 21.1. The predicted values were highly consistent, providing support for the sample multiple regression equation in predicting nurse adherence to CPGs.

Descriptive Findings from Nurses' Use of CPGs

Further support related to Hypothesis 1 can be garnered from recordings of the nurses' actual use of the CPGs from the Smoking Cessation Intervention Record (SCIR) forms. Of the total number of 1095 SCIR forms retrieved from the patient records at discharge, 21.1% were not completed, leaving 864 usable forms: 669 from inpatients and 195 from outpatients. Outpatient data were not analysed because the intervention was directed toward inpatients. Of the total number of SCIR forms collected, 60.9% were used in this analysis. Nurses were asked to complete a SCIR form with each patient they cared for over the study period. On average, each nurse completed approximately 10 (i.e. 669/67) SCIR forms. Descriptive statistics (frequencies and percentages) were used to summarise and present these findings.
Activity Captured by SCIR Forms

The total number of SCIR forms collected per month were compared to the hospital recorded patient discharges and recorded births during the implementation period. The purpose of this comparison was to assess the impact of the dissemination intervention within the intervention hospital. In comparison to the hospital recorded number of patient discharges in September, October, and November 2003, the SCIR forms reflected nurse interventions with 54.6% (249/456), 80% (376/470), and 62.0% (277/446) of the women discharged, respectively. Because the number of discharges included patients who were sent home (i.e., not in labour) and subsequently readmitted, patient discharge numbers were higher than the number of actual births. Therefore, in comparison to the hospital recorded births in September, October, and November 2003, the SCIR forms reflected nurse interventions with 69.5% (249/359), 95.7% (376/393), and 82.4% (277/366) of women giving birth at the intervention hospital.

Based on the kinds of interventions recorded on the SCIR forms by the intervention nurses, an estimate of patient smoking status was made. Patient smoking status was estimated because privacy legislation in the study province did not permit the study nurses to record health information such as patient’s smoking status on a research form (i.e., the SCIR) without written consent from each patient. Smoking status estimates were determined through an analysis of each of the 669 SCIR forms using the following criteria. For example, the patient was classified as a non smoker if Ask patient/mother about smoking status was checked off as done and no additional interventions were completed. The patient was classified as a former smoker if Ask patient/mother about smoking status and Advise: Congratulate and strongly encourage former smokers to remain quit was checked off as done. The patient was classified as a current smoker if Ask patient/mother about smoking status and at least Advise: strongly encourage every smoker to quit as soon as possible were checked off as done. Other interventions to assist smokers under assess, assist, and arrange as per the SCIR form (see Appendix F) were tallied. Among the inpatient women discharged from hospital where there were records, an estimated 19.8% were current smokers (n=133), 14% were former smokers (n=94), and 65.8% were non or never smokers (n=442).
**Application of the CPGs with Current Smokers**

Based on data recorded on the SCIR forms, all patients were asked about their smoking status. This practice was expected because nurses were required to ask patients about smoking as part of the patient health history. The SCIR data indicated that study nurses encouraged 93.2% of smokers to quit as soon as possible and informed 88.7% of the smokers of risks of smoking to themselves and to their infants. Nurses assessed a further 64.7% of current smokers about their willingness to make a quit attempt. Of those patients not willing to quit, intervention nurses indicated they provided motivational interventions using the 5Rs to 41.4% of women encouraging them to quit. Only 41% of current smokers unwilling to quit received the full intervention.

Among those patients willing to quit smoking in the next 30 days, intervention nurses offered 28.6% of them a variety of kinds of assistance. Most frequently recorded types of assistance were as follows: negotiating a definite quit date (17.3%); assisting with a quit plan (15.8%); encouraging problem solving (18.8%); offering social support (18.8%); providing pregnancy specific resources (19.5%); and helping the patient obtain social support at home (12.8%). SCIR records showed that intervention nurses arranged follow-up support for 38.8% of smokers by providing information on how to access community self-help resources and smoking cessation programmes.

**Application of the CPGs with Former Smokers**

The SCIR forms indicated that for patients who reported being former smokers, intervention nurses congratulated and encouraged 94.7% to stay quit. The records showed that intervention nurses informed 52.1% of former smokers of the risks of smoking to the woman and infant. Occasionally, nurses recorded offering assistance related to problem solving skills, pregnancy specific materials and social support. The SCIR forms also showed that intervention nurses provided follow-up support for 6.4% of former smokers, i.e., providing information on how to access community self-help resources for smoking cessation.
Hypothesis Two

At three weeks post intervention, intervention nurses' reported self-efficacy in treating tobacco use and dependence will be significantly higher than at baseline and that of the control group.

A one-way repeated measures ANOVA was conducted to examine the effect of the dissemination intervention on nurses' reported self-efficacy in treating tobacco use and dependence. Effect size for self-efficacy beliefs was calculated using Cohen's (1988) formulae for treatment effect ($d=1.856$) and medium variability. The estimated effect size of 0.69 can be considered a medium effect. While a medium effect was estimated in this study, it must be noted that other covariates may have contributed to this result.

At three weeks post intervention, intervention nurses reported self-efficacy on treating tobacco use and dependence was higher ($M=28.4$, $Cl=26.9,30.0$) than baseline ($M=18.5$, $Cl=16.6,20.3$) and higher than the control group at baseline ($M=16.9$, $Cl=15.1,18.7$) and follow-up ($M=16.7$, $Cl=15.2,18.2$). A significant $F$ value, $F(1,136)=69.50$, $p<0.001$, confirmed the change in self-efficacy over time was different between the two groups (see Table 17). The control group self-efficacy remained the same while the intervention group self-efficacy improved. The dissemination intervention did have an effect on nurses reporting self-efficacy on treating tobacco use and dependence accounting for 34.0% of the variance in the dependent variable.
Table 17

Repeated Measures ANOVA for Change in Self-efficacy

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>111774.12</td>
<td>1</td>
<td>111774.12</td>
<td>1593.24</td>
<td>***</td>
</tr>
<tr>
<td>Group</td>
<td>3044.54</td>
<td>1</td>
<td>3044.54</td>
<td>43.40</td>
<td>***</td>
</tr>
<tr>
<td>Error</td>
<td>9541.10</td>
<td>136</td>
<td>70.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Within subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in Self-efficacy</td>
<td>1646.46</td>
<td>1</td>
<td>1646.46</td>
<td>63.86</td>
<td>***</td>
</tr>
<tr>
<td>Change in Self-efficacy x Group</td>
<td>1791.90</td>
<td>1</td>
<td>1791.90</td>
<td>69.50</td>
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</tr>
<tr>
<td>Error</td>
<td>3506.41</td>
<td>136</td>
<td>25.78</td>
<td></td>
<td></td>
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</tbody>
</table>

*p<0.05. **p<0.01. ***p<0.001.

Each of the baseline and work environment variables was examined for possible interaction effects with the change in self-efficacy. All tables with non significant findings relating to self-efficacy are contained in Appendix M. To account for significant baseline differences in employment status (full-time and part-time/casual) and nursing practice units between control and intervention hospitals, two-way repeated measures ANOVA for self-efficacy were conducted first for employment status and then for nursing practice unit. The float nurse group was excluded from the nursing practice unit analysis because there was no comparable group at the intervention hospital. A non significant F value, $F(1,134)=0.01$, $p=0.93$, confirmed no interaction between change in self-efficacy, employment status, and group (see Table M8). Although employment status was different at baseline, working full-time or part-time/casual did not differentially influence changes in nurses’ self-efficacy in treating tobacco use and dependence. A non significant F value, $F(3,118)=1.11$, $p=0.35$, confirmed no interaction between change in self-efficacy, nursing unit, and group (see Table M9). The analysis indicated the nursing unit in which nurses worked did not modify nurses’ self-efficacy in treating tobacco use and dependence.

Because there were statistically significant differences between control and
intervention hospitals with respect to nurses' perceptions of the value of research in their nursing department and nurses' perceptions about using CPGs in their workplaces, repeated measures ANCOVA was undertaken to account for these baseline differences. A non significant $F$ value, $F(1,135)=0.28$, $p=0.60$, confirmed no interaction between the department value of research and self-efficacy (see Table M10). Nurses' perceptions of their department value of research did not modify the effect of the treatment on change in self-efficacy beliefs in treating tobacco use and dependence. A non significant baseline $F$ value, $F(1,135)=3.51$, $p=0.07$, confirmed no interaction between baseline perceptions about using CPGs and change in self-efficacy (see Table M11). Variations in nurses' perceptions about using CPGs measured at baseline did not influence nurses' responses to the intervention with respect to change in self-efficacy in treating use and dependence.

To account for baseline differences with respect to perceptions of workplace environment factors of nurse autonomy, resource adequacy, and perceived leadership approach, repeated measures ANCOVA was undertaken to account for each of these baseline differences. A non significant $F$ value, $F(1,135)=2.14$, $p=0.15$, confirmed no interaction between resource adequacy and change in self-efficacy (see Table M12). A non significant $F$ value, $F(1,135)=3.53$, $p=0.06$, confirmed no interaction between perceived leadership approach and change in self-efficacy (see Table M13). Neither variations in perceptions of time and resources nor perceptions of leadership differentially influenced nurses' self-efficacy on treating tobacco use and dependence.

A significant $F$ value, $F(1,135)=6.70$, $p=0.01$, confirmed an interaction between nurse autonomy and change in self-efficacy (see Table 18). The relationship was significant, so adjusted values are reported. For the intervention group, adjusted self-efficacy values were higher at post intervention ($M=28.4$, $CI=26.9,30.0$) than baseline ($M=18.9$, $CI=17.1,20.7$), while the control group adjusted self-efficacy values were unchanged from baseline ($M=16.5$, $CI=14.8,18.3$) to post intervention ($M=16.7$, $CI=15.2,18.2$). The analysis indicated that although nurses' perceptions of autonomy modified the effect of the intervention on change in self-efficacy in treating tobacco use and dependence, the intervention group demonstrated significantly improved self-efficacy scores in comparison to the control group.
Table 18
Repeated Measures ANCOVA for Change in Self-efficacy Controlling for Nurse Autonomy

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>5092.12</td>
<td>1</td>
<td>5092.12</td>
<td>72.92</td>
<td>***</td>
</tr>
<tr>
<td>Autonomy</td>
<td>114.39</td>
<td>1</td>
<td>114.39</td>
<td>1.64</td>
<td>0.20</td>
</tr>
<tr>
<td>Group</td>
<td>3135.23</td>
<td>1</td>
<td>3135.23</td>
<td>44.90</td>
<td>***</td>
</tr>
<tr>
<td>Error</td>
<td>9426.71</td>
<td>135</td>
<td>69.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Within subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in Self-efficacy</td>
<td>27.80</td>
<td>1</td>
<td>27.80</td>
<td>1.12</td>
<td>0.29</td>
</tr>
<tr>
<td>Change in Self-efficacy x Autonomy</td>
<td>165.69</td>
<td>1</td>
<td>165.69</td>
<td>6.70</td>
<td>**</td>
</tr>
<tr>
<td>Change in Self-efficacy x Group</td>
<td>1381.51</td>
<td>1</td>
<td>1381.51</td>
<td>55.83</td>
<td>***</td>
</tr>
<tr>
<td>Error</td>
<td>3340.72</td>
<td>135</td>
<td>24.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05. **p<0.01. ***p<0.001.

Predicting Self-efficacy in Treating Tobacco Use and Dependence

Multiple regression analysis using a backwards elimination solution was conducted to determine the variables that were associated with self-efficacy in treating tobacco use and dependence at post intervention. The predictor variables were the same set of variables used with the regression of adherence on CPGs. The criterion variable was self-efficacy in treating tobacco use and dependence. The results of the full model are presented in Table 19. The statistically significant variables from the final step of the backwards approach were working full-time (p=0.008) and the interaction between nurses’ own value of research and receiving the intervention (p<0.001). The above linear combination of the variables, or the trimmed model, was highly statistically significant: $F(2,123) = 64.92$, $p<0.001$. The sample multiple correlation coefficient was $R=0.72$ (adjusted $R^2=0.506$), indicating that approximately 50.6% of the variance in self-efficacy scores was accounted for by predictor variables in the trimmed model.
Table 19
Regression Analysis with Backwards Solution for Variables Associated with Self-efficacy

<table>
<thead>
<tr>
<th></th>
<th>Full Model (^a)</th>
<th>95% CI for $\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>SE (^b)</td>
</tr>
<tr>
<td>(constant)</td>
<td>13.83</td>
<td>9.71</td>
</tr>
<tr>
<td>Own Value</td>
<td>0.17</td>
<td>0.41</td>
</tr>
<tr>
<td>Department Value</td>
<td>-0.08</td>
<td>0.23</td>
</tr>
<tr>
<td>Nurse Autonomy</td>
<td>-0.33</td>
<td>0.42</td>
</tr>
<tr>
<td>Resource Adequacy</td>
<td>-0.52</td>
<td>0.30</td>
</tr>
<tr>
<td>Perceived Leadership Approach</td>
<td>0.34</td>
<td>0.21</td>
</tr>
<tr>
<td>CPGs Baseline</td>
<td>0.13</td>
<td>0.24</td>
</tr>
<tr>
<td>LDPNAU x Resource Adequacy</td>
<td>0.40</td>
<td>0.51</td>
</tr>
<tr>
<td>Intervention x Own Value Research(^{***})</td>
<td>0.39</td>
<td>0.53</td>
</tr>
<tr>
<td>Intervention x Autonomy</td>
<td>0.02</td>
<td>0.41</td>
</tr>
<tr>
<td>Nursing Unit(^d)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antepartum Gynecology</td>
<td>-1.06</td>
<td>1.75</td>
</tr>
<tr>
<td>LDPNAU(^e)</td>
<td>-5.70</td>
<td>5.83</td>
</tr>
<tr>
<td>LDRP(^f)</td>
<td>-2.84</td>
<td>1.84</td>
</tr>
<tr>
<td>Full-time(^\ast)</td>
<td>3.83</td>
<td>1.39</td>
</tr>
<tr>
<td>Intervention</td>
<td>2.17</td>
<td>11.08</td>
</tr>
</tbody>
</table>

\(^a\) Unstandardised coefficients. \(^b\) SE = Standard error. \(^c\) Multiple correlation coefficient. \(^d\) Comparison group = Postpartum. \(^e\) Labour, Delivery, Recovery, Postpartum Unit. \(^f\) Labour and Delivery (including Perinatal Assessment Unit).

\(*p<0.05. \^{**}p<0.01. \^{***}p<0.001.

Standard Regression Analysis for Self-efficacy

Standard regression was then used to determine the nature and strength of the relationships. The variables that were statistically significant from the final step of the backwards solution, the intervention variable and nurses' own value of research variable, were entered into the standard regression in a single step. All variables were
evaluated in relation to the criterion variable (self-efficacy in treating tobacco use and dependence) through the use of partial correlation coefficients (Munro, 2001). The interaction variable was dropped from the solution due to multicollinearity (de Vaus, 2002). The variable inflation factor for this interaction variable was highest among the predictor variables at 80.17. The results of the standard regression are presented in Table 20. The regression was highly significant, $F(3,134)=48.11, p<0.001$. In the final model, the multiple correlation coefficient was $R=0.720$ (adjusted $R^2=0.508$), indicating that approximately 50.8% of the variance in self-efficacy scores was accounted for by the predictor variables.

Table 20  
*Standard Regression Analysis for Variables Predicting Self-efficacy*

<table>
<thead>
<tr>
<th>Model Predictors</th>
<th>$\beta^a$</th>
<th>SE$^b$</th>
<th>$\beta^c$</th>
<th>$t$</th>
<th>$p$ value</th>
<th>Correlations</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Zero-order</td>
</tr>
<tr>
<td>(constant)</td>
<td>7.28</td>
<td>4.56</td>
<td>1.60</td>
<td>0.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own Value Research</td>
<td>0.45</td>
<td>0.23</td>
<td>0.12</td>
<td>1.96</td>
<td>0.05</td>
<td>0.20 (0.03)</td>
</tr>
<tr>
<td>Intervention</td>
<td>10.08</td>
<td>1.17</td>
<td>0.59</td>
<td>8.60</td>
<td>***</td>
<td>0.69 (0.36)</td>
</tr>
<tr>
<td>Full-time</td>
<td>3.24</td>
<td>1.22</td>
<td>0.19</td>
<td>2.66</td>
<td>0.01</td>
<td>0.49 (0.05)</td>
</tr>
</tbody>
</table>

$^a$ Unstandardised coefficient  $^b$ Standard error  $^c$ Standardised coefficient

*p<0.05. **p<0.01. ***p<0.001.

All three predictors contributed significantly to the variance in self-efficacy scores. The bivariate correlations between the predictor variables and the criterion variable, treating tobacco use and dependence, were all positive and are presented in the zero-order column in Table 20. From a review of the partial and semi partial correlations and their squared values, the best predictors of self-efficacy in this study were receiving the intervention ($p<0.001$), working full-time ($p=0.01$), and own value of research ($p=0.05$). Again, receiving the intervention was the strongest predictor of self-
efficacy in treating tobacco use and dependence at post intervention.

**Applying the Regression Equation for Self-efficacy**

The final model variables were own value of research, the intervention, and working full-time. The multiple regression equation was as follows:

Predicted self-efficacy beliefs (\(\hat{y}\)) = 7.28 + 0.45 (own value of research) + 10.08 (intervention) + 3.24 (full-time)

The following scenario of a typical nurse from the intervention hospital demonstrates the usefulness of the multiple regression equation to predict expected self-efficacy scores in treating tobacco use and dependence following the intervention. Values entered into the equation were the baseline mean scores for own value of research and one (1) for the intervention group and full-time.

\[\hat{y} = 7.28 + 0.45 (20.2) + 10.08 (1) + 3.24 (1) = 29.69\]

The second scenario of a typical nurse from the control hospital demonstrates predicted self-efficacy in treating tobacco use and dependence without the dissemination intervention.

\[\hat{y} = 7.28 + 0.45 (19.9) + 10.08 (0) + 3.24 (1) = 19.48\]

The predicted self-efficacy scores above were compared to the observed self-efficacy scores reported in the discussion preceding Table 15. Intervention nurses observed mean self-efficacy scores at post intervention were \(M=28.4\), while control hospital nurses' observed mean self-efficacy scores at follow-up were \(M=16.7\). Among intervention nurses, the predicted values were consistent with the observed values. In the control situation, predicted values were slightly higher than observed values.

**Hypothesis Three**

*Intervention nurses’ perceived organisational support will be positively associated with adherence to the CPGs on treating tobacco use and dependence.*

Organisational support has been operationalised in this study as the workplace environment factors of nurse autonomy, resource adequacy, and perceived leadership approach. Pearson’s correlations were conducted with each of the organisational
variables to test the existence of an association with adherence to the CPGs, among
the intervention nurses at baseline and post intervention. These data were also plotted
in scatter graphs to examine the distribution of scores and to confirm interpretation of
the correlation statistics. Strong, positive, and statistically significant correlations were
noted among perceived leadership approach and autonomy \(r=0.81\), perceived
leadership approach and resource adequacy \(r=0.73\), and between nurse autonomy
and resource adequacy \(r=0.73\). Non significant, slightly negative, and very weak
correlations were found at baseline and post intervention between adherence to CPGs
and nurse autonomy, resource adequacy, or perceived leadership approach (see Table
21). This hypothesis was not supported and therefore it was concluded that these
organisational support variables, when examined individually, did not appear to be
associated with intervention nurses’ adherence to CPGs.

Table 21

<table>
<thead>
<tr>
<th></th>
<th>Adherence to CPGs at Baseline</th>
<th>Adherence to CPGs at Post intervention</th>
<th>Nurse Autonomy</th>
<th>Resource Adequacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Autonomy</td>
<td>-0.10</td>
<td>-0.00</td>
<td>1.00</td>
<td>0.72**</td>
</tr>
<tr>
<td>Resource Adequacy</td>
<td>-0.16</td>
<td>-0.15</td>
<td>0.72**</td>
<td>1.00</td>
</tr>
<tr>
<td>Perceived Leadership</td>
<td>0.01</td>
<td>0.04</td>
<td>0.81**</td>
<td>0.73**</td>
</tr>
<tr>
<td>Approach</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\*p<0.05. **p<0.01. ***p<0.001.

Hypothesis Four

*Intervention nurses’ positive attitudes to using research in nursing will be positively associated with adherence to the CPGs on treating tobacco use and dependence.*

Intervention nurses’ own values towards research were compared to their
adherence with the CPGs at baseline and post intervention using Pearson’s \(r\)
correlations. The data were also plotted in scatter graphs to examine the distribution of
scores and to confirm the interpretation of the correlation statistics. A small, positive, non significant relationship was noted at baseline ($r=0.19$, $p=0.12$). A small, positive and significant relationship between intervention nurses’ own values toward research and adherence to CPGs at post intervention was noted ($r=0.27$, $p=0.03$). This hypothesis was supported only at post intervention. The data provide mixed support for the hypothesis that intervention nurses’ own values toward research are associated with adherence to CPGs.

**Additional Descriptive Findings**

In this section, a summary of responses to open-ended questions made in the study questionnaires are presented. At baseline, 12 nurses (five intervention and seven control hospital nurses) commented. At post intervention, 54 nurses added additional comments (31 intervention and 23 control hospital nurses).

**Baseline Experience**

A few of the nurses reported they already provided pamphlets and advice related to tobacco reduction and offered health teaching about limiting a baby’s exposure to environmental tobacco smoke. The nurses who provided comments mentioned concerns relating to a lack of knowledge regarding cessation programmes and effective techniques, discomfort with counselling women about smoking, a lack of time for cessation counselling because of the 24- to 48-hour hospitalisation period, the difficulties in working with “hard core smokers”, and inappropriate timing of smoking cessation advice during labour and delivery. One nurse shared comments relating to negative reactions by patients who had been approached by health care workers regarding smoking. Most nurses in both hospitals who provided comments at baseline indicated the need to have tobacco cessation counselling begin earlier in the antepartum period, e.g., by public health nurses or by doctors. One nurse wrote:

> Unfortunately, we as nurses (both in women’s health care and in general) have very little to no time to counsel patients regarding smoking. Also, patients are not necessarily in the right frame of mind to accept such teaching when in the labour and recovery period. These women need counselling prior to delivery, in fact prior to pregnancy or at least in the antepartum period. This type of counselling
(note: for one of the most addictive substances in use) needs far more time than
the approximately 48 hours women are in the hospital! Public health nurses
would be much better suited to the task - but where would the funding come
from?? (control hospital RN 55)

Post Intervention Experience

Intervention hospital nurses. At the first academic detail visit, intervention
hospital nurses estimated their time commitment for tobacco-related interventions per
patient as follows: 1 - 2 minutes (28 nurses); 2 - 5 minutes (21 nurses); 5 - 10 minutes
(8 nurses); and 10 - 15 minutes (1 nurse). At the second academic detail visit, nurses
estimated their time commitment per patient as follows: 1 - 2 minutes (20 nurses); 2 - 5
minutes (37 nurses); 5 -10 minutes (7 nurses); 10 - 15 minutes (1 nurse); and 15 - 20
minutes (1 nurse). Nurses most frequently reported offering minimal interventions at the
first contact (mode=1-2 minutes) and a brief, but longer (mode=2-5 minutes)
intervention at the time of the second contact. Two nurses commented they spent
between 15 - 30 minutes with patients who were very receptive to tobacco reduction
counselling. In the intervention hospital, nurses reported that smokers received mostly
minimal interventions and a few received augmented interventions.

Intervention hospital nurses’ responses to the four open-ended questions
focussed on topics such as participation in the project and constraints they experienced
in offering smoking cessation counselling. In relation to the project, nurses commented
they appreciated the opportunity to be part of the study. Several nurses commented
that having academic detailers who were approachable, easy to talk to, and
appreciative of their work made the study enjoyable. They also commented on the
academic detailers’ patience, and the respect shown to staff whether or not they were
part of the study. They were excited about learning to use the CPGs, noting an increase
in their knowledge base and the benefit to their patients. Several nurses commented
they planned to continue using the CPGs in their practice and would like to see CPGs
used on a regular basis in the hospital. Nurses reported the CPGs were easy to
implement in the obstetrical triage area and should be encouraged at all times, as well
as in the antenatal unit. One nurse wrote:
I have enjoyed participating in the study and I am starting to feel a little more comfortable with doing tobacco cessation counseling. It is something I will need to continue working on. Hopefully I will get better at it! I plan to implement the teaching/counselling into the daily physical assessments of the patients.

(intervention hospital RN 189)

A few constraints to offering smoking cessation counselling were noted. Some nurses indicated they found it difficult to talk to patients about smoking cessation. However, they commented that the intervention materials provided definitely helped them. Other nurses noted they needed to first establish a relationship or form a “bond” with the patient prior to offering smoking cessation counselling. The nurses reported it was sometimes not appropriate to use the CPGs in the Labour and Delivery unit when a woman was in an active labour. Only a few nurses commented that more time was needed. One nurse wrote:

I think if we had more time to actually talk with patients we may be able to get at the smoking issues more. We have barely enough time to do the teaching necessary for mom’s to handle the babies. (intervention hospital RN 75)

Control hospital nurses. The control hospital nurses who provided responses to the open-ended questions recognised the importance of the nurses’ role in smoking cessation counselling and indicated the need for training to be effective. They suggested that resources in the form of pregnancy specific written handouts, teaching videos, cessation records, and information about available community resources would be helpful. One nurse commented, “The initial survey has made me more aware of my responsibility as an RN to assist in giving smoke cessation information but, without proper resources, this is futile. Encouragement to stop smoking is not enough.”(control hospital RN 4). Some control hospital nurses also commented positively regarding the benefit of public health nurses offering smoking cessation advice and physicians routinely providing antenatal patients with education on tobacco reduction. Within the hospital, antepartum and post delivery were identified as appropriate areas for smoking cessation counselling.
Some control hospital nurses expressed concerns about smoking cessation counselling. A few control hospital nurses questioned the timing for counselling women in active labour. Some nurses were concerned about how receptive women would be during the postpartum period because of the other postpartum teaching done at that time. The work environment with short patient stays, a high patient acuity, and staffing issues were also noted as possible constraints.

**Intervention Nurses’ Experience with Dissemination Strategies**

In this section, an analysis of key ideas is presented from intervention nurses’ reported experiences with each of the dissemination strategies. Selected quotes from post intervention surveys are included to elaborate on main ideas. The nurses’ recommendations relating to continued use of the CPGs are presented last.

**Video and Print Materials**

Intervention nurses commented that the use of printed materials and the video was a good way to start the study. These approaches gave them insight, boosted their confidence, and showed them how to interact with clients. Many indicated that the most helpful parts of the video were the role plays with patients in different situations. One nurse stated, “Watching someone helped with how to approach the subject and how to word the questions so as not to sound confrontational.”(intervention hospital RN 18).

Nurses commented positively regarding the printed materials. They reported the study kit was user friendly, straightforward, and easy to read and understand. They appreciated the examples of statements to use with patients, the statistical information, and information about the model of behaviour change. Most of the nurses said the printed materials and video provided the base to proceed with smoking cessation counselling.

**Academic Detail Visits**

Academic detailers met each intervention nurse in person (or by phone) to arrange giving them their study kit and met twice during the study. The first academic detail visit lasted an average of 14.3 minutes (range=6-35 minutes). The second academic detail visit lasted an average of 12.2 minutes (range=4-25 minutes). The nurses said they appreciated the positive reinforcement and feedback from the
academic detailers regarding the strategies they had used as they implemented the CPGs. The visits were seen as timely, especially when they began using the smoking cessation intervention record form. During the visits the nurses reported gaining insight into how to improve their skills in counselling patients. They found the visits helped to keep them on track and were a good way to keep updated on the study progress. Only one nurse indicated that she did not find the academic detail visits helpful and preferred the printed materials. Typical examples of nurses' comments were as follows:

I enjoyed the fact the meetings were so open; concerns were addressed and the questions asked prompted discussion. (intervention hospital RN 122)

Helped, encouraged and motivated me to speak to more clients regarding smoking cessation. (intervention hospital RN 186)

Talking over what had been happening, getting suggestions from the researcher. (intervention hospital RN 83)

I made new friends!!! And the visits provided an opportunity to ask questions, obtain help, and give the study its humanitarian approach and its energy when we needed it. (intervention hospital RN 151)

Overall, nurses reported the open, encouraging approach made them feel supported, increased their motivation to provide smoking cessation counselling, and made it easy to stay in the study.

_Smoking Cessation Interventions Record Form_

Intervention nurses' comments about the SCIR related primarily to the layout of the form and its usefulness. One nurse commented: "[It is] clear, straight forward. The only downside ... it's more paperwork and sometimes gets lost or forgotten when transferring a patient" (intervention hospital RN 22). Most of the nurses reported the SCIR was easy to read and understand, and quick and easy to complete. They appreciated the step-by-step approach, the timeframe suggested with each step, and the check-off boxes to document their interventions. Another nurse commented:
I found that having the differently coloured sheet placed at the front of the chart was a good reminder for me. Having the whole process (which still seems a little overwhelming at times) using the 5As broken down into steps made the task seem less daunting and easier to fit in with teaching or assessing the patient. (intervention hospital RN 189)

Many nurses commented positively that the SCIR form helped to keep track of what had been completed and served as a useful reminder of what still needed to be done. The record helped to keep the process organised. At times I felt that I didn't have time to fill it in, but it was laid out so clearly, it really took very little time. The way it was set up, my memory was twigged if I saw that I had missed an intervention. So, it was a good reminder of the interventions. (intervention hospital RN 23)

In summary, data from the follow up questionnaires indicated nurses found the SCIR form quick and easy to use. They also commented positively on the checklist format and that it was easy to locate being a bright blue colour. Nurses also commented that having the CPGs printed on the SCIR form and placed on the patient chart was a good reminder they were in the study and reminded them to talk to their patients about smoking. Despite initial concerns from the nurses about the length of time required to implement the guidelines, the majority of nurses at the second academic detail visit reported spending an average of 2 - 5 minutes time on tobacco-related interventions with their patients.

*Nurses’ Recommendations Regarding Ongoing Use of CPGs*

Nurses commented on several specific activities and resources that would be helpful in supporting their continued use of the CPGs. They reported using the pamphlets on environmental tobacco smoke and community resources frequently and the self-help booklet occasionally with selected patients. Nurses indicated the need for ongoing access to smoking cessation materials and pamphlets to give to patients and their families. Visual aids, such as big posters for the unit, were recommended. Having a patient-specific video that showed the viewer successful stories of antepartum patients who quit smoking was desired by some nurses. Nurses also suggested more resources on teaching methods.
Nurses commented that ongoing support was desired from colleagues, such as clinical resource nurses, charge nurses, and more doctors talking with their patients about smoking cessation. Nurses were also interested in meeting other individuals who provided smoking cessation counselling to get more ideas about how to approach patients and offer assistance. Nurses also recommended having additional in-person continuing education sessions. Some suggested these sessions could include former smokers talking about strategies that worked for them, and community groups providing information on how they help patients stop smoking. To help keep themselves current, some nurses advised that a review of counselling techniques could be done during staff education days using case scenarios to promote discussion. Group discussions were seen as a means of support for nurses doing smoking cessation counselling and a forum to discuss experiences, including both successes and approaches that did not work out well.

Chapter Summary

The primary purpose of this chapter was to provide a detailed report of the quantitative results and a summary of the descriptive findings. Baseline assessments were presented regarding the psychometric properties of the study measures and scales, followed by a discussion of bivariate differences between control and intervention groups. The findings summarized below will be discussed in the next chapter within the context of current research and in relation to the theoretical framework.

Quantitative results indicated the dissemination intervention positively and significantly enhanced nurse adherence to the CPGs and boosted self-efficacy beliefs in treating tobacco use and dependence. No interaction effects were found among baseline and work environment measures, and change in adherence to CPGs. One significant interaction was found between nurse autonomy and change in self-efficacy. Although nurses' perceptions of autonomy modified the effect of the dissemination intervention on change in beliefs in treating tobacco use and dependence, the intervention group demonstrated significantly improved self-efficacy scores in comparison to the control group. Multiple regression analyses revealed three significant
predictors of nurse adherence to CPGs: receiving the intervention \( (p<0.001) \); baseline perceptions about using CPGs \( (p=0.05) \); and resource adequacy \( (p=0.04) \) and three significant predictors of self-efficacy: receiving the intervention \( (p<0.001) \); working full-time \( (p=0.01) \); and own value of research \( (p=0.05) \). This study demonstrated the efficacy of a multifaceted intervention on enhancing nurses' use of the CPGs in a hospital-based maternal child practice setting.
CHAPTER SIX  DISCUSSION

This study addressed the need for more rigorous evaluations of dissemination interventions in nursing practice. A dissemination intervention to support nurses' uptake of clinical practice guidelines (CPGs) related to tobacco reduction was evaluated. The findings contribute to the growing body of research-based information concerning the effectiveness of disseminating CPGs in nursing practice. In this chapter, study findings are presented in relation to current research and in relation to the theoretical framework, followed by a discussion of academic detailing. Methodological limitations are discussed. The chapter concludes with recommendations for nursing practice, education, and research.

This study appears to be the first to evaluate the effectiveness of methods to disseminate and implement the Agency for Health Care Research and Quality (AHRQ) CPGs on tobacco reduction into hospital-based maternal child nursing practice. In addition, the study addressed methodological limitations in related evaluations focusing on smoking cessation interventions by nurses with perinatal women (Buchanan, 2002; Chalmers et al., 2004; Katz, Muelenbruch, Brown, Fiore & Baker, 2002). The Katz et al. study examined clinician adherence (nurse and medical assistant) before and after a clinic-based intervention to measure the use of the AHRQ smoking cessation CPGs in a primary care setting. Naylor et al. (2002) evaluated the impact of smoking cessation workshops on care providers' knowledge, confidence, and use of stage-based approach with clients. Chalmers et al. (2004) used a community-based longitudinal pilot study to develop and implement a smoking cessation intervention with perinatal women. Unlike the work of Naylor et al., and Chalmers et al., this study had a control group and included an assessment of the nurses' perceptions of the innovation and work environment variables known to influence nurses' use of research. While the Naylor et al. study assessed care provider confidence, there was no control arm and self-report data limited the evaluation of the impact on nurses.

The dissemination intervention evaluated in this study is an important addition to a number of methods currently being used in Canada to disseminate CPGs related to tobacco reduction. The Registered Nurses of Ontario (RNAO) recently published a
booklet detailing how to integrate their best practice guidelines on smoking cessation into daily nursing practice (RNAO, 2003). The CPGs' implementation booklet and a new e-learning module have been disseminated via the RNAO website. The module is designed to teach nurses to how to offer a brief smoking cessation intervention. The Setting Universal Cessation, Counseling, Education and Screening Standards project, coordinated by the Association for Women's Health, Obstetric, Gynecologic and Neonatal Nurses, involves the evaluation of a research-based protocol on smoking cessation counselling by nurses with pregnant women. Educational materials, clinical protocols and data collection tools were disseminated to 13 volunteer sites in primary care settings across Canada and the United States (Albrecht et al., 2004). The above dissemination studies are very recent and evaluation findings regarding the impact of the dissemination methods on care providers and patients have yet to be published (Albrecht et al., 2004; Edwards et al., 2005; RNAO, 2004).

Nurse Adherence to Clinical Practice Guidelines

The study findings demonstrated that the implementation of a dissemination intervention that utilised academic detailing together with a video, printed materials, and a reminder form was associated with a significant increase in nurses' adherence to CPGs on tobacco reduction. The magnitude of this medium effect was comparable to previous dissemination studies of smoking cessation programmes with doctors and midwives where moderate and positive effect sizes were noted (Cooke et al., 1996; Cooke et al., 1998; Cooke et al., 2001). The study findings of increased adherence to CPGs on tobacco reduction are consistent with current research where health care professionals who were trained in smoking cessation were more likely than untrained controls to perform tasks of smoking cessation (Lancaster et al., 2002; McEwen & West, 2001; Zapka et al., 2000). Study findings also concur with similar research among physicians where academic detailing together with written materials and reminders were associated with successful dissemination and uptake of CPGs (Feder et al., 1995; Kim et al., 1999; Mascia et al., 2000; Neitzel et al., 1999; Thomson O'Brien et al., 2001a).
Effectiveness of Intervention on Adherence

In this study, the single best predictor of nurse adherence to CPGs was receiving the intervention. The intensiveness and multifaceted nature of the intervention contributed to nurse adherence to the CPGs. The study findings of increased adherence are consistent with previous research where multiple, active strategies such as academic detailing and clinician reminders were more likely to lead to clinician behaviour change compared to more passive dissemination strategies such as conferences and mailed materials (Davis & Taylor-Vaisey, 1997; Grimshaw et al., 1995). On the basis of a recent systematic review, Grimshaw et al. (2004) reported the following median improvements in physician performance in relation to the kind of dissemination strategy used: reminders (14.1%); dissemination of educational materials (8.1%); audit and feedback (7%); and multifaceted interventions involving academic detailing (6%). It is notable that more passive strategies such as educational materials were as effective with physicians as multifaceted interventions. Based on the differences between professional groups, these findings are not directly applicable to nursing. In this study, the combination of strategies using academic detailing, a reminder, printed materials and video enhanced nurse adherence rates. Future research is needed to determine what components of the multifaceted intervention were most effective.

The strategies used to influence the nurses' decision to implement the CPGs were based on Rogers' innovation-decision process (1995a). In the awareness and knowledge stage of nurse recruitment, mass media channels such as information posters were used to reach large numbers of nurses. In the knowledge and persuasion stages the academic detailers used a stance of high empathy (Rogers, 1995a) and communicated information in a respectful, straight-forward way to minimise nurses' defensive mechanisms (Bandura, 1977, 1986, 1997; O'Leary, 1985). Because of anticipated defensiveness due to nurses' own smoking status, the benefits of brief interventions were emphasised regardless of personal smoking habits. In the persuasion and decision stages, interpersonal communication channels were used to distribute self-study materials. Interpersonal channels were used again during the academic detail visits. The intervention nurses responded positively to meeting the
academic detailers and personally receiving their study kits. They commented positively on the individualised support and personal encouragement offered in a friendly, relaxed manner during academic detail visits. Based on the descriptive and anecdotal feedback, it is apparent that the kind of communication and the choice of communication channels matched to the stages of the innovation-decision process were important in influencing nurses' decisions to adopt and use the CPGs.

The learner centred approach using academic detailing appeared to be an important contributor to enhanced adherence rates. The provision of performance feedback, role play opportunities, discussion, together with the academic detailers' use of verbal persuasion during the academic detail visits were appreciated by the nurses in this study. The dialogue and exchange of information helped the nurses to understand how they were doing in terms of achieving the performance expectations outlined in the CPGs and provided them an opportunity to see where and how they could improve. Observations during the academic detail visits suggest that the dialogue with the academic detailers supported the nurses and provided motivation for them to engage in smoking cessation counselling. The study findings demonstrate this type of intervention often used with physicians also has applicability for RNs, especially those with some autonomy. This research adds to the growing body of research demonstrating the positive effects of academic detailing on professional practice (Thomson O'Brien et al., 2001a).

Perception About Using CPGs and Resource Adequacy

In addition to receiving the intervention, other important predictors of nurse adherence were nurses' perceptions about using CPGs measured at baseline and resource adequacy. Perceptions about using CPGs made a modest but significant contribution to predicting nurse adherence. Nurses who were more open to the usefulness of CPGs may have been positively influenced to implement the CPGs. The study findings are consistent with previous research where guidelines having similar attributes enhanced acceptance among medical practitioners (Grilli & Lomas, 1994; Grol et al., 1998). Reports of nurse effectiveness on decreasing patient smoking rates when using the CPGs may have also contributed to nurses' recognition of the advantages of using the CPGs.
Resource adequacy made a modest but significant contribution to predicting nurse adherence to CPGs. In this study resource adequacy was a measure of organisational support and was related to having enough time, enough RNs and support services on staff. The majority of intervention hospital nurses reported they had sufficient time to implement the CPGs, and identified that support from their colleagues, nurse managers, and physicians were important in supporting their efforts. The study findings were different from previous research involving dissemination of smoking cessation programmes where lack of time was reported as a barrier (Cooke et al., 1996; 2000; Naylor et al., 2002; Walsh et al., 1995). The study findings were not surprising because inadequate resources, and a lack of support from colleagues and administrators, have been frequently reported by nurses as barriers to using research in practice (Le May et al., 1998; Omery & Williams, 1999; Pettingill et al., 1994). Resource inadequacy may be a constraining factor in adherence to the CPGs.

Self-efficacy Beliefs in Treating Tobacco Use and Dependence

There have been a number of descriptive studies conducted to understand the relationship between nurse and physician self-efficacy and smoking cessation counselling performance. Nurses' knowledge, skill, and consistency in offering smoking cessation interventions vary widely (Bonollo et al., 2002; Pelkonen & Kankkunen, 2001; Zapka et al., 2000). These descriptive studies are limited in explaining the relationship between self-efficacy and smoking cessation counselling because of their cross sectional nature. The current study contributed to a better understanding of how the intervention enhanced nurses' self-efficacy beliefs due to its prospective design, and personal contact among the nurses and the academic detailers.

The dissemination intervention was associated with a significant increase in nurses' self-efficacy beliefs in treating tobacco use and dependence. The findings are consistent with previous research among physicians and nurses where perceived ability or self-efficacy to counsel smokers positively predicted smoking cessation counselling activity (Cooke et al., 1998). The lack of self-efficacy and lack of knowledge and skill in smoking cessation counselling has been, and continues to be, cited by nurses and physicians as barriers to offering smoking cessation interventions with pregnant and
postpartum women (Aquilino, Goody, & Lowe, 2003; Clasper & White, 1995; Cooke et al., 1996; Coleman, Cheater, & Murphy, 2004; Walsh et al., 1995). In this study, the best predictors of self-efficacy in treating tobacco use and dependence were receiving the intervention, working full-time, and valuing research.

**Effectiveness of the Intervention on Self-efficacy**

Receiving the intervention was the most important predictor of nurses’ self-efficacy in treating tobacco use and dependence. The strategies used in the intervention to enhance self-efficacy were based on social cognitive theory (Bandura, 1986, 1997). An important theoretical premise from social cognitive theory is that when people are learning a new task, they may have a limited basis on which to assess their own performance. This premise may lead to misperceptions or faulty judgements of the quality of their performance. During the implementation stage in both academic detail visits, the academic detailers listened carefully to the nurses’ comments and provided corrective feedback and suggestions for improving their performance. Bandura’s principle of minimising emotional arousal was also applied throughout the implementation stage. The academic detailers offered the intervention nurses feedback and encouragement in a relaxed and friendly manner. Because people judge their capabilities through social comparison, the academic detailers provided examples from other units to allow nurses to compare how they were doing to other colleagues.

Nurses’ written comments and academic detailers’ observations during the academic detail visits provide further evidence that intervention nurses’ efficacy beliefs arose from experiences of learning to use the CPGs, watching the teaching video, talking with colleagues and the academic detailers, and from receiving encouragement from colleagues and nursing managers. These actions were specifically planned and implemented to enhance nurses’ self-efficacy in offering brief smoking cessation interventions. Study findings provided evidence to support Bandura’s (1997) theoretical premise that the strategies and nature of the communication offered by the academic detailers was an important contributor to enhanced self-efficacy beliefs.

**Working Full-time**

It is important to note that working full-time was moderately associated ($r=0.49$) with self-efficacy beliefs and was retained as an independent and significant predictor
of self-efficacy beliefs in the final regression model (Table 20). Compared to part-time or casual nurses, full-time nurses may have been afforded more frequent opportunities to implement the CPG. Across Canada urban RNs are more likely to work full-time (56.1%) than their rural counterparts (49.6%). Rural RNs are more likely to work part-time (50.3%) than urban nurses at 43.8% (Canadian Institute of Health Information, 2003). These findings suggest that in clinical settings, where more nurses work part-time than full-time, that a longer training period may be needed to demonstrate positive changes in self-efficacy with interventions designed to enhance the use of CPGs.

Attitude Toward Research

Study findings demonstrated that nurses' own value of research was modestly and positively correlated with self-efficacy ($r=0.20$) and was retained as an independent and modest predictor of self-efficacy beliefs in the final regression model (Table 20). These findings are consistent with the growing body of nursing evidence where valuing of research facilitates nurses' use of research (Brett, 1987; Coyle & Sokop, 1990; Hicks, 1996; Le May et al., 1998; Omery & Williams, 1999; Retsas, 2001). This finding was anticipated because nurses' positive attitudes toward research use have consistently been reported as individual determinants of research utilization (Champion & Leach, 1989; Estabrooks, Floyd, Scott-Findlay, O'Leary, & Gushka, 2003; Hatcher & Tranmer, 1997; Tranmer et al., 2002).

Nurse Autonomy

The autonomy afforded in the nurses' work environment likely contributed to nurses' enhanced self-efficacy beliefs. Nurses' lack of autonomy has been previously reported as a constraint to using research in practice (Funk, et al., 1991b) and a constraint to implementing CPGs in highly structured work environments (Gennaro et al., 2001b). The findings demonstrated that autonomy interacted significantly with the effect of the intervention on self-efficacy (see Table 16). Compared to nurses with lower perceived levels of autonomy, nurses who believed they could make patient care decisions consistent with their professional judgement and who experienced support from their colleagues and supervisors, benefited more from the intervention in relation to enhanced self-efficacy in offering smoking cessation counselling. These findings suggest that in clinical contexts where nurse autonomy is not supported that it may be
more difficult to demonstrate positive changes in self-efficacy with interventions designed to enhance the use of CPGs. This research adds to the growing body of research identifying the importance of workplace environments in supporting professional autonomy.

Perceived Leadership Approach

Surprisingly, the perceived leadership approach enacted on the nursing units was not a significant determinant of adherence to CPGs. The psychometric properties of the perceived leadership scale were satisfactory and conceptually reliable in this population, however, it did not perform as expected. This may be related to the inherent limitations of exploratory factor analysis (Tabachnick & Fidell, 1996). The lack of performance may also reflect problems with the measurement. However, perceived leadership approach was strongly and significantly correlated with two other measures of the nurses’ work environment: with resource adequacy and nurse autonomy. A strong positive correlation existed between perceived leadership approach and resource adequacy (r=0.68, p<0.01). While the direction of causality cannot be determined, the findings suggest these factors influence each other. In this study, positive perceptions of the way leadership was enacted were associated with perceptions of resource adequacy, a component of the work environment supporting nurses’ use of CPGs.

In this sample it is of note that a positive and linear association (r=0.82, p<0.01) existed between perceived leadership approach and nurse autonomy. While the direction of causality is unclear, the findings suggest these factors influence each other. Those nurses with more autonomy may be open to new ideas and be willing to learn about smoking cessation counselling methods. Furthermore, those nurses who perceive the presence of supportive leadership may perceive more autonomy. A high correlation with autonomy and leadership was also reported by Clarke et al. (2001). These findings suggest that in clinical settings, where leadership is perceived as effective, that nurse autonomy is enhanced. In this way, leadership may positively influence nurses’ self-efficacy with interventions designed to enhance the use of CPGs.

In summary, the multifaceted dissemination intervention was successful in influencing the uptake and use of the CPGs on tobacco reduction and nurses’ self-
efficacy in treating tobacco use and dependence. The findings from this study could inform future dissemination methods and enhance knowledge transfer in nursing. The findings regarding resource adequacy and nurse autonomy are consistent with previous nursing studies where organisational context was influential in nurses’ use of specific research findings (Varcoe & Hilton, 1995), and where supportive work environments were positively associated with nurses’ research use (Hatcher & Tranmer, 1997). These study findings are also consistent with existing literature about the importance of a supportive organisational context in studies of knowledge transfer and promotion of clinician behaviour change (Davies & Hodnett, 2002; Dobbins et al., 1998; Kanouse et al., 1995; Kitson, 2001; Kitson et al., 1996; 1998; McCormack, Kitson, Harvey, Rycroft-Malone, Titchen, & Seers, 2002; Orlandi, 1996; Saks et al., 2001).

Academic Detailing

Academic detailing has not been used extensively in nursing and this study is an important evaluation of its application. As a heterophilous change agent, the techniques and principles used in the academic detail visits drew on a social marketing approach and included clear objectives, using concise educational materials, repeating essential messages, encouraging nurse participation, providing reinforcement and making use of opinion leaders and peer influence (Kaluzny et al., 1995; Kanouse et al., 1995; Soumerai & Avorn, 1990; Thomson O’Brien et al., 2001b; Weinreich, 1999f). The dissemination intervention was facilitated using academic detailing with one population of nurses in one clinical programme. The efficacy of academic detailing, together with a video, printed materials, and a reminder form was supported. Academic detailing was time intensive but the result was enhanced self-efficacy in treating tobacco use and dependence, and adherence to the CPGs.

Intervention hospital nurses commented the visits were timely, made them feel supported, and increased their motivation to provide smoking cessation counselling. Nurses commented positively on the study kit and the presentation of the CPGs. They appreciated the examples of wording to use with patients, the statistical information, and theory about behaviour change. These qualitative comments provide further support for the efficacy of academic detailing to disseminate CPGs within a
multifaceted approach in a hospital-based maternal child nursing practice setting. The study findings contrasted with Funk et al.'s (1991a) earlier research. Funk and colleagues surveyed 1,948 RNs in the United States (US) regarding their perceptions about barriers to using research in practice. The US nurses perceived the communication of the research to be lacking in clarity and relevance for practice. This difference may be explained by differences in design. Funk et al. used a cross sectional survey and findings were based on nurses' opinions of previously published research reports. Nurses in this study were presented with CPGs where research findings were already translated into practice guidelines. Nurses had the opportunity for one-on-one contact with the academic detailers to answer questions about the evidence underlying the CPGs.

The study findings add to a small but growing body of research that supports the use of active versus passive dissemination strategies. For example, passive dissemination strategies to encourage the use of CPGs on parenting and family violence by public health nurses were ineffective (Lia-Hoagberg et al., 1999). However, when active strategies were used with individual performance feedback, tutorials, and clinician reminders, changes in guideline recommended actions were observed (Katz et al., 2002). Active strategies may be more effective because they engage nurses and boost self-efficacy. There are added costs and time involved with active strategies and we still do not know if all the components are necessary to effect change. Grimshaw et al.'s (2004) systematic review examined single and multifaceted guideline dissemination and implementation strategies with physicians. Grimshaw et al. found no relationship between the number of component interventions and the effects of multifaceted interventions.

The challenges of using academic detailing included its labour intensiveness, the timing of the visits during hospital shifts, and the availability of experts. Although the academic detail visits were brief, organising the visits to ensure each nurse had reviewed the information, and locating each nurse on their respective unit added additional time. Patient care activities often took precedence over meeting with the academic detailers and resulted in time delays or necessitated rescheduling of the academic detail visit. On average, the academic detailers used about one hour to
prepare for, implement, and document each academic detail visit. There are also few nurses with expertise in teaching others about brief smoking cessation interventions and fewer who are knowledgeable in the social marketing approach underpinning academic detailing. Because the findings demonstrate nurses’ positive responses to academic detailing visits, innovations to overcome these barriers should be explored.

According to Titler (2004), dose is the number of strategies used combined with the frequency of employing each strategy and potency is the robustness of a single strategy to result in adherence to the CPGs. Quantitative findings indicated the dissemination intervention positively affected nurse adherence to the CPGs and boosted nurses’ self-efficacy in treating tobacco use and dependence. These findings suggest the strength (dose plus potency) of the intervention was effective in enhancing self-efficacy beliefs and nurse adherence to the CPGs on tobacco reduction. Overall, study findings are consistent with the growing body of research evidence indicating dissemination of CPGs is supported by more interactive implementation strategies such as ongoing education sessions and mentorship to facilitate uptake and use (Davis, 1998; Davis et al., 1992, 1995; Davis & Taylor-Vaisey, 1997; Dobbins et al., 1998; Grol, 1992; Logan et al., 1999; Lomas, 1988, 1991; Mittman et al., 1992; Oxman et al., 1995; Thomas, 1999). Questions remain as to whether there are more efficient ways to implement academic detail visits. In terms of feasibility as a research dissemination strategy, the number of visits to sustain behaviour change has only been initially addressed in this study, and remains unanswered.

**Study Limitations**

*Internal Validity*

The findings need to be considered in light of several limitations. Although the hospitals were matched on size, annual birth rate, kinds of patient services, and were randomly assigned to intervention and control situation, there were only two hospitals. They were not identical. The possibility exists that the hospitals and the nurses they employed may have been unique. The differences revealed during the baseline assessment were statistically controlled during data analysis using repeated measures ANCOVA. ANCOVA was used with the assumption the groups were essentially
equivalent except for the baseline differences used as covariates (Munro, 2001). This was impossible to know for certain and constitutes a study limitation. The initial selection differences may have influenced the observed treatment effects. While medium effects were estimated in this study, it must be noted that other covariates may have contributed to these results.

The recruitment of nurses for the study was challenging. Consistent with Rogers' (1995a) advice, the researcher sought out nurses in the hospitals who were viewed as opinion leaders. In this study they were referred to as research advocates. Rogers' theoretical premise was that opinion leaders in the nurses' social system were the "lieutenants in diffusion campaigns" (p. 28). The importance of using local opinion leaders is in the transmission of local norms and modelling appropriate behaviour (Mittman et al., 1992). The researcher recruited nine research advocates: five in the intervention hospital and four in the control hospital. Observations during the academic detail visits suggest these nurses created awareness about the study, encouraged colleagues to participate, and communicated questions to the academic detailers. Nurse participation rates were 50% and 46% in the control and intervention hospitals, despite an extended period of enrollment, regular visits to the nursing units, and opinion leaders. Staff vacation periods and participation in other ongoing research studies may have influenced participation rates. The sample had sufficient power for statistical analysis, however, recruitment and participation rates were less than optimal despite the use of opinion leaders.

An interesting study finding related to nurse recruitment was the rationale offered by some eligible nurses who declined to participate because they felt uncomfortable offering smoking cessation advice because they were smokers. Anecdotal reports of smokers being less willing to counsel smokers have been reported as barriers to counselling among doctors and midwives in Australia (Cooke et al., 1998; Walsh et al., 1995) and among British physicians and midwives (Clasper & White, 1995). Of those who participated in this study, 3.0% reported being current smokers, 20.9% reported being former smokers, and 76.1% reported being non smokers. The lower number of reported nurse smokers in this study may be partially explained by a slow but continuing decrease in smoking among RNs. In Manitoba in 1990, current nurse smokers were
15.2%, former smokers were 38.2%, and non smokers were 43.6% (CNA, 1990). In 2000, current smokers were 12.1%, former smokers were 23.5%, and non smokers were 64.5% (Chalmers et al., 2000). The researcher made a concerted effort to recruit all nurses, regardless of their personal smoking history. It is possible that nurses who were smokers may have declined to participate in the study. The characteristics of the non participants were unknown and the factors contributing to the reluctance of other eligible nurses to participate were not determined.

A third limitation of the study concerns the measurement of the nurses' adherence to the CPGs and self-efficacy in treating tobacco use and dependence. Measurement was primarily based on nurse self-report data, contributing to imprecision with the outcome measures. The study approach did not allow for academic detailers' observations of the level of skill nurses actually achieved. There were also no patient reports on whether the gains in performance of the CPGs' recommendations translated into improved smoking cessation outcomes. Patient outcome data were beyond the scope of the research design and were not assessed.

The threat of testing was introduced when nurses were tested using the same measures before and after the dissemination intervention (Reichardt & Mark, 1998). Pretesting may have increased nurses' responsiveness to the intervention materials. There is a possibility that the nurses' increases in adherence to CPGs and self-efficacy beliefs might have been influenced by pretest exposure to the questionnaires rather than representing real change in behaviour. Potential testing effects pose a further limitation. There is also a possibility the nurses' increases in adherence to CPGs and self-efficacy beliefs may have occurred as a result of being studied rather than representing real behaviour change. A potential Hawthorne effect because of the attention being paid to the study nurses represents a further study limitation.

The post intervention measures were taken three weeks after the intervention. The intervention period for each nurse was 10 weeks long. Based on the sample size and length of the study, the sample intervened with 133 smokers and 94 former smokers. Some nurses had more opportunities to intervene with smokers because of hospital admission practices involving triage of obstetrical patients. Longer follow up is needed to allow sufficient opportunities for nurses to intervene with smokers and to
identify if improvements in nurse adherence and self-efficacy are sustained beyond the thrust of a guideline dissemination project.

*External Validity*

The final limitation relates to the generalisability of findings. The multifaceted approach was also supported by study incentives. Incentives were planned to create excitement about the study and to recruit and retain nurses. Study incentives included weekly draws for small gifts, end of study draws for lottery tickets, study lapel pins, and food incentives such as Timbits and pizza. The average cost of incentives per nurse over the study period was approximately $54 (i.e., $10,731 / 198 participants). This cost estimate included 138 RNs from 8 nursing units and recognised the support provided by 32 unit clerks at the intervention hospital and 28 unit clerks at the control hospital. Study incentives for the nursing staff may have indirectly contributed to enhanced retention rates by serving as an ongoing reminder about the research. Study incentives may have influenced nurses' compliance with the intervention.

The study's quasi-experimental design, although practical and feasible, limits the knowledge claims that can be made and the generalisability of the findings (Cook & Campbell, 1979). There may have been differences between those who consented to participate and those who did not. Caution must be used in generalising the study findings beyond urban, acute care hospital-based maternal child settings where care is primarily provided by professional RNs and where assessment and recording of smoking status is part of routine nursing practice. Long term changes in nurses' self-efficacy beliefs and smoking cessation counselling behaviours were not assessed. Demonstrating that brief nurse interventions actually work in day-to-day practice remains a challenge in the field of tobacco research.

**Study Recommendations**

This study was designed to test the efficacy of a dissemination intervention in one clinical practice setting. Nurses responded positively to the training and reported increased confidence in providing tobacco related counselling interventions during hospitalisation associated with the birth of a baby. The following recommendations for the dissemination of CPGs related to tobacco recognise the complexities associated in
intervening with smoking and supporting clinician behaviour change. Based on the study findings and limitations of the present study, the following recommendations are made for nursing practice, nursing education, and for future research.

**Nursing Practice**

Although CPGs have been developed to support knowledge transfer in clinical settings, effective dissemination strategies to support the uptake of CPGs are also needed. Hospital-based smoking cessation interventions are used sub-optimally in most Canadian hospitals. The findings of this study provide direction for optimising nurses' use of smoking cessation interventions, specifically by using academic detailing along with print materials, a video, and a reminder form. It is possible that specially trained advanced practice nurses could provide academic detail visits in clinical settings.

Supporting autonomous practice of RNs is an important prerequisite for CPGs' dissemination and uptake in nursing. The interaction effect described earlier provided support for the premise that nurses' perceptions of greater autonomy were a factor in enhanced self-efficacy and confidence in smoking cessation counselling. This evaluation has added to our understanding of the importance of nurses' perceptions of autonomy in enhancing self-efficacy in offering tobacco reduction interventions. Supporting autonomous practice may be very important to all knowledge transfer strategies in nursing.

CPGs should allow nurses a choice of interventions based on their professional judgement. CPGs provide clinicians with a synthesis of the best available research evidence and in this way they are tools for nurses to operationalise the implementation of evidence-based practice (Mead, 2000). Mead warns that with nursing’s historical subservience and lack of autonomy in health care structures, that guideline dissemination strategies that constrain nurses’ clinical judgement could have an impact on the quality of patient care. The AHRQ CPGs are designed to allow nurses to choose interventions based on their own assessment and the patient’s expressed needs and values. In their efforts to tailor tobacco reduction interventions in the population of pregnant and postpartum women, nurses can also seek guidance from the Better Practices review of smoking cessation suggested by Greaves et al. (2005).
Nursing administration. Supporting nurses’ use of CPGs related to treating tobacco use and dependence has the potential to have a significant impact on population health. Nurse managers have important roles to play to support nurses’ use of smoking cessation interventions. Nursing managers should make staff training related to smoking cessation counselling available for nurses to support CPGs’ implementation. In this study, 73.9% of the sample had not received training in tobacco related counselling interventions. Ongoing training refers to having access to evidence-based and credible data, such as the research base contained with the AHRQ CPGs. Educating existing practitioners is pivotal to continue to address the adverse effects of tobacco on women and their children. Nurses also require ongoing support from nurse clinicians and managers for continuing professional development in smoking cessation counselling. Senior nursing leaders could also promote the important role that nurses could play inside the hospital and to funding bodies outside the organisation.

Institutional nursing policy stating that smoking cessation interventions should occur will help to normalise professional expectations for practicing RNs. The current practice in the study hospitals included an assessment of patient smoking status. This practice should be maintained, but in addition, every patient who smokes should be offered advice and assistance. Brief interventions are feasible and use of the 5A’s counselling approach by nurses in maternal child settings should be supported. A written practice policy would offer support for nurses and help ensure materials were available to assist them. As part of a nursing department policy, the integration of a recording form such as the SCIR is recommended to support nurses’ continued use of the CPGs in tobacco reduction. Recording forms prompt nurses to intervene, help avoid duplication of effort amongst nursing staff, and foster reinforcement of messages when the patient has more than one nurse over a period of time.

Resources related to tobacco reduction must be available for nurses to support the continued implementation of tobacco related CPGs. Nurses require easy access to appropriate patient resources such as educational pamphlets and videos, and in-hospital access to nicotine replacement therapies. Hospitals should invest in hiring tobacco reduction counsellors to assist nurses who may be dealing with patients who are more resistant smokers and who may require more intensive interventions.
Study nurses recommended that smoking cessation interventions should occur earlier in pregnancy. Nursing administrators can provide leadership to explore the possibilities of an integrated approach pertaining to tobacco reduction within a region. Providing a supportive organisational infrastructure, for RNs who have a professional responsibility to offer tobacco reduction interventions, is critical to implementing and sustaining evidence-based CPGs. An integrated systems' approach would support nurses and would promote consistent advice to patients among health care providers.

**Nursing Education**

Building professional nursing capacity in tobacco reduction counselling should begin in nursing education programmes. A greater emphasis needs to be placed on CPGs and smoking cessation interventions in basic nursing education programmes. We have learned from this study that nurses’ perceptions about using CPGs were an important predictor of their use of CPGs on tobacco reduction. Materials from the AHRQ CPGs and the study kit could be integrated into courses focussing on health promotion and disease prevention. Teaching about, and modelling the use of CPGs in theory and during clinical practica, would help to normalise the expectation of the professional role of RNs in providing tobacco reduction interventions.

Nursing education programmes must continue to emphasise the benefits of nursing research in improving the effectiveness of nursing and improving patient health outcomes. We have learned from this study that nurses’ own values toward research were a predictor of nurses’ self-efficacy beliefs in treating tobacco use and dependence. For example, nurse educators could identify the research base within the AHRQ CPGs on tobacco reduction and other CPGs and discuss how improvements to patient care could be achieved from their use.

Building professional capacity such as the strategies suggested above should become part of educational curricula of health care professionals. An exemplary programme in tobacco cessation interventions has existed since 1998 in the University of Manitoba undergraduate dental curriculum (Gelskey, 2001). It is important that all health care providers work together to assist pregnant and postpartum women to stop smoking. Multiple interventions by health care providers enhance quit rates (Fiore et al., 2000a; Lancaster et al., 2002).
Nursing Research

This study should be replicated with other populations of RNs in other hospital-based maternal child settings. The need to address implementation of CPGs on tobacco reduction in community health nursing is also warranted. Future knowledge transfer studies should assess nurse outcomes, such as adherence rates and self-efficacy beliefs, and include an assessment of work environment characteristics, particularly nurse autonomy, resource adequacy, and nursing leadership. The NWI-R instrument was psychometrically reliable in this population and warrants further use when measuring the above workplace variables. Future dissemination studies should also include an assessment of patient outcomes. While tailoring the AHRQ CPGs for use in one nursing context facilitates local use, this process may reduce the validity of the guideline. Rigorous evaluations are important to assess whether nurses’ use of the CPG improved anticipated patient outcomes (Grimshaw & Russell, 1993). Assessment of the impact of the care delivery process for the patient would offer a measure of clinician effectiveness (Dykes, 2003). Patient data would also represent a second source of data.

Future studies should include larger samples of nurses using controlled before and after designs. Experimental designs would permit randomisation of individual nurses and strengthen knowledge claims. Longer follow-up of nurses at six and twelve months would allow for increased opportunities for nurses to intervene with smokers regardless of full-time or part-time status. The longer follow-up would identify if the improvements to nurse outcomes achieved at 10 weeks are sustained over time. Allowing a longer period of time from pretest to post-test may lessen potential testing effects.

Further research using qualitative methods is needed to understand nurses’ experiences of offering tobacco reduction interventions. Focus group interviews could be included at six and twelve months to provide a better understanding of the challenges and successes of implementing the CPGs on tobacco reduction. Questions could include what would be necessary to sustain the use of evidence-based CPGs in practice. Observations of interactions among nurses and patients could provide a deeper understanding of nurses’ attitudes and behaviours involved in helping patients
quit smoking (Pelkonen & Kankunnen, 2002). Finding ways to approach pregnant and postpartum women about tobacco reduction in a manner that does not interfere with the nurse-patient relationship remains largely unexplored.

Future studies need to include economic evaluations. Brief clinician advice is clinically effective and cost effective compared to other disease prevention interventions (Fiore et al., 2000a). However, dissemination and implementation of CPGs are not without costs (Grimshaw et al., 2004). Nursing leaders and administrators require solid evaluation data with realistic financial information related to time, money, and human resources needed to support their efforts to implement CPGs on tobacco reduction into nursing practice.

The extent to which personal smoking practices influence professional engagement in smoking cessation interventions and clinician effectiveness warrants further investigation. Nurses' personal smoking habits were given by some nurses as reasons for not participating in the study and for their reluctance to offer smoking cessation advice and counselling to their patients. Future research should address the characteristics of non responders to assess constraints that influenced their decision not to participate in an evidence-based study on tobacco reduction.

Innovations to overcome the challenges to academic detailing as a dissemination strategy should be a focus of future research. Ways to better utilise technology in the dissemination intervention and during the academic detail visits should be explored. Finding ways to provide short periods of release time for the visits, to learn about the CPGs and acquire new skills, are ways to address barriers and enhance the use of academic detailing to disseminate CPGs on tobacco reduction. Future research should focus on developing and testing knowledge transfer theories to guide the development of innovative approaches to academic detailing. The study findings provide support for the conceptual framework used to guide the dissemination and uptake of the AHRQ CPGs in one local nursing context. This study conceptual framework could serve as beginning theoretical model to address innovative approaches to academic detailing in nursing.
Summary of the Research

This is the first study demonstrating the efficacy of a multifaceted dissemination intervention on enhancing adherence and use of CPGs related to tobacco reduction in a hospital-based maternal child practice setting. In this study, facilitators of nurses' use of CPGs and their self-efficacy in treating tobacco use and dependence included individual (baseline perceptions about using CPGs; valuing research), demographic (working full-time), as well as work environment variables (nurse autonomy and resource adequacy). Nurse adherence was best predicted by receiving the intervention, baseline perceptions about using CPGs, and resource adequacy. Self-efficacy in treating tobacco use and dependence was best predicted by receiving the intervention, working full-time, and valuing research. This study's quasi-experimental approach contributed to advancing the field of knowledge transfer and uptake in nursing beyond descriptors and facilitators of research use, to developing and testing a specific evidence-based intervention. Known barriers and facilitators of research use were incorporated in the current study to enhance participant buy-in and to inform and strengthen the intervention protocol. This study approach was consistent with current evidence on smoking cessation effectiveness and current recommendations where experimental studies to promote research transfer and uptake are being encouraged (Berwick, 2003; Estabrooks et al., 2003; Fiore et al., 2000a; Titler, 2004).

This research offers operational detail regarding the dissemination strategies and provides nurse feedback on the dissemination strategies that can assist in planning future dissemination intervention studies. This research continued to address the adverse effects of smoking by focussing on nurses who routinely cared for pregnant and postpartum women and explored ways to assist them to offer brief smoking cessation interventions in their daily practice. Nursing, with its holistic approach and frequent opportunity to interact with perinatal women, can play an important leadership role in promoting maternal and infant health. The study findings contribute to emerging theoretical development relating to knowledge transfer and uptake of research evidence in nursing. The findings broaden our understanding of how to support hospital-based nurses in using the CPGs on tobacco reduction and provide direction for improving future dissemination strategies.
References


Canadian Cancer Society. (2000). *If you want to help a smoker quit: One step at a time* [Pamphlet]. Author.


Appendix A: Intervention Protocol

<table>
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<tr>
<th>CPGs dissemination stages</th>
<th>Interventions</th>
<th>Theoretical underpinnings and empirical support</th>
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<tr>
<td>Knowledge stage</td>
<td>Assess current readiness for change on units with baseline survey (e.g., level of smoking intervention; self-efficacy; attitudes toward CPGs and research, organisational factors &amp; nurse demographics and background information.</td>
<td>Mass media channels most important at knowledge stage (Rogers, 1995a) and allows investigator to reach a large number of nurses.</td>
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<td></td>
<td>Plan for initial exposure to CPGs: -awareness sessions on each unit, e.g., presentations at unit meetings, in cafeteria. -informational posters, letters or articles to hospital newsletter, website, and to key external stakeholders -toll free number to facilitate discussion with researcher - emphasize advantages of using CPGs during trial, compatibility with existing practice of asking about smoking status.</td>
<td>Self-efficacy beliefs are constructed from four principal sources of information: enactive mastery experiences; vicarious experiences; verbal persuasion and social influences; and physiological and affective states (Bandura, 1997, p. 19).</td>
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<td></td>
<td>Researcher to invite Program Team Leaders, Program Directors, and other senior nursing leaders to offer their support &amp; encouragement through written letters or by visiting the units.</td>
<td>Individuals' learning performance is enhanced when strategies are used to minimize emotional arousal and defensive mechanisms (Bandura, 1977, 1986, 1997; O'Leary, 1985).</td>
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<td>Rogers' innovation attributes (1995a).</td>
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<td>Individuals who have a strong sense of self-efficacy and the needed skills may choose not to perform an activity because of disincentives or external beliefs (Bandura, 1997). As members of a social system (Rogers, 1995a), support from nursing colleagues, coworkers, and supervisors as part of the social system may provide nurses with an external incentive.</td>
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<td>Cosmopolite channels (outside the social system) more important at knowledge stage especially for earlier adopters (Rogers, 1995a).</td>
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<td>Persuasion stage</td>
<td>Distribution of self-study materials and video inservice via local and interpersonal channel. Video to include vignettes demonstrating the use of CPGs. Training content to emphasize the effectiveness of nurse-led smoking cessation interventions (e.g. include quit rates from previous studies), and compatibility with existing health teaching, advantages of using CPGs on a trial basis. Training materials to provide a variety of learning opportunities to address differences in individual learning styles. Staff who are not part of the study or staff who choose not to participate will be informed of the study. The CPGs’ will be posted to promote awareness of the intervention by all members of the nurses’ social system.</td>
<td>Demonstrating use will lessen possible nurse concern that the CPGs are complex (Rogers’, 1995a). Interpersonal and local channels of communication are most important at persuasion stage (Rogers, 1995a, p.203) Efficacy beliefs will not be expressed in corresponding action if people lack the necessary resources to perform the activities. So when performance is impeded by inadequate resources, disincentives or external beliefs, efficacy beliefs will exceed actual performance (Bandura, 1997, p. 68). Rogers’ characteristics of innovations (1995a, 1995b). Perceived self-efficacy is an important contributor to performance accomplishments, whatever the skills might be. Effective functioning requires both skills and the efficacy beliefs to use them well (Bandura, 1997, p.37). Efficacy beliefs are structured by experience and reflective of thought rather than being simply a disjoined collection of highly specific self-beliefs (Bandura, 1997, p.51). Perceived self-efficacy contributes to subsequent performance, independently of actual skills or past performance, when variations in prior performance are controlled (Bandura, 1997, p.60). Educational materials although not sufficient to change practice may have a predisposing effect for change (Freemantle, Harvey, Wolf, Grimshaw, Grilli, &amp; Bero, 2001) and when used with other practice reinforcing strategies can effect change (Wilson et al., 1988). Self-efficacy beliefs are constructed from four principal sources of information: enactive mastery experiences; vicarious experiences; verbal persuasion and social influences; and physiological and affective states (Bandura, 1997, p.19). People judge their capabilities through social comparison (Bandura, 1997, p.58).</td>
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<tr>
<td>Decision stage</td>
<td>AD visit #1: Assess nurses’ progress.</td>
<td>Educational outreach visits are generally effective in altering health professionals behaviour e.g., teaching new skills or challenging negative attitudes (Avorn &amp; Soumerai, 1983; Avorn, et al., 1992; Cummings et al., 1989; Grol &amp; Grimshaw, 1999; Putnam &amp; Curry, 1985; Soumerai et al., 1993).</td>
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<td>Provide additional information as requested by the nurse.</td>
<td>Efficacy beliefs contribute to level of motivation and performance, but they will not produce new performances if subskills necessary for the exercise of personal agency are completely lacking (Bandura, 1997, p. 61). Perceived efficacy then contributes to acquisition of knowledge and development of subskills as well as drawing on them in the construction of new behaviour patterns.</td>
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<td>Be aware some nurses may have decided to adopt (innovators, early adopters, and early majority) while others (e.g., late majority, laggards) may require additional persuasion, information or time.</td>
<td>Interpersonal channels of communication help to move individuals out of persuasion into the decision-making stage. Adopter categories reflect degrees of innovativeness and RNs will likely adopt at different rates (Rogers, 1995a).</td>
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<tr>
<td></td>
<td>Offer individualized support and encouragement in a friendly, respectful and relaxed manner.</td>
<td>To maximize retention (Davis et al., 2002)</td>
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<td></td>
<td>Offer the opportunity to rehearse or practice giving advice to patients.</td>
<td>Individualized training increases cessation activities by health professionals (Lancaster et al., 2002). Individualized training manuals and follow ups during a project increase guidelines’ adherence (Lichtman, Roumanis, Radford, Riedinger, Weingarten, &amp; Krumholz, 2001).</td>
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<tr>
<td></td>
<td>Emphasize the advantages of using the CPGs and compatibility with existing practice of asking about smoking status during trial.</td>
<td>Self-efficacy beliefs are constructed from four principal sources of information: enactive mastery experiences; vicarious experiences; verbal persuasion and social influences; and physiological and affective states (Bandura, 1997, p. 19).</td>
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<tr>
<td></td>
<td>Encourage peer support.</td>
<td>Innovation characteristics: relative advantage, trialability, compatibility emphasized (Rogers, 1995a).</td>
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<tr>
<td>Implementation stage</td>
<td>AD visit #2: Focus on support and encouragement in a personalized manner. Recognize adoption by nurses’ acceptance and use of CPGs. Recognize that decisions made can be discontinued. Continue to offer training opportunities as nurses may be at various stages of adoption. Note forms of “re-invention”. Ensure staff have easy access to patient education materials and SCIR forms. Encourage peer support. Offer feedback on progress using the CPGs, clarify misconceptions. Offer feedback on documentation from available SCIR forms. Continue to reinforce attitudes and behaviours.</td>
<td>Adopter categories reflect degrees of innovativeness and RNs will likely adopt at different rates (Rogers, 1995a). Self-efficacy beliefs are constructed from four principal sources of information: enactive mastery experiences; vicarious experiences; verbal persuasion and social influences; and physiological and affective states (Bandura, 1997, p.19). In social practice, personal enablement through mastery experiences is the most powerful way to create a strong, resilient sense of efficacy (Bandura, 1986). Continue to emphasize benefits and advantages of using CPGs (Rogers, 1995a). Innovations may be changed or modified by the user in the process of adoption and implementation (Rogers, 1995a, p.17). Personal enablement is achieved by equipping people with knowledge, subskills, and self-affirming experiences in the exercise of personal control. Individuals’ learning performance is enhanced when strategies are used to minimize emotional arousal and defensive mechanisms (Bandura, 1977, 1986, 1997; O’Leary, 1985). People judge their capabilities through social comparison (Bandura, 1997, p.58). In taking on a new task, faulty self-judgements can arise from a number of sources. People in new activities have a limited basis on which to assess the adequacy of their self-appraisals. They may misperceive the quality of their performance and may make inferential errors in judging their efficacy, perceive their ongoing experiences accurately, but introduce distortions by how they cognitively select, combine, and weight information available to them. Judgement of personal efficacy can be inflated by selective recall of personal successes and deflated by selective remembrance of personal failures (Bandura, 1997, p.70).</td>
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</table>
Cognitive regulation of motivation and action requires performers to have some idea of what they are trying to attain and informative feedback about what they are doing. Given definite aims and feedback about one's performance, efficacy beliefs function as influential regulators of motivation and performance enhancement (Bandura, 1997, p.66).

Providing performance feedback of capabilities influences self-efficacy and adherence and promotes performance mastery (O'Leary, 1985, p.448).

In addition to objective, factual knowledge, an effective detailer provides suggestions (feedback) on the success or deviance from targeted behaviours (Mittman et al., 1992). The dissemination orientation inherent in academic detailing reflects a deliberate attempt to influence and improve the effectiveness of the transfer process (Orlandi, 1987, p.123).

More complex interventions (e.g., outreach visits, audit and feedback, local opinion leaders) are moderately effective in CPGs implementation (Bero et al., 1998; Grol & Grimshaw, 1999; Gross, 2000; Hanson et al., 1997; NHS Centre for Reviews and Dissemination, 1999; Oxman et al., 1995; Solberg, 2000).
<table>
<thead>
<tr>
<th>Confirmation stage</th>
<th>AD visit #2</th>
<th>RNs are likely to adopt at different rates and some adopters may need an interpersonal communication while others will respond to a message from a respected colleague (Rogers, 1995a).</th>
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<tr>
<td></td>
<td>Offer supportive, one-on-one feedback to those who have adopted for making the change.</td>
<td>Individuals will be seeking reinforcement of decision or reversal of decision Rogers (1995a).</td>
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<td>Recognize adopters will be seeking validation to support their choice as being correct.</td>
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<td></td>
<td>Recognize that some adopters may discontinue or reverse a decision due to conflicting messages. Recognize that some (late majority or laggards) may not yet have adopted the CPGs.</td>
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<td></td>
<td>Continue to reinforce attitudes and behaviours.</td>
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<tr>
<td></td>
<td>Facilitate supportive messages from nursing leadership e.g., from Nursing Team Manager, Director of Nursing.</td>
<td>Cosmopolite channels are relatively more important than local channels for earlier than later adopters (Rogers, 1995a).</td>
</tr>
<tr>
<td></td>
<td>Encourage peer support.</td>
<td>People judge their capabilities through social comparison (Bandura, 1997, p.58).</td>
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<td></td>
<td></td>
<td>Proficient action is not simply a mechanical expression of preformed skills (Bandura, 1997, p.51). He suggests proficient action requires one to select and use subskills guided by higher self-regulatory skills such as diagnosing task demands, constructing and evaluating alternative courses of action, setting proximal goals to guide one's efforts, creating self-incentives to sustain engagement in taxing situations and to manage stress and debilitating intrusive thoughts. These self-regulatory skills enable people to improve performance in a variety of activities.</td>
</tr>
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Appendix B: Consent Form

Title of Study: An Evaluation of a Dissemination Intervention to Enhance Registered Nurses' Use of Clinical Practice Guidelines Related to Tobacco Reduction

Principal Investigator: Kathryn Hyndman, RN, PhD candidate
Doctoral Student
University of British Columbia School of Nursing
(xxx)xxx-xxxx

PhD Faculty Supervisor: Dr. Joan Bottorff, RN, PhD
Professor
University of British Columbia School of Nursing
(xxx)xxx-xxxx

Purpose:
The purpose of the research study is to better understand the factors that help Registered Nurses use clinical practice guidelines (CPG) related to treating tobacco use and dependence in their practice. You are being invited to participate because you provide nursing care to pregnant and postpartum women and their infants in one of the study hospitals. This research is a PhD thesis for Kathryn Hyndman, who is a registered nurse and doctoral student in the School of Nursing, University of British Columbia. Her supervisor is Dr. Joan Bottorff.

Study Procedures:
If you choose to take part in this study, you will be asked to complete a questionnaire at the beginning and end of the study. Some nurses may be asked to participate in an interview. The questions that will be asked in the questionnaire and interview relate to your views on the value of using research in nursing, smoking cessation interventions, using clinical practice guidelines, and the hospital organizational environment. In addition, some demographic information (e.g., education, years of work as a nurse) will be collected. Each questionnaire will be sent to you through the hospital mail and should take about 20 minutes to complete. Hospitals participating in this study will be
Title of Study: An Evaluation of a Dissemination Intervention to Enhance Registered Nurses' Use of Clinical Practice Guidelines Related to Tobacco Reduction

randomly assigned to two groups. This means that group assignment will be decided by chance, something like tossing a coin. If your hospital is assigned to one group, you will be asked to view a video, read printed materials, participate in two individual meetings of about 10 - 15 minutes with one of the researchers and complete patient chart forms. The individual meetings will occur during regularly scheduled work time and one will be by telephone. Alternatively, if your hospital is assigned to the other group, you will receive some written information and have the opportunity to attend an educational session, scheduled during work time, following the completion of the second questionnaire. If you are asked to participate in an interview, this will be arranged at a time convenient to you. The interview will be tape-recorded and typed out by a secretary. The 30 - 40 minute interview may be conducted in person or by telephone.

Confidentiality:
Any information resulting from this research study will be kept strictly confidential and only the researchers will have access to the information. All documents, including questionnaires and interview transcripts, will be identified by a numerical code and kept in a locked file. A list of participants' names and their code numbers will be kept in a separate locked file and destroyed at the end of the study. Data will also be stored on a computer with access restricted by a password. Participants will not be identified by name in any reports (including publications and presentations) of the completed study. The information we get from this study might be used again (secondary analysis) in future studies of nurses' attitudes and behaviours, but only if approved by the appropriate university committees.

Risks and Benefits:
There are no known risks to participating. The information from this study will help to understand ways to support nurses in using CPG related to treating tobacco use and dependence in their daily practice.

Contact:
If you have any questions, or desire further information with respect to the study, you may contact Kathryn Hyndman, Principal Investigator at (xxx)xxx-xxxx (toll free) or her Faculty Supervisor, Dr. Joan Bottorff at (xxx)xxx-xxxx. If you have any concerns about your treatment or rights as a research subject, you can contact the Director of Research Services at the University of British Columbia at (xxx)xxx-xxxx or the Human Ethics Secretariat at the University of Manitoba (xxx)xxx-xxxx.
Title of Study: An Evaluation of a Dissemination Intervention to Enhance Registered Nurses' Use of Clinical Practice Guidelines Related to Tobacco Reduction

Consent:
I understand my participation in this study is entirely voluntary and that I may refuse to participate or withdraw from the study at any time without prejudice or consequence.

I have received a copy of this consent form for my own records and reference.

I consent to participate in this study.

Subject's Signature ___________________________ Date ____________

Witness ___________________________ Date ____________
Registered Nurse Study Kit

Using Clinical Practice Guidelines Related to Tobacco Reduction

Promoting Woman and Child Health
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**Patient Education Materials** (folder pocket)

a) *Start Quit, Stay Quit* booklet  
(Hotz, Edwards, Sims-Jones, & Cushman, 1999)

b) *Growing Up in Smoke* pamphlet (French and English)  
(Canadian Cancer Society, 2002)

c) *Winnipeg Area Community Resources on Tobacco Reduction* pamphlet  
(Hyndman, 2003)

**Nurse Resource Materials** (folder pocket)

a) *Guidelines for Registered Nurses Working with Canadians Affected by Tobacco* booklet  
(Canadian Nurses Association, 1997)

b) *Treating Tobacco Use and Dependence: Quick Reference Guide for Clinicians* booklet  
(Fiore et al., 2000b)

c) *If You Want to Help a Smoker Quit* pamphlet  
(Canadian Cancer Society, 2000)

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Kathryn Hyndman, January 2003
Registered Nurse Study Kit

Purpose and Content

The intent of these materials is to offer you current information on the topic of smoking during pregnancy / early postpartum, the components of the clinical practice guideline for treating tobacco use and dependence, and demonstrate how to use the guideline with your patients. Some of the information you already know and use in your clinical practice; some of the information may be new. By working through the self-study materials and video you will be able to:

- Describe the smoking prevalence among pregnant and postpartum women in Manitoba.
- State the effectiveness of nurse-led smoking cessation interventions in reducing maternal smoking rates.
- Discuss the health consequences of smoking on the woman (baby).
- Understand that tobacco dependence is a chronic disease.
- Describe the stages in the smoking cessation process.
- Discuss the components of the clinical practice guideline.
- Describe how to use brief strategies to assist current smokers who are willing to make a quit attempt, who are not willing to make a quit attempt, or to prevent relapse among former smokers.
What's in the Kit?

- Information sheets in point form.

- A short 15-minute video with vignettes demonstrating the brief nursing interventions contained in the clinical practice guideline (CPG).

- Practice sheets to document your use of the guideline, completed forms to review your work, and a mini quiz.

- Patient educational pamphlets to use with your own patients on quitting, on environmental tobacco smoke, and on community resources. (Start Quit, Stay Quit; Growing Up in Smoke; Winnipeg Area Community Resources on Tobacco Reduction)

- CPG information. Nurse resource materials. (Guidelines for Registered Nurses Working With Canadians Affected by Tobacco; Quick Reference Guide for Clinicians - Treating Tobacco Use and Dependence; If You Want to Help a Smoker to Quit)

How to Use Your Kit

- Read through the information sheets.

- Watch the video that demonstrates using the CPG.

- Practice using the recording form and review your work.

- Take the mini quiz (answers provided).

- Refer to written materials and watch the video again as needed.
Information Sheet 1. Why Should Nurses Treat Tobacco Use and Dependence?

How Prevalent is Smoking Among Manitoba Women?

☑ Among Manitoba female smokers of childbearing years in 1996, 9.6% or 1 in 10 women aged 15 to 19 smoked cigarettes on a daily basis and among women aged 20 to 44, 54% or 1 in 2 women smoked cigarettes on a daily basis¹.

☑ In Manitoba in 1995, just under one-third (28.8%) of pregnant women smoked cigarettes during their pregnancies²,³.

☑ Breastfeeding rates were significantly lower among mothers who smoked. Breastfeeding rates for non smokers were 83.6% and 64.8% for smokers³.

Can Nurses Make a Difference?

☑ Nurses are respected and trusted by patients⁶-¹¹,¹⁴.

☑ Eighty percent of Manitoba smokers expressed a desire to quit smoking and this was expressed more commonly in the young than the old¹². These data reflect Canadian data where 75% of adult smokers would like to quit¹³.

☑ Nurses are effective in providing smoking cessation interventions. Although not every woman is ready to quit, nurse delivered interventions can achieve quit rates from 5% to 32% during pregnancy and up to 14.5% during the postnatal period⁴,⁵,⁶,¹⁵.

☑ Nurses interact frequently with thousands of women every year during prenatal and fetal assessments, during birth and in the postpartum period.

☑ Because of the large number of women who can be reached by nursing, nurses can play a powerful role in reducing the prevalence of smoking among pregnant and postpartum women.

References see over.....
References

Information Sheet #2: Health Consequences of Smoking

During Pregnancy and Delivery

- Women who smoke have an increased risk of tubal pregnancy, spontaneous abortion (miscarriage), premature rupture of membranes, and preterm labour\textsuperscript{1,2,3}.
- Women who smoke are more likely to have low birth weight babies. Low birth weight babies risk stillbirth or death during infancy\textsuperscript{4,5,6,7}.

Breastfeeding Effects

- Smoking is associated with low rates of breastfeeding initiation and reduced duration of breastfeeding\textsuperscript{8,9,10,11}.
- Milk volume and milk fat decreases in mothers of premature infants and who smoke\textsuperscript{12}. A decrease in milk quality and quantity may lead to early weaning\textsuperscript{6}.

Babies Exposed to Second-hand Smoke

- Sudden infant death syndrome (SIDS) or “crib death” occurs more frequently in infants whose mothers smoked\textsuperscript{13-18}.
- Environmental tobacco smoke is an important risk factor for SIDS\textsuperscript{18}.
- Babies exposed to environmental tobacco smoke (ETS) tend to be crankier, restless, and may spit up more often because of the chemicals they breathe in.

Children Exposed to Second-hand Smoke

- Cough and wheeze more than other children\textsuperscript{13-17}.
- Have more ear infections, colds, and pneumonia than other children\textsuperscript{13-17}.
- Have a greater chance of becoming asthmatic\textsuperscript{13-17}. Children with asthma have more asthma attacks due to ETS; their asthma attacks tend to be more severe\textsuperscript{15}.

As well ..... 

- A child who eats a cigarette butt can get sick.
- Every year children die in fires caused by careless smoking.

References see over .....
References


January 2003
Information Sheet #3: Smoking and Quitting

Why Do Women Smoke?

• Women may smoke because of loneliness, stress, and poverty. Smoking is one way to keep the lid on feelings of anger or frustration\(^1\).

• Women may smoke because smoking provides them with frequent and "acceptable" breaks from the demands of child care and maintaining a home and family\(^1,2\).

• Women may smoke to look "cool" and sophisticated and to try and keep their weight down\(^1,2,3\).

Why is it so Hard to Quit Smoking?

• Tobacco dependence exhibits classic characteristics of drug dependence. All drug addictions warrant clinical intervention, including tobacco dependence\(^6\).

• Nicotine, one of the main chemicals in tobacco, is a habit-forming drug. With each puff, a dose of nicotine is sent to the brain. Within seconds, nicotine enters the brain and stimulates the "feel good" chemicals that give you a temporary "high". The more a person smokes, the less likely their body is able to release these chemicals naturally\(^1,2,4\).

• There is a behavioural addiction - the mechanics of smoking. People who smoke 20 cigarettes a day bring the cigarette to their mouth about 250 to 300 times\(^1,4\).

• There is a psychological and social addiction - the time of day and in certain situations e.g., with coffee or after a meal\(^1\).

• Nicotine causes physical dependence characterized by withdrawal symptoms\(^6\). Withdrawal symptoms such as headaches, nervousness, irritability, trouble sleeping, coughing, dizziness, and constipation may make a person feel worse before they feel better\(^4\).

• Most smokers try to quit several times. Individuals who successfully quit smoking take an average of three or four cycles of trying to quit before becoming free of cigarettes. Relapse can be understood as a component of chronic disease, rather than a lack of patient commitment or lack of ability on the nurses' part. By recognizing tobacco dependence as a chronic condition, nurses will better understand the relapsing nature of this condition and identify the need for ongoing interventions\(^6\).

References see over.....
References


Information Sheet #4: Smoking Cessation Practices Among Pregnant and Postpartum Women

What is the Context?

• Approximately 40% of women who smoke stop just before becoming pregnant or when pregnancy was confirmed

1.

• It is estimated that 25% to 40% of women smokers try to stop smoking on their own for at least a brief time when they learn they are pregnant

2. Of those women who quit smoking in response to pregnancy, 21% relapse prior to delivery

3.

• Up to 75% relapse during the first six months of the postpartum period

4-7. Returning to smoking (relapse) can occur early after delivery and often within two weeks of the delivery

14.

• Two thirds of women who smoke during their first pregnancy also smoke during their second, exposing their first infant to tobacco smoke in utero and after delivery

8.

• For many women, pregnancy is a time-limited and clearly defined event during which tobacco abstinence may be more easily maintained while the stress of the transition to parenthood can contribute to relapse

5,13.

• A focus on relapse prevention with new mothers is critical both to maintaining abstinence that has been established and to reducing infant exposure to the risk of ETS

12,13.

• Since nicotine replacement therapies and Buproprion SR (Zyban) are not recommended for general use in pregnancy, the need for more powerful behavioural interventions and counselling to motivate and assist pregnant smokers to quit and sustain abstinence after delivery is important

9-11,13.

References see over.....
References


January 2003
Information Sheet #5: Stages of Change and Quitting Smoking

• It takes time and effort to quit smoking. Most people change their smoking behaviour through a cyclical process. The Transtheoretical Model portrays behavioural change as a process where individuals progress through a series of five stages. Many smokers pass back and forth through these five stages.

• Without planned interventions, people remain "stuck in the early stages". Prochaska and colleagues note there is no inherent motivation to progress through the stages of intentional change as there seems to be for physical and psychological development. Their research with high risk behaviours such as smoking supports a general rule of thumb: 40% in precontemplation; 40% in contemplation and 20% in preparation.

• Nurses can help their patients best by understanding the stages of change smokers go through. A reasonable goal for each therapeutic intervention with smokers is to help them progress one stage. Research suggests that to progress through the stages, the pros of changing must increase twice as much as the cons decrease.

Stages of Change Model

• "Precontemplation". Individuals have no intention to quit within the next six months. They tend to avoid information designed to help them change. People may be in this stage because they are uninformed or underinformed about the consequences of their behaviour, or they may have tried to change their behaviour several times and have become demoralized about their ability to change.

• "Contemplation". Individuals start thinking about quitting in the near future, within six months, but not right away. They are thinking about the pros and cons of stopping and may experience mixed feelings. This balance between the pros and cons can produce ambivalence that can keep people stuck in this stage for long periods of time.

• "Preparation". Individuals have decided to quit and start making plans, often within the next month. Many have taken significant action in the past year. They are getting ready to stop and may set a quit date and begin to cut down on cigarettes.

• "Action". Individuals are taking action to quit using different strategies. This stage can last from zero to six months. Individuals do not smoke. They remain most committed to changing their behaviour, yet remain at great risk for relapse.

• "Maintenance". Individuals have not smoked for more than six months and continue to maintain a smoke-free environment using a variety of strategies to stay quit. They are at less risk for relapse and can stay in this stage for six months to five years.

References see over...
References


January 2003
Information Sheet #6: The Clinical Practice Guideline for Treating Tobacco Use and Dependence

Who Developed the Guideline?

- In June 2000, the United States Public Health Service released its clinical practice guideline Treating Tobacco Use and Dependence\(^1\).

- The guideline was developed by an expert committee convened by the Agency for Health Care Quality and Research (AHRQ), a part of the United States Department of Health and Human Services\(^2\).

- The guideline is based on an extensive review of 6000 research articles on treating tobacco dependence\(^3\).

- The guideline is consistent with national smoking cessation guidelines in the United Kingdom, Canada, and New Zealand\(^4\).

- The AHRQ guideline is congruent with Canadian national recommendations on providing smoking cessation assistance and consistent with national nursing guidelines for registered nurses working with Canadians who use tobacco\(^5,6\).

- The AHRQ guideline was selected for this study because it is heavily evidence-based, current, comprehensive, and there is a special section for women and pregnancy\(^3,7\).

More About the Guideline

- The guideline highlights the chronic nature of tobacco use and dependence and emphasizes the importance of repeated clinical interventions\(^3,8\).

- The CPG panel recommends the interventions be used with all populations to ensure every patient who uses tobacco is identified and offered at least a brief intervention at each clinical visit\(^8\).

- The 2000 guideline is for physicians, nurses, dentists, and respiratory therapists and is applicable to a broad array of health care settings (e.g., clinic, hospital worksite). Brief clinical interventions can be provided by any clinician effectively and interventions as brief as three minutes can increase cessation rates significantly\(^8\).

References see over.....
References


Information Sheet #7: How the Guideline Works

How Do I Use the Guideline?

- The AHRQ guideline provides an algorithm for identifying and treating tobacco use\(^1,2,3\).

Patient Presents to a Health Care Setting
(clinic, hospital, worksite)

Does Patient Now Use Tobacco?

Yes  No

Is Patient Now Willing to Quit?

Yes  No

Provide Appropriate Tobacco Dependence Treatments
Promote Motivation to Quit
Prevent Relapse* No

* Relapse prevention interventions are not necessary in the case of the adult who has not used tobacco for many years.

- The goal of the guideline is to ensure every patient who uses tobacco is identified and offered treatment.

- This evidence-based intervention for clinicians is based on the following five main steps (the 5A's): *ask* the patient if she uses tobacco, *advise* her to quit, *assess* her willingness to make a quit attempt, *assist* her in making a quit attempt, and *arrange* for follow-up contact to prevent relapse\(^1,2,3\).

References see over.....
References


For the Patient Willing to Quit\textsuperscript{1,2}

- **Ask** (1 minute). Obtain the smoking status of every patient as part of each hospital visit. According to the guideline, asking whether or not a patient uses tobacco not only increases the rate of clinician intervention but also increases the number of patients who quit smoking.

- **Advise** (1 minute). Once tobacco use has been assessed and documented, recommend every tobacco user in clear, strong, and personalized manner to quit smoking. Brief advice to quit results in greater quit rates. 
  
  - **Clear**
    
    "I think it is important for you to quit smoking now and I can help you."
  
  - **Strong**
    
    "As your nurse, for the health of you and your baby, the most important thing you can do is quit smoking."
  
  - **Personalized**
    
    Your advice should refer to your patient’s individual situation. Inform the patient of the risks of smoking on the woman and infant and the impact of ETS on infants.

- **Assess** (1 minute). Assess the willingness of the patient to make a quit attempt within the next 30 days, e.g., “Are you interested in quitting at this time?” If the patient says “Yes”, you should offer assistance.

- **Assist** (3 minutes +). Assisting the patient in her quit attempt can be done using a brief or intensive intervention. A brief intervention, lasting less than 3 minutes results in greater quit rates.
  
  Help the patient develop a quit plan. Suggest and encourage the use of problem solving methods and skills. Offer support and encouragement while in hospital. Help patient obtain social support in her home environment. Provide pregnancy-specific self-help smoking cessation resources and education materials.

- **Arrange** (1 minute +). Arranging follow-up contact is the final step in treating tobacco use and dependence. The majority of women who remain abstinent during pregnancy are at high risk for relapse, especially within the first two weeks after delivery.
  
  The guideline recommends that you schedule a follow-up contact within two weeks. Since your patient is likely to be discharged, the following activities may assist your patient. Ensure patient understands how to access additional self-help resources in the community. Determine with patient if she would benefit from a group approach to smoking cessation. Facilitate referral to a smoking cessation program by offering a pamphlet on community resources.

References see over...
References


Information Sheet #9: Developing a Quit Plan

How to Counsel Patients to Quit? Encourage, Support, Offer Resources

• Set a quit date; ideally within two weeks. The patient should tell family, friends, and coworkers about the quit attempt and request their understanding and support.
• Anticipate challenges to planned quit attempt. What worked and what did not? Encourage patient to consider reusing strategies that were helpful and to avoid situations that led to relapse.
• The patient should remove tobacco products from her environment prior to quitting and avoid smoking in places where she spends a lot of time (e.g., work, home, car).
• Provide practical problem solving and skills training. This involves providing basic information about smoking and successful quitting, helping the patient recognize situations that increase the risk of smoking or relapse and helping them to identify skills intended to cope with high risk situations. Total abstinence is essential. “Not even a single puff after the quit date.” Anticipate challenges or triggers and discuss how patient will successfully overcome them. Alcohol can cause relapse so patient should consider limiting or abstaining from alcohol while quitting. Other smokers in the household make it more difficult to quit. Patients should encourage housemates to quit with them or not smoke in their presence.
• Provide a supportive clinical environment while in hospital by encouraging the patient, respectfully communicating caring and concern and encouraging the patient to talk about the quitting process.
• Help the patient learn how to develop social support when away from the hospital by teaching the patient how to identify and ask for support from family, friends, and coworkers.
• Pregnancy is considered a special situation and the use of pharmacotherapies such as Buproprion SR (Zyban) is not recommended. Pregnant/new mothers should be first encouraged to quit without pharmacologic treatment.
• Provide supplementary materials that are appropriate for your patient. At your nursing station, you may select any or all of the patient educational materials in your study kit.
• Please view the first video clip, Vignette #1, for a demonstration using the CPG and using the SCIR form to document nursing interventions.

References see over.....
References


Information Sheet #10: Assisting Patients Who Are Not Willing to Make a Quit Attempt

- **Ask.** Ask patient about smoking status.

- **Advise.** Provide clear, strong advice to quit smoking with personalized messages about the impact of smoking on mother and baby.

- **Assess.** Assess patient’s willingness to make a quit attempt within the next 30 days. If the patient says “No” or “Not now”, provide a brief intervention to motivate patient to quit and information about protecting infant from ETS.

How Do I Offer a Motivational Intervention?

- Patients unwilling to commit to making a quit attempt during a hospital visit may lack information about the harmful effects of tobacco, may have fears or concerns about quitting, or may be demoralized because of previous relapses.

- Such patients may respond to an intervention that provides the nurse an opportunity to educate, reassure, and motivate, built around the “5R's”:
  
  **Relevance.** Tailor advice and discussion to each patient. Nurses should encourage the patient to indicate why quitting is personally relevant, being as specific as possible (e.g., health concerns for patient and baby, personal barriers).

  **Risks.** Outline risks of continuing smoking. Nurses should ask the patient to identify potential negative consequences of tobacco use (e.g., acute risks such as harm to women in pregnancy and childbirth, risk to the baby of low birth weight, SIDS).

  **Rewards.** Outline the benefits of quitting. Nurses should ask the patient to identify potential benefits of stopping tobacco use. Nurses may suggest and highlight those that seem most relevant.

  **Roadblocks.** Identify barriers to quitting. Nurses should ask the patient to identify barriers to quitting and note strategies that could address barriers. Typical barriers include fear of failure, weight gain, withdrawal symptoms, lack of support, depression, and enjoyment of tobacco.

  **Repetition.** Repeat motivational messages at every visit. Nurses may remind patients that most people make repeated attempts before they quit successfully.

- Please view the second video clip, Vignette #2, for a demonstration of using the CPG with a woman who is not willing to quit smoking, and using the SCIR form to document nursing interventions.

References see over.....
References


Information Sheet #11: Assisting Patients Who Have Recently Quit Smoking

How Can I Prevent Relapse?\textsuperscript{1,2,3}

- Because of the chronic, relapsing nature of tobacco dependence, nurses should assess for relapse and use relapse prevention strategies recognizing that patients may minimize or deny tobacco use\textsuperscript{2}.

- Nurses should offer a brief relapse prevention to every patient who has quit recently.

- Minimal relapse prevention consists of the following:
  - congratulating patient on any success;
  - offering your strong encouragement to remain abstinent;
  - discussing the benefits of quitting, the problems encountered during quitting, or challenges anticipated to staying quit (e.g., weight gain, alcohol, other tobacco users).

- Although most relapse occurs early in the quitting process, some relapse occurs months or even years after the quit date. Therefore, nurses should offer brief relapse prevention interventions with former tobacco users.

- Please view the third video clip, Vignette #3, for a demonstration of using the CPG and using the SCIR form to document nursing interventions.

References see over.....
References


Do I Need to Offer Interventions?

- No. No further interventions are required.
- Nurses may congratulate patients and encourage continued abstinence.
- Please view the video clip, Vignette #4, for a demonstration of using the CPG and using the SCIR form for documentation.

References see over.....
References


Smoking Cessation Interventions Record (SCIR) Form

Vignette One: Assisting Patients Willing to Quit

<table>
<thead>
<tr>
<th>Ask (1 minute)</th>
<th>Date: Aug 18, 03</th>
<th>RN Initial: KH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask patient/mother about smoking status</td>
<td>done</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Advise (1 minute)</th>
<th>Date: Aug 18, 03</th>
<th>RN Initial: KH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly encourage every smoker to quit as soon as possible.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td>Inform patient of risks of smoking on the woman and infant.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td>Congratulate and strongly encourage former smokers to remain quit</td>
<td>done</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assess (1 minute)</th>
<th>Date: Aug 18, 03</th>
<th>RN Initial: KH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess willingness to make a quit attempt within 30 days.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td>Assist if patient/mother says YES.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If patient/mother says NO, provide intervention to motivate patient to quit, and give patient information about protecting infant from environmental tobacco smoke.</td>
<td>done</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assist (3 minutes +)</th>
<th>Date: Aug 18, 03</th>
<th>RN Initial: KH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negotiate a definite quit date</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td>Assist with a quit plan</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td>Encourage use of problem solving skills for cessation.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td>Provide social support while encouraging patient.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td>Provide pregnancy/postpartum specific resources.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td>Help patient (mother) obtain social support at home.</td>
<td>done</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Arrange (1 minute +)</th>
<th>Date: Aug 18, 03</th>
<th>RN Initial: KH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide information on how to access community and self-help resources.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td>Facilitate referral to smoking cessation program.</td>
<td>done</td>
<td></td>
</tr>
</tbody>
</table>
## Smoking Cessation Interventions Record (SCIR) Form

### Vignette Two. Assisting Patients Unwilling to Quit

- **Ask (1 minute)**
  - Ask patient/mother about smoking status
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**

- **Advise (1 minute)**
  - Strongly encourage every smoker to quit as soon as possible.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**
  - Inform patient of risks of smoking on the woman and infant.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**
  - Congratulate and strongly encourage former smokers to remain quit.
  - Done

- **Assess (1 minute)**
  - Assess willingness to make a quit attempt within 30 days.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**
  - Assist if patient/mother says YES.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**
  - If patient/mother says NO, provide intervention to motivate patient to quit, and give patient information about protecting infant from environmental tobacco smoke.
  - Done

- **Assist (3 minutes +)**
  - Negotiate a definite quit date.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**
  - Assist with a quit plan.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**
  - Encourage use of problem solving skills for cessation.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**
  - Provide social support while encouraging patient.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**
  - Provide pregnancy/postpartum specific resources.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**
  - Help patient (mother) obtain social support at home.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**

- **Arrange (1 minute +)**
  - Provide information on how to access community and self-help resources.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**
  - Facilitate referral to smoking cessation program.
  - Done
  - Date: Aug 20, 03
  - RN Initial: **jj**
### Smoking Cessation Interventions Record (SCIR) Form

**Vignette Three. Assisting Patients Who Have Recently Quit**

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<td>Ask patient/mother about smoking status</td>
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<td>RN Initial: <strong>JH</strong></td>
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<th><strong>Advise</strong> (1 minute)</th>
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<tbody>
<tr>
<td>Strongly encourage every smoker to quit as soon as possible.</td>
<td></td>
<td>Date: <strong>Aug 26, 03</strong></td>
<td>RN Initial: <strong>JH</strong></td>
</tr>
<tr>
<td>Inform patient of risks of smoking on the woman and infant.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congratulate and strongly encourage former smokers to remain quit</td>
<td>✓ done</td>
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<tr>
<th><strong>Assess</strong> (1 minute)</th>
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<tbody>
<tr>
<td>Assess willingness to make a quit attempt within 30 days.</td>
<td></td>
<td>Date:</td>
<td>RN Initial:</td>
</tr>
<tr>
<td>Assist if patient/mother says YES.</td>
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</tr>
<tr>
<td>If patient/mother says NO, provide intervention to motivate patient to quit, and give patient information about protecting infant from environmental tobacco smoke.</td>
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<tr>
<th><strong>Assist</strong> (3 minutes +)</th>
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<tbody>
<tr>
<td>Negotiate a definite quit date</td>
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<tr>
<td>Assist with a quit plan</td>
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<tr>
<td>Encourage use of problem solving skills for cessation.</td>
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<tr>
<td>Provide social support while encouraging patient.</td>
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<tr>
<td>Provide pregnancy/postpartum specific resources.</td>
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<tr>
<td>Help patient (mother) obtain social support at home.</td>
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<th><strong>Arrange</strong> (1 minute +)</th>
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<tr>
<td>Provide information on how to access community and self-help resources.</td>
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<td></td>
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<tr>
<td>Facilitate referral to smoking cessation program.</td>
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### Smoking Cessation Interventions Record (SCIR) Form

Vignette Four. Assisting Patients Who are Non-Smokers

<table>
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<td><strong>Ask</strong> (1 minute)</td>
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<td>Strongly encourage every smoker to quit as soon as possible.</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Inform patient of risks of smoking on the woman and infant.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Congratulate and strongly encourage former smokers to remain quit</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td><strong>Assess</strong> (1 minute)</td>
<td>Assess willingness to make a quit attempt within 30 days.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assist if patient/mother says YES.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If patient/mother says NO, provide intervention to motivate patient to quit, and give patient information about protecting infant from environmental tobacco smoke.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td><strong>Assist</strong> (3 minutes +)</td>
<td>Negotiate a definite quit date</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assist with a quit plan</td>
<td>done</td>
<td></td>
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<tr>
<td></td>
<td>Encourage use of problem solving skills for cessation.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide social support while encouraging patient.</td>
<td>done</td>
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<tr>
<td></td>
<td>Provide pregnancy/postpartum specific resources.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Help patient (mother) obtain social support at home.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td><strong>Arrange</strong> (1 minute +)</td>
<td>Provide information on how to access community and self-help resources.</td>
<td>done</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Facilitate referral to smoking cessation program.</td>
<td>done</td>
<td></td>
</tr>
</tbody>
</table>

Patient Addressograph
## Mini Quiz on Using Clinical Practice Guidelines Related to Tobacco Reduction

This True/False (T/F) Quiz is based on information in your study kit. Please take the quiz when you are ready, and check your scores with answers provided on the flip side.

<table>
<thead>
<tr>
<th>Questions</th>
<th>T</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In Manitoba in 1995, nearly one-third of pregnant women smoked cigarettes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Although not every woman is ready to quit, nurse delivered interventions can achieve quit rates from 5% to 32% during pregnancy, and up to 14% during the postnatal period.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Smoking has no effect on breastfeeding initiation and duration.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. SIDS occurs more frequently among infants whose mothers smoked while they were pregnant.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Environmental tobacco smoke is now recognized as a risk factor for SIDS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Nicotine does not cause physical dependence such as coughing, dizziness, and irritability.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Tobacco dependence exhibits classic signs of drug dependence and warrants clinical interventions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. About 40% of women who smoke stop on their own just before becoming pregnant or when pregnancy is confirmed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Up to 25% of women relapse during the first six months of the postpartum period.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. It is safe for all new mothers to be given prescriptions for nicotine replacement therapies and Zyban.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Individuals who have no intention to quit smoking within the next six months are in the &quot;maintenance&quot; stage of change.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Individuals who have decided to quit and start making plans to quit within the next month are in the &quot;preparation&quot; stage of change.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Individuals who successfully quit smoking take an average of 3 - 4 cycles of trying to quit before becoming smoke-free.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Individuals in the &quot;action&quot; stage of change do not smoke, yet they remain at great risk for relapse.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. The AHRQ clinical practice guideline was selected for this study because it is heavily evidence-based, current, comprehensive, and there is a special section for women and pregnancy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Brief, clear, personalized advice from a clinician results in greater quit rates.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Patients unwilling to make a quit attempt should not receive any education or assistance because they are already feeling demoralized.</td>
<td></td>
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</tr>
<tr>
<td>18. Nurses do not need to offer brief relapse prevention interventions to patients who have quit smoking recently.</td>
<td></td>
<td></td>
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<tr>
<td>19. Nurses do not need to offer relapse prevention interventions with patients who have not used tobacco for many years.</td>
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<tr>
<td>20. Interventions as brief as three minutes provided by nurses can increase cessation rates significantly.</td>
<td></td>
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</tbody>
</table>
**Mini Quiz on Using Clinical Practice Guidelines Related to Tobacco Reduction**

**ANSWER KEY**

<table>
<thead>
<tr>
<th>#</th>
<th>Answer</th>
<th>Reference</th>
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<tbody>
<tr>
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<td>Information Sheet #1</td>
</tr>
<tr>
<td>2</td>
<td>True</td>
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<tr>
<td>5</td>
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<td>Information Sheet #2</td>
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<td>6</td>
<td>False</td>
<td>Information Sheet #3</td>
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<td>7</td>
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<tr>
<td>8</td>
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<td>Information Sheet #4</td>
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<td>Information Sheet #4</td>
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<td>Information Sheet #4 and #9</td>
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<td>Information Sheet #5</td>
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<td>Information Sheet #5</td>
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<td>Information Sheet #3 and #5</td>
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<tr>
<td>15</td>
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<td>Information Sheet #6</td>
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<tr>
<td>16</td>
<td>True</td>
<td>Information Sheet #8</td>
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<tr>
<td>17</td>
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<td>Information Sheet #10</td>
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<tr>
<td>18</td>
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<td>Information Sheet #11</td>
</tr>
<tr>
<td>19</td>
<td>True</td>
<td>Information Sheet #12</td>
</tr>
<tr>
<td>20</td>
<td>True</td>
<td>Information Sheet #6</td>
</tr>
</tbody>
</table>

January 2003
Information Sheet: Nicotine Replacement Therapies

1. Is it safe for women who are breastfeeding:
   a) to be using the patch?
   b) to take Buproprion SR (Zyban)?
   c) to use Nicorette gum?

Response

The pharmacotherapies questioned above are all considered “first line” and have been found safe and effective for tobacco dependence treatment EXCEPT in certain populations. Pregnant and lactating women are considered one of these groups.

Pregnant women should be encouraged to quit first without pharmacologic treatment. The nicotine patch / Buproprion SR / nicotine gum should be used during pregnancy only if the increased likelihood of smoking abstinence, with its potential benefits, outweighs the risk of nicotine replacement and concomitant smoking. Similar factors should be considered in lactating women.¹ ²

Comments

Physicians may choose to consider pharmacotherapy for pregnant smokers who have been unable to quit using psychosocial interventions. In such cases, the clinician and pregnant smoker must contrast the risks of continued smoking. For example, a number of studies have shown that nicotine itself presents risks to the foetus, including neurotoxicity, and Buproprion SR has been shown to cause seizures in 1 out of 1,000 patients.

If the clinician and pregnant or lactating patient decide to use NRT, the clinician should consider monitoring blood nicotine levels to assess level of drug delivery. In addition, the clinician should consider using medication doses that are at the low end of the effective dose range and should consider choosing delivery systems that yield intermittent rather than continuous drug exposure. For example, nicotine gum rather than nicotine patch. Because none of these medications has been tested in pregnant women for efficacy in treating tobacco dependence, the relative ratio of risks to benefits is unclear. Additionally, since small amounts of these medications are passed through breast milk they may pose some risks to nursing infants.¹

References see over.....
References


Appendix D: Academic Detail Visit Guide

Academic Detail Visit Guide (Visits 1 and 2)

Code Number: ____________________________ Date: ______________________

1. Since Visit 1, have you worked:
   ______ full-time; ______ part-time; ______ casual; ______ holidays; ______ LOA

2. Please estimate your time commitment per patient in assessing smoking status and offering brief interventions: ______ 1-2 min.; ______ 2-5 min.; ______ 5-10 min.; ______ 10-15 min.; ______ 15-20 min.; ______ >30 min.

3. What additional information do you require for yourself or your patients?

4. How else can I assist you in your practice? (Focus on instruction, support, and encouragement)

5. What ways, and during what times, are you implementing the CPGs in your practice?

6. Offer feedback to RN on progress in using CPGs.

7. Encourage thorough documentation of assessments and interventions on the Smoking Cessation Interventions Record.

References: Cooke et al., 1998; Fiore et al., 2000a
Appendix E: Field Note Summary Form

<table>
<thead>
<tr>
<th>Contact type (✓)</th>
<th>With whom (specify Code Number):</th>
<th>Site: <strong><strong><strong><strong><strong>/</strong></strong></strong></strong></strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Detail visit</td>
<td>__________</td>
<td>Date: __________</td>
</tr>
<tr>
<td>Observation</td>
<td>__________</td>
<td>Written by: __________</td>
</tr>
<tr>
<td>Other</td>
<td>__________</td>
<td>Time: <strong><strong><strong><strong><strong>/</strong></strong></strong></strong></strong></td>
</tr>
<tr>
<td></td>
<td>__________</td>
<td>(start/end)</td>
</tr>
<tr>
<td></td>
<td>__________</td>
<td>Minutes: __________</td>
</tr>
</tbody>
</table>

1. What were the main issues that were addressed in this visit?

2. What additional information (resources) are needed for next visit?

3. Date of next visit and best time for nurse.

References: LoBiondo-Wood & Haber, 2003; Miles & Huberman, 1994
# Appendix F: Smoking Cessation Interventions Record Form

## Smoking Cessation Interventions Record (SCIR) Form

<table>
<thead>
<tr>
<th><strong>Ask</strong> (1 minute)</th>
<th></th>
<th>Date:</th>
<th>RN Initial:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask patient/mother about smoking status</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Advise</strong> (1 minute)</th>
<th></th>
<th>Date:</th>
<th>RN Initial:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly encourage every smoker to quit as soon as possible.</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inform patient of risks of smoking on the woman and infant.</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congratulate and strongly encourage former smokers to remain quit</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Assess</strong> (1 minute)</th>
<th></th>
<th>Date:</th>
<th>RN Initial:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess willingness to make a quit attempt within 30 days.</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assist if patient/mother says YES. If patient/mother says NO, provide intervention to motivate patient to quit, and give patient information about protecting infant from environmental tobacco smoke.</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Assist</strong> (3 minutes +)</th>
<th></th>
<th>Date:</th>
<th>RN Initial:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negotiate a definite quit date</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assist with a quit plan</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourage use of problem solving skills for cessation.</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide social support while encouraging patient.</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide pregnancy/postpartum specific resources.</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Help patient (mother) obtain social support at home.</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Arrange</strong> (1 minute +)</th>
<th></th>
<th>Date:</th>
<th>RN Initial:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide information on how to access community and self-help resources.</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitate referral to smoking cessation program.</td>
<td>□ done</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix G: Letter of Invitation

August 2003

Dear Registered Nurse:

You are invited to be a participant in a research study exploring Registered Nurses’ use of clinical practice guidelines on treating tobacco use and dependence because you provide care to pregnant or postpartum women and their infants and have the opportunity to offer health teaching to your patients. Your participation is voluntary and any information you provide will be kept confidential and reported anonymously. By participating you will be helping us understand ways to assist nurses in using clinical practice guidelines on tobacco reduction in maternal child settings.

If you choose to take part in this study, you will be asked to complete a questionnaire at the beginning and end of the study. Some nurses in each hospital may be invited to participate in an interview. The questions that you will be asked about relate to your views on the value of using research in nursing, smoking cessation interventions, using clinical practice guidelines, and the hospital organizational environment. In addition, some demographic information (e.g., education, years of work as a nurse) will be collected. Each questionnaire will be sent to you through the hospital mail and should take about 20 minutes to complete. Hospitals participating in this study will be randomly assigned to two groups. This means that group assignment will be decided by chance, something like tossing a coin. If your hospital is assigned to one group, you will be asked to view a video, read printed materials, participate in two individual meetings of about 10 - 15 minutes with one of the researchers over a 10-week period, and complete patient chart forms. The individual meetings will occur during regularly scheduled work time and one will be by telephone. Alternatively, if your hospital is assigned to the other group, you will receive some written information and have the opportunity to attend an educational session, scheduled during work time, following completion of the second questionnaire.

All participating nurses will receive a complimentary lunch and beverage and have their names entered into a draw for a one year paid membership to Association of Women’s Health, Obstetric, and Neonatal Nurses, and a draw for one of six lottery tickets from the Winnipeg hospital foundations. Weekly draws for small gifts will be held on each unit as a token of appreciation for participating nurses.

A consent form is enclosed with this letter. Please read it and if you have any questions or require more information, please feel free to contact me (toll free) at 1(XXX)XXX-XXXX, or my faculty supervisor, Dr. Joan Bottorff 1(XXX)XXX-XXXX.

If you are willing to participate in this study, please sign the consent form, keep one copy for yourself, and return one in the addressed envelope. Thank you very much.

Sincerely,

Kathryn Hyndman, RN, PhD candidate
Doctoral Student, The University of British Columbia
# Appendix H: Study Variables and Baseline Questionnaire

## Table H1. Relationship of Study Variables and Questionnaire

<table>
<thead>
<tr>
<th>Variable</th>
<th>Section in Questionnaire</th>
<th>Base line</th>
<th>Follow-up Section</th>
<th>Measures</th>
<th>Number of Questions</th>
<th>Previous alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contextual</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Demographic and nurse characteristics</td>
<td>F</td>
<td>✓</td>
<td></td>
<td>* Age, gender, ethnicity, education, prior training for smoking cessation, smoking status</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>* Unit type and length of time employed</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>* Perceived value of research in nursing</td>
<td>A</td>
<td>✓</td>
<td></td>
<td>* Nurses' perceived value of research in nursing scale (Clarke, 1991; Varcoe, 1994)</td>
<td>12</td>
<td>0.85 - 0.92 (Varcoe, 1994)</td>
</tr>
<tr>
<td><strong>Work environment</strong></td>
<td>B</td>
<td>✓</td>
<td></td>
<td>* Nursing Work Index - Revised Scale (Sochalski et al., 1999)</td>
<td>49</td>
<td>0.96 (Aiken &amp; Patrician, 2000); 0.82 (Lake, 2002)</td>
</tr>
<tr>
<td>* Perceptions about using CPGs</td>
<td>C</td>
<td>✓</td>
<td>A</td>
<td>* Measuring Perceptions of Innovation Adoption Scale (Pankratz et al., 2002)</td>
<td>17</td>
<td>0.85 (Pankratz et al., 2002)</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Self-efficacy beliefs in treating tobacco use and dependence</td>
<td>D</td>
<td>✓</td>
<td>B</td>
<td>Readiness Scale: * a) Ability to counsel for smoking cessation * b) Willingness to do smoking cessation interventions (Cooke, 2000; Center for Leadership Studies, 1993)</td>
<td>5</td>
<td>&gt;0.7 (Cooke, 2000)</td>
</tr>
<tr>
<td>* Adherence to the CPG on treating tobacco use and dependence</td>
<td>E</td>
<td>✓</td>
<td>C</td>
<td>* self-report of smoking cessation interventions * SCIR forms summary</td>
<td>12</td>
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</tr>
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</table>

(table continues)
Table H1. Relationship of Study Variables and Questionnaire (continued)

<table>
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<tr>
<th>Variable</th>
<th>Section in Questionnaire</th>
<th>Base line</th>
<th>Follow-up Section</th>
<th>Measures</th>
<th>Number of Questions</th>
<th>Previous alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions regarding RN experience with intervention</td>
<td>D</td>
<td>✓</td>
<td></td>
<td>* open-ended questions</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Questions regarding RN awareness of smoking prevalence &amp; policies</td>
<td>E</td>
<td>✓</td>
<td></td>
<td>* open-ended questions</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
August 2003

Dear Registered Nurse:

This is the first of two questionnaires in the research study entitled "An Evaluation of a Dissemination Intervention to Enhance Registered Nurses' Use of Clinical Practice Guidelines Related to Tobacco Reduction". It should take about 20 minutes of your time to complete the questionnaire. All questionnaires have been assigned a numerical code. Please do not put your name on the questionnaire. Return the questionnaire in the envelope provided to your hospital’s nursing office.

We do appreciate your time and look forward to your reply. As a gesture of our appreciation for your interest and participation in the study, please enjoy lunch in your hospital cafeteria. Nurses completing both questionnaires will have their names entered into a draw for a one-year paid membership to the Association of Women’s Health, Obstetric and Neonatal Nurses, and a draw for one of six lottery tickets from the Winnipeg hospital foundations.

If you choose not to participate, we would appreciate it if you could return the questionnaire in the envelope provided to the mailbox in your hospital’s nursing office.

Thank you very much for helping us with this research.

Kathryn Hyndman, RN, PhD candidate
Doctoral Student, The University of British Columbia
Section A: Perceived Value of Research in Nursing

We are interested in knowing about the value of research in nursing. On a scale of 1 - 4, indicate the response that reflects your own values and the response that reflects your understanding of the value that research holds for your nursing department/division.

Please select one number (not a range) and place it on the line to the right.

1. Research based knowledge assists the nurse to improve the effectiveness of nursing
2. Research enhances the profession's accountability to the public
3. Research findings provide "the facts" needed to validate clinical practice decisions
4. The research process is essential for creating innovative, scientific nursing interventions
5. Research enhances nursing's effectiveness in responding to new developments affecting health
6. Research findings enable nurses to use scarce health care resources more efficiently

Questionnaire Number ______
SECTION B: PERCEIVED ORGANIZATIONAL ENVIRONMENT IN YOUR HOSPITAL

In this section, we are interested in knowing about the work environment in your hospital. For each item in this section, please indicate the extent to which you agree the following items are present in your current job.

Please be sure to answer every statement.

Please select one number (not a range) and place it on the line to the right.

<table>
<thead>
<tr>
<th></th>
<th>1 strongly disagree</th>
<th>2 somewhat disagree</th>
<th>3 somewhat agree</th>
<th>4 strongly agree</th>
</tr>
</thead>
</table>

1. Adequate support services allow me to spend time with my patients

2. Physicians and nurses have good working relationships

3. A good orientation program for newly employed nurses

4. A supervisory staff that is supportive of nurses

5. A satisfactory salary

6. Nursing controls its own practice

7. Active staff development or continuing education programs for nurses

8. Career development/clinical ladder opportunity

9. Opportunity for staff nurses to participate in policy decisions

10. Support for new and innovative ideas about patient care

11. Enough time and opportunity to discuss patient care problems with other nurses

12. Enough registered nurses on staff to provide quality patient care

13. A nurse manager who is a good manager and leader

14. A chief nursing officer who is highly visible and accessible to staff

15. Flexible or modified work schedules are available

16. Enough staff to get the work done

17. Freedom to make important patient care and work decisions

18. Praise and recognition for a job well done

19. The opportunity for staff nurses to consult with clinical nurse specialists or expert nurse clinicians

20. Good relationships with other hospital departments

21. Staff nurses do not have to do things that are against nursing judgement

22. High standards of nursing care are expected by the administration

23. A chief nursing officer who is equal in power and authority to other top-level hospital executives

24. A lot of teamwork between nurses and physicians

25. Physicians who give high quality medical care

26. Opportunities for advancement

27. Support for nursing staff who are pursuing degrees in nursing

28. A clear philosophy of nursing pervades the patient care environment
## SECTION B: PERCEIVED ORGANIZATIONAL ENVIRONMENT IN YOUR HOSPITAL (cont'd)

<p>| | | | | |</p>
<table>
<thead>
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<tbody>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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</tr>
<tr>
<td>strongly disagree</td>
<td>somewhat disagree</td>
<td>somewhat agree</td>
<td>strongly agree</td>
<td></td>
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</tbody>
</table>

<p>| | | | |</p>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>strongly disagree</td>
<td>somewhat disagree</td>
<td>somewhat agree</td>
<td>strongly agree</td>
</tr>
</tbody>
</table>

29. Nurses who actively participate in efforts to control costs

30. Working with nurses who are clinically competent

31. The nursing staff participate in selecting new equipment

32. A nurse manager backs up the nursing staff in decision making, even if the conflict is with a physician

33. Administration that listens and responds to employee concerns

34. An active quality assurance program

35. Staff nurses are involved in the internal governance of the hospital (e.g., practice and policy committees)

36. Collaboration between nurses and physicians

37. A preceptor program for newly hired RNs

38. Nursing care is based on a nursing rather than a medical model

39. Staff nurses have the opportunity to serve on hospital and nursing committees

40. The contributions that nurses make to patient care are publicly acknowledged

41. Nurse managers who consult with staff on daily problems and procedures

42. A work environment that is pleasant, attractive and comfortable

43. Opportunity to work on a highly specialized unit

44. Written, up-to-date nursing care plans for all patients

45. Patient assignments foster continuity of care (i.e., the same nurse cares for the patient from one day to the next)

46. Staff nurses do not have to float from their designated unit

47. Staff nurses actively participate in developing their work schedules (i.e., what days they work, days off, etc.)

48. Each patient care unit determines its own policies and procedures

49. Working with experienced nurses who “know” the hospital

---

Edited for formatting and clarity.
SECTION C: PERCEPTIONS OF USING CLINICAL PRACTICE GUIDELINES (CPGs)

CPGs are statements that are systematically developed using available evidence to assist practitioners and patients in making decisions about specific health care behaviours.

In this section, we are interested in knowing your views on using CPGs in your hospital setting.

Please select one number (not a range) and place it on the line to the right.

1. Using CPGs is compatible with other procedures or practices in my hospital unit
2. I think that using CPGs fit well with the way I like to work
3. I believe that using CPGs would require my nursing unit to make substantial changes to our present system of procedures
4. It will be difficult to train nurses to use CPGs
5. Overall, I believe that it will be complicated to implement CPGs
6. I believe that nursing activities described in CPGs need to be implemented regularly
7. I believe it is okay for me to try out new CPGs on a limited basis before fully implementing them
8. Nurses will not be able to see any changes in patient behaviour if CPGs are implemented
9. Patients will like the changes if CPGs are implemented
10. Using CPGs will enhance my effectiveness on the job
11. My nursing unit will lose resources if we do not use CPGs
12. Using CPGs will increase my ability to get resources for my nursing unit
13. Using CPGs will increase the quality of care on my unit
14. Using CPGs will have no effect on patient behaviours
15. CPGs require more work than can be done with the current resources on my unit
16. Even if the hospital did not encourage the use of CPGs, I would like to implement them in my unit
17. Overall, I think using CPGs is advantageous for my unit
SECTION D: READINESS SCALE

In this section, we are interested in knowing your perceptions of your readiness to provide smoking cessation counselling to your patients. Please rate yourself on a scale from 1 to 8 (1 being the least amount and 8 being the greatest amount) on each of the dimensions listed below. Please circle one number (not a range) closest to your self-assessment.

**In performing smoking cessation counselling, I am a person who:**

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>3. Has low levels of skill in smoking cessation counselling</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>4. Needs assistance or refers to others for smoking cessation counselling</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>5. Rarely counsels women on smoking issues</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>6. Is insecure in doing smoking cessation counselling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>7. Resists involvement in smoking cessation counselling</td>
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<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
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<tr>
<td>8. Is not motivated to do smoking cessation counselling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>9. Is reluctant to take responsibility for smoking cessation counselling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>10. Avoids accountability for smoking cessation counselling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>
SECTION E: LEVEL OF SMOKING CESSATION INTERVENTIONS

In this section, we are interested in knowing the level of smoking cessation interventions used in your practice. Your best estimates are fine.

1. Approximately what percentage of women patients you have cared for in the hospital have a history of smoking? ________

2. Does your hospital have any policies directing you to offer smoking cessation interventions to your patients? (Check applicable)
   
   YES □     NO □
   
   If YES, please briefly describe the policy. ______________________________________________________

   ___________________________________________________________________________________________

3. Please think of the last 10 women smokers you admitted or cared for in the hospital. How often have you offered the following smoking cessation interventions?

   Please select one number (not a range) and place it on the line to the right.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>never (0 out of 10 smokers)</td>
<td>sometimes (1-2 out of 10 smokers)</td>
<td>fairly often (3-5 out of 10 smokers)</td>
<td>often (6-8 out of 10 smokers)</td>
<td>usually (9-10 out of 10 smokers)</td>
</tr>
</tbody>
</table>

   a) giving advice to quit smoking as soon as possible
   b) educating about the risks of smoking on the woman’s and baby’s health
   c) asking if the woman is willing to make a quit attempt
   d) assisting with a quit plan
   e) negotiating a definite quit date
   f) counselling about ways to stop smoking
   g) offering support while encouraging the patient in her quit attempt
   h) assisting patient to obtain social support at home from her spouse/partner, friends/co-workers to help her in a quit attempt
   i) providing information regarding the effects of smoking on the woman and the baby
   j) giving pregnancy/post-partum specific self-help materials
   k) referring the woman to a stop smoking group in the community
   l) providing information regarding community resources and self-help materials

   ______
   ______
   ______
   ______
   ______
   ______
   ______
   ______
   ______
   ______
SECTION F: DEMOGRAPHIC AND NURSE CHARACTERISTICS

In this section, we are interested in knowing more about you. All of the information in this survey is strictly confidential.

1. In what year did you complete your nursing program to become a Registered Nurse?
   19_____ 20_____

2. What kind of nursing program prepared you for RN registration? (Check one)
   - Nursing diploma
   - Bachelor’s degree in nursing
   - Other (please specify)

3. In addition to your RN program, what is the highest level of formal education you have completed? (Check one)
   - no additional formal education
   - community college diploma
   - some university courses
   - completed Bachelor’s degree
   - completed Master’s degree
   - completed Doctorate (PhD)

4. Have you received training in smoking cessation counselling? (Check all that apply)
   - in your basic nursing program
   - in a continuing education program
   - during in-services at work
   - never received training

5. How would you describe your current smoking status? (Check one)
   - I am a non-smoker
   - I am a smoker
   - I am an ex-smoker

6. When is your birthday?
   ________ Month 19_____ Year

7. Are you...? Female ☐ Male ☐

8. Which of the following best describes your ethnic background? (Check one)
   - Aboriginal (e.g., North American Indian, Metis, Inuit)
   - White (e.g., Caucasian, European)
   - Chinese
   - South Asian (e.g., East Indian, Pakistani, Punjabi, Sri Lankan)
   - Black (e.g. African, Haitian, Jamaican, Somali)
   - Filipino
   - Southeast Asian (e.g., Cambodian, Indonesian, Laotian, Vietnamese)
   - Latin-American
   - Japanese
   - Korean
   - Other (please specify)

9. How much do you work? (Check one)
   - part-time
   - full-time
   - casual

10. Please select one area that best describes your current area of nursing practice.
   - antepartum/gynecology
   - labour and delivery
   - labour/delivery/recovery/postpartum
   - postpartum unit
   - perinatal assessment unit
   - float pool
   - other (please specify)

11. How long have you worked on this unit? (Check one)
    - less than 6 months
    - 6 months to ≤1 year
    - >1 year to ≤2 years
    - >2 years to ≤5 years
    - >5 years to ≤10 years
    - more than 10 years
SECTION G: ADDITIONAL COMMENTS

Do you have any other questions or comments about this questionnaire? Please write them below.

Thank you very much for participating.
Please return the questionnaire in the envelope provided.
Appendix I: Contact Information Sheet

Dear Registered Nurse:

If you choose to participate in this study, please provide the information requested below. We will use this information to contact you if we need to and send you the follow-up questionnaire and a summary of the study (at your request).

Thank you very much.

Kathryn Hyndman, RN, PhD candidate
Doctoral Student, The University of British Columbia

Name: [please print]

Home Address: [please print]

Phone Number: Home: (xxx) Work: (xxx)

At the end of the study, a summary of the findings will be prepared and mailed to participants on request.

Do you wish to receive a study summary?

☐ Yes    ☐ No

Please return Contact Information Sheet in envelope provided. Thank you.
August 14, 2003

Dear Registered Nurse:

About a week ago, an invitation to participate in a research study and a questionnaire were sent to you via the hospital mail seeking your views on the value of using research in nursing, smoking cessation interventions, using clinical practice guidelines, and the hospital's organizational environment.

We have undertaken the study to understand ways to assist nurses in using clinical practice guidelines on tobacco reduction in maternal child settings. It is extremely important that your opinions be included in the study if the results are to accurately represent the opinions of registered nurses working in these areas.

If you have already returned your consent form and questionnaire, thank you very much.

If by some chance you did not receive the questionnaire, or it got misplaced, please call me now (toll free) at 1-xxx-xxx-xxxx and I will send another one in the hospital mail to you today.

Sincerely,

Kathryn Hyndman, RN, PhD candidate
Doctoral Student, The University of British Columbia
Date: November 14, 2003

Dear Registered Nurse:

This is the second and last questionnaire in the research study entitled "An Evaluation of a Dissemination Intervention to Enhance Registered Nurses' Use of Clinical Practice Guidelines Related to Tobacco Reduction". It should take about 20 minutes of your time to complete the questionnaire. All questionnaires have been assigned a numerical code. Please do not put your name on the questionnaire. Return the questionnaire in the envelope provided to your hospital's nursing office.

We do appreciate your time and look forward to your reply. As a gesture of our appreciation for your continued interest and participation in the study, please enjoy a favourite beverage in your hospital cafeteria. Nurses completing both questionnaires will have their names entered into a draw for a one-year paid membership to the Association of Women's Health, Obstetric and Neonatal Nurses, and a draw for one of six lottery tickets from the Winnipeg hospital foundations.

If you choose not to participate, we would appreciate it if you could return the questionnaire in the envelope provided to the mailbox in your hospital’s nursing office.

Thank you very much for helping us with this research.

Kathryn Hyndman, RN, PhD candidate
Doctoral Student, The University of British Columbia

Attachment: beverage coupon
addressed return envelope
AN EVALUATION OF A DISSEMINATION INTERVENTION TO ENHANCE REGISTERED NURSES' USE OF CLINICAL PRACTICE GUIDELINES RELATED TO TOBACCO REDUCTION

REGISTERED NURSE SURVEY FOLLOW-UP QUESTIONNAIRE

NOVEMBER 2003
SECTION A: PERCEPTIONS OF USING CLINICAL PRACTICE GUIDELINES (CPGs)

CPGs are statements that are systematically developed using available evidence to assist practitioners and patients in making decisions about specific health care behaviours.

In this section, we are interested in knowing your views on using CPGs in your hospital setting.

Please select one number (not a range) and place it on the line to the right.

1. Using CPGs is compatible with other procedures or practices in my hospital unit

2. I think that using CPGs fit well with the way I like to work

3. I believe that using CPGs would require my nursing unit to make substantial changes to our present system of procedures

4. It will be difficult to train nurses to use CPGs

5. Overall, I believe that it will be complicated to implement CPGs

6. I believe that nursing activities described in CPGs need to be implemented regularly

7. I believe it is okay for me to try out new CPGs on a limited basis before fully implementing them

8. Nurses will not be able to see any changes in patient behaviour if CPGs are implemented

9. Patients will like the changes if CPGs are implemented

10. Using CPGs will enhance my effectiveness on the job

11. My nursing unit will lose resources if we do not use CPGs

12. Using CPGs will increase my ability to get resources for my nursing unit

13. Using CPGs will increase the quality of care on my unit

14. Using CPGs will have no effect on patient behaviours

15. CPGs require more work than can be done with the current resources on my unit

16. Even if the hospital did not encourage the use of CPGs, I would like to implement them in my unit

17. Overall, I think using CPGs is advantageous for my unit
**SECTION B: READINESS SCALE**

In this section, we are interested in knowing your perceptions of your readiness to provide smoking cessation counselling to your patients. Please rate yourself on a scale from 1 to 8 (*1 being the least amount and 8 being the greatest amount*) on each of the dimensions listed below. Please circle one number (not a range) closest to your self-assessment.

In performing smoking cessation counselling, I am a person who:

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Score Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does not have the necessary knowledge in smoking cessation counselling</td>
<td>1 2 3 4 5 6 7 8</td>
<td>Has the necessary knowledge in smoking cessation counselling</td>
</tr>
<tr>
<td>2. Does not have the necessary experience in smoking cessation counselling</td>
<td>1 2 3 4 5 6 7 8</td>
<td>Has the necessary experience in smoking cessation counselling</td>
</tr>
<tr>
<td>3. Has low levels of skill in smoking cessation counselling</td>
<td>1 2 3 4 5 6 7 8</td>
<td>Has high levels of skill in smoking cessation counselling</td>
</tr>
<tr>
<td>4. Needs assistance or refers to others for smoking cessation counselling</td>
<td>1 2 3 4 5 6 7 8</td>
<td>Requires little or no assistance in smoking cessation counselling</td>
</tr>
<tr>
<td>5. Rarely counsels women on smoking issues</td>
<td>1 2 3 4 5 6 7 8</td>
<td>Regularly counsels women on smoking issues</td>
</tr>
<tr>
<td>6. Is insecure in doing smoking cessation counselling</td>
<td>1 2 3 4 5 6 7 8</td>
<td>Is confident in doing smoking cessation counselling</td>
</tr>
<tr>
<td>7. Resists involvement in smoking cessation counselling</td>
<td>1 2 3 4 5 6 7 8</td>
<td>Is committed to doing smoking cessation counselling</td>
</tr>
<tr>
<td>8. Is not motivated to do smoking cessation counselling</td>
<td>1 2 3 4 5 6 7 8</td>
<td>Is highly motivated to do smoking cessation counselling</td>
</tr>
<tr>
<td>9. Is reluctant to take responsibility for smoking cessation counselling</td>
<td>1 2 3 4 5 6 7 8</td>
<td>Eagerly accepts responsibility for smoking cessation counselling</td>
</tr>
<tr>
<td>10. Avoids accountability for smoking cessation counselling</td>
<td>1 2 3 4 5 6 7 8</td>
<td>Accepts accountability for smoking cessation counselling</td>
</tr>
</tbody>
</table>
SECTION C: LEVEL OF SMOKING CESSATION INTERVENTIONS

In this section, we are interested in knowing the level of smoking cessation interventions used in your practice.

1. Please think of the last 10 women smokers you admitted or cared for in the hospital. How often have you offered the following smoking cessation interventions?

   Please select one number (not a range) and place it on the line to the right.

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>never (0 out of 10 smokers)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>sometimes (1-2 out of 10 smokers)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>fairly often (3-5 out of 10 smokers)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>often (6-8 out of 10 smokers)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>usually (9-10 out of 10 smokers)</td>
<td></td>
</tr>
</tbody>
</table>

   a) giving advice to quit smoking as soon as possible
   b) educating about the risks of smoking on the woman’s and baby’s health
   c) asking if they were willing to make a quit attempt
   d) assisting with a quit plan
   e) negotiating a definite quit date
   f) counselling about ways to stop smoking
   g) offering support while encouraging the patient in her quit attempt
   h) assisting patient to obtain social support at home from her spouse/partner, friends/co-workers to help her in a quit attempt
   i) providing information regarding the effects of smoking on the woman and the baby
   j) giving pregnancy/post-partum specific self-help materials
   k) referring the woman to a stop smoking group in the community
   l) providing information regarding community resources and self-help materials
SECTION D: NURSES’ EXPERIENCE WITH DISSEMINATION STRATEGIES

In this section, we are interested in knowing about your experience with the strategies used in the study to disseminate the CPGs. Your comments will help to evaluate the implementation approach.

1. Did you receive a video and printed materials and participate in individual meetings with the researchers? (Circle YES or NO)  
   YES  NO

   If YES, please complete questions in Section D before proceeding to Section E.

   If NO, proceed to Section E.

2. What did you find most helpful on the information you received regarding the clinical practice guidelines related to tobacco reduction?
   a) video and print materials
   b) researcher visits
   c) Smoking Cessation Interventions Record
3. What would make each of the dissemination strategies more effective?
   a) video and print materials
   b) researcher visits
   c) Smoking Cessation Interventions Record

4. What other activities, materials, or things would help you use clinical practice guidelines related to tobacco reduction in your practice?
SECTION E: ADDITIONAL COMMENTS

If you have any other comments or questions about this questionnaire or the study, please write them below.

Thank you very much for participating.
Please return the questionnaire in the envelope provided.

Questionnaire Number _____
Appendix L: Post Intervention Reminder Letter

Date:

Dear

I am writing to you because you are a participant in the research study focusing on the use of clinical practice guidelines on tobacco reduction. We appreciate the time you have taken to be involved in the study!

About two weeks ago we sent you the final questionnaire for this study and it has not been returned. In case you did not receive the questionnaire, I am sending another copy of this letter. The questionnaire should only take 10 to 15 minutes to complete. Your answers to these questions will provide us with important information about nurses' views of using clinical practice guidelines and tobacco reduction in their practice.

I am enclosing $5.00 as a small token of appreciation. I hope you will find some time to buy yourself a beverage and fill out the questionnaire. Your views are important and we would like to include them in our study. To thank nurses for participating in the study, we are providing a gift for each nurse who completes and returns this final questionnaire. You can choose one of the following gifts - a manicure, a back massage, or a Keg gift certificate. See the enclosed sheet describing each gift to make your selection.

In addition, those who complete and return the questionnaire will have their names entered into a draw for a one-year paid membership to the Association of Women's Health, Obstetric and Neonatal Nurses, and a draw for one of six lottery tickets from the Winnipeg hospital foundations.

Please do not hesitate to call me if you have any comments or questions.

Thank you very much for helping us with this research.

Sincerely,

Kathryn Hyndman, RN
PhD candidate and Doctoral Student
The University of British Columbia
1-xxx-xxx-xxxx
Appendix M: Additional Data Tables

Table M1

Two-way Repeated Measures ANOVA for Change in Adherence to CPGs Controlling for Employment Status

<table>
<thead>
<tr>
<th></th>
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<th>df</th>
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<th>F</th>
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</tr>
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<tbody>
<tr>
<td><strong>Between subjects</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>1082.50</td>
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<tr>
<td><strong>Within subjects</strong></td>
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<tr>
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<td>2742.53</td>
<td>76.42</td>
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<tr>
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<td>35.89</td>
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</table>

*p<0.05. **p<0.01. ***p<0.001.
Table M2

*Two-way Repeated Measures ANOVA for Change in Adherence to CPGs Controlling for Nursing Unit*

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<th>MS</th>
<th>F</th>
<th>p</th>
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<td>2842.31</td>
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<td>320.89</td>
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</tr>
<tr>
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</tr>
<tr>
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*a df lower because 12 float nurses excluded.
*p<0.05. **p<0.01. ***p<0.001.
Table M3

Repeated Measures ANCOVA for Change in Adherence to CPGs Controlling for Perceptions of Nursing Department Value of Research

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*p<0.05. **p<0.01. ***p<0.001.
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*Repeated Measures ANCOVA for Change in Adherence to CPGs Controlling for Perceptions About Using CPGs*

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*p<0.05. **p<0.01. ***p<0.001.
Table M5

Repeated Measures ANCOVA for Change in Adherence to CPGs Controlling for Nurse Autonomy

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*p<0.05. **p<0.01. ***p<0.001.
Table M6

*Repeated Measures ANCOVA for Change in Adherence to CPGs Controlling for Resource Adequacy*

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*p<0.05. **p<0.01. ***p<0.001.
### Table M7

**Repeated Measures ANCOVA for Change in Adherence to CPGs Controlling for Perceived Leadership Approach**

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*p<0.05. **p<0.01. ***p<0.001.
Table M8
Two-way Repeated Measures ANOVA for Change in Self-efficacy Controlling for Employment Status

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*p<0.05, **p<0.01, ***p<0.001.
Table M9

*Two-way Repeated Measures ANOVA for Change in Self-efficacy Controlling for Nursing Practice Unit*

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*a df lower because 12 float nurses excluded.
*p<0.05. **p<0.01. ***p<0.001.
Table M10

Repeated Measures ANCOVA for Change in Self-efficacy Controlling for Perceptions of Nursing Department Value of Research

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*p<0.05. **p<0.01. ***p<0.001.
Table M11

Repeated Measures ANCOVA for Change in Self-efficacy Controlling for Perceptions about Using CPGs at Baseline

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*p<0.05. **p<0.01. ***p<0.001.
Table M12

*Repeated Measures ANCOVA for Change in Self-efficacy Controlling for Resource Adequacy*

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*p<0.05. **p<0.01. ***p<0.001.
Table M13

Repeated Measures ANCOVA for Change in Self-efficacy Controlling for Perceived Leadership Approach

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