

Impact of Hospitalisation on Patient Smoking: Current Practice and Potential for Nurse-Provided Smoking Cessation Care

Amanda Nagle BSc (Hons)

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I hereby certify that the work embodied in this thesis is the result of original research and has not been submitted for a higher degree to any other University or Institution.

Signed:

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SYNOPSIS

SYNOPSIS

Tobacco smoking is currently responsible for the deaths of 50 Australians every day.¹ We have known for a long time that these deaths are preventable, however, the difficulty lies in helping people to overcome their addiction to nicotine, and in preventing young people from taking up the behaviour. The hospital setting has been described in the literature as a "window of opportunity" and a "teachable moment" for providing smokers with encouragement, support and skills to quit smoking while they are in hospital.² Nurses have been described as an "under-utilised resource" in efforts to control the tobacco epidemic.³ The nature of the hospital setting differs markedly from that of the general practice setting, where extensive research effort has been focused over the last two decades. The public health research literature offers very little in the way of information about the potential of the hospital setting, or of nurses as providers of smoking cessation care. Therefore this thesis aims to determine the potential of the hospital setting and of nurses as providers of smoking cessation advice, and to inform the development, and appropriate targeting of hospital based smoking cessation interventions in the future. The approach taken follows the steps identified in research models designed to guide the development of health behaviour change research.⁴⁻⁶ These models identify the need to have accurate measures of the target behaviour, knowledge of the prevalence of the targeted behaviour, an understanding of the perceptions of the target group towards health behaviour change, including knowledge of risk, attitudes to change and barriers to receiving help. They also stress the need for

knowledge of the perceived appropriateness of the intended provider group, their knowledge, attitudes, barriers and skills in providing the health behaviour intervention, and data on the current levels of health intervention, being provided to the target population by these providers.

Four decades have passed since the landmark article in *The Journal of the American Medical Association (JAMA)* in 1950, linking smoking as an aetiological factor in lung cancer.⁷ However, during the 1980s American hospitals were still selling cigarettes.⁸ This paradox between research literature and public health policy deserves investigation. Hence **Chapter 1** of the thesis summarises the history and nature of tobacco control in relation to hospitals, health policy and health professionals (particularly nurses). This literature review provides an understanding of some of the factors which will impact on the introduction of change to the health sector. Following this, the thesis discusses a series of studies providing the data necessary to develop, introduce and appropriately target smoking cessation care.

Data from the studies discussed in this thesis were collected during one data collection period during 1991. The patient studies in Chapters 2-4 involved a cross-sectional survey of all consenting and eligible inpatients in the 6 largest hospitals of the Hunter Area, on randomly selected data collection days. Immunology, Paediatrics, Intensive Care and the Delivery Suites were excluded from the study, as all patients in these wards would have been ineligible to participate. There was a total of 1552 patients in hospital during data collection and of these 744 (48%) were ineligible (mentally, physically or emotionally incapable of providing informed consent). Of eligible patients, 711 (88%) consented to participate in a study, which they were told would involve a brief bedside interview, possibly a saliva sample

taken for analysis of tobacco products, and a self-completed questionnaire. The studies reported in Chapters 5-6 involved a cross sectional survey of all day shift nursing staff on the wards, on the same randomly selected data collection days. There were 399 nurses on the day shifts in the 52 wards, and of these 388 (97%) were eligible, and 382 (98%) participated in the study. Nurses received a brief ward-based interview and completed a questionnaire (88% returned).

Chapter 2 reports on the accuracy of self report as a measure of smoking status within the hospital setting. The aim of the study was to determine among hospital patients, on the biochemical evidence of salivary cotinine analysis, the proportion of self reported Smokers, Recent Quitters, Ex-Smokers and Never Smokers who appeared to be smokers. This study involved a randomly selected stratified subsample of 192 patients from the larger sample. Overall 18% of self reported non smokers (i.e. Recent Quitters, Ex-smokers and Never Smokers) had salivary cotinine levels above 10 ng/ml (the accepted cutpoint for determining smoking in populations where consumption is low).⁹⁻¹¹ There was, however, great variation in the level of disagreement between self report and salivary cotinine among the sub-groups of non-smokers, with 62% of self reported Recent Quitters, 17% of Ex-smokers and 12% of Never Smokers found to be deceiving. The deception rate among hospital patients more closely resembles that found among participants in smoking cessation trials, than the usually low levels of deception found among participants in community surveys. This implies that, when identifying at-risk patients for routine assessment of smoking status and intervention, methods should be utilised which encourage accuracy of self report. Additionally, any smoking cessation trials in this setting must incorporate biochemical validation of self report.

The study reported in **Chapter 3** aimed to determine the self reported prevalence of smoking and the factors associated with self reported smoking among hospital patients. The study also aimed to determine, among the population of patients who reported smoking in the preceding 3 months, the prevalence and factors associated with quitting at hospital admission, and the rate of maintained abstinence 9 months post discharge. Results showed the prevalence of smoking measured by self report was half (16%) the cotinine corrected estimate of smoking prevalence (32%). The study found that hospital patients who were smokers were more likely than hospital patients who were non smokers, to be aged 16-34; have a main lifetime occupation of blue collar work; be unmarried or single or widowed; and live with a smoker. Seventy one percent of hospitalised smokers reported not being in current paid employment, i.e. they were either unemployed (22%), retired (19%) or engaged in home duties (30%). Therefore it appears that the hospital setting provides an excellent opportunity to target low socioeconomic groups who have been found to have the greatest risk of mortality and morbidity from smoking, have the highest smoking rates in the community¹² and who are often difficult to reach with health promotion information.

The study found that 56% of those patients who were smokers in the last 3 months reported quitting smoking on admission to hospital. No socioeconomic variables were found to be associated with quitting on admission. The 9 month post discharge follow-up of patients who had quit smoking in the three months prior to bedside interview, found that the long term quit rates (biochemically verified) varied from a conservatively calculated 2.9% to a liberally calculated 9.5% of smoking inpatients. Thus hospitalisation appears to be a natural intervention with an efficacy rate equivalent to that found in general practice smoking intervention

studies.¹³ It also appears that many smokers are not able to convert short term abstinence into maintained quitting.

The knowledge and attitudes of hospitalised smokers towards smoking and quitting, and also towards nurses as providers of cessation care, is described in **Chapter 4**. The specific aims of this study were to determine hospitalised smokers' perceptions of their vulnerability to risk, the benefits of quitting, knowledge of health risks and quitting strategies, intentions regarding quitting and perceived difficulties with quitting. The study examined differences on these variables between smokers who quit at admission, and those who continued smoking after admission. The final aim of this study was to explore hospitalised smokers' perceptions of the appropriateness of the hospital setting, and of nurses as providers of quit smoking support.

The results showed that whilst smokers perceived a generalised risk associated with smoking, when asked about personal risk, few thought that smoking had contributed to their current admission. The same discrepancy was found between the experience of symptoms of smoking related ill health, and the perception that smoking had contributed to those symptoms. The implications here for intervention design suggest a need to focus on personalised health risks. In terms of attitudinal predictors of quitting smoking on admission, the results showed that being admitted with a smoking related diagnosis, experiencing the smoking related symptoms of bronchitis, asthma or congestion in the preceding 2 months, intending to be a non-smoker in 3 months, and perceiving that the hospital stay was useful in encouraging non-smoking or cessation, were significantly associated with quitting at admission. The study found that 42% of smokers thought that the hospital stay was useful in encouraging non-smoking; 64% thought that providing

smoking cessation care should be part of the nurses role, however, only 33% thought nurses should counsel all patients. Patients were less concerned about nurses' smoking behaviour as a barrier to care provision (47%) and more concerned with the perception that nurses were too busy to provide care (80%). Interventions in this setting should assess patients' current symptoms of ill health in relation to smoking and relate improved prognosis with quitting. It is encouraging that 42% of smokers are enthusiastic about hospital smoking cessation care, however the 58% who do not agree may require additional efforts directed at changing this attitude.

Chapter 5 focuses on nurses' attitudes and knowledge about providing smoking cessation care to inpatients. The aims of this study were to determine the prevalence of self reported smoking among hospital nurses in 6 Hunter region public hospitals, and the characteristics of smoking nurses; to describe nurses' knowledge of the health risks of smoking and the strategies to aid quitting; to describe their attitudes to smoking and quitting, and to providing smoking cessation care to inpatients. The results showed that 21.7% of nurses reported being current smokers, indicating a marked decrease in smoking among nurses compared to rates reported in studies conducted in the last 2 decades, which found smoking rates of more than 40%.¹⁴⁻¹⁶ This rate was also lower than the 24.7%¹⁷ of women in the Australian community who report being smokers. The majority of nurses (72%) were able to describe at least 3 strategies to assist smoking patients who wanted help to stop smoking. However the responses most often did not reflect state-of-the-art practice guidelines and were more passive in nature, such as sucking sweets and knitting (22%) or providing emotional support (19%). Knowledge of more active strategies was less prevalent with 5.5% of responses citing the provision of literature, and 3.6% citing use of nicotine replacement therapy.

Nurses felt that helping patients to quit smoking should be part of their role (60%). This rate rose to 75% support when asked about providing care to those patients who want to quit, and dropped to 42% when asked about providing care to all smokers. The implication of this finding is that the majority of nurses are comfortable with providing smoking cessation care reactively, but that there is less support for a comprehensive proactive program. The main barriers identified by nurses to providing smoking cessation support, were patients not requesting it, lack of time and lack of in-service training. The majority of nurses (75%) were enthusiastic about attending in-service training programs. In-service training programs must be integrated into the hospital sector in order to provide opportunities for nurses to share their concerns, and to acquire current information in practice relating to smoking cessation care.

Chapter 6 reports on the nature and extent of current recording of smoking status on patient medical records, and the current levels of smoking cessation care provided by nurses within the hospital setting. The medical records of each patient were audited for evidence of any mention of the patient's smoking status. Nurses were interviewed and asked if they had provided care for a particular patient in their ward, if they thought a particular patient was a smoker, and if they had provided various types of smoking cessation care to this patient. The aims of the study were to determine the proportion of patients who reported having been assessed for smoking status at admission; to compare the self reported smoking status of patients with the medical record of smoking status; to describe the proportion of patients who currently received various types of smoking cessation care from nurses (as reported by both patients and nurses); and finally to describe the proportion of nurses who reported providing smoking cessation care to any

smoking patients. The results of this study showed that 36% of all patients reported not being asked by anyone about their smoking status at admission to hospital. Similarly 38% of all patients had nothing recorded on their medical records relating to smoking status. Patients who had their smoking status recorded on their medical record were significantly more likely to be young, more educated, to be scheduled to receive anaesthesia, to be admitted to hospital 6 and to be a self reported smoker. There was also a trend towards significance for the variable of occupation, with white collar workers more likely to have smoking status recorded than patients reporting home duties or no lifetime occupation.

Nurses reported having advised 20% of self reported smokers to quit, discussed quitting with 17%, given literature to 2% and referred 1% to outside quit agencies. Patients reported slightly less care received than nurses reported care provided. Interestingly, nurses reported that 26% of smokers asked to be taken outside for a cigarette. These findings suggest that currently the provision of smoking cessation care by nurses is poor in this setting, and that many opportunities to intervene are missed. It also appears that assessment for smoking status is not comprehensively elicited from all patients, and that assessment for smoking status depends on the characteristics of the patient and on the hospital to which the patient is admitted.

Chapter 7 discusses the implications of these findings for tobacco control within the hospital setting in relation to policy, and the design of an effective hospital based, nurse provided smoking cessation intervention. Hospital policy on smoking control should require the assessment for smoking status and intentions concerning quitting to be recorded on the medical records of all admitted patients. Additionally policy should establish a framework for the training of nurses through

the existing in-service training program. Such training should be skills-based and practical in nature and focus on assessing and supporting the withdrawal process of patients who quit smoking during hospitalisation. A hospital-based intervention should be brief, capable of maximising the multiple contacts patients receive from nurses during their hospital stay, and incorporate post-discharge follow-up, linking in-hospital treatment with other services in the community. The development, implementation and evaluation of such policy initiatives by hospitals are capable of reducing the prevalence of smoking in the community and of contributing to the national goals and targets for health by the Year 2000.

CHAPTER 1

Health professionals,
hospitals and
tobacco control

SMOKING AND TOBACCO CONTROL

Smoking - the epidemic of the late 20th century

"Cigarette smoking is the greatest known carcinogen in history".¹ Since the carcinogenic effect of cigarettes was described in 1950, an estimated 1,008,287 men and 23,885 women in Australia, have died of respiratory cancers alone.¹ During 1989, 17 Australians died each day of lung cancer.¹ Smoking has been associated with a two to fourfold increased risk of coronary heart disease, a greater than 70% excess rate of death from coronary heart disease, and is responsible for 30% of all cancer deaths.² Smokers account for 70% of patients with atherosclerosis obliterans and virtually all those with thromboangiitis obliterans.² Ischaemic heart disease, is both the major cause of death in our community and also the major cause of hospital admission.³ In 1986 a report was commissioned by the Commonwealth Government in Australia, to quantify the mortality and morbidity associated with smoking.⁴ Smoking was estimated to kill 50 people per day, cause one in every 6 deaths, 103,000 episodes of hospitalisation per annum (3%), 1 million bed-days per annum (4%), the loss of 92,000 person-years of life, and 9,000 (16%) cancers.⁴ Smoking represents the single most preventable cause of death and illness in our society.²

In 1989/90, the National Health Survey found that an estimated 3.5 million people in Australia, aged over 16 years (32% of males and 24.7% of women) were smokers⁵. These rates were similar to those reported by the Anti-Cancer Council of Victoria's 1989 survey, which found that 30.2% of males and 27% of females were current smokers.⁶ In 1993/94, the National Drug Strategy household survey found

that 29.3% of males and 23.5% of females were smokers.⁷ The smoking rate had decreased from the 1974 rate of 41% of men and 29% of women,⁴ representing a decline of 9% in men and 4% in women.

The smoking epidemic is thus no longer on the increase, at least in Australia, however the health impact of the disease is still an enormous individual and community burden. It has been estimated by Brown and Kessler⁸ that reductions in lung cancer mortality over the two decades from 1990-2010 will only occur if the recent downwards trends in smoking prevalence continue in line with the United States National Cancer Institute's target of 15% by the Year 2000. Recently published research, by Doll et al⁹ suggest that the long term impact of smoking may be more extensive than previous estimates had predicted. They followed a cohort of British doctors, over a 40 year period, and reported that while mortality rates in the first 20 years among this cohort, were twice as high for smokers as for non smokers, in the second 20 years the mortality rate among smokers was 3 times that of non smokers.

The national target for smoking prevalence set by the Australian National Goals, Targets and Strategies for Better Health Outcomes Into the Next Century is 20% for males and females by the year 2000.¹⁰ We have a 35 year history of knowing at both a medical and governmental level that smoking is the largest known carcinogen,¹ yet the costs of preventable deaths due to smoking have been estimated to be more than \$9 billion each year.¹¹ Increased tobacco control activities, in all sectors of the community, and at all levels within government, will be required if these targets are to be reached.

Attempts to control tobacco

Efforts to control tobacco began largely at the community, and grassroots level, with anti-tobacco lobbyists and health professional groups campaigning for government action. Tobacco control tactics employed by these groups have included strategies for initial deterrence among adolescents, litigation, legislation and mass media campaigns.

There appears to have been a lack of political will to reduce the influence and power of the tobacco companies and a reluctance on the part of governments to take decisive action.¹² As quoted by Taylor, the British Royal College of Physicians recognised this implicit role of governments in their 1983 report, "Smoking still kills, and at a time when some 100,000 of our citizens are dying prematurely from its effects every year and millions more will die elsewhere, the Royal College of Physicians would be failing in its duty if it did not urge the government to reverse its present attitude of inactivity and even encouragement towards the tobacco industry and tackle this hidden holocaust with the urgency once given to cholera, diphtheria, poliomyelitis and tuberculosis."(pp xv)¹²

Tobacco has become an accepted part of every day living and tobacco companies have been ranked among the wealthiest and most powerful companies within the economic sphere.¹² These companies have mounted a powerful and financially well supported legal, political and mass media campaign to keep tobacco from being labelled as an addictive substance and restricted in terms of sales and advertising.¹² In Australia today free advertising of the product on billboards is allowed, and as Nigel Gray has put it, the product has been "advertised, promoted and sold in pretty packets for substantial profit"¹ at milkbars, food counters and petrol stations.

The impact of passive smoking on tobacco control

Perhaps the most important piece of research which has directly led to changes in legislation and governmental policy, was the first paper on passive smoking by Hirayama in Japan.¹³ The negative health impact of smoking on the non-smoking wives of Japanese male smokers produced a marked increase in concern among non-smokers worldwide about the effects of passive smoke in the workplace. The financial concern among employers and the possibility of litigation produced some of the most far reaching limitations on smoking. The result was legislative and policy changes, and restrictions on smoking in public buildings, transport and public spaces as well as in private workplaces. The impact on smoking was to move the habit from an acceptable public behaviour to a socially unacceptable and private activity.¹ These changes in the community attitude towards smoking have also been reflected within government departments and more specifically within the health department, largely as a result of Occupational Health and Safety legislation.

Satcher and Erikson estimated that 40,000 books and articles and 22 Surgeon General's reports have been produced on tobacco and health.¹⁴ And whilst the resulting actions and publicity have resulted in a decline in the smoking prevalence over the past two decades, the decline has slowed in the last few years and based on current trends it is unlikely that we will achieve our smoking targets for the Year 2000.¹⁴ Increased effort may be required, particularly involving the health care sector, and especially involving health professionals.

HOSPITALS AND POLICY

Smoking control policy and legislation in the hospital setting

The economic costs of smoking related ill health, impact directly on the health care system. Active smoking is associated with greater use of inpatient services¹⁵ and is estimated to have caused 38,000 hospital separations in 1988/89 in NSW, Australia.³ The associated direct inpatient costs in NSW for tobacco were \$144 million, with the average cost of a smoking admission \$3700 (compared to \$2000 for a non-smoking admission).³ Additionally smokers create heavier demands on the hospital system than non-smokers¹⁶

Hospitals are important and highly visible health care institutions, the epicentre of the health sector, and many researchers have cited the responsibility and leadership role of hospitals, in developing and implementing smokefree policies.¹⁷⁻²⁰ The process of establishing smokefree hospitals has been slow, spanning three decades and following a steady series of redefinitions as more credible medical information and greater social acceptability of the rights of nonsmokers emerged.²¹

Early efforts at smoking control within the hospitals did not begin until the late 1970s, 15 years after the release of the 1964 US Surgeon General's report, implicating tobacco as a cause of lung cancer. By 1978 only 42% of hospitals surveyed in the United States had made any attempt to restrict smoking and only 21% prohibited smoking at meetings.²⁰ In the late 1970s an American Cancer Society Taskforce reported that of 7,200 hospitals in the US only 55 were involved in any antismoking programs or policies.²² At the same time hospitals were selling tobacco products to both staff and patients.^{17,23} Kottke²⁴ reported that as late as

1982, 30% of all American hospitals were still selling cigarettes to patients, 20 years after the 1964 Surgeon General's report. In 1983, 95% of Veteran Association hospitals in the United States were still selling cigarettes, and were in fact one of the largest tax free outlets for volume sales of cigarettes, generating 50 million dollars annually in sales.²⁵ Hospitals were slow to realise their role in the smoking epidemic, and it was not until the threat of litigation from passive smoking that hospitals finally took steps to reduce this threat.

As evidence of the effects of passive smoking became more prevalent throughout the 1980s with the publication of the Hirayama paper in 1981¹³, hospitals became concerned with the fact that they were admitting patients into a hazardous environment likely to contribute to chronic illness. The smoking bans instituted by hospitals during the 1980s resulted from a perception that hospitals must protect patients from harmful substances while they were in hospital¹⁷ rather than from a recognition of the hospital's pre-eminent role in tobacco control. The American Medical Association in 1983 urged hospitals to take a stronger role in tobacco control through "Plan Seeks"¹⁷ however this urging involved only the setting aside of designated smoking areas. The introduction of some smokefree wards so patients could chose smoking or non smoking and a few designated smokefree areas inside the buildings started to occur during the 1980's.²⁰

Following the release in 1986 of the Surgeon General's Report on the Health Consequences of Involuntary Smoking, legislation in 34 states in America required the introduction of some kind of smoking restrictions in hospitals.²⁰ These smoking restrictions however usually meant a separate smoking area, that was still inside the building and the separation of smoking and non smoking sections in the lounges and cafeterias inside the hospital buildings.¹⁸ A 1988 hospital survey in the US

found 90% of hospitals had some form of internal smoking restriction.²⁶ Compliance with these smokefree bans within the hospital buildings has generally been reported as good to excellent.^{17,27}

There was some evidence in the late 1970s of one or two innovative hospitals taking a lead in tobacco control and adopting a total smoking ban inside the buildings. However, a survey in 1978 found that less than 1.2% of randomly selected hospitals in the US had a total smoking ban inside hospital buildings.²⁷ In 1985 the proportion with total smoking bans had increased to 5.3%¹⁸ and 10 years later in 1988 a survey found that 8% of hospitals surveyed had totally smokefree buildings.²⁸ It has been claimed that given the information available by this time from numerous Surgeon General reports and pressure from Medical Associations this poor performance (a 6% increase over 10 years) appears to reflect an attitude of nonconcern on the part of most hospital administrations and a lack of government will to take action.¹² Given the nature of their primary mission,²⁹ and their pre-eminence as the central health care facility, hospitals were in a position to adopt smoking restrictions much earlier than they did.

By 1992, all hospitals in the United States applying for accreditation had to have policies which prohibited smoking by patients, staff and visitors within the buildings.³⁰ Surveys of both staff and patients have found widespread acceptability of smokefree policies within hospitals,^{29,31} and such policies have been found to reduce environmental tobacco smoke and smoking inside the hospital buildings,^{29,32,33} however these bans do not appear to have reduced the prevalence of smoking among hospital staff.^{26,28,34}

Recently there have been initiatives taken by a few hospitals in the United States, Japan and Australia aimed at the gradual implementation of totally

smokefree hospital sites (ie. restrictions which include parts or all of the grounds outside the buildings). For example, the Mayo Clinic in its 1987 smokefree policy implementation, included the grounds of the medical facility as a smokefree area. Hurt and colleagues however reported problems at the Mayo Clinic with people smoking "on the fringes of the medical centre grounds [which] have led to complaints by neighbouring businesses".³⁵

The literature has provided anecdotal reports of the "migration of smokers", to areas immediately outside the entrances, as a result of internal smoking restrictions in the hospital setting.¹⁹ In Australia, legislation was introduced in 1988, in New South Wales (NSW), which required a prohibition on smoking by all staff, patients and visitors, in all public hospital buildings and vehicles.³⁶ This clustering of smokers around the main entrances to hospital buildings was observed in a recent study, undertaken in the Hunter region of NSW, Australia.³⁷ Using direct observations, this study found that of all outdoor smokers observed in the grounds of 2 public hospitals, 50% were staff, 40% were visitors, and 10% were patients.³⁷ Additionally 82-90% of outdoor smokers were observed congregating within 10 metres of entrances. These findings suggest that rather than acting as exemplars of non-smoking behaviour, hospital staff are currently providing a visual message to the community that smoking is an acceptable behaviour.^{37,38}

There are clear economic benefits associated with the introduction of a total smokefree hospital site policy including reduced risk from fire, greater productivity among employees, reduced sickness and absenteeism and lower cleaning costs.²¹ Other less tangible, yet perhaps more powerful benefits of a totally smokefree hospital, result in the sending of a clear message to the community that smoking is incompatible with the mission and public image of a health care organisation,^{21,39}

that cigarettes are sufficiently harmful to warrant control within this setting, and that smokers are expected to and capable of delaying the urge to smoke whilst on the hospital site.

Public hospitals in Australia, would appear to be well placed to move towards the next stage in smoking bans, namely the adoption of legislation making hospitals totally smokefree sites (including the grounds). Such a move would convey to the community, that Health Departments and hospital management no longer tolerate a health risk behaviour with such high associated health costs. The introduction of policy in relation to smoking bans has however not been matched with policy initiatives which deal with the consequences of smoking bans. There appear to be a lack of policies relating to the care and management of smoking inpatients.

New challenges for hospitals in tobacco control

Hospitals have the opportunity and the responsibility to provide care for the hospitalised smokers who are affected by current bans. The idea that hospitals should increase their role in promoting wellness and that promoting health can reduce costs has been circulating since 1984.⁴⁰ Recently, in Australia, preventive health targets have been set for health administrators, and have been incorporated into the 1993 Medicare agreement signed by all State Health Ministers and the Commonwealth government.¹⁰ The aim of this strategy was to reorient the health sector away from their exclusive focus on illness treatment and towards the delivery of preventive care (assessment and treatment) during all routine contacts with the health sector. Hospital administrators wishing to maintain their hospital's place as the "philosophical and moral hub of health care" will need to ensure the systematic training of their workforce in health promotion and comprehensive delivery of

health promotion to all patients.⁴¹ The hospital represents a unique setting where public health interventions can be delivered in the clinical setting.⁴²

This public health approach provides lower intensity programs, but enables more of the smoking population to be reached. The hospital setting allows for the considerable impact of face-to-face counselling and personal tailoring to be combined with the reach of public health interventions. Velicer and Diclemente describe this interaction by the relationship, $\text{Impact} = \text{Efficacy} \times \text{Recruitment rate}$.⁴³ That is, an intervention which is highly efficacious (e.g. 40% quit rate) but which reaches only 5% of the population will have an overall impact of 0.02, whereas an intervention which is not so efficacious (e.g. 5% quit rate) but which reaches 80% of the population will have a higher impact (0.32).⁴³ Interventions delivered in the hospital setting could facilitate the achievement of the goal of 20% smoking prevalence by the Year 2000.

What do we know about the behaviour of hospitalised smokers ?

The Stanford Five City Project, (5 cross sectional surveys conducted over the 10 year period 1979-1989) found that 27% all smokers surveyed within the community had been hospitalised (all causes) in the past year.⁴⁴ This represents potential for considerable impact from a moderately efficacious hospital-based smoking cessation intervention. Patients in the hospital setting are experiencing altered health states and are therefore more receptive to information which assists them to make sense of these changes.⁴⁰ They are already receptive to information and advice from health professionals as they are no longer able to deal effectively with symptoms of these altered health states. The hospital setting therefore represents a unique and appropriate venue for incorporating health promotion, risk

assessment, and intervention for the lifestyle illnesses afflicting patients. Conversely, to withhold information and risk assessment for preventable diseases at a time when patients are re-prioritising health and restructuring their life is to be negligent in the delivery of health care.

We know that the majority of smokers want to quit smoking,¹⁵ and the most common reason given for quitting smoking is health concerns.⁴⁵ The number of smokers abstaining from smoking during hospitalisation appears to be increasing in response to the smoking policy.⁴⁶ Many smokers have to stop smoking in hospital in response to common hospital procedures (cardiac catheterisation, oxygen therapy, intravenous infusion). There is little research on the impact of smokefree hospital policy on patients.⁴⁶ Hospitalisation potentially encourages patients to be more aware of the health risks of smoking while at the same time providing an environment rich in incentives to quit smoking.⁴⁷ Hospitalisation has been described variously as "the window of opportunity" and "a teachable moment"⁴⁸ for intervening with smoking cessation advice and support. Recent research suggests substantial self-initiated cessation and increased interest in quitting among hospitalised smokers.¹⁵ Emmons et al⁴⁸ reported a prevalence of smoking of 16% among inpatients and that one third of patients were keen to receive cessation counselling from their physician.

Glasgow et al⁴⁷ have conducted one of the few studies which explored smoking rates among hospitalised patients and reported on the impact of a hospital stay on the short and long term smoking behaviour of in-patients. They surveyed 526 patients between 12 and 18 months after hospitalisation and asked retrospectively about smoking status in relation to hospitalisation. The hospitals at that time did not have any smoking bans and patients were able to continue

smoking during their hospitalisation. They found that 19% of the sample self-reported being smokers prior to hospitalisation, 51% of these smokers reported not smoking while in hospital, 37% of smokers reported attempting to quit after hospitalisation and 16% of these smokers reported being non-smokers (not biochemically validated) at 12 months post discharge. A most interesting finding of this study was that heavier smokers (more than 25 cigarettes per day, prior to hospitalisation) were more likely to have stopped smoking at some time before follow-up (26% vs 10%; $p < 0.001$). However, the weaknesses of this study as acknowledged by the authors, were the reliance on self report and the retrospective nature of the survey (12-18 months). This important study was the first which identified the behaviour of hospitalised smokers, albeit in hospitals which still allowed active smoking in certain inside areas. Even so, it appeared that half of the smokers ceased smoking for the duration of their hospital stay.

Goldstein et al⁴⁶ found that 51% of hospitalised smokers reported quitting smoking during hospitalisation and that just under 50% reported not receiving any advice about quitting from either physicians or nurses. In-patient cessation support could potentially turn their short term enforced abstinence into long term maintained quitting.¹⁵ Before trialing interventions for use in this setting, further research is required to determine the prevalence of smoking among inpatients. Research on the prevalence of smoking among hospitalised patients is scarce and the exact prevalence is still unknown.¹⁵ Glasgow et al found a self reported prevalence of 19%⁴⁷ and Emmons et al, 16%⁴⁸ among hospital patients, yet the community smoking rate in the United States was 29%.⁴⁹ There is no reason to believe that smokers should be under-represented in the hospital population, in fact the reverse should be true. Given what appears to be low estimates of smoking

among hospital patients, research is also needed to establish the validity of self report as a measure of smoking status within this setting.

There is, to date, little evidence in the research literature of the current levels of smoking risk assessment and cessation care being provided, within the hospital setting. As Fiore states, "this [assessment of smoking status] small but fundamental change in clinical practice will begin to address a current weakness in the way we practice medicine - the failure to universally assess, document and intervene with patients who smoke."⁵⁰ Hospitals have the potential to become centres of excellence for dissemination of best practice for health professionals in assessment and management of the chronic addictive disease of smoking. Additionally hospitals can play a role in the development of articulated care management systems (both pre and post discharge) which can act as prompts for other community based health professionals including general practitioners. The next section will examine the literature relating to the efficacy of health professionals as providers of smoking cessation care.

THE ROLE OF THE HEALTH PROFESSIONAL IN TOBACCO CONTROL

The efficacy of health professionals in providing smoking cessation

The single most important reason given by smokers for quitting is concern for their health.¹⁵ Health professionals are therefore appropriate providers of smoking cessation care. There is a vast literature on the effectiveness of health professionals in the delivery of smoking cessation advice and support stretching across several decades.^{43,51-54} In the early 1980s interest in medical practitioners and their role as smoking cessation care providers increased.^{40,55-62} This interest in the potential effectiveness of physicians arose as a result of the public health perspective of tobacco control and the search for ways to deal with the epidemic on a population level. Research has shown that 80% of smokers visit their medical practitioner each year.⁶³ Research in the Hunter region in Australia, has shown that 93% of general practitioners report being interested in smoking prevention and 66% report that they have time to provide smoking care.⁶⁴

Physician advice and encouragement to quit smoking has been shown to increase the likelihood that patients will quit smoking.^{65,66} The medical practice appears to be an ideal setting for providing smoking cessation advice,⁵¹ and much research has shown that medical practitioners can be effective.⁶⁷ Kottke et al in their meta-analysis of 39 smoking cessation interventions delivered in medical practices showed an average difference in smoking cessation rates of 8.4% (at 6 months) and 5.8% (at 12 months), between intervention and control groups.⁶⁷ This efficacy rate was greater with multiple providers (i.e. physicians and non-physician

health professionals), when the treatment included nicotine replacement therapy, and when treatment was delivered face-to-face. The largest difference between intervention and control groups, reported by Kottke et al in this review was 50%⁶⁸ at 12 months.⁶⁷ In 1984 the National Cancer Institute in the U.S.A. funded 5 randomised controlled trials in primary health care settings, designed to determine the efficacy of physicians in the provision of smoking cessation care to patients.^{65,69-72} As these trials were conceived from a population based focus, quit rates were determined for all patients in the practice not just those who received the advice. The results of these 5 trials were summarised by Manley et al,⁷³ who concluded that the training of physicians increased the provision of smoking cessation care only when combined with a prompt system. This prompt system, usually involving a receptionist attaching markers to the medical records of smoking patients, when combined with physician training increased cessation rates among patients. Glynn et al combined these results with consensus development, and produced recommendations, a manual⁵² and a national training program for physicians in the United States. These recommendations, even though based on data from trials with medical practitioners also included recommendations for nurses.⁷³

In Australia a "Sick of Smoking" program, designed to be delivered very briefly during a usual medical consultation, stressing the risks of smoking, providing self help materials and referral was found to produce a 7.5% vs a 3.2% quit rate (intervention vs control group) at one year follow-up.⁷⁴ Copeman et al⁷⁵ trialled a more intensive physician provided smoking cessation program, "Smokescreen". They found that whilst a 24% cessation rate was achieved at 12 months, only 7% of the physicians' total smoking population was recruited,

suggesting that only the most at risk or perhaps the most motivated smokers were reached.

Several barriers to implementing smoking cessation care have been identified for general practice. In Australia, medical practice attracts fee for service, and while preventive care can be combined during another consultation it cannot attract a fee on its own. There is thus a financial disincentive to provide preventive care.⁷⁴ It also means that any smoking cessation care provided must be brief. Additionally lack of time and lack of detection of smokers within the medical practice have been identified as barriers to the provision of care.⁷⁶ Dickinson et al's⁷⁷ study assessed the rate of detection of smokers by medical practitioners. These researchers bypassed the medical records and asked the physicians directly about the smoking status of their patients. They found that 56% of smokers were identified by medical practitioners (78% of identified smokers had smoking related diseases). They concluded that doctors were more likely to respond to the "evidence of the disease than to the habit itself".

Overall this increased research and advocacy of the medical practitioner's role has had an impact on the level of smoking cessation care being provided by medical practitioners. Several studies have reported on the level of medical practitioner advice to quit smoking reported by smokers in community samples.^{44,78,79} In 1975, 35% of men and 38% of women smokers reported being told to quit by a medical practitioner.⁷⁸ A 1983 study found 42% of male and 46% of female smokers reporting being advised to quit by their medical practitioner.⁷⁹ In the Stanford Five-City Project, where households were randomly sampled in 1979-1980, 1981-1982, 1983-1984, 1985-1986 and 1989-1990, Frank et al reported an increase from 1979 to 1989 (44.1% vs 49.8% respectively) in the proportion of

patients reporting that they had been advised by a medical practitioner to quit smoking.⁴⁴ However a recent study in 1990, by Manley et al, found a decline in advice particularly for women smokers.⁷³ These researchers suggest that medical practitioners may be waiting for patient cues to act. Other health professionals, particularly in the hospital setting could be effective in prompting action among medical practitioners, through referrals.

Clinic-wide intervention systems (including office based components such as clerical staff recording patients' smoking status and marking records) have been trialled as a way to prompt medical practitioners to provide smoking cessation care systematically to all patients.⁵¹ The results of this trial showed that 40% of patients received advice in the intervention condition compared to 26% in the control condition. Whilst shown to be effective, the overall treatment rate still did not rise above 50% of all smokers. The success of this program reportedly lay in the inclusion of additional non medical staff within the practice setting contributing to the smoking cessation care of each patient, either through marking charts, or taking histories. It has been suggested that such broad based approaches to tobacco control have the potential to achieve the National targets.¹⁴ A search within the scientific research literature reveals that the potential role of nurses, or in fact any other health professional, (who are often referred to in the literature as "non-physicians") in the provision of smoking cessation care has not explored in terms of efficacy, cost and impact on cessation rates among clients.

NURSES - AN OVERLOOKED RESOURCE IN TOBACCO CONTROL

Nurses' role in public health

Achieving the National Target of a smoking prevalence of 20% in the population by the year 2000,¹⁰ will require an increase in the efforts of all health professionals, and the active engagement of the nursing profession.⁸⁰ Patient education has traditionally been part of the nurses' responsibility,⁸¹ and has been vital to nurses' role in promoting self care. Nurses constitute the largest group of health-care professionals, work in more diverse settings and with more people than other health professional groups, they provide the largest proportion of direct patient care and are regarded by the public as role models.^{80,82-86} A breakdown of occupation groups within the health care sector in Australia, in 1988, found that of all people in health occupations 9.4% were general medical practitioners, 3.4% specialist medical practitioners, 54.4% registered nurses, 13.9% enrolled nurses and 3.5% dental nurses.⁸⁷ Descriptions of nurses' involvement in preventive care, exist largely within the nursing literature and tend to be based on case descriptions of individual hospital and workplace projects, or on the prevalence of smoking among nurses.⁸⁸ There are few empirical studies of reach, impact or efficacy of nurse provided smoking cessation care.⁸⁰ Their role does not appear to have been explored as extensively as the role of medical practitioners. There are numerous factors which may have contributed to this invisibility of nursing in the public health domain.

Firstly, like the medical profession, nursing has been focused on illness

centred care in acute care settings.⁸⁹ By the 1950s health care had become more specialised and more technical with an increased emphasis on treating disease.⁹⁰ This was not always the case and traditionally public health concepts were embedded within the role of nurses.⁹⁰ In the first school of nursing, Florence Nightingale incorporated one year of epidemiology and public health nursing for the training of nurses.⁹⁰ By the 1960s the identity of public health nursing was disintegrating, with training in the large tertiary teaching hospitals focusing on acute care and it has been suggested that public health nursing has disappeared from the nursing curriculum.⁹¹ Secondly, it has been suggested that the socialisation of nurses as dependent, non-assertive, and compliant assistant health professionals, has resulted in nurses failing to take professional initiative and reclaim their public health origins.⁹² And thirdly, nurses' current involvement in public health roles such as the early detection and prevention of cancer has possibly been limited by lack of recognition of their role and their potential by other health professionals.⁸⁰

Reform within nursing is paralleling the shift at a national level, away from illness care to wellness care, preventive care or health promotion.⁸⁹ Exclusive illness care has prove too costly to maintain in the long term with the increases in prevalence of chronic lifestyle diseases.⁸⁹ In the US the American Nurses Association (ANA) in it's *Nursing's Agenda For Health Care Reform*⁹³ advocated an increase in prevention activity and an increase in public health nursing involving taking health care to the consumer rather than passively waiting to be asked for assistance with illness.⁸⁹ This proactive focus on population oriented nursing is very different from the reactive individual acute care model of nursing currently practiced, and different also from the case finding and service delivery model of

community nursing. Cloutier Laffrey et al assert that the role of nurses in primary health care has been encouraged mainly during times of shortages of medical practitioners.⁹⁰ They describe the example within the United States during the 1960s, when the shortage of general practitioners in remote areas and the high cost of health care resulted in the accreditation of "nurse practitioners".⁹⁰ Koch et al similarly claim that the establishment of nurse practitioners occurred in response to lack of medical services in low socioeconomic or rural areas.⁹⁴ In the United States by 1978, 7000 nurse practitioners had established in practice, delivering primary health care for chronic illnesses.⁹⁵

The Burlington randomised controlled trials evaluated the performance of nurse practitioners and found that they were as competent in referring, diagnosing and prescribing as the general practitioners involved in the trial and that they performed better than other randomly selected general practitioners who were not part of the trial.⁹⁶⁻⁹⁸ However, increases in the number of medical practitioners being trained and resistance from the American Medical Association halted the advance of nursing practitioners.⁹⁰ In Australia, restrictive regulations prevent nurses from prescribing, referring and initiating diagnostic procedures.⁹⁹ The role of the nurse practitioner has however recently been re-examined in response to a shortage of medical services in remote areas.⁹⁴ Currently a trial is underway across several Area Health Services exploring the potential of nurse practitioners working alongside and within general practice in the delivery of specific primary care functions such as detection for cancer of the cervix and breast, provision of quit smoking advice, diet and exercise interventions.¹⁰⁰

Even with the changing emphasis on education programs and the policies of governing bodies, research on the effectiveness of nurses in the delivery of health

promotion is scant.¹⁰¹ However the few research studies which have been conducted conclude that nurses are effective in promoting health.^{58,102,103} In a randomised controlled trial of behaviour therapy for psychiatric patients, patients in the psychiatric nurse condition were more satisfied with care and had better outcomes at one year than patients in the general practitioner usual care group.¹⁰² Robson et al¹⁰³ conducted a randomised controlled trial of a computer assisted health promotion program. The intervention group received risk assessment and follow-up from a nurse and a general practitioner, and the control group received general practitioner support alone. They found that screening for hypertension, blood pressure, cervical cancer, smoking and serum cholesterol were all significantly greater in the nurse follow-up condition. Fullard et al⁵⁶ compared referral to a practice nurse for a health check after a general practice consultation with routine general practitioner consultation alone, and found health risk assessment rates doubled for blood pressure and quadrupled for smoking status in the practice nurse condition.

As nurses constitute the largest group in the public health sector, the national goal of reorienting the health sector, will require research into nurses' role in the delivery of preventive health care. There is evidence that nurses perceive that they have a role to play in reorienting the health services. There is, however, a gap between recognising the potential of nurses in the delivery of health education and the practice of health education.¹⁰⁴ The next section of this review will look at the evidence currently available for the efficacy of nurses in delivering smoking cessation care.

Nurses' efficacy in providing smoking cessation care

Very little research has been published which examines nurses' provision of smoking cessation care.¹⁰⁵ The nursing literature contains many statements such as "Nurses are involved in all aspects of helping the public to stop smoking, encouraging nonsmokers not to start smoking, and actively working to create smoke-free environments at the local, regional and national levels".⁸⁰ Whilst this may well be a true statement in that some nurses somewhere may be engaged in some of these activities, there is an under-representation of nurse provided smoking cessation research in the tobacco control literature.^{102,106-108} Entrekin et al¹⁰⁶ concluded that the literature was lacking studies which looked at nurses' current levels of care in relation to detection and early prevention of cancer. Four studies were found which reported levels of smoking cessation care provided by nurses, in the hospital environment.^{46,48,106,108}

Entrekin et al's study provided data on both knowledge and reported care delivery and whilst being unrepresentative of nurses generally (a response rate of 32%) did however show that amongst the 2,500 nurses who did return their surveys only 3.4% of nurses reported providing smoking cessation care to 81-100% of their patients.¹⁰⁶ While it would have been interesting to know exactly what proportion of nurses actually were providing any smoking cessation support to any patients, the results do indicate that nurses are not currently providing adequate smoking cessation care to their patients in the United States.¹⁰⁶

Emmons and Goldstein found that in the acute care setting, nurse intervention with smoking care varied by ward, with 52% of cardiovascular patients reporting that nurses had provided some smoking cessation care compared to only 16% of general ward patients.⁴⁸ In another study Goldstein et al¹⁰⁸ found that while

52% of nurses surveyed believed that nurses should provide smoking cessation care to all smoking patients, only 35% said that they were providing counselling to all their patients, with 43% reporting that they do not know how to counsel. They conclude that currently nurses are not providing smoking cessation support to their patients due to lack of training and physician failure to incorporate nurses into smoking cessation care. In a separate study Goldstein et al⁴⁶ found that almost 50% of hospitalised smokers had received no advice to quit smoking from a physician or a nurse. Some studies in the nursing literature, whilst utilising small samples have found some interesting results, for example that length of stay in hospital was associated with successful quitting following a nurse delivered smoking cessation program, and active patient participation in the program rather than patients passively receiving prescriptive advice, was associated with quitting.¹⁰⁵

Nurses have however, been incorporated in trials evaluating medical practitioner delivered smoking cessation programs.¹⁰⁹ In a randomised controlled trial of nicotine patch therapy combined with the National Cancer Institute physician intervention program, nurses provided the weekly follow-up counselling for withdrawal and relapse prevention.¹⁰⁹ However very little information was provided on the role of nurses in this study, except that "follow-up and relapse prevention were provided by a study nurse during individual counselling sessions". The physician component involved brief advice to quit, negotiating a quit date and referral to the nurse. The physician component appears to have taken place during one brief initial session. The remainder of the counselling was conducted by the nurse on a weekly basis and interspersed with telephone follow-up. The intervention produced a one year cessation rate of 27.5% in the active patch condition versus 14.2% in the placebo condition.¹⁰⁹

Hollis et al^{110,111} compared three physician-nurse team approaches to patient counselling with brief physician advice alone in the primary care setting. All patients received brief physician advice to quit smoking and were then randomly assigned to one of three nurse provided interventions or a physician advice only control group. The first nurse-managed model involved a brief self help condition - involving a 15 minute session incorporating assessment, carbon monoxide feedback, a 10 minute video on quit tips, a quit kit including gum, toothpicks and a calendar, a manual on how to quit, setting a quit date and a follow-up phone call 2-4 weeks later. The second nurse-managed condition involved the carbon monoxide feedback, a video espousing the benefits of the group program, membership to a group, and reminder postcards one week prior to the start of the group. The third nurse-managed condition involved the self help condition plus membership to the intensive quit smoking group, essentially a combination condition. The results showed that all three nurse managed models produced significantly higher ($p < 0.05$) quit rates at 3 and 12 months than the brief physician advice alone (Nurse model 1:12.9% and 7.9%; Nurse model 2:14.1% and 7.6%; Nurse model 3:13% and 6.9%; and Physician advice alone:7.6% and 3.9% respectively at 3 and 12 months). The rationale for conducting this study was described as finding a way to "minimise demands on the physicians" and as a "nurse-assisted" intervention. This study could equally have been described as an evaluation of three models of nurse provided smoking cessation care or as a "physician-assisted" program. Other researchers have referred to nurses as "non-physician staff" and as "physician assistants".^{56,112} This description of nurses' role as "non-physicians" and as "assistants" underlies an inherent bias in the research literature, which may have resulted in an underestimation of the potential role of nurses in the provision of smoking

cessation. The emphasis has clearly been on the primary role of the physician in the provision of smoking cessation counselling.

Barr Taylor et al ¹¹³ conducted the only study which examined the efficacy of a nurse-only delivered smoking cessation intervention. This study was hospital based, involved patients after a myocardial infarction and included follow-up telephone counselling post discharge. Average time spent by the nurse with patients in the intervention condition was 3.5 hours. Results showed a 29% difference (biochemically verified) between intervention and control group at one year (intervention 61% vs control group 32%). The study included those lost to follow-up as smokers. This nurse managed system was considered more convenient for patients as follow-up occurred through telephone contact rather than visits. This study demonstrates that nurses can be effective providers of smoking cessation care during myocardial infarction rehabilitation, and can increase the quit rate by an absolute 29% (95%C.I. 14.5%-43.5%) in the absence of physician support.

There is now a need to explore the role and potential of nurses within the acute care hospital setting. There is some evidence that many health professionals and especially nurses perceive that educating patients about health is part of their role but that the next step of encouraging patients to change their lifestyle is overstepping the bounds of their role.⁴⁰ They see patients as already too stressed with altered health states, change of routine and problems with activities of daily living to burden them with behaviour change programs which may not be related to their admission diagnosis.⁴⁰ The majority of nurses are employed in the acute care hospital setting,¹¹⁴ and in order to develop acceptable and appropriate programs for use within that setting, more information is needed on how the hospital stay impacts on hospitalised smokers and how nursing staff treat these smokers. The

policies and procedures within hospitals relating to smoking are also likely to impact extensively on the experiences of hospitalised smokers and the reaction of nursing staff.

Evidence of the efficacy of hospital based smoking cessation programs

Research to date is fairly scant and those few studies which have been done have utilised the types of public health brief interventions found to be most efficacious when provided by general practitioners in the primary care setting. Stevens et al conducted a randomised controlled trial in the hospital setting, comparing usual care to bedside counselling program delivered by research staff and incorporating a 12 minute bedside video, 20 minute counselling session, self help materials and a follow-up phone call.¹¹⁵ The counselling was geared to the patient's stage of change.¹¹⁶ The results showed that this brief bedside smoking cessation program provided by trained research staff, raised the 12 month continuous abstinence rate by a relative 50% from 9.2% control group to 13.5% intervention group ($p < 0.05$). This research is most important as it represents the first evaluation of a bedside smoking cessation intervention provided in the ward setting for general hospital patients rather than specific sub-groups (eg cardiovascular patients) and it demonstrates the potential effectiveness and minimal time and cost required to effect change in the population of in-patients. Those lost to follow-up were counted as smokers. These authors have more recently explored the efficacy of this bedside intervention when it is delivered by usual care health professionals (in this case respiratory therapists) rather than by research staff, but findings are not yet available.

Orleans et al⁴⁵ provided a minimal contact motivational counselling,

behavioural abstinence and nicotine fading cessation program (patients were triaged to receive tailored care depending on their stage of change) to 62 consecutive physician referred inpatients, diagnosed with cardiovascular disease. They found a 27% quit rate (informant verified) at 6 months among a population of heavy smoking inpatients referred by their doctors for behavioural treatment to a trained clinical psychologist. The program whilst achieving an acceptable outcome, did not include a control group, and the program was delivered by a clinical psychologist, which would be very costly if conducted on a large scale. Whilst the patients were recruited in the hospital setting the intervention occurred in an out-patient setting.

Barr Taylor et al¹¹³ randomly allocated 173 cardiovascular patients to usual care or a nurse managed brief bedside smoking cessation intervention combined with post discharge follow-up. They reported a one year smoking cessation rate (biochemically verified and including those lost to follow-up as smokers) of 32% in the usual care group compared to 61% in the intervention group. Hurt, Dale and McClain⁽¹¹¹⁾ developed and trialled a nicotine addiction treatment based on carbon monoxide feedback, behavioural quit smoking counselling, self help materials, pharmacological support, 3 follow-up counselling calls and 8 personalised computer generated letters for highly addicted patients admitted for nicotine dependence. There was no control group, however a quit rate of 30% was achieved with this group of highly addicted inpatients. This intensive program produced a 29% one year biochemically confirmed abstinence rate and suggests that such intensive treatment is acceptable to inpatients, (suffering from arteriosclerosis obliterans, coronary artery disease and chronic obstructive pulmonary disease) and efficacious for a usually recalcitrant population of hard-to-reach smokers.

Strecher et al¹¹⁷ compared usual care to a brief minimal intervention

delivered by either a medical student, health educator or a nurse to inpatients who were selected as being at least contemplating quitting smoking. The study found no significant difference between treatment and control groups, informant verified at 3 months (18.6% vs 15.4%). Campbell et al¹¹⁸ similarly found no significant differences in biochemically verified smoking cessation rates at 12 months follow-up among inpatients with smoking related diseases who received physician advice to quit and were then randomly allocated to receive either nicotine gum or a placebo plus 5 recalls to outpatients after discharge.

Orleans review of these hospital based interventions concluded that hospital based interventions can produce about 20-25% quit rate, however the quit rate among control groups is higher than in primary care or general population samples.¹⁵ The majority of smoking cessation intervention research has been in the primary care setting involving medical practitioners with little research focused on the potential of the hospital setting as a venue for, and little research on the potential of nurse practitioners as providers of smoking cessation interventions.¹⁵

In Summary

Many health organisations and researchers as well as practitioners now recognise the potential hospitals have for moving forward and taking a leading role in disease prevention.^{23,30,119} Little is known however about the role hospital staff, and particularly nurses, are currently playing in smoking cessation efforts within the hospital setting (i.e. current levels of assessment and cessation care).⁴⁸ Research is required which will enable the development of appropriate, acceptable, targeted smoking cessation interventions for hospitalised smokers. Specifically research is needed to determine the validity of self report as a measure of smoking status, the

prevalence and predictors of smoking among the hospital population, the impact of admission on the smoking behaviour of patients, both short and long term, the attitudes of hospital patients and nurses to smoking risk assessment and smoking cessation care, the current levels of detection of smokers on medical records and the levels of cessation care currently being provided to hospitalised smokers by nurses. These aims are addressed in the following chapters of this thesis. The implications of the findings are discussed in relation to the development of training programs for nurses and brief nurse provided smoking cessation interventions for delivery to inpatients during their hospital stay.

CHAPTER 2

**Misclassification of smoking
status by self report among
hospital patients**

INTRODUCTION

The burden of illness associated with smoking has been well documented.^{1,2} Chapter 1 has described the need for public health professionals and for hospital administrators, to be involved in the development and evaluation of smoking cessation interventions for the hospital setting. In order to develop and trial smoking cessation programs for use with hospital inpatients, it is necessary to accurately measure smoking status in this setting. Self report is the most common measure of smoking status, as it is the most cost efficient and the easiest to administer. However, the validity of self report has been questioned in the past due to the belief that smokers may react to the increased public perception that smoking is undesirable and therefore deny their smoking behaviour.³ A number of studies though, have demonstrated that among the general community, self reported smoking status is very accurate. When compared with biochemical measures, such as expired carbon monoxide and cotinine (in serum, urine or saliva), over 95% of individuals who claim to be non-smokers have their self report verified by biochemistry; that is, fewer than 5% of people who report that they do not smoke are found to have misreported their smoking status.^{4,7}

Self reported smoking has generally been reported as having a higher sensitivity in survey studies than in studies involving the delivery of smoking cessation interventions.³ In the latter studies, smokers may have perceived some pressure to report being non-smokers, and a greater proportion of self reporting non-smokers were found to be smokers based on biochemical evidence.^{5,8,9} Table 1 summarises results from smoking cessation trials where deception rates of between

22-40% have been observed,^{1,9-11} and from outpatient clinics for the treatment of cardiovascular diseases, where deception rates of 15-30% have been reported.^{5,8} Jarvis et al⁵ have noted that many of the outpatients in their study were suffering from smoking related illnesses, which may have increased their feelings of guilt about smoking and thereby encouraged them to conceal their true smoking status.

Table 2.1: Deception rates in studies where demand characteristics favoured the reporting of non-smoking status.

Author (year)	Deception Rate	Description of the setting
Sillett et al. ¹⁰ (1978)	40%	Participants in a smoking cessation trial.
Wilcox et al. ⁸ (1979)	27%	Outpatient infarction clinic.
British Thoracic Society ¹ (1983)	25%	Cessation trial with patients with smoking related diseases.
Jamrozik et al. ⁹ (1984)	23%-40%	G.P. patients involved in an anti-smoking intervention.
Jarvis et al ⁵ (1987)	15%-20%	Cardiovascular outpatients.
Ruth & Neaton ¹¹ (1991)	22% Intervention 13% Control	Male participants in Multi Risk Factor Intervention Trial.

The results of studies throughout the 1970s and 1980s strongly supported the need for biochemical validation of self reported smoking status. This has resulted in claims of lack of funding support and publication of studies in the absence of biochemical validation.¹² Recently there has been a well argued position in the literature that because of high non consent rates for biochemical testing, the low misclassification rates generally found in community studies, and more importantly

the lack of adequate power to detect statistically significant differences between intervention and control conditions in terms of misclassification rates, it is no longer necessary to biochemically validate self report.^{12,13} Velicer et al¹³ suggest that the veracity of self report, however, will vary as a function of the type of population (community sample vs patients with a smoking related disease), the type of intervention (personally tailored vs media), and the demand characteristics (reward or praise for reporting non-smoking). Patrick et al conclude from a meta-analysis of studies comparing self reported behaviour and biochemical measures of smoking behaviour, that biochemical validation is more important in intervention studies, in adolescent studies, and in studies where questionnaires are self completed (rather than interview administered).³ Strategies such as the bogus pipeline, where participants are informed that biochemical measures will be taken and specimens are taken, but where analysis is either not undertaken or undertaken on a limited random sample.¹⁴

The general population of hospital inpatients may differ substantially from the general population and from the population of outpatients presenting with smoking related diseases. Few published studies have explored the prevalence of smoking among inpatients or the accuracy of self reported smoking among hospital inpatients. The two studies found both reported low rates of self reported smoking among inpatients - 16%¹⁵ and 19%¹⁶. This smoking rate appears to be much lower than that found in the general population (25-30%^{17,18}). The hospital setting may be exerting demand characteristics which favour the reporting of non smoking. Glasgow et al examined the disconfirmation rate between self report and salivary cotinine measurement of smoking status in a series of intervention studies in different settings.¹² One of these settings was a hospital, and the control group

results provide information on the validity of self reported smoking status among participants who were in a hospital setting. Of 110 people (who reported being smokers in the 3 months prior to hospital admission) surveyed retrospectively, 12 months after discharge, and not initially told that biochemical measures would be taken; 18% refused to participate in the biochemical analysis, 14% reported that they had relapsed in the week between self report measurement and biochemical measurement, and 9% had salivary cotinine levels above 25 ng/ml. This misclassification rate of 9% was higher in the inpatient setting than in any of the other settings where the study was undertaken (1% in outpatient department; 0% in worksite; 4% in dental surgeries).

Bittoun et al,¹⁹ in a study conducted prior to the introduction of smoking bans in hospitals in Australia, found that 8% of a convenience sample of patients who reported being non-smokers, had alveolar carbon monoxide levels indicative of smoking. The same study repeated after the introduction of the bans, found that 32% of a convenience sample, who reported being non-smokers, tested positive for carbon monoxide.²⁰ This result suggests that the introduction of smoking bans into public hospitals may have exerted pressure on smoking patients to conceal their smoking status.

No other studies examining the accuracy of self reported smoking among patients, resident within the hospital setting, could be located. Moreover, few studies have explored the relationship between accurate self report of smoking status and recency of reported smoking history. Wagenknecht et al²¹, in a community survey for the CARDIA study, found 11.2% of ex-smokers compared to 2.6% of non-smokers were deceiving. Glasgow et al¹² found that the shorter the duration since quitting, the greater the likelihood of misclassification of self

reported smoking status by biochemical measurement. It appears from these two studies that the likelihood of misclassification is greater, the more recent the cessation attempt.

The study presented in this chapter utilised those measures described in the literature as likely to increase the veracity of self report. This included the use of the bogus pipeline methodology whereby all patients were informed prior to self report data collection, that biochemical measurement of smoking status would be undertaken.¹⁴ Additionally interviewer administered measurement of self reported smoking status was utilised, rather than self completed questionnaires.³

Salivary cotinine was selected as the best available biochemical marker for distinguishing smokers from non-smokers. Jarvis et al⁵ compared 11 biochemical measures of smoking and found salivary cotinine to have the best sensitivity and specificity against self report (95% and 99% respectively). Cotinine is a by-product of nicotine metabolism²² and has a relatively long half life, averaging about 20 hours,^{8,23,24} making it unnecessary to control for the time of day of sampling.²⁵ Salivary cotinine was chosen over urinary or plasma cotinine because higher concentrations of cotinine are found in saliva,⁵ and sampling procedures are relatively simple. Concentrations of cotinine in saliva are relatively stable throughout the day as a result of the relatively long half life of cotinine,²³ therefore the time of day of sampling and the time since the last cigarette, does not make any significant difference in detection of cotinine.

Various cutpoints, ranging from 10 ng/ml-50 ng/ml of salivary cotinine, have been selected as markers of smoking/non-smoking status. Etzell, in a review of the literature on salivary cotinine as a marker for smoking status, concluded that the evidence best supports the use of broad categories to describe the relationship

between cotinine and smoking intake. She concludes that cotinine levels below 10 ng/ml are associated with non-use of tobacco or possible passive exposure, levels between 10-100 ng/ml are associated with either high passive exposure or infrequent consumption of nicotine, while levels of more than 100 ng/ml are associated with active consistent smoking.²⁶ Since sensitivity and specificity vary with the cutpoint, the lower the cutpoint the higher will be the sensitivity, but at the expense of lower specificity and having a large number of false positives. The factors which influence the choice of cutpoint include the prevalence of smoking,¹¹ the expected rate of deception,²⁷ whether the pattern of smoking is occasional, as with schoolchildren and adolescents^{22,28,29} and whether the researcher wishes to minimise the false positives or minimise the total rate of misclassification.¹¹ The recommended cutpoint among populations of occasional or low level smokers is 10 ng/ml.^{22,29,30} The aim of the study was to determine, among a subsample of the patients surveyed in the main study,¹⁴ the proportion of self reported smokers, recent quitters, ex-smokers and never smokers who appeared to be smokers, on the biochemical evidence of salivary cotinine analysis.

METHOD

SAMPLE

Gaining access to patients in the hospital setting

Access to patients was gained through a strategic "top-down" process involving presentation of the project to each level of hospital management and negotiations concerning the data collection procedure. Endorsement of the project at each level was then utilised in negotiations at the next level of management. Meetings were held first with the Hunter Area Health Board, then with the Chief Executive Officer and the Director of Nursing of each hospital, then with the Nursing Executive, the Medical Heads of Departments, and finally with individual Nursing Unit Managers. This strategic process ensured access to patients on data collection days in a setting where "ownership" of patients is a grey area. The process also produced a negotiated data collection protocol which involved minimum disruption to ward routine, staff time and patient treatment.

Sampling for the main patient survey

The six largest hospitals in the Hunter Area of New South Wales (NSW), Australia participated in this cross sectional survey of smoking behaviour of inpatients. All hospitals in NSW, Australia have a total smoking ban in operation inside all hospital buildings. Paediatrics, delivery suites, and immunology wards were excluded as all patients in these wards would have been either under 16 (paediatrics), in labour (delivery suites), or terminally ill (immunology) and would therefore have been ineligible for the study. Each of the remaining 52 wards in the

6 hospitals was accessed on a randomly selected day (excluding weekends), during the period September to December 1991. This data collection procedure was repeated three weeks later, after the ward had the opportunity to refill with new patients.

All patients who were resident in the ward on the data collection day were included in the study population. Eligible patients were those able to speak English, over 16, not terminally ill, not in labour, not receiving medication likely to impair their ability to think rationally, and considered mentally, physically and emotionally capable of making informed decisions about consent (see Appendix 2.4 Eligibility Criteria).

PROCEDURE

Interviewer Training

Data collection was completed by the researcher and a team of 6 interviewers. These interviewers were mature-aged women, who were either nurses, had extensive experience in a medical setting or in the care of ill people, were well presented, reliable, and who could demonstrate confidence when working alongside hospital staff in the ward setting. Interviewers received a full day "out of ward" training session as well as a half-day training "in the ward setting". They were trained in consent gaining techniques, skills in dealing with the ward environment, and interpersonnal skills for relating to patients and staff. Additional training was provided in the correct technique for taking the saliva sample. Interviewers were asked to take home specimen jars, and practice taking a saliva sample among friends or family to ensure that samples were clean and of sufficient quantity for analysis. The importance of placing fresh samples immediately in the eskies was

emphasised and of transporting the samples each day to the freezers in the laboratory (see Appendix 2.3).

Interviewer performance was monitored in terms of consent rates, completed data and log books and satisfactory saliva samples for the first 3 days. Interviewers whose performance was poor were retrained, counselled and paired with a more experienced interviewer for half a day. One interviewer was subsequently replaced, as her performance did not improve.

Determining Eligibility

On the afternoon prior to the randomly selected data collection day, the Nursing Unit Manager (NUM) arranged for the study's Patient Checklist (see Appendix 2.1 Patient Checklist) to be completed with the names, bed numbers, age and date of admission, medical record unit number, and principal diagnosis of all patients in the ward (see Instructions for Nursing Unit Managers Appendix 2.2). This strategy split the tasks involved in the study across two nursing shifts and reduced the time burden on the day shift nurses. A trained interviewer met with the NUM in each ward at the beginning of the data collection day (see Instructions for Interviewers, Appendix 2.3). The NUM was asked to determine the eligibility of each patient in the ward (based on the criteria listed in Appendix 2.4 Eligibility Criteria).

Recruiting patients and gaining consent

The NUM introduced the interviewer to all eligible patients in the ward. Eligible patients were given an Information and Consent Letter (see Appendix 2.5) describing participation in a survey of smoking attitudes of hospital patients. This

letter also informed patients that they could consent to either the questionnaire or to providing a saliva sample (if randomly selected to do so) or to both. Patients were informed, prior to interview, that the saliva sample would be analysed for cotinine, a tobacco by-product, and would indicate their exposure to cigarette smoke either from inhaling their own or other people's cigarette smoke (passive smoking). This consent procedure was conducted non-verbally to ensure maximum confidentiality of consent status. Non-consenting patients were asked to complete a brief 4 item questionnaire (see Non-Participants Details, Appendix 2.6).

Brief bedside interview

Consenting patients were interviewed about their smoking status in a manner designed to ensure maximum confidentiality. The trained interviewer showed consenting patients a card on which were listed four categories of smoking or non-smoking status, which were read aloud to each patient (See measures section further on). Interviewers asked each patient to point to the category which best described their current smoking behaviour. The interviewer recorded the patient's response. Patients who reported themselves as smokers were also asked to complete a smoking diary (as part of the survey described in detail in Chapter 3), indicating the number of cigarettes smoked on each of the preceding four days. All patients were asked whether they had chewed any nicotine gum in the preceding 4 days. As patients were resident in a smoke-free environment, the effects of passive smoking were assumed to be nil. In order to determine the possible effect of pre-admission passive smoking, a calculation was made for each patient of the number of days spent in hospital.

Random sub-sample for salivary cotinine analysis

The sub-sample of patients who were asked to provide a saliva sample were selected using a computerised random number generation program. As it was expected that the number of recent quitters and smokers would be smaller than the other two groups and given limited resources for cotinine analysis, a larger proportion of patients from these two categories were randomly selected for inclusion in the sub-sample. The sub-sample randomly selected 6 in every 10 smokers and recent quitters, 3 in every 10 ex-smokers and 2 in every 10 never smokers. Questionnaires were marked to indicate that this patient was selected for saliva cotinine sampling.

Acquisition and analysis of saliva sample

Patients who were randomly selected to provide a saliva sample were asked to deposit a 5 ml sample of saliva into a 70 ml plastic specimen jar. As recommended by the reagent manufacturer, patients were given a piece of Arrowmint chewing gum to use if they were unable to supply the sample because of mouth dryness. Patients were approached during the morning, usually between 9.00 am and 12.00 noon so as to avoid mealtimes. If patients had just eaten, they were asked to rinse their mouth with water before providing the sample. The samples were placed immediately on ice and transported to a freezer within 3 hours, where they remained stored at 0° C for 2-4 months pending assay.

MEASURES**Self report of smoking:**

The following categories were read aloud to each patient by the interviewer, who asked patients to select which category best described their current smoking behaviour. These definitions of smoking status were based on self report measures used in other published and unpublished community surveys³¹⁻³³ and on the predicted half life of salivary cotinine (averaging about 20 hours)^{8,23,24}. It was anticipated that elevated cotinine after 4 days would be due to smoking. Patients were asked, *Which of the following best describes your current smoking status?*

Smoker: You have smoked cigarettes, cigars or pipes in the last 4 days.

Recent Quitter: You have not smoked in the last 4 days, and you have quit smoking sometime in the last 3 months.

Ex-smoker: You have quit smoking more than 3 months ago.

Never-smoker: You have never smoked more than 100 cigarettes, cigars or pipes in your life.

Salivary cotinine:

In the present study there was reduced opportunity to smoke, and thus presumably lower levels of cotinine in the saliva of hospital inpatients. Therefore a range of cutpoints was considered with particular emphasis on 10 ng/ml of salivary cotinine.

Chromatography

The method used to analyse the samples involved extraction of a basic compound into an organic phase followed by separation using capillary column gas chromatography, and measurement with a nitrogen-phosphorus detector.^{34,35}

Nitrogen-Phosphorus detector:	Varian TSD
Carrier gas:	Nitrogen 500 kPa, 20 psi
Capillary column:	25m x 0.25mm id., BPI
Oven temperature program:	160-220°C @ 35°/min then hold
Injection Port temperature:	2500C
Detector Temperature:	300°C
Air:	400k Pa
Hydrogen:	300 kPa, 16psi
Attn:	8-32
Range:	10-121

All cotinine results were calculated by comparison with chromatogram results for a standard of 100 ng of pure cotinine reagent dissolved in 1 ml of water (as against a ml of saliva) and carried through the same full analytical procedure as the saliva assays. Calibration controls were included every 10 assays and calibration factors were calculated from these controls. The equipment was calibrated by adding an internal standard (500 ng Pheniramine maleate) to every assay which was carried through the full analytical procedure to account for instrument variation. Calibration controls were included every 10 assays and calibration factors were calculated from these controls. The laboratory was blind to the self reported smoking status of patients providing samples.

RESULTS

SAMPLE CHARACTERISTICS

Patients participating in the main survey

There was a total of 1552 inpatients in the 52 wards of the 6 public hospitals on the two data collection days. Of these, 48% (n=744) were considered ineligible based on the exclusion criteria. Of the ineligible patients, 6% (n=41) were either under the age of 16 or did not speak English well enough to participate; 44% (n=329) were physically unable to participate as they were either absent from the ward in the operating theatres, at X-ray or therapy, were unconscious, in severe pain, deaf, blind or were awaiting discharge; 36% (n=270) were cognitively or emotionally incapable of participating due to the effects of medication, severe depression, developmental disability, dementia or Alzheimers disease; and 14% (n=104) had been in hospital on the first and the second data collection day (three weeks apart) and would therefore have been counted twice, consequently their second data set was removed.

The 806 eligible patients were approached, and 88% (n=711) consented to participate in the survey. Of these, 16% (n=114) reported having smoked in the last 4 days (Smokers), 8% (n=59) reported having quit smoking sometime in the last 3 months (Recent Quitters), 29% (n=206) reported having quit smoking more than 3 months ago (Ex-smokers) and 47% (n=332) reported never having smoked more than 100 cigarettes, cigars or pipes in their life (Never Smokers). Of the 711 patients in the survey, 628 (78% of all eligible patients) agreed to provide a saliva sample if they were randomly selected to do so.

Table 2.2: Characteristics of consenters & non-consenters to supplying a saliva sample.

Characteristic	Consent Status				X ²	df	p
	Consenter		Non-consenter				
	(n = 628) ^a		(n = 77) ^b				
	n	% ^c	n	%			
Sex							
Male (n=256)	240	94	16	6			
Female(n=449)	388	86	61	14	7.70	1	0.005
Age							
16-34 (n=198)	164	83	34	17			
35-54 (n=133)	127	95	6	5	10.84	1	0.001
55-69 (n=152)	140	92	12	8	5.69	1	0.017
70+ (n=222)	197	89	25	11	2.56	1	0.11
Self Reported Smoking Status							
Smoker (n=114)	98	86	16	14			
Recent Quitter (n=59)	48	93	3	7			
Ex-smoker (n=206)	191	92	17	8			
Never Smoker (n=332)	289	88	41	12	5.56	3	0.014

^a Total patient numbers for each characteristic which do not sum to the column total are the result of missing data.

^b Missing data for 2 non-consenting patients.

^c Row percentages

Table 2.2 shows significant differences between survey participants consenting to supply a saliva sample, and survey participants who refused to participate in the saliva sample component (non-consenters) on the variables of age, sex and self-reported smoking status. In particular, women were more likely than men to refuse to supply a saliva sample ($p < 0.005$). Patients who were aged 16-34 years were more likely to refuse to participate than patients aged 35-59 ($p < 0.001$),

or people aged 55-69 ($p < 0.01$), but not more likely than patients aged over 70 years. Self reported current Smokers and Never Smokers were more likely to refuse to supply a saliva sample than either Recent Quitters or Ex-smokers. When Smokers and Recent Quitters were compared to Ex-smokers and Never Smokers there were no significant differences found in the consent rate.

Sub-sample for cotinine analysis

The 628 eligible patients who consented to provide a saliva sample, were stratified into the four groups based on self reported smoking status and proportionally more patients were selected from the groups of Smokers and Recent Quitters. A total of 249 (40%) patients were randomly selected to provide a saliva sample.

Other researchers have noted the difficulty of accurately detecting people who had smoked lightly during the days preceding salivary cotinine testing.^{6,21,36,37} Therefore an initial analysis of 25 randomly selected smokers' saliva specimens was undertaken to determine whether low consumption in the preceding days affected cotinine levels and hence made detection difficult. When consumption of cigarettes over the preceding four days was compared with cotinine levels in this sample, it was found that those smoking less than 5 cigarettes in the preceding 2 days had very low levels of cotinine in their saliva.

Table 2.3 shows the number and percentage of saliva samples from total smokers ($n=25$), light smokers (fewer than 5 cigarettes in the preceding 2 days; $n=12$) and moderate smokers (5 or more cigarettes in the preceding 2 days; $n=13$), in this sub-sample, found to have levels of cotinine equal to, or greater than, each

cutpoint. At the cutpoint of 10 ng/ml of salivary cotinine recommended in populations where smoking is intermittent or light,^{23,26,29} 48% of all smokers, 25% of light smokers and 69% of moderate smokers tested positive. These results indicate that salivary cotinine at this cutpoint had poor sensitivity, among the population of hospital patients who were smoking intermittently or lightly.

Table 2.3: Number and percentage of the subsample of N=25 smokers testing positive at various cutpoints of cotinine.

<i>Salivary Cotinine Cutpoint ng/ml</i>	<i>Type of Smoker</i>					
	Total Smokers (n = 25)		Light Smokers^a (n = 12)		Moderate Smokers^b (n = 13)	
	n	(%)	n	(%)	n	(%)
≥ 5	19	(76)	9	(75)	10	(77)
≥ 10	12	(48)	3	(25)	9	(69)
≥ 15	10	(40)	1	(8)	9	(69)
≥ 20	10	(40)	1	(8)	9	(69)
≥ 25	9	(36)	1	(8)	8	(62)
≥ 30	8	(32)	1	(8)	7	(54)
≥ 40	8	(32)	1	(8)	7	(54)
≥ 50	5	(20)	0	(0)	5	(38)

^a Light Smoker - Fewer than 5 cigarettes in preceding 2 days.

^b Moderate Smoker - 5 or more cigarettes in preceding 2 days.

Based on this finding, saliva specimens from smokers who reported smoking fewer than 5 cigarettes in the preceding 2 days were not included in the cotinine analysis sample (n=37 light smokers excluded). Of the 212 patients remaining in the cotinine analysis sample, 192 (91%) provided sufficient saliva for analysis, and none reported chewing nicotine gum in the preceding 4 days. The final composition

of the cotinine analysis sample was as follows: Smokers (n=40) i.e. patients who reported smoking 5 or more cigarettes in the last 2 days, representing 35% of all self reported Smokers; Recent Quitters (n=34) i.e. patients who reported quitting smoking some time in the last 3 months, representing 58% of all self reported Recent Quitters; Ex-smokers (n=53) i.e. patients who reported quitting smoking more than 3 months ago, representing 26% of all self reported Ex-smokers; and Never Smokers (n=65) i.e. patients who reported never having smoked more than 100 cigarettes in their lifetime, representing 20% of all self reported Never Smokers.

Distribution of cotinine levels in the sample

Figure 2.1 shows the distribution of cotinine levels for the different categories of self reported smoking status. This figure shows that the cotinine profile of Recent Quitters more closely resembles that of Smokers than that of the other two non-smoking categories. It also shows that a number of self reported smoking patients were not detected by cotinine, while a number of self reported non-smoking patients had elevated cotinine levels (some of over 100ng/ml).

Table 2.4 shows the cumulative number and percentage of individuals in each self reported smoking status category who tested positive at each cutpoint of salivary cotinine. Column 1 of Table 2.4 shows that at the lowest cutpoint of 5ng/ml, 90% of self reported smokers tested positive, i.e. 10% of smokers were incorrectly classified based on self report. At 10ng/ml, 85% of smokers tested positive, meaning that 15% of smokers were incorrectly classified based on self report.

Table 2.4 also shows the misclassification rate for the three different categories of non-smoking patients (i.e. the proportion of self reported non-smokers who tested positive for cotinine). The proportion of Recent Quitters testing positive on cotinine is consistently higher than that of either Ex-smokers or Never smokers regardless of the cutpoint. At a cutpoint of 10 ng/ml, 62% of Recent Quitters, 17% of Ex-smokers and 12% of Never Smokers tested positive for cotinine. Even at higher cutpoints of 30 ng/ml of salivary cotinine, 44% of Recent Quitters had a positive cotinine result compared to 4% of Ex-smokers and 5% of Never Smokers.

Figure 1: Cotinine values by self reported smoking status

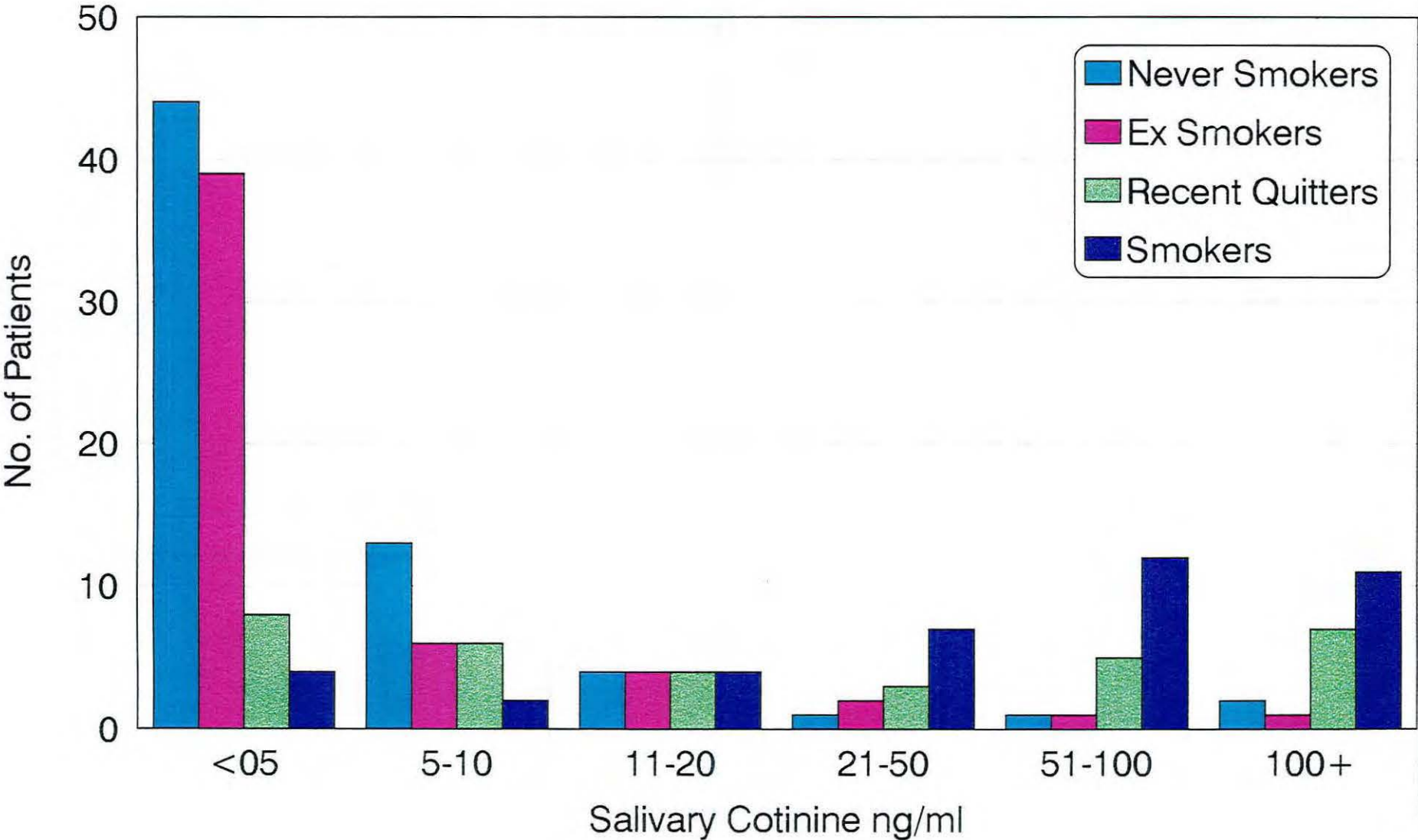


Table 2.4: Percentage of self reporting non-smokers and smokers testing positive with different cutpoints of salivary cotinine in the whole sample of 192 patients.

<i>Salivary Cotinine Cutpoint ng/ml</i>	<i>Self Reported Smoking Status</i>											
	Smokers^a (n = 40)			Recent Quitters (n = 34)			Ex- Smokers (n = 53)			Never Smokers (n = 65)		
	n	%	C.I	n	%	C.I	n	%	C.I	n	%	C.I
≥ 5	36	90	(81-99)	26	76	(62-90)	14	26	(14-38)	21	32	(21-43)
≥ 10	34	85	(74-96)	21	62	(46-78)	9	17	(7-27)	8	12	(4-20)
≥ 15	33	83	(71-95)	18	53	(36-70)	5	9	(1-17)	6	9	(2-16)
≥ 20	31	78	(65-91)	16	47	(30-64)	4	8	(1-15)	4	6	(0-12)
≥ 30	26	65	(50-80)	15	44	(27-61)	2	4	(0-8)	3	5	(0-10)

^a Patients who smoked more than 5 cigarettes in the preceding 2 days.

From these results it was possible to calculate an overall disconfirmation rate among self reported non-smokers. The subjects who provided saliva for analysis came from a stratified sample which over-represented Recent Quitters and Smokers, in relation to the proportions these groups represented within the total sample of hospital patients. Hence it was not appropriate to simply pool the results to determine an overall disconfirmation rate among non-smoking inpatients. As shown in Table 2.5, the overall disconfirmation rate among non-smokers was calculated by extrapolating the disconfirmation rate for each category of self reported non-smoker in the saliva cotinine analysis sample, to the total sample of hospital patients participating in the survey (N=711). Using this method it was calculated that 18% of all hospital patients, who self reported as non-smokers, were likely to be disconfirmed.

The average number of days in hospital from day of admission to day of interview was also calculated for patients who tested positive at a cutpoint of 10 ng/ml, and was found to be 6.7, 6.8 and 4.2 days respectively for Recent Quitters, Ex-smokers and Never Smokers. In particular, among Recent Quitters who tested positive for cotinine, it was found that only 1 patient had been in hospital for less than 4 days.

Table 2.5: Calculation of the overall deception rate among self reported non-smokers.

	<i>Cotinine Analysis Sample (N=192)</i>	<i>Survey Sample Estimates (N=711)</i>	
	% Disconfirmed ^a	No. of survey patients ^b	Estimate of no. of patients disconfirmed ^c
<i>Recent Quitters</i>	62%	59	36
<i>Ex-smokers</i>	17%	206	35
<i>Never Smokers</i>	12%	332	39

^a Percentage of each smoking status category disconfirmed.
^b Number of patients in the survey population who self reported in each category of smoking status.
^c The percentage of patients whose self report was disconfirmed in the saliva sample population x the number of survey participants in each self reported smoking category (eg 0.62 x 59 =36)Table 4.

DISCUSSION

In this cross-sectional study of hospital inpatients, comparing self-reported smoking status with biochemical assay of cotinine in saliva, it appeared that a large proportion of patients, who reported that they had quit smoking less than 3 months ago but more than 4 days ago, were probably not telling the truth. This group was different from those who reported quitting smoking more than 3 months ago and those who reported never having smoked. These results have important implications for the clinical management of smoking in-patients and for the delivery of smoking cessation programs based on in-patient self report. However, the data need to be interpreted in the light of potential selection and measurement bias.

Possible explanations for the proportions of self reported non-smokers testing positive on salivary cotinine include passive smoking, test error and deception. It is extremely unlikely that the positive test results were due to passive smoking in the days immediately preceding testing, as the average length of stay in the smokefree hospital building environment, among patients testing positive for cotinine, was greater than 4 days and only one Recent Quitter, who tested positive for salivary cotinine, had been in hospital for less than 4 days. In view of the ban on smoking in hospitals, it is unlikely that exposure to environmental smoke was high enough in hospital to elevate cotinine, particularly as the salivary cotinine analysis was unable to detect 15% of patients who reported actively smoking more than 5 cigarettes in the preceding 2 days.

A second possible explanation for the misclassification results among non-smokers is test error in the biochemical assay. Test error, however, would be

expected to have a similar effect in all three groups of non-smokers. Murray et al³⁸ have described misclassification rates among non-smokers as being a combination of test error and deception. They found a misclassification rate of 8% among self reported non-smokers in their control group compared to 17% in their intervention group and concluded that this difference was equivalent to at least the minimum deception rate occurring in the intervention group. In the current study, if it is assumed that the total misclassification rate of 12% found among Never Smokers represents the false positive rate (test error) of the test, then the minimum level of deception occurring in the other two groups would be 5% among Ex-smokers and 50% among Recent Quitters. It is, however, unlikely that the misclassification among Never Smokers is totally due to test error and more likely that some deception occurred among this group of Never Smokers.

The most plausible explanation of the results is that the disconfirmation rate among non-smokers, at 10 ng/ml of salivary cotinine, is due to deception. Other researchers have noted this difference in deception rate in relation to the category of non-smoking reported, with those apparently deceiving more likely to report a recent smoking history than no smoking history. Wagenknecht et al²¹ found in a random community survey as part of the CARDIA study, that 11.2% of self reporting Ex-smokers, compared to 2.6% of self reporting Never smokers, were deceiving. Similarly Glasgow et al found that a shorter duration since quitting predicted disconfirmation.¹²

Another finding of the present study was that salivary cotinine is probably a flawed gold standard for measuring smoking status within the hospital setting. The study found that 15% of patients who reported smoking 5 or more cigarettes in the preceding 2 days were classified as non-smokers at a cutpoint of 10 ng/ml of

salivary cotinine. This result could be due to either deception, test error, or the insensitivity of salivary cotinine in detecting low levels of cigarette consumption. It is unlikely that these patients are deceiving when they report as smokers. There would seem to be no plausible reason for non-smokers to report as smokers upon admission to hospital. It is also unlikely that these results are due to test error. As Table 2.4 shows, there is clear evidence of a dose response relationship between heavy and light smokers. It is therefore more likely that salivary cotinine assay is not sensitive enough to detect the intermittent smoking occurring among this inpatient population. This inability of a biochemical measure to detect low levels of consumption in field settings has been reported by other researchers. Woodward⁶ found that 58% of smokers who consumed less than 5 cigarettes per day were not detected using a cutpoint of 17.5 ng/ml of salivary cotinine. Williams³⁹ found that 88% of adolescents who smoked 1-5 cigarettes per day were not detected by assay of thiocyanate in saliva. Therefore it seems likely that the detection rate of smokers, in this setting, using salivary cotinine, may be an underestimate of the true prevalence of smoking.

The 18% of all self reported non-smokers calculated to be deceiving, more closely resembles the deception rates found among participants in smoking cessation trials involving high demand characteristics,⁹⁻¹¹ and among outpatients with smoking related diseases (Table 2.1),^{5,8} than the usual figure of less than 5% found in general community surveys.^{4,5,7} Glasgow et al¹² also found the highest disconfirmation rates among hospital patients. Therefore it seems likely that among the population of hospital patients, demand characteristics exist which favour the reporting of non-smoking status.

The findings of the present study have important implications for prevalence surveys, for the accuracy of medical records, for clinical management of patients and for proactive delivery of smoking cessation education programs within the hospital setting. In terms of prevalence surveys, the findings imply that self reported smoking rates are likely to substantially underestimate the actual prevalence of smoking among hospital patients and that some form of biochemical validation of smoking status is required. The inaccuracy of self report in this setting casts some doubt on the accuracy of self reported smoking status on patients' medical records. This in turn has ramifications for the clinical management of patients. Biochemical measurement of smoking status using salivary cotinine has the advantages of a long half life, and ease of collection. However, it has the potential to miss smokers consuming low quantities of cigarettes. There is a need to develop more accurate biochemical tools for use in this setting, particularly in the measurement of recent quitting. Abrams et al²⁹ stress the need for research to establish the limits of sensitivity of salivary cotinine in the field setting, particularly when trying to determine recent quitting between 7 and 30 days.

In assessing patients for proactive treatment programs, the results indicate that many patients who would benefit from such programs may be missed. Apart from refining biochemical measures for use in this setting, an alternative approach to increasing accuracy, particularly when the purpose of measurement is to establish risk status or for proactive clinical management, might be to utilise a broader definition of "smoker". Altering the usual definition of "smoker" from a person who currently smokes, to one which includes anyone who has smoked during the last 3 months, that is Recent Quitters, would increase the detection of smokers. The small group of true Recent Quitters, those who had quit smoking in the last 3

months, would not be adversely affected by inclusion in this definition, and could benefit from smoking cessation programs aimed at relapse prevention. This approach may be particularly useful in situations where biochemical validation of self report is not feasible.

This study found that self report was not an accurate measure of smoking status in the hospital setting, and suggests that smokers are likely to deceive by describing themselves as Recent Quitters (in the last 3 months). The implications are that biochemical validation is warranted for prevalence surveys in this setting, and that the definition of a smoker should be broadened to "anyone who reported smoking in the last 3 months", for intervention programs and clinical management.

In the next chapter the impact of hospitalisation on the smoking behaviour of patients will be explored, both short and long term. Chapter 3 will also describe the characteristics of smokers and the factors associated with quitting within this setting.

CHAPTER 3

**Prevalence of smoking and
quitting among hospitalised
patients**

INTRODUCTION

The impact of the health burden of smoking is felt directly within the hospital system, with an estimated 38,000 hospital separations in NSW caused by active smoking in 1989, and with direct in-patient costs of \$144 million.¹ An admission caused by tobacco is more expensive to treat, costing \$3,700, compared to the average cost of all acute care admissions of \$2,000.¹ As lifestyle diseases are the major cause of illness and death,² hospitals have a strong financial and ethical incentive to expand their traditional role of diagnosis and treatment of disease to include detection and treatment of lifestyle risk factors for these disease states.

The prevalence, and the factors associated with smoking among hospital patients, provide important information about the potential reach of any interventions, and assists in the effective targeting and design of cessation interventions. It is also important to know what patients are currently doing about their smoking when they enter hospital. Smoking may be a causative factor within the presenting illness, and may interfere with treatment and recovery. Hospitals are smokefree environments and patients may experience withdrawal difficulties while in hospital if in fact they are abstaining.

Few studies have examined the prevalence of smoking among hospital patients.^{3,4} Emmons et al⁵ found that the unvalidated self reported smoking prevalence at admission, among 304 inpatients from a specialised cardiovascular disease unit, was 16%, and attributed this low prevalence figure to the age of the population (average age 65 years). Glasgow et al⁸ found that 19% of their convenience sample of 526 patients, reported being smokers prior to hospitalisation.

These prevalence figures are considerably lower than the 25%-30% smoking rate found among the general community.^{6,7} Most studies of hospital patients assume that the prevalence of smoking among hospital patients will be the same as the national average.⁴

However there is still relatively little systematic study of smokers within the hospital setting providing data on the prevalence of smoking among hospital patients and the impact of admission on smoking behaviour, both during hospitalisation and in the long term.^{3,8} Few studies have explored the impact of hospitalisation on the smoking behaviour of patients *during* their hospital stay.^{3,8,9} Most of the current data come from studies of patients with smoking related diseases, and suggest that many smokers, who are hospitalised with smoking related diseases, quit smoking during their stay, with reported cessation rates of between 20% - 80%.¹⁰ Goldstein et al⁸ in a convenience sample of 517 general in-patients in a US hospital, found that 51% of smokers reported stopping smoking after admission to hospital. Similarly, Glasgow et al,³ in a retrospective study of people 12 to 18 months after their hospitalisation, found that of 526 people who reported being smokers prior to their hospitalisation, 51% recalled abstaining during hospitalisation, 37% recalled trying to quit or remain abstinent at some time after discharge and 16% reported abstinence at the one year post discharge interview. This study also found that predictors of changing smoking behaviour were; being older, being hospitalised with a smoking related condition, and (in direct contrast to the findings of general community surveys), being a heavy smoker.³ Thus there is some evidence to suggest that up to half of the population of hospitalised smokers are reporting quitting smoking during their stay.

A small number of recent studies have explored the efficacy of smoking

cessation interventions in increasing the post-discharge quit rate among hospitalised smokers.^{4,10,11} In one recent study, Glasgow et al⁹ examined the biochemically validated smoking cessation rate, 12 month post discharge, among patients who had been randomly allocated at hospital admission to either an intervention or control group for a smoking cessation trial. Of the 666 control group smoking patients in this study (i.e. who reported being smokers in the 3 months prior to hospital admission and who received no hospital intervention), 110 (16.5%) reported being abstinent at 12 months post discharge interview. These patients were asked, after providing self report data, to supply a saliva sample for analysis. The data show that of the 110 self reported quitters, 18% refused to supply a saliva sample, 14% changed their smoking status to "smoker" (in the 2 weeks between self report and saliva test), 6% had missing data, and a further 9% tested positive (more than 25 ng/ml) for salivary cotinine. Conservatively (i.e. assuming that all those who were not tested, were in fact smokers), these results suggest a potential maximum of 47% of these smokers, who reported being abstinent 12 months post discharge, are likely to be still smoking. Even using this conservative estimate of long term quitting, this study suggests that 52 (8%) of all the 666 smokers admitted to hospital, were found to be validated non-smokers 12 months after discharge. Thus the control group data in this study seems to suggest that the hospital stay could be associated with a naturalistic quit rate of 8%, 12 months after discharge. Whilst this was a control group and therefore did not receive any interventions, the participants were nevertheless part of a smoking cessation trial, which may have inflated the cessation rate.

The study reported in this chapter aimed to determine the self reported and cotinine corrected prevalence of smoking and the factors associated with self

reported smoking among hospital inpatients. The study also aims to determine, among the population of patients who reported smoking in the preceding 3 months, the prevalence of quitting and the characteristics of those who quit on hospital admission, and the rate of maintained abstinence 9 months post discharge.

METHOD

SAMPLE

The methodology for gaining access to patients in the hospital setting, for establishing eligibility and for recruiting patients into the main survey have previously been described in Chapter 2.

PROCEDURE

The protocol for the study has also been described in Chapter 2. After determining the eligibility of all patients on the ward, the Nursing Unit Manager(NUM) was asked by the interviewer to provide information from the medical records about whether the patient was scheduled for or had received anaesthesia, and was asked to determine whether the patient was able to move around (mobility) (See Appendix 2.3). Responses were recorded by the interviewer on the Patient Checklist (Appendix 2.1). After being introduced to each patient by the NUM, and determining consent, (as described in Chapter 2), the interviewer proceeded to conduct the brief bedside interview to determine smoking status. Interviewers asked each patient to point to the category which best described their current smoking behaviour (See Appendix 2.3). Patients were then given one of 3 colour coded questionnaires based on their self reported smoking status: Smokers (see Appendix 3.1), Ex-smokers which included Recent Quitters (see Appendix 3.2) and Non smokers (see Appendix 3.3). These questionnaires were collected at the end of the data collection day. The procedure for collection and analysis of saliva samples has been described earlier (see chapter 2).

All patients who reported quitting smoking in the previous 3 months were followed up nine months post discharge. Approximately nine months post-discharge,

these patients were sent an Information Letter (see Appendix 3.4), informing them that the interviewer would telephone them shortly to ask for their consent to participate in a brief follow-up telephone interview (see Appendix 3.5), asking about their current smoking status, and a possible home visit to collect another saliva sample (if selected to do so). Patients were again informed in this letter that their saliva sample would be analysed for cotinine, a tobacco by-product. Telephone contact was initiated within 1-3 days of estimated receipt of the letter. Five attempts were made to contact participants. Consenting subjects were asked about their smoking status, and those who reported being abstinent were asked to nominate a time within the next 24 hours for the interviewer to visit and collect a saliva sample.

MEASURES

Nursing Unit Manager interview

Measures of age, gender, anaesthesia ("*having had or being scheduled to have a surgical procedure*"), date of admission and principal diagnosis were obtained from an audit of the Medical records performed by the Nursing Unit Manager, either on the evening prior to data collection or during the interview (see Appendix 2.2 and 2.3). A patient's mobility, defined as "*ability to move around*", was assessed by the NUM.

Brief Patient Interview

Patients were read the list of smoking categories and asked to "*point to the category listed on the card which best describes your smoking status:*

Smoker: *You have smoked cigarettes, cigars or pipes in the last 4 days.*

Recent Quitter: *You have quit smoking sometime in the last 3 months.*

Ex-smoker: *You have quit smoking more than 3 months ago.*

Never smoker: *You have never smoked more than 100 cigarettes, cigars or pipes in your life."*

Patient Self-completed Questionnaire

This self completed questionnaire was developed in consultation with a panel of experts (including behavioural scientists, nurses and medical practitioners). Some of the items were developed from both published and unpublished research,^{6,12,13} and were designed to be compatible with the Australian Bureau of Statistics data. Other items specific to the hospital setting were generated for this questionnaire. The questionnaire was first circulated to the members of the expert panel and after several redraftings was completed by a small group of nurses and patients. Their feedback was incorporated, and after an additional round (as described), the final instrument reflected, internal consistency, comprehensibility and a logical flow .

Sociodemographic Variables

Levels of education completed, marital status, country of birth, current employment status, and main lifetime occupation were measured in the patient questionnaire.

Smoking History Variables

Measures of consumption, duration of smoking, and cessation attempts were obtained from the patient questionnaire. Consumption of cigarettes prior to admission was measured with the questions, "*When you were smoking regularly how many cigarettes, cigars or pipes did you smoke on an average day?*" (for Recent

Quitters), or alternatively " *Before you came into hospital, how many cigarettes would you have smoked on an average day?*" (for Smokers). The average daily consumption after admission for continuing smokers was measured from the 4 day smoking diary.

Duration of smoking was measured by response to the question, "*For how long altogether had/have you smoked cigarettes, cigars or pipes?*" Cessation attempts were measured with the question, "*How many times have you tried to quit smoking altogether?*". In order to measure exposure to passive smoking in the home, all patients were asked "*Does anyone living in your household smoke cigarettes, cigars or pipes?*"

Smoking cessation at admission

Smoking cessation in relation to hospital admission was calculated for all patients who reported having been smokers during the preceding three months (i.e. for both Smokers and Recent Quitters). "Quitting smoking at admission" was defined as ceasing to smoke at some time prior to admission or on the day of admission, whereas "continuing to smoke after admission" was defined as consuming cigarettes on any day after the day of admission. For the group of Smokers, information from the 4 day smoking diary question and from their date of admission were used to calculate cessation after admission. Recent Quitters were asked "*Did you quit smoking: 1) After you came into hospital; 2) On the day you came into hospital; 3) The day before you came into hospital; 4) The week before; 5) More than a week before;*" Those who responded with option 1 were classified as having continued to smoke in hospital after admission day, the remaining response options were classified as "Quit smoking at admission". Therefore the group of

patients defined as having quit smoking on admission comprised Recent Quitters, who had not smoked after their admission to hospital and Smokers who reported not smoking any cigarettes on all of their post admission days in hospital. The categories of Smoker and Recent Quitter were collapsed as a result of the findings in Chapter 2 for much of the analysis of this chapter.

Follow-up interview - 9 month post-discharge

In the telephone interview, point prevalence abstinence was used to measure cessation, rather than continuous abstinence. Patients were asked whether they had smoked any cigarettes, cigars or pipes in the last 4 days. Only those subjects who reported zero consumption of cigarettes, cigars or pipes in the preceding 4 days, were asked to supply a saliva sample within the next 24 hours.

Cotinine assay

The measurement of cotinine in saliva has been described in detail in Chapter 2.

Coding

Patients' principal diagnoses as reported by the NUM were coded by a trained nurse (see Coding for Principal Diagnosis, Appendix 3.6). This process was repeated as a reliability check and any discrepancies were reconciled. A random sample of 40 of her coding responses was selected and checked by a medical practitioner for accuracy.

RESULTS

SAMPLE CHARACTERISTICS

A description of the survey sample has previously been reported in Chapter 2 and in Table 3.1. Of the 1552 inpatients in the 52 wards, 808 (52%) were considered eligible by the NUM, and 711 of these eligible patients (88%) consented to participate in the survey. Compared to eligible patients, ineligible patients were less mobile (43% vs 74%), slightly older, in hospital for longer and had a higher proportion of males. Compared to consenting patients, non-consenters were slightly older (mean age of 60 vs mean age of 54), in hospital for longer (12 days vs 9 days), were less mobile and had a slightly lower proportion of males. Of the consenting population, 64% were females, 62% were not scheduled to receive anaesthesia, 75% were mobile within the hospital, their average age was 54 years and they had been in hospital for an average of 9 days at bedside interview.

PREVALENCE OF SMOKING IN THE 3 MONTHS PRIOR TO HOSPITAL INTERVIEW

Table 3.2 compares the prevalence of smoking among hospital patients (both self reported and cotinine corrected), with the prevalence of self reported smoking among a recent community survey.⁶ The first row of Table 3.2 shows that of the 711 eligible consenting inpatients, 114 (16%) reported having smoked in the last 4 days (Smokers), 59 (8%) reported not smoking in the last 4 days and having quit smoking sometime in the last 3 months (Recent Quitters), 206 (29%) reported having quit smoking more than 3 months ago (Ex-smokers) and 332 (47%) reported never having

smoked more than 100 cigarettes, cigars or pipes in their life (Never Smokers).

Table 3.1: Characteristics of study population, eligible, ineligible, non-consenting and consenting samples.

<i>Characteristics</i>	<i>Patients</i>									
	All patients in hospital on sampling days		Ineligible		Eligible		Non- Consenters		Consenters	
	n	%	n	%	n	%	n	%	n	%
Sex										
Male	624	(40)	338	(46)	286	(36)	30	(31)	257	(36)
Female	920	(60)	403	(54)	517	(64)	66	(69)	452	(64)
Anaesthetic										
Yes	548	(36)	243	(34)	305	(38)	33	(34)	273	(38)
No	978	(64)	478	(66)	500	(62)	64	(66)	437	(62)
Mobility										
Yes	916	(60)	308	(43)	598	(74)	67	(69)	532	(75)
No	611	(40)	403	(57)	208	(26)	30	(31)	179	(25)
	Mean	(Sd)	Mean	(Sd)	Mean	(Sd)	Mean	(Sd)	Mean	Sd
Age	59	(22)	64	(21)	55	(21)	60	(19)	54	(21)
Length of stay	14	(29)	19	(35)	10	(20)	12	(17)	9	(20)
Total	1552		744	(48)	808	(52)	97	(12) ^a	711	(88) ^a

^a Percentage of all eligibles (n = 808).

N sizes vary within each category. Percentages are calculated from the total number of patients who have complete data for that category.

The second row of Table 3.2 presents the number and percentage of self reported non-smokers who were found to be smokers, defined by having more than 10 ng/ml of salivary cotinine (Chapter 2). The third row of Table 3.2 shows the corrected estimate of smoking prevalence among hospital patients when the deception rates found in the subsample are extrapolated to the whole sample. (Calculations of this estimate of true prevalence can be found in Chapter 2, Table 2.5). This corrected estimate of smoking among hospital inpatients shows that 32% are likely to be Smokers, 3% Recent Quitters, 24% Ex-smokers and 41% Never Smokers.

The last row of Table 3.2 shows the prevalence of smoking found in a recent general community survey (Hill et al 1989^f). After correction for cotinine, the smoking prevalence figures for the study approximate those of the general population, with a tendency to have a slightly greater number of "ever smokers" (Smokers 32% vs 29%, Recent Quitters 3% vs 1% and Ex-smokers 24% vs 23%) among the hospital patient population than among the general population, and slightly fewer Never Smokers (41% vs 45%).

As cotinine corrected data were available for only a small subsample of patients, self report data was used as the outcome measure for the remainder of this chapter. However in keeping with the findings of the cotinine study, the definition of a smoker has been broadened to include anyone who reported smoking in the previous 3 months (i.e. Smokers and Recent Quitters).

Table 3.2: Self reported and cotinine corrected prevalence of smoking in the population of hospital inpatients.

<i>Prevalence</i>	<i>Smoking Status</i>							
	<i>Smoker ^a</i>		<i>Recent Quitter ^b</i>		<i>Ex-Smoker ^c</i>		<i>Never Smoker ^d</i>	
	n	%	n	%	n	%	n	%
Hospital Inpatients								
<i>Self Report</i> (<i>N</i> = 711)	114	(16)	59	(8)	206	(29)	332	(47)
<i>Deception Rates among non-smokers^e</i> (<i>N</i> = 192)	NA	NA	21	(62)	9	(17)	8	(12)
<i>Cotinine corrected estimate of prevalence^f</i>	225	(32)	22	(3)	171	(24)	293	(41)
General Population								
<i>D Hill 1989⁶</i> (<i>N</i> = 4820)	1377	(29)	59	(1)	1119	(23)	2185	(45)

^a Smoked in last 4 days.
^b Quit sometime in last 3 months (no smoking in last 4 days).
^c Quit smoking more than 3 months ago.
^d Never smoked more than 100 cigarettes, cigars or pipes during lifetime.
^e Those self reported non-smokers who tested positive at 10 ng/ml of salivary cotinine.
^f The proportion of RQs, ExSs, and NSs testing positive for salivary cotinine in the randomly selected stratified subsample (n=192) was applied to the total sample of 711 patients. Therefore it was estimated that 35 Recent Quitters (62% of 59); 36 Ex-smokers (17% of 206) and 40 Never Smokers (12% of 332) from the total sample could be estimated to be smokers. When these estimates were added to the patients who self reported as smokers (n=114) the total estimated number of smokers in the large sample was 225 (i.e. 114+35+36+40 = 225)

VARIABLES ASSOCIATED WITH SMOKING STATUS

Chi squared analyses were undertaken to determine whether sociodemographic or hospital stay variables were associated with self reported smoking status. In light of the findings in Chapter 2 that many of the Recent Quitters (62%) were likely to have misreported their smoking status, for the purposes of describing the characteristics of patients who are smokers within the hospital setting, the two groups have been joined. Therefore, variables were assessed in relation to three categories of

smoking status, Smoker (i.e Smokers plus Recent Quitters), Ex-smoker and Never Smoker. The results of these Chi-squared analyses are presented in Table 3.3.

Sociodemographic Variables

As multiple tests for significance require a more conservative level of probability in order to account for the probability of significance by chance, the Bonferroni correction was used to calculate a significance level of $p < 0.003$, for the multiple tests carried out in Table 3.3.¹⁴ Based on this calculation, Table 3.3 shows that there was a statistically significant association between smoking status and the variables of gender, age, main lifetime occupation and living with a smoker. Males were more likely to be smokers or ex-smokers than were females, with a total of 73% of hospitalised males being "ever" smokers compared with 41% of females. Patients in the 16-34 year age group, were more likely to be smokers than patients aged over 70 years, in fact only 8% of patients over the age of 70 were smokers. The data comparing age, sex and smoking status is presented in Appendix 3.7.1. From this table it was calculated that 32% (54/167) of patients who reported smoking in the last 3 months were women aged 16-34.

Table 3.3 also shows a trend towards significance for marital status whereby single, divorced or widowed patients appeared to more likely to be smokers than married patients. Compared to employed patients, there was also a trend towards unemployed patients being significantly more likely to be smokers ($p < 0.009$), however, this was not significant at the conservative 0.003 probability level. Similarly compared to white collar workers, blue collar workers were significantly more likely to be smokers ($p < 0.001$), however there were no significant differences between white collar workers and people listing home duties as their main lifetime occupation. People who

lived with a smoker were significantly more likely to be a smoker ($p < 0.0001$)

The characteristics of the group of hospitalised smokers were calculated by the number of smokers in each category divided by the total number of smokers who responded to that item, and therefore the denominator differs for each variable. The study found that 71% of hospitalised smokers had achieved Year 10 schooling or less; 29% were currently employed, 30% engaged in home duties, 19% were retired, and 22% were unemployed or unable to work; 66% lived with a smoker; 76% were mobile in the hospital; 60% were not having anaesthetic; and 24% were admitted with a diagnosis which could be related to smoking.

Hospital stay variables

Table 3.3 shows that no hospital stay variables were associated with self reported smoking status at the conservative probability level of 0.003, however, there was evidence of a trend towards patients admitted with a diagnosis related to smoking to be more likely to be self reported Never Smokers and Ex-smokers, rather than self reported Smokers ($p < 0.007$). Of patients admitted with a smoking related diagnosis, 56% were either current or past smokers compared to 44% who were Never Smokers. In terms of the variable length of stay, t-test analysis showed that patients who had been in hospital for a longer period of time were significantly less likely to be Smokers than Never Smokers.

Table 3.3: Self reported smoking status by sociodemographic and hospital stay characteristics of the sample. (N=706)

Characteristics	Smoking Status						X ²	df	p
	Smoker in the last 3 months (n=173)		Ex-Smoker (n=206)		Never Smoker (n=332)				
	n	%	n	%	n	%			
Sociodemographic									
<i>Gender</i>									
Male (256 ^a)	72	28	115	45	69	27			
Female (449)	96	21	90	20	263	59	72.4	1	0.001
<i>Age</i>									
16-34 (195)	66	34	38	19	91	47			
35-69 (287)	84	29	96	33	107	37			
70+ (222)	17	8	71	32	134	60	67.1	4	0.001
<i>Education Completed</i>									
Year 10 (492)	119	24	140	28	233	47			
Year 12/Trade/tertiary (210)	48	23	65	31	97	46	0.47	1	0.79
<i>Marital Status</i>									
Married/De facto (432)	93	22	148	34	191	44			
Divorced/widowed/single (270)	75	28	56	21	139	51	9.5	1	0.009
<i>Country of Birth</i>									
Australia (617)	152	25	174	28	291	47			
Overseas (86)	16	19	30	35	40	46	2.3	1	0.31
<i>Employment Status</i>									
Employed/student(171)	44	26	46	27	81	47			
Home duties (215)	46	21	44	21	125	58	3.21	1	0.07
Retired (207)	28	14	85	41	94	45	1.69	1	0.19
Unemployed/unable to work (89)	33	37	29	33	27	30	6.73	1	0.009
<i>Lifetime Occupation</i>									
White collar (216)	42	19	72	33	102	47			
Blue collar (180)	62	34	60	33	58	32	13.63	1	0.001
Home duties/No occupation (287)	62	22	60	21	165	57	1.28	1	0.26
<i>Passive smoke exposure</i>									
Lived with a smoker (217)	108	50	41	19	68	31			
Did not live with a smoker (465)	56	12	152	33	257	55	115	1	0.000

Table continued over page

Characteristics	Smoking Status						X ²	df	p
	Smoker in the last 3 months (n=173)		Ex-Smoker (n=206)		Never Smoker (n=332)				
	n	%	n	%	n	%			
Hospital Stay									
Mobility									
Able to move around (528)	128	24	154	29	246	47			
Unable to move around (177)	40	23	52	29	85	48	0.2	1	0.9
Anaesthetic									
Has or will have (271)	68	25	68	25	135	50			
Has not or will not have (435)	100	23	138	32	197	45	3.6	1	0.17
Principal Diagnosis									
Smoking Related disease (207)	39	19	77	37	91	44			
Non-Smoking related (477)	123	26	123	26	231	48	10.0	1	0.007
	Mea n	Sd	Mea n	Sd	Mean	Sd	t		p
Length of Stay	6.6	8.6	8.4	15.6			-		0.16
		7					1.4		
			8.4	15.6	11.2	25.8	-		0.12
							1.6		
	6.6	8.6			11.2	25.8	-		0.00
		7					2.9		3

^a Percentages are calculated from the total no. of patients in each category (row).

p < 0.003 = significant

FACTORS ASSOCIATED WITH HAVING SMOKED IN THE LAST 3 MONTHS

A backward elimination logistic regression analysis was undertaken, using the BMDP statistical package LR procedure, to determine whether sociodemographic and

hospital stay variables were associated with having smoked in the last 3 months. The outcome variable was smoking (in the last 3 months) versus not smoking (Ex-smokers and Never Smokers). The sociodemographic variables used in this logistic regression were gender, age, education completed, marital status, country of birth, main lifetime occupation, and passive smoking. The hospital stay variables used were principal diagnosis and length of hospital stay. The results are presented in Table 3.4 and show that patients who lived with a smoker were 6 times more likely to be a smoker than patients who did not live with a smoker (CIs: 3.9, 9.1). Patients aged 16-34 were 6.2 times (CIs:3.1, 12.2) more likely to be a smoker, and patients aged 35-69 were 5.3 times (CIs:2.8, 9.9) more likely to be a smoker than a person aged over 70. The odds 2 for marital status suggests that the probability of being a smoker is about twice as high for single patients as for married patients. Blue collar workers are 2.9 times (CIs:1.7, 5.1) more likely to be smokers than white collar workers. Since the 95% confidence interval for *home duties* includes the value of one, this suggests that while some difference in the probability of being a smoker has been observed between white collar workers and those whose occupation is *home duties*, this difference may not be significant. The variables most strongly associated with being a smoker appear to be living with a smoker, being under 70, single and a blue collar worker.

Table 3.4: Backward elimination logistic regression factors associated with being a self reported smoker.

Variable names	Parameter Estimate (Coeff)	Standard Error(SE)	Odds Ratio	Lower CI 95% (OR)	Upper CI 95% (OR)
Lives with a smoker					
No					
Yes	1.7923	0.2152	6.00	3.9369	9.1536
Age					
Over 70					
16-34 years	-1.8233	0.3477	6.19	3.1328	12.239
35-69 years	-1.6637	0.3203	5.28	2.8176	9.8911
Marital Status					
Married					
Single/divorced/widowed	0.7522	0.2186	2.12	1.3825	3.2563
Main Lifetime Occupation					
White collar					
Blue collar	-1.0859	0.2776	2.96	1.7199	5.1020
Home duties	-0.3851	0.2579	1.47	0.8865	2.4366

p<0.05

SMOKING CESSATION ON ADMISSION

Table 3.5 shows the percentages of all Smokers in the last 3 months who reported quitting on admission to hospital and continuing to smoke at admission, across the 6 hospitals in the study. The percentage who quit smoking on admission varied across the hospitals from 39% to 64% with an average quit rate on admission of 56% across all hospitals.

Table 3.5: Smoking cessation at admission.

<i>Hospital</i>	<i>Smoker in last 3 months (n=168)</i>				Total Smokers
	<i>Continued smoking after admission</i>		<i>Ceased smoking on admission</i>		
	n	% ^a	n	%	
1	12	(55)	10	(45)	22
2	14	(61)	9	(39)	23
3	27	(38)	44	(62)	71
4	5	(36)	9	(64)	14
5	7	(44)	9	(56)	16
6	9	(41)	13	(59)	22
Total	74	(44)	94	(56)	168

^a Row percentages.

CHARACTERISTICS OF PATIENTS WHO REPORTED SMOKING CESSATION ON ADMISSION

The Chi squared analyses in Table 3.6 shows that there were no sociodemographic variables significantly associated with quitting smoking on admission to hospital. Among hospital stay variables, patients admitted with a

smoking related condition were significantly more likely to cease smoking on admission to hospital, than those patients with a non-smoking related diagnosis (79% vs 49%), and this was the only variable which differed significantly at the conservative level of significance, calculated according to the Bonferroni correction $p < 0.001$, between patients who quit smoking and those who decided to continue smoking after admission. None of the smoking history variables were significantly related to quitting.

Table 3.6: Characteristics of smokers (in the last 3 months) who quit smoking at admission.

Characteristics	Smoker in the last 3 months						
	Continued smoking after admission (n=74)		Ceased smoking on admission (n=94)		X ²	df	p
	n	% ^a	n	%			
Sociodemographic							
<i>Gender</i>							
Female (96)	44	46	52	54	0.2	1	0.7
Male (72)	30	42	42	58			
<i>Age</i>							
16-34 (65)	34	52	31	48	1.2	1	0.26
35-69 (84)	35	42	49	58			
70+ (17)	4	24	13	76	3.4	1	0.06
<i>Education Completed</i>							
Year 10 (119)	51	45	68	55	0.2	1	0.67
Year 12/Trade/Tertiary (48)	23	48	25	52			
<i>Marital Status</i>							
Married/De facto (n=93)	42	45	51	55	0.02	1	0.87
Divorced/widowed/single (75)	32	43	43	57			
<i>Country of Birth</i>							
Australia (n=152)	69	45	83	55	0.67	1	0.41
Overseas (n=16)	5	31	11	69			
<i>Current Employment Status</i>							
Employed/student (n=44)	20	45	24	55	3.87	3	0.28
Home duties (n=46)	17	37	29	63			
Retired (n=28)	15	54	13	46			
Unemployed/unable to work (n=33)	19	58	14	42			

Table continued over page

Characteristics	Smoker in the last 3 months						
	Continued smoking after admission (n=74)		Ceased smoking on admission (n=94)		X ²	df	p
	n	% ^a	n	%			
Main Lifetime Occupation							
White collar (n=42)	24	57	18	43			
Blue collar (n=62)	23	37	39	63			
Home duties/No lifetime occupation (n=62)	26	42	36	58	1.83	2	0.17
Hospital Stay							
Mobility							
Able to move around (n=128)	60	47	68	53			
Unable to move around (n=40)	14	35	26	65	1.3	1	0.26
Anaesthetic							
Has or will have (n=68)	32	47	36	53			
Has not or will not have (n=100)	42	42	58	58	0.24	1	0.62
Medical Diagnosis							
Smoking Related disease (n=39)	8	21	31	79			
Non-Smoking related. (n=123)	63	51	60	49	10.1	1	0.001
Passive smoke exposure							
Living with a smoker (n=108)	52	48	56	52			
Not living with a smoker (n=56)	21	38	35	62	1.29	1	0.26
	Mean	Sd	Mean	Sd	t		p
Length of Stay							
Mean no. of days	7.6	9.27	5.8	7.45	1.36		0.18
Smoking History							
Consumption							
Cigs/day before admission	18.2	11.5	21.9	13.9	-1.87		0.06
Cigs/day after admission	9.2	8.5	N/A	N/A			
Duration							
Mean number of years as a smoker	24.0	17.07	26.9	18.0	-1.05		0.29
Cessation							
Mean number of attempts to quit smoking	3.47	2.74	4.12	4.56	-1.02		0.31

^a Row percentages

p < 0.005 = significant

SMOKING CESSATION 9 MONTHS POST DISCHARGE

In order to determine the impact of hospitalisation on quitting rates in the long term, patients who had quit smoking in the 3 months prior to hospital interview and been abstinent for at least 4 days at the time of interview (Recent Quitters), were followed up 9 months after their discharge from hospital. Of the 59 patients in this follow-up study, 12 (20%) were non-contactable by telephone after 5 attempts, 10 (17%) had moved interstate or were on long service leave overseas, and 3 (5%) were deceased. Of the 34 (58%) eligible patients, 2 (6% of eligibles) refused consent. Of the 32 eligible consenting patients, 7 self reported as non-smokers. However, 2 of these self reported non-smokers tested positive above 10 ng/ml of salivary cotinine and were reclassified as smokers. Thus, in this sample of eligible consenting subjects, only 5 (15.6%) of the eligible patients who reported quitting in the 3 months prior to hospital admission and who had been abstinent for more than 4 days at hospital interview, were confirmed non-smokers at 9 months after discharge.

Table 3.7 presents the results of this follow-up sample, as well as the calculations of conservative and liberal long term quit rate estimates, for the population of all smokers (in the previous 3 months). The most conservative quit rate calculation was based on the assumption that the 67 (39%) smokers at hospital interview who continued to smoke in hospital would continue to smoke at 9 months post discharge, and that the 47 (27%) patients who had quit smoking in hospital but for less than 4 days, would also be smokers at 9 months post discharge. Thus the quit rate was conservatively calculated by $5/173$ or 2.9%. The most liberal calculation was based on the assumptions that the 67 (39%) smokers at hospital

interview who continued to smoke in hospital would continue to smoke at 9 months post discharge, and that the 47 (27%) patients who had quit smoking in hospital, but for less than 4 days, would quit at the same rate as the subjects who were abstinent for more than 4 days (i.e. is 15.6% or 11.5 subjects would be abstinent at 9 months post discharge). Thus the quit rate was liberally calculated by $(11.5 + 5)/173$ or 9.5%.

Table 3.7: Smoking status at 9 months follow-up among patients who reported having quit smoking for at least 4 days at hospital interview.

	<i>Patients who self reported as Smokers in the 3 months preceding hospital interview (n=173)</i>	
	n	%
Continuing smokers at hospital interview	67	39
Ceased smoking for less than 4 days at hospital interview	47	27
Ceased smoking for more than 4 days at hospital interview (Followed-up 9 months post discharge)	59	34
Patients followed up 9 months post discharge (n=59)		
Eligible Consenters	32	54 ^a
Self reported Non-smokers (biochemically confirmed)	5	15.6 ^b
Calculation of quit rate(n=173)		
Conservative estimate ^c	5	2.9%
Liberal estimate ^d	15.6	9.5%

^a Percentage is of the number of patients followed up (n=59)

^b Percentage is of the number of eligible consenting patients (n=32)

^c *Conservative estimate* assumes that none of the non-consenters, ineligible and patients who reported quitting for less than 4 days at hospital interview, would be non-smokers at 9 months post discharge. Therefore $(0 + 5)/173 = 2.9\%$

^d *Liberal estimate* assumes that the same percentage (15.6%) of non-consenters(2), ineligible(25) and patients who reported quitting for less than 4 days at hospital interview(47), would be non-smokers at 9 months post discharge, as was found among the consenting eligibles (i.e. 11.5 patients non-smoking at 9 months follow-up).

Therefore $(11.5 + 5)/173 = 9.5\%$

DISCUSSION

The findings of this study have several implications for public health generally, as well as for the development of specific smoking cessation strategies for use in the hospital setting. Firstly, it is evident that strategies need to be developed to encourage smoking patients to accurately report their smoking status within the smokefree hospital setting. The prevalence of smoking measured by self report was half (16%) the cotinine corrected estimate of smoking prevalence (32%). Glasgow et al³ found a similarly low prevalence of self reported smoking among a convenience sample of hospital patients (19%), however, no comparison with biochemically validated data was available from that study. Emmons et al⁵ found a prevalence of 16% among a sample of 304 medical inpatients and concluded that the older age of the sample was probably responsible for the low prevalence estimate. This may be true but as no biochemical validation of smoking status was reported, the result might also have been due to deception.

The discrepancy between self reported and biochemically corrected smoking rates has public health implications for determining the size of the target population, and the potential reach of any smoking cessation intervention within the hospital setting. The results indicate that for accurate measurement of prevalence, biochemical validation is essential. In terms of the clinical management of patients and the identification of smokers at admission to hospital, it is unlikely that biochemical measurement of smoking status would be part of usual hospital admission procedure. In this case the implications of the study are that utilising a broader definition of "smoker" to include patients who reported

smoking during the preceding 3 months, would increase the accuracy of self report measurement, and identify 24% of the patient population as smokers, as compared to 16% by self report and an estimated 32% by salivary cotinine.

Secondly, based on the cotinine corrected data (Table 3.2), the prevalence of smoking and of ex-smoking among hospital patients was found to be marginally higher among hospital in-patients than among the general population, whereas the prevalence of never smoking was slightly lower among hospital patients than among the general population. Further research is needed to determine whether in fact never smokers are less likely to be represented in the population of hospital patients.

The third implication of the study is that the hospital setting represents an excellent access point for targeting smokers from those groups which have high prevalence of smoking, or who because of their sociodemographic characteristics are difficult to reach with smoking cessation messages. The results of the logistic regression analyses showed that patients who were under the age of 70, whose main lifetime occupation was blue collar work, who were unmarried, and who lived with a smoker were more likely to be smokers. Thus the hospital setting would be an ideal access point for reaching low socioeconomic smokers who are at the greatest risk of mortality and morbidity,¹⁵ have the highest smoking rates in the community¹⁶ and are often the most difficult to reach with health promotion information.

Fourthly, the characteristics of the population of hospitalised smokers described in this study provide useful information for the design of hospital based smoking cessation interventions. The finding that only 29% of in-patient smokers are employed, implies that the costs of smoking cessation interventions should be

kept to a minimum. This is particularly critical in the prescription of nicotine replacement therapy within this setting. The 71% of smoking in-patients not in the paid labour force are also not likely to be reached by workplace smoking cessation programs. The average age of hospital in-patients in the study was 59 years, yet the majority of smoking in-patients were younger than this (63% were under 55) and a large proportion were aged under 35 (40%). This implies that smoking cessation interventions can be specifically targeted at this younger age group, and that the image of hospitals containing mostly older smokers is not accurate, as only 8% of patients aged over 70 were smokers.

The study also found that of all in-patient smokers 32% were females aged under 34. This age group has the highest rates of female smoking (36%)¹⁶ and their high numbers in the in-patient smoking population supports the conclusion that targeting smokers within the hospital setting provides an excellent access point for reaching groups with high prevalence of smoking, groups it would otherwise be difficult to access and for which there would be a good long term public health benefit to be gained by successful intervention to encourage quitting. The finding that the highest level of schooling completed by 71% of in-patient smokers was Year 10 suggests that self help materials should be screened for readability levels, and that in developing new materials for use in this setting, written text should be kept to a minimum and maximum use made of audiovisual material. Meade et al¹⁷ have found that the reading level of primary care smoking patients is lower than the reading level (SMOG assessed) of a wide selection of self help smoking material. Given that men and women outside the workforce are more likely to smoke and that men (aged 25-64 yrs) with low education levels are 85% more likely to smoke,¹⁸ and that low socioeconomic groups have poorer health, more risk factors, use doctors

more and preventive services less,¹⁹ the hospital presents a unique opportunity to target these groups with preventive care.

Of interest is the finding that 24% of smoking patients were admitted with a diagnosis related to smoking, compared to 39% of Ex-smokers and 27% of Never Smokers ($p < 0.007$). Whilst this was not significant at the conservative probability level of $p < 0.003$, there was a trend towards significance. Ex-smokers may have decided to quit smoking as a result of the early symptoms or early diagnosis of their condition (in the months or years prior to hospital admission). The 27% of Never Smoking patients admitted to hospital with a diagnosis related to smoking, may be accounted for by the fact that diagnoses related to smoking (eg cardiovascular diseases) are also related to other lifestyle risk factors which are likely to increase with age regardless of smoking status. It is also possible that this result reflects the effects of passive smoke exposure in the home. There is evidence that passive smoking increases the risks of smoking related diseases,²⁰ and Dobson et al,²¹ in a study in the Hunter region found that the odds ratio for coronary death or heart attack in women exposed to passive smoking in the home was 2.46 for non-smokers, compared to those not exposed to the risk. In the current study, 21% of Never Smokers reported living with someone who smoked. Additionally the findings in Chapter 2 showed that 12% of Never Smokers, in the cotinine sub-sample, had their smoking status disconfirmed by salivary cotinine analysis. With passive smoke exposure potentially accounting for 4%, and disconfirmation potentially accounting for an additional 12%, it is possible that only 11% (27% - 16%) of Never Smokers were admitted to hospital with a diagnosis related to smoking.

The fifth implication of the study is that smoking cessation interventions need to be specifically developed and targeted for the hospital setting, to capitalise

on the finding that the majority of smokers reported quitting smoking on admission (56%). Intervention programs developed for use in the primary care setting may have to be modified for use in the hospital setting, as the first step in most primary care smoking cessation interventions usually involves the patient setting a quit date.²² Intervention programs for a population where 56% report having quit smoking already, should be focused more on maintaining abstinence, with coping strategies for dealing with nicotine withdrawal symptoms and relapse prevention. Such a high naturally occurring quit rate among a population group where the prevalence of smoking is also high, and where smokers are resident for an average of 7 days in a smokefree public health care facility, provides a unique opportunity for the provision of targeted smoking cessation and relapse prevention interventions. Other studies based on a convenience sample of in-patients⁸ and on 12 month post discharge recall,³ similarly found that 51% of patients who reported smoking in the 3 months prior to admission reported, stopping smoking after admission. The only sociodemographic or hospital stay variable associated with quitting on admission was being admitted with a smoking related diagnosis.

The last but extremely important implication of the study is that whilst quit rates within the hospital setting may be high, they do not appear to be maintained long term. The findings suggest that long term quit rates varied from a conservatively calculated 2.9% to a more liberally calculated 9.5% of smoking in-patients. Glasgow et al⁸ similarly found a self reported quit rate of 9.5% among their control group patients 12 months after discharge. However, the sample size for the current follow-up study was relatively small, may not have been representative and lacked power. In future studies all patients who reported smoking in the 3 months preceding hospital interview should be followed up and

predictors of long term quitting assessed. Nevertheless, a quit rate of between 2.9% - 9.5% occurring in the absence of a planned intervention is encouraging and closely resembles the 5.8% quit rate reported from randomised controlled trials of brief interventions in the primary care setting.²³ Public health smoking control efforts and hospital administrations should capitalise on this natural effect, and focus research effort towards the evaluation of in-patient programs which aim to increase this quit rate and maintain it in the long term.

SUMMARY

The important findings of this study are, firstly that the prevalence of smoking among hospital in-patients is high, that a substantial proportion of patients are quitting in relation to admission to hospital, that the hospital stay can effect a long term quit rate equivalent to the efficacy of brief smoking cessation interventions, and that the target population of smoking in-patients represents that group of smokers who are difficult to reach and who have high smoking rates within the community. The findings of this chapter therefore strongly support the development and introduction of effective, specifically tailored, smoking cessation interventions in the hospital setting. However, information is needed concerning the attitudes and needs of these smoking in-patients. Do those patients who quit smoking on admission intend to remain non-smokers after discharge, or are they merely complying with hospital smokefree policy? Would smoking in-patients accept education and advice about smoking cessation? The next chapter explores the attitudes of in-patients to smoking cessation advice and education, and the perceived acceptability of the hospital setting and of nurses as providers of this care.

CHAPTER 4

**Attitudes towards smoking
and quitting among
hospitalised patients**

INTRODUCTION

During the last two decades efforts aimed at reducing the high level of morbidity and mortality associated with lifestyle illnesses, such as cancer and cardiovascular disease, have focused on motivating individuals to change risk behaviours to health behaviours.¹ During this time, research and theory development have concentrated on the motivational factors associated with individual health behaviour change.^{2,7} These theories have provided detailed information about the antecedents and the processes of this decisional change.^{4,5} The information has enabled the development of sophisticated tailored intervention components, designed specifically to alter these predisposing attitudes and beliefs, and thereby influence and support the decision to change.^{8,9} This chapter firstly reviews several theories of health behaviour change, then explores the knowledge, attitudes and intentions of hospitalised smokers in this study, and discusses the implications of the findings for the development of smoking cessation interventions for use in this setting.

The Health Belief Model, developed in the 1950s and 60s, holds that certain beliefs provide the momentum and intensity to energise a change in behaviour and enable an individual to take action to avoid disease (e.g. to quit smoking).^{2,3} According to this model, individuals will take action and quit smoking if they believe that they are susceptible to a smoking related disease, that a smoking related disease will be moderately or severely serious in terms of their health, emotions or lifestyle, that the action of quitting smoking will in fact be beneficial, and that the action of quitting smoking will not involve overcoming significant

barriers.³ A tenet of this model is that a cue triggers the decision to quit smoking once sufficient intensity has been established through attitudinal and belief change. The cue to begin the action can be a sudden awareness of an internal bodily state (symptoms) or some external trigger such as a media item, advice from a health professional, or an interpersonal interaction.⁴ The model predicts that the greater the intensity of beliefs creating the motivational energy, the less intense the cue needs to be to trigger action. Conversely the lower the intensity of beliefs about severity and seriousness then a greater intensity will be required in the stimuli to effect action.² Applying the Health Belief Model to the population of hospitalised smokers, the decision to quit smoking on admission should be associated with perceived vulnerability to either current or future risk.

The Transtheoretical Model of Change, developed from the Health Belief Model and Social Learning Theory, describes the act of quitting smoking as a continuous *process*, whereby an individual smoker passes through a series of stages known as the Precontemplation, Contemplation, Preparation, Action and Maintenance stages of change.⁵ According to this theory, a smoker will progress through this series of motivational and behavioural stages en route to becoming a non-smoker. An individual in the Precontemplation stage is described as a committed smoker who is not thinking about quitting smoking in the foreseeable future. Such an individual is not processing information about smoking, is less consciously aware of their smoking behaviour, and is doing little to refocus their attention. The Contemplation stage is described as thinking seriously about quitting smoking. In this stage, the individual will be absorbing information relevant to this decision, responding to stimuli about smoking cessation, and be more aware of the role smoking is playing in their lives. An individual in the

Preparation stage is described as having tried unsuccessfully to quit smoking in the past year and intending to quit in the next month. Action stage is described as the time immediately after quitting (0-6 months) and is characterised by large amounts of time and effort being devoted to the change process and to coping with the sequelae to stopping as well as an increased interest in supportive relationships. The Maintenance stage continues until smoking is no longer a problem, lasting up to 5 years, and often involving a recycling through the previous stages.⁵

The importance of the transtheoretical model is in the guidance it provides for practitioners developing smoking cessation interventions. The model implies that smoking cessation interventions should be tailored to the individual's stage of change. Prochaska et al found that a computerised interactive expert system (which included individual manuals), tailored to the individual's stage of change, resulted in a doubling of the abstinence rate compared to the best available standardised program (American Lung Association).¹⁰ Within a population of smokers approximately 40% have been found to be in Precontemplation stage, 40% in Contemplation stage and less than 20% in Preparation stage.¹¹⁻¹⁴

The population of hospitalised smokers and quitters, influenced by the pressures of smokefree policies during their stay and focused on their own health may well hold different attitudes, beliefs and intentions concerning smoking and quitting and may be at different stages along the process of change. The findings in Chapter 3 showed that 56% of patients who reported being smokers in the preceding 3 months, reported quitting smoking on admission to hospital. This is much larger than the less than 20% of the general population of smokers, found to be prepared to take action. The findings from the general population have however been derived from telephone surveys¹¹ and from volunteers responding to newspaper

advertisements.⁵

Common to both these models of health behaviour is the underlying premise that people who adopt health actions (eg quitting smoking) are different in attitudes, knowledge, intentions and perceived barriers, to those who do not adopt health actions. There is an underlying precept in both models that changing (i.e. quitting smoking) involves a subjective, motivated decision which is preceded and energised by shifts in key beliefs, thoughts and intentions.⁴ Evidence from research among the general population supports this view. Gritz et al⁷ followed a group of smokers who tried to quit smoking unaided and found that those who quit were less likely to be addicted (i.e. smoked less for a shorter period of time) more likely to be aware of the health risks of smoking, have higher levels of motivation to quit and greater confidence in remaining abstinent. Other research has found that smokers experiencing symptoms (eg coughing, wheezing, shortness of breath) or those with smoking related diseases, are more likely to successfully quit smoking.⁷ One study, Ronayne et al,⁸ of hospital patients with chronic peripheral vascular disease, by found that patients who continued smoking perceived significantly less risk associated with smoking, than patients who quit smoking. However there have been few studies which look at the event of hospitalisation and describe what attitudes, beliefs and knowledge characterise a smoker who is likely to be influenced to quit smoking during a hospitalisation episode.¹⁵

In order to influence their decision to change from a risk behaviour (smoking) to health behaviour (quitting), both the Health Belief Model and the Transtheoretical Model of Change emphasise the need to first understand predisposing knowledge, attitudes and beliefs of the target population in order to develop appropriate interventions to effect change. The aims of this study were

firstly to determine, among the population of hospitalised smokers, their perceived vulnerability to risk, perceived benefits of quitting, their knowledge of the health risks associated with smoking and of quitting strategies, their intentions regarding quitting and their perceived difficulties with quitting. The second aim of the study was to determine whether there were significant differences in these variables between the two groups of hospitalised smokers, those who reported stopping prior to hospital admission and those who reported continuing to smoke after hospital admission. It was anticipated that those who chose to take action and quit smoking on admission would perceive themselves to be at greater risk, hold more positive attitudes towards quitting, have increased knowledge of the risks of smoking and the benefits of quitting and have intentions to become a non-smoker. The third aim of the study was to determine whether hospitalised smokers regarded nurses as acceptable providers of smoking cessation interventions.

METHOD

PROCEDURE

Access to patients, eligibility, recruitment of subjects, consent and the procedure have been described in Chapter 2.

SAMPLE

Eligible patients for this study of beliefs, knowledge and attitudes were the 173 patients who reported, at the interview, that they had smoked at some time in the preceding 3 months (i.e. again using the broader definition of a "smoker" which includes Smokers and Recent Quitters). The sample thus included both those who continued smoking on admission and those who quit smoking on admission (described in Chapter 3). In summary, a patient was described as having "continued to smoke after admission", if they reported smoking any cigarettes on any days after the day on which they were admitted to hospital. A patient was described as having "quit smoking on admission", if they reported **not** smoking any cigarettes on any days after the day on which they were admitted to hospital. This definition, of quitting on admission also included those patients who may have smoked on the day of admission, but as they reported smoking no cigarettes on any day in hospital since that day, it was assumed that cigarette consumption on the day of admission was likely to have occurred prior to admission to hospital.

MEASURES

Medical Record Audit

Actual risk

Actual risk was defined as having a smoking related diagnosis. Patients medical records were audited by the interviewer and the Nursing Unit Manager (see Appendix 2.3) to determine the principal diagnosis of each patient. These were later coded as diseases which could be related to smoking or not related to smoking (described in Chapter 3 and in Appendix 3.6).

Self completed patient questionnaire

Knowledge and attitude questions

Knowledge and attitude measures were collected from two groups of patients: those who quit smoking on admission and those who continued smoking after admission. The instrument for measuring the knowledge and attitude items was contained within the self completed patient questionnaires (see Appendix 3.1, 3.2 and 3.3).

Actual risk

Experienced symptoms of smoking ill-health in last 2 months

Items on the self-complete questionnaire asked patients: *Have you had any of the following symptoms in the last 2 months?* Response options included a dry sore throat, mouth or nose sores, cough, breathlessness, bronchitis, congestion and asthma. Patients were asked to answer *yes* or *no*.

Perceptions of current risk

a) Related to current admission

Patients were asked: *How much do you think that smoking has contributed to the illness for which you are in hospital?* Response options were *A great deal*, *Somewhat* and *Not at all*. Patients who responded with either of the first two options were classified as thinking that smoking had made a contribution to their admission.

b) Related to other health problems

Patients were asked *How much do you think that smoking has contributed to your other health problems?* The response options and coding were the same as used in the previous item.

Perceptions of future risk.

Patients were also asked *If you continue to smoke what do you think is the percentage chance that smoking will cause you a fatal illness?* Response options included *Don't know*, *No chance* and increments of 10% beginning with 10% and ending with 100%. Responses were then aggregated into two categories, *No chance* and *Some chance*.

Knowledge

Of the health risks associated with smoking

Both the extent and type of patients' knowledge of smoking related ill health were measured. In order to avoid chance associated with multiple choice responses, the knowledge of health risk items were presented in open-ended format. Patients were asked to *write down the names of any illnesses caused by smoking*. Responses

were later coded as "correct" if they corresponded to diseases causatively associated with smoking.¹⁶ (See Appendix 4.1.1). Diseases were grouped into Cardiovascular, Respiratory, Cancer and Others and the number of patients giving responses in each category was recorded. The coding was conducted independently by the author and a trained nurse, and collaboration occurred with a medical practitioner for any discrepancies.

Of quitting strategies

Knowledge was again measured with an open-ended question: *Do you know of any methods which could help a person who wants to stop smoking?* Extent of patients' knowledge was measured by classifying patients as *not able to name at least one strategy*, *able to name at least one strategy* and *able to name 2 or more strategies*. Similar strategies were grouped together and described by a common theme. (see Appendix 4.1.2).

Attitudes

Smoking is a health risk

On a four point Likert scale, patients were asked to decide *How much do you agree or disagree with each statement?* Patients who agreed or strongly agreed with the statement, *Cigarette smoking can cause major damage to health* or disagreed or strongly disagreed with the statement, *Too much fuss is made of the dangers of smoking*, were considered to hold the attitude that smoking is a health risk.

Quitting smoking is beneficial

Patients who agreed or strongly agreed with the statement, *Giving up smoking helps a person live longer* or disagreed or strongly disagreed with the statement, *Quitting will not improve the health of people who have smoked for a long time* were considered to hold the attitude that smoking cessation is beneficial to health.

Quitting smoking is achievable

Patients who disagreed or strongly disagreed with the statement *Quit smoking programs do not really help people to stop smoking* or disagreed or strongly disagreed with the statement *Most patients who smoke do not want to quit* were considered to have a positive attitude that quitting smoking is achievable.

Perceived difficulties with quitting

Patients who were still smoking were asked the question *Below are some reasons which smokers say make it hard to quit smoking. How important is each reason, in stopping you from giving up smoking?* Patients who had quit smoking were asked *Below are some reasons which ex-smokers say made it hard to quit smoking. How important was each reason, in making it difficult for you to stay a non-smoker?* For the complete list of response options see Patient Questionnaire (Smokers Questionnaire: Appendix 3.1, Ex-Smokers questionnaire: Appendix 3.2). Patients were then asked *Of these 10 reasons, which three are the most important, in your view?* Response options were *most important*", *second most important* and *third most important*. For each item the number of patients who ranked the item as one of the three most important items was calculated.

Intentions to quit smoking

Smokers were asked *Would you like to stop smoking?* Those who answered yes were considered to have an intention to quit smoking. Patients were also asked *How likely is it that you will give up smoking in the next 3 months?* Those who had quit smoking were asked *How likely is it that you will still be a non-smoker in 3 months?* Response options ranged along a 7 point Likert scale, from *Extremely unlikely* to *Extremely likely*. Patients were considered to be confident in their ability to quit if they responded with any of the three likely categories.

Usefulness of hospital stay

All smokers were asked *How useful has your hospital stay been in encouraging you to become a non-smoker?* Patients who had quit smoking were asked *How useful has your hospital stay been in helping you to stay a non-smoker?* Response options varied from *Very Useful* to *Not at all useful* (on a 4 point Likert-type scale).

Perceptions of nurses' role

Patients who disagreed or strongly disagreed with the statement, *Helping patients to quit smoking should not be part of a hospital nurse's role* or agreed or strongly agreed with the statement *Hospital nurses should educate all smoking patients about the effects of smoking* were considered to hold the attitude that smoking cessation was should be part of the nursing role.

Perceptions of nurses' capability in this role

Patients who disagreed or strongly disagreed with the statement that

Hospital nurses should not attempt to counsel patients who want to stop smoking or agreed or strongly agreed with the statement *Hospital nurses would make good quit smoking counsellors* were considered to hold the attitude that nurses were capable as providers of smoking cessation care.

Perceptions of the barriers to nurses providing care

Patients who disagreed or strongly disagreed with the statement *Hospital nurses who smoke would make good quit smoking educators* or agreed or strongly agreed with the statement *Hospital nurses are too busy to teach patients about quitting smoking* were classified as believing this item to be a barrier to providing cessation care.

Expressed willingness to receive smoking cessation care from nurses

Patients who were smokers were asked *How would you feel about a nurse who was trained to help people stop smoking, offering you the following?* Patients who had quit smoking were asked *How would you feel about a nurse, who was trained to help people stay non-smokers, once they have quit, offering the following.* The care items included talking about smoking or quitting, giving advice to quit, describing how smoking affected health and the benefits of quitting, providing reading material about quitting, referral to quit agencies, and discussion of how to quit smoking or stay quit. Patients were considered to have a positive attitude to receiving nurse provided smoking cessation care if they responded with *I would welcome it.*

RESULTS

SAMPLE CHARACTERISTICS

There were 173 patients who reported at interview that they had smoked during the preceding 3 months. Of this sample 57% were female, 63% were aged under 54 years, 71% had finished school at or below Year 10, 55% were married, 90% were born in Australia, 29% were employed, 22% were unemployed, 30% were engaged in home duties and 19% were retired, 25% described white collar work as their main lifetime occupation, 37% blue collar and 37% home duties, 66% lived with a smoker, 76% were able to move around, 40% had, or would receive, anaesthesia, and the average length of hospital stay before interview was 6.6 days.

Smoking status at admission

Of the 168 patients with completed questionnaires, 94 (56%) reported that they ceased smoking on admission to hospital and 74 (44%) reported continued smoking after admission.

Vulnerability to risk

Actual risk

In terms of actual risk Table 4.1 shows that 24% of all hospitalised smokers had an principal diagnosis which could be causally related to smoking. Given the number of significance tests being undertaken, a more conservative p value was calculated using the Bonferroni correction (0.05 divided by the number of tests being performed).¹⁷ Therefore for Table 4.1, probability values less than 0.006 were considered significant.

Among hospitalised smokers admitted with a diagnosis related to smoking,

significantly more quit smoking on admission than continued smoking after admission (79% vs 21%, $p < 0.001$). Among all hospitalised smokers 39% experienced sore throat, mouth or nose sores in the preceding 2 months; 52% experienced a cough; 41% experienced breathlessness; and 59% experienced bronchitis, asthma or congestion. Smoking related symptoms of a dry sore throat, cough, or breathlessness were not significantly related to quitting smoking after admission, however more patients who had experienced bronchitis or congestion or asthma in the last 2 months quit smoking on admission than chose to continue smoking after admission (58% vs 42%, $p < 0.0001$).

Perceptions of current risk

Table 4.1 also shows that among all hospitalised smokers, 20% perceived that smoking had contributed to their current admission, and 36% perceived that smoking had contributed to other health problems. Patients who perceived that their smoking had contributed to their current admission were not significantly more likely to have quit smoking on admission to hospital than to continue smoking in hospital.

Perceptions of future risk

Using a conservative measure of future risk i.e. *some chance* that continued smoking will cause a fatal disease compared to *no chance*, 88% of hospitalised smokers who responded ($n=108$) thought that there was some chance that continued smoking would cause a fatal illness. However there was no significant association between perceptions of future risk and the decision to quit smoking on admission.

Table 4.1: Vulnerability to risk among continuing smokers and smokers who quit after admission.

Risk	Patients who smoked in the last 3 months						X ²	df	p
	Total (n=168)		Continued smoking after admission (n=74)		Ceased smoking on admission (n=94)				
	n	% ^a	n	% ^b	n	% ^b			
ACTUAL RISK									
Admission diagnosis									
Smoking related disease	39	24	8	21	31	79	10.1	1	0.001
Non-smoking related disease	123	76	63	51	60	49			
Symptoms experienced in the last 2 months									
Sore throat;mouth/nose sores	64	39	24	38	40	62	1.39	1	0.24
Cough	86	52	32	37	54	63	2.80	1	0.09
Breathlessness	67	41	26	39	41	61	0.9	1	0.34
Bronchitis/congestion/asthma	97	59	29	42	68	58	17.3	1	0.0001
PERCEPTION OF CURRENT RISK									
Related to admission									
Thought smoking had contributed to current admission									
Yes	34	20	8	25	26	76	6.25	1	0.01
No	132	80	65	49	67	51			
Related to other health problems									
Thought smoking had contributed to other health problems									
Yes	58	36	23	32	37	41	1.09	1	0.3
No	104	64	50	68	54	59			
PERCEPTIONS OF FUTURE RISK									
No chance that continued smoking will cause a fatal illness	13	12	8	62	5	38	0.01	1	0.94
Some chance that smoking will cause a fatal illness	95	88	55	58	40	42			

a Column percentages
b Row percentages. n sizes vary within each category. Percentages are calculated from the total number of patients with complete data for each category.
p < 0.006 = significant

Knowledge of the health risks associated with smoking

Table 4.2 shows that among hospitalised smokers 27% were not able to name any smoking related diseases. Of all accurate responses (n=248) made by the hospitalised smokers, 103 (42%) were categorised as cancer, 101 (40%) were categorised as respiratory, 44 (18%) were categorised as cardiovascular and 3 (2%) were categorised as "Other". There was no significant association between either the number of smoking related diseases known or the type of disease given and the decision to quit smoking on admission.

Attitudes to smoking and quitting

In terms of patients' beliefs about the health risks of smoking, Table 4.3 shows that 85% of all hospitalised smokers believed that cigarette smoking could cause major damage to health, and 54% believed that too much fuss was made of the dangers of smoking. Items which measured patients' perceptions about the benefits of quitting showed that 57% of hospitalised smokers thought that giving up smoking would help a person live longer and 53% thought that quitting smoking would improve the health of people who had smoked for a long time. However, 61% of hospitalised smokers thought that quit smoking programs did not really help people to stop and 77% thought that most smoking patients did not want to quit. There were no significant associations between attitudinal variables related to the perceived benefits and barriers to quitting and the decision to quit smoking after admission.

Table 4.2: Patients' knowledge of diseases caused by smoking.

Patients who smoked in the last 3 months									
Knowledge indicators	Total		Continued smoking after admission (n=74)		Ceased smoking on admission (n=94)		X ²	df	p
	n	%	n	% ^a	n	% ^a			
Quantity									
Not able to name any smoking related diseases	46	27	22	48	24	52			
Able to name one or more smoking related diseases	122	73	52	43	70	57	0.17	1	0.67
Accurate responses made									
	Total number of responses (n=248)		By those who continued smoking after admission (n=112)		By those who ceased smoking on admission (n=139) ^b				
	n	%	n	% ^a	n	% ^a			
Type									
Cardiovascular	44	18	17	39	27	61			
Respiratory	101	41	45	45	56	55			
Cancer	103	42	50	49	53	51			

a Row percentage

b Three responses were for "Other" smoking related diseases.

Table 4.3: Patients' perceptions of the benefits and barriers to smoking cessation.

Attitude	Patients who smoked in the last 3 months						X ²	df	p
	Total		Continued smoking after admission (n=74)		Ceased smoking on admission (n=94)				
	n	% ^a	n	% ^b	n	% ^b			
Smoking is a health risk									
<i>Cigarette smoking can cause major damage to health</i>									
Agreed	139	85	63	45	76	55	0.08	1	0.78
Disagreed	25	15	10	40	15	60			
<i>Too much fuss is made of the dangers of smoking</i>									
Agreed	89	54	40	45	49	55	0.01	1	0.91
Disagreed	77	46	33	43	44	57			
Quitting smoking is beneficial									
<i>Giving up smoking helps a person live longer</i>									
Agreed	93	57	39	42	54	58	0.1	1	0.75
Disagreed	70	43	32	46	38	54			
<i>Quitting will not improve the health of people who have smoked for a long time</i>									
Agreed	76	47	38	50	38	50	1.6	1	0.21
Disagreed	85	53	33	39	52	61			
Quitting is achievable									
<i>Quit smoking programs do not really help people to stop smoking</i>									
Agreed	99	61	45	45	54	55	0.08	1	0.78
Disagreed	62	39	26	42	36	58			
<i>Most patients who smoke do not want to quit</i>									
Agreed	127	77	53	42	74	58	0.5	1	0.47
Disagreed	38	23	19	50	19	50			

a Column percentages.

Knowledge of strategies which aid quitting

Table 4.4 presents the results of patients' knowledge of strategies to aid quitting and shows that 51% of hospitalised smokers were unable to name any strategies which might aid quitting, with no difference between groups. In terms of the type of strategies named, 50% of the responses provided by hospitalised smokers were categorised as willpower, 15% as professional help, 14% as cognitive/behavioural/pharmacological aids and 8% as pressure from others. Of all responses given, 50% cited personal willpower, with other strategies being less well known.

Perceived difficulties with quitting

The complete data on rank ordering of perceived difficulties with quitting is presented in Appendix 4.2. When responses were summed to gain a measure of the total number of patients who ranked each item as one of the three most important, it was found that similar items were ranked as the most important among those who continued smoking and those who quit. As Table 4.5 shows, for those who continued smoking after admission, the most important difficulty was *feeling upset, angry or depressed* (50%), followed by *cravings for cigarettes* (43%) and then *coping with stress* (42%). For patients who quit smoking after admission, the same three items were ranked as the three most important, however the order was slightly different. For this group who had stopped smoking in hospital, the most important difficulty was *coping with stress* (46%), followed by *craving for cigarettes* (41%) and then *feeling upset, angry or depressed* (37%).

Table 4.4: Patients' knowledge of strategies which might aid cessation.

Patients who smoked in the last 3 months										
		Total (n=168)		Continued smoking after admission (n=74)		Ceased smoking on admission (n=94)				
Knowledge indicators		n	%	n	% ^a	n	% ^a	X ²	df	p
Quantity										
	Not able to name any strategies	85	51	35	41	50	59			
	Able to name one or more strategies to aid quitting	83	49	39	47	44	53	0.37	1	0.55
Accurate responses made										
		Total number of responses (n=103)		By those who continued smoking after admission (n=44)		By those who ceased smoking on admission (n=59)				
		n	%	n	% ^a	n	% ^a			
Type										
	Personal willpower	52	50	18	35	34	65			
	Professional help	15	15	8	53	7	47			
	Cognitive/behavioural pharmacological aids	14	14	7	50	7	50			
	Pressure from others	8	8	3	38	5	62			
	Others	14	13	8	57	6	43			
a	Row percentages									

Table 4.5: Patients' perceived difficulties with quitting smoking.

<i>Attitude</i>	<i>Smokers (in the last 3 months) who ranked each difficulty as one of the 3 most important</i>			
	Continued smoking after admission (n=74)		Ceased smoking on admission (n=94)	
	n	%^a	n	%
Perceived difficulty quitting smoking				
<i>Coping with stress</i>	31	42	43	46
<i>Craving for cigarettes</i>	32	43	39	41
<i>Feeling upset/angry/depressed</i>	37	50	35	37
<i>Coping with boredom</i>	23	31	27	29
<i>Loss of pleasure of smoking</i>	17	23	24	26
<i>Putting on weight</i>	20	27	19	20
<i>Other family smoking</i>	7	9	18	19
<i>Loneliness or loss</i>	7	9	15	16
<i>Coping in social situations</i>	9	12	13	14
<i>Other</i>	5	7	1	1

Intentions to quit smoking

Table 4.6 shows that 56% of all hospitalised smokers would like to stop smoking. This variable, however, was not associated with the decision to quit smoking after admission. In relation to intentions to quit smoking, Table 4.6 shows that 32% of all hospitalised smokers thought that it was likely that they would be non-smokers in 3 months. Patients who thought that it was likely that they would be non-smokers in 3 months, or who were unsure, were significantly more likely to quit smoking on admission, than those who thought that it was unlikely that they would be a non-smoker in 3 months ($X^2=6.59$, $df=1$, $p<0.01$). continued to smoke after admission ($p<0.02$).

Table 4.6: Patients' intentions to quit smoking.

		<i>Patients who smoked in the last 3 months</i>								
		Total		Continued smoking after admission (n=74)		Quit smoking on admission (n=94)				
		n	%	n	% ^a	n	% ^a	X ²	df	p
<i>Intentions</i>										
Would you like to stop smoking ^b										
Yes		60	56	36	60	24	40			
No		48	44	27	56	21	44	0.04	1	0.84
Likely to be a non-smoker in 3 months										
Yes		53	32	17	32	36	68			
Unsure		35	21	13	37	22	63			
No		78	47	43	55	35	45	7.65	2	0.02

^a Row percentages.

^b This question was only asked of patients who had been smoking in the last 4 days. Therefore, n sizes are smaller than for other variables.

Appropriateness of the setting for smoking cessation and of nurses as providers

Table 4.7 shows that among all hospitalised smokers 42% thought that the hospital stay was useful in encouraging non-smoking, 64% thought that helping patients to quit smoking should be part of the nurse role and 52% thought that nurses should counsel patients who wanted to quit, only 33% thought that nurses should educate all smoking patients about the effects of smoking. In terms of hospitalised smokers' perceptions about nurses' capabilities in this role, 47% thought nurses would make good quit smoking counsellors. Two barriers to nurse provided counselling were presented to hospitalised smokers and 63% thought that

nurses who smoked would not make good quit smoking educators and 80% thought that nurses were too busy to teach patients about quitting smoking. Again given the multiple tests for significance undertaken, the Bonferroni correction meant that variables with probability levels less than 0.007 were conservatively considered significant. In Table 4.7 the only variable, associated with the decision to quit smoking on admission was the perceived usefulness of the hospital stay in encouraging non-smoking. Patients who perceived the hospital stay as useful in encouraging non-smoking were significantly more likely to quit smoking on admission than continue to smoke after admission (71% vs 29% $p < 0.003$).

Expressed willingness to accept smoking cessation care from a nurse

As Table 4.8 shows between 33-40% of all hospitalised smokers said that they would welcome each of the smoking cessation care items presented. There were no significant associations between willingness to accept particular items of smoking cessation care and the decision to quit smoking after admission.

Table 4.7: Patients' perceptions of nurses as providers of smoking cessation care.

Attitude Statements	Patients who smoked in last 3 months						X ²	df	p
	Total		Continued smoking after admission (n=74)		Ceased smoking on admission (n=94)				
	n	%	n	%	n	%			
Usefulness of hospital stay in encouraging non-smoking									
Useful	69	42	20	29	49	71	8.55	1	0.003
Not useful	94	58	50	53	44	47			
Perceptions of nurses' role									
<i>Helping patients to quit smoking should not be part of a hospital nurse's role</i>									
Agreed	106	64	52	49	54	51	3.24	1	0.07
Disagreed									
<i>Hospital nurses should educate all smoking patients about the effects of smoking</i>									
Agreed	53	33	26	49	27	51	0.39	1	0.54
Disagreed	106	67	45	42	61	68			
<i>Hospital nurses should not attempt to counsel patients who want to stop smoking</i>									
Agreed	79	48	32	41	47	59	0.37	1	0.55
Disagreed									
Perceptions of nurses' capability in this role									
<i>Hospital nurses would make good quit smoking counsellors</i>									
Agreed	74	47	29	39	45	61	1.09	1	0.3
Disagreed	82	53	40	49	42	51			
Perceptions of barriers to nurses providing care									
<i>Hospital nurses who smoke would make good quit smoking educators</i>									
Agreed	58	37	22	38	36	62	0.65	1	0.42
Disagreed	98	63	45	46	53	54			

Table continues over page

Attitude Statements	Patients who smoked in last 3 months						X ²	df	p
	Total		Continued smoking after admission (n=74)		Ceased smoking on admission (n=94)				
	n	%	n	%	n	%			
Hospital nurses are too busy to teach patients about quitting smoking"									
Agreed	133	80	58	44	75	56	0.01	1	1.00
Disagreed	33	20	14	42	18	58			

^a Row percentages

p < 0.007 = significant

Table 4.8: Patients' willingness to accept smoking cessation care from a nurse.

	Patients who smoked in the last 3 months								
	Total		Continued smoking after admission (n=74)		Ceased smoking on admissio n (n=94)				
Willingness to accept care	n	%	n	% ^a	n	% ^a	X ²	df	p
Being talked to about smoking or quitting									
Yes	67	40	29	43	38	57			
No	99	60	44	44	55	56	0.01	1	1.00
Being advised to stop smoking									
Yes	36	33	22	61	14	39			
No	72	67	41	57	31	43	0.04	1	0.84
Being told about better health after quitting									
Yes	57	35	27	47	30	53			
No	104	65	45	43	59	57	0.11	1	0.74
Being given reading material about quitting									
Yes	62	38	31	50	31	50			
No	101	62	41	41	60	59	1.02	1	0.31
Being referred to quit support agencies									
Yes	56	34	30	54	26	46			
No	108	66	42	39	66	61	2.66	1	0.10
Discussion of how to quit smoking									
Yes	64	39	32	50	32	50			
No	100	61	40	40	60	60	1.2	1	0.27

a n sizes vary within each category. Percentages are calculated from the total number of patients with complete data in each category. Row percentages.

DISCUSSION

In order to influence the decision to quit smoking among a population of smokers, both the Health Belief Model and the Transtheoretical Model of Change, emphasise the need to first understand predisposing knowledge, attitudes and beliefs of the target population in order to develop appropriate interventions to effect change. It is these attitude and belief system shifts which provide the energy for the action to occur, and it is anticipated that those who decide to quit smoking will differ from those who continue smoking along the dimensions of knowledge that smoking is harmful, perceived personal vulnerability to the effects of smoking, a belief that quitting smoking will be beneficial and an intention to quit smoking.¹⁶ The first aim of this study was to determine the attitudes, knowledge and beliefs of hospitalised smokers. The results will be discussed in relation to the development of smoking cessation interventions for use in the hospital setting.

Perceived vulnerability to and knowledge of risk among hospitalised smokers

The study found that in terms of generalised attitudes towards risks the majority of hospitalised smokers believed that smoking can cause major damage to health (85%). The majority of hospitalised smokers (88%) also reported that there was some chance that continued smoking would cause them a fatal illness. However, when asked about their beliefs concerning their current personal vulnerability to risk, hospitalised smokers were less sure of the risk. Only 20% thought that smoking had contributed to their current admission (even though 24%

were admitted with a disease related to smoking). Similarly more patients reported experiencing symptoms of smoking related ill health in the previous 2 months than reported that smoking had contributed to these symptoms. The study found that 38% of all hospitalised smokers experienced mouth or nose sores or a dry sore throat, 51% a cough, 40% breathlessness and 58% bronchitis, congestion or asthma, yet only 38% thought that smoking had contributed to their health problems. It would seem that these patients either are not aware of the potential risks, are incorrectly assessing current symptoms of risk or are ignoring these internal body cues.

The implications of these findings for smoking cessation interventions within the hospital setting is to focus on personalising the risks of smoking and providing clear information about the relationship between smoking and individual experiences or symptoms of ill health. A smoking ill health assessment and feedback of personal risk for each smoking patient could be incorporated into standard hospital care. As 27% of these hospitalised smokers were unable to name any smoking related diseases, this personalised risk assessment could incorporate information about the nature and process of smoking related diseases. Knowledge of the cardiovascular risks of smoking should be particularly stressed as the percentage of responses cited by patients for this disease (18%) was much lower than for either cancer (41%) or respiratory (42%) disease. This is concerning, given that cardiovascular disease has been the highest cause of death and ischaemic heart disease contributes 29% (the largest proportion) to deaths from active smoking.¹⁸

Perceived benefits of quitting and knowledge of quitting strategies among hospitalised smokers

Whilst between 53% and 57% of hospitalised smokers believed that quitting smoking produced health benefits, only 39% felt that quit smoking programs were effective and 51% were unable to name any methods which might help someone to quit smoking. Fifty percent of all answers given by those who could name at least one strategy cited personal willpower as the method which would help. The implication of this finding is that interventions should focus on demystifying the quitting process, and providing information on smoking and quitting and on quitting strategies.

Intentions

Whereas perceptions about risk decreased from the generalised beliefs to the personalised beliefs, the opposite trend was found with intentions to quit smoking. When asked about smokers in general, only 23% of all smokers thought that most smokers wanted to quit smoking, however, when asked about their own personal intentions concerning quitting, 56% said that they would like to quit smoking and 56% reported quitting on admission. Thirty two percent expressed the intention to be non-smokers in 3 months time. Components of smoking cessation interventions should provide smokers with accurate information on the extent of the desire to quit smoking among smokers and provide feedback that the majority of smokers are in fact quitting smoking at admission.

Perceived difficulties with quitting among hospitalised smokers

The study found that in terms of the perceived difficulties associated with quitting smoking, hospitalised smokers gave their highest priority to the affective difficulties of quitting smoking namely, coping with stress, experiencing cravings for cigarettes and feeling upset, angry or depressed. Other studies have shown that negative affect most frequently precedes relapse after cessation.¹⁹ Intervention within this setting should incorporate emotional coping strategies for dealing with negative affect experienced after quitting.

Did those who quit smoking on admission differ from those who continued smoking after admission?

The second aim of the study was to determine whether knowledge, attitudes and beliefs were associated with the decision to quit smoking on admission to hospital. Various attitudes, beliefs and knowledge, were compared between the two groups of hospitalised smokers, those who decided to quit smoking on admission and those who decided to continue smoking. Three variables were conservatively found to be significantly associated with quitting on admission: patients who were admitted with a smoking related diagnosis ($p < 0.001$); patients who reported experiencing symptoms of bronchitis, asthma or congestion ($p < 0.0001$) and patients who perceived the hospital to be a useful in encouraging non-smoking ($p < 0.003$) were more likely to quit smoking on admission than to continue smoking after admission.

There were no significant differences on other variables related to vulnerability, between those who quit on admission and those who quit after admission. Among patients who experienced breathlessness, sore throat, mouth or

nose sores; patients who perceived that smoking had not contributed to other health problems, and patients who perceived a future risk, that is, that smoking has some chance of causing a fatal illness, there were no significant differences between those who continued smoking after admission and those who quit smoking on admission. The difference between these two sets of variables (i.e. between predictors and non-predictors of quitting) could be described in terms of their seriousness or immediacy. The findings support the Health Belief Model, in that patients who perceived a more serious or immediate threat (namely, believing that smoking was contributing to the current illness rather than to other health problems, being admitted with a diagnosis related to smoking rather than another diagnosis, and experiencing more severe symptoms of smoking related ill health, like bronchitis, asthma or congestion rather than breathlessness, sore throat, or mouth sores) were more likely to take action to change the risk behaviour.

The study found no significant differences on the variables of smoking related disease known, strategies known which might aid quitting, attitudes that smoking was harmful, that quitting was beneficial, or achievable, and finally reporting a motivation to want to quit smoking. This is in contrast to the findings of other researchers. Gritz et al⁷ found that quitters were lighter smokers, less addicted, had increased motivation to stop, were more confident of their ability to quit, had increased knowledge and were less addicted than continuing smokers. These subjects were however different from the hospital patient sample in that they were volunteers with higher socioeconomic and educational levels. Hospital patients are not healthy volunteer populations and tend to have lower socioeconomic and educational levels (as reported in Chapter 3).

The results have implications for the hospital based smoking cessation

interventions and for theories of behaviour change. The smokefree policies operating in all Australian public hospitals may necessitate some form of abstinence from resident smoking inpatients.²⁰ For inpatients within these smokefree hospital settings, the decision to quit smoking on admission appears to be influenced by the individual's underlying beliefs about their vulnerability and about the perceived severity of risk, but not by their knowledge and attitudes towards smoking or quitting. Experiencing the internal bodily cues of a smoking related diagnosis or some symptoms of smoking related ill health appears to act as a powerful trigger, energising the decision to quit smoking, in the absence of underlying attitudinal change. Similarly the perception that a stay in the smokefree hospital was useful in encouraging quitting may also have influenced the decision to take action, and interventions designed for use in the hospital setting could promote the advantages of learning about smoking, risk, withdrawal and quitting while in hospital, regardless of the patient's decision about quitting on admission.

The study found that patients who believed that it was likely (or even that they were unsure) that they would be non-smokers in the next 3 months were significantly more likely to quit smoking on admission than patients who thought that they would not be a non-smoker in the next 3 months ($p < 0.01$). According to the Transtheoretical Model of Change, intentions to quit smoking in the near future (next month) describe the less than 20% of the general population of smokers in the Preparation stage of change.²¹ The finding that 32% of patients who were still smoking in hospital could be in this Preparation stage suggests that the external cue of hospitalisation in a smokefree environment may be intense enough to facilitate progress through the stages of change. However it is also possible that the increased timeframe (from intention to quit in 1 month vs intention to quit in 3

months) accounted for the increase.

Even accounting for the disconfirmation rates found among Recent Quitters (62%), and reported in Chapter 2, a large proportion of the smoking population reported having taken action to quit smoking. If 62% of the 94 patients (i.e. $n=58$ patients) who reported quitting on admission, were likely to have their smoking status disconfirmed by salivary cotinine analysis, then the rate of quitting on admission is probably somewhere between 35% and 56%. A smoker who quits smoking on admission to a smokefree hospital may be engaging in a unique type of quitting behaviour - *compliance quitting*, rather than *committed quitting*. This type of quitting may be in response to the strong hospital cues combined with the perceptions of vulnerability but not associated with underlying knowledge and attitudinal changes. The implication of this finding is that even though their behaviour suggests intervention components which focus in the Action stage and the provision of maintenance strategies, patients' lack of underlying attitudinal change may still reflect a Precontemplator or a Contemplator. Further research is needed to determine whether the hospitalised smokers who quit smoking on admission are actually in the Action stage of change, according to Prochaska et al's model, i.e. perceive more pros than cons concerning quitting smoking.⁵ The challenge for hospital based smoking cessation interventions is to convert this compliance quitting into maintained quitting post discharge. Interventions should provide personalised information on the relationship between smoking and health and should provide positive encouragement concerning the usefulness of the hospital stay as a place to work on quitting smoking.

The third aim of the study was to determine whether hospitalised smokers perceived the hospital and their direct care nurses as appropriate providers of

smoking cessation care. The results of the study showed that 42% of hospitalised smokers thought that the hospital stay was useful in encouraging non-smoking. In terms of nurses' role generally, as providers of smoking cessation care, 64% thought that it should be part of the nurses' role, however only 52% thought that nurses should provide this care to patients who wanted to quit smoking and only 33% thought that nurses should counsel *all* smoking patients. When asked whether they would personally be willing to receive various types of care from a nurse, between 33-40% of smoking in-patients expressed willingness to receive the care items. Emmons et al²² similarly found that one third of inpatients in a specialised cardiovascular disease unit reported that they would be interested in receiving smoking cessation counselling from medical practitioners. Interestingly, in the current study, the nurses' smoking behaviour was not perceived to be a barrier to providing smoking cessation advice by 47% of smoking in-patients. However, *being too busy* was perceived as a barrier, for nurses, by 80% of all smoking inpatients. The implication of these results for intervention development is that patients would accept smoking cessation interventions from nurses but that such interventions should utilise self help materials with minimal support and time involvement from nurses.

In conclusion, this study found that having a smoking related diagnosis, or experiencing symptoms of smoking related ill health such as bronchitis, congestion or asthma, perceiving that smoking had contributed to their admission, regarding the hospital stay as useful in encouraging non-smoking and the intention to become a non-smoker in 3 months time were all significantly associated with the decision to quit smoking on admission. Other attitudes, knowledge and beliefs did not predict smoking cessation on admission. Just over half the hospitalised smokers

wanted to stop smoking, and in fact reported quitting smoking on admission to hospital. Between 33-40% reported being willing to accept care from nurses, but many were concerned about time constraints. Interventions may be effective in the hospital setting if they assess for stage of change and tailor intervention components to the individuals decision about continuing or abstaining from smoking in the hospital. Components could additionally incorporate personalised risk assessment and feedback, and promote the advantages of the hospital stay as an opportunity to acquire health information about smoking and quitting, regardless of the decision concerning smoking in the hospital.

This study found that patients are prepared to use the hospital stay to quit smoking and believe that nurses are appropriate providers of this support. How nurses perceive their patients smoking behaviour and their role as providers of this support care is the focus of the next chapter. Chapter 5 will explore the attitudes of nurses towards the provision of smoking cessation education and support and whether they perceive themselves to be appropriate, confident, trained, and prepared to engage in smoking cessation education with their patients.

CHAPTER 5

**Knowledge and attitudes
of hospital nurses toward
providing smoking
cessation care**

INTRODUCTION

The studies described in the preceding two chapters found that the majority of smoking patients quit smoking briefly on admission to hospital and held positive attitudes towards the hospital stay and towards nurses as appropriate providers of smoking cessation care. The extent to which this opportunity to encourage smoking cessation can be maximised depends on health organisations and on health care providers. Hospitals are one of the last health organisations to incorporate preventive and health promotion initiatives. As the 1988 review of the National Better Health Program found, mainstream health services in Australia were not directly addressing the national targets. Rather, fringe areas of health promotion and public health were solely responsible for this work.¹ Despite inherent potential and the general support of national health professional associations for health promotion activities, the health care system remains focused on the treatment rather than the prevention of disease.² Reorienting the health sector to incorporate health promotion activities has been difficult to achieve. New strategies, tabled in 1993 in the revised document "Goals and Targets for Australia's Health in the Year 2000 and Beyond", have linked health sector funding to the achievement of these targets in health promotion.¹ This strategy aims to reorient the health service sector and health professionals towards active participation in achieving the national goals.¹

The largest group of health professionals in the country are nurses.³ They have the greatest frequency and duration of contact with patients and have a traditional place within both their training and their practice for patient education

and are perceived as a credible source of health information by patients.⁴⁻⁶ Interestingly, 100 years ago Florence Nightingale devoted a year of the first nursing course to public health nursing and principles of epidemiology.⁷ There is a growing recognition among the leaders of the nursing profession of the importance of preventive care and health education, particularly in achieving the national goals and targets for health by the Year 2000.⁸ However, the role of providing preventive care in the past has often been considered more a part of community nurses' and health educators' role and has not been seen as an important part of the acute care hospital nurses' role.⁷ Nursing followed medicine in the move towards highly specialised technical care and a focus on curing diseases rather than preventing illness.⁷ Robson, among others, has claimed that nurses' potential in preventive health care has been largely underutilised.⁹ We currently have little information available on the current practices of nurses in relation to smoking cessation, nor about their perceptions of their role.

Surveys during the last decade have revealed that whilst nurses appear to believe in their role as health educators in relation to smoking cessation^{10,11} they were not utilising opportunities to provide this care¹⁰ and their skills and knowledge base were perceived as poor.^{10,12,13} Macleod Clark et al found that although nurses were able to acquire information about smoking from patients, they lacked the necessary skills and confidence to implement smoking cessation programs.¹⁴ In one of the few rigorously conducted studies involving a representative sampling frame rather than convenience samples, Goldstein et al surveyed nurses in one hospital site and found a self reported smoking prevalence of 25% (17% ex-smokers, and 58% never smokers).¹⁵ They found that non-smoking nurses reported counselling significantly more patients than smoking nurses (a

difference of 37%) (95% CI, 24%-48%). They also found that whilst 95% of nurses believed that it was their responsibility to counsel some of their patients about smoking, only 52% believed they should counsel all patients who smoke and only 35% actually reported counselling patients. However, as pointed out by the authors, the fact that the study was conducted in only one hospital and 31% of nurses did not return their questionnaires, may have biased the results. No comparable studies have been published on Australian hospital nurses. Insufficient knowledge of the risks of smoking and a lack of interpersonal skills have been suggested as the main barriers to nurses' role as smoking educators.¹³

Additionally it has been argued that the high smoking rates found among some populations of nurses, may diminish their effectiveness as potential providers of smoking cessation care.¹⁶⁻¹⁸ In a review of 73 surveys of nurses' tobacco consumption, Adriaanse reported prevalence rates during the 1970s of more than 40% in Austria, Denmark, Ireland, New Zealand and West Germany, a figure higher than the smoking rates found among physicians and also among the general population of women.¹⁶ However, during the 1980s the smoking rate dropped to between 15-40% across industrialised countries, but was still claimed to be higher than either physician or general female population groups.¹⁷⁻²⁰ In Australia, a 1976 study found that whilst male nurse smoking rates were somewhat higher than the proportion of males in the general population who smoked (55.7% compared to 45% respectively), the female nurse smoking rates were significantly higher than the smoking rates found in the Australian population of female smokers (52.2% compared to 29% respectively).²¹ A West Australian study in 1978 however, found that only 32% of male and female nurses were smokers.²²

One of the major problems with comparisons of survey data is the

inconsistency in the studies of the definition of a "smoker" and of a "nurse". For example some studies refer to nurse aides, enrolled nurses, health educators, and students as "nurses" whilst other studies describe only registered nurses as "nurses". Further contributing to the methodological problems are the methods of recruiting nurses ranging from postal surveys of nursing registration records, to interviews with hospital based ward staff. Often response rates are either not reported or are less than 60%, making any conclusions doubtful.^{17,18}

During the late 1980s, studies became methodologically tighter, reporting recruitment strategies and response rates. Goldstein in 1987, with a 69% response rate, reported the prevalence of smoking among a hospital sample of 168 nurses, at 25%.¹⁵ Becker in 1986 found a prevalence of 22% among registered nurses with a response rate of 80%,¹⁹ and Dore et al in 1988 found a prevalence of 22.9% among female hospital nurses with a response rate of 90%.¹⁷ These studies also reported that the figures were lower than the smoking prevalence rates among the general population of women. Thus it would seem that smoking prevalence is reducing in some countries among practicing nurses. Macleod Clark et al¹⁴ found that despite an overall smoking rate of 34%, among a sample of nurses, 80% thought that they could play an active role in smoking education. There are few data to suggest how the smoking behaviour of nurses may impact on their provision of smoking cessation care, or of recent prevalence rates of smoking among Australian nurses.

The current study recruited hospital based nurses who were providing direct care to the patients involved in the previous studies, and through interviews and questionnaires aimed to explore those factors which might facilitate and those which may act as barriers to the provision of smoking cessation care to inpatients. The specific aims were:

1. To determine the prevalence of self reported smoking and the characteristics of smokers among hospital nurses in 6 public hospitals in the Hunter region of NSW, Australia.
2. To describe hospital nurses' knowledge of the health risks of smoking and the strategies to aid quitting.
3. To describe hospital nurses' attitudes to smoking and quitting and their attitudes to providing smoking cessation care.

METHOD

GAINING ACCESS TO NURSES IN THE HOSPITAL SETTING

Access to nursing practitioners was gained by first seeking approval for the research project from the Area Health Board, from the Chief Executive Officer of each hospital, and from the Director of Nursing of each hospital. It was jointly decided that the nursing interview qualified the project as quality assurance assessment, and therefore permission was granted to conduct the survey during daily ward routine and involve each nurse in a 15 minute interview with research staff. Collaborative meetings were held with the Nursing Executive Committee and with Nursing Unit Managers (NUMs) where the protocol for data collection was negotiated and items of interest to nursing practitioners were included in the questionnaires. This strategic "top-down" process involving presentation of the project, negotiation of data collection procedure and endorsement of the project at each level of hospital nursing management ensured maximum involvement and awareness of the research.

SAMPLE

The six largest hospitals in the Hunter Area of New South Wales (NSW), Australia participated in this cross sectional survey of the knowledge and attitudes of hospital nurses to the provision of smoking cessation care for smoking patients. All nursing practitioners who were on day shift in eligible wards on the randomly selected data collection days were included in the study. Eligibility was defined as being present in the ward on the data collection day and consent was not required because of the quality assurance nature of the project. This sampling method

provided a sample of nurses consisting of Assistant Directors of Nursing, Nursing Unit Managers, Registered Nurses, Clinical Nurse Specialists, Enrolled Nurse Aids, and student nurses, who were responsible for the direct care of the patient sample recruited for the previous studies. Paediatric wards, delivery suites, and immunology wards were excluded as all the patients in these wards would have been aged under 16 (paediatrics), in labour (delivery suites) or terminally ill (immunology) and would have been ineligible for the study. Nurses from these wards were therefore also excluded from the study. Each of the remaining 52 wards was accessed on a randomly selected day (excluding weekends), during the period September to December 1991. This data collection procedure was repeated three weeks later and only those nurses who were had not been interviewed before were included on this second occasion.

PROCEDURE

A meeting between the Research Project Manager and each NUM was organised one week prior to the randomly selected data collection day. At this meeting, the protocol for data collection was explained thoroughly and any difficulties which arose were solved collaboratively. During this meeting a start time for the data collection was negotiated, as were times for the 15 minute interviews with each nurse on the ward. Use of a quiet room close to the nursing station was arranged for conducting the nursing interviews. The NUM was provided with the following study materials; a Patient Checklist (Appendix 2.3), Instructions for Nursing Unit Managers (Appendix 2.1) and a List of Nurses (Appendix 5.1). A reminder telephone call 24 hours prior to the data collection day was made to each NUM. On the day prior to the randomly selected data collection day the Nursing

Unit Manager (NUM) was asked to ensure that the Patient Checklist was completed for all patients in the ward (see Appendix 2.1 Instructions for Nursing Unit Managers). The NUM entered the names of all nurses who were rostered for duty on the day shift of the data collection day onto the List of Nurses (see Appendix 5.1). At the ward changeover meeting on the data collection day the NUM briefly informed all dayshift nurses of the study and handed out a Notification of Research form which explained their involvement in the project (see Appendix 5.2). At the prearranged start time a trained interviewer met with the NUM for a 30 minute interview (see Instructions for Interview with Nurses, Appendix 5.3). During this interview the remaining part of the Patient Checklist was completed (as described in Chapter 2 and 3); the NUM was interviewed using the Nurse Knowledge Interview (see Appendix 5.4). The self completed Nurse Questionnaire (see Appendix 5.5) was given out at the end of the interview, with a request to return it, completed and sealed in the provided envelope and delivered to the box left at the nursing station by the following day. All day shift nurses were then interviewed at their prearranged time, using the Nurse Knowledge Interview and were given the Nurse Questionnaire to complete during the day. Confidentiality was assured and nurses were asked not to discuss the nature of the interviews with other staff.

MEASURES

Items for the questionnaire and the interview were generated from a review of the literature on attitudes among nurses towards the provision of smoking cessation care,^{10,12,17,23-25} and manuals of best practice in the provision of smoking cessation care by health professionals.^{26,27} The survey was first reviewed by an expert panel, comprising behavioural scientists, nurses and medical practitioners and then pilot tested by a small group of nurses in one hospital and modified according to their comments, prior to administration.

Nurse Knowledge Interview

Sociodemographic Variables

Questions were asked concerning age, gender, marital status, nursing education, current position, ward, shift and number of years nursing experience. Type of shift was measured with the question *What shift do you usually work?* Response options were Permanent day shift, Permanent evening shift, Permanent night shift, Regular rotating shift, Other.

Smoking History Variables

Current smoking status was measured by presenting a flip-card on which several definitions of smoking status were presented. Nurses were asked, *Are you a:-*

Smoker - i.e you have smoked at least 100 cigarettes in your life and you currently smoke (in the last 4 days)

Ex-smoker - i.e you do not currently smoke (in the last 4 days) but you have smoked more than 100 cigarettes in your life.

Non-smoker - i.e. you have not smoked more than 100 cigarettes in your life.

Measures of current smoking status, onset in relation to nurse training, duration and intentions about quitting were obtained. Intention to quit smoking was measured with two questions, firstly a general question *Would you like to stop smoking*, for which the response options were *Yes*, *No* and *Don't Know*. Secondly a more specific question *How likely is it that you will be giving up cigarettes in the next 3 months?* For this question a 7 point Likert scale was presented on a flip-card with response options ranging from *Extremely unlikely* to *Extremely likely*.

Nurses were asked *Do you think that your smoking status is a help or a hindrance in providing smoking advice for patients?* Response options ranged from *Very Helpful* to *A Great Hindrance*, on a 5 point Likert scale.

Knowledge of smoking and quitting

Both the extent and type of nurses' knowledge of smoking related illnesses were measured. In order to avoid chance guessing associated with multiple choice responses, the knowledge of health risk items was presented in open-ended format. Nurses were asked *Can you name up to seven diseases which you think can be caused by smoking?* Knowledge of smoking cessation strategies was measured by the questions *Imagine that Mrs Smith is a patient in your ward. She has decided to stop smoking today. Can you tell me any ways (maximum of 6) in which you could help her to quit?* Nurses were also asked *Can you name three places in your Health Area where you could refer Mrs Smith to receive help to quit smoking?*

Nurse Questionnaire

Nurses' attitudes to smoking and smoking cessation

Smoking is a health risk

On a four point Likert scale, nurses were asked to decide *How much do you agree or disagree with each statement*. Nurses who agreed or strongly agreed with the statement that, *Cigarette smoking can cause major damage to health* or disagreed or strongly disagreed with the statement, *Too much fuss is made of the dangers of smoking*, were considered to hold the attitude that smoking is a health risk.

Quitting smoking is beneficial

Nurses who agreed or strongly agreed with the statement that, *Giving up smoking helps a person live longer* or disagreed or strongly disagreed with the statement that, *Quitting will not improve the health of people who have smoked for a long time* were considered to hold the attitude that smoking cessation is beneficial to health.

Quitting smoking is achievable

Nurses who disagreed or strongly disagreed with the statement that *Quit smoking programs do not really help people to stop smoking* or disagreed or strongly disagreed with the statement that *Most patients who smoke do not want to quit* were considered to have a positive attitude that quitting smoking is achievable.

Nurses' attitudes to their role as providers of smoking cessation care

Appropriateness of the setting

All nurses were asked *How useful is the hospital stay as a place for a patient to quit smoking?* and *How useful is the hospital stay in helping a patient to stay a non-smoker?* Response options varied from *Very Useful* to *Not at all useful* (on a 3 point Likert-type scale).

Role of nurses

Nurses were asked how much they agreed or strongly agreed with the following statements *Helping patients to quit smoking should not be part of a hospital nurse's role; Hospital nurses should educate all smoking patients about the effects of smoking; Hospital nurses who smoke would make good quit smoking educators; Hospital nurses are too busy to teach patients about quitting smoking; Hospital nurses should not attempt to counsel patients who want to stop smoking; and Hospital nurses would make good quit smoking counsellors*

Capability and training

In relation to the following items of smoking cessation care, nurses were asked whether they felt confident carrying out these activities, whether they had received adequate training, and whether they felt that they had sufficient knowledge of these areas:

Asking patients whether they are smokers

Taking a detailed smoking history

Asking the patient if they want to quit smoking

Talking to the patient about how they go about quitting or staying quit.

Nurses were also asked *How enthusiastic would you feel attending an in-service training course on providing smoking cessation advice and support for patients who smoke?* Response options ranged on a 5 point Likert scale from *Very enthusiastic* to *Not at all enthusiastic*

Acceptability to patients

Nurses were asked *How do you think a smoking patient would feel, if a nurse who was trained to help people stop smoking, offered the following?* The care items included talking about smoking or quitting, advice to quit, describing how smoking affected health and the benefits of quitting, providing reading material about quitting, referral to quit agencies, and discussion of how to quit smoking or stay quit. Response options were *Patients would welcome it*, *Patients would not be interested*, and *Patients would resent it*.

Factors perceived to facilitate the provision of smoking cessation care

Nurses were asked to report whether certain conditions *would make it much more likely, a little more likely or no more likely* that they would provide stop smoking advice and support for their patients. These conditions included increases in time, support, confidence, training, knowledge and skills as well as structural prompts such as follow-up of patients after discharge, access to nurse specialists in smoking cessation, assessment and history forms, requests from patients, and incentives. Nurses were then asked to nominate the three most important items.

Perceptions of current levels of smoking cessation care

Four items of smoking cessation care were presented to nurses:

1. Correctly identifying smokers
2. Taking a detailed smoking history
3. Asking patients if they wanted to quit smoking
4. Talking to patients about how they might go about quitting.

Nurses were asked: *In the ideal world what proportion of smoking patients do you think you should provide each item of care for? Within the limitations of the current system what proportion of smoking patients do you think you could provide each item of care for? Over the past 4 weeks what proportion of smoking patients did you provide each item of care for?*

CODING

For the open ended question concerning knowledge of smoking related diseases, responses were classified as "correct" if they corresponded to diseases causally associated with smoking, according to Dickman and Gibberd²⁸ (See Appendix 5.6.1). Responses were broadly categorised into Cardiovascular, Respiratory, Cancer and Others; the total number of responses was calculated and the number of responses in each category was calculated as a proportion of the total number of responses.

Responses to the open ended question concerning methods or strategies which might aid a smoking patient to quit, and places where a smoking patient may be referred, were coded by first selecting a random sample of 30 answers and giving each unique response a code number. After 19 answers were coded, no additional "new" responses were identified. During the coding of the remaining interviews,

additional codes were added if any "new" responses were identified. Appendix 5.6.2 lists the general response descriptor as well as specific examples given by nurses on strategies to aid quitting. Appendix 5.6.3 provides coding options for Question 5 on referral places. All open ended knowledge questions were coded by 2 trained coders who were registered nurses. Training involved providing these coders with the same small sample of responses (also coded by the author). Coding was compared, feedback provided, and the process repeated until three successive samples were identically coded. During the remainder of the coding, random sampling of the coders' work and the provision of feedback ensured quality control during coding.

RESULTS

SAMPLE CHARACTERISTICS

There were 399 nurses on the day shift, in the 52 wards of the 6 hospitals on the randomly selected data collection days. Of these, 388 (97%) were eligible (i.e. were actually present in the ward on the data collection day), and 382 (98%) completed the Nurse Knowledge Interview (six nurses present in the wards were not able to be interviewed during the data collection day due to emergencies within the ward). Of these, 335 (88%) completed the Nurse Questionnaire (self-completed).

Sociodemographic characteristics

As Table 5.1 shows, the sample comprised predominantly young nurses, 73.9% were aged under 40 years and predominantly female nurses (93.7%).

Nursing characteristics

The majority of the nurses completed their nursing training in Australia (92.1%), within the hospital setting (71.8%), were highly qualified (51.2% had post basic nurse training, 55.8% were registered nurses), worked a regular rotating shift (78.3%), and had worked in their area of nursing for more than a year (65.4%). The category of *Other*, for area of nursing currently worked in, included renal, neurology, oncology, rheumatology, haematology, urology, orthopaedics.

Table 5.1 Characteristics of nurse sample.

<i>Characteristics</i>	<i>Nurses (n=382)</i>	
	<i>n</i>	<i>%</i>
Sociodemographic		
<i>Gender</i> Male	24	6.3
Female	358	93.7
<i>Age</i> 20-29	153	40.8
30-39	124	33.1
40-49	65	17.3
50-59	30	8.0
<i>Marital Status</i>		
Single	117	30.7
Married/DeFacto	223	58.7
Divorced/Separated/Widowed	40	10.5
Nursing		
<i>Country of Nurse Education</i>		
Australia	350	92.1
Overseas	30	7.9
<i>Type of Nurse Education</i>		
Hospital	273	71.8
University/College	107	28.2
<i>Post-basic nursing training</i>		
Yes	195	51.2
No	186	48.8
<i>Current Position</i>		
Registered Nurse	213	55.8
Clinical Nurse Specialist	47	12.3
Nursing Unit Manager	45	11.8
Enrolled Nurse	49	12.8
Other/Student/Assist.Director Nursing	28	7.3
<i>Current nursing area</i>		
Medical/Surgical	166	43.5
Obstetrics/Gynaecology	67	17.5
Coronary Care/Intensive care	37	9.7
Other	112	29.3
<i>Time working in this area</i>		
Less than 1 year	132	34.5
1 - 5 years	112	29.3
More than 5 years	138	36.1
<i>Shift usually worked</i>		
Permanent day shift	65	17.0
Permanent evening/night/other	18	4.7
Regular rotating	299	78.3

Smoking history characteristics

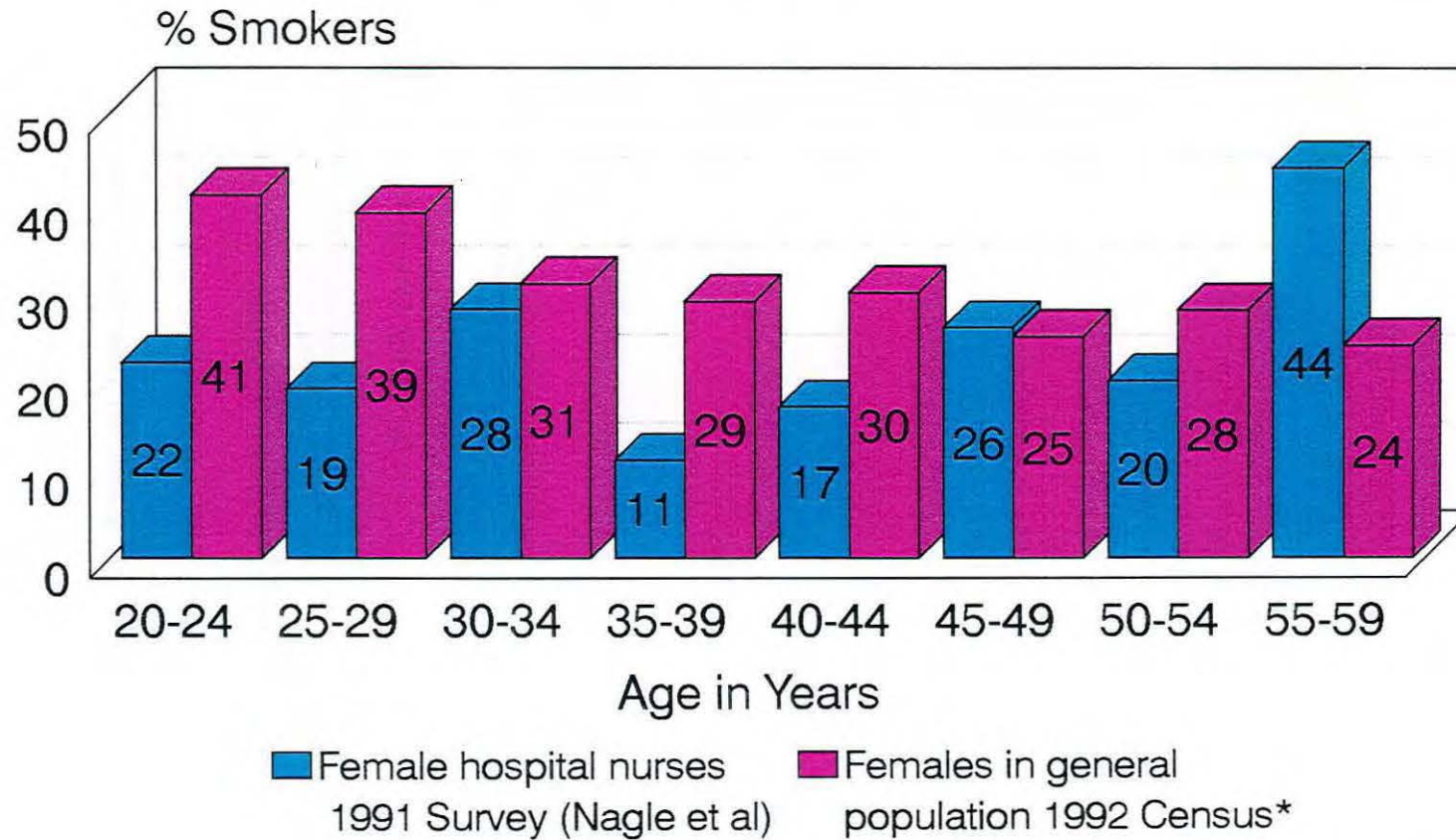
Among this sample of nurses, 21.7% reported being current smokers (i.e. reported having smoked in the last 4 days), 21.5% reported being Ex-smokers and 56.5% reported being Never Smokers. As displayed in Figure 2, in all age groups under 45 years, the proportion of smokers among the female nursing sample was less than that found in the general female population (approximately half in all age groups, except the 30-34 age group). Among women over 45 years the proportion of smokers among nurses is the same or greater than among the general female population (except among 50-54 year olds).

Predictors of smoking status among nurses

There was a significant difference in the proportion of smokers among different categories of nursing positions. Nineteen percent of registered nurses, 24% of clinical nurse consultants, 12% of nursing unit managers and 40% of enrolled nurses were smokers ($X^2=25.5$, $df=8$, $p<0.001$) (see Appendix 5.7.1). Hospital trained nurses were also significantly more likely to have been an "ever smoker" than university trained nurses ($X^2=7.6$, $df=2$, $p<0.02$) (see Appendix 5.7.2).

Table 5.2 shows that the majority of nurses who did smoke, began smoking prior to completing their nursing training (50.6% prior to training and 42.2% during their training). Only 14.5% of currently smoking nurses had been smoking for less than 5 years, whilst more than half (54.1%) had been smoking for more than 11 years. Of those nurses who were smokers, the majority (56.6%) reported that they would like to quit smoking, with a further 8.4% being ambivalent. When asked about the likelihood of quitting smoking in the next 3 months, 26.5% thought that it was likely.

Figure 2: Comparison of smoking x age among female nurses and the general population of women



*Hill DJ, White VM: Australian Adult Smoking Prevalence. Australian Journal of Public Health 1995;19(3):305-308

Table 5.2 Smoking history of self reported ever-smokers.

<i>Characteristics</i>	Smokers (n=83)		Ex-Smokers (n=82)	
	n	%	n	%
History				
<i>Onset of smoking</i>				
Before nurse education	42	50.6	44	54.3
During nurse education	35	42.2	35	42.1
After nurse education	6	7.2	2	2.4
<i>Duration of Smoking</i>				
Less than 5 years	12	14.5	37	46.3
6-10 years	26	31.3	24	30.0
11-20 years	30	36.1	15	18.8
More than 20 years	15	18.0	4	5.0
Motivation to quit				
<i>Would you like to quit?</i>				
Yes	47	56.6	-	-
Don't know	7	8.4	-	-
No	29	34.9	-	-
Intention				
<i>Likelihood of quitting in next 3 months</i>				
Likely	22	26.5	-	-
Unsure	7	8.4	-	-
Unlikely	54	65.1	-	-

Nurses' knowledge of smoking and quitting

There were no inaccurate responses given by nurses, i.e no nurses named diseases which were not causally related to smoking²⁸ (see Appendix 5.6.1.). In terms of the number of diseases named by nurses, 380 nurses (99%) were able to name at least one smoking related disease, 191 nurses (50%) were able to name 5 smoking related diseases and 62 nurses (16%) were able to name 7 smoking related diseases. As Table 5.3 shows, cancer was the most frequently named disease, (58% of all responses) followed by cardiovascular (27.1% of all responses) and respiratory (11.5% of all responses).

In terms of knowledge of strategies which might aid quitting, 379 nurses (99%) were able to name at least one strategy, 276 (72%) were able to name at least 3 strategies, and 43 (11%) were able to name 6 strategies. The most commonly provided strategies were diversional activities such as knitting, sucking lollies etc (22.1% of responses); emotional support/encouragement (19%); and referral to other health practitioners (10.8%). Responses relating to *other strategies* were relatively infrequent: increasing fluid (2%), providing literature (5.5%) and nicotine replacement therapy (3.6%).

Nurses' knowledge of potential referral sources, (Table 5.3) shows that QUIT was the most well known place to send a smoking patient for further advice or support (37.9%), followed by a psychologist or hypnotherapist (12.4%), a hospital specialist (11.6%), and Community Health or Department of Health (10.9%). Less well represented were responses which named Drug and Alcohol Counsellor (5.9%), 7th Day Adventist program (5.8%) and the patients' general practitioner (4.8%).

Table 5.3 Nurses' knowledge of diseases caused by smoking and strategies which aid quitting.

<i>Knowledge</i>	<i>Number and % of all responses given by nurses</i>	
	<i>n</i>	<i>%</i>
<i>Type of diseases known</i>		
<i>Total no. of responses (N=1745)</i>		
Cancer	1012	58.0
Cardiovascular	473	27.1
Respiratory	201	11.5
Other	59	3.4
<i>Strategies which aid quitting</i>		
<i>Total no. of responses (N=1320)</i>		
Providing literature	73	5.5
Referral	142	10.8
Nicotine Gum	48	3.6
Education	94	7.8
Diversional activities	292	22.1
Avoidance strategies	60	4.5
Rewards	68	5.1
Coping skills	102	7.7
Listening	55	3.8
Emotional support/encouragement	252	19.0
Goal setting	6	0.5
Increasing fluids	26	2.0
Removal of cigarettes	48	3.6
Other	54	4.1
<i>Local places to refer clients</i>		
<i>Total no. of responses (N=630)</i>		
Quit	239	37.9
Psychologist/Hypnotherapist	78	12.4
Hospital Specialist	73	11.6
Community Health/Dept of Health	69	10.9
Other	39	6.2
Drug & Alcohol Counsellor	37	5.9
7th Day Adventist program	37	5.8
Patient's GP	30	4.8
National Heart Foundation/Cancer Council	28	4.4

Nurses' attitudes to smoking and quitting

As shown in Table 5.4, the majority of nurses in the sample perceived smoking to be harmful (98% thought that cigarette smoking can cause major damage to health); quitting smoking to be both beneficial (81% thought that giving up smoking helps a person live longer) and achievable (72% thought that quit smoking programs really help people to stop smoking). The variables of age, location of nurse training, and nurses' smoking status were cross tabulated with attitudes to smoking and quitting to determine significant differences. The only significant association found was that more younger nurses thought that *most smokers do not want to quit smoking* ($X^2=8.2$, $df=3$, $p<0.04$) (see Appendix 5.7.3)

Table 5.4 Nurses' perceptions of the benefits and barriers to smoking cessation.

<i>Attitude</i>	<i>Direct care nurses who agreed</i>	
	<i>n</i>	<i>%</i>
Smoking is a health risk		
<i>Cigarette smoking can cause major damage to health (n=327)</i>	320	98
<i>Too much fuss is made of the dangers of smoking (n=331)</i>	37	11
Quitting smoking is beneficial		
<i>Giving up smoking helps a person live longer (n=323)</i>	261	81
<i>Quitting will not improve the health of people who have smoked for a long time (n=324)</i>	55	17
Quitting is achievable		
<i>Quit smoking programs do not really help people to stop smoking (n=323)</i>	92	28
<i>Most people who smoke do not want to stop (n=322)</i>	145	45

Nurses' attitudes to their role as providers of smoking cessation care

Appropriateness of the setting

As Table 5.5 shows 72% of nurses perceived the hospital stay as a useful place for patients to quit smoking.

Role of Nurses

Table 5.5 also shows the attitudes of nurses to providing smoking cessation support to patients. Fifty eight percent of nurses thought that they should educate *all* smoking patients about the effects of smoking on health, whilst counselling patients who *wanted to stop smoking* was perceived as being part of the nurses' role by more nurses (75%).

Table 5.5 Nurses' attitudes to their role in providing smoking cessation.

<i>Attitude Statements</i>	<i>Nurses who agreed</i>	
	n	%
<i>Appropriateness of the setting</i>		
<i>Hospital stay is useful as a place for patients to quit smoking</i>	237	72
<i>Hospital stay is useful in helping a patient stay a non-smoker</i>	222	67
<i>Role</i>		
<i>Helping patients to stop smoking should not be part of a hospital nurse's role</i>	132	40
<i>Hospital nurses should educate all smoking patients about the effects of smoking</i>	189	58
<i>Hospital nurses should not attempt to counsel patients who want to stop smoking</i>	82	25
<i>Capability and Training</i>		
<i>Hospital nurses would make good quit smoking counsellors</i>	192	59
<i>Hospital nurses who smoke would make good quit smoking educators</i>	72	22
<i>Hospital nurses are too busy to teach patients about quitting smoking</i>	201	63

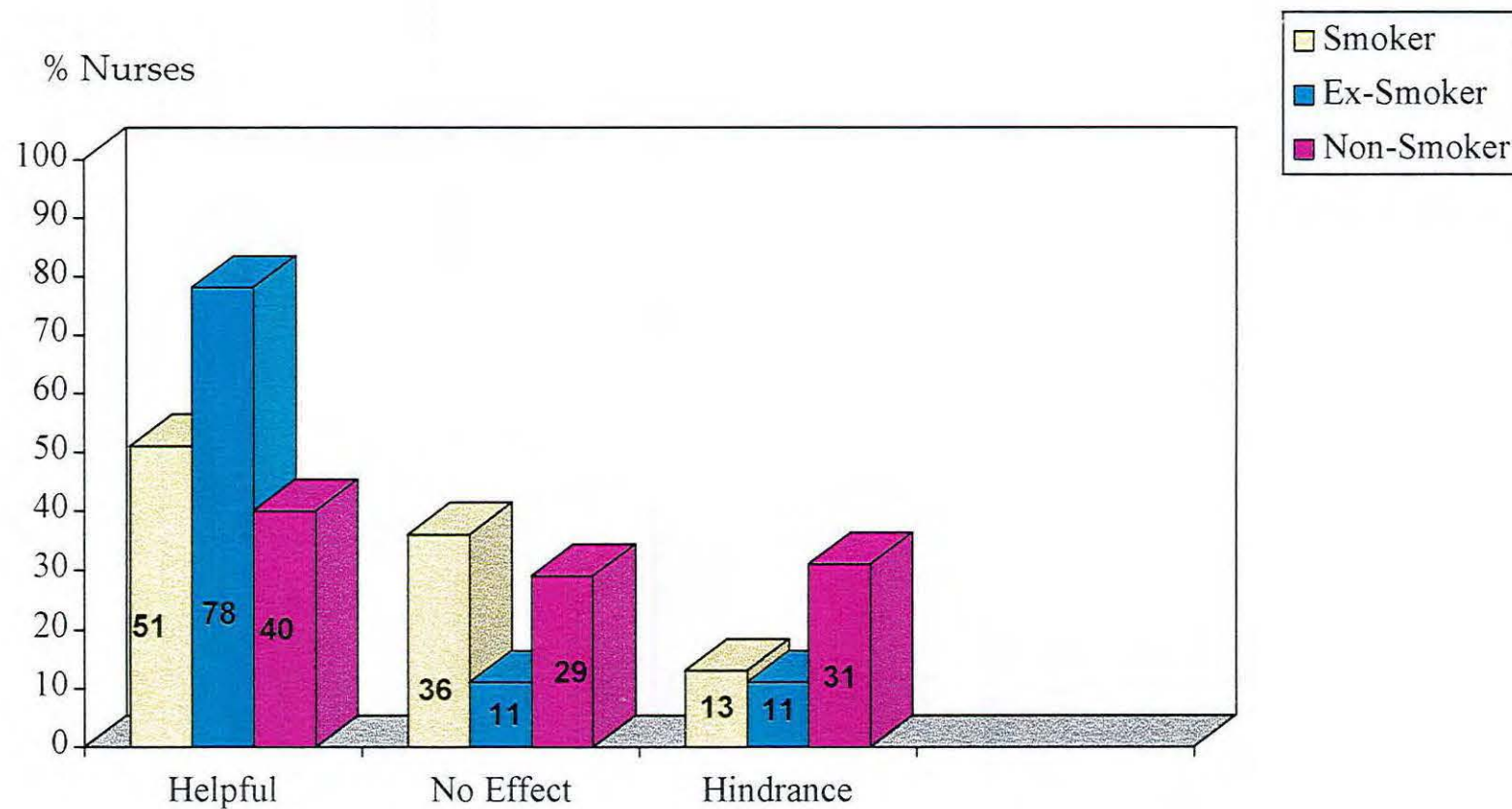
Capability and Training

Table 5.5 shows that 59% of nurses felt that nurses would make good quit smoking counsellors, however, only 22% thought that nurses who smoke would make good quit smoking counsellors. The majority of nurses felt that nurses were too busy to teach their patients about quitting smoking (63%).

Table 5.6 shows that a high proportion of nurses expressed confidence in their ability to ask about the patient's smoking status (96.6%) but fewer were confident about discussing quitting smoking with a patient (61.5%). In terms of knowledge of smoking cessation care, 61.6% felt that they had all the knowledge they needed about asking a patient about their smoking status, and only 21.2% felt that they had enough knowledge about discussing smoking cessation with a patient.

Similarly most nurses felt that they lacked adequate training in providing smoking cessation care, with only 58.2% reporting that they had received adequate training in assessing smoking status, 43.3% in determining patients' quitting intentions and 24.5% in discussing how to quit smoking. However 75.9% of all nurses were enthusiastic about attending in-service training courses on smoking cessation care. Nurses' age, location of training, post basic training and smoking status were cross tabulated with perceptions of confidence in providing smoking cessation care. Nurses who had no post basic training were significantly more confident in asking patients if they wanted to quit smoking than nurses who had post basic nurse training ($X^2=8.5$, $df=1$, $p<0.003$) (see Appendix 5.7.4).

Figure 3: Nurses' Percieved impact of smoking status on the provision of cessation care



Nurses' perceptions of the impact of their smoking status on the provision of smoking cessation care

Figure 3 shows that 51% of smoking nurses thought that their smoking status would be helpful in providing smoking cessation care to inpatients, as did 78% of ex-smoking nurses, however only 40% of never smoking nurses found their smoking status helpful. Thirteen percent of smoking nurses thought that their smoking status was a hindrance to the provision of smoking cessation care to inpatients, compared to 11% of ex-smoking nurses and 31% of never smoking nurses. Ex-smokers and Smokers were significantly more likely than Non Smokers to find their smoking status helpful ($X^2=26.6$ $df=2$, $p<0.00001$) (see Appendix 5.7.5).

Table 5.6 Nurses' perception of ability to provide smoking cessation care.

<i>Attitude</i>	<i>Direct care nurses who agreed (n=335)^a</i>	
	<i>n</i>	<i>%</i>
Past Training		
<i>Received adequate training in:</i>		
Asking smoking status (326)	190	58.2
Taking smoking history (327)	128	39.1
Assessing intentions to quit (326)	141	43.3
Discussing how to quit (327)	80	24.5
Future Training		
<i>Enthusiastic about attending in-service training on providing cessation care</i>	247	75.9
Confidence		
<i>In current knowledge of:</i>		
Asking smoking status (326)	201	61.6
Taking smoking history (324)	123	38.0
Assessing intentions to quit (323)	158	48.6
Discussion how to quit (325)	69	21.2
<i>In providing care:</i>		
Asking smoking status (326)	315	96.6
Taking smoking history (326)	248	76.0
Assessing intentions to quit (327)	251	76.7
Discussion how to quit (325)	200	61.5

^a Approximately 10 nurses returned questionnaires with no responses.

Acceptability to patients

Table 5.7 shows nurses' perceptions of how patients would react to smoking cessation care. The supportive aspects of smoking cessation care, that is, talking about smoking cessation (63%), being referred to a quit agency (62%), discussing how to quit smoking and provision of literature (58%), were considered the most acceptable to patients. However, the more confrontational aspects such as telling the patient how smoking was affecting their health (42%) and advising them to stop smoking (22%) were less well supported. In fact 35% of nurses felt that patients would resent being *advised* to stop smoking.

Table 5.7 Nurses' perceptions of patients' willingness to accept smoking cessation care from a nurse.

Care	Proportion of nurses who perceived that patients would					
	Welcome Care		Not be interested		Resent Care	
	n	%	n	%	n	%
Talked to about smoking or quitting (308)	195	63	88	29	25	8
Advised to stop smoking (307)	69	22	132	43	106	35
Told how smoking was affecting their health (305)	128	42	122	40	55	18
Given literature on quitting(303)	174	58	107	35	22	7
Referred to quit agencies (304)	188	62	97	32	19	6
Discussion of how to quit smoking (306)	184	60	92	30	30	10

Factors perceived to facilitate the provision of smoking cessation care

Table 5.8 describes the factors likely to increase the provision of smoking cessation care and the proportion of nurses who held this attitude. As can be seen, all factors listed with the exception of nurses' non-smoking status were considered facilitators of smoking cessation care by the majority of nurses. Nurses ranked *patient requesting care* as the *most important* factor, followed by *more time* and *availability of in-service training*. The lowest priority was given to *more confidence*, *support from supervisor*, *smoking history forms* and *nurses personal smoking status*.

Perceptions of current levels of smoking cessation care

Table 5.9 shows that in an *ideal world* the majority of nurses felt that *all* smoking patients should be receiving smoking cessation care, when asked the same question but *within the limitations of the current system* less than 25% thought that *all* smoking patients could receive this care. When asked about levels of care provision over the preceding 4 weeks, less than 10% of nurses felt that *all* smoking patients had received the items of care listed. In fact the majority of nurses felt that in the last 4 weeks *no* smoking patients had a smoking history taken, were asked about their intentions to quit, or had smoking cessation strategies discussed with them.

Table 5.8 Nurses' perceptions of facilitators to the provision of smoking cessation care.

<i>Item</i>	<i>Proportion of nurses who thought the following facilitators would make them more likely to provide smoking cessation care. (n=325)</i>		<i>Ranking as most important</i>	<i>Ranking as one of 3 most important</i>
	<i>n</i>	<i>%</i>		
Patients requesting care	319	98.2	1	2
More time	286	88.3	2	3
More knowledge	283	87.1	5	6
Quit counsellors/nurse specialists available for staff to consult with	281	86.5	4	4
Having better skills	280	86.2	7	8
In-service training available	270	83.1	3	1
Patients followed-up post-discharge to determine success	264	81.2	7	5
Incentives for nurses	246	75.7	9	9
Smoking history forms	241	74.2	12	10
Medical practitioner pre-admission advice to quit	233	71.7	6	7
More support from supervisor	223	68.6	11	12
More confidence	220	67.7	13	13
If nurse were not a smoker	126	38.8	10	11

Table 5.9 Nurses' perceptions of current levels of smoking cessation care provided to smoking patients.

<i>Perceptions of care provision</i>	<i>Proportion of nurses who thought that care would be provided to:</i>							
	No Smokers (0%)		The Minority of Smokers (1%-50%)		The Majority of Smokers (51%-99%)		All Smokers (100%)	
	n	% ^a	n	%	n	%	n	%
In the ideal world								
Smoking status known	27	9	22	8	70	24	174	59
Smoking history taken	34	11	25	8	54	18	173	62
Intentions to quit assessed	43	14	26	9	45	15	183	62
Strategies for quitting discussed	42	14	28	9	56	19	170	57
Within the limitations of the current system								
Smoking status known								
Smoking history taken	17	6	65	21	183	60	41	13
Intentions to quit assessed	43	14	61	20	147	49	48	16
Strategies for quitting discussed	50	17	64	21	109	36	73	24
	52	17	76	25	119	38	52	17
Currently occurring (in the past 4 weeks)								
Smoking status known	81	28	75	26	104	36	30	10
Smoking history taken	197	70	36	13	34	12	14	5
Intentions to quit assessed	195	69	43	15	30	11	13	5
Strategies for quitting discussed	195	69	48	17	27	10	12	4

DISCUSSION

Whilst nurse-provided quit smoking programs in public hospitals have the potential to capitalise on the window of opportunity presented by the hospital stay, reorientation of the nursing workforce in the area of preventive health care (and in the area of tobacco control in particular) is essential. The data presented in this chapter provides information on nurses' current knowledge, attitudes, skills and confidence in providing smoking cessation care. Factors which facilitate and impede nurses' adoption of smoking cessation care as part of routine nursing care are also described. These factors are discussed in relation to their implications for the design and development of interventions to facilitate the adoption of smoking cessation care by hospital nurses.

Nurses' smoking behaviour

The finding that 21.7% of nurses were self reported smokers is a slightly lower smoking rate than the 25%¹⁵, 22%¹⁹ and 22.9%¹⁷ smoking rate among nurses reported in other recent studies. The myth that "so many" nurses smoke and are therefore inappropriate as providers of smoking cessation care, had its origins in the high smoking rates of over 40% reported during the 1970s. However the data from the current study suggest that these high rates may no longer be a reality and that the smoking rate among hospital nurses appears to be lower than among women in the Australian community generally (24.7% in 1989).²⁹ It is possible that the demand characteristics of working as a health professional in a smokefree health care setting may encourage nurses to conceal their true smoking status. However,

all other studies found in the literature reported only self report data, making comparisons compatible. The data shows that for nurses under the age of 45, prevalence is lower than the general population, however, over the age of 45 the prevalence is higher for most age groups. There would seem to be no plausible reason why deception should occur disproportionately with age. Therefore even allowing for a constant level of deception it appears as if the prevalence of smoking is decreasing among nurses.

An increased professional role for nurses in the provision of smoking cessation care for their patients could potentially have an additional benefit in reducing this smoking rate further. Incorporating training in relation to smoking and smoking cessation care into the undergraduate curriculum is also crucial to the reorientation of nursing care in the hospital. And given that 92.8% of nurses who are smokers began smoking during or before their training, there is obvious potential for an increased focus on the importance for nurses of being a nonsmoking role model. As more than half the nurses who smoke reported that they would like to quit smoking and 26.5% thought there was a likelihood of being a non-smoker in the next 3 months, it would seem that work-based and faculty-based smoking cessation programs specifically targeting nurses and student nurses should be adopted.

Whilst 78% of nurses thought that generally, smoking nurses would not make good quit smoking educators, when asked specifically about their own behaviour and performance, 52% of smoking nurses thought that their smoking behaviour would be helpful in providing smoking cessation care to patients (compared to 40% of non smoking nurses). It is possible that such life events may predispose some nurses to be more willing to provide smoking cessation care,

however perceptions of the generalised other are more conservative than perceptions of self. Further research is needed to determine whether nurses show stages in their readiness to adopt smoking cessation care similar to the stages described in Prochaska et al's Transtheoretical Model of Change.³⁰ It is feasible that health care providers, when adopting a new health care behaviour, may move through the same stages of change (Precontemplation, Contemplation, Preparation, Action, and Maintenance) as clients do when adopting a new health behaviour. This finding also shows the separation expressed by nurses between their professional and personal behaviours, in that 52% of smoking nurses felt that their smoking helped them provide cessation care to patients.

Nurses' knowledge of smoking and quitting

Faulkner et al¹⁰ in a 1983 study, reported that when not cued by a multiple choice question, nurses displayed poor knowledge of the health risks of smoking. However the data from the current study showed that 50% of nurses were able to correctly name at least 5 diseases caused by smoking. When the various diseases named by nurses were examined, 58% of diseases named related to cancer, 27% to cardiovascular disease and 11.5% to respiratory diseases.

The majority of nurses (72%) were able to describe at least 3 strategies to assist a smoking patient who wanted help with quitting. However the responses most often did not reflect state-of-the-art practice guidelines for providing smoking cessation interventions. Instead they reflected a more passive style of intervention, for instance diversional activities such as knitting and sucking on lollies (22% of strategies named), and providing emotional support (19%). Knowledge of more active strategies was less frequent, (5.5% for provision of literature and 3.6% for use of

nicotine replacement therapy). This data suggests a lack of training in the delivery of brief smoking cessation interventions.

Similarly nurses' limited knowledge of places where they might refer a smoking patient also suggested the need for improved training. Whilst 37.9% of referral options named QUIT, only 4.8% named general practice. Recent research and public health initiatives have focused strongly on the increased role and effectiveness of general practitioners in providing quit smoking advice,³¹⁻³³ however, nurses seem unaware of these initiatives. Programs designed to increase adoption of smoking cessation care by nurses should focus on disseminating findings of current research concerning the efficacy of multiple health professionals in providing smoking cessation care. Whilst nurses appeared to have limited knowledge of state-of-the-art intervention strategies, their attitudes towards smoking as a health risk were very positive. The majority of nurses believed that smoking was harmful (98%), that quitting was beneficial (81%) and achievable (72%). Such attitudes are likely to predispose nurses to providing smoking cessation care, given adequate training.

Nurses' perceptions of their role as providers of smoking cessation care

Nurses felt that helping patients to stop smoking should be part of their role (60%). There was however more widespread support for the role of *counselling patients who wanted to quit* (75%), than for the role of educating *all* smoking patients on the effects of smoking on health (58%). It appears that smoking cessation support may be conceived by nurses as a response only to patients who express the desire to quit. In fact *patients requesting care* was considered by nurses to be the most important facilitator of an increased nursing role in provision of

smoking cessation care. If the 56% of smokers who said that they would like to stop smoking, or the 54% of smokers who reported quitting prior to admission (Chapter 3) explicitly requested help from nurses, then current attitudes among nurses should predispose them to provide smoking cessation support to over half the population of inpatient smokers. The implications of this finding are, firstly, that smoking cessation interventions in the hospital setting, provided by nurses may be improved if they incorporated, assessment of intentions about quitting and interest in receiving smoking cessation support from nurses. Such information if then explicitly displayed on the patients medical record would constitute a request for help and may act as a prompt for nurses in providing smoking cessation support.

The second implication of this finding is that any nurse training program should discuss and promote proactive provision of smoking cessation care rather than a reliance on reactive care. This reorientation has already been flagged in policy documents of leading nursing organisations, such as the American Nurses Association in their *Nursing's Agenda for Health Care Reform*.³⁴ This document suggested that nurses take a proactive role in taking preventive health care to the consumer rather than waiting to be asked for assistance. Nurses may be viewing smoking as a patient's lifestyle choice rather than as a vital sign of a major chronic disease. Fiore⁸ has suggested that within the health profession, smoking status should be regarded as the fourth vital sign, along with blood pressure, pulse rate and temperature.

A large gap was found to exist between nurses' perceptions of the ideal provision of smoking cessation care in the hospital setting and the reality of the ward setting. The majority of nurses (57% - 62%) thought that in the ideal world all smoking patients should receive the four items of smoking cessation care

(identification of smoking status, history taken, intentions assessed and quit strategies discussed). However the finding that a small group of nurses (9-14%) felt that even in the ideal world *no* smoking patients should receive any of these items, suggests the need to address this issue in inservice training programs. Within the limitations of the current system, less than 24% of nurses felt that all smoking patients would receive the four items, and when asked about the preceding 4 weeks, only 4-10% of nurses felt that *all* smokers had received this care. This large discrepancy between the ideal world and the ward reality, suggests that even with positive attitudes and the perceived appropriateness of the role, there are factors which are impeding the delivery of care, and which need to be identified and resolved in intervention.

Nurses' perceptions of what patients find acceptable

The more supportive aspects of care such as, talking about smoking and quitting, giving literature, referral, and discussion of how to quit smoking, were perceived by nurses as being acceptable to patients (58% to 63%). However, the more confrontational activities, such as telling the patient how smoking was affecting their health and advising the patient to stop smoking, received less support (42% and 22% respectively). This wariness of raising the topic with smokers was not supported in the patient data (Chapter 4) where only 11.9% of smoking patients thought they would resent a nurse talking to them about smoking or quitting.

Nurses' perceptions of their own abilities in providing smoking cessation care

Nurses thought that they lacked skills to provide smoking cessation care. Whilst the majority of nurses felt that providing smoking cessation care should be part of their role, 41% of nurses felt that they would *not* make good smoking counsellors. Nurses perceived a lack of knowledge of the skills required to deliver interventions. For example while 61% felt they had enough knowledge about how to ask a patient about smoking status, only 21.2% felt they had enough knowledge about discussing smoking cessation. This poor skill-based knowledge was also found in the responses to the open ended question on which strategies might aid quitting. Approximately 60% of nurses reported that they lacked training in these skills, and inservice training programs were cited as the third most important factor in increasing the provision of smoking cessation care. The implications of this finding are that both inservice training and undergraduate training courses need to be developed and implemented with a focus on skills acquisition. The study found that 75.9% of nurses would be enthusiastic about attending in-service training.

Barriers to provision of cessation care

Whilst 72% of nurses perceived that the hospital setting was an appropriate place for patients to quit smoking, 63% reported that they were too busy to provide smoking cessation education. Goldstein et al,¹⁵ in contrast (in their study, conducted in the mid 1980s) reported that only 8% of nurses felt that providing smoking cessation care involved too much time.¹⁵ It is possible that increased demands on the role of the nurse have increased the time constraints involved in adopting any new care. The implications of these findings are that hospital administration must

allow for the provision of preventive care in their allocation of staff time, and that brief interventions must be developed and evaluated for use in this setting. The majority of nurses thought that the structural factors such as availability of quit counsellors, post discharge follow-up, pre-admission advice to quit from a general practitioner, availability of smoking history forms, incentives for nurses and supervisor support would make them more likely to provide smoking cessation support (ranging from 68-98% of nurses). Programs designed to enhance the adoption of smoking cessation care should therefore incorporate these structural supports and reinforcers.

CONCLUSION

This chapter presented data on the attitudes and knowledge among nurses which predispose, enable and reinforce the provision of smoking cessation care. The findings have implications for nurse education, hospital policy and further research:

Nurses Education

a) In-service training would be well received by hospital nurses. Such training should incorporate opportunities to share and discuss attitudes, such as the delivery of proactive vs reactive smoking cessation care, smoking as a vital sign for chronic disease vs smoking as a lifestyle choice, the myth of high smoking rates among nurses, and the separation of professional and personal behaviour. The training should also incorporate skills acquisition in the delivery of brief smoking cessation interventions.

b) Undergraduate training should incorporate all of the above with particular emphasis on the importance of nurses as nonsmoking role models. Every

effort should be made to involve student nurses who smoke in quit smoking programs, to reduce the prevalence of smoking among student nurses before they graduate to practice.

Hospital Policy

a) **Clear policy statements** stating the importance of reorienting health care delivery, and increasing preventive health activities are required from hospital management. Strategies need to be implemented and structural prompts developed which are likely to facilitate the proactive provision of cessation care including assessing patients' intentions regarding quitting and their willingness to accept support from nurses.

b) **Allocation of resources** should incorporate, as a priority, time allowances, both for training and for the actual delivery of brief smoking cessation care during usual ward routine.

c) **Articulation of pre-discharge, inpatient and post discharge planning** is required, to coordinate referral to general practitioners and hence strengthen awareness of collaborative opportunities.

Research

a) **Stages of change** - Research which describes the stages of change traversed when health providers adopt a new health care behaviour has the potential to inform the way in which inservice training is delivered. Potentially different training programs may be required where training is tailored specifically to the health providers particular stage of change. Such work has been undertaken by Prochaska et al in relation to clients' health behaviour change,³⁰ but as yet no work has been published on the process of change among health providers.

b) **Efficacy of interventions** - evaluation of interventions aimed at

increasing the adoption of smoking cessation care by nurses is needed, as are interventions which evaluate the cost and resources required to achieve particular quit rates within the hospital setting.

c) Current detection and care - If nurses are to be encouraged to adopt smoking cessation care as part of their usual patient care then it is crucial that smoking patients be identified on their medical records to alert staff to the need for treatment. There is currently no data on the extent of identification of smoking patients on medical records, nor any data on levels of smoking cessation care currently being provided by direct care nurses. The next chapter will examine both current levels of identification of smoking patients, nurses knowledge of their smoking patients and levels of smoking cessation care currently provided to inpatient smokers.

CHAPTER 6

**Current assessment and
care of
hospitalised patients**

INTRODUCTION

Literature relating to the effectiveness of health professionals in providing brief interventions has largely focused on care delivered by physicians in the primary care setting, while hospital based interventions¹ and interventions delivered by nurses² have been largely unreported. A steady increase has been noted from community samples in the proportion of people who report receiving quit smoking advice from their general practitioners, from 35% in a 1975 study³ to 42% in a 1985 study⁴ to 50% in a 1991 study.⁵ Medical practitioners have been found to correctly identify approximately half (56%) of their smoking patients.⁶

There is some evidence from the literature on smoking cessation trials that nurses can be effective in delivering brief smoking cessation interventions within the primary care setting,⁷ the outpatient setting,² and to patients following myocardial infarction.⁸ Those few trials which have incorporated a nursing intervention with brief general practitioner advice to quit smoking, have demonstrated nurses' potential and found a doubling of quit rates in the nursing conditions.^{1,8} Zhand found that, when given the same training, nurse practitioners were more likely than physicians to counsel smoking patients about quitting.⁷ Barr Taylor et al⁸ conducted a randomised controlled trial of a nurse-managed intervention for acute myocardial infarction patients, which focused on relapse prevention, initiated in the hospital and conducted largely by telephone, and they found a significantly higher biochemically verified cessation rate (71%) in the intervention group compared to the usual care group (45%) (95% CI, 9.5% to 42.6%). Hollis et al¹ found that three nurse assisted interventions (following physician

advice) significantly increased the quit rate among primary practice patients over brief physician advice alone (6.9%, 7.6% and 7.1% vs 3.9% respectively).

Whilst there is some evidence in the experimental literature that nurses are capable of effective delivery of smoking cessation care, the actual levels of counselling being received by smoking patients within the hospital setting has been poorly researched. Delivery of smoking cessation advice has been described as a "neglected factor" in the treatment of patients.⁹ Few studies could be found which described the extent of smoking cessation care being delivered to smoking inpatients, and no studies could be found which examined the identification, on the medical records, of inpatient smokers. In one of the few rigorously conducted surveys involving a representative sampling frame rather than a convenience sample, Goldstein et al found 35% of nurses reported that they had actually counselled patients about smoking cessation.²

Data from the previous chapters have shown that the majority of nurses (75%) are positive about counselling patients who want to quit smoking (Chapter 5) and that the majority of hospitalised smokers in Hunter public hospitals (56%) report that they want to quit smoking (Chapter 3). Additionally 33-40% of inpatient smokers expressed willingness to receive smoking cessation care from their nurses (Chapter 4). Both patients and nurses hold favourable attitudes to smoking cessation care being provided within the hospital setting by nurses (Chapter 4 and 5). Goldstein et al have similarly reported that 52% of nurses believed that they should provide smoking cessation care to all patients.² The study reported in Chapter 4, found that only between 4% and 10% of nurses felt that in the last 4 weeks, all smoking patients had received the basic items of smoking cessation care, namely smoking history, advice to quit, discussion of how to quit and referral to an

appropriate agency (Chapter 5). Therefore it seems that whilst attitudes may be supportive, there is a perception among nurses that care is not currently being optimally provided.

Introducing smoking cessation interventions into the routine nursing care of hospital patients will involve systematically overcoming the barriers to such care provision.¹⁰ One barrier identified in the literature to the delivery of smoking cessation care in health care settings is the lack of systematic identification of smoking patients.¹¹ The inclusion of smoking status as a vital sign is an essential first step and has the potential to act as a prompt to begin further discussions with the patient¹² and flags smoking status as an important health indicator worthy of repeated monitoring as an indication of the patients overall health status.

Pilot testing had revealed that hospitals had no standard forms for recording smoking status on the medical records and no standard method for asking patients about their smoking status. Therefore an audit of the entire medical record would be necessary. The most likely question asked by hospital staff would be *Are you a smoker?* This question could well be interpreted by a patient as meaning either *Have you been a regular smoker at home?* or alternatively *Will you be a smoker in hospital?* This study examined how patients with various descriptions of smoking status on their medical records reported their own smoking status at bedside interview and in relation to hospital admission.

The aim of this chapter was to assess the extent and nature of current detection of smoking patients within the hospital setting and current levels of smoking cessation care provided within the hospital setting by nurses. The specific aims of this study were to:

1. Determine patient's report of having been assessed for smoking status, and by whom, on admission to hospital.
2. Compare the smoking status recorded on the medical records with patients' self reported smoking status.
3. Determine the proportion of self reported smoking patients currently receiving smoking cessation care from ward nurses, as reported by both nurses and patients.
4. To determine the characteristics of patients who have their smoking status recorded and who receive smoking cessation care from their nurses.
5. Determine the proportion of nurses who report providing smoking cessation care to any patient perceived to be a smoke.

METHOD

SAMPLING

This chapter reports data from 3 data sources, patient survey data, previously described in Chapter 2 and 3, nurse survey data, previously described in Chapter 5, and medical record data from an audit of the patients' medical records, which will be described in this chapter.

PROCEDURE

Patient survey

Patient data was obtained from the brief bedside interview (see Chapter 2) and from the self completed Patient Questionnaire as described in Chapter 3. Appendix 3.1, 3.2 and 3.3).

Nurse Survey

Similarly the method of approaching and interviewing the day shift nurses in the 52 wards has been described in Chapter 5. After completion of the Nurse Knowledge Interview, the trained interviewers delivered the Nurse Care Interview (see Appendix 6.1 for the interview schedule and Appendix 2.3 for the procedure). These interviews occurred in a private room near the main nursing station. The nurses' responses to each question on the Nurse Care Interview were recorded on the Nurse Care Coding Sheet (see Appendix 6.2). The bed number of each patient had been recorded in the left hand column of this form, however during the

interview specific questions were asked using both the patient's name and their bed number. For example, *Have you advised Mr. Bloggs in bed 8 about?*

Medical Record Audit

This data was collected during the Nursing Unit Manager (NUM) Interview, described initially in Chapter 2 (see Appendix 2.3). After the NUM had scanned the medical record of each patient to determine eligibility, mobility and scheduling for anaesthesia, s/he was asked to determine whether there were any entries regarding the patient's smoking status (see Appendix 5.3). This procedure overcame the problem of interviewers not being allowed access to the medical records. The interviewer asked the NUM *Can you tell me if there is anything recorded in ...(patient's name)'s...medical record.. about his/her smoking status, ie. whether there is an entry either at admission or in the nursing or medical notes which mentions whether he/she is a smoker, an ex-smoker or non-smoker?* Interviewers checked that the NUM was scanning each page of the medical record. NUMs were reminded that it was not their previous knowledge, nor their opinion of the patient's smoking status which was required, but any mention of the patient's smoking status recorded anywhere on the medical record. NUMs were requested to search every page including the history, medical notes and nursing notes. Medical record smoking status was thus recorded by the interviewer as either *Smoker, Ex-smoker or Non Smoker*.

MEASURES

Patient survey

Patients' self reported smoking status at brief bedside interview

All patients were asked their smoking status during the brief bedside interview (as described in Chapter 3). After consenting to provide a saliva sample for cotinine analysis, patients were read the list of smoking categories and asked to *point to the category listed on the card which best describes your smoking status:*

In summary the categories were

Smoker: *You have smoked cigarettes, cigars or pipes in the last 4 days.*

Recent Quitter: *You have not smoked in the last 4 days and you have quit smoking sometime in the last 3 months.*

Ex-smoker: *You have quit smoking more than 3 months ago.*

Non smoker: *You have never smoked more than 100 cigarettes, cigars or pipes in your life.*

Patients' self reported smoking status in relation to hospital admission

The method of determining patients' smoking status at admission has been described in Chapter 3. In summary, "Quitting smoking at admission" was described as ceasing to smoke in the previous 3 months and prior to or on admission to hospital. "Continued smoking" was described as having consumed some cigarettes on any day in hospital after the day of admission.

Patients' report of assessment for smoking status at admission

Patients were asked, in the self-completed questionnaire (See Appendix 3.1, 3.2 and 3.3) *When you arrived in hospital for this stay, were you asked if you smoked by:*

- a) A nurse*
- b) A receptionist/clerk*
- c) A doctor*
- d) Other, please write who.*

Patients responded either yes or no to each of the response options.

Patient report of cessation care received from nurses

"Smoking cessation care" was used to describe the basic steps in a brief smoking cessation intervention. The items, which were initially pilot tested with both patients and nurses, were based on the American Lung Association model of Ask, Advise, Assist, Arrange.¹³ Self reported smokers and recent quitters were asked *Since you have been in hospital, has a nurse ever:-*

- a) Talked to you generally about smoking or quitting*
- b) Advised you to stop smoking (smokers only)*
- c) Told you about how smoking was affecting your health (or about the benefits to your health after stopping smoking, for recent quitters)*
- d) Given you some reading material about quitting smoking*
- e) Told you about people who might help you with quitting smoking (or staying a non-smoker, for recent quitters)*
- f) Talked about how you might go about quitting smoking (or staying a non-smoker, for recent quitters)*

Each patient received general nursing care from multiple nurses. Therefore the proportion of self reported Smokers and Recent Quitters who reported receiving cessation care from at least one nurse was used as the measure of the extent of care received by patients.

Nurse survey

Nurses' identification of patients who were smokers

In order to determine the extent and nature of identification of smoking patients by nurses, nurses were first asked if they had provided direct nursing care of each patient in the sample in the last 4 days. If they answered yes, then they were asked whether they thought this patient was a smoker. Nurses were then asked *What makes you think that [patient's name] is a smoker?* Response options included

Checked the medical record/history

Observed him/her smoking or took him/her outside to smoke

Observed other signs of smoking eg, smoky breath, cigarettes in a drawer

Asked him/her about smoking

He/she told you

Lifestyle, friends, attitudes, personal attributes

Friends, relatives told me

Told by doctor

Other

Nurses' report of cessation care provided

In the Nursing Care Interview, nurses were first asked: *Have you provided*

any direct care of [patient's name and bed number] during the last 4 days? If the answer was *No*, then no further questions were asked of this nurse for this particular patient. If the nurse answered *Yes* i.e. they had provided care for this patient in the previous 4 days then the nurse was asked: *Which of the following options best describes [patient's name] smoking status?* A flipcard with the same definitions as were provided for patients (see above) was shown to the nurse. These two questions were asked for all eligible patients in the ward before any further questions about smoking cessation care were asked. This strategy aimed to reduce potential response bias which might have occurred once nurses realised that describing each patient as a *non-smoker* involved no further questions and a much shorter interview.

After describing patient's smoking status, nurses were asked a series of questions about each patient whom they considered to be either a Smoker or a Recent Quitter. Recent Quitters were included in the care interview as it was possible and certainly desirable for nurses to provide smoking cessation care to a patient who had quit smoking at admission to hospital. Nurses were also asked how they had arrived at their determination of the patient's smoking status; what they thought the patient's risk status was; what they thought the patient's intentions were concerning smoking and quitting; whether it was the patient or the nurse who had initiated any discussions about smoking or quitting. If any discussion had occurred concerning smoking or quitting, the nurse was then asked *During any of these conversations, with [patient's name] did:*

- a) [patient's name] ask to be taken outside to smoke (for smokers only)?
- b) you advise [patient's name] to stop smoking (or encourage their decision to quit smoking for recent quitters)?

- c) you inform [patient's name] about the health risks of smoking (or the improved health after quitting, for recent quitters)?*
- d) you provide literature to [patient's name] about smoking and quitting?*
- e) you refer [patient's name] to people or places where s/he might get help with quitting (or with maintaining non-smoking, for recent quitters)?*
- f) you discuss how [patient's name] might go about quitting (or remaining a non-smoker, for recent quitters)?*
- g) Is there anything not mentioned which you have talked to [patient's name] about?*

As each nurse provided care to multiple patients, there were multiple nurse-patient dyads and the proportion of nurses who reported providing smoking cessation care to at least one patient was used as a measure of the extent of care provision by nurses.

RESULTS

Patient report of smoking status assessment

Table 6.1 shows that overall 36% of patients reported not being asked by anyone about their smoking status, on arrival in hospital. The data shows that the more recent the smoking history, the smaller the proportion of patients who reported not being assessed for smoking status at admission (Never Smokers 44%; Ex-smokers 43%; and Smokers 24%) ($X^2=45.7$; $df=2$; $p<0.001$). Overall the same proportion of patients reported being assessed by doctors and nurses (43%) while fewer reported assessment by a receptionist/clerk (26%).

Table 6.1: Patient report of being assessed for smoking status.

Smoking category	Patients who reported being asked about smoking status:							
	By a nurse		By a clerk		By a doctor		By no-one	
	n/N	% ^a	n/N	%	n/N	%	n/N	%
<i>Smokers (in last 3 months)</i>	84/164	51	45/163	28	80/162	49	25/164	24
Continued after admission	42/74	57	22/73	30	31/72	43	14/74	19
Quit before admission	42/90	47	23/90	26	49/90	54	25/90	28
<i>Ex-Smokers</i>	72/195	38	52/195	27	93/192	48	83/192	43
<i>Never Smokers</i>	130/313	42	74/307	24	117/315	37	134/307	44
<i>All Patients</i>	286/672	43	171/665	26	290/669	43	242/665	36

^a Row Percentages

Medical record smoking status assessment

The results of the audit of patients' medical records for any mention of their smoking status in either the admission information, the medical notes or the nursing notes are presented in Table 6.2. As can be seen from the last row of this Table, 38% (268/706) of patients had nothing recorded concerning their smoking status, a further 18% of patients were described as smokers, 11% as Ex-smokers and 34% as Never Smokers on their medical record. The column percentages show that of those patients who had *smoker* recorded on their medical record, 41% reported continuing to smoke in hospital, 48% reported quitting smoking at admission, 8% reported being Ex-smokers (for more than 3 months) and 3% reported never having smoked. Among patients who had *non smoker* recorded on their medical record, 1% reported continuing to smoke in hospital, 2% reported quitting at admission, 23% reported quitting more than 3 months ago and 74% reported never having smoked. Among patients who had nothing recorded on their medical record, 5% self reported continuing to smoke in hospital, 10% reported quitting smoking on admission, 31% reported having quit smoking more than 3 months ago and 55% reported never having smoked. The row percentages in Table 6.2 show that among patients who reported continuing to smoke in hospital 68% had *smoker*, 5% had *ex-smoker*, 8% had *never smoker* and 19% had nothing recorded on their medical records. Among patients who reported quitting smoking on admission to hospital, 65% had *smoker*, 6% had *ex-smoker*, 2% had *never smoker* and 27% had nothing recorded on their medical records concerning smoking status.

Table 6.2: Comparison of smoking status recorded on medical records with patients self reported smoking status.

Self reported smoking status	Medical Record Smoking status (n=706)											
	Smoker (n=125)			Ex-Smoker (n=75)			Non Smoker (n=238)			Nothing Recorded (n=268)		
	n	% row	% col	n	% row	% col	n	% row	% col	n	% row	% col
Smoker in the last 3 months												
Continued after admission (n=74)	51	68	41	4	5	5	6	8	1	13	19	5
Quit smoking before admission (n=94)	60	65	48	6	6	8	2	2	2	26	27	10
Ex-Smoker (n=206)	10	5	8	59	29	79	55	27	23	82	40	31
Never Smoker (n=332)	4	1	3	6	2	8	175	53	74	147	44	55
Total (N=706)	125		18	75		11	238		34	268		38

The characteristics of patients who had their smoking status recorded, that is, as either Smoker, Ex-Smoker or Non Smoker, on their medical record were compared with the characteristics of those who had no smoking status recorded on their medical record and the chi squared analyses are presented in Table 6.3. As multiple tests for significance were conducted, the Bonferroni correction¹⁴ was applied and probability levels less than 0.005 were considered significant. This table shows that a number of factors were significantly related to having smoking status recorded on the medical record. Among the patients' sociodemographic characteristics, age and education level were significantly related to having smoking status recorded. Patients who were younger were more likely to have their smoking status recorded than older patients ($p < 0.002$). Patients who had Year 12 or higher education were significantly ($p < 0.003$) more likely to have their smoking status recorded than patients who completed year 10 schooling only. Whilst not significant at the 0.005 level, there was a trend suggesting that patients citing white collar occupations would be more likely to have their smoking status recorded ($p < 0.04$).

Among hospital stay characteristics, patients who were scheduled for anaesthesia (69%) were more likely to have smoking status recorded on the medical record than patients who were not (58%) ($p < 0.005$). The hospital to which patients were admitted significantly predicted whether smoking status was recorded on the medical record (91% of Hospital 6 patients compared to 24% of Hospital 5 patients) ($p < 0.00001$). Finally the patients self reported smoking status was significantly

related to whether they had their smoking status recorded on their medical record, with 82% of self reported smokers compared to 56% of self reported Never Smokers having their smoking status recorded on their medical record ($p < 0.00001$).

Table 6.3: Characteristics of patients who had smoking status recorded on their medical records.

	Smoking status recorded on medical records						
	YES		NO				
Patient Characteristics	n	% ^a	n	%	X ²	df	p
Sociodemographic							
Gender							
Female (451)	276	61	175	39	0.43	1	0.52
Male (256)	163	64	93	36			
Age							
16-34 (197)	138	70	59	30	12.37	2	0.002
35-69 (288)	183	64	105	36			
70+ (222)	119	54	103	46			
Education Completed							
Year 10 (494)	288	58	204	42	8.93	1	0.003
Year 12/Trade/Tertiary (212)	149	70	63	30			
Marital Status							
Married/De facto (434)	281	65	151	35	3.58	1	0.058
Divorced/Widowed/Single (273)	158	58	115	42			
Current Employment Status							
Employed/student (180)	124	69	56	31	7.62	3	0.05
Home duties (216)	140	65	76	35			
Retired (216)	122	56	94	44			
Unemployed/unable to work (94)	55	58	39	42			
Main Life Occupation							
White collar (217)	149	69	68	31	6.64	2	0.04
Blue collar (194)	122	63	72	37			
Home duties/No lifetime occupation (287)	165	57	122	43			
Hospital Stay							
Anaesthetic							
Has or will have (272)	187	69	85	31	7.94	1	0.005
Has not or will not have (436)	254	58	182	42			
Medical Diagnosis							
Smoking Related disease (209)	121	58	88	42	2.63	1	0.11
Non-Smoking related (478)	308	64	170	36			

Table continues over page

Patient Characteristics	Smoking status recorded on medical records						
	YES		NO		X ²	df	p
	n	% ^a	n	%			
<i>Hospital</i>							
1 (83)	57	69	26	31			
2 (100)	69	69	31	31			
3 (291)	160	55	131	45			
4 (73)	54	74	19	26			
5 (70)	17	24	53	76			
6 (92)	84	91	8	9	97.03	5	0.000
Smoking status							
<i>Smoking status at admission</i>							
Smoker (in last 3 months)							
Continued smoking after admission (74)	61	82	13	18			
Quit before admission (94)	68	72	26	28			
Ex-Smoker (206)	124	60	82	40			
Never smoker (332)	185	56	147	44	24.89	3	0.000

p < 0.005 = significant

^a Row Percentages

Since these variables may be inter-related, a backward elimination logistic regression analysis was undertaken with BMDP statistical package LR procedure. Variables used in the analysis were: Age, Education, Main Lifetime Occupation, Anaesthesia, Medical Diagnosis, Hospital, and Smoking Status. As Table 6.4 shows the best logistic regression model includes the predictor variables of education, anaesthesia, hospital and smoking status. All are highly significant, with p-values much smaller than 0.05. However, the overall model does not fit the data well. The reasons for this are unclear.

Those patients with an education level Year 10 or below are about 1.8 times more likely not to have their smoking status recorded on the medical record as patients with an education level of Yr 12 or above (95% CI:1.19 - 2.67).

Table 6.4: Backward elimination logistic regression factors associated with smoking status NOT being recorded on the patient's medical record.

Variable names	Parameter Estimate (Coeff)	Standard Error(SE)	Odds Ratio	Lower CI 95% (OR)	Upper CI 95% (OR)
Education (Year 12 or above)					
Year 10 or below	0.58	0.21	1.78	1.19	2.67
Anaesthetic (Has or will have.)					
Has not or will not have anaesthesia	-0.43	0.20	1.54	1.05	2.28
Hospital (6)					
1	1.72	0.48	5.59	2.20	14.24
2	1.52	0.46	4.55	1.85	11.21
3	2.19	0.41	8.93	3.96	20.14
4	1.26	0.49	3.52	1.36	9.14
5	3.60	0.50	36.33	13.51	97.74
Smoking Status (continued in hospital)					
Never Smoked	1.42	0.37	4.15	2.03	8.49
Quit more than 3 months ago	1.32	0.38	3.74	1.77	7.89
Quit before admission	0.56	0.43	1.75	0.75	4.07

Patients who have not had and will not have anaesthetic are about 1.5 times more likely not to have their smoking status recorded on their medical record. Relative to Hospital 6, patients admitted to each of the other hospital are more likely not to have smoking status recorded on their medical record. Patients who have never smoked, are 4.15 times more likely not to have a smoking status recorded on their medical record and those who have quit more than 3 months ago, are 3.74 times more likely not to have a smoking status recorded on their medical record (relative to those who continued smoking in hospital). Since the confidence interval for the odds ratio of those who quit before admission includes one, this suggests that there may be no real differences in the probability of having a recorded smoking status on the medical record between this group and the group which smoked after admission.

Nurses' knowledge of patients' smoking status

Sixty one percent (70/115) of patients who were self reported Smokers were described as smokers by at least one of their direct care nurses. Additionally 33% (17/52) of self reported Recent Quitters were detected by nurses.

Provision of smoking cessation care to smoking patients

Table 6.5 shows the strategies of smoking cessation care and presents data on the proportion of patients who received these forms of cessation care as reported by nurses and patients. Nurses' report of care reflects the proportion of patients to whom at least one nurse reported providing care. Patient report of care reflects the proportion of patients who reported receiving care from at least one nurse. This data is presented for both self reported Smokers and Recent Quitters as the latter

group could benefit from relapse prevention strategies and additionally this group had a high reported disconfirmation rate (Chapter 2) and may have been smoking in the hospital. Table 6.5 shows, in relation to *advice to quit, information on health risks, provision of literature, referral and discussion of quitting*, the extent of care received by Smokers (reported by patients) and the extent of care delivered to Smokers (reported by nurses) was similar. In terms of specific items of smoking cessation care as reported by patients and nurses respectively, *advice to quit smoking* was delivered to 17% and 20% of Smokers, *information on health risks* to 16% and 17% of Smokers, *literature provided* to 2% and 2% of Smokers, *referral* for 1% and 1% of Smokers and *discussion of how to quit smoking* to 3% and 4% of Smokers.

Table 6.5 shows that for Recent Quitters there were differences in the patient report of care received and the nurse report of care provided for *information on health risks, provision of literature and referral*. For the first item of care involving *general conversation about smoking or quitting*, nurses reported providing care more frequently (to both smokers and recent quitters) than patients (both smokers and recent quitters) reported receiving care. Twenty six percent of Smokers reported that they had asked a nurse to take them outside for a cigarette.

Table 6.5: Provision of smoking cessation care.

Smoking cessation care	Patients who received smoking cessation care							
	As reported by nurses				As reported by patients			
	Smoker (n=115)		Recent Quitter (n=52)		Smoker (n=109)		Recent Quitter (n=57)	
	n	%	n	%	n	%	n	%
General conversation about smoking/quitting	54	47	15	29	11	10	6	10
Patient asked to be taken outside to smoke	30	26	N/A ^c	N/A	N/A	N/A	N/A	N/A
Advice to quit	23	20	N/A	N/A	18	17	6	11
Information on health risks or benefits	20	17	11	21	17	16	3	5
Provision of literature	2	2	9	17	2	2	3	5
Referral	1	1	9	17	1	1	3	5
Discussion of how to quit	5	4	1	2	3	3	4	7

a) The proportion of patients to whom at least one nurse reported providing care.

b) The proportion of patients who reported receiving care from at least one nurse.

c) N/A indicates that this question was inappropriate to that group and was not assessed.

Extent and nature of identification of smokers by nurses and proportion of nurses providing smoking cessation care

One hundred and eighty nine nurses, of the 382 interviewed (49%) reported that they had provided direct nursing care to a smoker. Of these, 109 (58%) nurses reported nursing one smoker, 53 (28%) reported nursing two smokers, 17 (9%) reported nursing three smokers, 7 (4%) reported nursing four smokers, 5 (3%) reported nursing five or more smokers. Therefore there were 324 nurse/smoking-patient dyads (or interactions possible between a nurse and a patient perceived to be a smoker by that nurse). In terms of the methods used by nurses to identify smokers, the study found that in these 324 dyads, nurses reported that identification of the patients' smoking status was informed by: observing the patient smoking (38%); lifestyle, friends, attitudes, personal attributes (22%); observing other signs of smoking (e.g. smoky breath, cigarettes in a drawer) (13%); being told by the patient (11%); other (8%); checking the medical record (5%); asking the patient (2%); being told by friends, relatives or a doctor (1%).

Table 6.6 shows that 24% of nurses, providing smoking cessation care reported that they had initiated a general conversation about smoking or quitting with at least one smoker and 31% reported being asked by at least one patient to take the patient outside to smoke. Care items such as advising the patient to quit smoking and informing them of the health risks were delivered to at least one patient by 22% and 20% of nurses respectively and strategies such as providing literature and referral to a support agency were delivered to at least one patient by 3% and 1% of nurses respectively.

Table 6.6: Nurses who provide smoking cessation care to patients.

Smoking cessation care item	Number and percentage of nurses who reported providing cessation care to at least one smoker^a (N=189 nurses)	
	n	%
Patient initiated conversation about smoking/quitting	80	42
Nurse initiated conversation about smoking/quitting	45	24
Patient asking to be taken outside to smoke	58	31
Advised/encouraged quitting	41	22
Informed of health risks	37	20
Provided literature	5	3
Referred to outside quit support	2	1
Discussion of how to quit	11	6
Anything else	7	4

^a Nurses were only asked about smoking cessation provided to patients whom the nurse perceived to be smokers.

DISCUSSION

The main findings of this study suggest that assessment and recording of smoking status by hospital staff and the provision of smoking cessation care by hospital nurses is currently poor. Firstly, there was great variability both across hospitals, and within hospitals in terms of the number of patients who had their smoking status recorded on their medical records. Secondly, nurses were found to be unskilled in identifying smoking patients and were using observation, attribution or guesswork to identify smokers rather than the medical records or proactive assessment of the patients. Thirdly, many opportunities to provide smoking cessation care were currently being ignored within the hospital setting and provision of smoking cessation care by nurses was being minimally provided. Each of these findings will be discussed and recommendations made for improved assessment of smoking status and provision of smoking cessation care.

The finding that across the 6 hospitals in the Hunter region, 38% of all in-patients had nothing recorded on their medical record concerning their smoking status implies lack of motivation, policies and procedures within public hospitals to systematically record patients' smoking status. That 32% of self reported Smokers were not identified as Smokers on their medical records suggests that hospitals do not currently view smoking as a sufficiently important enough indicator of health to be routinely recorded on medical records. The differences in the proportion of patients in each self reported smoking category who were found to have nothing recorded on their medical record (5% of continuing smokers, 10% of quitters on admission, 31% of ex-smokers and 55% of never smokers) could be explained by staff who do not record the smoking status of patients who are perceived to be at low risk

of smoking related complications. This may mean that smoking status is assessed and if the patient is not a smoker, then nothing is recorded on the medical record. The finding that assessment of smoking status varied across hospitals (ranging from 24% in Hospital 5 to 91% in Hospital 6) implies that different policies and practices exist within different hospitals regarding the assessment of smoking status. It also implies that one hospital (Hospital 6) can provide information on best practice in smoking assessment for implementation throughout the Area. There is a need for a strategic initiative at a policy level within the Area Health Service to achieve comprehensive protocols for the assessment of smoking status throughout all health care facilities.

The finding that patients who had nothing recorded on their medical record about their smoking status were significantly different to patients who had their smoking status recorded, has serious implications for equity of access to health care. The Australian National Goals, Targets and Strategies for Better Health Outcomes into the Next Century¹⁶ has highlighted the poor delivery of service and the poorer health status and health outcomes associated with low socioeconomic and low education groups within the population, and have set a priority for equity in health services. Patients who had their smoking status recorded on their medical record were significantly more likely to be more educated, receive anaesthesia, continue smoking while in hospital, and be admitted to Hospital 7. This finding could be explained by greater verbal skills, increased need to know of potential risks during anaesthesia, a more obvious display of smoking behaviour and more rigorous protocols and procedures in Hospital 7, respectively. By adopting a policy initiative to comprehensively assess smoking status for all hospital admissions, hospital administrators could overcome the poor rate of recording and the selectivity of

assessment.

Currently three measures of health status are mandatorily included in all admission procedures: pulse rate, temperature and heart rate.¹² Historically these signs have been considered vital indicators of the presence or absence of disease, particularly of infectious or contagious disease, and are commonly referred to as the "vital signs".¹² However during the 1990s when morbidity and mortality are mainly due to lifestyle diseases, assessing patients' risk factors for the major preventable diseases should be incorporated into all routine admission procedures. As the major preventable cause of disease, smoking almost certainly warrants inclusion as the fourth vital sign, as suggested by Fiore.¹²

The category of "smoker" on the medical record was found to include both patients who continued and those who abstained from smoking during their hospitalisation (41% and 48% respectively). Applying the term "smoker" to both these groups of patients is unhelpful in terms of triaging patients for appropriate cessation support as those who have quit smoking will require different intervention components to those who are still smoking.

Orleans et al ¹⁶ suggest that an effective smoking status assessment should include the patient's level of nicotine dependence¹⁷ and a measure of the patient's stage of change: precontemplation, contemplation, preparation, action or maintenance.⁹ Such a comprehensive smoking status assessment would alert health professionals to the risk of relapse,⁹ (particularly among Recent Quitters). It would also provide information on the potential severity and extent of withdrawal symptoms (patients who intend to abstain from smoking during hospitalisation are potentially more likely to experience nicotine withdrawal symptoms). Further, it would enable tailoring of intervention components to the specific stage of change

of the smoker. Alerting health professionals to the smoking status of all patients via the medical record, has the potential to increase the rate of cessation care delivery among health professionals and the rate of quitting among patients.

The following recommendations are therefore made for inclusion in a brief smoking assessment protocol:

"Have you ever smoked cigarettes?"

"How long ago did you smoke your last cigarette?"

"How many cigarettes did you smoke on an average smoking day?"

"Was your first cigarette within half an hour of waking up?"

"Do you wish to quit smoking during your hospitalisation?"

"Do you wish to stay a non smoker after discharge from hospital?"

Given that 68% of self reported Smokers were identified on the medical records, the finding that only 61% of these smokers were known to at least one of their direct care nurses suggests that nurses' detection of smokers is less than optimal. However, this represents a slightly better detection of smokers than was found in a comparable study of general practitioners in the Hunter Area, where 56% of smokers were identified.⁶ The current study found that the strategies used by nurses to identify patients tended to be passive and to rely on observation (51%) or guesswork (22%). In these interactions between a nurse and a smoking patient, nurses did not use proactive strategies to determine a patient's smoking status, such as consulting the medical records (5%) or asking the patient about their smoking status (2%). Among the group of patients with the most chance of becoming maintained quitters (i.e. those who had quit smoking in the last 3 months) nurses are currently identifying only 33%, implying many lost opportunities for patient

support.

When the topic of smoking is raised by either a patient or a nurse an opportunity is presented by that prompt to introduce smoking cessation information, care and withdrawal management techniques. The finding that nurses reported having conversations about smoking with 47% of smoking patients, yet less than 20% received any form of smoking cessation support, indicates many opportunities to intervene were lost. There was some discrepancy between the nurse report and patient report of these general conversations (only 10% of smokers reported such general conversations). This was the only item of smoking related care where such a large discrepancy between nurse report and patient report occurred (other items showed variations of less than 3%). It may be that the 26% of smokers who asked to be taken outside to smoke, did not describe this interaction as a "discussion about smoking", whereas nurses did.

The study found that these opportunities for intervention were not acted upon, and that generally the provision of any smoking cessation care by nurses was poor. Both patients and nurses reported care being provided to less than 20% of hospitalised smokers for *advice to quit* and *information about health risks*. For items of care such as *providing literature*, *referral* and *discussion of how to quit* less than 5% of smokers received care (Table 6.5). Orleans et al¹⁶ found that only 16% of smoking patients reported receiving discussion from a nurse about smoking. These findings suggest the need for a comprehensive action plan which incorporates the development of in-service training programs for nurses within the hospital setting, focusing on skills in recognising opportunities to intervene with smoking cessation care and demonstrating methods of incorporating such care into routine nursing practice.

The discrepancy between nurses and patient report of smoking cessation care among Recent Quitters may be an artefact of the small number of patients involved. Cessation care, however, for this group was similarly poor and any training program for nurses should emphasise the importance of this group of quitters in terms of providing skills to manage withdrawal and encouragement to continue with their quit attempt post discharge.

Requests by 26% of smoking patients for a nurse to take them outside to smoke represent important opportunities for intervention. Nurses work in a setting where the hospital policy prohibits smoking within the buildings and yet they are confronted with patients who are potentially experiencing severe nicotine withdrawal symptoms. The act of leaving the hospital building can be difficult, (patients are often attached to intravenous drip apparatus), embarrassing, (wearing nightwear) and uncomfortable (there are often no weather shields outside for protection). Yet such behaviour represents a coping strategy (albeit a maladaptive one) which will temporarily relieve nicotine withdrawal symptoms. Nurse training programs in smoking cessation care need to recognise this dilemma faced by nurses and provide nurses with skills and strategies in assessing and assisting nicotine withdrawal. Increasing nurses' knowledge and skills in coping strategies for nicotine withdrawal would provide them with a choice of options (eg prophylaxis, behaviour strategies, relaxation) to assist the patient to reduce the effects of nicotine withdrawal.

The extent of care delivery among the nursing workforce, (that is the proportion of the nurses surveyed who reported providing smoking cessation care to at least one patient whom they perceived to be a smoker) was somewhat encouraging. The figures in Table 6.6 show slightly more patients receiving care

than presented in Table 6.5, however Table 6.5 refers only to the population of self reported smokers in the sample, whereas Table 6.6 asks nurses to report patient care for any patient in the study whom they perceived to be a smoker, regardless of the patients' self reported smoking status. Table 6.6 shows a similar pattern of opportunity lost, with 42% of nurses reporting a patient initiated conversation, and 31% reporting being asked by at least one patient to be taken outside to smoke. This finding suggests that one third of the nursing workforce is interacting and conversing with patients about smoking, and thus presents an excellent starting point for targeting smoking cessation interventions. Again 37%-41% of nurses provided advice to quit and information about the health effects to at least one patient. This finding is most encouraging particularly in light of the report by nurses of lack of adequate training and lack of time. Again the same pattern is observed in Table 6.6 as was seen in Table 6.5, with far fewer nurses delivering structural intervention components, such as providing literature (3%) and referring to other agencies (1%).

Overall the findings of this study provide valuable information for targeting change strategies within the hospital setting aimed at increasing the extent, skill and effectiveness of nurses as providers of smoking cessation advice in the hospital setting. The information from this study can be used to inform the development of in-service training modules for nurses as well as providing data to feedback to hospital administration about current levels of assessment and care and the areas in need of specific targeting. The next and final chapter will discuss the implications of these findings in relation to the findings of the previous studies and make recommendations for policy, practice and research.

CHAPTER 7

Conclusions

CONCLUSION

The inter-related series of studies described in this thesis have explored the potential role of nurses in delivering smoking cessation education and support to hospitalised smokers. The project has been guided by a staged approach to research which stresses the need to develop valid and reliable measures to collect accurate data on prevalence of target behaviours, knowledge attitudes and barriers in relation to risk behaviour and health behaviour, and current provider practices.¹ Such information can then inform the development, planning and evaluation of health behaviour change programs.²

In order to develop a smoking cessation intervention which targets patients and is delivered by nurses within the hospital setting, all three components, i.e. the patients, the nurses and the hospital, warrant exploration in relation to those factors perceived to be behavioural and attitudinal facilitators or inhibitors to change. For patients this change will be from risk behaviour (smoking) to health behaviour (quitting). For nurses, the change will be from the exclusive provision of illness care to the inclusion of preventive health care. For hospitals it will involve change from smoking bans alone to policies which incorporate staff training and patient management issues. The current project has presented data which suggests that the hospital setting is an ideal venue for focusing on smoking cessation and that both nurses and patients are keen to be involved. The key findings of this thesis are discussed in terms of their implications for the development of hospital-based, nurse-provided smoking cessation interventions for inpatients.

Methodology

The project described in this thesis, involved a cross-sectional descriptive survey of approximately 700 inpatients in the 52 wards of the 6 largest hospitals in the Hunter Area of NSW, recruited on randomly selected days. The project also involved a cross sectional survey of approximately 400 nurses who were providing direct patient care to these patients on the randomly selected days as well as an audit of the medical records of these patients.

The advantages of the cross-sectional method of data collection were firstly that it enabled recruitment of a representative sample of "in bed patients". Alternatively recruiting patients at admission and therefore recruiting "entering patients" would have biased the sample towards short stay patients, as the beds for these patients free up more quickly and therefore proportionally more short stay patients would be recruited in the sample. Secondly in terms of measuring patients' smoking behaviour during hospitalisation, recruiting and administering questionnaires at admission could only have measured intent to quit smoking during hospitalisation, and would not have enabled measurement of quantity smoked per day during a hospitalisation episode. The disadvantage of the methodology used in this study was the additional cost involved in data collection at the bedside, and the fact that quitting on admission was measured retrospectively.

Both the salivary cotinine sub-sample and the 9 month post-discharge follow-up sample were relatively small, making analysis of predictor variables for maintained abstinence and disconfirmation of self reported smoking status, within hospital, inappropriate. Additionally only recent quitters, that is those who had stopped smoking more than 4 days ago were included in this follow-up study and

therefore a weakness of the design was the omission of those patients who quit smoking within the last 4 days (at bedside interview).

The high ineligibility rate (42%) was expected, given the setting, and may have potentially biased the results. However, the cross-sectional sampling methodology enabled the recruitment of patients at varying stages along the illness recovery continuum. The consent rate of 88% was adequate, and a strength of the design was the collection of brief information from non-consenters. This data showed no significant differences in terms of self reported smoking status between those who consented and those who refused.

The research in this thesis has contributed knowledge in several areas; the validity of self report as a measure of smoking status among inpatients; the impact of hospitalisation on smoking behaviour, both in the short and long term; the acceptability of nurses as providers, and of the hospital as a setting, for providing smoking cessation interventions; factors associated with quitting smoking during hospitalisation; prevalence of smoking among Australian ward-based nurses; current levels of detection of hospitalised smokers by hospital medical records, and current levels of smoking cessation care being provided to hospitalised smokers by nurses. Conclusions from the thesis will be discussed in relation to implications for further research and for the development of smoking cessation interventions.

Is self report an accurate measure of smoking status in the hospital setting?

Self report was found not to be an accurate measure of patients' smoking status in the hospital setting. The disconfirmation rate of 18% found overall among

self reported non-smokers was similar to that found by Jarvis ³ among cardiovascular outpatients, but was less than the 32% reported by Bittoun among a convenience sample of inpatients.⁴ A recency effect was also noted, whereby the shorter the reported abstinence period, the higher the disconfirmation rate, (namely, 62% disconfirmation rate among self reported Recent Quitters, 17% among Ex-smokers, and 12% among Never Smokers - Chapter 2). Wagenknecht ⁵ similarly found an association between recency of quitting and increased deception rate, with 11.2% deception rate reported among ex-smokers compared to 2.6% among non-smokers. The study reported in Chapter 2 found these disconfirmation rates even given the use of the bogus pipeline method⁶ where patients were informed about saliva collection and analysis prior to gaining self reported smoking status data.

These results imply that when asking patients about their smoking status at admission, in order to identify at risk individuals (both at risk of smoking related ill health and of smoking relapse), methods must be used which encourage accurate disclosure of smoking status. Rather than asking the question "Are you a smoker?" staff could ask "Have you smoked in the last 3 months?" This simple step would then allow the inclusion of those people who had quit just prior to admission as well as many of those who had misreported their smoking status.

These results suggest that intervention research trials in this setting should utilise biochemical verification of smoking status, as the demand characteristics appear to be favouring the report of non smoking behaviour. The finding that salivary cotinine analysis had difficulty detecting smokers who consumed low levels of tobacco has also been found in other studies.^{7,8} Further research is needed to determine whether the use of carbon monoxide as a biochemical measure in this setting may be more appropriate, based on cost, ease of delivery and the potential

for incorporation into withdrawal management interventions in the form of physiological feedback to patients throughout hospitalisation.

What proportion of the hospital patient population are smokers?

Whilst only 16% of hospital patients reported being smokers, the cotinine corrected prevalence of smoking among inpatients was estimated to be 32% (Chapter 3). This finding implies that the hospital setting would seem to have a higher proportion of smokers than are found in the general population (28%),^{9,10} making it an excellent intervention point from a public health perspective. The findings also suggest that people who have never smoked are less likely to be represented in the hospital population than people who have "ever" smoked.

What are the characteristics of hospitalised smokers?

Chapter 3 concluded that providing hospitalised smokers with smoking cessation interventions would enable access to a subgroup of the population traditionally poorly serviced and in greatest need. Low socioeconomic groups have traditionally: high smoking rates, lower quit rates, higher risks of mortality and morbidity, made less use of preventive and screening services and are often difficult to reach with smoking cessation programs.¹¹ Patients whose main lifetime occupation was blue collar work, who were aged 16-34 years, who were unmarried and who lived with a smoker were more likely to be smokers. The study also found that 71% of hospitalised smokers were not in the workforce (30% home duties; 19% retired; and 22% unemployed), and that 71% were educated at or below Year 10 schooling. These findings imply that the hospital setting presents an excellent opportunity to target low socioeconomic groups with preventive health messages.

As the average length of hospital stay for smokers was found to be 6.6 days, there would appear to be ample time available to inform, encourage and support behaviour change. Given the employment and education findings, consideration must also be given to both the costs incurred by patients in smoking cessation care (e.g. nicotine replacement therapy, and follow-up referrals) and the readability levels of literature and education materials designed for use in this setting. A considerable proportion of hospitalised smokers were young women aged 16-34 yrs (32%) and this high representation of a group, which has the highest rates of female smoking in the general population (36%),⁹ again reinforces the appropriateness of resource allocation for smoking cessation interventions in this setting.

What impact does hospitalisation have on the smoking behaviour of inpatients?

The experience of hospitalisation appears to be a natural smoking cessation intervention. Admission to hospital produces a high initial quit rate (56% of all patients who had smoked in the last 3 months). Glasgow et al have similarly reported this extraordinarily high admission related quit rate (51%).¹² Whilst the majority of those quit attempts were only for the duration of the hospital stay the long term quit rate at 9 months post discharge was between 2.9% and 9.5% (biochemically validated) (see Chapter 3). This quit rate is comparable to the 5% efficacy of brief general practitioner interventions.¹³ Other researchers have found that interest in quitting and past quitting behaviour predicts successful quitting at 7 years follow-up.¹⁴ Further research is needed within the hospital setting to determine if quitting behaviour on admission also predicts long term quitting. The methodology used in the current follow-up study and the small sample size did not

allow analysis of the predictors of long term quitting.

The high naturally occurring quit rate on admission, has implications for the type of strategies utilised in smoking cessation interventions. The usual strategy employed in general practice interventions of setting a quit date^{13,15,16} may be inappropriate for many smokers in this setting. More emphasis may need to be placed on nicotine withdrawal assessment, nicotine replacement therapy and teaching appropriate coping strategies for patients with severe symptoms. Further research is needed to explore ways to turn this environmentally triggered short term abstinence into long term maintained abstinence. Intervention strategies need to be developed which are tailored to the two sub-groups of hospitalised smokers, those who continue smoking during their hospitalisation (44%) and those who quit on admission (56%). For the latter group, relapse prevention and withdrawal management strategies may be appropriate, whilst the former group may require personalised assessment of health risk status and encouragement to learn about the effects of reduced nicotine consumption and coping strategies. Individual patients could be triaged on admission to receive an intervention tailored to their decision about quitting on admission. Prochaska et al have demonstrated that matching the intervention to the person's stage of change produces higher quit rates compared to the best available standardised intervention (American Lung Association).¹⁷

What characterises the hospitalised smoker who quits smoking at admission?

Chapter 3 and 4 showed that the variables associated with quitting smoking on admission were, being admitted with a disease related to smoking ($p < 0.001$); having experienced bronchitis, asthma or congestion in the past 2 months

($p < 0.0001$); perceiving that the hospital stay would be useful in encouraging non-smoking ($p < 0.003$); and intending or being unsure about being a non-smoker in the next 3 months (0.01). These findings were not supported by the findings of other researchers, that among volunteer populations, white collar workers and smokers with low consumption levels have been found to be more likely to quit.¹⁸

Overall, 24% of hospitalised smokers were admitted with a diagnosis related to smoking and 59% reported experiencing bronchitis, asthma or congestion in the preceding 2 months. These factors represent actual risk of smoking related disease. However when asked about their perceptions of current risk and of future risk, i.e. whether they *thought* smoking had contributed to their admission or to their other health problems, only 20% and 36% of hospitalised smokers respectively, believed that smoking had contributed to their admission or to their other health problems (Chapter 4). Interestingly, whilst actual risk of smoking related ill health (i.e. being admitted with a smoking related disease or reporting symptoms of bronchitis, congestion or asthma in the last 2 months) was associated with quitting at admission, perceptions about the current and future risk of smoking disease were not. Even though patients may have been experiencing symptoms of ill health related to smoking, and appeared to be acting on that experience by quitting smoking at admission, some of these patients did not appear to believe that their smoking was related to their ill health. This finding has major implications for health education interventions, and highlights the importance of assessing and communicating the specific personalised health linkages between smoking and ill health for each patient.

It is important to conduct further research in this area to determine which stage of change, according to the Prochaska et al's¹⁹ model, best describes the 46%-

53% of patients who do take temporary quit action. Whilst their actions would seem to fit the Preparation stage of the model, the proportion of hospitalised smokers in this stage appear to be much larger than the 18-29% of community smokers found to be in Preparation stage.^{19,20} Research is needed in this area to determine the potential impact of environmental triggers such as hospitalisation in creating large shifts in the stages of change. The Health Belief Model predicts that the greater the intensity of the trigger to act, then the weaker the attitudinal motivation needs to be to begin the action.²¹ It may be that, despite their quitting behaviour, these smokers are still at a Contemplation stage of change. The opportunity presented within the hospital setting, where over 50% of smokers have already "set a quit date", has unfortunately largely been ignored as a venue for research and intervention development. There is obvious need for both.

What are hospitalised smokers' attitudes towards quitting?

Almost half the population of hospitalised smokers do not believe that quitting smoking will produce health benefits and, when asked about any strategies or methods which might aid quitting, the most popular response was "willpower". These findings suggest that patients' knowledge of the process of quitting, the strategies available to support quitting and the impact of quitting on health status is poor. Smoking cessation interventions in the hospital setting should focus on providing accurate information in these areas to **all** hospitalised smokers whether they have decided to quit or not. The provision of such information to all smokers should be part of responsible health care, and will assist patients to build up health literacy and health skills and enable them to make informed health decisions based

on accurate information (Chapter 4). *The Goals and Targets for Australia's Health in the Year 2000 and Beyond*²² has identified improving people's health literacy or knowledge i.e. "the ability to gain access to, understand, and use information in ways which promote and maintain good health and life skills" as a national goal.

The results presented in Chapter 4 also showed that many hospitalised smokers thought they were alone in the desire to quit, as 56% of them reported that they themselves wanted to quit smoking however, only 33% thought that most smokers want to quit smoking. Clear feedback to hospitalised smokers that wanting to quit smoking is a majority opinion, is important as a social support mechanism. Expressing the intention to be a non-smoker in 3 months time, has been found to be a strong predictor of quitting, and as an indicator that the person is in the Preparation stage of readiness to quit smoking.²³ Thirty two percent of hospitalised smokers thought that they would be a non-smoker in 3 months, and a further 21% were unsure of whether they would be a non-smoker in 3 months. These findings indicate the potential impact of an effective smoking cessation education and support program in this setting.

Given that patients perceived affective withdrawal symptoms (such as feeling states of stress, craving, anger and depression), as the most difficult to deal with, interventions in this setting (delivered over the average 6.6 days of a hospitalised smokers' stay) could incorporate discussion of emotional and mood changes following quitting. Such discussions could provide information, coping strategies, support, rehearsal of coping strategies and assistance in preparing family and friends for these changes (particularly as close friends and relatives often visit patients during hospitalisation). The ability of nurses to have contact with family and friends and to utilise their position to provide information and establish a more supportive

home environment, has perhaps been under-utilised as a potential resource.

Do patients perceive the hospital setting and nurses as acceptable and appropriate providers of smoking cessation care?

The majority of hospitalised smokers thought that smoking cessation support should be part of nurses' role (64%) however, only half felt that nurses should educate *all* smoking patients (33%). They felt that nurses' smoking behaviour (63%) and the fact that nurses were too busy (80%) were potential barriers to nurses providing this care. Almost half said that they would be willing to accept smoking cessation care from a nurse, and thought that the hospital stay was a useful place to encourage non-smoking (Chapter 4). Emmons et al found that only a third of smoking patients in a cardiovascular ward were interested in receiving smoking cessation counselling from medical practitioners.⁹ The implications of the current study are that the hospital setting and nurses as providers are perceived as appropriate and acceptable to many smokers. However, some attention should be paid, in intervention development, to attitudinal shift for patients, i.e. away from the attitude that smoking cessation support is a care item of voluntary patient choice, and towards an attitude where smoking risk assessment, feedback and support is considered a comprehensive and vital part of hospital care.

What impact does nurses' smoking behaviour have on their role as smoking cessation care providers?

Chapter 5 found that 21.7% of nurses reported being smokers and that in most age categories under 45 years the proportion of smokers among female nurses was approximately half that found in the general female population.⁹ This finding

may have been influenced by misreporting among nurses of their smoking status. The use of biochemical assessment of the smoking status of nurses could potentially have provided a more accurate measure of smoking rates. However, all the studies of health professionals' smoking rates (including studies of nurses' smoking rates) base their measurements of smoking status on self report, making trend assessment and comparisons more appropriate. Additionally our early negotiations with nursing staff in the hospitals implied that such a request for biochemical verification of self report would be met with a refusal to participate and would make enlisting hospital management support for the project impossible.

Whilst self reported smoking rates among nurses appear to have declined rapidly from the high levels of the last few decades, and were found to be lower than those of same aged women in the community, their smoking rates were nevertheless perceived to be a potential barrier to providing smoking cessation care by patients (63%). Whilst patients thought that it might be a hindrance, nurses did not, with 51% of smoking nurses and 78% of ex-smoking nurses reporting that their smoking status was helpful in providing smoking cessation care, compared to only 40% of never smokers. When asked whether they thought their smoking experience was a hindrance to the provision of care, only 13% of smokers and 11% of ex-smokers thought that it was, compared to 31% of never smokers. This finding suggests that a useful strategy for increasing the number of nurses providing smoking cessation care, particularly among smoking nurses, might be to stress the potential advantage of having a personal smoking history when talking to hospitalised smokers about their smoking behaviour. Further research is needed to explore whether increased training in the delivery of smoking cessation care might result in a secondary advantage of a further decline of smoking rates among nurses.

The current study found that 56% of smoking nurses reported that they wanted to quit smoking, and 26% thought that it was likely that they would be non-smokers in the next 3 months. This finding also suggests that appropriately marketed smoking cessation programs for all staff, and especially for nurses, may be usefully incorporated into intervention training programs.

A greater emphasis during undergraduate nurse training on smoking prevention, both personally and as part of patient care, is required. The study found that 51% of smoking nurses took up the habit prior to their nursing education, and an additional 42% during their nursing training. An increased focus on prevention and cessation could reduce the rate of smoking among nurses, whilst at the same time improving the knowledge and skills base of nurses in preventive smoking care prior to arriving on the wards. Appropriately targeted interventions in the undergraduate training setting, could potentially reach 92% of smoking nurses (Chapter 5), and therefore warrant further investigation.

Do nurses feel that providing smoking cessation care is part of their role?

Nurses believed that smoking was harmful (98%), that quitting was beneficial (82%) and achievable (72%), and that helping patients to stop smoking should be part of their role (60%). Nurses were more comfortable providing care to patients who wanted to quit (75%) than educating *all* smoking patients on the effects of smoking on health (58%) (Chapter 5). These findings suggest that whilst the majority of nurses perceive that smoking cessation care should be part of their role, some of them may be viewing smoking as a "lifestyle choice" and not a "chronic disease" and that health literacy skills should only be provided to those who request them and not as part of necessary care to be provided equally to all

patients. Nurse training, as part of intervention development, could focus on shifting some nurse attitudes to enable proactive delivery of care and not just reactive delivery of care.

Although nurses expressed positive attitudes towards the delivery of smoking cessation care, there was a large discrepancy between nurses' perceptions of the ideal world, the current reality and actual care delivered. Whilst 57-62% of nurses felt that in the ideal world all smokers should receive the four basic smoking cessation care items (identification, history taken, intentions assessed and quit strategies discussed), less than 24% felt that under the current system all smoking patients would receive them and only 4-10% felt that all smokers hospitalised in the last 4 weeks had actually received them. Intervention strategies in this setting should incorporate monitoring of the levels of nurse adoption and feedback to ward nurses about levels of compliance achieved.

What do they see as the main barriers to care provision?

Patients requesting care, more time and access to in-service training, were ranked by nurses as the three most important factors likely to increase nurse provision of smoking cessation care. Additionally 75% of nurses reported that they were enthusiastic about attending inservice training programs. Such programs should specifically aim to increase rates of adoption of smoking cessation care by nurses. As 63% of nurses believed that they were too busy to provide education to patients, such programs should also be very focused on training nurses in brief interventions capable of being delivered opportunistically during usual care. Further research is needed to test how well nurses respond to training and to what extent they implement the training in the delivery of care to patients.

What smoking cessation care are nurses currently providing to their smoking patients?

The provision of smoking cessation care by nurses is currently poor with less than 20% of smoking patients receiving smoking cessation care. Both nurses and patients reported that 17-20% of smokers received advice to quit, 16-17% received information about the health risks, 3-4% received discussion on how to quit smoking, 2% received literature and only 1% were referred to any community support agencies (Chapter 6). The finding that 26% of smoking patients asked a nurse to take them outside to smoke (as reported by nurses) suggests that many opportunities to raise the issue of smoking are currently missed, and that nurses require additional skills training to enable them to capitalise on these opportunities to offer withdrawal symptom management for patients. Taking the patient outside to smoke is a maladaptive way to reduce the effects of nicotine withdrawal. Increasing nurses' knowledge and skills in coping strategies for nicotine withdrawal would provide a choice of options to assist patients reduce the effects of nicotine withdrawal.

Assessment of smoking status on medical records

Assessment of the smoking status of patients was found to be less than optimal, with 36% of patients reporting that they were not asked about their smoking status at admission to hospital by either nurses, doctors or clerical staff. The audit of medical records confirmed the poor performance of hospitals in this area, with 38% of patients having nothing recorded on their medical records concerning their smoking status. Certain patient sociodemographic characteristics

predicted the recording of smoking status on the medical record. Patients who were younger, had education to Year 12 or greater, were more likely to have their smoking status recorded. Whilst not significant at the conservative probability level of 0.005 (corrected due to the multiple significance tests being undertaken), there was a trend for more patients who were currently employed to have their smoking status recorded on the medical record (69%) than patients who were unemployed or unable to work (58%) ($p < 0.01$). Other factors associated with recording of smoking status were, the hospital of admission (with a range of from 91% of patients in Hospital 6 to 24% of patients in Hospital 5), suggesting that specific policies in certain hospitals, or perhaps influential medical or nursing staff, are capable of improving the rate of assessment. Scheduling for anaesthesia and the patient's self reported smoking status, were also associated with having smoking status recorded on the medical record, with self reported smokers significantly more likely to have their smoking status recorded (82%) than self reported never smokers (56%) ($p < 0.00001$). Whilst it is anticipated that patients receiving anaesthesia would be more likely to have their smoking status assessed, it is difficult to understand why patients admitted with a lower education level or who were unemployed should be less likely to have their smoking status assessed. This latter finding suggests that the under-use of preventive services found among low socioeconomic groups ²⁴ may in part be related to inequities in the delivery of preventive health care services by health facilities. Such a situation certainly warrants attention.

Recording instruments, which are tailored to the existing medical record documentation, may improve the rate of detection and additionally provide staff with other smoking related history of the patient. Such visual prompts are also likely to facilitate and reinforce staff in the provision of smoking cessation care.

Forty eight percent of those patients who had "smoker" recorded on their medical record had abstained from smoking during their hospitalisation, suggesting that the current system of assessing patients does not accurately reflect the impact of hospitalisation on smoking behaviour. This then makes it difficult to distinguish between patients who have quit and those who have continued smoking during their hospital stay. Additionally, the finding that 18% of those who continued to smoke in hospital had nothing recorded on their medical record, suggests a complacency among hospital staff about the recording of smoking status and behaviour. It is recommended that hospital policy incorporate a comprehensive system of smoking assessment for all admissions, and that the assessment instrument provide information useful for the provision of smoking cessation care during hospitalisation. Fiore advocates that smoking status should be incorporated as the fourth vital sign in all interactions between patients and health providers.²⁵ He argues that the vital signs of pulse, temperature and blood pressure have in the past alerted health professionals to the likely presence of infectious diseases and have been standardised into routine care for all patients. As the infectious diseases of the last century have been replaced by illness and death related to tobacco, it is appropriate that smoking status be incorporated as the fourth vital sign.²⁵

The future

Now that hospitals have eliminated smoking within their buildings to protect the non-smokers, the next step is to prevent further harm among smokers by making hospitals completely smokefree, and incorporating risk assessment, education and cessation support during hospitalisation.²⁶ Policies which relate to tobacco control within hospitals in N.S.W. have not incorporated smoking cessation

support for staff or for patients who wish to stop smoking,²⁶ yet smokefree hospitals have been reported by patients as the most appropriate way to highlight the dangers of smoking.²⁷ Admission to hospital represents a "teachable moment" when patients are likely to respond to quit smoking support and information relating to smoking and their health.²⁸

An effective, brief smoking cessation intervention, delivered through public hospitals, has the potential to impact on the national goal of reducing the prevalence of smoking by the Year 2000 to 20% of men and 20% of women.²⁸ In Australia, 2.3 million people experience one or more hospital episodes in a year.²⁹ Assuming the same smoking prevalence as among the general population, i.e. approximately 28% (30% for men and 27% for women),⁹ it can be estimated that 644,000 smokers will enter hospital in Australia in a year. A hospital based smoking cessation intervention provided by multiple care givers, incorporating nicotine replacement therapy and behavioural strategies, has been claimed to potentially result in a 20% quit rate.³⁰ This would enable 128,800 smokers to quit each year. Based on a population of 16,788,321¹⁰ people and 4,700,728 (28%) smokers in Australia, this quit rate among hospital inpatients would represent a 2.7% decrease in the population prevalence of smoking annually. Many other factors are likely to influence this calculation and it assumes several constants, namely that uptake rates of new smokers will remain the same, and that the last 10% of smokers will not be harder to influence than the first. This estimation nevertheless demonstrates the direct potential impact inherent in the hospital setting for helping to achieve the national targets for tobacco control. The challenge and the imperative for the hospital sector will be to work systematically to reduce the tobacco epidemic and its associated costs to the sector and to the community.

Reduction in lung cancer mortality rates in the next few decades depends on reaching the current population of smokers and convincing them to quit.³¹ The hospital setting offers extensive opportunity for the provision of smoking cessation care.³⁰

There are other indirect potential benefits from a higher public profile within hospitals in tobacco control and smoking cessation support. Firstly, as the centre for health care delivery, the hospital can refer patients to other health professionals within the community after discharge for follow-up smoking cessation care. There is potential to develop and deliver an articulated program of preventive care with links into the wider community. Post discharge referral to community nurses and general practitioners has the potential to prompt and reinforce smoking cessation care among community based health professionals.

Additionally, hospitals with a strong focus on smoking cessation would exert influence on the training of new graduates of both medicine and nursing, and therefore, are likely to impact on the curriculum of tertiary training institutions. Hospitals, in concert with universities, are the primary training ground for nurses, medical practitioners and other health professionals. An established culture of preventive care delivery in relation to smoking could potentially enhance the adoption of skills by these trainees.

Finally the message being sent clearly to the community would be that nicotine addiction is a serious chronic condition, and is being systematically and proactively treated within the hospital setting. Alternatively the omission of hospital settings in the active promotion of smoking cessation sends a confusing public message, one which suggests that smoking is perhaps a private lifestyle choice rather than the chronic addictive disease, responsible for the nation's highest

levels of morbidity and mortality. The task for public health researchers is to develop and evaluate efficacious, cost effective and acceptable smoking cessation interventions, which can be delivered by nurses in the hospital setting. Additionally effort is needed in determining the most effective methods of providing inservice training in order to increase hospital staff's knowledge, skills and motivation in providing preventive health care.

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