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The effectiveness of a health system-wide dissemination strategy in increasing clinician provision of nicotine replacement care to smokers in a rural hospital

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Executive Summary

The majority of clinical practice policies and guidelines are distributed from a State level for area health service-wide implementation. Traditionally area health services have been responsible for strategies to ensure policy or guideline compliance. However, there is little empirical evidence regarding the efficacy of intervention to change clinical practice at a health service level. This study assessed the effectiveness of a health service-wide strategy that aimed to increase the routine provision by clinicians of nicotine replacement therapy (NRT) to nicotine dependent inpatients. The provision of such care was required by health service policy as part of routine clinical care to hospital patients who use tobacco.

Hunter New England Health implemented a multi-component dissemination strategy across all of its 47 hospitals. The strategy was supported by a project team of three full time equivalent existing project staff. The dissemination strategy included the following evidence-based clinical practice change components; executive sponsorship and leadership, communication, establishing consensus, enabling tools and prompts, staff training, telephone support and compliance monitoring and feedback.

Of the patients included in the study, 244 were male, with an average age of 50 and 153 were female with an average age of 49. Fifty six patients were Aboriginal or Torres Strait Islander. One hundred and fifty five of the patients in the study were discharged from the surgical ward.

A pre-post study design was used to examine the effectiveness of the dissemination strategy. An audit was conducted of the medical records of three hundred and ninety

seven patients who nicotine dependent smokers, 18 years of age or over and admitted to an inpatient ward for at least a 24 hour period.

Both the offer and provision of NRT to nicotine dependent inpatients significantly increased from pre to post implementation of the dissemination strategy. The rates of offer and provision of NRT found in this study post intervention were considerably higher than current estimates of such care both nationally and internationally.

The study demonstrates that substantial gains can be made in the provision care to inpatients through the implementation of a health-system wide dissemination strategy. The findings of this current study suggest that a carefully planned, structured and intensive dissemination strategy can have a substantial impact on clinician compliance with clinical practice policies and guidelines.

ABSTRACT

Background

The systematic provision of nicotine replacement therapy (NRT) to hospital inpatients is important for the management of patient nicotine withdrawal during the hospital stay, and to encourage patient smoking cessation. The aim of the study was to assess the effectiveness of a dissemination strategy delivered on a health service-wide basis in increasing the routine provision of NRT to nicotine dependent inpatients by clinicians in one rural hospital. The study also aimed to identify patient and clinical characteristics associated with NRT provision.

Methods

The study employed a pre-post study design. Baseline data were collected from nicotine dependent inpatient medical records 12 months prior, and 12 months following the implementation of the dissemination strategy. Dissemination strategies included: executive support; executive endorsement of initiatives to encourage NRT provision; multiple methods of communication; staff consensus processes; enabling systems and prompts for clinicians; staff training; telephone support for clinical managers; and ward staff performance monitoring and feedback.

Results

In total, data from 397 medical records were utilised in this study. A significant increase from baseline was found for offer (24% to 73%) and provision (16% to 37%) of NRT following the dissemination strategy. No patient or clinical characteristics were found to be associated with NRT offer or provision.

Conclusion

Significant gains can be made in the provision of NRT care to inpatients through the implementation of a health system-wide dissemination strategy. Evaluation of the effect of the dissemination strategy across other hospitals, smoking care elements and other areas of clinical practice change is required.

INTRODUCTION

In Australia, tobacco smoking is the greatest single preventable cause of premature death and disease.¹ Approximately 19,000 Australians die from a smoking-related illness each year.² Despite the existence of a wide variety of smoking control initiatives, the prevalence of smoking in many countries, including Australia, remains unacceptably high.^{1;3} It is estimated that approximately 2.9 million Australians aged 14 years and over are daily smokers.⁴ The prevalence of smoking is greater in rural and regional areas of Australia compared with metropolitan areas (28% vs 22%).⁵ While there has been a decrease in tobacco use over recent decades, the continuing burden of disease associated with tobacco use in Australia warrants further investment in tobacco control initiatives.

One important approach to tobacco control involves the provision of support to aid smokers in their smoking cessation attempts.¹ In Australia, a number of strategies for providing such support exist. These include population wide access to cessation support services such as: Quitlines^{1;6;7} and internet based programs;⁸ access to effective pharmacotherapies over the counter at pharmacies;^{1;7;9} and the distribution of self-help material.^{7;10} The provision of smoking cessation care to patients by health professionals has been identified as a particularly important tobacco control initiative, as most smokers come into contact with health professionals each year, health professional advice is a powerful motivator for patients to quit smoking, and clinicians have the capacity to provide cessation support and prescribe effective cessation medications.¹¹ Despite significant investment in initiatives to encourage all health professionals to systematically identify, encourage and support cessation attempts, the provision of smoking cessation care to health service patients remains an underutilised strategy.¹²

Guidelines^{11;13;14} regarding the provision of smoking cessation care to health service patients place a particular emphasis on the provision of nicotine replacement therapy (NRT) given its proven efficacy in aiding smoking cessation,⁹ and its capacity to manage the risk of withdrawal whilst a patient is in a smoke-free environment.¹³ NRT has been shown to be an effective means of reducing the physiological symptoms of nicotine withdrawal through providing a controlled dose of nicotine into the blood stream.¹⁵ NRT is also a relatively safe substance and does not expose smokers to other

harmful substances included in cigarettes, such as hydrogen cyanide, nitrogen oxides, volatile aldehydes, some alkenes, and some aromatic hydrocarbons¹⁶. Numerous clinical practice guidelines, including those in the US¹¹ and UK,¹⁷ recommend the routine provision of NRT to patients that smoke. In New South Wales, Australia, a Guide for the Management of Nicotine Dependent Inpatients (the Guide) was released in 2002 to support hospital clinician delivery of smoking cessation care.¹³ Its key recommendation involved the prescribing of nicotine replacement therapy to nicotine dependent inpatients.

Despite the efficacy of NRT and unequivocal recommendations for its use,^{11;13;14} meta-analyses examining the provision of NRT to hospital patients suggest that just 14% of smokers are advised of, or receive NRT from hospital staff.¹⁸ In Australian hospitals, research suggests that between 6%¹⁹ and 14%¹² of nicotine dependent hospital inpatients are routinely provided with NRT. The author could not identify any Australian studies that specifically examined NRT provision in rural hospitals. However, one study has reported the provision of smoking cessation care more generally in rural areas. The study conducted by Freund and colleagues found that only 22% of district and community hospitals in New South Wales reported providing adequate smoking cessation care.²⁰ As a consequence, increasing the provision of NRT by clinicians remains a significant challenge for health services, including those in rural areas.

Clinical staff report a number of barriers to the provision of smoking care including lack of time to provide care,^{21;22} and limited confidence,²³ knowledge^{21;23} and skills²³ to manage patients who may wish to smoke.^{21;23} In addition, research suggests that particular patient and clinical characteristics are associated with smoking cessation care provision by health providers. Such characteristics include a patient's age,²⁴⁻²⁶ cultural origin and diagnosis.²⁶⁻²⁸ In regards to NRT provision specifically, clinical staff appear more likely to provide NRT to patients who experience nicotine withdrawal symptoms, those who smoke a high number of cigarettes and those who have a longer length of stay.²⁹ This selectivity of care provision contradicts guideline recommendations and limits the capacity of NRT treatment to provide its intended clinical and public health benefits.

The low rates of clinician provision of NRT suggest that strategies used to date to disseminate smoking cessation clinical practice guidelines have not been effective.¹² To modify clinical practice, research suggests that interventions should incorporate strategies tailored to address deficits in organisational support and resources, and deficits in provider knowledge and skills.³⁰ Such strategies shown to be effective include the use of opinion leaders, consensus processes, training, performance feedback, prompts and reminders.^{31;32} In addition, it is suggested that such strategies should be tailored to address identified provider barriers to change.³⁰ With respect to the provision of smoking cessation care within hospitals, modification of the broader environment regarding the acceptability of smoking behaviour, may also facilitate care provision. To this end, it is recommended that the introduction of strategies to increase smoking cessation care should occur in the context of other strategies designed to reduce smoking in and around hospitals, such as the introduction of smoke-free policies.³³

Few studies have been undertaken that describe the impact of practice change interventions in increasing NRT provision to hospital inpatients.³⁴ In a randomised controlled efficacy study conducted in Australia, a multi-component practice change intervention was found to increase NRT to outpatients who attended a preoperative clinic (86% vs 0%).³⁵ The intervention strategies that were used included opinion leaders, training, establishing consensus, care provision monitoring and feedback and computerised support systems to prompt NRT provision.³⁵ Similarly, a controlled efficacy trial across four hospitals that involved the provision of training, reminders and prompts, local consensus, monitoring and feedback management support and communication, found a 21% increase of NRT provision to nicotine dependent inpatients at follow-up.³⁶ Although these studies suggest that NRT provision can be increased through practice change interventions, these studies only describe the results of efficacy-focused research trials conducted for a limited period of time in either single clinical units within hospitals,^{35;37;38} or across a limited number of hospitals.^{36;39;40}

The author is not aware of any Australian or overseas studies that have assessed the effectiveness (as apposed to efficacy) of initiatives designed to ensure that all smokers in hospitals are routinely offered and provided NRT by clinicians on an ongoing basis.

Similarly, the author is not aware of any Australian or overseas studies that have assessed the effectiveness of dissemination strategies designed to deliver such care across a health system, that is, across multiple hospitals, facilities and units within a single administrative structure, such as health trusts in the UK⁴¹ and health services in New South Wales, Australia.⁴² As a consequence, the effectiveness of strategies designed to disseminate clinical practice change strategies regarding smoking cessation care across such complex structures, and across multiple, diverse and physically distant facilities is unknown.

Given this lack of research evidence, a study was undertaken to assess the effectiveness of a dissemination strategy delivered on a health service-wide basis to increase routine clinician provision of NRT to nicotine dependent inpatients. The study assessed the effectiveness of the strategy in one rural hospital. Furthermore, given recommendations that all nicotine dependent inpatients should be offered NRT, and given evidence of barriers to, and biases in the provision of such care, the study also aimed to identify patient and clinical characteristics associated with NRT provision following the implementation of the dissemination strategy.

METHOD

Design

The study employed a pre-post study design. Baseline data were collected in one hospital over the 12 month period prior (1 October 2005 to 30 September 2006) to the implementation of the dissemination strategy, and follow-up data collected over the 12 month period following the implementation of the dissemination strategy (1 October 2007 to 30 September 2008). The dissemination strategy was delivered over a 12 month period (1 October 2006 to 30 September 2007). The outcome measures of interest were the proportion of nicotine dependent patients recorded in the medical records as having been offered NRT, and the proportion of nicotine dependent patients recorded in the medical records as having been provided NRT. The effectiveness of the dissemination strategy was assessed by statistical comparison of these measures between baseline and follow-up.

As the study represented an exercise in quality assurance of mandated care, the chair of the Hunter New England Human Research Ethics Committee advised that a formal ethics approval by the committee was not required.

Setting and participants

Hospital

The study took place in one of eight area health services in New South Wales, Australia. Within this health service, one regional referral hospital was selected on a convenience basis. The hospital was one of 47 hospitals in the health service, and located in a regional centre of approximately 53,500 people.⁴³ The 288 bed hospital had approximately 13,300 episode funded admissions per annum and provided inpatient (surgical, medical, intensive care) and ambulatory care services (emergency, outpatient).

Patients

Eligible patients were those who were: admitted to an inpatient ward for at least a 24 hour period; were 18 years of age or over; were discharged between 1 October 2005 to 30 September 2006 and between 1 October 2007 to 30 September 2008; and were current smokers (ICD-10⁴⁴ code Z72.0 or F17.1). Patients discharged from all wards other than antenatal, intensive care and mental health wards were included in the study.

A list of all eligible patients was extracted from electronic hospital records (Business Objects XI release 2) by clinical records staff at the hospital. From this list, the medical records of 50 patients were randomly selected for each of six two month periods across the baseline period, and similarly across the follow up period (n=300 for baseline and follow-up). Random selection was conducted using SAS version 9 statistical software (SAS version 9).⁴⁵ Records of smoking patients were then assessed to determine if the patient was nicotine dependent. Based upon information obtained within the medical record, patients recorded as having smoked: more than 10 cigarettes a day; more than 160 packs per year; more than 3 packs per week; within 30 minutes of waking up in the morning; or was referred to as a “heavy” smoker were

defined as nicotine dependent. Smokers who were not defined as nicotine dependent were excluded from the remaining analyses.

Assuming one third of patient smokers are nicotine dependent,^{19;46} the random selection of 50 medical records of smokers bimonthly for two six month periods was estimated to yield a total study sample of 400 nicotine dependent smokers. Assuming a significance level of 0.05 and a baseline prevalence of NRT offer/provision of 20%, a study sample of 400 nicotine dependent patients (200 at baseline and 200 at follow-up) was estimated to be sufficient to provide 80% power to detect a change of 12% in the offer and provision of NRT between baseline and follow-up.

Dissemination strategy

Based on previous reviews of clinical practice change strategies,^{11;13} and interventions found to be effective in enhancing NRT provision to inpatients,^{35;36} a multi-component dissemination strategy was developed for implementation across all 47 hospitals in the area health service. The strategy was implemented in the context of the introduction of an area-wide smoke-free policy banning smoking on all health service property, indoors and outdoors. The delivery of the strategy to all 47 hospitals was supported by a project team of three full time equivalent existing project staff located approximately 300kms from the study hospital. The dissemination strategy included the following evidence-based components:

1. Executive sponsorship and leadership.³¹ The Chief Executive Officer endorsed the establishment of an implementation committee and project team. The implementation committee, lead by two Executive Sponsors, was responsible for the planning, implementation and monitoring of initiatives to facilitate the routine provision of NRT (21mg/24 hr patch) to nicotine depending inpatients.
2. Communication.³¹ The rationale for, implementation progress, and the monitoring of the dissemination strategy was reported regularly to clinical staff via weekly electronic newsletters, broadcast emails, fact sheets, smoke-free site meetings, executive meetings, management meetings, and staff meetings.

3. Establishing consensus.^{31;32} During the planning and implementation phase, an inpatient working group, with representation from the project team and relevant clinical managers and staff from the hospital, was responsible for consulting with staff, and reaching agreement on key intervention strategies and methods of implementation.
4. Enabling tools and prompts.³² A number of tools were developed and implemented area-wide to facilitate and prompt the routine provision of NRT to nicotine dependent patients. These included a guideline to describe appropriate smoking care for dependent inpatients, a nicotine care assessment form to prompt clinician offer and provision of NRT, a protocol for the supply of NRT to wards by pharmacy, and a protocol for nurse-initiated NRT provision.
5. Staff training.³² A half day train-the-trainer session was conducted for nursing staff regarding the management of patient nicotine withdrawal.
6. Telephone support. Four tailored telephone contacts were made by the project team with all hospital Senior Nurse Managers and/or Nurse Unit Managers. The purpose of the calls was to support managers to comply with the dissemination strategy processes, to ensure staff had been appropriately trained, and to respond to difficulties experienced by nurse managers or their staff.
7. Compliance monitoring and feedback.^{31;32} Two bedside audits were conducted in every inpatient ward on a day specified by nurse unit managers. The audit involved the collection of data in two ways: a review of the patient's medical record; and by asking patients about whether clinical staff had offered and/or provided them NRT. On each ward the audit was conducted by one ward staff member nominated by the Nurse Unit Manager. Data from the audit was forwarded to the project team, and a feedback report regarding the ward's performance was emailed to the Nurse Unit Manager, the Senior Nurse Manager/s of each hospital, and the Executive Clinical Managers.

Data collection procedures

Data for the study was collected via retrieval of data stored in the electronic hospital records (Business Objects XI release 2), or were extracted via an audit of the paper medical records of patients. Medical records staff obtained the electronic hospital records data. To audit paper medical records of patients, a one page medical record audit tool was developed, pilot tested and amended on an iterative basis by the researchers and two trained clinical auditors prior to its finalisation (Appendix 1). Each auditor conducted the final study audit utilising the audit tool.

Measures

Demographic and clinical characteristics

Patient demographic and clinical information including age, gender, length of stay and ward of discharge were obtained from electronic hospital records. Aboriginal and/or Torres Strait Islander status and nicotine dependence were obtained from the medical record audit.

Offer and provision of NRT

To assess staff offer of NRT, notation within all sections of the medical record including the medication list and clinical progress notes were examined. An offer of NRT was deemed to occur if there was a record of a patient either being offered NRT, being prescribed NRT, or refusing NRT by a clinical member of staff. To assess staff provision of NRT, the nurse initiated section of the medication list, clinical progress notes and medication lists were examined for recorded prescription or provision of NRT.

Inter-rater reliability

Throughout the audit, approximately 10% of medical records were randomly selected by the researcher and were audited by both auditors to assess inter-rater reliability.

Analysis

All data analysis was conducted using SAS version 9 statistical software.⁴⁵ All statistical tests were two tailed with $\alpha = 0.05$.

Demographic and clinical characteristics

Descriptive statistics, including means for continuous variables (or medians if data is highly skewed) and proportions for categorical variables were used to describe the demographic and clinical characteristics of the samples at baseline and follow-up. Differences in the patient demographic and clinical characteristics between baseline and follow-up samples were assessed using Pearson chi-squared tests of association for categorical variables, and independent *t* tests for continuous variables. Continuous variables that were not normally distributed were assessed using the Wilcoxon Rank Sum test.

Provision and offer of NRT

Chi-squared tests were undertaken to examine change in the proportion of nicotine dependent inpatients offered and provided NRT from baseline to follow-up.

Inter-rater reliability

Cohen's kappa was used to assess the inter-rater reliability of auditors on measures of offer and provision of NRT.

Demographic and clinical characteristic associations with offer and provision of NRT

Univariate logistic regression models were fitted to determine if individual demographic and clinical factors were associated with offer (yes/no) and provision (yes/no) of NRT at follow-up. For the regression, categorical variables were formed from the continuous variables of age (<35, 35-54, 55-74, 75+) and patient length of stay (<4, 5-10, 11+).

RESULTS

Sample

Based on the data obtained from electronic hospital records, 550 and 566 eligible smokers at baseline and follow-up respectively were discharged from the hospital. From these smokers, three hundred medical records were randomly selected and audited for each period (55% and 53% respectively). Of the medical records audited,

65% (n=195) of patients at baseline and 67% (n=202) of patients at follow-up were nicotine dependent and constituted the sample of interest for this study.

Demographic and clinical characteristics

Characteristics of the eligible nicotine dependent patients are provided in Table 1. Across both baseline and follow-up samples, the patients were more likely to be male (63% and 60% respectively), aged on average 50 years old, and were most likely to be discharged from a surgical ward (37%, 41% respectively). There were no significant differences between baseline and follow up samples for age, gender, Indigenous status, length of stay and ward of discharge.

Table 1: Demographic and clinical characteristics of nicotine dependent patients

Descriptor	Baseline n=195	Follow-up n=202	p value
Age (\bar{x} (s))	50.0 (15.4)	49.5 (15.2)	$p = 0.77$
<i>Gender</i>			
Male	63%	60%	$p = 0.52$
<i>Indigenous status</i>			
Aboriginal and/or Torres Strait Islander	15%	13%	$p = 0.47$
<i>Length of stay</i>			
Days (median (range))	4.0 (2-84)	3.0 (2-69)	$p = 0.34$
<i>Ward of discharge</i>			
Orthopaedic	25%	18%	$p = 0.56$
Medical	16%	19%	
Surgical	37%	41%	
Medical/surgical	11%	12%	
Coronary care unit	6%	4%	
Other	5%	5%	

Offer and provision of NRT

Inter-rater reliability analysis of the 83 medical records found a high level of agreement between auditors on offer of NRT ($\kappa=0.97$) and perfect agreement ($\kappa=1.0$) on measures of NRT provision.

Table 2 shows the proportion of nicotine dependent patients who were offered, and the proportion of dependent patients who were provided NRT at baseline and at follow-up. Changes in the proportion of patients receiving each form of care were highly significant. Compared to baseline, the odds of patients in the follow-up period being offered NRT was more than eight times greater (OR 8.7, CI 5.5 to 13.6), and for the measure of NRT provision, the odds of inpatients discharged during the follow-up period receiving NRT was three times that of inpatients discharged during the baseline period (OR 3.0, CI 1.9 to 4.8).

Table 2: Proportion of nicotine dependent smokers offered and provided NRT

	Baseline n=195	Follow-up n=202	<i>p</i> value	Odds ratio	95% CI
Offered NRT	24% (46/195)	73% (147/202)	$p < 0.0001$	8.66	5.50 - 13.62
Provided NRT	16% (32/195)	37% (75/202)	$p < 0.0001$	3.01	1.87 - 4.83

Demographic and clinical characteristic associations with offer and provision of NRT

Associations between patient characteristics, and offer and provision of NRT to nicotine dependent patients are displayed in Table 3. No patient characteristics were associated with either offer or provision of NRT.

Table 3. Possible predictors of offered/provided NRT to nicotine dependent inpatients post intervention

Predictor variable	Offer n = 202			Provision n = 202		
	Odds ratio	95% CI	p-value	Odds ratio	95% CI	p value
<i>Gender</i>			0.11			0.14
Female	1			1		
Male	1.70	0.89-3.33		1.54	0.86-2.75	
<i>Age</i>			0.30			0.37
18-34	1			1		
35 - 54	1.63	0.69-3.86		1.54	0.64-3.70	
55-74	2.17	0.82-5.77		1.58	0.62-4.05	
75+	0.81	0.21-3.18		0.47	0.09-2.57	
<i>Indigenous status</i>			0.33			0.47
Aboriginal and/or Torres Strait Islander	1			1		
Non-Aboriginal and/or Torres Strait Islander	1.67	0.60-4.66		0.72	0.30-1.76	
<i>Length of stay (days)</i>			0.90			0.93
2-4	1			1		
5-10	1.16	0.57-2.38		1.05	0.55-2.00	
11+	0.93	0.31-2.86		1.22	0.44-3.42	
<i>Ward</i>			0.66			0.86
Orthopaedic	1.00	0.42-2.39		1.33	0.60-3.00	
Medical	1.28	0.53-3.10		1.30	0.59-2.83	
Surgical	1			1		
Medical/surgical	1.46	0.49-4.36		0.93	0.36-2.43	
Other	0.58	0.21-1.59		1.00	0.36-2.79	

DISCUSSION

To the best of the author's knowledge, no previous Australian study has reported at the level of a single hospital, the effectiveness of a health system-wide dissemination strategy in increasing routine clinician provision of NRT to inpatients. The results of this study suggest such a system-wide dissemination strategy is effective in markedly increasing the offer of

NRT to nicotine dependent smokers, and increasing the provision of NRT to such smokers. Such findings have important implications for how governments and health services disseminate clinical practice guidelines to promote the routine provision of smoking cessation care, provide preventive care, and to disseminate clinical practice change guidelines generally.

The proportion of patients offered NRT increased substantially between baseline and follow-up from 24% to 73%. While this change was less than that found in an efficacy research trial implemented in one Australian pre-surgical outpatient clinic, where offers of NRT increased from 0% to 89%,³⁵ it exceeds the increase from 7% to 28% reported by Freund et al in an efficacy study across four hospitals in Australia.³⁶ Importantly, at follow-up, almost three quarters of nicotine dependent patients were offered NRT, a prevalence of care far in excess of that reported for other hospitals in Australia and internationally. In such studies, between 0%⁴⁷ and 34%⁴⁸ of inpatients have been reported to be offered NRT.

Despite the increases in offers of NRT, 27% of nicotine dependent patients were not recorded as being offered NRT following the implementation of the dissemination strategy. This suggests that further initiatives may be required to achieve acceptable levels of such care. An alternative explanation is the possibility that an offer of NRT may have been made but not recorded. Studies undertaken in hospital settings suggest that clinicians under record actual smoking cessation care provision.⁴⁹⁻⁵¹ If poor recording of care occurred in the study hospital, the observed proportion of patients receiving an offer of NRT may represent an under estimate of actual care provision.

Thirty seven percent of nicotine dependent inpatients were recorded as being provided NRT at follow-up. This finding is consistent with a previous Australian hospital-wide trial that reported 28% of nicotine dependent inpatients at follow-up were provided with NRT following a multi-component practice change intervention.³⁶ The follow-up rate of NRT provision is also considerably higher than previous estimates of routine NRT provision to nicotine dependent inpatients in Australian hospitals¹⁹. Nonetheless, the finding indicates that even after the provision of a comprehensive practice change strategy, two thirds of patients are not using NRT as inpatients. This may be due, in some degree, to a lack of patient interest in using NRT. In this study, 33% of patients offered NRT were recorded as having refused the offer. Such findings suggest that additional strategies directed at increasing patient

receptivity to the offer of NRT may be needed, such as clinician skills training in outlining the benefits of the product in reducing withdrawal and aiding cessation.^{21;22}

The lack of significant associations between patient demographic and clinical characteristics, and the offer and provision of NRT suggests that clinicians were not biased in their provision of NRT care to patients. Such a finding contrasts with those of previous studies which have found that older patients,^{24;26} those with a shorter length of stay¹², and those who have a smoking related illness^{24;26} are more likely to receive smoking cessation care. An absence of such bias in care provision in this study could suggest that the nature and components of the dissemination strategy were successful in conveying to clinicians the need for a universal approach to NRT care provision, as recommended by clinical guidelines.

The results of this study should be interpreted in the context of a number of its design and methodological characteristics. First, a simple non-controlled pre-post study design was used as a pragmatic means of evaluating, from a routine service delivery perspective, the potential effectiveness of the dissemination strategy. Given this design, the observed changes in NRT care between baseline and follow-up cannot be directly attributable to the dissemination strategy, and may be attributable to temporal changes across the health system generally, or to other interventions that may have been implemented in the hospital. However, notwithstanding this limitation, a recent survey of smoking cessation care in New South Wales hospitals has shown increases in NRT provision between 2002 and 2007 across the state of 12%, well below the 21% observed in this study.⁵² The possibility therefore exists that the dissemination strategy used in this study may have contributed an additional improvement in the study hospital over and above secular trends.

Second, the dissemination strategy was designed to encourage, on an ongoing basis, the routine offer and provision of NRT by clinicians. Although the results are suggestive of an effect over a 12 month follow-up period, further research is required to examine the long term sustainability of such NRT care practices. Third, the study was designed to examine the effectiveness of health service-wide dissemination strategy in one of the 47 area health service hospitals. The extent to which the strategy was effective in influencing care delivery in the other hospitals, thereby indicating the effectiveness of the strategy overall, is unknown. The promising findings of this study suggest a larger study assessing NRT care delivery across all hospitals is warranted.

Finally, the study was focused on one of the smoking cessation care elements recommended by the New South Wales Health smoking care guidelines.¹³ The extent to which the dissemination strategy had an impact on other aspects of smoking cessation care was not assessed. In a recent efficacy trial in four New South Wales hospitals using similar practice change strategies, Freund et al reported increases in the offer and provision of NRT; in the discussion of nicotine dependence management; and the provision of written resources.³⁶ The possibility therefore exists that the observed effects on NRT care in this study may have been generalised to other care elements. In contrast, previous studies have suggested that the provision of NRT is perhaps the most frequently adopted of smoking cessation care elements, with others, such as advice and discharge planning less likely to be implemented by clinicians. Further research is required to examine the effect of the dissemination strategy on other smoking cessation care elements.

This evaluation has demonstrated that significant gains can be made in the provision of NRT care to inpatients through the implementation of a health system-wide dissemination strategy. As previously reported, limited implementation of smoking cessation care elements followed the state-wide dissemination of smoking care guidelines in 2002. The findings of this current study are of significance in this context, as they suggest that a more intensive dissemination strategy may have a greater impact on clinician uptake of the care guidelines. Despite its greater intensity, the study further suggests that the level and duration of resources required to implement the strategy are capable of being met from within existing health service funding arrangements. Further evaluation of the effect of the dissemination strategy across other hospitals, smoking care elements and other areas of clinical practice change appear warranted.

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Ref Type: Unpublished Work

SMOKE FREE MEDICAL RECORDS AUDIT

Audit Instructions Sheet

DIRECTIONS FOR RECORDING RESPONSES TO AUDIT QUESTIONS:

NOTE: Please ensure you use only information recorded in the medical record for the specific admission period.

ID

Record patient's ID. Each medical record requires a unique patient ID assigned.

Q1. Patient Sex

If this information is NOT recorded in the front sheet, refer to patient's notes for references to sex specific language e.g. "he/she" or "his/her" and record accordingly.

- **Record "1"** if the patient is male.
- **Record "2"** if the patient is female.

Q2. Is the patient an Indigenous Australian?

This information should be recorded in the front sheet.

- **Record "1"** if the record indicates that the patient is Aboriginal and or Torres Strait Islander.
- **Record "2"** if the record indicates that the patient is NOT Aboriginal and or Torres Strait Islander.
- **Record "3"** if this is not stated or there is no record of this.

Q3. Was the patient a current smoker?

Note 1: A patient is identified as a current smoker if they were smoking at time of admission or using nicotine replacement therapy when admitted.

Note 2: If there is recording conflict, i.e. notation of patient being a smoker and a non-smoker, assess patient as a smoker.

Note 3: Do not use information from the pre-booked surgical form or pre-anaesthetic form if the form/s were completed before admission.

- **Record "1"** if the patient was a smoker on admission.
- **Record "2"** if the patient was NOT a smoker on admission.
- **Record "3"** if no record of smoking status on file.

IMPORTANT: If patient identified as a non-smoker or smoking status not recorded for this admission record 2 or 3 and discontinue audit for this patient.

Q4. Is the patient nicotine dependent?

Note 1: This question is an attempt to quantify the amount the patient smoked (it is NOT enough simply to identify the patient as a smoker. This question requires additional information.

Note 2: If there is recording conflict in regard to number of cigarettes smoked assessed nicotine dependence on the highest number of cigarettes recorded.

Note 3: Use information, of number of cigarettes smoked, recorded on the pre-booked surgical form or pre-anaesthetic form if patient was still smoking on admission and the information is not recorded anywhere else.

- **Record “1”** if the patient either:
 - smoked more than 10 cigarettes a day, **or**
 - smoked more than 160packs/year or more than 3packs/week, **or**
 - smoked within 30 minutes of waking up in the morning, **or**
 - was referred to as a “heavy” smoker.
- **Record “2”** if the patient does not meet any of the criteria described above. For example:
 - Smoked 10 or less
- **Record “3”** if there is partial information about patient’s level of dependence but not enough to classify them in either category, or the amount smoked **or** how soon they smoked in the morning is not recorded within the patient’s file.

Q5. Was NRT received?

This question is a multiple response. Nicotine replacement therapy (NRT) can be in the form of patch, lozenge, gum, inhaler or sublingual tablet.

Note: A patient may have been offered NRT and accepted NRT, however, they may not have received NRT.

- **Record “a”** if the patient was **offered** any form of NRT.
Note: This information would appear in the patient’s notes e.g. “patient offered NRT”.
- **Record “b”** if the patient **accepted** any form of NRT.
Note: This information would appear in the nicotine care assessment form or in the patient’s notes.
- **Record “c”** if NRT was **nurse initiated**.
Note: If NRT was nurse initiated it would be charted in the nurses initiated section of the medication list.
- **Record “d”** if NRT **charted** on the medication list.
Note: NRT needs to be charted on medication list and charted at least once.
- **Record “f”** if the patient **refused** NRT.
Note: This information would appear on the nicotine care assessment form or in patient’s notes.
- **Record “g”** if there is no mention of NRT anywhere in the file.

Q6. Comments.

Please record any specific comments or problems encountered during the auditing process.

A comment column is provided to record any additional information in the patient's file relating to the smoking care that they have received which has not been recorded elsewhere in the file and to record problems relating to obtaining and recording information e.g. "could not determine number of cigarettes smoked as writing illegible".

SMOKE FREE MEDICAL RECORDS AUDIT (Tamworth)

TIME PERIOD: (e.g. TP1 08/05 to 09/05) _____ DATE AUDITED _____ AUDITOR _____ PAGE NO. _____

Patient ID	Q.1 Sex		Q.2 Is patient an Indigenous Australian?			Q.3 Was patient a current smoker?			Q.4 Was patient Nicotine dependent?			Q.5 Inpatient NRT (circle all elements of care)							Q.6 Comments
	Male	Female	Yes	No	Not recorded	Yes	No	Not recorded	Yes	No	Not recorded	Offered NRT	Accepted NRT	Nurse initiated NRT	Chartered NRT	Noted NRT	Refused NRT	None provided	
	1	2	1	2	3	1	2	3	1	2	3	a	b	c	d	e	f	gg	Record any specific comments or problems:
	1	2	1	2	3	1	2	3	1	2	3	a	b	c	d	e	f	gg	
	1	2	1	2	3	1	2	3	1	2	3	a	b	c	d	e	f	gg	
	1	2	1	2	3	1	2	3	1	2	3	a	b	c	d	e	f	gg	
	1	2	1	2	3	1	2	3	1	2	3	a	b	c	d	e	f	gg	
	1	2	1	2	3	1	2	3	1	2	3	a	b	c	d	e	f	gg	
	1	2	1	2	3	1	2	3	1	2	3	a	b	c	d	e	f	gg	
	1	2	1	2	3	1	2	3	1	2	3	a	b	c	d	e	f	gg	