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AN AUDIT OF THE PREVALENCE OF RECORDED NICOTINE DEPENDENCE TREATMENT IN AN AUSTRALIAN PSYCHIATRIC HOSPITAL

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AN AUDIT OF THE PREVALENCE OF RECORDED NICOTINE DEPENDENCE TREATMENT IN AN AUSTRALIAN PSYCHIATRIC HOSPITAL

Objectives - To investigate the prevalence of recorded smoking status, nicotine dependence assessment, and nicotine dependence treatment provision; and to examine the patient characteristics associated with the recording of smoking status.

Method - A retrospective systematic medical record audit was conducted of all psychiatric inpatient discharges over a six month period (1 September 2005-28 February 2006), at a large Australian psychiatric hospital, with approximately 2000 patient discharges per annum. A 1-page audit tool identifying patient characteristics and prevalence of recorded nicotine dependence treatment, and requiring ICD-10-AM diagnoses coding was used.

Results - From 1012 identified discharges, 1000 medical records were available for audit (99%). Documentation of smoking status most frequently occurred on the admission form (28.8%) and diagnoses summary (41.6%). Documentation of nicotine dependence was not found in any record, and recording of any nicotine dependence treatment was negligible (0-0.5%). The rate of recorded smoking status on discharge summaries was 6%. Patients with a diagnosis of alcohol, cannabis, sedative use disorders or asthma were twice as likely to have their smoking status recorded compared to those who did not have these diagnoses.

Conclusions - Mental health services, by failing to diagnose and document treatment for nicotine dependence, do not conform to current clinical practice guidelines, despite nicotine dependence being the most commonly diagnosed psychiatric disorder.

Implications - Considerable system change and staff support is required to provide an environment where a primary prevention approach such as smoking care can be sustained.

Keywords: Smoking, Mental Health, Audit

Smoking is the leading preventable cause of death and morbidity¹, contributing to over 15,000 deaths in Australia² and 438,000 in the United States of America (USA)³ annually, with the main causes of tobacco-related deaths being cancers, cardiovascular diseases and respiratory diseases³. In Australia and elsewhere there remains a significant disparity in smoking prevalence between the general population (16.6%)⁴ and the high prevalence among inpatients in psychiatric units (70-90%)⁵⁻⁷. Consequently, the burden of tobacco-related disease is much higher for people with mental health problems^{7,8}.

International and national clinical practice guidelines emphasize the importance of systematically identifying and providing nicotine dependence treatment to all smokers in all health care settings⁹⁻¹¹. For example, the New South Wales (NSW) Health Department guideline for the management of nicotine dependent inpatients¹⁰ recommends that: all smokers be identified upon admission; nicotine withdrawal be managed; nicotine replacement therapy (NRT) be prescribed; withdrawal symptoms be monitored; and treatment of nicotine dependence be included in discharge summaries.

Despite the existence of such guidelines, the prevalence of nicotine dependence treatment in health services is generally low. An audit of 250 medical records in an United Kingdom (UK) general hospital setting found that although the majority of inpatients were asked about smoking (88%), only 38% of smokers were provided with quit advice and only 18% were provided with NRT¹². In a study of Nurse Unit Managers' report of provision of nicotine dependence treatment in all general hospitals in New South Wales, Australia, only 37% of respondents reported that all inpatients had their smoking status recorded, while few (17%) provided brief advice to quit or recommended NRT¹³. Audits of medical records in other Australian general hospitals in both urban and regional settings showed substantial errors in recording smoking status^{14,15}, minimal provision of NRT and low prevalence of recorded smoking status on the discharge summary¹⁶.

As has been recognized to be the case for general hospital patients, admission to a mental health unit potentially represents an opportunity to provide nicotine dependence treatment to psychiatric inpatients, and to support and facilitate cessation for the high proportions of patients who report contemplating a quit attempt^{7,17-19}. Importantly, an accumulating number of studies provide

insight into the specific forms of cessation care that may be required for this population, taking into account factors such as high levels of nicotine dependence, concurrent prescribed psychiatric medications and concurrent substance abuse, particularly alcohol and tobacco²⁰⁻²².

In the USA, a national survey of physicians showed that they usually identified the smoking status of patients with psychiatric diagnoses, but infrequently offered advice to quit²³. Results of an audit of 250 medical records in one psychiatric inpatient service in the USA found that although 42% of inpatients were identified as current smokers, none received a diagnosis of nicotine dependence, and although 56% of smokers were prescribed NRT, smoking status was not included in treatment planning²⁴. Similarly, an audit of outpatient mental health records in Texas found that although smoking status was routinely documented, very few patients who smoked received a diagnosis of nicotine dependence²⁵.

Only one study has described the prevalence of nicotine dependence treatment provision in mental health inpatient settings in Australia. In a cross-sectional survey of nurse managers in all public psychiatric inpatient units in NSW, Australia²⁶, half (50%) estimated that all patients in their units were assessed for smoking status, 37% estimated that such status was documented, and 4% reported that nicotine dependence was always documented.

Given the almost ubiquitous nature of smoking among people with a mental disorder, and limited studies regarding the prevalence of nicotine dependence treatment provision in mental health settings, a study was undertaken to determine the prevalence of such care in an Australian psychiatric hospital. The medical record audit study was undertaken to: investigate the prevalence of recorded smoking status, nicotine dependence assessment, and nicotine dependence treatment provision; and to examine the patient characteristics associated with recorded smoking status assessment – during the inpatient stay and at discharge.

Method

Design & Setting

A retrospective systematic medical record audit was undertaken for all psychiatric patients discharged from a large adult psychiatric hospital located in NSW, Australia, over a six month period (1 September 2005-28 February 2006). The facility has approximately 2000 patient discharges per annum, and 80 beds in five units: two general acute units, an intensive care unit, a dual diagnoses (concurrent mental health and substance use problems) unit, and an aged care unit. All units were included in the audit. The audit took place six months prior to the introduction of a total smoking ban at the site, and in the absence of a mandatory requirement to record smoking status or provide nicotine dependence treatment.

Procedure

Medical record audit represents an accepted systematic approach to quantifying the delivery of medical care^{27,28}. Prior to the conduct of the audit, a review of hospital procedures was undertaken to guide the development of the audit tool. This process identified five locations within the medical record where the care items of interest could be recorded: admission forms; review forms; clinical notes; electronic discharge summary; and diagnoses summary. Admission forms are usually completed by clinical and medical staff. Review forms are used at a number of stages: at 35 days following admission in acute inpatient service settings, or at change in mental health legal status, service unit or care, or the occurrence of a critical incident. Clinical notes are completed by all staff who engaged in patient treatment at any time. The discharge summary is a computer-generated facsimile which is automatically sent to the patient-nominated general practitioner and most appropriate community service. The discharge summary is either completed by the treating doctor or filled in by a nurse and signed by a doctor, usually within two weeks of patient discharge. The diagnoses summary is completed by medical staff and attached to the medical record after patient discharge.

All medical records for discharged patients within the audit period were eligible to be included in the audit, and were identified by a unique medical record number. Data were collected by an experienced clinical information services staff member. The audit process was conducted between two weeks and three months from the discharge date, the time period varying due to the completion of the documents required and availability of the medical record file.

A random 9% sample of files (n=91) was re-audited by another clinical information services staff member to provide an assessment of the reliability of the audit for the information taken from both the diagnoses summary and the discharge summary.

Measures

A 1-page audit tool was developed encompassing tick-boxes for identifying patient characteristics and prevalence of recorded nicotine dependence treatment, and requiring coding of diagnoses according to the International Statistical Classification of Diseases and Related Health Problems, Tenth revision, Australian Modification (ICD-10-AM)²⁹.

Patient Characteristics

Patient characteristics collected included the medical record number, treating unit at discharge, admission and discharge dates, date of birth, gender, and whether the index admission was the first ever admission, the patients' ability to speak English, and their Aboriginal or Torres Strait Islander status (yes/no/unknown). ICD-10-AM²⁹ diagnoses were recorded from the discharge summary. The unit conducting the discharge procedures in each medical record was noted.

Prevalence of Recorded Nicotine dependence treatment

In order to investigate the prevalence of recorded nicotine dependence treatment, the recording of 10 care items in each of the 5 locations within the medical record was assessed: smoking status; quantity/strength of cigarettes; diagnoses of nicotine dependence; brief advice to quit; patient desire to quit; provision of printed quit information; referral to Quitline; provision of NRT; quit attempt; and nicotine withdrawal monitoring. These 10 care items reflect Australian guidelines for the management of nicotine dependent patients¹⁰. Any locations within the record where the care item was recorded were noted.

Analysis

Admission and discharge dates were used to calculate length of inpatient stay. The medical record number was used to identify number of discharges within the audit period. Using ICD-10-AM²⁹ indexing, diagnoses were reduced to 33 categories using the *List of three-character categories* index, based on those which were most prevalent and/or which had a particular relevance to smoking and its recording. These categories included ten psychiatric diagnoses

(suicidal ideation, schizophrenia/psychosis, adjustment disorders, borderline personality disorder, bipolar disorders, depressive disorders, anxiety disorders, dementias, history of self harm, and other personality disorders); seven substance-related diagnoses of abuse/dependence (smoking, alcohol, cannabis, multiple drug, stimulants, sedatives, and opioids); and six tobacco-related diseases (diabetes, neoplasm [or history of], hypertension, asthma, circulatory diseases, and cardiovascular diseases).

Cohen's kappa³⁰ was used to determine inter-rater reliability. All other data analyses were conducted using SPSS (Version 15)³¹. Descriptive statistics were used to describe patient characteristics and prevalence of recorded nicotine dependence treatment. Chi square tests were initially used to identify patient characteristics associated with smoking status assessment on the diagnoses summary, and on the discharge summary, using Bonferroni correction to address the increased probability of Type 1 error due to multiple testing³². To ascertain the patient characteristics that were independently associated with nicotine dependence treatment recorded on the two summary forms, those that were found to be associated at the $p < 0.25$ level were entered into backward stepwise logistic regression models³³.

Results

Sample

From 1012 identified discharges, 1000 medical records were available for audit (99%). Missing medical records arose where files were transferred to other facilities. Of the 1000 audited medical records, all had meaningful data for analysis: 87% of audited records had admission forms, 8% had review forms, and 94% had discharge summaries completed at the time of the audit, and all had clinical notes and diagnoses summaries.

Unit and patient characteristics

Unit demographic and clinical characteristics indicated significant differences between the units in terms of a higher frequency of substance use in the dual diagnoses unit and medical conditions in the aged care unit. Tobacco use was the most commonly classified health condition, with 41.5% of records identifying the patient as a smoker.

Prevalence of recorded nicotine dependence treatment

Due to the ambiguous nature of smoking assessment, the audit was only able to capture smoking assessment information relating to those identified as smokers. Non smokers and former smokers were not identified. Using Cohen's kappa³⁰, inter-rater agreement was high for recording smoking status (89% for diagnoses summary, 90% for discharge summary).

Documentation of smoking status most frequently occurred on the admission form (28.8%) and diagnoses summary (41.6%), with 41.6% of records having smoking status recorded in any location. Documentation of nicotine dependence was not found in any record, and prevalence of any recorded nicotine dependence treatment was negligible (0%-0.5%). Recording of smoking status occurred on 5.7% of discharge summaries. Of the three patient records that documented that the patient was making a quit attempt, only one documented that NRT was provided, and this was at discharge. Of the four patient records indicating that the patient received NRT, two were provided NRT at admission, and two were provided with NRT at discharge.

Patient characteristics associated with assessment and recording of smoking status on the diagnoses summary and discharge summary forms

Chi square analysis revealed that 15 patient characteristics were associated with recorded smoking status on the diagnoses summary at $p < .25$, and that 8 patient characteristics were associated with recorded smoking status on the discharge summary at $p < .25$ (Table 1).

Table 2 reports the results of logistic regression analyses examining the patient characteristics independently associated with recorded smoking status on the diagnoses (7 of 15) and discharge summaries (4 of 8). The results show that factors most strongly associated with having smoking status recorded on the diagnoses summary were patients with a diagnosis of sedative use disorders ($OR = 3.039, df = 1, p = 0.013$), cannabis use disorders ($OR = 2.245, df = 1, p < 0.001$), asthma or other respiratory disorders ($OR = 1.955, df = 1, p = 0.007$) or alcohol use disorders ($OR = 1.899, df = 1, p < 0.001$). Factors most strongly associated with having smoking status recorded on the discharge summary were patients with a diagnosis of intentional self harm ($OR = 3.494, df = 1, p = 0.030$) and stimulant use disorders ($OR = 3.264, df = 1, p < 0.001$).

Discussion

The audit data presented in this study provide the first large scale record-based indication of the prevalence of a comprehensive range of nicotine dependence treatment elements in an Australian inpatient psychiatric facility. Similar to previous research in the US, 41.6% of medical records recorded smoking status assessment²⁴, and no records indicated a diagnosis of nicotine dependence^{24,25}. The results from this facility conform to those of a NSW state-wide survey of Nurse Unit Managers in mental health settings²⁶, where 44% of respondents reported less than half of medical records have patient smoking status recorded and 70% of respondents stated that no patients have a nicotine dependence diagnosis recorded. As a consequence it is reasonable to conclude that the findings from this study may reflect the prevalence of care throughout the state.

The results suggest that this particular mental health facility is failing to diagnose and document treatment for nicotine dependence in a manner consistent with guideline recommendations. The guideline for the management of nicotine dependent patients¹⁰ recommends 10 processes for treating nicotine dependence. Of these 10, only the assessment of smoking appeared to be documented with any regularity, despite research consistently reporting that the prevalence of smoking among psychiatric service patients to be at least 70%^{5,7}. In addition, evidence of treatment for nicotine dependence was rare and untimely, with patients interested in quitting having the provision of NRT recorded at discharge and not during admission.

Interestingly, asthma/other respiratory disorders and hypertension were the only tobacco-related diseases or conditions recorded on the diagnosis summary that were found to be associated with the recording of smoking status assessment. Death due to respiratory disease and heart disease among people with mental illness is more than double that of the general population⁸. Further, people with mental illness have far higher death rates due to neoplasms, diabetes, and circulatory diseases⁸. However it appears that respiratory illnesses and hypertension were the only tobacco-related diseases to cue the recording of smoking status. Ideally, smoking would always be routinely assessed and recorded independently of a context of tobacco-related diseases.

These results may reflect a diagnostic/curative approach rather than a primary prevention approach to the assessment and provision of nicotine dependence treatment, consistent with other research³⁴⁻³⁶.

The data suggests a low rate (6%) of recorded smoking status on discharge summaries. Discharge summaries are forwarded to treating GPs, community mental health teams and drug and alcohol services, and summarize the therapeutic events and planned interventions. Failure to document nicotine dependence and nicotine dependence treatment represents a lost opportunity for ongoing community support for patients attempting to quit¹⁸. Evidence suggests that without ongoing support most patients will resume smoking upon discharge^{18,37}.

Predictors of recorded smoking status assessment on discharge summaries were a medium length of inpatient stay (4-14 days), multiple admissions, and a diagnosis of either stimulant use or intentional self harm. There is little evidence available to explain why these variables would be associated with recording of smoking status on discharge. However, previous research in general health settings has found patients with nicotine withdrawal symptoms, those who smoked a higher number of cigarettes, and those who had a longer length of stay were more likely to be provided NRT³⁸. These results suggest that efforts to increase the recording of smoking status on discharge summaries for ongoing support in the community are required for all patients. Further research is needed to identify sustainable mechanisms for providing mental health patients with access to such integrated, ongoing cessation support after discharge.

The recording of smoking status was associated with the recording of alcohol, cannabis, stimulant and sedative use. Earlier Australian research found that tobacco, alcohol and cannabis use were all associated with an increased likelihood of using other substances³⁹. Poly-substance use is common⁶ and there can be interactions between the use of different substances which may have clinical relevance⁵ - both circumstances which would suggest a positive rationale for the recording of one substances to prompt the recording of another. However, there may also be a more negative interpretation to be made if it were the case that this led smoking to be *only* recorded in instances where other substance use was an issue. It is preferable that smoking and other commonly problematic substances for this population group such as alcohol and cannabis,

would always be routinely assessed and recorded independently of a context of poly-substance use.

It is acknowledged that the limitation of an audit is the reliance on documentation by clinical and medical staff, and it could be argued that nicotine dependence treatment and health promotion practice occurred but was not documented. However, research comparing medical record audit and patient surveys found that although rates for screening of smoking status were similar between the two methods, higher rates for advice to quit smoking were seen on medical record audit versus patient survey (66% vs 52%)⁴⁰. The findings of this study are strengthened, however, by a large sample size and representation from all units at the facility, and by similar findings in a NSW state-wide survey of Nurse Unit Managers in mental health settings²⁶. In addition, the data were collected 3 years ago and a follow up audit is required to determine whether the provision of nicotine dependence treatment has changed. The likelihood of change is unknown. However, delays to the introduction of a smoke-free workplace policy in mental health services in the state, delays that have recently been removed⁴¹, make it unlikely that much will have changed. Unfortunately, research suggests that it is unlikely that psychiatric patients are offered appropriate information or support to help them change their tobacco usage^{26,42}. It is recognized that inpatient psychiatric facilities are under considerable strain in a difficult and pressured environment⁴³, however if this vital information is not recorded, opportunities to reinforce smoking abstinence or quit attempts are missed and psychiatric care may be compromised²⁴.

Considerable system change and staff support is required to provide an environment where a primary prevention approach such as nicotine dependence treatment can be sustained^{26,36}. Training is required to improve staff knowledge and efficacy regarding providing nicotine dependence treatment, and the provision of nicotine dependence treatment specialists could be considered⁴⁴. Further research is required to determine how best to ensure smoking status assessment and nicotine dependence treatment are provided and recorded. Despite evidence that smoking is the leading preventable cause of death and morbidity generally², particularly prevalent for those with mental health problems^{5,6}, and contributes to a higher death rate in people with

mental illness⁸, these results show that tobacco use is the most commonly classified health condition in this mental health facility.

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Conflicts of Interest Statement

All authors state that no conflict of interest exists that could inappropriately influence (or bias) the authors' decisions, work, or manuscript.

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Table 1: Patient characteristics associated with recording of smoking status on diagnoses summary and discharge summaries

Patient Characteristics (n)	Diagnoses Summary n = 416			Discharge Summary n = 57		
	n	%	p	n	%	p
Dual Diagnoses Unit (167)	101	24	0.000	26	46	0.000
Aged 49 or less (791)	359	87	0.000	-	-	-
First Admission (595)				44	79	0.006
Psychiatric Diagnoses						
Suicidal Ideation (354)	-	-	-	47	83	0.003
Dementia (930)	406	98	0.000	-	-	-
Substance Use Diagnoses						
Alcohol (347)	177	43	0.000	-	-	-
Cannabis (263)	151	36	0.000			
Stimulants (147)	81	19.5	0.000	19	33	0.000
Medical Diagnoses						
Hypertension (909)	397	96	0.000	-	-	-
Cardiovascular diseases (892)	388	93	0.000	-	-	-

Table 2: Logistic Regression results for patient characteristics associated with recording of smoking status on diagnoses and discharge summaries in the final logistic regression model

Variable	Co-efficient	SE	df	P Value	Odds Ratio	CI (95%)
Diagnoses Summary						
Length of Stay						
< 3 days						
4-14 days	0.285	0.092	1	0.002	1.330	1.110 – 1.594
15+ days						
<i>Diagnoses of:</i>						
Dementia	-1.061	0.399	1	0.008	0.346	0.158 – 0.757
Alcohol Use Disorder	0.641	0.147	1	0.000	1.899	1.424 – 2.533
Cannabis Use Disorder	0.809	0.156	1	0.000	2.245	1.655 – 3.047
Sedative Use Disorder	1.111	0.449	1	0.013	3.039	1.261 – 7.324
Hypertension	-0.721	0.304	1	0.018	0.486	0.268 – 0.883
Asthma/Respiratory	0.670	0.250	1	0.007	1.955	1.197 – 3.194
Discharge Summary						
Length of Stay						
15+ days	0.0437	0.191	1	0.023	1.547	1.063 – 2.251
First Admission	0.818	0.344	1	0.018	2.264	1.154 – 4.441
<i>Diagnoses of:</i>						
Stimulant Use Disorder	1.168	0.311	1	0.000	3.216	1.749 – 5.913
Intentional Self Harm	1.251	0.578	1	0.030	3.494	1.126 – 10.847