Title: Improving alcohol history taking by Junior Medical Officers

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Abstract

Background. The World Health Organization (WHO) reports that alcohol use was responsible for 4% of the global disease burden in 2000, second only to tobacco and high blood pressure. Brief interventions have been proven effective in producing significant reductions in alcohol use, yet alcohol use is not routinely recorded in hospital settings. An effective strategy to address this problem has not been implemented. Our study aimed to determine the effect of two strategies to improve assessment and management of alcohol use disorders by Junior Medical Officers (JMOs).

Method. This was a crossover trial conducted at two hospitals over two years. Medical records of patients who had been admitted by JMOs were examined for records of: alcohol use; quantified alcohol consumption; alcohol intervention; alcohol withdrawal or a consultation from the Drug and Alcohol team. Data were also collected on tobacco use and nicotine replacement therapy (NRT). In year 1, the first hospital received printed individual feedback on their own and their group's results, while the second hospital received a face-to-face presentation of their group's results by one of the Staff Specialists. The following year, they received the alternate intervention.

Results. A total of 3025 patient records were examined for 130 JMOs. After Individual Feedback, the percentage of records with any alcohol history remained static at 60%; however the percentage of quantified histories rose from 69% to 92% (p<0.001). More smokers were detected (p= 0.038) and NRT prescribing rates rose significantly from 2% to 16% (p= 0.004). After Group Feedback, recording rates of alcohol and tobacco use remained static. Logistic regression showed that JMOs were significantly more likely to record alcohol status if the doctor was an intern (i.e. first year), was located at the second hospital, or if the patient was male, and was younger than the median age of 70 years.

Conclusion. Our study suggests that feedback on individual performance with education about desired standards is effective in improving the recording of quantified alcohol histories by Junior Medical Officers.

Background

The World Health Organization (WHO) reported that alcohol use was responsible for 4% of the global disease burden in 2000, second only to tobacco and high blood pressure. [1] It is estimated that the annual economic, health and social costs to England are £20bn, with 22,000 deaths. [2] Alcohol excess accounts for more than 3400 deaths and 72,000 hospital admissions annually in Australia. [3] Admission to hospital presents an ideal opportunity for assessment and appropriate intervention, as it has been reported that between 12% and 36% of hospital in-patients have alcohol problems. [4-6] Yet, since 1980, several studies have reported that alcohol consumption is not routinely recorded in patient records by medical staff and risky consumption often goes undetected. [7-10] Even when risky drinking is recorded, it is often not acted on. [5 11 12 13]

Significant reductions in alcohol use and/or related problems have been reported for brief interventions compared with no-intervention controls in many randomised trials in health care settings. [14-16] It has been demonstrated that an early intervention, which may be as brief as 5-10 minutes, can be effective in reducing alcohol consumption and related problems. [17-20] However, methods for improving detection of drinking problems are needed, so that brief interventions can be appropriately implemented.

In a sample of inpatients from a major teaching hospital in Sydney, hazardous, harmful or dependent drinking was self-reported by 12% (using the AUDIT questionnaire). [21] However, alcohol histories were recorded in only 50% of medical records by surgeons, anaesthetists, or nurses, and even where a history was available, 80% of these histories did not quantify alcohol consumption. No interventions were recorded as having been provided.

It has been difficult to identify an effective strategy to address this problem. Traditional didactic medical education, continuing medical education and distribution of materials does little to change clinical practice behaviour. [22] One Cochrane review of 85 studies showed that audits of clinical practice and feedback were modestly effective in improving professional practice in several settings. [23]

The aim of the present study was to determine whether either individual or group feedback on current practice improved the assessment and management of alcohol use disorders in inpatients by Junior Medical Officers (JMOs). These are the doctors in their first two years after graduation, also known as interns and RMO1s (1st year Residents). These terms will also be used where needed to differentiate the two.

Methods

The study was a crossover trial, conducted at two hospitals over two years. Two forms of intervention were tested:

(1) A brief printed, personalised, feedback form combined with an educational intervention. JMOs received printed confidential results on their own performance in comparison to that of the overall study group in recording alcohol histories and alcohol interventions. In addition, printed educational guidelines were provided on the desirable minimum standard required.

(2) A group (face to face) feedback and educational intervention, given to junior medical staff by a staff specialist, conducted as part of the hospital's routine weekly seminars.

The first hospital received individual feedback in year 1 and group feedback in year 2, while the second hospital received the interventions in reverse order. Paediatrics, palliative care, day stay, geriatric rehabilitation unit, sleep centre, the birth centre and delivery ward, intensive care and high dependency wards were excluded from the study due to underage patients, extreme illness and practical challenges in collecting data. Both hospitals (Royal Prince Alfred Hospital and Concord Repatriation General Hospital) are large urban teaching hospitals in Sydney, Australia. Their active drug and alcohol consultation-liaison services have experienced specialist nurses and a specialist medical consultant available in working hours.

The medical records of patients who had been admitted by JMOs were examined on the wards. Information was recorded concerning: age and sex of patient; type of admission (emergency or elective); ward; clinical specialty; date of admission; hours of admission (business hours, out of hours or not recorded); JMO pager number or name (to allow identification for individual feedback); record of alcohol consumption (categorised as quantified, non-quantified or nil, and as risky or not risky- see below for definitions), any further description of their alcohol consumption (e.g. duration or pattern of drinking); any record of intervention for risky alcohol consumption; request for a Drug and Alcohol consultation; evidence of alcohol withdrawal documented by the Alcohol Withdrawal Scale (AWS); prescription of any withdrawal medication; and in order to monitor compliance with the recent hospital policy to offer nicotine replacement therapy (NRT) to all patients who smoke, tobacco use status and record of prescription of NRT. A quantified alcohol history was defined as a record from which consumption in grams of ethanol per day could be calculated; a recording of nil alcohol consumption was recorded as quantified. Risky alcohol consumption was defined as exceeding Australian National Health & Medical Research Council (NHMRC) limits for low risk consumption (20g per day for women or 40g for men).[24]

Statistical analysis
Data were recorded on handheld computers and downloaded and imported into SPSS v12.[25] Frequencies of all variables of interest were individually calculated for each JMO for the purpose of the printed individual feedback, but grouped frequencies only were produced for the group feedback sessions. Chi square calculations were used to measure changes from baseline to follow-up at each hospital, to compare the results of individual feedback and of group feedback, and to look for any differences between the hospitals in the rates of recording of alcohol consumption, quantified alcohol consumption, tobacco smoking and prescription of nicotine replacement therapy at baseline and at follow-up. Logistic regression analysis was used to examine the effects of the hospital, JMO gender, or medical officer seniority (i.e. intern versus RMO1), time of admission, and age and sex of patient on the dependent variable, recording of alcohol histories. The same analysis was used to look for any effects on the recording of quantified alcohol histories, and for any record of tobacco smoking.

Ethics
The study was approved by the Human Ethics Review Committee of the Central Sydney Area Health Service. Each junior medical officer was invited to take part and none declined.

Results

A total of 3025 patient records, 2038 at Royal Prince Alfred (RPA) and 987 at Concord Hospital, were examined for 130 JMOs (65 at RPA and 65 at Concord) across the two years of the study. Males made up 53% of the patient population and the median age was 70 years. Results from the entire data set show the recorded prevalence of risky drinking was 7%; an intervention was documented in 22% of these patients' notes and a consultation with the Drug & Alcohol team was requested in 19% of cases.

After the Individual Feedback intervention, the rate of recording of any alcohol history remained static at approximately 60%; however the percentage of quantified histories rose from 69% to 82% ($p<0.001$). The percentage of records with insufficient information to calculate risky drinking decreased from 24% to 19% ($p<0.001$). More non-drinkers were recorded after feedback, which contributed to this result. There was no significant rise in the percentage of risky drinkers detected or in recorded interventions. More smokers were detected after individual feedback ($p=0.038$) and nicotine replacement therapy (NRT) prescribing rates rose significantly from 2% to 16% ($p=0.004$) (Table 1).

After the Group Feedback intervention, there was very little change in recording of alcohol and smoking histories. Alcohol status was recorded in 57% of records pre-intervention and 59% post-intervention, and quantified alcohol histories rose from 75% to 77% ($p=0.39$). Smoking status was recorded in 64% of records pre-intervention and 63% post-intervention (Table 2).

On logistic regression analysis it was apparent that JMOs were significantly more likely to record alcohol status if the doctor was an intern or was based at Concord Hospital, or if the patient was male or was younger than the median of 70 years. (Table 3). The statistically significant predictors of a quantified history being taken were 'Concord hospital', 'business hours' and 'post-feedback'. The significant predictors of tobacco smoking status being recorded were patient gender (male), 'hospital', and being admitted during business hours.

Discussion

Our study found that record audits and individual feedback of both their own performance and those of the group significantly improved quantitative alcohol history recording, recording of tobacco smoking and prescription of NRT by Junior Medical Officers. In contrast, group feedback and an accompanying educational session had no significant effect on these behaviours. It is also noteworthy that doctors in their second year, more distant from medical school but more clinically experienced, were significantly less likely to record alcohol histories. This phenomenon has been previously demonstrated, [26] suggesting a need for post-graduate training such as the interventions tested in this study. While we demonstrated an improvement in quantification of histories, they remained imperfect with 20% of patients still unable to be classed as risky or non-risky drinkers. We were not able to demonstrate an improvement in detection of risky drinkers or in the rate of provision of interventions to identified drinkers; however, numbers were small.

Risky drinkers
One hundred and nineteen patients (7%) could be classed as risky drinkers based on the levels of consumption or other notes such as "3ʳᵈ admission for alcohol withdrawal this year" in their medical records; the majority (75%) were below the median age of the overall patient cohort of 70 years, and 85% were men. This prevalence is surprisingly low. While these were only the patients who had been admitted by JMOs over selected set periods, it still suggests considerable underdiagnosis of alcohol problems. This low figure compares with 12% self-reported by patients in a survey at one of the study hospitals. [21] Less than a quarter (22%) of risky drinkers were recorded as having some intervention for their alcohol use; a Drug and Alcohol consultation was requested for 19%, while 53% were monitored with the Alcohol Withdrawal Scale. This suggests that about two-thirds of these patients may have received no advice in relation to their drinking while in hospital.

Not all educational strategies improve clinical practice. However, interactive programs that use peer discussion and practice sessions for developing skills have been proved more effective than programs that use didactic approaches. [27] One Australian study has reported on improvements in alcohol history taking by interns after three years of increased undergraduate teaching about alcohol and the introduction of an alcohol and drug unit in the hospital, with results obtained from similar audits of patient records. [28] Education about alcohol history-taking was shown in another hospital study to be an effective way, also measured by audits of medical records, of improving both junior medical officers and nurses' performance in alcohol use detection and intervention. [11] However, individualised feedback to increase the rate at which junior medical staff record an adequate alcohol history has not previously been trialled in the hospital setting, making this the first study of its type.

Limitations of the study
We do not know whether all the JMOs read their individual feedback. We do know that not all JMOs were able to attend group feedback sessions due to their rosters. However the group sessions were scheduled for a time when a maximum number of JMOs were free to attend; the JMO training program is considered compulsory to attend and the sessions are also popular, as lunch is provided. Some JMOs had no admissions during some data collection periods, due to their postings to different wards. Some JMOs may have been included in both rounds of data collection, while others may have had their admissions included in only one round; therefore we could not produce paired data to compare individual changes. It is possible also that some patients received an intervention but it was not recorded.

Our study demonstrated that individual performance feedback, but not group feedback and education, led to improved rates of recording of quantified alcohol histories by JMOs. This finding suggests that individual feedback is a more powerful tool for improving clinical performance than group educational sessions and could be used more widely in JMO training to improve detection of alcohol problems amongst hospital inpatients. The drawback is that it was labour-intensive, requiring hours of data collection, analysis of results and preparation of individual reports and could not be widely implemented in its present form. However, the increasing implementation of electronic medical records may provide the technology for further implementation of this method at lower cost, provided concerns regarding patient privacy and JMO consent can be addressed. Data can then be extracted and fed back to the medical staff on any aspect of clinician performance.

This may prove an invaluable tool for performance improvement across the disciplines. Further research is needed into educational or other interventions to further enhance the rate of detection and intervention for risky drinking.

Table 1   Results of the individual feedback intervention in both hospitals

	Baseline	Follow-up	Test statistic & p value
	Numbers of records examined		
Patients	(n=708)	(n=532)	
Gender			
Male	376 (53%)	281 (53%)	
Female	332 (47%)	251 (47%)	X^2 p= 0.920
Age (median 70)			
14-69 years	328 (47%)	273 (52%)	
70-101 years	376 (53%)	255 (48%)	X^2 p= 0.100
Smoking status recorded	485 (69%)	359 (68%)	X^2 p= 0.676
Smokers	82/485 (17%)	71/359 (20%)	X^2 df 2 p=0.038*
Nicotine patches prescribed	2/82 (2%)	11/71 (16%)	X^2 p= 0.004*
Alcohol status recorded	442 (62%)	320 (60%)	X^2 p= 0.414
Quantifiable amount (inc. nil)	305/442 (69%)	261/320 (82%)	X^2 p< 0.001*
Risk drinkers	35 (8%)	14 (4%)	*(Fisher's exact)*
Alcohol withdrawal scale	10 (29%)	5 (38%)	X^2 p= 0.373
Intervention provided	7 (20%)	2 (15%)	X^2 p= 0.535
D&A consult called	6 (17%)	3 (21%)	X^2 p= 0.507

* statistically significant

Table 2 **Results of the group feedback intervention in both hospitals**

	Baseline	Follow-up	Test statistic & p value
	Numbers of records examined		
Patients	(n=997)	(n= 794)	
Gender			
Male	505 (51%)	442 (56%)	
Female	485 (49%)	353 (44%)	X^2 p=0.054*
Age (median 70)			
14-69 years	522 (53%)	381 (48%)	
70-100 years	467 (47%)	414 (52%)	X^2 p=0.041*
Records			
Smoking status recorded	630 (64%)	501 (63%)	X^2 p=0.788
Smokers	108/630 (17%)	85/501 (17%)	X^2 df 2 p=0.690
Nicotine patches prescribed	7/108 (7%)	4/85 (5%)	X^2 p=0.420 *(Fisher's exact)*
Alcohol status recorded	567 (57%)	470 (59%)	X^2 p=0.432
Quantifiable amount (inc. nil)	425/567 (75%)	363/470 (77%)	X^2 p=0.393
Risk drinkers	35 (6%)	35 (7%)	
Alcohol withdrawal scale	14 (40%)	16 (46%)	X^2 p=0.629
Intervention provided	8 (24%)	7 (20%)	X^2 p=0.722
D&A consult called	7 (20%)	7 (20%)	X^2 p=1.000

* statistically significant

Table 3 **Factors significantly associated with history-taking - logistic regression analysis**

Any alcohol history	**Odds ratio**	**95% CI**	**P value for Wald**
Facility			
Concord Hospital	1.79	(1.5-2.12)	<0.001
Royal Prince Alfred	1.00		
Time of day			
Business hours	1.53	(1.26-1.87)	<0.001
Out of hours	1.00		
Doctors			
Intern	1.3	(1.11-1.5)	0.001
RMO1	1.00		
Patients			
Male	1.28	(1.09-1.48)	0.002
Female	1.00		
Age $\leq$69 years	1.23	(1.06-1.44)	0.006
Age $\geq$70 years	1.00	(0.69-0.93)	0.004
Quantified alcohol history	**Odds ratio**	**95% CI**	**P value for Wald**
Facility			
Concord Hospital	1.24	(1.06-1.45)	0.008
Royal Prince Alfred	1.00		
Time of day			
Business hours	1.11	(1.01-1.23)	0.026
Out of hours	1.00		
Patients			
Male	1.13	(0.98-1.31)	0.097 (n.s.)
Female	1.00		
Any feedback			
Followup	1.57	(1.35-1.8)	<0.001
Baseline	1.00		
Tobacco history taking	**Odds ratio**	**95% CI**	**P value for Wald**
Facility			
Concord Hospital	1.54	(1.3-1.8)	<0.001
Royal Prince Alfred	1.00		
Time of day			
Business hours	1.13	(1.03-1.25)	0.011
Out of hours	1.00		
Patients			
Male	1.41	(1.21-1.64)	<0.001
Female	1.00		

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