

Evaluation of a clinical practice improvement program for nurses for the management of alcohol withdrawal in hospitals

Michelle Daly
Clinical Nurse Consultant
Drug and Alcohol Services
North Coast Area Health Service
Lismore NSW 2480
Australia

Dr. Stephen Kermode
Associate Professor and Director of Teaching and Learning
School of Health and Human Sciences
Southern Cross University
Lismore NSW 2480
Australia

David Reilly
Clinical Psychologist
Former Area Manager Drug and Alcohol Services
North Coast Area Health Service
Lismore NSW 2480
Australia

Address for correspondence

Michelle Daly
Riverlands Drug and Alcohol Centre
North Coast Area Health Service
Locked Bag 11, Lismore, NSW 2480
Australia

Tel: +61 2 6620 7600
Fax: +61 2 6620 7639
Email: Michelle.Daly@ncahs.health.nsw.gov.au

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Abstract

The most common alcohol-related chronic condition for hospitalisation is alcohol dependence which can lead to an alcohol withdrawal syndrome (AWS). The aim of this paper is to report on a quality improvement program in an Australian rural area health service for the screening and management of alcohol withdrawal and the effect of two types of nursing education and training approaches: a self-directed competency training package and a more traditional in-service program.

The measure of improvement was compliance to nine clinical standards or core competencies for the assessment and treatment of the AWS derived from the Clinical Institute Withdrawal Assessment for Alcohol-Revised (CIWA-Ar) scale and the NSW drug and alcohol withdrawal clinical practice guidelines. An audit of medical records using a standardised protocol for the nine standards was conducted at baseline (n=100) and follow-up (n=340) across eleven hospitals in the area.

Results indicated that in three hospitals where 70 nurses completed the self-directed competency training achieved a higher total compliance score across the nine standards compared to eight hospitals where 238 nurses received the in-service program. The self-directed competency program was also rated highly by nurses who participated in the program.

The benefits of self-directed competency training are discussed as well as future recommendations for improving nurse education strategies for managing alcohol withdrawal.

Key words

Nursing education, alcohol withdrawal, alcohol-related hospital admissions

Introduction

In Australia the most common class of drug associated with hospital separations is alcohol which has been estimated to cost \$662.2 million (Collins and Lapsley, 2008; Roxburgh and Degenhardt, 2008). The most common alcohol-related chronic condition for hospitalisation is alcohol dependence (Ministerial Council on Drug Strategy, 2006).

Alcohol-dependent patients who are admitted to hospitals for accidents, injuries and other primary medical conditions are likely to experience an alcohol withdrawal syndrome (AWS) which can at times be potentially life threatening (Bayard et al, 2004). It is important to ensure that all generalist nurses have expertise in the screening, assessment and clinical management of such patients and to provide a high standard of care and safety for patients identified as in jeopardy of AWS (Ragaisis, 2004).

Medical record file audits conducted at eleven hospitals in a NSW regional area health service in 2004, demonstrated poor compliance with the Clinical Institute Withdrawal Assessment for Alcohol-Revised (CIWA-Ar) scale, as well as the prescribing and administration of medication in accordance with NSW drug and alcohol withdrawal clinical practice guidelines (NSW Department of Health, 1999; NSW Department of Health, 2007a).

The CIWA-Ar is a well validated 10-item scale and considered the gold standard for nurses and other health professionals to observe and assess the severity of AWS and determine the need for and dose of medication (Sullivan et al, 1989; Pittman et al, 2007).

Continuing education and demonstration of competency within the workplace are considered integral in nursing (McCormack et al, 2006). Providing nurses with education leads to enhanced patient care with decreased clinical risk (Uding, Jackson and Hart, 2002), increased job satisfaction, empowering and retaining nurses in the workforce (Wolak et al, 2006) and ensures competency and accountability of staff (McCormack et al, 2006). This is supported by a meta-analysis conducted by Waddell (1992 cited in Brunt, 2000) which concludes that continuing education has a positive impact on nursing practice.

McCormack et al (2006) in summarising the literature indicated that the causal link between education and positive outcomes is not clear but some evidence links positive education and learning to organisation structures and processes, for example leadership style, transparency and good communication. Whereas limited resources, nurse shortages and increased demands inhibit continuing education continuous professional development is one key factor amongst a number of factors which seem to contribute to positive outcomes.

Due to the persistent problem of limited resources, education is traditionally provided as in-service education at change of shift for nurses. The limitation of this form of education is that nurses are often tired or too busy to give the education their full attention, and the educational input is delivered in less than optimal conditions. To address the issue of poor quality learning contexts and the problem of poor compliance with clinical guidelines a more creative way of delivering education was trialled, in which nurses completed a self-directed learning package, open-book exam and individual clinical competency assessment through discussion of a complex case study. The open book exam

(worksheets) and case study were adopted from a metropolitan teaching hospital and were modified to suit local needs.

The rationale for the self-directed learning module is based on adult learning principles enunciated by the work Malcolm Knowles such as readiness to learn, convenience, autonomy in planning and evaluating instruction, relevance to job or personal life, problem-centred rather than content centred accessibility of resources and time constraints (Knowles, Holton and Swanson, 2005). These principles have been applied in nurse education. For example, Zapp (2001) found that active learning in nurses resulted in more increase in knowledge and satisfaction around learning than receiving education in the form of a lecture, and used in nurse education in areas such as diabetes (Uding, Jackson and Hart, 2002), and a self-learning package for hospitalised children with tracheostomies (Kang, 2002).

In a study of nurses' knowledge, attitudes and beliefs about alcohol and drug use Happell, Carta and Pinikahana (2002) recommended that specific educational programs to enhance nurses' skills in the assessment and management of drug and alcohol problems may be beneficial. At the same time the NSW Department of Health began a process of updating the former *NSW detoxification clinical practice guidelines* (1999) to the *New South Wales drug and alcohol withdrawal clinical practice guidelines* (NSW Department of Health, 2007a) and concomitant *Clinical guidelines for nursing and midwifery practice in NSW: identifying and responding to drug and alcohol issues* (NSW Department of Health, 2007b).

The aims of the present study were to investigate compliance with the clinical guidelines and consider two types of education and training approaches for alcohol withdrawal: a self-directed competency learning package and a more traditional in-service program.

Pilot program

During 2004 baseline medical record file audits conducted at 11 hospitals in the area health service, demonstrated clinically risky situations and poor compliance with the at the time NSW detoxification clinical practice guidelines (NSW Department of Health, 1999). Medical Officers at all hospitals were given feedback on the audit results around prescribing medication and made aware of NSW Department of Health guidelines on medications recommended for management of alcohol withdrawal.

In order to address this problem of poor compliance with nurses, during 2005 a pilot self paced-training program consisting of a self-directed learning package, open-book exam and individual clinical competency assessment was conducted for nursing staff at three hospitals. The remaining eight hospitals received in-service education over a 12 month period (4 – 6 education sessions depending

on the size of the hospital). The Area Clinical Nurse Consultant (CNC) for Drug and Alcohol Services provided the education for both programs with a Drug and Alcohol Clinical Nurse Specialist (CNS) assisting with the self paced program at one of the hospitals.

Follow-up audits were conducted in November 2005 and November 2006 and compared to the baseline 2004 data for hospitals that received the in-service only and hospitals that received the self-directed training package.

Study design

This study was conducted using medical record file audits and a self report evaluation survey to determine the impact of a self paced education program including nursing clinical assessment in the form of discussion of a complex case study. Medical record file audits were conducted to determine the impact of in-service education. Three hundred and forty (340) medical record files were audited from 2004 to 2007. The baseline consisted of 100 medical records and the after training follow-up consisted of 240 records (175 after in-service only and 65 after the self-directed competency training).

Data Collection

The NSW Health clinical practice guidelines on management of alcohol withdrawal include the following requirements:

- Completion of a substance use history
- Frequency of monitoring the withdrawal, for example, patients should be monitored hourly for the first 4 hours then 4 hourly if the CIWA-Ar score is greater than 10; hourly if the score is 10 or more; and monitoring should occur for at least 3 days
- Prescription and administration of medication, for example diazepam and thiamine in accordance with monitoring by the CIWA-Ar

These requirements were expanded into a protocol of nine standards. File audits were conducted to determine compliance with the nine standards and a total compliance score. The standards were:

1. Total compliance score
2. Substance use history implemented appropriately
3. Monitoring hourly on arrival implemented
4. Monitoring 4 hourly where required
5. Monitoring hourly where required

6. Monitoring for 3 days where required
7. Diazepam prescribed as per protocol
8. Thiamine prescribed as per protocol
9. Diazepam administered as per protocol
10. Thiamine administered as per protocol

Medical record file audit data was collected to determine compliance with each of these protocol standards. Each audit assessed the presence or absence of each standard for each admission. If the standard was required and implemented it was scored 'yes', and if it was required and not implemented it was scored 'no'. If it was not required it was scored 'n/a'. The data were then analysed to compare subgroups within the data and determine levels of improvement in a pre-test post-test design. Descriptive statistics and one-way analysis of variance were used to determine the efficacy of two models of education, namely:

1. Self-directed competency training
2. In-service training

In addition to the compliance aspect of the study, a process evaluation was undertaken where nurses were asked to complete an anonymous survey. The survey asked participants about knowledge attainment, benefits of completing the program both for the nurse professionally and for the patient clinically and ways to improve the program. A five point Likert Scale was used to measure the perceived knowledge gained (from 1 disagree to 5 agree).

Participants

Nurses were recruited across eleven hospitals in the North Coast Area Health Service, New South Wales. Three hundred and eight (308) nurses were provided with education on the management of alcohol withdrawal, 238 receiving in-service education and 70 receiving the self-directed training program. Nurses in three of the eleven hospitals participated in the self-directed learning program and five hospitals received in-service education only (over a 12 month period receiving 4 – 6 education sessions depending on hospital size).

Ethics approval

During 2007, on completion of the medical record file audits, the benefits of data analysis were discussed. Following management approval an ethics application form for research was forwarded to the area health service Human Research Ethics Committee. The committee resolved that this project fell within the domain of quality assurance and therefore did not require ethics approval. The committee also approved the evaluation and publication.

Results

The total number of staff that received the training was 308 nurses with 238 (77.3%) at eight hospitals receiving the in-service program, and 70 (22.7%) at three hospitals the self-directed competency program.

The results indicate that self-directed competency training was more effective than in-service training. As shown in Table 1 there was a 9 percent positive change from baseline for the total compliance score for the hospitals that had the in-service training only compared to a 25 percent change in the hospitals that had the self-directed competency training. For the competency training program across the nine standards the change in improvement ranged from 5 percent to 57 percent and for in-service training from minus 12 percent to 30 percent.

The lowest performing protocol standard at pre-test was monitoring hourly, with only 17% compliance. The highest performing protocol standard at pre-test was diazepam prescription, thiamine prescription, and thiamine usage with 77% compliance. The best overall improvement in compliance was achieved for monitoring hourly, with an improvement of 57% from 17% at pre-test to 74% at post-test for the competency cohort (Table 1). Table 2 shows across the nine standards that competency training was more effective or there were no differences.

The most consistently applied standard of the protocol was diazepam prescription and usage. The least consistently applied standard was monitoring hourly on arrival (Table 3). Hospitals varied in their compliance to the protocol for overall compliance and for all components with the exception of thiamine prescription and usage (Table 4).

For the self-report survey of nurses completing the self-directed competency training a total of thirty (30) surveys were returned (43% response rate). Scores were averaged determining a mean score of 4.5 (out of a possible total of 5) indicating that perception of nurses gaining knowledge was rated highly. The benefits of completing the program were in the form of open ended questions. A summary of feedback from respondents demonstrated that the program had increased their knowledge, skill and confidence in managing patients experiencing withdrawal. They indicated that the program influenced their approach to care with a more positive and non judgmental attitude. Nurses believed that there was an increase in patient care and a decrease in clinical risk.

Discussion

Nurses require core competencies for the assessment and management of alcohol withdrawal in hospital settings. One way of determining adherence to clinical practice standards for AWS is to conduct file audits of medical records.

This study developed a protocol of nine clinical standards based on protocols from the NSW drug and alcohol withdrawal clinical practice guidelines (NSW Department of Health, 1999; NSW Department of Health, 2007a).

A baseline audit over 11 hospitals revealed poor compliance with AWS protocols. Subsequently two education and training programs for nurses were implemented: self-directed competency training and traditional in-service training program.

A follow-up medical record audit showed increased overall compliance across the nine standards. The three hospitals that provided the self-directed competency training showed a higher level of skills in alcohol withdrawal management than the eight hospitals that had in-service training only.

There are a number of points from these findings. Firstly, there is an economy of both time and resources for participants in self-directed competency training. It may be accomplished at times which best suit the participant and in an environment which best allows for learning. It is not dependent on the time availability and fatigue levels of inter-shift delivery of in-service training. It is in the interests of employers to front load program development to allow it to be delivered in this manner, as it eases stress on an already stressed workforce and it produces better outcomes. However it is resource intensive for the nurse conducting the individual clinical competency assessment.

The competency assessment was conducted with each individual nurse by the clinical nurse consultant (CNC) at ten of the eleven hospitals, with a D&A Clinical nurse Specialist assisting the CNC at one of the hospitals. The competency assessment involved discussion on the completed worksheets and a complex case study, taking approximately 30 minutes per nurse. Time is also required to drive to the hospitals involved throughout the assessment process. It would be beneficial to explore the possibility of other professional such as Clinical Nurse Educators providing some of the competency assessments.

Models of continuing professional development are a concern for nursing for the purpose of ongoing professional accreditation. Such requirements already exist in other professions such as psychology and medicine. What this study has found is that self-paced competency-based models are not only a viable alternative to traditional in-service education, but that they are capable of producing superior outcomes.

Secondly, it is clear that some components of the protocol are implemented more consistently than others (for example monitoring four hourly is more consistent than monitoring hourly), and some hospitals have better compliance rates than others. Some of the factors contributing to this problem seem to be localised, while others seem to more widespread. There is a need for managers to promote further study of these phenomena in order to improve the overall compliance rate across the organization.

Table 3 illustrates the mean compliance scores for each protocol component. Two components have significantly lower compliance scores including monitoring hourly (for a CIWA-AR score of ten or more) and monitoring hourly on arrival (for first four hours). Limited resources may account for lower scores for hourly monitoring. Also the way in which the protocol is written may have influenced a lower compliance with monitoring hourly for the first four hours. The protocol notes that, on presentation to the Emergency Department monitoring should occur hourly for the first four hours, and then hospitalized patients should be monitored four hourly or hourly depending on the severity of the withdrawal for at least 3 days. At times alcohol withdrawal is not identified in the emergency department, or the patient is intoxicated with alcohol during the stay in the emergency department with withdrawal being identified in the ward after admission. Therefore as the nurse follows the CIWA-AR protocol the hourly monitoring for the first 4 hours is missed because the protocol notes this for the emergency department. There is a need for the protocol to be reviewed to ensure monitoring is attended hourly for the first four hours after withdrawal is identified regardless of location.

Table 4 shows that there is no uniform improvement, that is all hospitals were not equally compliant on all components. Local and contextual factors may have impacted on compliance such as varying documentation standards, local cultural issues, management structure, some hospitals may manage more alcohol withdrawal on a regular basis resulting in a higher compliance, higher workloads at some sites may result in less compliance due to limited staff resources, and individual prescription preferences of medical officers may account for variations in prescribing of diazepam.

Both the medical record audits and the self-report from nurses indicated that there was improvement in the skills and knowledge in the management of alcohol withdrawal with the self-directed competency training compared to in-service only. A limitation of using medical record audits as a measure of change is that it can only be inferred that the self-directed training with nurses was effective. The knowledge and skills of medical staff about alcohol withdrawal may have influenced the results. For example, there was a high compliance with the standard of diazepam prescribing as per protocol with a higher proportional increase with the in-service only group (Table 1). This may indicate that medical officers who were provided feedback about initial file audits and made aware of the NSW withdrawal guidelines adopted appropriate diazepam regimes.

Conclusion and recommendations

Self-directed competency training was demonstrated to be an effective approach to increase the skills and knowledge for the management of alcohol withdrawal. Three hospitals that had in-service training later requested the self-directed

competency training. That is, the current program had a high level of acceptance among nurses in rural hospital settings.

There is potential for future improvements in several aspects of this study. Firstly, to bring the training more in line with recent updated NSW drug and alcohol withdrawal clinical practice guidelines (NSW Department of Health, 2007a) and clinical guidelines for nursing and midwifery practice in NSW: identifying and responding to drug and alcohol issues (NSW Department of Health, 2007b).

Secondly, to improve the content of the self-directed learning package linking clinical practice guidelines with specialised case vignettes for various settings within hospitals such as emergency departments, medical and surgical wards, orthopaedics, mental health, and midwifery services. Thirdly, further develop clinical competency assessment by other interactive modes of delivery such as on-line and web-based models or utilizing digital versatile disc (DVD) technology with actual or acted case studies. Fourthly, further methods of recognition or formal accreditation need to be developed for participants who achieve the required standard level of competency in management of withdrawal syndrome.

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Table 1: Mean compliance scores for patient records audit according to types of staff training						
Protocol component	Inservice program			Competency program		
	Pre-test (n=83) %	Post-test (n=175) %	Change %	Pre-test (n=17) %	Post-test (n=65) %	Change %
Substance use history	69	57	-12	73	88	15
Monitoring hourly on arrival	27	35	8	18	63	45
Monitoring 4 hourly	55	60	5	45	92	47
Monitoring hourly	32	33	1	17	74	57
Monitoring for 3 days	61	80	19	64	93	29
Diazepam prescribed as per protocol	57	87	30	77	92	15
Thiamine prescribed as per protocol	75	73	-2	77	82	5
Diazepam administered as per protocol	59	86	27	68	90	22
Thiamine administered as per protocol	73	73	0	77	82	5
Total compliance score	57	66	9	59	84	25

Table 2: t-Test results for types of training

Protocol component	p=	Which was more effective?
Substance use history	0.000	competency
Monitoring hourly on arrival	0.000	competency
Monitoring 4 hourly	0.000	competency
Monitoring hourly	0.000	competency
Monitoring for 3 days	0.001	competency
Diazepam prescribed as per protocol	0.336	no difference
Thiamine prescribed as per protocol	0.162	no difference
Diazepam administered as per protocol	0.366	no difference
Thiamine administered as per protocol	0.162	no difference
Total compliance score	0.000	competency

Table 3: Mean compliance scores for all hospitals after implementation of programs

Rank order of compliance	Protocol component	Mean %	s.d. %	Range	
				Min. %	Max. %
	Substance use history	65	48	29	91
	Monitoring hourly on arrival	42	50	10	79
	Monitoring 4 hourly	67	47	48	100
	Monitoring hourly	44	50	0	93
	Monitoring for 3 days	83	38	43	100
	Diazepam prescribed as per protocol	88	33	14	100
	Thiamine prescribed as per protocol	75	43	14	100
	Diazepam administered as per protocol	86	35	14	95
	Thiamine administered as per protocol	75	43	14	100
	Total compliance score	70	27	30	89

Table 4: ANOVA results comparing compliance rates between hospitals		
Protocol component	p=	Were all hospitals equally compliant?
Substance use history	0.000	No
Monitoring hourly on arrival	0.000	No
Monitoring 4 hourly	0.000	No
Monitoring hourly	0.000	No
Monitoring for 3 days	0.000	No
Diazepam prescribed as per protocol	0.000	No
Thiamine prescribed as per protocol	0.616	Yes
Diazepam administered as per protocol	0.000	No
Thiamine administered as per protocol	0.595	Yes
Total compliance score	0.000	No