The Efficacy of an Electronic Protocol in the Management of Alcohol Withdrawal
Sinai Hospital

Program/Project Description
Following two near catastrophic incidences involving aggressive behaviors from patients undergoing alcohol withdrawal syndrome (AWS), as well as episodes of over sedation, the nursing staff of a medical-surgical unit requested an intervention from the Chief Nurse Officer (CNO). A needs assessment revealed nurses were dissatisfied with poor management of patients experiencing withdrawal, lack of policy and standardization of care and concerns for safety of patients and staff were identified as contributing factors.

Alcoholism is the largest treatable health problem that remains untreated in the United States and is the fourth leading cause of disability and healthcare burden worldwide. Each year 13 to 15 million Americans are affected adversely by alcohol. These patients have a higher risk for systemic complications and higher morbidity and mortality rates. The alcoholic patients in an intensive care setting have a 50% mortality rate compared to 26% for non-alcoholic patients. The cost of treatment for AWS is approximately 100 million per hospital admission a year.

Experts on the management of alcohol-related illnesses suggested that early screening, prophylactic management, and standardized assessment in combination with symptom-triggered pharmacological therapy is imperative to effective management of AWS. Until now, no evidence was found to support effective integration of all the recommended components. More importantly, no facility has implemented the alcohol protocol in an integrated electronic format.

The goals of the project were to 1) increase early detection of patients at risk for AWS, and reduction of time from admission to treatment; 2) reduce the number of patients reported as over or under sedated; 3) reduce adverse effects of withdrawal; 4) reduce length of stay and mortality rates; 5) decrease frequency of patients transfer to higher levels of care; and 6) increase clinicians’ satisfaction with caring for alcoholic patients. The project was piloted on two Medical-Surgical Units and data was collected and statistically analyzed to determine measures of success.

Process.
To address the above issues, stakeholders were identified and contacted, and a multi-disciplinary team of physicians, nurses, pharmacists, risk management, nurse educators and IT personnel were selected. The project manager conducted an extensive literature review and distributed key evidence-based articles to the group with recommendations based on grade and quality of the evidence. After many hours of discussions, the evidence-based multidisciplinary integrated electronic alcohol withdrawal protocol was recommended and a prototyped developed.

Solution.
The solution was to develop an integrated Standardized electronic protocol consisting of the CAGE screening tool, the modified Clinical Institute Withdrawal Assessment revised (CIWA-Ar) Severity Assessment tool, and an Benzodiazepine treatment orderset using both sliding scale and prophylactic dosages. All patients are screened on admission or entry to the Emergency Department. When a patient screen positive for risk of AWS an electronic alert is automatically generated and posted to the patient chart, letting the provider(s) know that the patient is at risk for AWS. The electronic orderset is then activated. Additionally, a task is sent to the nurses’ activity list (PALS) and to the electronic medical record (e-MAR). The patients are medicated based on their assessment score. Reassessment is done 30 minutes after medication.

The protocol was piloted on two medical-surgical units in both manual and electronic formats. Data from the electronic charts of patients admitted with AWS during the months of July to September of 2009 were compared to the manual chart of patients admitted during the same timeframe in 2007 and 2008.

Measurable Outcomes.
A retrospective comparative analysis of 165 charts was conducted using data from baseline, manual protocol, and e-protocol. Data were statistically analyzed and the following outcomes obtained.

1. The number of patients with AWS doubled from baseline (n=24) to manual protocol (n=48). After implementation of the electronic protocol with CAGE+ screening there was significant increase (n=93). A t-test of the difference between patients screened (e-protocol) and those not screened (no protocol and manual protocol) was significant (t = 2.66, p = .009). Additionally, patients that were screened received treatment six hours sooner than those that did not get screened (5.8 hours versus 11.6). See attachment.
2. The effectiveness of the e-protocol in managing frequency of adverse effects of delirium tremens, seizures, hallucination and anxiety were also significant. The manual and electronic protocol were superior to having no protocol (F= 6.593, p=.002).

3. In terms of under sedation, patients managed with the manual protocol had higher scores (64%) compared to those managed with the electronic protocol (27%). Two of the baseline patients were over sedated but none of the protocol patients were reported over sedated. The treatment effect of the three groups were compared using One-way ANOVA and a difference in over sedation was found (F=3.460; p = .034). Post Hoc comparison to determine which of the groups cause the difference, found that the electronic protocol accounted for most of the difference (p = .039).

4. The frequency of patients needing to be transferred to a higher level of care due to AWS was reduced with the implementation of the protocol. Fifty-nine percent (59%) of the no protocol group were transferred to a higher level of care, compared to 26.8% of the manual protocol group and 24.7% of the electronic protocol group. Test statistics showed a significant difference between the groups (F=7.298, p= .001). The electronic protocol accounted for the difference (p= .001).

When LOS was examined between the three groups, there was a decrease in length of stay between the no protocol and the protocol groups. The average length of stay prior to the protocol (manual and electronic) was seven days (M= 7.34; SD = 8.17). Current LOS is two days (M=1.79, SD= 1.02). There was no significant difference between the manual and the no protocol group (p = .731).

Mortality rate was also examined and showed no significant change in mortality rates among the three groups (F =3.009; p = .052). There was no expiration in the manual and electronic protocol groups, but one patient in the no protocol group expired.

Post implementation, survey addressed clinicians’ satisfaction in the management of patients with AWS using the Abruzzi (1998) Program Evaluation Model to develop a 5-point questionnaire with 25 questions on satisfaction. The results of that survey showed that clinicians reported high satisfaction scores (87.9%) with the use of the e-protocol. The respondents were nurse (n=46) and physicians (n=24).

In summation, the manual and electronic protocols have mainly been effective in managing the adverse events of patients experiencing acute AWS. The electronic protocol showed the most efficacy in improving safety and quality outcomes for this cohort of patients.

**Sustainability.**

To ensure sustainability, annual competency education was developed and is available on the hospital Health Stream electronic education system. Competency results are tracked by each unit manages and by the educagtors. Following the pilot, the protocol was rolled-out across the multi-centered system and is policy-modulated.

**Role of Collaboration and Leadership.**

The project was a multi-disciplinary process. The project team consisted of medical, surgical, psychiatric and Emergency providers, nurses and nurse managers, pharmacists, risk and data management personnels, nurse educators and IT personnel. The team worked collaboratively to reach unanimous decisions. The project was a CNO initiative and received her full financial and administrative support. Monthly verbal and written reports were communicated to the CNO and updates were sent to the organization leadership team. Several department Chiefs were members of the executive committee/steak holders. The hospital-wide and multi-centered roll-out resulted from the tremendous support of the CNO and organizational leadership who remained engaged throughout the process.

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References for Efficacy of an e-Alcohol Withdrawal Protocol: A Quality and Safety Initiative


Translation of Project

Pettigrew and Whipp Translation Framework
Subtraction Model

AWS Incidences

AWS Screening Tool

Standardized Nursing Assessment Tool

Standardized Treatment by multi-disciplinary teams

CAGE

CIWA-Ar & STT using BZD

Concept (Why)

Context (What)

Process (How)

Laidlow, V.T (2009) and is based on Pettigrew & Whipp Framework (Stetler, 2005).