

Quality Improvement

Demonstration of the Managing for Daily Improvement Quality Improvement Methodology in an Alcohol Withdrawal Protocol Audit

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Abstract

Background

The Clinical Institute Withdrawal Assessment for Alcohol, Revised (CIWA-Ar) is an assessment tool designed to standardize care and minimize the risk of complications in patients experiencing alcohol withdrawal. After discovering an increase in medication errors and late assessments under this protocol, pharmacists at a 218-bed community hospital performed an audit of protocol compliance using a performance improvement methodology known as Managing for Daily Improvement (MDI).

Methods

A daily audit of CIWA-Ar protocol compliance was performed across all hospital units, followed by discussions with frontline nurses regarding barriers to compliance. The daily audit included assessments of appropriate monitoring frequency, medication administration, and medication coverage. Nurses caring for CIWA-Ar patients were interviewed to identify perceived barriers to protocol compliance. The MDI methodology provided a framework and tools to visualize audit results. The visual management tools used in the methodology include daily tracking of 1 or more discrete process measures, daily identification of barriers to perfect process performance at the patient and process level, and collaborative action plan tracking to resolve barriers.

Results

Forty-one audits were collected for 21 unique patients over 8 days. After conversations with multiple nurses across different units, the most commonly reported barrier to compliance was a lack of communication at shift handoff. The results of this audit were discussed with nurse educators, patient safety and quality leaders, and frontline nurses. Process improvement opportunities identified from this data included improved widespread nursing education, development of protocol auto-discontinuation criteria based on scores, and determination of downtime processes for the protocol.

Conclusion

The MDI quality tool successfully assisted in identifying end-user barriers to and focused areas of improvement of compliance with a nurse-driven CIWA-Ar protocol. This tool is elegant in its simplicity and ease of use. It can be customized to cover any timeframe or monitoring frequency while providing visualization of progress over time.

Keywords

quality improvement project; protocol audit; clinical audit; alcohol withdrawal protocol; patient safety; medication safety; nurse education; Clinical Institute Withdrawal Assessment for Alcohol, Revised; CIWA-Ar; Managing for Daily Improvement

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Background

According to the 2021 National Survey on Drug Use and Health, 29.5 million people ages 12 and older suffer from alcohol use disorder.¹ These patients are at risk of episodes of withdrawal that can be severe, often requiring pharmacologic treatment to prevent delirium and seizures.² When caring for this patient population, proactive monitoring and intervention are important to minimize the risk of complications and to optimize the patient’s recovery.² The Clinical Institute Withdrawal Assessment for Alcohol, Revised (CIWA-Ar) was designed to standardize the care of this population and is an effective tool for managing alcohol withdrawal. This scoring tool is a 10-item assessment that measures the severity of alcohol withdrawal symptoms and guides further treatment decisions.² The correct time frame for assessment and administration of medication can be critical for this patient population.

Quality improvement (QI) is the framework used to improve patient care in a methodical, systematic way by seeking to standardize processes and achieve predictable results.³ This QI project aimed to quantify compliance with the CIWA-Ar protocol, address errors, and identify barriers encountered by front-line nursing staff to improve patient safety surrounding the CIWA-Ar protocol at this 218-bed community hospital, with nearly 70 000 total annual ER visits and Primary Stroke Center accreditation. Managing for Daily Improvement (MDI) is a structural quality improvement framework that may also be referred to as Lean Daily Management. It is used in many industries, often

manufacturing and logistics, to visualize progress over time and identify barriers to key daily activities, such as adherence to CIWA-Ar protocol in this case. This improvement strategy attempts to drive change from the bottom up while allowing for quick, on-the-spot correction of problems.⁴ Utilization in healthcare has been organic and born from attempts to discover the effective use of process improvement principles in the healthcare setting.

Methods

An interdisciplinary team convened in late 2022 to revise and update the facility Alcohol Withdrawal order set and nurse-driven CIWA-Ar protocol. On February 1, 2023, the facility implemented a revised Alcohol Withdrawal order set and CIWA-Ar protocol based on current evidence-based guidelines and facility-specific safety data. Under the revised protocol, the ordering provider chooses between lorazepam, diazepam, or chlordiazepoxide and also chooses a low, medium, or high-intensity dosing strategy based on patient-specific factors (**Figure 1**).

At our facility, the Patient Safety team identified opportunities based on safety event reporting to improve the provision of care for patients experiencing or at risk for alcohol withdrawal. A brief audit was completed for patients using the CIWA-Ar protocol after an increase in medication errors and late assessments were discovered post-implementation of the protocol update. To assess the effect of protocol revisions and implementation efforts, the clinical pharmacy manager and a Postgrad-

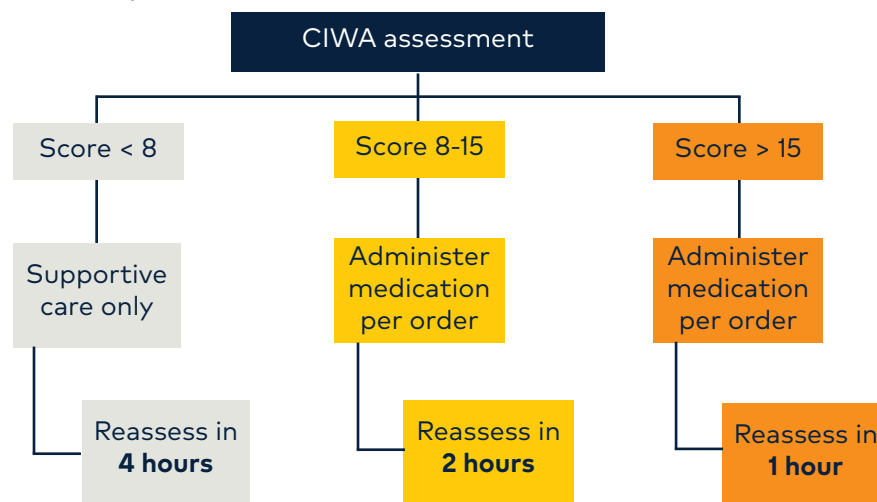


Figure 1. A flowchart shows the CIWA-Ar Assessment Protocol.

uate Year 2 Medication-Use Safety and Policy pharmacy resident performed this audit to highlight areas of opportunity and determine further improvement strategies. Examples of errors prompting the audit include a missing dose of lorazepam for a CIWA-Ar score of 9, a late CIWA-Ar assessment that was more than 4 hours overdue, and administration of a protocol benzodiazepine without a documented, corresponding CIWA-Ar score. The MDI tool was used to visualize the audit and monitor for changes in overall compliance.

The MDI tool was utilized to facilitate the first Plan-Do-Study-Act (PDSA) cycle of this continuous effort.⁵

MDI Tool Part I: Daily Tracking

Over the course of this audit, 21 total patients were followed over 8 weekdays, with most patients undergoing reassessment for 3 or 4 consecutive days while their CIWA-Ar protocol order was active. The pharmacist's assessment of the patient's protocol occurred at approximately the same time each day and only went back to the previous audit to ensure data points were not duplicated.

The following items were reviewed and evaluated for each patient:

1. CIWA-Ar assessments were completed on time. (This included a "grace period" of 2 hours for assessments that should be occurring every 2 and 4 hours, as well as a "grace period" of 1 hour for every 1-hour assessment.)
2. CIWA-Ar medications were given appropriately per the protocol order, which included the correct dose of medication for the corresponding score, no omitted doses for a qualifying score, and no extra doses given without an associated CIWA-Ar score.
3. Medication coverage for CIWA-Ar scores of 8-15 and greater than 15 were included in the initial protocol order, by the ordering provider.

The patient assessment measure was counted as "compliant" if all 3 of the above criteria were met for the previous 24 hours. If any of the above criteria were not met, the patient assessment measure was considered "non-compliant."

MDI Tool Part II: Barrier Frequency

The second part of the MDI tool assists in determining barriers to compliance. After completing the daily audit, the pharmacists would contact or locate the nurses responsible for these patients to discuss barriers. The MDI tool allows the user to track which barriers are reported or occur most frequently and should be the focus of improvement efforts. In addition to discussing nurse-perceived barriers, the clinical pharmacist was able to provide real-time education regarding protocol expectations and best practices to frontline nurses.

Throughout this process, all medication errors were reported as they were discovered via facility safety event reporting procedures. This project was undertaken as a quality improvement project and as such did not need Institutional Review Board (IRB) review.

Results

MDI Tool Part I: Daily Tracking

Figure 2 shows the daily tracking results. The intent of this tool is that over time as barriers are addressed, the rate of compliance shown on the chart will increase. For example, some of the patients assessed on February 16, 2023, may have been cared for by nurses who had previously received hands-on education from a pharmacist in the days prior. These nurses may have been more likely to correctly follow the protocol, although individual tracking of nurse adherence was not a focus of this project.

Of the 41 daily audit assessments, 8 (19.5%) were fully compliant in the timeliness of assessment, medication administration, and appropriate medication coverage. There were 12 instances where patients received a CIWA-Ar protocol medication without a documented corresponding CIWA-Ar score. In 7 cases, the CIWA-Ar medication was omitted, despite the patient having a score of 8 or greater. Late or missing assessments were the most common errors found during the audit, with 70 counts. Of these assessments, 34 (48.5%) occurred during a night shift. Note that late and missing assessments also represent the potential for missed doses, depending on what the patient's missing score would have been.

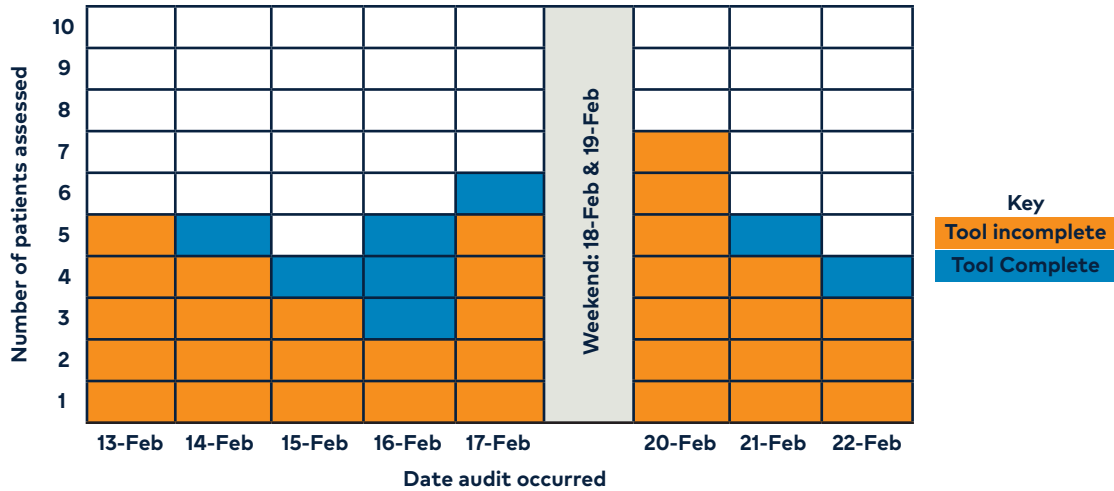


Figure 2. A chart shows the daily tracking of CIWA-Ar Protocol compliance.

MDI Tool Part II: Barrier Frequency

Figure 3 tracks the frequency of reported barriers to CIWA-Ar protocol compliance. A commonly reported barrier discovered during this audit was a lack of nursing awareness on how to set reminders on the electronic health record status board to prompt repeat CIWA-Ar assessment. The most commonly reported barrier was limited or no hand-off communication between shifts regarding the ongoing protocol. Only 1 nurse reported that the patient being asleep impacted their ability to perform and document the assessment. Three nurses interviewed over the course of this audit mentioned time constraints and workflow inefficiencies as barriers.

Discussion

The results of this audit were presented to nurse educators, patient safety and quality leaders, and frontline nurses. Using the barrier-tracking component of the MDI tool, several focused process improvement strategies

were identified. Given that 4 nurses reported a lack of knowledge of how to set reminders on their status board, focused education that was previously developed by the clinical informatics team was re-distributed. Another improvement strategy included a discussion of incorporating auto-discontinuation criteria for the CIWA-Ar protocol to reduce the nursing assessment workload when clinically appropriate. Development of downtime processes for CIWA-Ar assessment documentation and guidance for nursing on assessing alcohol withdrawal patients during periods of sleep were also discussed. The barrier identified with handoff communication sheds light on consistent quality shift handoff communication and generated discussion with nursing and quality leaders about reemphasis on this fundamental and important piece of nursing care.

The improvement strategies informed by this project were collaborative efforts between patient safety and quality leaders, pharmacy leaders, and nurse leaders along with nurse

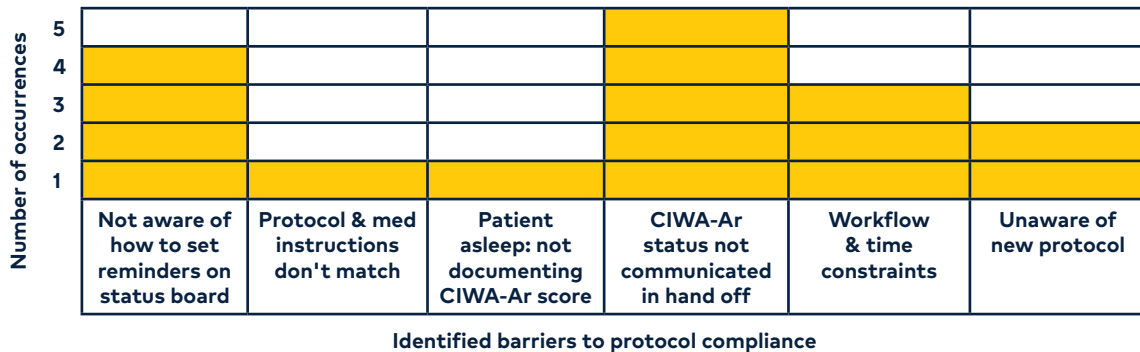


Figure 3. A chart shows the frequency of reported barriers to protocol compliance.

educators. Furthermore, as a part of annual competencies and training, clinical and staff pharmacists at our facility demonstrated the ability to assess nurse compliance with CIWA-Ar protocol to help ensure that further safety events and coaching opportunities are detected. The decentralized clinical pharmacy model at our facility affords greater collaboration between nursing and clinical pharmacy in the care of these complex patients.

One limitation of this project was the inability to obtain perceived barriers from the night shift nursing staff. As a result, the nurse-reported barriers only represent the views and opinions of day shift nurses who cared for CIWA-Ar patients and were available to discuss the protocol with the pharmacist at the time of this audit. Other limitations include nursing hesitancy to define and admit barriers to protocol compliance and lack of tracking of individual nurse compliance over time.

Conclusion

The Managing for Daily Improvement quality tool successfully assisted in identifying focused areas of improvement and barriers to nursing compliance. This tool is user-friendly and elegant in its operational simplicity and data visualization. It can be customized to cover any timeframe or frequency of monitoring, while allowing the user to visualize progress over time. The CIWA-Ar protocol audit served as an effective example to demonstrate the use of this quality improvement tool in enhancing interdisciplinary collaboration in continuous quality improvement. Our facility plans on continued utilization of this methodology to improve the quality of care.

By eliciting and tallying end-user barriers to success, QI resources can be deployed in a data-driven and cost-effective manner in this era of healthcare resource limitations. This methodology provided a framework to bring transparency to a complex process in the midst of a transitional time in healthcare and nursing support while uniting an interdisciplinary team around data that emphasizes process and system opportunities over human failure.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Dr Stephens is an employee of TriStar Summit Medical Center, a hospital affiliated with the journal's publisher.

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