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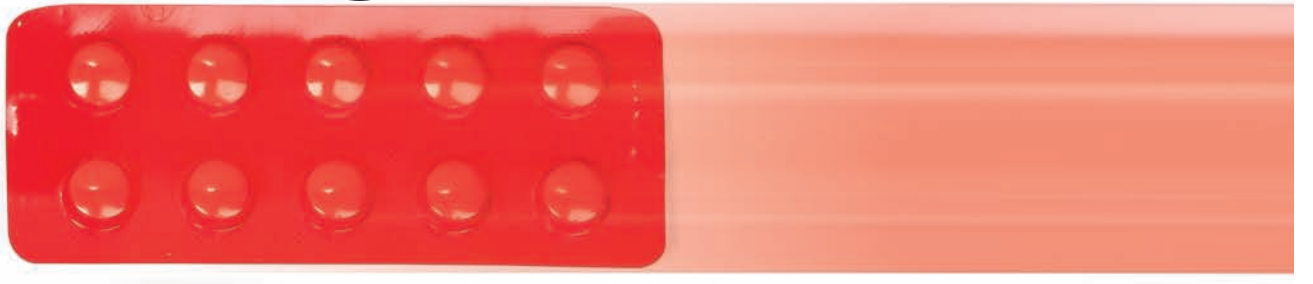
Drug diversion detection



Software offers real-time data for prompt identification and assistance

By Jason C. Perry, MSN, and Christine L. Vandenhouten, PhD, RN, APHN-BC

Drug diversion and addiction are serious and sometimes uncomfortable situations for nurse leaders to address. Diversion can jeopardize patient care and safety, and leave healthcare organizations open to legal issues, financial loss, and damage to their reputations. To prevent drug diversion, facilities should have strong controlled substance security measures and active monitoring systems.[1] The best detection systems aggregate and analyze data specific to set usage parameters.[2]

A Midwestern health system previously used a manual process to track controlled substances, which was time-consuming (approximately 20 hours per week), involved subjectivity on the part of the team, and didn't allow for proper identification because

limits/parameters couldn't be set. The manual system did identify discrepancies in controlled substances/inventory but didn't effectively identify individuals involved.

This article describes a quality improvement (QI) project to implement drug diversion detection software. The goal was to select software that uses sophisticated data analytics to quickly identify healthcare professionals practicing outside of the system limits to allow for early identification and assistance.

Background

Drug abuse is defined as a patterned use of a substance in which the user either intentionally or unintentionally causes him- or herself harm or causes harm to others.[3] It can also be classified as an intentional misuse of labeled and provider instructions to achieve a desired altered state. It's estimated that over 25 million Americans use illicit drugs, and this number continues to rise. Of these individuals, 7 million are estimated to use prescription drugs for a purely nonmedical purpose.[4] Unfortunately, because of their ease of access, healthcare workers aren't immune to the growing problem of substance misuse/abuse.

With more than 3 million practicing nurses in the US, it's estimated that over 300,000 of them, or more than 10%, are abusing substances, according to the National Institute on Drug Abuse.[3] Although nurses typically don't abuse drugs or alcohol at a higher rate than the general public, the difference lies in the types of drugs abused. Nurses tend to abuse prescription medications, such as amphetamines, opioids, sedatives, tranquilizers, and inhalants; this coincides with their workplace environment.[4] Behaviors that may suggest diversion include irritability, nervousness, pupil changes, and working excessive amounts of additional shifts.[4]

Addiction is the number one reason for healthcare professionals to divert controlled substances.[5] Nurses typically divert drugs using one of the following methods:[4]

- taking the wasted portion of the drug for personal use
- removing excessive amounts of as-needed medications
- not administering the drug to patients
- administering a substitute substance to patients.

Health systems have a moral and legal responsibly to audit and monitor the administering practices of all personnel who have access to controlled substances.[6] Instituting drug diversion software/monitoring systems and security measures is the first step in problem recognition. The CDC further recommends that processes are put in place to evaluate patient harm and promptly report healthcare professionals who are diverting drugs to licensing agencies.[2]

Nurses who reported having easier access to opioids were almost twice as likely to divert as those without that availability.

All health systems handle controlled substances to some extent. To ensure proper handling, organizations are required to develop storage and distribution systems to minimize diversion risk. The US Drug Enforcement Administration estimates that drug diversion in the US alone costs an average of $25 billion a year.[7] In one study, nurses who reported having easier access to opioids were almost twice as likely to divert as those without that availability.[5] In another study, over 19% of pharmacists reported using controlled substances without a prescription, and more than 17% of physicians reported the use of controlled substance diversion, citing self-treatment without an authorized prescription.[5]

Diversion in these cases is difficult and almost impossible to detect due to the multiple

medication access points throughout the health system. This, along with the multiple hands involved in delivery, storage, and administration practices, puts most health systems at risk for problems associated with diversion. Currently, there are no widely accepted best practices or guidelines in the literature that institutions can adopt to improve their diversion detection systems. Software is available for automated dispensing cabinets (ADCs) that uses data analytics to monitor for potential diversion behaviors and trends. The health system where this QI project was implemented uses ADCs but wasn't using the associated diversion detection software.

Software selection

First, a multidisciplinary team composed of nursing and pharmacy leaders was created to develop selection criteria and evaluate the software products. Selection criteria were based on ease of use, initial cost, annual maintenance, and implementation/compatibility with current hardware. Next, the team approached the procurement and logistics department to determine the list of approved vendors. Because the health system previously invested in the ADC hardware, it was important that the software be compatible. Once vendors were identified, they were invited to present their products to the team.

The team chose a diversion detection software product compatible with the ADCs currently in use. Data security is of paramount importance, so the software is password protected, allowing restricted access to only assigned members of the diversion detection team.

Another benefit of using the diversion detection software is the identification of nonstandard processes used on the clinical units, which allows the health system to standardize medication administration. For example, some clinical areas were removing opioids from the ADC before pain assessment. Although this saves time, the practice was causing discrepancies and miscounts because some RNs forgot to return the medications to the appropriate ADC. The enhanced diversion detection process has led the nursing staff to be more diligent regarding controlled substance management.

Implementation

Working with the detection software, it was necessary to develop an operational reporting dashboard designed to correlate specific analytical data to help detect potential drug diversion from the ADCs. The software package allowed the team to assign a percentage score to any health system employee with access to the ADC infrastructure. This percentage score was based on multiple metrics, including the work area, full- or part-time status, and historical trends of the individual user and department.

The parameters set a baseline measurement to account for the usual and customary ADC opioid pull amounts for a given area of the health system. For example, a nurse working full-time, 12-hour shifts on a surgical ICU may have a greater opioid pull volume than a part-time nurse working in a rehabilitation setting. By customizing the parameters, the team can identify potential diversion activities unique to the clinical area.

Another important step was the creation of a diversion detection team. Composed of senior nursing and pharmacy leaders, the team reviews the reports to ensure the accuracy and analysis of the data before alerting unit management of an employee's potential drug diversion activity. These reports are set to flag users who fall outside the control values set by the team. Control values are specific to each unit's controlled substance administration patterns. For example, postanesthesia care unit nurses administer controlled substances for initial postoperative pain control more often than nurses working on the medical floor. The resulting algorithm for each patient care area takes this usage pattern into account when identifying individuals whose usage patterns fall outside the parameters.

Confirming diversion activity

Once individuals are flagged as having administration patterns outside the unit-specific norms, the diversion detection team meets with the unit manager and clinical nurse specialist (CNS) to discuss the situation. The CNS conducts a comprehensive review of the employee's medication administration and other documentation. For example, the CNS will look at the number of controlled substances wasted due to contamination that require the nurse to obtain another dose and the number of controlled substance doses

administered over time. Another important consideration is the number of oversedation incidents that require administration of reversal agents such as naloxone.

The diversion detection team, in conjunction with the nurse manager and CNS, monitors the flagged employee's activity for a week and then meets to review the results of the monitoring period. If the employee's behaviors suggest possible diversion, the health system follows its diversion and impairment policies, which include steps to ensure that nursing staff members aren't impaired, such as the use of random drug screening, restricting access to controlled substances, and closer monitoring of the nurse's activities.

After diversion is detected

Although it may be necessary to terminate an impaired nurse and report the activity to the state board of nursing, it's important to provide the needed support and assistance while maintaining patient safety. When an employee is found to have diverted controlled substances, human resources (HR) professionals, along with senior nursing leadership, work with the employee to conduct weekly random drug screens, engage him or her in mandatory counseling services via the employee-assistance program, and relocate him or her to a practice area where there's no access to controlled substances.

Termination may be necessary if the employee is uncooperative or found to have sold controlled substances for personal financial gain. In the latter case, the local police are notified and carry out their own investigation. Senior nursing leadership and HR will then cooperate with law enforcement as appropriate.

Cost/benefits

The manual medication reconciliation process was completed in the pharmacy by two pharmacy technicians, who spent an average of 3 to 4 hours daily Monday through Friday reviewing the controlled substances log for discrepancies. The average monthly cost of the manual system was approximately $1,750 per month. The diversion detection software costs $2,000 for the initial installation, with a monthly fee of $700. When comparing the annual cost for both systems, the savings to the health system is $10,000 annually.

Although cost savings are important to any health system, the critical benefit of diversion detection software is the use of data analytics to identify potential drug diversion activity in a timely manner. Early identification of impaired staff may result in needed treatment, allowing for nurse retention. At a rate of $64,000 to replace an RN, the cost of human capital is far greater than that of the diversion detection software. Of course, patient outcomes are another important consideration because nurses who are diverting may not administer needed medications to patients. In the end, incorporating diversion detection software saves time, money, and lives.

Preliminary results

Preliminary results demonstrate a return on investment. The software generates real-time data for each user in minutes rather than several days in the following reports:

- proactive diversion report, containing a list of staff members whose activity fell outside their unit-specific parameters for administering controlled substances
- drug audit report, providing usage for specific controlled substances on each unit
- discrepancy monitor report, alerting the diversion detection team of controlled substances that haven't been properly reconciled in the system
- user archive report, providing historical controlled substance activity for all staff authorized to access controlled substances.

The diversion detection team reviews the proactive diversion, drug audit, and discrepancy monitor reports weekly looking for outliers and potential problem areas. At this point, the user archive report is only reviewed to determine the frequency that a user was flagged in the past. Time spent by pharmacy technicians who previously compiled the data is now spent performing their primary role of delivering medications to the ADCs.

In terms of potential drug diversion activity identified by the software, medication documentation was the largest contributor to the proactive diversion report. The health system has optimized its opioid charting module to reeducate nurses about opioid documentation requirements. In two cases, nurses who fell outside the unit parameters met the system's criteria for drug testing. Although their drug screen results were negative, both nurses were placed

on improvement plans to ensure that the system documentation/administration guidelines are being followed in the future.

Real-time advantage

Nurse leaders are in a critical position to protect patients from the negative effects of drug diversion. Leader vigilance and process consistency are key, leadership rounding and daily staff huddles are a must, and nurses and providers must expect that opioid tracking measures are in place and their organization takes diversion seriously. The use of diversion detection software saves both time and money, but the greatest benefit is the ease in which real-time reports are generated, allowing the team to better track controlled substances, more quickly identify potential diverters, and improve medication documentation. Use of a manual process requires hours of staff time and is less likely to identify potential diversion behavior in a timely manner. With real-time data, crucial follow-up conversations happen sooner, resulting in better patient outcomes. NM

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Jason C. Perry is the director of nursing at Bellin Health System in Green Bay, Wis. Christine L. Vandenhouten is an associate professor of nursing at the University of Wisconsin-Green Bay.

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