MedPro Group
a Berkshire Hathaway company

Checklist

Reducing Medication Selection and Administration Risks Associated With Automated Dispensing Cabinets

Automated dispensing cabinets (ADCs) represent a health technology that has evolved over the past few decades. ADCs are almost universally used in hospitals now to help with distribution, tracking, storage, and security of medications in patient care areas. Many benefits have been noted with the use of this technology, including improved efficiency, better inventory control and monitoring, timelier medication administration, fewer dispensing errors, and improved tracking and record-keeping.[1]

Like any technology, though, ADCs can increase risks and create safety hazards if they are not used appropriately as part of a well-designed system. These risks were illustrated in the recent high-profile case of a Tennessee nurse who overrode an ADC and selected and administered the wrong medication to a patient, which ultimately led to the patient's death. Numerous other errors associated with ADCs also have been reported, emphasizing the need for hospitals and healthcare facilities to review their processes related to this technology.

The following checklist can help hospital leaders and healthcare providers assess their protocols associated with ADCs, and identify potential risks that might lead to medication selection and administration errors.[2]

	Yes	No
Organizational Policies and Procedures		
Does your organization require the use of pharmacy-profiled ADCs to direct providers to patient-specific medication profiles and limit medications to those reviewed and approved by pharmacists?	☐	☐
Does your organization restrict ADC access to designated providers, and are users granted privileges specific to their provider type and/or their need to access certain types of medications?	☐	☐

	Yes	No
Organizational Policies and Procedures (continued)		
Does your organization stipulate that medications cannot be removed from ADCs without medication orders?	☐	☐
Has your organization developed a list of medications that should be excluded from ADC inventories based on medication type and/or patient care area?	☐	☐
Has your organization devised and implemented a policy to limit the use of ADC overrides to specific circumstances in which waiting for pharmacy review could result in patient harm?	☐	☐
Does an interdisciplinary group determine what medications will be available on override, who can remove medications on override, and what types of medications will be available on override based on clinical location?	☐	☐
Has your organization implemented strategies to improve safety and reduce risks associated with overrides, such as: • Limiting the number and quantity of medications that are available on override? • Requiring providers to review the patient's diagnosis and medical history (e.g., allergies) during overrides to determine whether the drug and dose are appropriate? • Requiring providers to document their rationale any time they override the ADC? • Requiring a witness (another licensed practitioner) to provide verification when high-alert medications are retrieved on override?	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐
Are providers required to remove medications for only one patient at a time and immediately before their use?	☐	☐
Are providers prohibited from removing medications using an inventory function?	☐	☐
Are providers required to visually compare key information on the drug label to the medication order or the medication administration record (MAR)?	☐	☐
Are providers required to label all medication or solution preparations unless the medication or solution is prepared at the patient's bedside and administered immediately?	☐	☐

	Yes	No
Organizational Policies and Procedures (continued)		
Are providers required to keep medications removed from ADCs in their original packaging while transporting them to patients' bedsides unless an exception applies (e.g., the medication needs to be crushed)?	☐	☐
Does your pharmacy have policies and procedures in place to facilitate safe stocking of ADCs (e.g., standardized medication names, barcode scanning, and independent double-checks)?	☐	☐
Has your pharmacy established policies and procedures to facilitate the safe return of unused medications to ADCs (e.g., a secure, one-way return bin that pharmacy staff manages)?	☐	☐
If your organization does not have 24-hour pharmacy services, are remote pharmacy services used or is full access to ADCs limited to a single or select number of individuals when pharmacy services are unavailable?	☐	☐
Environmental Considerations		
Are ADCs and associated storage components located in secure areas with limited disruptions and distractions?	☐	☐
Are ADCs and associated storage components always kept together?	☐	☐
Do ADCs have enough space around them to allow users to completely open the doors and drawers?	☐	☐
Are ADCs located close to patient care areas to improve efficiency for staff and prevent workarounds (e.g., taking medications for more than one patient at a time)?	☐	☐
Are adequate countertops available for medication preparation and labeling (without having to use the ADC surface)?	☐	☐
Are the areas around ADCs well lit to help staff read screens, medication labels, and MARs?	☐	☐
Are medication supplies and devices (e.g., syringes, labels, and IV tubing) stored in close proximity to ADCs?	☐	☐

	Yes	No
ADC Configuration and Functionality		
Are ADCs configured with locked-lidded pockets or secure compartments to help segregate medications and prevent improper medication selection?	☐	☐
Are medications and oral solutions provided in patient-specific or unit-dose containers that are ready to use?	☐	☐
Are items that are used together (e.g., diluents and vaccines) kept together in a kit or linked using ADC functionality?	☐	☐
If patients' medications brought from home are stored in ADCs, are they kept in a secure, patient-specific location and not mixed with other patient medications?	☐	☐
Can ADC users create an assigned patient list in the system to reduce the risk of selecting the wrong patient?	☐	☐
Do patient-specific screens show sufficient patient information (e.g., name, unique identifier, allergies, and location)?	☐	☐
Are safety precautions used in the display of medication information (e.g., the presentation of generic vs. brand names, the use of tall man lettering, and the use of leading zeros in dosages)?	☐	☐
Are ADC users required to enter at least the first five letters of the medication name prior to selection?	☐	☐
Do providers have access to printers that can print patient-specific and drug-specific barcodes for proper labeling of prepared medications and solutions?	☐	☐
Do ADCs provide interactive alerts that prompt users to enter important information (e.g., purpose of medication removal) to help ensure correct medication selection?	☐	☐
Are ADC alerts tailored to the clinical area and carefully selected to avoid issues associated with alert fatigue?	☐	☐

	Yes	No
Education and Quality Improvement		
Do providers receive training on how to safely use ADCs and education about organizational policies related to ADCs during orientation and when changes to ADC systems occur?	☐	☐
Does your organization assess providers at hire and routinely for competency with ADC technology and procedures?	☐	☐
Are providers trained on procedures for managing ADC downtime and system failures?	☐	☐
Do providers receive education on risks associated with ADCs, examples of real-life medication errors resulting from ADC issues, and best practices for reducing risks and safeguarding patients?	☐	☐
Are providers educated about risks associated with multitasking, interruptions, and distractions during the medication selection and removal process?	☐	☐
Are override reports routinely reviewed and analyzed to monitor for appropriate use of the override function and to identify areas for improvement?	☐	☐
Are the results from override reports and identified trends shared with all individuals in the organization who have ADC privileges?	☐	☐

Resources

- American Journal of Health-System Pharmacy: ASHP Guidelines on the Safe Use of Automated Dispensing Cabinets
- Institute for Safe Medication Practices: Guidelines for the Safe Use of Automated Dispensing Cabinets
- Institute for Safe Medication Practices: Over-the-Top Risky: Overuse of ADC Overrides, Removal of Drugs without an Order, and Use of Non-Profiled Cabinets
- Pennsylvania Patient Safety Authority: Problems Associated With Automated Dispensing Cabinets

Endnotes

[1] Institute for Safe Medication Practices. (2019). *Guidelines for the safe use of automated dispensing cabinets.* Retrieved from www.ismp.org/resources/guidelines-safe-use-automated-dispensing-cabinets; Cello, R., Conley, M., Cooley, T., De la Torre, C., Dorn, M., Ferer, D. S., . . . Volpe, G. (2022). ASHP guidelines on the safe use of automated dispensing cabinets. *American Journal of Health-System Pharmacy, 79*(1), e71–e82. https://doi.org/10.1093/ajhp/zxab325; Grissinger, M. (2012). Safeguards for using and designing automated dispensing cabinets. *P&T, 37*(9), 490–530.

[2] This checklist was developed based on the ISMP and ASHP sources cited previously.