Table 1. Key Safety Strategies for Safeguarding High-Alert Medications

Key Strategy	Description	Examples
Failure Mode & Effects Analysis (FMEA) & Self Assessments	Proactively identify the ways that processes or medication-related equipment can fail, why they might fail, how they might affect patients, and how they can be made safer; assess current systems and practices against best practices	▪ Consider elements of the antithrombotic self assessment found at: www.ismp.org/node/56 ▪ Consider elements of the community/ambulatory pharmacy self assessment found at: www.ismp.org/node/534 ▪ Perform an FMEA on a new high-alert medication before initial use ▪ Perform an FMEA on a high-risk process associated with medication use
Forcing Functions & Fail Safes	Employ procedures or equipment design features that will: ▪ Prevent something from happening until certain conditions are met (forcing function) ▪ Prevent malfunctioning or unintentional operation by reverting back to a predetermined safe state if a failure occurs (fail safe)	▪ Use features that stop (e.g., hard stop in computer order entry) a process from moving forward or require the entry of key information (e.g., allergies) before proceeding
Limit Access or Use	Use constraints to restrict access to certain medications or error-prone processes; require special education or conditions for prescribing, dispensing, or administering a particular drug; require special authorization for participation in certain tasks	▪ Sequester U-500 insulin vials in a separate container or area to hinder mix-ups with other insulin products ▪ Limit the ability to make modifications to automated dispensing machines to staff with specific training and credentials
Constraints & Barriers	Use of special equipment or environmental conditions to prevent a hazard from reaching a target	▪ Use of personal protective equipment to reduce employee exposure to hazards ▪ Eliminate tincture of opium from community pharmacy inventory if possible.
Standardize	Create clinically sound, uniform models of care or products to reduce variation and complexity	▪ Employ evidence-based, standard order sets (one for each care process)
Simplify	Reduce the number of steps, handoffs, and options without eliminating crucial redundancies	▪ Use commercially available products instead of compounding products ▪ Optimize pharmacy computer systems to better accept electronic prescriptions to eliminate transcription errors
Redundancies	Implement multiple pathways so if the first pathway fails, a second pathway may detect the error and be successful	▪ Require the verification of two unique patient identifiers to verify patient identity before dispensing medications ▪ Mandate patient counseling for high-alert medications
Externalize or Centralize Error-Prone Processes	Transfer error-prone tasks to an external site or centralized area to help ensure they are completed in a distraction-free environment by those with expertise, with appropriate quality control checks in place	▪ Establish a centralized call center to triage all incoming calls thus reducing call burden and interruptions in the pharmacy
Differentiate Items	Modify the packages and labels of medications to help distinguish them from other medications with look-alike packaging or look- and sound-alike names	▪ Purchase look-alike medications from different manufacturers to maximize label differences in appearance ▪ Use tall man lettering with drug names on computer screen drug listings to call out differences in look-alike drug names ▪ Use color or a pen/marker to draw out or circle important information (e.g., strength) on labels ▪ Affix auxiliary labels to call attention to important information

> **Table 1** — continued from page 3

Key Strategy	Description	Examples
Maximize Access to Information	Use active, not passive, means of providing staff and patients with necessary information at the appropriate time while performing critical tasks	▪ Use of computer systems with clinical decision support, thus providing immediate warnings (e.g., soft stop) if unsafe orders are entered
Checklists & Reminders	Provide a list of items for comparison, verification, or to assist with remembering important steps or information; provide additional alerts or warnings to make important information highly visible (overuse of reminders can lead to desensitization and alert fatigue)	▪ Use checklists for complex tasks ▪ Build reminders into order sets or protocols if special monitoring is required
Situational Awareness & Critical Thinking	To enhance an accurate understanding of the environment in order to understand how information, events, and one's own actions will impact patient safety and other goals, both immediately and in the near future; a strategy used to reduce drifting into unsafe practice habits	▪ Use simulations to expose staff to common risks and to teach them to identify and manage the risks ▪ Coach staff to recognize the specific risks associated with their behavioral choices that were not seen or were misread as being insignificant or justified ▪ Teach and encourage self-briefings before critical tasks to reinforce memory cues and knowledge, and to seek answers to questions ▪ Implement team huddles with a specific focus to communicate and share information concurrently with a team
Positive Performance Shaping Factors	An aspect of the human's individual characteristics, environment, task, or organization that specifically improves human performance, thus decreasing the likelihood of human error	▪ Limit distractions in the environment and multi-tasking when staff are carrying out critical and/or complex tasks ▪ Provide hands-on experiences and/or simulation training to rehearse and reinforce new skills and knowledge ▪ Establish realistic workloads ▪ Establish staffing patterns and workflow that guard against fatigue ▪ Promote a Just Culture to foster reporting and learning
Education & Competency Validation	A baseline strategy intended to impart upon staff and patients, specific knowledge (what they know) and skills (the ability to apply the knowledge) about medications and their safe use, and to verify their knowledge and skills	▪ Provide patients receiving a high-alert medication with written information regarding the types of errors that have happened with the drug and how to avoid them ▪ Educate staff about each high-alert medication/class of medications on the organization's high-alert medication list, how errors happen, the steps the organization is taking to avoid errors, and the staffs' role in error-reduction
Recovery	Recognize that, despite efforts, an error might occur, so enhance the ability to detect the initiating event and correct it before significant patient harm can occur	▪ Implement a post-fill audit program to compare the actual prescription received from the prescriber to the computer-generated label within 24 hours of dispensing the medication ▪ Monitor drug levels and drug-related lab values (e.g., INR) regularly

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