Medication Incidents Related to Look-alike Packaging
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Background
- Look-alike packaging refers to the situation when packaging of a medication is visually similar to another medication or drug product.
- According to a national Poison Centre perspective, the most common cause of medication errors occurring outside of healthcare facilities was look-alike packaging.
- Approximately 30% of medication errors were due to look-alike packaging and labeling.
- Medication incident reporting can be used to enhance understanding of factors that may contribute to medication incidents associated with look-alike packaging.

Objectives
- To examine medication incidents related to look-alike packaging of drug products and to determine potential system-based improvements that may be customized in pharmacy practice to enhance medication safety.

Approach
- Reports of medication incidents involving look-alike packaging of drug products were extracted from the Institute for Safe Medication Practices Canada (ISMP Canada) Community Pharmacy Incident Reporting (CPhIR) Program between January 2010 and December 2015.
- After a review of 985 incidents, 578 were included in this qualitative, multi-incident analysis. The incidents were then analyzed and categorized into main themes.

Results
Seven main themes were identified:
- Theme 1: Wrong drug
- Theme 2: Right drug, but wrong strength/concentration
- Theme 3: Right drug, but wrong form/formulation
- Theme 4: Right drug, but wrong quantity
- Theme 5: Right drug, but wrong generic manufacturer
- Theme 6: Right drug, but wrong label
- Theme 7: Mix up of two drugs in the same vial

*Due to the multitude of themes, this multi-incident analysis was stratified with respect to high-alert medications in community/ambulatory healthcare and the top 100 most commonly prescribed medications.

Table 1: Selected Main Themes & Incident Examples

Theme 2: Right drug, but wrong strength/concentration
A patient was due for a refill of Singulair® 10 mg. The pharmacist dispensed three boxes of Singulair® to the patient; two of which were Singulair® 10 mg and one box of Singulair® 5 mg. The pharmacist only scanned one of the three boxes during dispensing. The error was identified by the patient after taking one tablet of Singulair® 5 mg.

High-Alert Medications in Community/Ambulatory Healthcare
A prescription was written for Warfarin 1 mg, but Warfarin 5 mg was dispensed. The patient took the medication according to the directions for the 1 mg tablet on the label. A family physician noticed the error four weeks later and the patient was admitted to the hospital for changes in INR.

Theme 3: Right drug, but wrong form/formulation
Top 100 Most Commonly Prescribed Medications
A patient attended the pharmacy with a new prescription for Lorazepam SL 1 mg. However, the patient was provided with Lorazepam 1 mg. The error was noticed by the pharmacist after the medication had been dispensed.

High-Alert Medications in Community/Ambulatory Healthcare
A patient was due for a refill of their Novolin®e 50/70. In error, the pharmacy dispensed Novolin®e 500U. The patient’s blood sugars had risen after starting the new medication. The error was discovered by the patient’s wife when checking her husband’s insulin supply.

Table 2: Potential Contributing Factors
Person-based Factors
- Confirmation bias: the tendency to see what one wants to perceive as opposed to reality
- Inexperience: lack of education or information about drugs

System-based Factors
- Look-alike labelling/packageing
- Look-alike/sound-alike drug names
- Lack of automation, like barcode technology, to ensure the correct medication is dispensed
- Storage of look-alike medications in close proximity
- Lack of verification with the original prescription and the medication dispensed
- Availability of multiple strengths/formulations from the same or different manufacturers
- Workflow interruptions during the prescription fill process

Table 3: Proposed Solutions Organized by the Hierarchy of Effectiveness
1. Forcing Functions & Constraints
   - Connect with pharmaceutical companies to advocate for safer packaging of drug products by introducing differentiation in product design.
   - Update computer software to detect and alert pharmacy staff of products with non-distinct packaging during the order entry stage of the medication-use process.

2. Automation & Computerization
   - Implement barcode scanning into the pharmacy workflow to ensure the correct medication is dispensed.

3. Simplification & Standardization
   - Organize medication drawers/shelves, using a divider system, to spatially segregate look-alike products.

4. Reminders, Check Lists, Double Checks
   - Produce a reference list, unique to each pharmacy, of the medications that have non-distinct packaging. Have the list accessible for reference during dispensing tasks.

5. Rules & Policies
   - Avoid purchase of drug products with look-alike packaging and compare new products with existing packaging.
   - If the pharmacy already carries products with a similar appearance, switch manufacturers.

6. Education & Information
   - Include online learning modules.
   - Training sessions

Conclusion
- Medication incidents related to look-alike packaging are common and have the potential to cause serious patient harm, especially when incidents involved high-alert medications.
- This multi-incident analysis has provided system- or workflow-based changes that can alert practitioners of look-alike drug products and prevent medication incidents.
- Person-based interventions like independent double checks, reminders, and education, can also support pharmacists in advancing safe medication use.

References
3. Nakhla N. Top 100 most commonly prescribed medications. Presented as part of PHARM 129 – Professional Practice 1 Course. Waterloo, ON: School of Pharmacy, University of Waterloo; 2012.