

## Assessment of Pediatric Look-Alike, Sound-Alike Substitution Errors

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**Summary:** Look-alike, sound-alike (LASA) medication errors occur when a patient receives an incorrect medication because its name is spelled or sounds like another medication. While medication errors have been studied in the pediatric population, the frequency of LASA-specific errors in pediatric prescriptions is not well documented or understood.

This study identified pediatric medications that are at the highest risk of causing harm through LASA errors and is refining a method for flagging individual prescriptions as potential errors and creating screening alerts. The research team used a modified Delphi approach with a panel of practicing general pediatricians to review a defined list of 200 LASA medication pairs. The error rates of these medication pairs were estimated by reviewing patient medication histories and diagnostic data. After estimation of the error rate, the positive predictive value will be identified for the screening alerts.

Research results could help guide the creation of a computerized set of pediatric-specific LASA screening alerts that could be implemented in pharmacies to reduce LASA errors for children. This research will lay the groundwork for development of a larger-scale implementation study in pharmacy settings, with the goal of reducing pediatric ambulatory LASA errors.

### Specific Aims:

- Identify a subset of known LASA drug pairs that are prescribed in ambulatory pediatric care. **(Achieved)**
- Estimate frequencies of screening alerts (potential LASA substitution errors) in these drug pairs, and determine the positive predictive values (true positives) of the screening alerts. **(Ongoing)**

**2012 Activities:** The research team identified a subset of known LASA drug pairs that are prescribed in ambulatory pediatric care. After two rounds of provider surveys to build consensus on the degree of potential harm among the pairs, the team charted the responses in scatter plots and conducted cluster analysis to identify drug pairs for the final round of provider surveys. The cluster analysis produced a list of 608 drug pairs that was sent to providers for review in the third round of surveys. The Delphi process identified the drugs that the participants thought to be of high potential patient harm should a substitution occur. The 608 pairs included in the final round of the Delphi process were included in the final computations estimating the frequency of substitution errors.

Before running frequencies for the second aim, the team systematically identified duplicate entries in the

Medicaid dataset to be used for the frequency analysis. The team used a Food and Drug Administration (FDA) file that cross-referenced the brand name and generic drugs that are the same drug but are listed under different names. The process took longer than expected because the FDA file was not complete and had to be supplemented by manual searches for additional brand names on Drugs.com and MedlinePlus.

As last self-reported in the AHRQ Research Reporting System, project progress and activities are mostly on track and project budget spending is roughly on target. The project is somewhat behind schedule on the second aim, in part because of the time required to match generic and brand drug names. A 1-year no-cost extension is being used to complete the final analysis of frequencies of LASA drug pairs and document the results.

**Preliminary Impact and Findings:** The research team completed basic frequency calculations and have found that 207 of the 608 LASA drug pairs included in the final round of the Delphi process did not have a person who received both drugs in the pair within a 6-month period. This suggests that for these LASA pairs (34 percent of the total tested), it is highly unlikely that a patient received those substitution errors. It also suggests that screening for substitution errors for these pairs is feasible in the pharmacy setting, so any patient who receives both of these drugs within a 6-month period should be screened at the point of dispensing to make sure they are receiving the correct drug.

For 505 pairs (83 percent), the cumulative total of subjects who received both drugs in a pair was 3,610, amounting to less than one screening alert per day in South Carolina based on a review of 10 years of South Carolina outpatient Medicaid data.

On the other hand, the project team identified 20 LASA pairs (3 percent) where greater than 1,000 subjects received both drugs in the respective pair within a 6-month period. Their past research has suggested that up to 10 percent of these events represent likely LASA substitution errors. Even if the percentage of error in these new prescriptions is 10 percent, the fact that 3 percent of the LASA pairs were received by more than 1,000 subjects means that screening for potential substitution errors in these drug pairs will be very difficult as many patients appear to be receiving both drugs legitimately.

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**Target Population:** Pediatric\*

**Strategic Goal:** Develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies.

**Business Goal:** Knowledge Creation

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\* This target population is one of AHRQ's priority populations.