

VA Center for Medication Safety (VA MedSafe)
“DRAFT PAPER: Look-Alike Sound-Alike Drug Names For New Molecular Entities (NMEs)”

Issue: Medication safety considerations for look-alike sound-alike (LASA) drug names.

Background:

Similar drug names account for approximately 15% of all reports to the USP Medication Errors Reporting program¹. Despite review by numerous scientific and governing bodies prior to market introduction, many new drug names similar in sound or spelling to existing names are still being approved and, consequently, medication errors due to drug name confusion continue to occur. Such errors may occur anywhere in the drug provision process from prescribing (written, oral, or computer entry), to progress note documenting, to medication dispensing. In 2001, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) published a *Sentinel Event Alert* on look-alike and sound-alike drug names². This national patient safety goal stated that organizations should identify and, at a minimum, annually review a list of LASA drugs used in the organization, and take action to prevent errors involving the interchange of these drugs. Multiple lists of confusing drug name sets have been identified by the USP and JCAHO. Per the JCAHO standard, an organization's list of LASA drugs must contain a minimum of 10 drug combinations, with at least 5 of these from Tables I or II of their published list of problematic drug names, and 5 more combinations from Tables I, II and/or III (see APPENDIX 1 and II for JCAHO and USP Tables).

One way to minimize the risk of drug name confusion is to screen drug names against a database of existing products in order to identify similar drug names pairs. A system for multi-attribute drug product comparison (MDPC) which enables a user to assess the confusability of proposed drug names has been developed by Lambert et. al. at the University of Illinois at Chicago³. Upon input of a drug name, the system is able to search multiple drug databases based on name similarity (orthographic and phonological), non-name attribute similarity (dosage form, strength, and route of administration), or some combination of both based on the user's assignment of relative weights to each dimension. The user is further able to place emphasis on the beginning and/or end of the drug name.

In August 2004, to facilitate compliance with the JCAHO patient safety mandate, the VA Medical Advisory Panel (MAP) and VISN Formulary Leaders (VFLs) proposed that VA PBM, in conjunction with the VA Center for Medication Safety (VA MedSafe), conduct a LASA pilot program for newly approved new molecular entities (NMEs) being reviewed for formulary status designation. A memorandum of understanding was reached between VA PBM and Lambert et al. to utilize the MDPC tool to conduct the LASA for NMEs pilot program.

Description of LASA for NMEs Pilot Program:

A. Objectives

The objective of this program is to pilot a structured search and retrieval method for determining LASA drug names that have potential for drug name confusion. The focus will be on NMEs as they newly enter the prescription market. Once similar drug name pairs are identified, recommendations for system-wide safeguards can be built into drug information systems to reduce the probability of confusion in practice.

B. Process

Using the MDPC search engine, a PBM outcomes pharmacist specialist queries the database of existing drug names by employing a minimum of five different retrieval methods for each generic and brand name for an NME. The original number of retrieval methods was twenty; however, through a series of searches, evaluations, and feedback discussions with other PBM clinicians, the retrieval methods were pared down to five. Within each retrieval methods, attributes such as name, strength, dosage form, and route may be varied.

The retrieval methods produce multiple listings of drug names, each with an assigned similarity score and rank. The names may appear in more than one of the listings, and may receive a different similarity score and rank, depending on the search strategy. To uniformly narrow down search results, the following steps are performed:

1. Drug names with the top 25 similarity scores from each search are selected (for both brand and generic name, excluding the NME drug name itself).
2. The names are ranked in descending order of frequency of occurrence.
3. The PBM outcomes pharmacist screens the list to delete names that are highly improbable.

4. The PBM outcomes pharmacist and PBM clinician discuss the significance of remaining names and come to consensus on the final selection of LASA names. Consideration is given to the similarity score, rank, frequency of occurrence, dosage form, and formulary status. Further consideration is given to how the drug is prescribed in the VA order entry process as well as how the drug is stocked/shelved.
5. A list of approximately 3-8 names are incorporated into the NME monograph under the Look-alike Sound-alike (LASA) evaluation section. The LASA names should be accompanied with dosage strengths, forms, and routes of administration so that the reader can make additional judgment regarding the probability of a mix-up. When needed, a brief explanation of why the LASA drug name may be cause for potential drug name confusion will be included.

B. Findings

The retrieval methods using the MDPC search engine produce many LASA names that could potentially cause drug name confusion. However, significant effort needs to be applied to narrowing down the lists and making the final selection of drug names that would be incorporated into the monograph. Despite efforts to conduct the process in an objective manner, the final selection is dependent on substantial subjective evaluation on the part of the PBM outcomes pharmacist and clinician. A list of LASA drug name pairs that have been identified for NMEs to date can be found in Appendix III. The steps for search, retrieval, and determination of significant drug names for potential confusion are part of a dynamic process that is constantly being refined.

C. Limitations

Difficulties encountered in the LASA pilot program are found in the narrowing down of the numerous LASA names to those that are relevant to the VA's formulary, order entry process, and individual facilities' stocking/shelving policies. Additionally, although the MDPC provides an exhaustive tool for screening drug names against multiple databases, it does not yet provide a look-alike comparison for drugs similar in appearance (color, size, shape) as well as packaging. These are significant considerations in evaluating a drug's potential for mix-up.

Recommendations

- A. Evaluation of real and potential errors from the list of identified LASA pairs will need to be evaluated on an ongoing interval basis.
- B. Methods for implementation of safeguards and alerts need to be designed into drug information systems to reduce the probability of drug name confusion in the prescription order entry and dispensing process. The following are examples of computer system reminders for LASA drugs:
 1. When ordering a drug that has LASA potential for drug name confusion, the provider is given a flagged warning alerting him/her to the LASA potential.
 2. The provider needs to confirm that he/she indeed intended to order that specific drug product before being allowed to proceed to the next step of order entry.
 3. The provider is prompted to indicate the purpose of the medication on the prescription order entry.
 4. The medication label should contain both generic and brand name (if different from the generic name).
- C. Auxiliary reminder labels should be placed on containers of identified LASA drugs pairs to alert all personnel involved in the dispensing process.
- D. Periodic updates should be carried out to educate health care providers on newly reported LASA potentials and close-calls
- E. Policies that minimize drug name confusion should be implemented. The following are examples:
 1. Develop alternate stocking methods for LASA drug pairs other than alphabetically by name.
 2. When placing verbal/telephone orders, prescriber must provide correct spelling of drug name, and person receiving the order must repeat the drug name and dose ordered.
 3. When dispensing a drug with LASA potential, the practitioner should inquire if the drug is a routine or new medication. In the event the patient does not recognize the drug, the prescription should be withheld until clarification can be made with the prescriber.

Implications for VA:

The pilot LASA for NME program utilizing the MDPC search engine provides a standardized format for evaluating LASA drug name potentials. This is just one piece of the armamentarium in ensuring medication safety for our Veteran patients. The responsibility still rests upon physicians, nurses, and pharmacists to attentively inspect each

prescription order for its intended use. Having safeguards and alerts in place, combined with the efforts of providers, will provide an environment that would minimize the potential for medication errors to occur.

Future Plans

A prototype evaluation of known LASA drug pairs has been conducted. This tool will be used to evaluate the LASA for NME pilot program to search for real and potential or “close call” errors. An SBIR grant and NIH proposal entitled “Reducing Drug Name Confusion with Better Search Software” (PI, Bruce Lambert, Ph.D) was recently submitted. Finally, a LASA analysis will be planned for the top 50 prescribed drugs (by volume) in the VA. Thereafter, safeguards and alerts will be applied to the list of identified LASA potentials.

References:

1. USP Quality Review. March 2001. No. 76
2. JCAHO. *Sentinel Event Alert*. Issue 19 - May 2001.
3. Lambert BL, Yu C, Thirumalai M. A system for multiattribute drug product comparison. *J Med Syst*. Vol. 28, No. 1, February 2004.