IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

Human Journals
Review Article
March 2018 Vol.:11, Issue:4

Dispensing Errors Associated with Look-A-Like and Sound-A-Like Products and Remedies; Current Status and Prevention Strategies

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Submission: 24 February 2018
Accepted: 2 March 2018
Published: 31 March 2018

Keywords: Dispensing errors, Look-a-like and sound-a-like products, prevention strategies

ABSTRACT

Dispensing errors are one of the major problems in both developed and developing countries. It is common scenario in hospital pharmacy as well as retail pharmacy shop. Patient's compliance hampers dramatically when wrong medicines are dispensed. Lack of knowledge, stress because of excessive workload, mislabeling, misjudgment etc. are the major causes behind this problem. Look-a-like and sound-a-like products (LASA) are in mainstream which is one of the main reasons of dispensing errors. Proper care and attention should be taken regarding dispensing of LASA products. The aim of the present study is to find out the main reasons for this problem and some solutions that may be adapted to solve this problem.

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INTRODUCTION

A dispensing error is the difference between a prescription and the medicine that the pharmacy delivers to the patient on the basis of prescription, including the dispensing of a medicine with deficient pharmaceutical or informational quality.[1-6] Dispensing error is very much common and according to the report of National Reporting and Learning System (NRLS), around 17% of the medication errors were reported in the general, acute and community hospitals of UK in 2007 which was happened because of dispensing error.[7] In the USA, 4 dispensing errors per day per 250 prescriptions in 50 pharmacies were observed.[8] 11% dispensing error was found in southeast Asian countries.[9] 8.5% dispensing errors were found in a UK hospital which was associated with LASA related.[10] Moreover, 29% of dispensing errors were found regarding LASA products.[11] Since 2000, around 95,000 medication errors have been reported to FDA of which 25% was related to LASA products.[11]

From these data, it is obviously a big problem and challenging issue. The aim of this article is to remind awareness about dispensing errors regarding LASA products and sharing some solutions.

EXAMPLES OF LOOK –A-LIKE AND SOUND-ALIKE (LASA) PRODUCTS

Some examples of look-a-like and sound-a-like products are presented in Table 1, Table 2 and Figure 1, respectively.

Table 1. Some examples of sound-a-like products regarding generic names.[13]

Generic Name	Generic Name
Aminophylline	Amitriptyline
Anafranil	Enalapril
Azithromycin	Erythromycin
Baclofen	Bactroban
Clobazam	Clonazepam
Tramadol	Trazodone
Vinblastine	Vincristine

Table 2. Some examples of sound-a-like products regarding brand names in different countries.[11,12]

Country	Brand Name	Brand Name
Australia	Avanza (mirtazapine)	Avandia (rosiglitazone)
	Losec (omeprazole)	Lasix (frusemide)
Bangladesh	Naprosyn (Naproxen)	Maprocin (Ciprofloxacin)
	Prolock (Omeprazole)	Preloc (Metoprolol)
	Procef (Cephradine)	Procet (Cetrizine hydrochloride)
Brazil	Losec (Omeprazol)	Lasix (Furosemida)
	Keflin (Cefalotina)	Quelicin (Succinilcolina)
Canada	Celebrex (Celecoxib)	Cerebyx (Fosphenytoin)
	Losec (Omeprazole)	Lasix (Furosemide)
France	Reminyl (Galantamine hydrobromide)	Amarel (Glimepiride)
Ireland	Losec (Omeprazole)	Lasix (Furosemide)
Italy	Diamox (Acetazolamide)	Zimox (Amoxicillina triidrato)
	Flomax (Morniflumato)	Volmax (Salbutamolo solfato)
Japan	Almarl (Arotinolol)	Amaryl (Glimepiride)
	Taxotere (Docetaxel)	Taxol (Paclitaxel)
Spain	Dianben (Metformin)	Diovan (Valsartan)
	Ecazide (Captopril)	Eskazine (Trifluoperazine)
Sweden	Avastin (Bvacizumab)	Avaxim (Hepatitis A vaccine)
	Lantus (Insulin glargine)	Lanvis (Toguanine)

Figure 1. Look-a-like medicines.

Joint Commission on Accreditation of Healthcare Organizations (JCAHO) reported following pairs in Patient Safety Reporting System (PA-PSRS) as LASA related problems-[11]

- ❖ Hydromorphone and morphine.
- ❖ Insulin products.
- ❖ Lipid-based doxorubicin (DOXIL) and conventional doxorubicin (ADRIAMYCIN).
- ❖ TAXOL (paclitaxel) and TAXOTERE (docetaxel).
- ❖ AMARYL (glimepiride) and REMINYL (galantamine).
- ❖ AVANDIA (rosiglitazone) and COUMADIN (warfarin).
- ❖ KLONOPIN (clonazepam) and clonidine (CATAPRES).
- ❖ LAMISIL (terbinafine) and LAMICTAL (lamotrigine).
- ❖ HESPAN (hetastarch) and heparin.

COMMON RISK FACTORS ASSOCIATED LASA PRODUCTS

Following factors from previous studies are responsible for LASA medication errors-[14-16]

- Illegible handwriting.
- Lack of knowledge about drug names.
- New products in market.
- Similar packaging and labeling.
- Similar strengths, dosage forms, frequency.
- Same clinical use.

STRATEGIES TO MINIMIZE OR SOLVE LASA RELATED PROBLEMS

According to Pharmaceutical Services Division, Ministry of Health Malaysia, the following steps are referred to solve the LASA related problems.

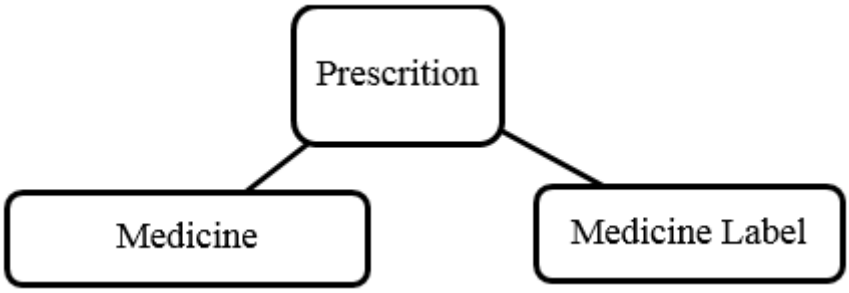
a) Procurement: Multiple strengths of medicines should be minimized and should avoid purchase of similar packaging and appearance products.

b) Storage: Look-a-like products mismanagement can be minimized by using Tall Man lettering. Again, additional warning labels can be used. These labels should be uniform to facilitate the identification.

c) Prescribing: Writing should be clear and legible. Name of medication, dosage form, dose and complete direction for use should be specified clearly. Communication should have to be clear.

d) Dispensing/Supply: Medicines should be identified by its name and strength and bot by its appearance or location. Double check is necessary.

e) Administration: Triangle check should be maintained during administration. Clarification of verbal orders has to be cleared and verified.



f) Monitoring: LASA products have to be reviewed and updated regularly. Feedback mechanism to inform on look-a-like products should be implanted.

g) Information: Relevant personnel should have access in LASA list and staff should be informed about the new products listed in LASA list.

h) Patient Education: Education and awareness should be arisen in patient's level.

i) Evaluation: Medication errors related LASA medications should be evaluated.

Therefore, the following steps may be taken-

1. Ensuring legible handwriting in prescription and use of sterile cockpit.[11]

2. Problematic abbreviations like QD/ QID should be taken into considerations while dispensing.[11]

3. Drugs having similar name and like (shown in table 1, table 2 and figure 1) should be dispensed carefully.

4. Verbal orders should be read back.[11]

5. Modern ICT based systems can be adapted to solve the problem.[17,18]

6. Access to medications should be maintained.

Pharmaceutical companies can play important roles by taking following considerations-[11]

- By adopting universal drug naming system.
- Screening of drugs that may be a potential candidate for LASA related problems.
- Standardization of suffix.
- Focus on newly medications.

FDA can perform following steps to solve the LASA problems-[11]

- Reviewing of drug names to minimize the confusion.
- Can work with pharmaceutical companies in drug packaging system and drug name selection.
- Barcode introduction in medicine packaging.
- Analyzing of reported LASA errors.
- Introduction of guidance for the companies.
- Educating the patients.

CONCLUSION

Preventive measures should be taken to solve the LASA related dispensing problems. Pre-marketing and post marketing strategy should be controlled and reviewed regularly so that

LASA related problems can be minimized. Safety practices should be ensured. Adaption of newer technologies and other steps may be useful to solve this problem. Patients' compliance will be highly ensured if this problem is minimized or fully solved.

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