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PERILOUS EFFCT OF SALA DRUGS – ROOTCAUSE ASSESSMENT AND INTIMIDATION

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ABSTRACT

In the world of globalization, the pharmaceutical field is witnessing tremendous growth and changes in technology. “Sound-alike and look-alike drugs” means names of drugs that either look or sound similar often cause confusion, and can cause errors which can harm patients or even cause death. The most common intellectual error factors that are believed to contribute to errors include, too many telephone calls, Illegible prescription, Staff shortage, stress and fatigue. The most common SALA drugs were Alprazolam for Lorazepam, Azithromycin for Erythromycin and Phenobarbital for Pentobarbital. The purpose of the study of SALA drugs was to increase patient safety in relation to the use of medicines in primary care and the objectives were to measure the frequency and type of errors registered to estimate the seriousness of the errors and to identify potential solutions for error prevention. Errors can also be prevented by reducing pharmacist stress and patient pressure, including providing a comfortable waiting area. Other recommendations include not storing drugs with similar names near each other, the prescriber can avoid verbal prescriptions to a maximum extent, active involvement of the medical industry and regulatory authorities in future initiatives and steps to eliminate SALA effect. This review throws an insight of dangerous effect of SALA drugs and methods for developing strategies and recommendations to enhance patient safety and minimise clinical issues with look-alike, sound-alike medication names.

Keywords: SALA drugs, Alprazolam, Erythromycin, Illegible prescription.

INTRODUCTION

The National Coordinating Council for Medication Errors Reporting and Prevention (NCC MERP) was formed by the US Food and Drug Administration (FDA) with aim to promote the reporting, understanding, and medication errors prevention through the coordinated efforts of its member associations and agencies . It also emphasis on various methods to increase the patient safety. It defines medication error as "any preventable event that may cause or lead to inappropriate medication use or patient harm, while the medication is in the control of the health-care professional, patient, or consumer"[1] Medication errors contribute substantially threat to patient ilife causing death, with 25% of these errors accounts for Sound Like Look Like Drugs[2.]

Medication names that sound similar or look similar are probable source of error in health care systems.When written or spoken some proprietary (brand name) and non-proprietary names (generic name) sound or appear to be similar to other drugs called as SAlA drugs. These confusing drug names contribute to major causes of medication error leads to adverse or fatal effects [3] This problem is especially prevalent when the two names are spelled similarly and also share the same strength and dosage.

Confusing medication names and packaging contribute to potentially harmful medication errors Look-alike medicine packaging refers to medicine containers or primary packaging that looks like that of another medicine. Look-alike medicine branding occurs when two or more products are marketed under the same brand name; this may also be known as brand extension. SALA brand names also postulate threat to consumers who are on complex medical treatments involving several different medicines or who self-medicate with several different non-prescription medicines. If the names of some of the medicines sound similar to each other, there is a risk patients will take or use the wrong medicine.

Fig 1: **Sound Alike Drugs (Durezol and Durasal)**

Some instance, the *containers* do not look alike. DUREZOL is in a white plastic squeeze bottle containing corticosteroid eye drops to reduce inflammation and pain following ocular surgery. DURASAL is in a brown glass bottle with a brush applicator for spreading the caustic liquid on warts for removal.[4]

ROOT CAUSE OF SALA DRUGS EFFECT

- Poor handwriting,
- Use of abbreviations
- Fatigue
- Staff shortage to double check
- Unclear verbal orders
- Memory lapse
- Illegible handwriting,
- Incomplete knowledge of drug names,
- Newly available products
- Similar packaging or labeling
- Incorrect selection of a similar name from a computerized product list.[5]

RISK REDUCTION STRATEGIES

- **Tall Man Lettering**

Tall Man lettering involves highlighting the dissimilar letters in two names to help in distinguishing between the two and making less prone to mixup.

The use of tall man letters as one means of reducing confusion between similar drug names

This can help pharmacists and others by making the dissimilar letters more conspicuous to decrease the likelihood they might choose the wrong drug from the shelf or computer screen

Example HumaLOG and HumuLIN, oxyCODONE and OxyCONTIN; ceFAZolin and cefTRIAXONE; and FLUoxetine and DULOXetine; clonazePAM and LORazePAM.

To promote standardization, ISMP has created a list of Look-Alike Drug Name Sets with Recommended Tall Man Letters. A list of some drugs to which anesthesiologists are usually familiar is given in Table 1.[6-8]

Table 1: Tall Man lettering for some drugs

1. alDACTONE	2. humALOG
3. alDOMET	4. humULIN
5. alODORM	6. hydrALAZINe
7. alphaprESS	8. hydrOCHLOROTHIAZIDe
9. alphaprIL	10. ketALAR
11. amARYl	12. ketOROLAC
13. amOXIl	14. laRGACTIl
15. amIODAROne	16. laMICTAl
17. amLODIPIne	18. methADONe
19. amITRIPTYLIne	20. methYLPHENIDATe
21. amINOPHYLLIne	22. meTOhexal
23. aPomine	24. meLLIhexal
25. aVomine	26. morphine
27. arABLOC	28. HYDROmorphone
29. aTRopt	30. NEOral
31. aZopt	32. INDEral
33. azATHIOPRINE	34. niFEDIPine
35. ERYthromycin	36. niMODIPine
37. azITHROMYCIN	38. niZATIDine
39. bisOPROLOl	40. proMETHazine
41. bisACODYl	42. proCHLORPERazine
43. OXCARBazepine	44. propRANOLol
45. CARBAMazepine	46. propOFol
47. carbIMAZOLe	48. tEGRETOl
49. caRVEDILOl	50. tRENTAl
51. caPTOPRIl	52. tEMOdal
53. celAPRAM	54. tRAMadol
55. DOBUTamine	56. tORadol
57. DOPamine	58. trimEPRAZINE
59. DEPO-medrol	60. trimIPRAMINE
61. SOLU-medrol	62. CLONazepam
63. depo-PROVERA	64. Diazepam
65. solu-CORTEF	66. OXazepam
67. SOLU-medrol	68. diPYRIDAMOLe
69. diPRIVan	70. diSOPYRAMIDe

Tall Man Lettering Examples:

AlprazOLam
LorazEPam
BuPROPion
BusPIRone
ClomiPHENE
ClomiPRAMine

- **Separate medications** - Make sure that medications with similar sounding names are separated into separate sections or shelves
- Use of bar coding technology in ordering, receiving, restocking, dispensing, administration[9]

- Physically segregate SALA drugs
- Affixing “name alert” stickers to areas where look-alike or sound-alike products are stored.
- Including the medication indications on orders
- Inclusion of generic and brand name on labels on computer system[10]
- Installing pop-up alerts in computer systems
- Prescribing medications by their generic names
- Placing eye-catching labels and warning stickers on storage bins
- Storing medications in nonadjacent areas
- Advising patients to remain alert for potential mix-ups with look-alike sound-alike medications.[11]
- Double check should be for selected high alert medications
- Instances when verbal or telephone orders are unavoidable usage of READ back procedure like hear, write, read and confirm.
- Place maximum dose warnings on in computer system.

IMPACT OF SALA DRUGS ON HEALTHCARE SYSTEM

Every year FDA reviews approximately 400 brand names for drugs before they are marketed. Approximately 33% of these drug names are rejected. In some cases drug names are changed after marketing such as in 2005 when Amaryl (glimepride) was confused with Reminyl (galantamine) and subsequently changed to Razadyne. Before change one person died[12]
Patients may develop sensitive to SALA drugs and prone to get adverse eefects.

During visits, prescribers and patients should have thorough discussions so that when patients leave their prescribers' offices, they are completely familiar with the name and purpose of each medication prescribed.

Health products affected by SALA issue

- Pharmaceutical drug products for use in humans and veterinary medicine
- Natural drug products for human use

To date, majority of errors are seen in human prescription drugs.[13] Drug companies and USFDA have focused on SALA drugs problem in recent years and steps taken by the US FDA to curtail the error.Administration, 2002). Furthermore, the US Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has required the

accredited hospitals to "identify and annually review a list of LASA drugs used in the organization, and take action to prevent errors involving the interchange of these drugs" since 2005 and maintains a list of LASA drug names (Joint Commission on Accreditation of Healthcare Organizations, 2008a; , 2008b, Requirement 3C).

- Reviewing drug names to minimize confusion

  The federation has launched "Name Differentiation Project" and issued letters to manufacturers of look-alike name pairs to voluntarily revise the visual appearance of their established names (e.g. acetahexamide and acetazolamide)
- Working with drug companies to improve labelling/packaging

  The NCC has suggested a restriction on caps and ferrules of injectables (except for convey warnings) and the use of innovative labelling.
- Use of bar codes

  The use of machine-readable codes on all medication packages and containers is considered as a promising technology to reduce medication errors.
- Analyzing reported errors

  The FDA is analyzing the errors for causality and trying to prevent them.
- Creating guidances for industry

  The NCC has also developed recommendations for prescribing, dispensing, manufacturing and storage to prevent medication errors and patient harm.
- Educating the public

  Public education and awareness about medication errors is essential for its prevention.[14-15]

ROLE OF HEALTHCARE PROFESSIONALS IN ERADICATING SALA DRUGS ILLEFFCT

Problem of SALA drugs can be alleviated through actions by regulatory agencies, pharmaceutical manufacturers, healthcare professionals, and patients[16]

Pharmacist

Pharmacist should educate other staff about the potential for SALA errors and even identify a list of LASA products dispensed at their site. When errors (or near misses) occur, this should be shared between sites for awareness/education of staff.

- All the pharmacist should track SALA medication errors and must be reported immediately
- Always include full directions on labels – not just 'as directed'.

- Inform regulatory bodies and manufacturers of potential SALAD issues as they are
- identified.
- Users of electronic databases should consider the proximity of SALAD medicines on drug data files.
- Store SALAD medicines in separate locations with high-alert shelf markings.
- Develop strategies to accommodate patients with sight impairment, language differences
- and limited knowledge of health care.
- Provide patient information leaflets in other languages if available.
- Always include full directions on labels – not just 'as directed'.[17-19]

Fig 2: Sound Alike Drugs

Fig 3: Look Alike Drugs

Physician

- Full drug name should be written when prescribing – no abbreviation
- Specification of the exact dose must on the prescription – never use 'as directed[20-21]

Nurses

- Patients should be educated on the potential for their drug to have a LASA with other drugs and those drugs' names
- Encourage patients and carers to ask if they are unsure about any aspect of their
- medicine.
- Avoiding verbal communications

At the pharmacy, the indication should be checked against the drug and the prescription label. If the indication does not match what the patient expects, the patient should consult with the physician or pharmacist. National reporting sites exist where SALA drug errors and near misses can be confidentially reported for the purpose of identifying and communicating epidemiological trends on near misses.[22-23]

POTENTIAL BARRIERS IN REDUCTION OF SALA DRUGS

Some Pharmaceutical companies implies marketing pressure to use brand names hence due to globalization of pharma market continued production and marketing of SALA drugs exist. Moreover the wide variability in pharmacy/pharmaceutical regulations among countries also pose serious problem. Taking patient safety as major priority risk of error should be identified by both drug product characteristics and health care system processes. Educating the patient about illeffect of SALA drugs despite of language barrier regarding the potential problem may minimize the prevalence of SALA drugs.[24-25]

CONCLUSION

In the healthcare phenomenon medication errors do occur at various levels. Sound-alike/Look-alike (SALA) drugs always presented special challenges in pharmacy. The growth of SALA drugs has become global in recent years has increased significantly. Similar drug names account for one third of medication errors that can harm patients individually and at community level. Pharmacists play a critical role in preventing the SALA drugs effect by interaction to patients with practical suggestions, and implementing recommendations to ensure the welfare of patient. The remedy to this global problem lies in appropriate regulatory

processes , enhanced cooperation between physician and pharmacist and raising public awareness may culminate the perilous effect of SALA drugs.

REFERENCE

1. U.S. Food and Drug Administration, “Medication error reports.” [last cited on 2010 Nov 3].http://www.fda.gov/Drugs/DrugSafety/MedicationErrors/default.htm .
2. Gremillion L, Hogan DJ. Dermatologic look- or sound-alike medications.J Drugs Dermatol. 2004 Jan-Feb;3(1):61-4.
3. The Joint Commission. Comprehensive Accreditation Manual for Hospitals: http://www.jointcommission.org/
4. Grasha A. Cognitive systems perspective on human performance in the pharmacy: implications for accuracy, effectiveness, and job satisfaction. Alexandria (VA): NACDS; 2000 Report No. 062100
5. What's in a name? Lessening the confusion over drug names Home Care Provid. 2000 Apr; 5(2):62-6.
6. Ostini R, Roughhead E, Kirkpatrick CMJ, Monteith GR, Tell SE.Quality use of Medicines-medication safety isssues in naming; look-alike, sound-alike medicine names. Int J Pharm Prac 2012;20(6):349-357. [PubMed] doi: 10.1111/j.2042-7174.2012.00210.x.
7. The Drugs (Labeling and Packing) Rules, 1986. Accessed on 21 July 2013. http://www.healthkp.gov.pk/downloads/Druglabeling.pdf.
8. Merry AF, Shipp DH, Lowinger JS. The contribution of labelling to safe administration of medication in anaesthetic practice. Best Pract Res ClinAnaesthesiol. 2011;25:145–159. [PubMed] doi: 10.1016/j.bpa.2011.02.009.
9. Reducing Look-alike/Sound-alike (LASA) Drug ErrorsReduce-Look-alike-Sound-alike-Drugs Clinical Pharmacy Services on January 19, 2012
10. Hoffman JM, Proulx SM. Medication errors caused by confusion of drug names. Drug Saf. 2003;26(7):445-52.
11. Schulmeister L. Look-alike, sound-alike oncology medications. Clin J OncolNurs. 2006;10:35–41.
12. "Safety Labeling Changes Approved By FDA Center for Drug Evaluation and Research (CDER)". MedWatch, The FDA Safety Information and Adverse Event Reporting Program.

13. Building a Culture of Patient Safety. Report of the Commission of Patient safety and QualityAssurance July 2008 (accessed 2 March 2010). Available at http://www.cpsqa.ie/publications/pdf/patientsafety.pdf
14. FDA 101: Medication Errors. 2009. Feb 20, [last cited on 2010 Nov 3]. Available from http://www.fda.gov/consumer/updates/medicationerrors031408.html .
15. Schulmeister L. Look-alike, sound-alike oncology medications. Clin J OncolNurs. 2006;10:35–41.[PubMed]
16. Hoffman JM, Proulx SM. Medication errors caused by confusion of drug names. Drug Saf. 2003;26(7):445-52
17. Look-Alike, Sound-Alike Medication Names, WHO Collaborating Centre for Patient SafetySolutions, volume 1, solution 1, May 2007 (accessed 7 May 2010). Available athttp://www.ccforpatientsafety.org/common/pdfs/fpdf/Presskit/PS-Solution1.pdf
18. Davis NM. Combating confirmation bias. *Am J Nurs.* 1994; 94: 17.
19. Drug name confusion, preventing medication error. *FDA Consumer Magazine*. July-August, 2005.
20. Use of Tall Man Lettering is gaining wide Acceptance, Institute for safe Medication Practice,July 31, 2008 (accessed 11 Nov 2009). Available athttp://www.ismp.org/newsletters/acutecare/articles/20080731.asp
21. Medicine labelling: Name differentiation designs for generic cephalosporin products,MHRA (accessed 11 November 2009). Available athttp://www.mhra.gov.uk/home/idcplg?IdcService=SS_GET_PAGE&ssDocName=CON0626
22. Ostini R, Roughhead E, Kirkpatrick CMJ, Monteith GR, Tell SE.Quality use of Medicines-medication safety isssues in naming; look-alike, sound-alike medicine names. Int J Pharm Prac 2012;20(6):349-357. [PubMed] doi: 10.1111/j.2042-7174.2012.00210.x.
23. The Drugs (Labeling and Packing) Rules, 1986. Accessed on 21 July 2013. http://www.healthkp.gov.pk/downloads/Druglabeling.pdf
24. National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP).NCCMERP Web site. *About Medication Errors* www.nccmerp.org/aboutMedErrors.html. Accessed August 2011.
25. Davis NM, Cohen MR, Teplitsky B. Look-alike and sound-alike drug names: the problem and the solution. Hospital Pharmacy, 1992, 27:95–98, 102–105, 108–110.