Irish Medication Safety Network

Briefing Document on Sound-Alike Look-Alike Drugs (SALADs) in the Hospital Setting

This document is intended to be used in conjunction with the IMSN ***SALAD Bar: a list of reported Sound-Alike Look-Alike Drugs which have been confused or have potential for confusion*** (available on www.imsn.ie)

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On behalf of the Irish Medication Safety Network
In consultation with Irish Medication Safety Network members

About the IMSN

The Irish Medication Safety Network (IMSN) is a voluntary independent group comprising hospital pharmacy based specialists actively involved in medication safety which aims to promote patient safety and safe medication practices through collaboration and shared learning within the network and with the wider community.

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Definition

SALADs (Sound-Alike Look-Alike Drugs)

Phonetic (sound-alike) drug names and orthographic (look-alike) product packaging can cause confusion resulting in potentially harmful medication errors[1]. The term LASA (Look-Alike, Sound-Alike) has also been used[1] however IMSN have adopted SALADs as their preference which is mostly embedded in Irish healthcare alerts and education.

Background

There have been many cases both nationally and internationally, some with fatal outcomes, in which patients have received the wrong medicine due to confusion between similarly named, sounding, or look-alike brand and generic names[1-4]. SALAD errors make up a high proportion of all medication errors; estimates range from 6% to 15%[5] of all medication incidents, representing a significant threat to patient safety[6-8]. Drugs which have been involved in SALAD errors are provided in the SALAD Bar document. Hospitals should use their own experience supplemented by the SALAD Bar document and/or other lists to compile their own list which should be short, relevant, and regularly reviewed. Consider development of a SALAD risk assessment tool (scoring risk of likelihood versus risk of harm) to determine the risk associated with a particular SALAD pairing.

Causes/Factors Contributing to SALAD Errors

it deosn't mttaer in waht oredr the ltteers in a wrod are the olny iprmoatnt tihng is taht the frist and lsat ltteer are in the rghit pcale

Many people can easily read the above sentence. The order of the letters in the word do not matter, the only important thing is that the first and last letters are in the right place. This partly explains why SALAD errors are a significant medication safety issue. Other contributory factors are discussed below.

Drug names - quantity and complexity

- **Quantity of drug names[1]:** There are a number of contributory factors one of which is the very large number of medications available. For example, there were 9,921 medicines authorised for human use in Ireland listed on the Health Products Regulatory Authority (HPRA) website in August 2024[9]. This is before considering exempt medicinal products, nutritional and borderline products, and complementary and alternative medicines.
- **Generic and proprietary names[1]:** Drugs are discussed and documented in terms of both a generic and brand name, resulting in healthcare professionals and patients having to consider a multitude of drug names. There is also an increasing number of 'branded generics' on the Irish market. For example, atorvastatin can currently be prescribed using at least four different names, and venlafaxine by at least ten[9].
- **Spelling errors:** A spelling error involving just one or two incorrect or misplaced letters can quickly transform the intended drug into a completely different product. For example, clotrimazole and cotrimoxazole which only have a couple of letters in the difference.

- **Combination products:** Combination products contain multiple active ingredients. Often the combination product comes in a range of strengths. Examples include:
  - Fosavance® 70/2800 and Fosavance® 70/5600
  - Co-Diovan® 160mg/12.5mg, Co-Diovan® 160mg/25mg, Co-Diovan® 320mg/12.5mg, Co-Diovan® 320mg/25mg
  - Acerycal® 5/5, Acerycal® 5/10, Acerycal® 10/5, Acerycal® 10/10[9].
- **Different formulations of the same active drug:** As an example sustained release preparations can be differentiated from immediate release by use of an additional word such as "Retard", or by extra letters such as XL, XR, SR, PR etc. Lack of standardisation of these acronyms can lead to confusion and error[1].
- **Different strengths of the same drug:** Packaging may be similar across a particular brand, contributing to difficulty differentiating between different products or strengths of products.

Handwriting[1]

Illegible writing is an important contributory factor to errors in medical care. This is a problem inherent in average human writing, and not exclusive to prescribers[10]. The Irish healthcare system in acute services still remains to a large extent reliant on a system of handwritten communication and is yet to fully adopt the use of technology[11-12].

Electronic systems[1]

Moving away from handwritten prescriptions to electronic prescribing (ePrescribing) systems enhances patient safety and reduces medication error rates. However ePrescribing does not eliminate the possibility of a SALAD error. Selection errors can occur if picking from a drug list (drop-down menu), or if a typographical error occurs while filling free-text fields in an electronic prescription[13]. In the same way 'electronic' does not automatically equate to 'risk free' in relation to SALAD dispensing errors which have not been eliminated despite use of computers in dispensaries for many years[14].

Packaging (look-alike)[1]

Look-alike packaging is recognised as a serious concern[2,4]. Different drugs or different strengths of the same drug can easily be mistaken for each other when they have similar packaging. Even when a "Purchasing for Safety" policy has been implemented, changes to packaging and product livery can occur after the initial assessment, and even more so now with constant medication shortages. Parallel imports can also result in the same product having different packaging. Some companies adopt a standardised approach to livery, which in itself can lead to visual similarities between products.

Product shortages[15]

The European market is vulnerable to drug shortages, due in part to recent international geopolitical situations and Brexit resulting in manufacturing delays. These can be sudden, unexpected, and require urgent action. A different brand or presentation of the same drug, or an alternative but therapeutically equivalent drug, is often required. Checks for SALAD error potential may not be completed during this accelerated procurement process.

Strategies for Risk for Risk Reduction at a Hospital Level

- Adopt **electronic systems** for prescribing and documentation of administration where possible[1]. Drug databases should be configured with safety as a primary consideration.
    - Ensure governance and quality assurance systems for electronic drug databases include reference to potential for SALAD errors, and strategies on how to reduce the risk.
    - Evidence-based/judicious use of pop-ups and alerts should be considered, to maximise effectiveness and minimise alert fatigue.
    - Database design should facilitate inclusion of indication[16] which adds clarity to a prescription.
- In conjunction with an optimally implemented electronic health record, **barcode medication administration systems** have the potential to reduce administration errors[17] ("closed loop medication administration").
- Ensure the concept of SALAD pair mix-ups and awareness with regard to a potential error prone situation is highlighted where staff **education** is taking place including during staff orientation, at educational talks and in Continuing Professional Development programmes.
- Implement a **'Purchasing for Safety Policy'**. When ordering a new medicine, consider potential for SALAD mix-ups. Be aware Purchasing for Safety is not guaranteed to prevent a SALAD from entering the hospital. Manufacturers can change their product livery, parallel imports can have different packaging, and shortages can lead to urgent procurement of a much-needed alternative.
- **Segregate storage** of known SALAD pairs within the dispensary and on hospital wards/ departments[1].
- Have a system where staff can **report** serious or potentially serious SALAD mix-ups, for example through medication safety incident and near miss reporting on NIMS. These should be reported to the HPRA and the companies whose products are involved.
- Review at intervals (e.g. through audit, internal incident and near miss reporting, use of published lists) for potential new SALAD pairs, and **communicate SALAD pairs** to frontline staff via regular education and alerts.
- Foster an environment which allows medication use processes (especially prescribing, dispensing and administration) to occur with **minimal interruption**. Time and space should be dedicated to these high-risk tasks.
- **Review design of Prescription Forms** – Increase paper size to at least A4 to allow adequate space for completion. Create space for the prescriber to include all the relevant information, including the drug indication[18-19] where appropriate. Consider strategies to encourage unjoined writing e.g. lightly lined forms[18]:

A	s	p	i	r	i	n

- Consider careful introduction of **Tall Man lettering**[1,18-21]. To maximise effectiveness this should first be standardised, ideally at an international[21] or national level e.g. underway with the Hospital Medicines Management System (HMMS). Tall Man lettering is a method of applying uppercase lettering to sections of SALAD names to bring attention to the points of dissimilarity[20].
- **Avoid Verbal Orders where possible** - In areas where verbal orders are authorised, a verbal order policy should be in place[22]. Verbal orders should be minimised.

Actions that can be taken at various stages of the medication use process

Step	Recommendations
Communication	• Reconcile medication at hospital admission and discharge, and consider the higher potential for communication errors at these transitions • Written medication orders are preferred over verbal orders • Involve and educate the patient with regard to possible SALAD errors
Prescribing	• Include 'indication for the medication' for clarity and certainty. Use current evidence-based resources e.g. Summary of Product Characteristics (SPCs) and the British National Formulary (BNF) • Expand the name of the drug in full, always avoid abbreviating the name of a drug • Prescribe using generic names as appropriate • Design handwritten prescription forms to promote unjoined mixed case/letters • Electronic prescriptions: take care to pick the correct entry when selecting drugs from a database/dropdown menu - do not assume that electronic automatically means "safer". Be aware of the proximity of SALAD medicines on dropdown menus • Provide explicit directions for use - avoid "as directed" • Written medication orders are preferred over verbal orders. If unavoidable: ○ Write the communication received clearly - scribe should ideally be a 2nd person ○ Re-read communication to ensure accuracy, including saying numbers out individually (e.g. one zero etc) ○ Include indication to add clarity and certainty
Dispensing	• Users must read the **name, strength, and formulation** every time - do not rely on packaging colour/design (the livery) • Users of electronic databases (e.g. ePrescribing and smart infusion pumps) should consider and be aware of the proximity of SALAD medicines on drug data files due to risk of mis-selection • Where possible, dispense medication in original manufacturer's pack • When packing down, position label to ensure the entire drug name is displayed clearly on a single side of the product. Avoid the user having to turn the container to read the full name
Storage	• Optimise drug storage systems with due consideration for potential SALAD errors e.g. segregate storage of identified SALAD medicine pairs or groups • Ensure that the outward-facing surface of the product has the full name, strength, and formulation clearly visible • Optimise lighting where medicines are selected e.g. drug trolleys/shelves • Be aware and prioritise SALAD errors involving high-alert medicines which has greater potential for severe harm

Administration	• Read **the name, strength, and formulation** every time. Do not rely on packaging colour/design • Interpret the indication for treatment to add clarity and certainty • Users of electronic databases (e.g. ePrescribing and smart infusion pumps) should be aware and consider the proximity of SALAD medicines on drug data files due to risk of mis-selection • Include the patient - the last step in the administration process

References

1. World Health Organization; Medication safety for look-alike, sound-alike medicines; 2023. Available at https://www.who.int/publications/i/item/9789240058897 [Accessed 8 August 2024]

2. McCoy LK. Look-alike, sound-alike drugs review: include look-alike packaging as an additional safety check. Joint Commission Journal on Quality and Patient Safety, 2005, 31(1):47–53

3. Medicines and Healthcare Products Regulatory Agency: Drug-name confusion: reminder to be vigilant for potential errors; 2018. Available at https://www.gov.uk/drug-safety- update/drug-name-confusion-reminder-to-be-vigilant-for-potential-errors [Accessed 8 August 2024]

4. Traynor K. FDA works toward product naming, packaging guidance. Am J Health-Syst Pharm. 2010;67(16):1308-1310

5. Bryan R, Aronson JK, Williams A, Jordan S. The problem of look-alike, sound-alike name errors: Drivers and solutions. Br J Clin Pharmacol. 2021;87(2):386-94

6. Hyland M, Oates G. Survey of Sound-alike Look-alike Drugs mix-ups reported to Irish Hospital Pharmacists. Hospital Pharmacy News Ireland, IPN Communications Ireland Ltd, 2014

7. Ryan A, Robertson K, Glass B. Look-alike medications in the perioperative setting: scoping review of medication incidents and risk reduction interventions. Int J Clin Pharm. 2024 Feb;46(1):26-39. doi: 10.1007/s11096-023-01629-2

8. Bryan R, Aronson JK, Williams AJ, Jordan S. A systematic literature review of LASA error interventions. British Journal of Clinical Pharmacology. 2021 Feb;87(2):336-51

9. Health Products Regulatory Authority (HPRA) August 2024. Available at https://www.hpra.ie/homepage/medicines/medicines-information/find-a-medicine/results?query=Venlafaxine&field=ACTIVESUBSTANCES [Accessed 8 August 2024]

10. Berwick DM. The truth about doctors' handwriting: a prospective study. BMJ 1996;313:1657 Available at https://www.bmj.com/content/313/7072/1657. [Accessed 8 August 2024]

11. Edwards E. Investment in e-health proposed under development plan. Irish Times. Feb 16, 2018. Available at https://www.irishtimes.com/news/ireland/irish-news/investment-in-e-health-proposed-under-development-plan-1.3395390 [Accessed 8 August 2024]

12. Thompson S. eHealth in Ireland: We can learn from the mistakes of others. Irish Times. Jul 11, 2016. Available at https://www.irishtimes.com/life-and-style/health-family/ehealth-in-ireland-we-can-learn-from-the-mistakes-of-others-1.2712338 [Accessed 8 August 2024]

13. Ahmed Z, Garfield S, Jani Y, Jheeta S, Franklin BD. Impact of electronic prescribing on patient safety in hospitals: implications for the UK. Clinical Pharmacist. 2016 May 5;8(5). Available at https://www.pharmaceutical-journal.com/research/review- article/impact-of-electronic-prescribing-on-

patient-safety-in-hospitals-implications-for-the- uk/20201013.article. [Accessed 8 August 2024]

14. Aldhwaihi K, Schifano F, Pezzolesi C, Umaru N . A systematic review of the nature of dispensing errors in hospital pharmacies. Integrated Pharmacy Research and Practice, 2016;:51—10. Available at https://www.dovepress.com/a-systematic-review-of-the-nature-of-dispensing-errors-in-hospital-pha-peer-reviewed-article-IPRP. [Accessed 8 August 2024]

15. European Association of Hospital Pharmacists: Medicines Shortages, 2024. Available at https://www.eahp.eu/practice-and-policy/medicines-shortages [Accessed 8 August 2024]

16. Galanter WL et al. Indication Alerts Intercept Drug Name Confusion Errors during Computerized Entry of Medication Orders. PLoS ONE 9(7): e101977. Published July 15, 2014. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4098994/ [Accessed 8 August 2024]

17. Baysari MT, Lehnbom EC, Westbrook JI for The Australian Commission on Safety and Quality in Health Care. Evidence Briefings on Interventions to Improve Medication Safety: Bar code medication administration systems. Volume 1, Issue 1: June 2013. Available at https://www.safetyandquality.gov.au/sites/default/files/migrated/Evidence-briefings-on-interventions-to-improve-medication-safety-Bar-code-administration-systems-PDF-620KB.pdf [Accessed 8 August 2024]

18. Grissinger M. Avoiding Confusion With Alphanumeric Characters. Pharmacy and Therapeutics, 2012;37(12):663. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3541865/ [Accessed 8 August 2024]

19. Australian Commission on Safety and Quality in Health Care. National guidelines for on-screen display of clinical medicines information. January 2016. Available at National Guidelines for On-Screen Display of Medicines Information | Australian Commission on Safety and Quality in Health Care [Accessed 8 August 2024]

20. National Cancer Control Programme. NCCP position paper on the use of Tall Man Lettering. Version 2, October 2019. Available at https://www.hse.ie/eng/services/list/5/cancer/profinfo/medonc/sactguidance/tall%20man%20lettering%20.pdf [Accessed 8 August 2024]

21. US Food and Drug Administration (FDA) and Institute for Safe Medication Practices (ISMP). FDA and ISMP Lists of Look-Alike Drug Names with Recommended Tall Man Letters. ISMP; 2023 Institute for Safe Medication Practices. Look-Alike Drug Names with Recommended Tall Man (Mixed Case) Letters. Available at Look-Alike Drug Names with Recommended Tall Man (Mixed Case) Letters (ecri.org) [Accessed 8 August 2024]

22. Koczmara C et al. Communication of medication orders by telephone- "Writing it right". ISMP Canada, Spring 2006. Available at http://www.ismp-canada.org/download/caccn/CACCN-Spring06.pdf. [Accessed 8 August 2024]