How do we fix the ‘look-alike sound-alike’ puzzle?

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Senior Pharmacist
Patient Safety
NHS Improvement

Specialist Pharmacy Service
NCVO, London, Thursday 12th July 2018
Starting point
A (quick) bit of history

Up to 1950s → 1960s / 1970s → Now!
Starting point
A (quick) bit of history

Up to 1950s 1960s / 1970s Now!
Starting point
A (quick) bit of ‘patient’ history

Up to 1950s 1960s / 1970s Now!

Dedicated medicines Some consistency

Now patients can get ‘all sorts’
The size of the problem?

Brand vs generic prescribing

vs

It's about function and naming
The size of the problem?

Brand vs generic prescribing

It's about function and naming

LASA - we don't really know
The size of the problem?

'Wrong pills' pharmacist suspended after woman’s death

A pharmacist convicted of supplying the wrong drugs to a patient died after being suspended from practising for seven months.

Propranolol vs Prednisolone

Elizabeth Lee and Martin White

Amlodipine vs Amitriptyline

https://www.bbc.co.uk/news/uk-england-nottinghamshire-42735588
https://www.bbc.co.uk/news/uk-northern-ireland-38223865

Slide 7 NHS Improvement 20180613
Why does it go wrong?

We (in Europe) read in a ‘z’ track fashion
We pick up and associate with stored graphics of words/packages/shapes
We jump over clumps of letters in words to ‘speed things up’

So we are already extracting less than the available information when we make decisions

Worse still we see what we what to see, what our brains might tell us we should be seeing!
Why might pharmaceutical industry use shape and colour?

It costs money for dedicated machinery, but:

• complex colour, shape and size of a drug formulation fights the risk of counterfeiting;
• therapeutic objectives - colourful medicines are more comforting to patients, mainly children;
• It may improve differentiation by patients and healthcare professionals; and,
• It promotes a corporate image for marketing and advertising.
What does the EU think?

Good practice guide on risk minimisation and prevention of medication errors
Final

6.1.1.2

......However, in line with other guidance [...] it is emphasised that the use of **colour-coding is not usually recommended** given the limited range of available colours and the absence of common understanding of colour coding conventions.

Different MAHs and applicants make use of colour as part of their brand and livery and in most cases there is **no set colour scheme that must be used for a given indication or class of medicinal products**. However, choice of colour should be considered in product design to ensure that it does **not introduce the risk of confusion** with other established products where informally-agreed colour conventions exists (e.g. in some Member States, asthma reliever inhalers have blue-coloured dust caps while maintenance corticosteroid inhalers have red or brown dust caps).
Look-Alike, Sound-Alike Medication Names

Patient Safety Solutions
| volume 1, solution 1 | May 2007

http://www.who.int/patientsafety/solutions/patientsafety/PS-Solution1.pdf?ua=1
Solutions?

1. Ensuring that health-care organizations actively identify and manage the risks associated with LASA medications by:

a. **Annually reviewing** the LASA medications used in their organization (NPA, MSO in CP, NRLS….working on it!)
Solutions?

1. Ensuring that health-care organizations actively identify and manage the risks associated with LASA medications by:

b. Implementing clinical protocols which:

Minimize the use of verbal and telephone orders.

**Emphasize the need to carefully read the label each time a medication is accessed and again prior to administration, rather than relying on visual recognition, location, or other less specific cues.**

Emphasize the need to check the purpose of the medication on the prescription/order and, prior to administering the medication, check for an active diagnosis that matches the purpose/indication.

Include both the nonproprietary name and the brand name of the medication on medication orders and labels, with the nonproprietary name in proximity to and in larger font size than the brand name.
Solutions?

1. Ensuring that health-care organizations actively identify and manage the risks associated with LASA medications by:

   c. Developing strategies to avoid confusion or misinterpretation caused by illegible prescribing or medication orders, including those that:

   Require the printing of drug names and dosages. Emphasize drug name differences using methods such as “tall man” lettering.
Solutions?

1. Ensuring that health-care organizations actively identify and manage the risks associated with LASA medications by:

   d. **Storing problem medications** in separate locations or in non-alphabetical order, such as by bin number, on shelves, or in automated dispensing devices.

   e. **Using techniques such as boldface and colour differences** to reduce the confusion associated with the use of LASA names on labels, storage bins and shelves, computer screens, automated dispensing devices, and medication administration records.
1. Ensuring that health-care organizations actively identify and manage the risks associated with LASA medications by:

f. Developing strategies to involve patients and their caregivers in reducing risks through:

- Providing patients and their caregivers with written medication information, including medication indication, nonproprietary and brand names, and potential medication side effects.

- Developing strategies to accommodate patients with sight impairment, language differences, and limited knowledge of health care.

- Providing for pharmacist review of dispensed medications with the patient to confirm indications and expected appearance, especially when dispensing a drug that is known to have a problematic name.
Solutions?

1. Ensuring that health-care organizations actively identify and manage the risks associated with LASA medications by:

g. Ensuring that all steps in the medication management process are carried out by qualified and competent individuals.

So I ask you ..... Anything you didn’t know? And this was 2007!
How do we fix the ‘look-alike sound-alike’ puzzle?

the need to dispel two key myths:
• The perfection myth: if people try hard enough, they will not make any errors.
• The punishment myth: if we punish people when they make errors, they will make fewer of them; that remedial and disciplinary action will lead to improvement by channelling or increasing motivation.’

But……why might humans ‘err’?

Thinking fast and slow, System1/System2 [1]
AND
Slips, lapses, mistakes and violations [2,3]

Duel process theory

In psychology, a dual process theory proposes that thought can arise in two different ways, or as a result of two different processes - an implicit (automatic), unconscious process and an explicit (controlled) process.

‘Thinking fast and slow’

The central thesis is that action arises from two modes of thought: ‘System 1’ is fast, instinctive and emotional; ‘System 2’ is slower, more deliberative, and more logical.

So how does this relate to LASA?

**System 1:** Fast, automatic, frequent, emotional, stereotypic, unconscious. Examples:
- Select based on the position of the package on the shelf
- Ask for a second check and move on before confirmation
- Select based on physical properties ‘stored’ in memory
- FMD – Scan!

**System 2:** Slow, effortful, infrequent, logical, calculating, conscious. Examples:
- Arrange positions to challenge automatic selection
- Have discrete responsibilities for checking and a process that can only run to completion if all aspects are correct
- Open the packaging to confirm contents

Maybe this is a solution?

Based on System 1 and System 2 understanding related to medication
We are all capable of error and things change

NPC. MeReC bulletin.2011;22(no1)

Slide 22 NHS Improvement 20180613
Safe acts

Intended actions

Follow reasoned practice

Correct

System 2

System 1

Unintended actions

Basic error types

Lapses

Skill based errors

Memory failures

Slips

Skill based errors

Attentional failures

Unsafe acts

Consciously competent

Up-to-date with practice

Follow reasoned practice

Correct

Basic error types

Lapses

Skill based errors

Memory failures

Slips

Skill based errors

Attentional failures
### Potential actions

<table>
<thead>
<tr>
<th>Potential actions</th>
<th>Opinion of their effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actions related to making staff aware of potential for error/ consequences of past errors (stories, posters, etc.)</td>
<td>This can have a temporary effect but simply being aware of the risk or past error(s) does not appear to prevent it recurring.</td>
</tr>
<tr>
<td>Physical separation of LASA combinations to different locations.</td>
<td>This may have some effect, but can apply to many drug combinations and some PSIs are reported to have occurred despite this. It relies on those that restock shelves adhering to the policy.</td>
</tr>
<tr>
<td>Annotate the Patient Medication Record (PMR)</td>
<td>The PMR is updated with a note of the error and to warn future dispensing to be extra vigilant and mindful that the patient has experienced a LASA error. Staff can become ‘alert blind’ or fail to appreciate the necessity for additional vigilance.</td>
</tr>
<tr>
<td>Standard Operating Procedure (SOP)</td>
<td>As a consequence of error a SOP may be developed to specify future actions to mitigate error, such as physical separation. These may ask for a signature, presumably to motivate compliance with instructions. Nevertheless errors still occur. The SOP may aid in describing what should happen but is not a barrier to, for example, a lapse such that LASA drugs are stocked side-by-side.</td>
</tr>
<tr>
<td>A sticker cautioning that the specific medicine might be confused with another LASA is attached to the shelf below the medicine</td>
<td>Many labels would be needed for all possible LASA combinations. This action is reserved for combinations where error has occurred locally or nationally. However, once in place for more than a short period such labels may not ‘register’ on the perception of staff and errors recur.</td>
</tr>
<tr>
<td>Reducing distractions such as background noise and interruptions</td>
<td>The business of the dispensing environment can increase the risk of error, and all efforts to create a better working environment reduce the risks. The NPSA developed guidance in the design of the workplace environment; however, as a business, community pharmacies react to the ebb and flow of workload and it may be challenging to account for such variation.</td>
</tr>
<tr>
<td>Double or triple checking by other staff members</td>
<td>Good practice would support that errors may be less likely if multiple staff check each other’s work; however, this may not be feasible in a community pharmacy setting due to staff working patterns. Recent publications suggests separate responsibilities in the checking process might improve this safety activity.</td>
</tr>
<tr>
<td>Avoiding fatigue</td>
<td>Errors are more likely when people are tired, thirsty or hungry, so setting a maximum for the hours of continuous work without a break can help reduce, but not eliminate, error</td>
</tr>
</tbody>
</table>
## Potential actions

<table>
<thead>
<tr>
<th>Expert opinion of their effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arrange drug names in pick lists to physically separate LASA drugs known to be problematic</strong></td>
</tr>
<tr>
<td>While this may improve selection accuracy (?), it means that drug for selection is not obviously in order and may not be found in its ‘safe’ location (such as the next page in a pick list) leading to omission. Once the location is known unconscious incompetence may over-ride this safety feature. There is a common-sense, face-validity this, but there is no published evidence ‘in practice’ to confirm its effectiveness.</td>
</tr>
<tr>
<td><strong>Use of visual techniques to improve selection (tallman).</strong></td>
</tr>
<tr>
<td>This may have some effect (tall-man midi), but how it works ‘in practice’ has limited evidence. It requires that the two or three LASA drugs are juxta positioned for visual comparison. While it may have an impact it is unlikely to be a reliable strong barrier as eye movement varies between people and the natural jumping of fixation may over-ride the safety feature. At best, not a strong barrier to error.</td>
</tr>
<tr>
<td><strong>Visual clues on the product</strong></td>
</tr>
<tr>
<td>Actions to make the drug name stand out and not be lost in the surrounding information. Minimum standards for the size of the drug name recommended and considered as an aspect of Product Authorisation. There is no research to support the absolute or relative size of text characters on products necessary to ensure visual acuity or safety differentiation.</td>
</tr>
<tr>
<td><strong>Barcode</strong></td>
</tr>
<tr>
<td>Would appear to be an effective physical barrier to incorrect drug selection. Some research corroboration. The impact on the time and efficiency of the dispensing process is not fully known. The use of barcode scanning with robotics has been associated with error. Probably the best we can do at the moment.</td>
</tr>
</tbody>
</table>
Dispensing errors from look-alike drug trade names

Hsiang-Yi Tseng,¹,² Chen-Fan Wen,³ Ya-Lun Lee,¹,² Kee-Ching Jeng,¹,²
Pei-Liang Chen¹,²

Basically if you do everything you can affect the LASA error rate!
What we are hoping to do

We know the commonly confused medication. For some combinations is really important that we highlight them.

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Unlikely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Possible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Almost certain</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

- **5 Catastrophic**
  - 5
  - 10
  - 15
  - 20
  - 25

- **4 Major**
  - 4
  - 8
  - 12
  - 16
  - 20

- **3 Moderate**
  - 3
  - 6
  - 9
  - 12
  - 15

- **2 Minor**
  - 2
  - 4
  - 6
  - 8
  - 10

- **1 Negligible**
  - 1
  - 2
  - 3
  - 4
  - 5

For grading risk, the scores obtained from the risk matrix are assigned grades as follows:

- 1–3: Low risk
- 4–6: Moderate risk
- 8–12: High risk
- 15–25: Extreme risk
We will probably be doing something

The Report of the Short Life Working Group on reducing medication-related harm

- Build on work to identify and increase awareness of ‘look alike sound alike’ drugs and develop solutions to prevent these being introduced.
- Work with industry and MHRA to produce more patient friendly packaging and labelling.

Summary

We know the issues, medicines are complicated, >1,250,000,000 items – its pretty good, but we will try to make it better