Information design for patient safety

A guide to the graphic design of medication packaging
Information design for patient safety

A guide to the graphic design of medication packaging
About this publication

*Information design for patient safety* is based on the results of a design research collaboration between the National Patient Safety Agency (NPSA) and the Helen Hamlyn Research Centre (HHRC) at the Royal College of Art, London. Editing, design and production of the document by the NPSA publishing department.

The purpose is to allow busy designers, purchasers and others with an interest in package legibility and comprehensibility to quickly and simply understand how and why good design can contribute to patient safety through the clear labelling of medicines.

Research and methodology

The study was carried out over a one-year period by Thea Swayne, a postgraduate specialist in information and graphic design, working to a brief set by the NPSA and the HHRC. Existing design guidance was reviewed and consultations were undertaken with experts in graphic and information design, and in design for patient safety.

A wide range of stakeholders contributed to the research – including patients, pharmaceutical industry personnel, NHS agencies, nurses and pharmacists. Observational research was undertaken in key end-use environments, such as wards, pharmacies and patients’ homes. A collection of current medicine packages was assembled as part of the study, and an analysis was carried out of common problem factors for which design solutions were proposed. The outcome was a design rationale to enhance patient safety and a fully illustrated set of design considerations with both good and bad examples.
## Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Foreword</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Introduction</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Stakeholder review panel</td>
<td>13</td>
</tr>
<tr>
<td>1</td>
<td>User testing</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>Packaging design checklist</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>Design recommendations for secondary packaging</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Dispensing label</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Faces of the packaging</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Hierarchies of information</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Name of medicine</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Strength of medicine</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Typography</td>
<td>41</td>
</tr>
<tr>
<td>4</td>
<td>Using colour</td>
<td>59</td>
</tr>
<tr>
<td>5</td>
<td>Design recommendations for primary packaging</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Further reading</td>
<td>78</td>
</tr>
</tbody>
</table>
Foreword
In the Department of Health’s 2003 report, *Design for patient safety*, I offered a new perspective on improving patient safety and set out how we should be making use of the many opportunities for effective design in healthcare to address some of the safety challenges we are facing.

Concentrating on design for safer packaging of prescription medicines, this latest publication seeks to resolve some of the risks associated with medication error and, once again, draws attention to the need for an inclusive and systems-wide approach.

Ensuring the safety of patients must become a high visibility issue for anyone involved in the delivery of healthcare. This publication is a further contribution to the important work that is taking place in this field.
Introduction
Information design for patient safety shows how graphic design on medicine packaging can enhance patient safety and details best practice based on established guidelines. It is aimed at packaging designers and pharmaceutical companies. It will also be of interest to those in the NHS who regulate and purchase medication.

There are an estimated 900,000 recorded adverse events in the NHS every year.\(^1\) Improvements to the design of medicine packaging could reduce this figure whilst also improve medication compliance. It is estimated that a third of medication errors are caused by confusion over packaging and labelling instructions.\(^2\) Healthcare is delivered in many different contexts and patients’ sensory, physical and mental capabilities vary greatly. Design solutions have to address these factors.

Information design for patient safety focuses on:

- blister packs: the most common type of primary packaging for prescription medicines;
- secondary packaging used to contain blister packs;
- the label attached to secondary packaging in pharmacies.

The design considerations and principles outlined can be applied to other products such as patient information leaflets and tablet bottles.

There is a comprehensive checklist that details the key factors that impact on patient safety. In line with the Medicines and Healthcare products Regulatory Agency (MHRA) guidance document,\(^3\) user research and evaluation is recommended when significant changes are made to any packaging. The checklist can help ensure that any testing of individual designs is thorough and effective.

The examples of best practice have taken into account the views of patients as well as those of pharmaceutical industry personnel, NHS agencies, nurses and pharmacists. They have also been researched in key end-use environments including hospital wards, pharmacies and patients’ homes.

Information design for patient safety is the result of a collaboration between the National Patient Safety Agency (NPSA) and the Helen Hamlyn Research Centre (HHRC) at the Royal College of Art, London. It builds on the Designing for patient safety study commissioned by the Department of Health and the Design Council, and undertaken jointly by the HHRC, the University of Cambridge and the University of Surrey.\(^4\)

Although the ideas in this publication require further research, they provide the foundations for establishing graphic design best practice guidelines that have the potential to increase patient safety.

Ideas for further research include looking at:

- how design can help patients on multiple medication schedules;
- information on the tablet itself;
- adding a picture of the tablet on secondary packaging;
- matching machine-readable codes on packaging and dispensing labels;
- putting small products in larger packaging for, in particular, ophthalmic products;
- a ‘header’ area away from the tablets on blister strips where all critical information would remain intact.

References

1  www.npsa.nhs.uk/about
4  *Designing for patient safety: a scoping study to identify how the effective use of design could help to reduce medical accidents*. Robens Centre for Health Ergonomics at the University of Surrey, Engineering Design Centre at the University of Cambridge and Helen Hamlyn Research Centre, 2003
Stakeholder review panel
A stakeholder review panel was formed to ensure information design for patient safety addresses a wide and representative range of issues. The panel members are:

<table>
<thead>
<tr>
<th>Name</th>
<th>Role and Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roger Coleman</td>
<td>Professor of Inclusive Design and Co-founder, Helen Hamlyn Research Centre, Royal College of Art</td>
</tr>
<tr>
<td>Steven Drewett</td>
<td>Outpatient, Haematology &amp; Oncology, Hammersmith Hospital</td>
</tr>
<tr>
<td>Colum Menzies Lowe</td>
<td>Head of Design and Human Factors, National Patient Safety Agency</td>
</tr>
<tr>
<td>Professor David Cousins</td>
<td>Head of Safe Medication Practice, National Patient Safety Agency</td>
</tr>
<tr>
<td>Wendy Harris</td>
<td>Head of Safety Solutions, National Patient Safety Agency</td>
</tr>
<tr>
<td>Professor Peter Buckle</td>
<td>Director of Ergonomics, European Institute of Health and Medical Sciences, University of Surrey</td>
</tr>
<tr>
<td>Jonathan Milner</td>
<td>Business Development Manager, InTouch PharmaMed, a Matthews Brand Solutions company</td>
</tr>
<tr>
<td>Stein Lyftingsmo</td>
<td>Community and Hospital Pharmacist, Norway and Editor of website on labelling of medicines</td>
</tr>
<tr>
<td>Sue Kilby</td>
<td>Head of Practice, Royal Pharmaceutical Society of Great Britain</td>
</tr>
<tr>
<td>Rachel Dean</td>
<td>Acting Senior Graphic Designer, Royal National Institute of the Blind</td>
</tr>
<tr>
<td>Jeff Willis</td>
<td>Deputy Head of Communication Art &amp; Design Department, Royal College of Art</td>
</tr>
<tr>
<td>Careen Snadden</td>
<td>Technical Director, Almus Pharmaceuticals</td>
</tr>
<tr>
<td>Howard Stokoe</td>
<td>Principal Pharmacist, NHS Purchasing and Supply Agency</td>
</tr>
<tr>
<td>Brian Parkinson</td>
<td>Making Sense Design and co-facilitator of Designers in Health Network</td>
</tr>
<tr>
<td>Idris Hughes</td>
<td>Community Pharmacist and author</td>
</tr>
<tr>
<td>Yogini Jani</td>
<td>Senior Pharmacist, UCLH NHS Foundation Trust</td>
</tr>
<tr>
<td>Grant Courtney</td>
<td>Strategic Development Manager, GlaxoSmithKline</td>
</tr>
<tr>
<td>Jan MacDonald</td>
<td>Medicine and Healthcare products Regulatory Agency</td>
</tr>
<tr>
<td>James Ward</td>
<td>Senior Research Associate, Engineering Design Centre, University of Cambridge</td>
</tr>
<tr>
<td>Matt Kennedy-Martin</td>
<td>Head of Government Relations, Design Council</td>
</tr>
</tbody>
</table>
User testing

Packaging design should take into account the needs and capabilities of the widest possible range of potential users, and in particular older and partially sighted users, and how they interact with the medicine in the home.

It should also consider the needs of pharmacists and, in particular, how they identify, classify and differentiate between medicine packages.
Pharmaceutical companies should develop their own methods for testing their packaging on users.

The example below is developed from *A guideline on the readability of the label and package leaflet of medicinal products for human use.*

**Aim**

There are a number of core tasks that are critical for the safe use of pharmaceutical packaging. The aim is to assess how users find the information they need and how they then interpret this information. The test should be able to highlight any undesirable outcomes and determine the best combination of design elements.

**Method**

Test on a minimum of 20 people and a range of users including patients, pharmacists and carers. This will vary for each product.

Manufacturers should carry out the testing. Designers should be involved.

**Participants**

Start by testing the products on 10 critical users who are likely to encounter problems. This should include users with lower visual abilities and reduced cognitive and dexterous functions.

If a user becomes confused, note how they deal with the difficulty.

If a user does not understand a question, avoid giving the answer. Instead, ask them what they think it means.

**Testing procedure**

Test one user at a time, allowing at least half an hour for each person. They can be asked about using more than one packaging, but do not ask more than 15 questions in a single session. Two questions concerning the same information should not follow one another.

Ask users to carry out their normal routine for reading information on packaging:

1. Observe and write down what they do.
2. Ask users to write down in their own words what they did.
3. Ask questions that might extend the information gathered.
4. Ask specific questions about the legibility of particular design elements on the packaging.
5. Determine if specific information on the packaging can be found quickly and easily.
6. Determine if information on the packaging is understandable and informative.
7. Ask users to find a particular piece of information and explain it in their own words. This will reveal how well they understand the information. If this involves a physical activity such as mixing something together, they should be asked to do this and actually go through the procedure on the package.

**Results**

Reviewing the data should reveal any major problems with the legibility of information on the packaging. At this stage, it is possible to redesign or rewrite the information before further testing.

Once satisfactory data has been obtained from 10 users, a further 10 should be tested. The objective is to have at least 16 users out of 20 able to answer each question correctly. It may be necessary to clarify the performance of the questionnaire, which may include rewriting and remodelling the questions to achieve a better level of performance.

**Reference**

1. *A guideline on the readability of the label and package leaflet of medicinal products for human use*, European Commission, Belgium, 1998
DO NOT EXCEED THE STATED DOSE

Do not give to children under 12 years of age without medical or doctor's advice. There is a possible connection between the use of aspirin and Reye's syndrome when given to children under 12 years of age. If you are not sure or carry a dose, do not exceed the stated dose.
Packaging design checklist
## Packaging design checklist

<table>
<thead>
<tr>
<th>Issue</th>
<th>Recommendation</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Secondary packaging</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine name and strength obscured</td>
<td>Allocate 70 x 35mm white space for dispensing label</td>
<td>23</td>
</tr>
<tr>
<td>Dispensing label and medicine name mismatched</td>
<td>Position the generic name and medicine strength above or next to the space for the dispensing label</td>
<td>25</td>
</tr>
<tr>
<td>Critical information does not appear in the same field of vision</td>
<td>Put critical information in the same field of vision on at least three non-opposing faces</td>
<td>27</td>
</tr>
<tr>
<td>Some text can only be read by flipping the pack or reading upside down</td>
<td>Orientate text in the same direction</td>
<td>29</td>
</tr>
<tr>
<td>Difficult to recognise important information</td>
<td>Use blank space to emphasise critical information</td>
<td>31</td>
</tr>
<tr>
<td>Brand name confused with the generic name of a medicine</td>
<td>Emphasise generic medicine name</td>
<td>33</td>
</tr>
<tr>
<td>Medicines with similar names confused for one another</td>
<td>Use Tallman lettering to emphasise the difference between look-alike or sound-alike medicine names</td>
<td>35</td>
</tr>
<tr>
<td>Wrong strength of a medicine selected</td>
<td>Differentiate between strengths of the same medicine</td>
<td>37</td>
</tr>
<tr>
<td>Easy to miss the decimal point in numbers with a trailing zero</td>
<td>Do not add trailing zeros to numbers</td>
<td>39</td>
</tr>
<tr>
<td>Small type size is difficult to read</td>
<td>Body text in a minimum of 12 point</td>
<td>41</td>
</tr>
<tr>
<td>Sentences in capital letters or italic type are hard to read</td>
<td>Use upper and lower case</td>
<td>43</td>
</tr>
<tr>
<td>Simulated handwriting and ornate typefaces are hard to read</td>
<td>Use sans serif typefaces</td>
<td>45</td>
</tr>
<tr>
<td>Issue</td>
<td>Recommendation</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td><strong>Secondary packaging</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lightweight typeface is hard to read</td>
<td>Use bold or semi-bold type</td>
<td>47</td>
</tr>
<tr>
<td>Condensed typeface is hard to read</td>
<td>Do not use condensed typefaces</td>
<td>49</td>
</tr>
<tr>
<td>Squashing lines of text closer together or reducing the distance</td>
<td>Do not squash lines of text closer together or adjust the spaces between</td>
<td>51</td>
</tr>
<tr>
<td>between individual letters makes text difficult to read</td>
<td>letters</td>
<td></td>
</tr>
<tr>
<td>Irregular amount of space between words</td>
<td>Align text to the left</td>
<td>53</td>
</tr>
<tr>
<td>Text illegible over an image or logo</td>
<td>Do not place text over images or logos</td>
<td>55</td>
</tr>
<tr>
<td>Insufficient contrast between background and type</td>
<td>Create a strong contrast between type and background colour</td>
<td>57</td>
</tr>
<tr>
<td><strong>Using colour</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colour differentiation inadvertently associated with a particular</td>
<td>Use colour differentiation to highlight information</td>
<td>61</td>
</tr>
<tr>
<td>feature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colour does not help distinguish between products in a manufacturer’s range</td>
<td>Use opposing, meaningless colours</td>
<td>63</td>
</tr>
<tr>
<td><strong>Primary packaging</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glare caused by light reflecting on the foil</td>
<td>Use non-reflective foil</td>
<td>67</td>
</tr>
<tr>
<td>Text damaged when blister strip is cut</td>
<td>Put medicine name and strength clearly on each pocket</td>
<td>69</td>
</tr>
<tr>
<td>Reduced legibility due to combined effect of foil material, small</td>
<td>Create a strong contrast between type and background colour</td>
<td>71</td>
</tr>
<tr>
<td>type size and background colour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduced legibility due to combined effect of a small type size and</td>
<td>Use bold or semi-bold type</td>
<td>73</td>
</tr>
<tr>
<td>lightweight font on a foil background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blister strip with the wrong secondary packaging</td>
<td>Match the styles of primary and secondary packaging</td>
<td>75</td>
</tr>
</tbody>
</table>
Design recommendations for secondary packaging

The term secondary packaging describes the outer package of a pharmaceutical product. It holds the primary packaging and does not touch the medicine. The combined impact of all design elements, such as colour and typography, should be evaluated.
Pharmacists produce a label that exactly repeats the prescriber’s instructions and attach it to the secondary packaging. If space is not allocated for the label, it is frequently placed over the manufacturer’s text obscuring the medicine name and strength. The underlying text may also show through the label making the instructions difficult to read.

Each tablet contains ingredient 0mg for this effect. Also contains ingredient and ingredient. See enclosed leaflet for further information.

For oral administration. Take as directed by your doctor. Please read enclosed leaflet. KEEP OUT OF SIGHT AND REACH OF CHILDREN.

Do not store above 25°C Store in original package. AA0000/0000
Recommendation
Allocate 70 x 35mm white space for dispensing label

Have a clearly designated space for the dispensing label. This should be a white space in which there is no text or image.

Dispensing label dimensions vary, but a minimum of 70 x 35mm is suggested as this is the most common size for dispensing labels.

Generic Name 10 mg

Each tablet contains ingredient 0mg.
Also contains ingredient.
For oral administration.
Take as directed by your doctor.
Please read enclosed leaflet carefully.
Store below 25ºC in a dry place.
Protect from light.
Keep out of sight and reach of children.
In the pharmacy, the prescription is read; the medicine is picked from the shelf; the medicine type and dosage are checked against the prescription; and a dispensing label is produced by the dispensary system and attached to the secondary packaging.

Occasionally, due to human error, the dispensing label and medicine name on the secondary packaging are mismatched.
Recommendation

Position the generic name and medicine strength above or next to the space for the dispensing label.

The generic name and strength of the medicine should be directly above or beside the space provided for the dispensing label.

Pharmacy staff can then easily check that the medicine description on the dispensing label correctly matches that on the secondary packaging.

Example:

Generic Name 10 mg

Each tablet contains ingredient 0mg. Also contains ingredient.

For oral administration. Take as directed by your doctor.

Please read enclosed leaflet carefully.

Store below 25°C in a dry place. Protect from light.

Keep out of sight and reach of children.

Take FOUR tablets on alternate mornings

Patient name
Issues

The following critical information does not always appear in the same field of vision: medicine name, variant, strength, form and number of tablets or capsules.
Recommendation

Put critical information in the same field of vision on at least three non-opposing faces

A standard packaging box has six faces on which information can be displayed. Critical information should be in the same field of vision on at least three non-opposing faces of the secondary packaging.

This means putting the information on the top or bottom face, one of the side faces, and on one of the end faces. If it is feasible, display a product description on more than three non-opposing faces.
If text is not orientated in the same direction, the pharmacist and patient have to either read upside down or flip the pack to read the information.
Recommendation

Orientate text in the same direction

The text on every face, excluding the ends, should be orientated in the same direction.
Hierarchies of information

Issue

If secondary packaging is cluttered with text and images, it can be difficult to recognise important information and identify the correct packaging.

 BRAND NAME
generic name
contains 0mg ingredient and ingredient

Each tablet contains
ingredient equivalent to 0mg
of ingredient and omg
ingredient

28 Tablets
Distributed by
Company Pharmaceuticals
123 Any Road
Any town
Any postcode

Products license holder
123 Any Road
Any town
Any postcode
Code 00/00000/0000/0000/00
00/00000/0000/0000/00
Recommendation

Use blank space to emphasise critical information such as the medicine name and strength.

Generic Name Capsules

10 mg
28 Capsules
Patients can be given different brands of the same medication which can lead to them confusing brand names with generic names. This can result in them taking multiple doses of the same medication. This risk is increased if the brand name has more emphasis than the generic name.
Recommendation

Emphasise generic medicine name

The generic name should be in 16 point size or greater.

Generic Name
Capsules
10 mg
28 Capsules
Medicine names that are spelt in a similar way, with the same number of letters and word shape, can be easily mistaken for one another.

The possibility of error is increased if medicines are stored alphabetically and these medicines are next to one another.

Chlorpropamide 10 mg

Chlorpromazine 10 mg
Recommendation

Use Tallman lettering to emphasise the difference between look-alike or sound-alike medicine names.

Use Tallman (capital) letters to highlight those sections of similar medicine names that contain the characteristic of the medicine.

ChlorproPAMIDE 10 mg
28 Capsules

ChlorproMAZINE 10 mg
28 Capsules
If the strength of a medicine is not clearly displayed, the wrong strength can be selected.

<table>
<thead>
<tr>
<th>Strength</th>
<th>Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 mg</td>
<td>MANUFACTURER® GENERIC NAME</td>
</tr>
<tr>
<td>20 mg</td>
<td>MANUFACTURER® GENERIC NAME</td>
</tr>
<tr>
<td>30 mg</td>
<td>MANUFACTURER® GENERIC NAME</td>
</tr>
<tr>
<td>40 mg</td>
<td>MANUFACTURER® GENERIC NAME</td>
</tr>
</tbody>
</table>
Recommendation

Differentiate between strengths of the same medicine

Make medicine strengths stand out through typeface, type weight, colour and shape.
This is particularly important if all secondary packaging from a manufacturer looks similar.
Issue

If numbers have a trailing zero (a decimal point followed by a zero) it is easy to miss the decimal point and dispense a tenfold overdose.

For example, administering 50mg instead of 5mg.

Generic Name 1.0 mg Tablets

1.0mg

28 Tablets
Recommendation
Do not add trailing zeros to numbers

Where possible, always use whole numbers.
Different strengths of the same medicine should be expressed in the same way, such as 250mg, 500mg, 750mg.
Typography

Issue

Small type size is difficult to read.

Generic Name
Capsules

10 mg
28 Capsules
Minimum recommended type size is 12 point. However, 14 point is more accessible for patients with sight difficulties.

**Generic Name**

**Capsules**

**10 mg**

28 Capsules
Typography

Issue

Entire sentences in capital letters or italic type are hard to read.
Recommendation

Use upper and lower case

Do not use capitals for generic medicine names (other than selective Tallman lettering, see page 36), brand names, sentences or paragraphs. Italic type should not be used where there is an alternative method of emphasis such as bold type. Upper and lower case should always be used for sentences.

Generic Name
Capsules

10 mg

28 Capsules
The choice of typeface influences legibility. Simulated handwriting and ornate typefaces are difficult to read.

Serif typefaces, that is typefaces with small terminal strokes added to the end of the main stroke or line of a character, are harder to read on medication packaging than sans serif typefaces, that is typefaces without serifs.

Serif typefaces are ideal for large bodies of text such as books and newspapers, where the serifs aid the reader in following and recognising lines of text at speed.

They are not suitable for medication packaging, where clarity, accuracy and legibility must be paramount.
Recommendation

Use sans serif typefaces

Use a sans serif typeface, such as Arial, Helvetica or Univers.

Generic Name
Capsules

10 mg

28 Capsules
Typography

Issue

Lightweight type reduces legibility. Patients, especially those who are partially sighted, find bolder type easier to read.
Recommendation

Use bold or semi-bold type

Use bold or semi-bold type and avoid lightweight type.

Generic Name
Capsules

10 mg
28 Capsules
Condensed typefaces reduce legibility.

Generic Name
Capsules
10 mg
28 Capsules
Recommendation
Do not use condensed typefaces

Do not use condensed typefaces.

Generic Name
Capsules
10 mg
28 Capsules
Reducing the space between lines, known as the leading, and reducing the space between letters, known as the kerning, affects legibility.
Recommendation

Do not squash lines of text closer together or adjust the space between letters.

Do not squash lines of text closer together. If text is in 12 point size, the leading should be 16 point. If text is in 14 point size, the leading should be 18 point.

Do not adjust the space between letters unless doing so will enhance legibility.

Generic Name
Capsules

10 mg

28 Capsules
An irregular amount of space between words affects legibility.

### Issue

<table>
<thead>
<tr>
<th>Generic Name 10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERIC NAME 10MG</td>
</tr>
<tr>
<td>Take FOUR tablets</td>
</tr>
<tr>
<td>on alternate mornings</td>
</tr>
<tr>
<td>Patient name</td>
</tr>
</tbody>
</table>

Each tablet contains ingredient 0mg. See enclosed leaflet for further information. For oral administration. Take as directed by your doctor. Please read enclosed leaflet.

Keep out of sight and reach of children.
Recommendation
Align text to the left

Align text to the left hand margin and do not justify text.

Generic Name 10 mg

Each tablet contains ingredient 0mg.

See enclosed leaflet for further information.

For oral administration. Take as directed by your doctor.

Please read enclosed leaflet.

Keep out of sight and reach of children.
Fitting text around or over images or logos breaks the flow of information.

**Issue**

Generic Name
Capsules
10 mg
28 Capsules
Recommendation
Do not place text over images or logos

Text should remain unbroken.
Images or logos should be placed at the beginning or end of the text.

Generic Name
Capsules

10 mg
28 Capsules
Insufficient contrast between the background and the type reduces legibility.
Recommendation

Create a strong contrast between type and background colour

There should be a strong contrast between the type and background colours.

Dark coloured type (e.g. black, dark blue) should be on a light coloured background (e.g. white, pale pink, pale yellow).

Generic Name

Capsules

10 mg

28 Capsules
Using colour

Colour can help correctly identify, classify and differentiate between medicines. However, relying totally on colour to do this can lead to mistakes. This is because colours look different in different lighting conditions; people have different perceptions of colour; and colour blindness means some people see colours differently.
If a single colour is used for a whole range of medicines it can be difficult to identify a specific product. This is compounded if medicines with similar names are stored next to one another.

If a patient is prescribed a number of medicines with the same colour packaging, there is an increased chance of them taking the wrong one.

**Colour coding**

A colour coding system allows people to memorise a colour and match it to a function. However, creating a shortcut for identifying a medicine without having to read the label can lead to mistakes. No colour coding system could differentiate between all 12,000 medicines authorised in the UK. Furthermore, in the absence of a national or international colour code, any UK system could become a barrier to trade.

One exception is the medicine warfarin, which is universally colour coded brown for strengths of 1mg, blue for strengths of 3mg, and red for strengths of 5mg.

**Colour differentiation**

Colour differentiation is the recommended method. It uses colour to make features on a packet stand out or to help distinguish one item from another. The chosen colour is not associated with a particular feature. It is important that there is no pattern in the colour scheme.
Issue

Colour differentiation is inadvertently associated with a particular feature.
Recommendation
Use colour differentiation to highlight information

Do not colour code packaging.
Use colour to distinguish between, for example, different strengths of the same medicine and between similarly named medicines.
The use of colour does not help distinguish between products in a manufacturer’s range.
Recommendation
Use opposing, meaningless colours

Use opposing, meaningless colours to distinguish between medicines with similar names in a manufacturer’s range. An awareness of users with limited colour perception should be developed.

Generic Name One
Tablets
10 mg
28 Tablets

Generic Name Two
Tablets
10 mg
28 Tablets

Generic Name Three
Tablets
10 mg
28 Tablets

Generic Name Four
Tablets
10 mg
28 Tablets
Design recommendations for primary packaging
Blister strips are commonly sealed with reflective foil. Glare can easily be caused by light reflecting on the foil. This can reduce the legibility of any information printed on the foil. If type is in a light colour or lightweight font, legibility can be further reduced.
**Recommendation**

*Use non-reflective foil*

---

<table>
<thead>
<tr>
<th>Generic Name 10 mg</th>
<th>Generic Name 10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 mg</td>
<td>10 mg</td>
</tr>
<tr>
<td>10 mg</td>
<td>10 mg</td>
</tr>
<tr>
<td>10 mg</td>
<td>10 mg</td>
</tr>
<tr>
<td>10 mg</td>
<td>10 mg</td>
</tr>
</tbody>
</table>
Blister strips are taken out of the secondary packaging to access the medicine and may not be returned. Single blister pockets, which hold one dose of the medicine, can be cut from the strip leaving insufficient information about the medicine. If the name and strength are printed across the entire blister strip, the text is damaged when the medication is removed.
Recommendation
Put medicine name and strength clearly on each pocket

The medicine name and strength should appear on each pocket of the blister strip. If the size of the pocket is too small, the information should be repeated in a pattern across the entire strip.
Legibility can be reduced by the combined effect of the foil material, a small type size and a background colour that does not sufficiently contrast with the type colour.
**Recommendation**

Create a strong contrast between type and background colour

Type colour should contrast strongly with the background colour. For example, black or dark blue type on a white, pale pink or pale yellow background. If text is reversed out of a background colour, use a bold typeface.
Blister strip

Issue

Small type size and a lightweight font on a foil background impairs legibility. Small type sizes are easier to read when set in a heavier weight typeface.
Recommendation

Use bold or semi-bold type

Use bold or semi-bold type and avoid lightweight type. It is important to note, however, that too much bold or semi-bold type can also impair readability if in a very small point size.
Patients taking more than one medicine, or the same medicine in two or more strengths, must be able to identify which blister strip belongs to which packet because the prescription instructions are attached to the secondary packaging.

Mixing packages and blister strips up could lead to the patient taking the wrong medication or even overdosing.
Recommendation

Match the styles of primary and secondary packaging

A product's primary and secondary packaging should have an identical or linked visual style created through, for example, colour.
Further reading
Books


Designing for patient safety: a scoping study to identify how the effective use of design could help to reduce medical accidents. Robens Centre for Health Ergonomics at the University of Surrey, Engineering Design Centre at the University of Cambridge and Helen Hamlyn Research Centre, 2003


Papers and articles


Almus – drug packaging case study, Design Council, London, 2004


Always read the leaflet: getting the best information with every medicine, Committee on Safety of Medicines, Working Group on Patient Information, The Stationary Office, 2005


Building a safer NHS for patients: Improving medication safety, Department of Health, London, 2004


Drug name confusion: evaluating the effectiveness of capital (‘Tallman’) letters using eye movement data, Filik R., Purdy K., Gale A., Garrett D., Applied Vision Research Unit, University of Derby, Elsevier Ltd., UK, 2004

A guideline on the readability of the label and package leaflet of medicinal products for human use, European Commission, Belgium, 1998

Improving the design of healthcare products and systems to improve patient safety, EU Patient Safety Working Group, National Patient Safety Agency, 2005

An information design approach to labelling, van der Waarde K., Belgium, 2005

Labelling medicines effectively, a briefing note to the WHO, Sless D., Communication Research Institute of Australia, 2003


Medication errors and the judicious use of colour on the labelling of medicines, Filik R., Purdy K., Gale A., Applied Vision Research Unit, University of Derby, UK, 2004

The packaging and labelling of solid oral medicines, Ward J., Clarkson J., Buckle P., A report to the NPSA, 2004


Report to the committee on safety of medicines from the working group on labelling and packaging of medicines, UK, 2001

Safer by design: designing for healthcare, Menzies Lowe C., National Patient Safety Agency, 2004

See it right, Royal National Institute of the Blind, London, 2001

A spectrum of problems with using colour, medication safety alert, 13 November 2003, Institute of Safe Medication Practice, Huntingdon Valley, USA, 2005

Tall letter writing of generic CephALOSPORine names, Lyftingsmo S., Elverum, Norway, 2003

Use of colour on pharmaceutical product labels, labelling and packaging, Public Hearing Department of Health and Human Services, Food and Drug Administration, Rockville, USA, 2005

Which pill when: medicine packaging that aids compliance in taking prescribed drugs, Mawle R., McGinley C., Helen Hamlyn Research Centre, Royal College of Art, London, 2004

Websites
The Association of the British Pharmaceutical Industry www.abpi.org.uk
Almus Pharmaceuticals www.almus.com
Design Council www.designcouncil.org.uk
Helen Hamlyn Research Centre at the Royal College of Art www.hhrc.rca.ac.uk
Stein Lyftingsmo’s personal website www.lyftingsmo.no
Brian Parkinson’s personal website www.makingsense.co.uk
Medicines and Healthcare products Regulatory Agency www.mhra.gov.uk
National Association of Boards of Pharmacy (US) www.nabp.net
National Patient Safety Agency www.npsa.nhs.uk
Patient Packaging Audit www.patientpacks.com
Pharmacy Choice www.pharmacychoice.com