Criteria and ingredients for successful patient information

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Three criteria are considered for designing patient information both printed and displayed on computer screens: readability, usability, likeability. These criteria relate to the ingredients necessary to support people using patient information, as they seek to find the answers to questions, understand the intended message, and interpret that understanding in relation to their own circumstances. Achieving successful designs for patient information may be costly but communication failures could have even higher costs.

Empowering patients to make informed choices requires evaluating how successfully specific communications achieve their goals. A variety of criteria can be used when designing information for patients, whether printed materials (such as labels on medicine containers), or information from the Internet viewed on computer screens, or research summaries. Evaluation needs to consider, as a minimum, how readable, usable and likeable the material is. Readability criteria focus on the text, seeking to capture the ease with which the message can be understood. Usability assessments ask how easily people can refer to the information either to answer questions or to follow procedures. Likeability is concerned with whether or not people will choose to view the information. Meeting these three criteria is essential because it is a waste of time to succeed on only some — e.g. to create a message that could be understood, but find patients were put off reading by the colour or size of the text.

Readability and comprehension

Computers make it easy to apply readability formulae to a text, which is perhaps among the reasons why their popularity has continued in spite of their shortcomings. More than 100 readability formulae exist. This shows that people want such an assessment tool, but seem unhappy with those produced so far. The main ingredients of readability formulae are word length and sentence length. People will usually understand short words more easily than long ones, yet patient information leaflets contain words such as ‘reconstitution’ and ‘suspension’. As with most general rules there are exceptions. Technical terms can be short but unfamiliar (e.g., stent); but such problems will be undetected by readability formulae. As sentences become longer they offer authors more opportunities for confusing readers, but even relatively short advice, e.g. ‘Do not repeat dose more frequently than four hourly’ can be simplified by writing ‘Allow at least four hours between doses’.

Formulae ignore syntactic structure. Therefore scrambling the word order does not change the readability score for a text, although it makes a big difference to people’s ease of understanding. Formulae can be applied to paragraphs but do not cope well with lists, tables, and diagrams. Even for paragraphs, revisions based on formulae only fine-tune the author’s text, rather than detecting the need for major restructuring of the material or the inclusion of important missing information. Readability formulae are helpful in alerting information designers to potential pitfalls, and often they are available cost-free and time-free as part of a word processing package. Nevertheless they can be false friends because they miss much that is crucial to successful patient information.

Ask the audience

Clearly there is a need for an assessment tool with a broader range of constituents than readability formulae have. A better tool would include legibility issues, not just for the visually impaired but for members of the general public who have left their glasses at home, or who are trying to read the information in poor light. This tool would also check vocabulary together with the complexity and tone of the text. Would it suffice just to ask members of the target audience to comment on the material? Checking vocabulary can require ingenuity because asking people to read information and then say if they understand it often yields little information. People may fear showing themselves to be stupid if they say they encountered problems, so they claim to understand. Asking them how likely it is that a specific target group would understand (e.g., school leavers with no exam passes) can be one way round this. Sometimes people may feel that it is impolite to criticize, so they too say that all is
well. Stressing the desire to improve the material can help to overcome this.

Asking people questions about what they have read can offer authors insights into readers’ interpretation of their message, but there is a need to take care that the questions cannot be answered from the text without any real understanding. After reading a leaflet saying ‘Take the tablets with water or use the tiddleywink method’. Most people will be able to answer the question ‘How should you take the tablets when no water is available?’ Although they can reply ‘Use the tiddleywink method’ they may not know what this method involves. One way of circumventing this is through the use of scenarios for which interpretation of the message is required in order to say what a character in the scenario should do.

Asking people about the medium in which they wish to receive information can reveal strong preferences which vary across medical topics. In an unpublished study we asked 189 women whether they wanted printed, video, or audio information about a range of medical topics. We found that 88% wanted printed information about topics such as childhood vaccinations, but this fell to 43% for strokes, and 32% for speech impairments where video was felt to be more useful. Asking the audience certainly has a useful part to play in making design decisions about patient information.

Usability
Usability techniques are important assessment methods because they offer a broad approach which typically monitors performance in a range of tasks for a variety of users.6,7 The Communications Research Institute of Australia has developed a usability technique known as Performance Centred Design.8 They encourage information designers to specify what people should be able to do with the information (e.g., 80% of readers should find ‘side-effects’ in ten seconds). Redesign takes place until these targets are met. This method is more likely to achieve communicative success than relying on a simple formula or asking readers general questions, but again there are limitations. Usability methods can show where people have problems with the material, but may not detect missing information that people wanted. If usability testing is undertaken in the laboratory, crucial features of daily life may be overlooked. For example, a medicine may specify that it should be taken at breakfast, but is this a time of day or a meal? If you do not have breakfast, when should you take the medicine? Usability studies with paid volunteers may also overlook people’s unwillingness to read. Usability measures have fewer limitations than readability formulae, but they require more skill and more time from the author or information designer, or both. Hence they appear to involve greater costs, but unsuccessful communications also have costs.

Likeability
Even if the material can be used easily, the design effort is wasted if people dislike its appearance and so postpone reading. Likeability considers the tone and aesthetics of the document, the use of space, and the integration of text and graphics. In a small-scale study (unpublished) we found that graphics improved the appearance of a healthcare leaflet. Fifty-two adults read a leaflet about heart care and used it to answer questions. They then gave it marks out of ten for appearance. Half the leaflets had graphics which were cartoons flagging the topic of the page (Figure 1). These leaflets received higher ratings than those without graphics. A subsequent study, using a published leaflet on back pain, showed not all graphics are welcome, particularly those that disrupt the flow of text on the page as illustrated in Figure 2.

Likeability assessments also have limitations. Because they rely on subjective opinion, disagreements may arise. People can find it difficult to divorce assessments of the content from design features. However, in developing tools for assessing video materials it was shown that separate measures can be obtained if people understand which

![Figure 1. Cartoon graphics similar to this, gave enhanced ratings for the appearance of the page.](image-url)
aspects of the material they are assessing. Commenting on the relative strengths and weaknesses of two alternative versions of the same material may be easier than responding to just one version.

If successful communication depends on the information being readable, usable and likeable, how can these different criteria be integrated during the process of design? This integration becomes easier once it is appreciated how people read and are influenced by information design.

Patients as readers

Authors of patient information are not creating a monologue which readers will follow linearly. Rather they are providing the answers to a question-and-answer dialogue initiated by readers. As a consequence, reading is often non-linear, with readers jumping about looking for the answers to questions. For patient information the word ‘reading’ embraces diverse activities including: searching for information (which may involve scanning and filtering out material thought irrelevant); understanding the intended message (which may require re-reading, or deciding whether this is really the information being sought); and applying the knowledge gained to the problem in hand (for which people may need to remember the material, draw inferences to fit local circumstances and plan a sequence of actions).

Designers are increasingly aware of the need to help people with sensory and cognitive disabilities understand information. However, cognitive disability is not only a chronic condition affecting a minority of the community, but has acute manifestations to which many people fall prone through circumstances as diverse as a heavy cold, a merry celebration, or too little time. So good design potentially benefits us all.

Design and adherence

After readers have found information thought relevant to their query, and after having understood the author’s
message, they engage in a variety of interpretative activities. They understood that the author said the tablets should be taken with water, but if that is not convenient they will decide whether this really matters. In the USA, 125,000 people a year die as a result of non-compliance with medical instructions. Non-adherence is not deviant behaviour but characterizes how everyone deals with information sometimes. One familiar example: the file labelled Read Me First that often appears during software upgrading is noticed but not necessarily responded to because people think they can guess what it says or doubt the relevance of what it will say to their present agenda. Readers motivate their reading and interpret their understanding of what they read in the light of their own agendas. Nevertheless there is evidence that information design can influence the frequency of adherence to instructions.

In an ingenious laboratory study, volunteers were taken into an empty room having a wooden chair and miscellaneous items on a bench. They were asked to apply sealant to the chair from a tin on the bench. All necessary tools and equipment were provided in the room, and the instructions were on the tin of sealant. When the instructions said ‘Use in a well ventilated area’ only 20% of participants opened the window, but this rose to 55% if the instructions were more explicit and said ‘Open the window… before applying the sealant’. Similarly, only 30% of participants put on the goggles lying on the bench when the instructions said ‘Avoid contact with eyes’, but this rose to 80% when the instructions were changed to ‘Wear goggles when applying sealant’. So the design of instructions can clearly make a big difference to people’s adherence.

When taking medicines, people will guess the answers to their questions if none are provided. The label says ‘Not for children under 12’ but was that author thinking of age or size of the average 12 year old? The tablets are not to be taken with alcohol, but does that lunchtime drink have any relevance to someone on their way home from work? Patient information leaflets do not have the space to cover all possible contingencies, but at times just a little more information could reduce the guessing factor. Instead of just saying ‘Take with water’ it would not take much more space to say ‘Take with water or other cold, non-alcoholic drink.’ The longer version is much more informative, showing that shorter is not always better.

Conclusions

Simple design guidelines will never be adequate for patient information because achieving success often means resolving design conflicts. Successful compromises need to be based on a broad and detailed knowledge of design options and their consequences for readers. Design expertise is a craft skill that is honed by training and experience of the diversity of contexts in which the information will be used and the mix of audiences being reached. Information providers need to address readers’ lack of knowledge about a topic and also their misunderstandings – perhaps arising from misinformation they have obtained elsewhere because increasingly patients check the World Wide Web for information. The design assessment must extend beyond a focus on the text and its usability and must include people’s interpretation of the information in social contexts, i.e., in their daily lives. Creating successful communications means going beyond readable, usable and likeable. This may seem costly but any adequate cost-benefit analysis must weigh these costs against those associated with communication failures. It is not cost-effective to produce a leaflet or a web page cheaply if few patients bother to read it, or if those who do misunderstand it. As patients become increasingly aware of their legal rights to be adequately informed, organizations responsible for producing information for the public

<table>
<thead>
<tr>
<th>Region surveyed</th>
<th>Outpatients</th>
<th>Inpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>87</td>
<td>82</td>
</tr>
<tr>
<td>Wales</td>
<td>89</td>
<td>85</td>
</tr>
</tbody>
</table>

Table 1.

Accuracy was greater when people used tables such as this where successive decisions flow down the page (NB: These are fictitious data). Readers select a column from row 1 (region), then from row 2 (patient), and the information they want is immediately below in row 3.

<table>
<thead>
<tr>
<th>Region surveyed</th>
<th>% satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>87</td>
</tr>
<tr>
<td>Wales</td>
<td>89</td>
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may find that under-funding appropriate design methodologies has adverse financial consequences. Not communicating successfully can also be costly.

References