

A minor headache?

This visual essay shows and describes the information about an ordinary pain killer. It discusses both the contents and design, and questions if this is the most appropriate way to communicate with a person who has a minor headache. The first part provides a step-by-step description. The second part summarizes the main patterns. The main conclusions are:

- the contents is incorrectly structured, repetitive, conflicting, and hard to apply.
- the language is confusing, vague, and at some points inappropriate.
- the visual design does not enable people to find and understand information.
- the information does not really support patients to make appropriate decisions.

These conclusions could be used as starting points for the development of information about ibuprofen that would really 'enable people to act appropriately'.

Part 1: What patients get to see

On a recent trip to England, I got a mild headache. Not something to worry about, just a bit annoying. I went into a pharmacy and looked for a pain killer. In the shop, I found the right shelf and the available selection of pain killers. I have taken Ibuprofen before, but I am unfamiliar with the brand and the form of long lasting capsules. I took a package and checked if this particular medicine would be suitable for me. I need to base some of my decisions on the information that is provided on the outer packaging. The figures below show this information. Could this medicine help to alleviate my headache?

- action: find shelf
- action: select package
- action: read details
- action: consider suitability

Figure 1. Six sides of the package. The braille on the back of the package (b) states: 'boots ibuprofen long lasting 200 mg capsules'. The dimensions are 86 by 71 mm. The height is 23 mm.



all 64%

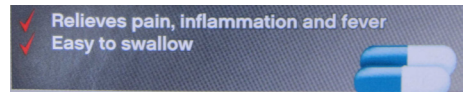
Question 1: What is this medicine for? ('The indications')

The front of the package does not really make clear where I should start reading. At least four items are equally prominent. None of these prominent ones - Boots pharmaceuticals; IBUPROFEN; LONG LASTING; 200 mg capsules - means very much to me. The text in the smallest type is the most relevant. It states: '*Relieves pain, inflammation and fever*' (figure 2). This is part of a list of two items. The visual design implies that both these sentences belong to the same group, and have a similar type of meaning. It suggest that, apart from considering the reasons to take a medicine, it is also important to consider the way in which I need to take it.

action: consider benefits

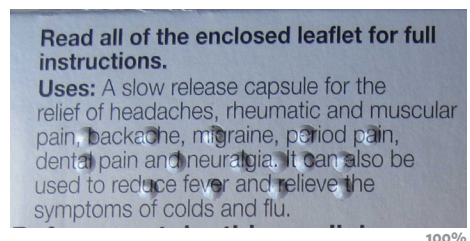
action: consider the way in which it is taken

Figure 2. The design suggests that 'Easy to swallow' is nearly as important as the reasons to take ibuprofen.



I'm not sure if '*Relieves pain*' also includes headaches, so I've to turn the package around. The first sentence on the back of the pack is '*Read all of the enclosed leaflet for full instructions*' (figure 3). I doubt if I can open the package in a pharmacy. Does this mean that I have to base my decision on incomplete instructions, and check the full instructions after I've bought the package?

Figure 3. It is fairly hard to read the text on the back of the package. The type is small, it is condensed, it is a light version, and there is very little space between the lines. The text is printed in black ink on a silver-grey background, the cardboard is shiny and reflective, and there are Braille dots are pushed right through the text which distort the letter shapes. According to the literature about legible typography, each of these factors influences legibility in a negative way. The combination of seven (!) detrimental factors make the text very hard to decipher.



The information on the pack continues (figure 3): '*Uses: A slow release capsule for the relief of headaches, rheumatic and muscular pain, backache, migraine, period pain, dental pain and neuralgia. It can also be used to reduce fever and relieve the symptoms of colds and flu.*'. If I compare this with the information on the front (figure 2) than it seems different. I can see the relation between different kinds of pain, but I don't see the term 'inflammation' in the list on the back. I don't see the 'relieves the symptoms of colds and flu' on the front either. Why does the information on the front of the package seem different from the information on the back?

action: consider benefits

action: ask pharmacist

I took the easy way out and I approached the pharmacist for advice. The pharmacist confirmed that I had made the right choice. Ibuprofen helps against minor headaches. She checked if ibuprofen was really suitable by asking if I had any stomach problems. If I had any I should use paracetamol; if not Ibuprofen would be a good choice.

action: read information

After purchasing ibuprofen and back in my hotelroom, I had a good look at the information. Information is provided on the package (figure 1), a package leaflet (figures 4 and 5), and two blister packs with 8 capsules each (figures 6 and 7).

The front of the package leaflet has a prominent logo of the pharmacy, and seems to have two headings (figure 8). The first one is small and states: '*Information for the user*'. I'm not sure why this is required and I wonder if this leaflet could potentially be for anyone else?

Figure 4. The front of the package leaflet.
The dimensions are 135 by 209,5 mm.

Typographical details:

- x-height: 1,50 mm
- linespace: 3,18 mm (= 9 point)
- ranged left. Linelength: 52 mm or 48 characters maximum

Total number of words: 1215

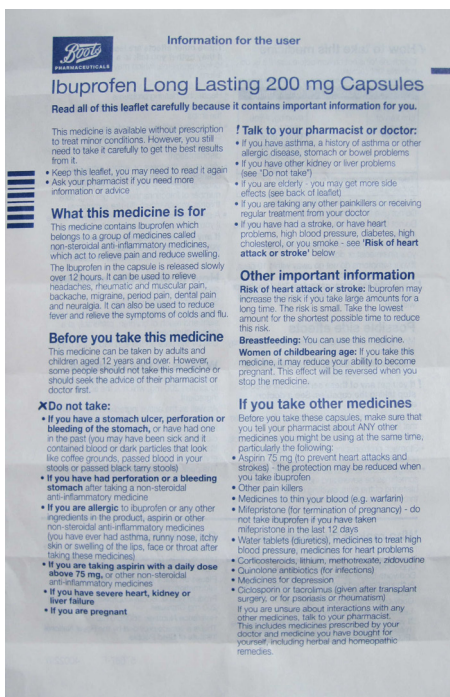


Figure 5. Back of the package leaflet.

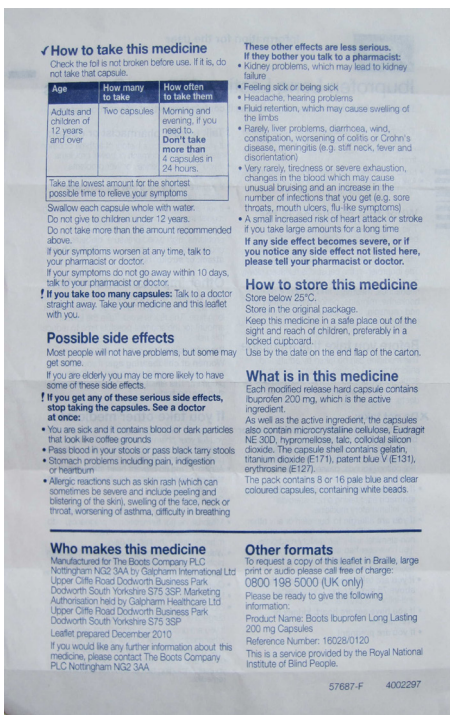


Figure 6. Front of a blister pack.



45%

Figure 7. Back of a blister pack.

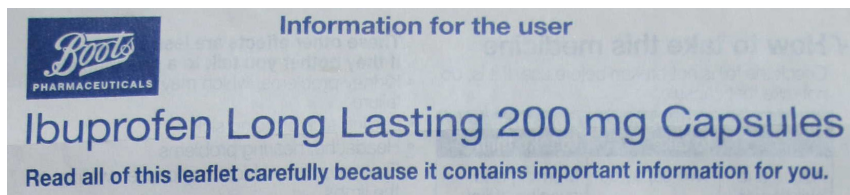


45%

45%

Figure 8. The two headings and a subheading relate the medicine, the patient, and the leaflet. The name of the medicine is most salient and the leaflet contains ‘important information’. There are two instructions for a patient: ‘to read all’ and ‘to read carefully’. The balance between medicine, leaflet and patient becomes evident: the medicine is most important, than the leaflet, and the patient comes last.

action: read information

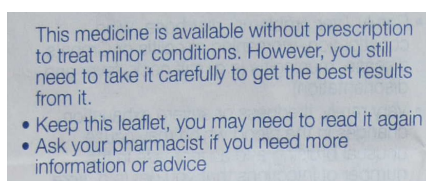


100%

There is a second heading which states the full name of the medicine: ‘*Ibuprofen Long Lasting 200 mg Capsules*’ (figure 8). The type size indicates that this is really the main heading. The following sentence reinforces the instructions of the back of the package: ‘*Read all of this leaflet carefully because it contains important information for you.*’ This seems slightly patronizing to me. I’ve got to read ‘*all of the leaflet*’, I’ve got to read it ‘*carefully*’, and they tell me that it is ‘*important for me*’. Those are usually things that I can decide for myself.

The patronizing tone continues in the first paragraph (figure 9). ‘*This medicine is available without prescription to treat minor conditions. However, you still need to take it carefully to get the best results from it.*’ Not only do I have to read the leaflet carefully, I also must take the capsules carefully. I’m not sure how to do either of these. The following sentences confirm that I’m stupid. ‘*Keep this leaflet, you may need to read it again.*’ Are there any other reasons to keep the leaflet? The text continuous: ‘*Ask your pharmacist if you need more information or advice.*’ It is strange to put this advice in the package leaflet, because this can only be read after the patient has opened the pack. I have not even started reading the text, and it is already suggests that I might need to go back to the pharmacist to get more information. At the same time, I wonder if there could be ‘more’ information. There are 428 words on the package and 1215 words in the leaflet. How much more could there be? If I need more information I might want to check a website, or make a phone call, or write an e-mail before I walk back to the pharmacy. Unfortunately, there are no websites, phone numbers or e-mail addresses on the package nor on the leaflet.

Figure 9. The typography of the leaflet shows a certain disdain for readers too. They typeface is condensed, light, and printed in dark blue ink. There is little space between the lines, and the paper is so thin that the text that is printed on the back shines through. Each of these factors reduces the legibility of a text if compared to an optimal design as it is suggested in the typographic literature.



100%

The first section of the leaflet ‘*What this medicine is for*’ starts with a long sentence about ibuprofen and the group of medicines (figure 10). It is not clear why these are so important that they must be mentioned first. Based on the title, I had expected something like: ‘This medicine relieves different kinds of pain. It also reduces fever, and relieves the symptoms of colds and flu.’ But the text in the leaflet prefers to describe the effects of a group of medicines ‘*which acts to relieve pain and reduces swelling*’. This seems to suggest that Ibuprofen has both these effect as well. If it really has, than it is surprising that ‘swelling’ is not mentioned on the outer package too.

action: reconsider benefits

Figure 10. The first sentence is 25 words long and uses an awkward ‘which-which’ construction. (In linguistic terms: Multiple embedded non-restrictive clauses. These are particularly difficult for poorer readers, and for those who are reading quickly.)

- There is a substantial amount of information in the paragraph that is unrelated to the heading.
- There are two paragraphs, separated by a bit of white space. This separates lines 1 to 4, and lines 5 to 10. Both paragraphs are about the same topic: why are they separated?
- The term ‘non-steroidal anti-inflammatory medicines’ confuses me. I don’t have an inflammation, just a headache. If this is relevant, it should be explained. If this is really important, than it might need to be on the package.

The text continues to explain that ibuprofen is released slowly over 12 hours. It is not clear if there is a difference between ‘*Long lasting*’ (figure 1a), ‘*Lasts up to 12 hours*’ (figure 1a), ‘*slow release capsule*’ (figure 3), and ‘*The ibuprofen in the capsule is released slowly over 12 hours*’ (figure 10). What is released slowly? The capsule or the Ibuprofen? It seems that the ibuprofen in the capsule dissolves over a period of up to 12 hours. It does not seem necessary to use four different descriptions to explain that.

The third and fourth sentence mention the reasons to take ibuprofen again. This is the same as on the package. So, if I combine all the indications into a single list, than ibuprofen can be used to:

- relieve different kinds of pain,
- reduce fever,
- relieve inflammation,
- reduce swelling, and
- relieve symptoms of colds an flu.

I find it odd that items of this list are mentioned in three different places. I only need something for a headache. This is now described as a specific type of pain, and I get the treatment for another four indications as well. Did I buy the wrong stuff? Isn’t there a medicine that just treats headaches? I really don’t need the rest.

action: reconsider purchase

Question 2: Who is it for? Can I use it? (‘contra-indications and warnings’)

In the section ‘Before you take this medicine’, there are two lists. The first mentions groups of people who should not use Ibuprofen at all (‘Do not take:’). A second list describes situations in which a patient should seek the advice of a pharmacist or doctor before taking Ibuprofen. I expect that it might be beneficial for me to check both lists to see if I any of these apply to me.

The back of the package and the leaflet mention six things that I must consider before I take Ibuprofen (figure 11). These are mentioned under the heading ‘*Do not take:*’. The list in the package leaflet (figure 12) is identical to the list on the back of the package. In figure 11 and 12, these are indicated by numbers. After some careful reading, I can only be sure about the first and the sixth item: I don’t have those. I’m not so sure about the other four.

action: consider warnings

What this medicine is for

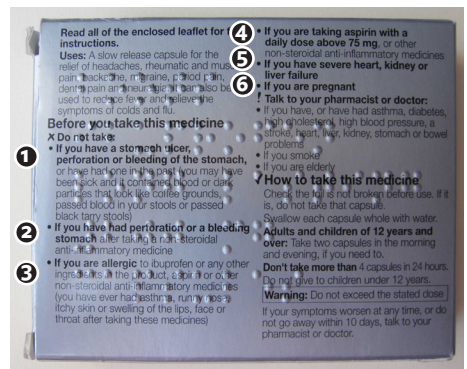
This medicine contains Ibuprofen which belongs to a group of medicines called non-steroidal anti-inflammatory medicines, which act to relieve pain and reduce swelling.

The Ibuprofen in the capsule is released slowly over 12 hours. It can be used to relieve headaches, rheumatic and muscular pain, backache, migraine, period pain, dental pain and neuralgia. It can also be used to reduce fever and relieve the symptoms of colds and flu.

100%

Figure 11. The outer package and the package leaflet provide the same six bullet points advising not to take ibuprofen. Four bullets are a bit unclear:

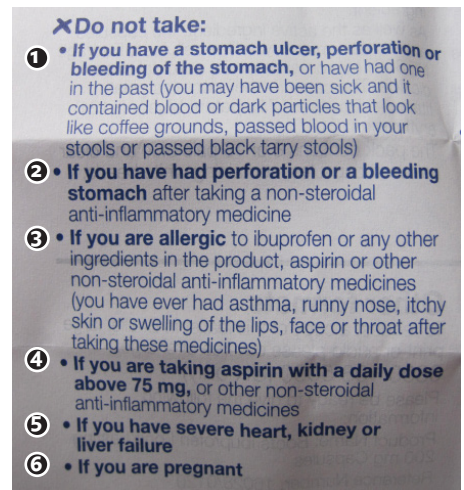
- Bullet 2: Could ibuprofen - as part of this group - *cause* perforation and a bleeding stomach? Is this a potential side effect? And is 'a bleeding stomach' the same as 'bleeding of the stomach' described in bullet 1?
- Bullet 3: I need to check if I am allergic to ibuprofen or if I am allergic to any of the other ingredients. Unfortunately, these 'other ingredients' are not mentioned on the package. They can only be found in the leaflet. I can't find out what 'the other ingredients' are when I'm purchasing ibuprofen.



65%

Figure 12. The package leaflet.

- Bullet 3: I find it strange to mention aspirin as a separate medicine. I thought that aspirin belonged to the group of medicines that are called Non-steroidal anti-inflammatory medicines (NSAIDs). Why is it separated out?
- Bullet 3: I've got to recall if I ever got asthma, runny nose, itchy skin, or swelling of the lips, face, or throat? Are they trying to tell me that ibuprofen might cause these allergic reactions?
- Bullet 4: Do I take more than 75 mg of aspirin or of NSAIDs per day? These capsules are 200 mg each and I could take two capsules twice a day. That's 800 mg in total. Would there be a dangerous difference between 800 and 875 mg? Why would 75 mg per day - less than 10% - really matter?
- Bullet 5: Do I have a severe heart, kidney, or liver failure? Fortunately, I don't have any of these failures, but how can I know if these are severe or not? Are there also minor liver failures, or negligible heart failures?

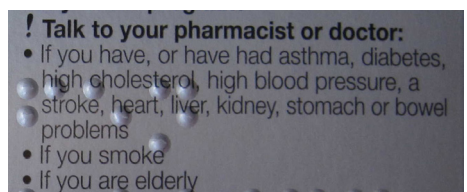


100%

action: consider asking advice from a pharmacist or doctor

Then there are a number of situations when a consumer should ask a doctor or pharmacist for advice. The outer package provides three points (figure 13). The package leaflet formulates this list slightly differently by spreading similar information over five bullet points (figure 14). In contrast with the list under 'Do not take' which was copied verbatim, these lists are not identical.

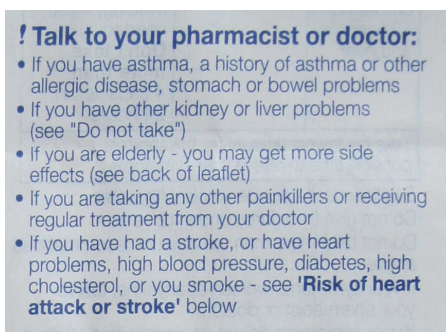
Figure 13. The sentence after the first bullet can be interpreted in many different ways. Some are plainly incorrect ('If you have had diabetes.' [some forms are incurable at the moment]; 'If you have a heart' or 'If you have had a stomach'.) It takes some effort to relate 'heart', 'liver', 'kidney', and 'stomach' to 'problems'. The use of a swung dash (-) would have been helpful.



165%

Figure 14. The precautions section in the package leaflet differs a bit from the information on the package.

- Should a patient/consumer be able to compare these lists?
 - I'm not sure if I can distinguish between 'if you have had asthma' (package) and 'If you have a history of asthma' (leaflet). I did not realize that asthma was an allergic disease either.
 - In these five points, there are three different ways of visually indicating a reference:
 - a. (see "Do not take")
 - b. (see back of leaflet)
 - c. - see 'Risk of heart attack or stroke' below
- There is no typographic consistency in the use of double quotation marks (or single?), roman (or bold?), and the use of brackets (or not?).



100%

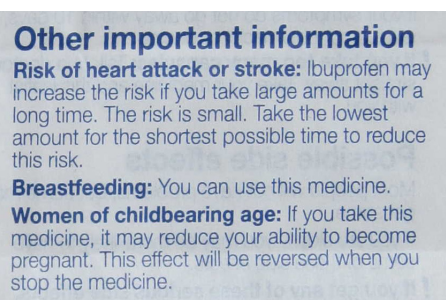
The text in the leaflet adds three things that do not appear on the outer package:

- other allergic diseases
- if you use any other pain killers
- if you receive regular treatment from your doctor.

The section '*Talk to your pharmacist or doctor*' contains three references (figure 14). Following these references does not really help me. The first reference points to the section '*Do not take*'. This section just adds '*severe kidney and liver failure*' (see figure 11, item 5). It is expected that I would be able to distinguish between '*severe kidney or liver failure*' and '*other kidney and liver problems*'. The second reference suggests that elderly can find more information 'on back of leaflet'. The text on the front is: '*you may get more side effects*' and the back says: '*you may be more likely to have some of these side effects*' (see figure 21). These sentences do not have the same meaning. 'More' or 'more likely' in comparison to what? Furthermore, 'elderly' seems fairly vague to me. Does this mean over 75 or over 90? And the third reference to '*Risk of heart attack or stroke*' provides general instructions that are applicable to all: '*take the lowest amount for the shortest possible time to reduce the risk*' (figure 15).

The remark about other pain killers worries me. I've got to know that there are other pain killers. Could there be steroidal pain killers? Or pro-inflammatory ones? This requires very detailed knowledge and the assistance of a doctor or a pharmacist becomes essential. The information is provided in a strange location as well. A bit further down, there is a special section '*If you take other medicines*' (figure 16).

Figure 15. The title '*Other important information*' does not give any indication about the contents of this section. It lists three unrelated items that require very different reactions. The first item suggests to take the lowest amount for the shortest time, the second states that there is no problem for breastfeeding mothers, and the third one warns of a possible unwanted effect.



100%

This is followed by two untreated items about breastfeeding and becoming pregnant. Although probably vital for female patients, I can't see how this information can be classified as 'other important information'. It's unlikely that women for whom this information is relevant will look at a section called 'Other important information'.

The next section in the package leaflet, after the section on 'other important information, provides advice about potential interactions with other medicines (figure 16). The first sentence states that '*Before you take these capsules, make sure that you tell your pharmacist about ANY other medicines you might be using at the same time, ...*'. This information only appears in the leaflet, and none of this information is mentioned on the package. This is surprising. In the first place, there is a section earlier in the leaflet that is headed '*Before you take this medicine*'. The information about other medicines should have been in there. Secondly, this should have been mentioned on the outer package too, because this is relevant before buying Ibuprofen. The general advice seems to be: 'if you take any other medicines, talk to your pharmacist.' It is not necessary to list these 'other medicines' because ANY medicine needs to be mentioned to the pharmacist.

Figure 16. Information in the leaflet is only available after purchasing the package and is likely to be read when patients are at ease. The advice to 'tell your pharmacist about ANY other medicines' comes too late. This is something that should have been mentioned on the package.

- The sequence of the items in the list is odd. Usually, these lists are in order of importance with the most important elements on top. Are aspirin and other pain killers really the most important?
- The grouping of the medicines in each item seems a bit strange too. Why put medicines against bipolar disorders (lithium), together with medicines against cancer (methotrexate), and HIV/AIDS (zidovudine)?
- The first line starts 'Before you take these capsules ...'. Shouldn't this be included in the section 'Before you take this medicine'?

If you take other medicines

Before you take these capsules, make sure that you tell your pharmacist about ANY other medicines you might be using at the same time, particularly the following:

- Aspirin 75 mg (to prevent heart attacks and strokes) - the protection may be reduced when you take ibuprofen
- Other pain killers
- Medicines to thin your blood (e.g. warfarin)
- Mifepristone (for termination of pregnancy) - do not take ibuprofen if you have taken mifepristone in the last 12 days
- Water tablets (diuretics), medicines to treat high blood pressure, medicines for heart problems
- Corticosteroids, lithium, methotrexate, zidovudine
- Quinolone antibiotics (for infections)
- Medicines for depression
- Ciclosporin or tacrolimus (given after transplant surgery, or for psoriasis or rheumatism)

If you are unsure about interactions with any other medicines, talk to your pharmacist. This includes medicines prescribed by your doctor and medicine you have bought for yourself, including herbal and homeopathic remedies.

100%

But the list of reasons not to use this product is not finished yet. There are two other reasons and these appear in different locations.

Reason 1. Do not take this medicine if the foil is broken. This is stated on the package and on the leaflet (figure 17). This is an odd way of describing 'medicine use', because it considers 'pressing a capsule through the foil' as 'use'. Replacing 'it' in the second sentence shows the problem: 'If the foil is broken before use, do not take that capsule' Of course the foil is broken before I take a capsule. There is no other way to get to the capsule. I miss a motivation for this instruction.

Figure 17. Identical information is given on the package and in the leaflet. This information is only relevant just before taking the capsules. It is not relevant in a pharmacy.

✓ How to take this medicine

Check the foil is not broken before use. If it is, do not take that capsule.

140%

✓ How to take this medicine

Check the foil is not broken before use. If it is, do not take that capsule.

100%

action: talk to pharmacist if I use other medicines

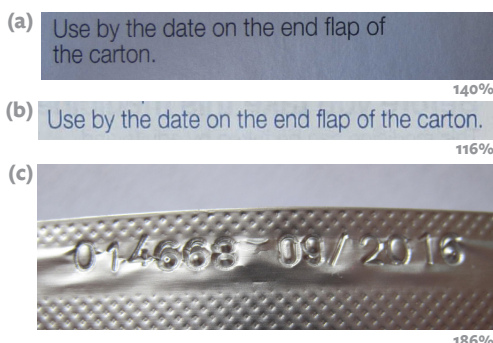
action: check blister

Reason 2. Do not take his medicine after the expiry date. The statement in the leaflet mentions: *'Use by the date on the end flap of the carton.'* (figure 18). I'm not sure if there is a difference between 'package' and 'carton'. The expiry date is also stated on the blister itself, but neither the package nor the leaflet refers to this. The reference would not be necessary if the description and the dates/batch number would appear together on the package.

action: check expiry date

Figure 18. References to the expiry date are made on the box (a) and in the leaflet (b). There is no explanation at the actual side where LOT and EXP are pressed into the cardboard (figure 1e). The batch number and expiry date on the blisterpack are not mentioned (c).

- The reference to 'end flap of the carton' is strange. In the section 'What is in this medicine' the text refers to 'the pack', not 'carton'.



To summarize this section, I can confirm that I don't have any of the medical problems and I do not use other medicines. I don't smoke, I'm not pregnant, and I'm over 12 years old. The foils are still intact, and the expiry date is in 2016. All seems fine, so I can take Ibuprofen. But the information has started to worry me. I can't answer some of these questions because I don't know if I have 'other kidney or liver problems', and I don't know if these are 'severe ones'. I don't know if I have 'high blood pressure', or 'high cholesterol.' I don't know what 'perforation' is, and I can't make a judgement 'why more than 75 mg aspirin is relevant' or 'what a severe failure' means. Personally, I have difficulties to distinguish between 'severe heart failure', a 'stroke', 'heart problems', and a 'heart attack'.

action: consider age

It took me quite a bit of time to consider all these points, and the presentation of the information does not really help me to make decisions. Furthermore, it is not clear why a lot of this information appears on both the package and in the leaflet, why some is partially copied, and why some information is not mentioned at all.

Question 3: How do I take it? (Instructions)

Until now, I have established that this medicine is suitable for me to treat my headache. I have also figured out that I'm not in one of the groups of people that should not take ibuprofen. Now the next task looms: how to take these capsules.

- The instructions are provided on the package and in the package leaflet. The package (figure 19) provides this as a list of separate sentences. The package leaflet (figure 20) shows a table. Again, much of the information is repeated, but it appears in a different order. For example, the box starts with *'Swallow each capsule whole with water'*. In the leaflet this is mentioned under the table.
- A warning in the leaflet-table (figure 20) says: *'Take the lowest amount for the shortest possible time to relieve your symptoms.'* (Is this in conflict with the instruction 'Take two capsules'? The lowest amount would be one capsule?) This warning does not appear on the package.
- On the package there is a text in a box with a warning. It states: *'Warning: Do not exceed the stated dose'*. The leaflet mentions *'Do not take more than the amount recommended above'*. Both of these warnings require some mental gymnastics to find out what 'the stated dose' or the 'amount recommended above' is. It seems that the statement: *'Don't take more than 4 capsules in 24 hours'* is clearer.

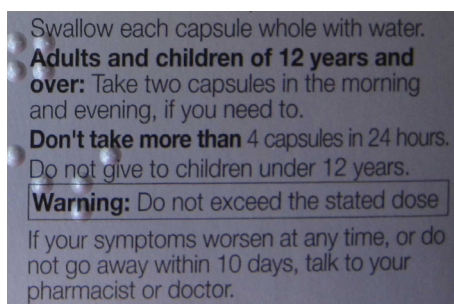
action: swallow the capsules

action: restrain intake

action: consider maximum

Figure 19. The package gives instructions in a list of six items.

- The use of bold type has different functions:
 - as a title: 'Adults and children'
 - to emphasize: 'Don't take more than'
 - as a visual cue to focus attention: 'Warning'
- The roles of titles, emphasis, and attention are not visually distinguished.



165 %

Figure 20. The Leaflet gives the same six items in a different order and a different format.

Age	How many to take	How often to take them
Adults and children of 12 years and over	Two capsules	Morning and evening, if you need to. Don't take more than 4 capsules in 24 hours.
Take the lowest amount for the shortest possible time to relieve your symptoms		
Swallow each capsule whole with water. Do not give to children under 12 years. Do not take more than the amount recommended above. If your symptoms worsen at any time, talk to your pharmacist or doctor. If your symptoms do not go away within 10 days, talk to your pharmacist or doctor.		

100%

Some questions remain:

- Why is it necessary to always take 2 capsules? Was it not possible to put 400 mg into one capsule? Or should patients experiment themselves what an effective dose is? And if that is correct, why is that not stated anywhere?
- Why is the age so important for the dosage? Are other factors, like asthma, taking other pain killers, and pregnancy less relevant? How does the weight of a patient, or the liver function affect the dosage?

Question 4: What are the side effects? (Potential risks)

The section 'Possible side effects' only appears in the leaflet (figures 21 and 22). The package itself does not mention any side effects. The manufacturer does not provide information about possible risks at the time of purchase. This might make me suspicious, or at least it makes me wonder.

The section starts with a reassuring sentence: '*Most people will not have any problems, but some may get some.*' This might be the most appropriate way of formulating, but the next sentences are worrying: '*If you get any of these serious side effects, stop taking the capsules. See a doctor at once:*' and '*If any side effect becomes severe*'. Both are in bold type to visually emphasize their importance.

Four remarks about the possible side effects.

1. The separation between 'serious side effects' and 'less serious side effects' does not give any indication how often these might occur. There are three indicators: "Rarely", "very rarely", and "a small increased risk". The odds of the other side effects are not mentioned. It is notoriously difficult to understand risks in relation to statistical frequencies, but for any risk-benefit decision these indications are essential. I think that kidney failure and heart attacks should not be classified as 'less serious' side effects. For me, they sound fairly serious. And if I get one of the serious side effects, I have to go to see a doctor immediately. If a less serious side effect - such as a heart attack or meningitis - bothers me, I've got to talk to a pharmacist. I would probably not follow this last advice and hope that a doctor can reach me quickly enough.
2. All five reasons for taking ibuprofen are also mentioned as possible side effects. By taking ibuprofen against pain, you might get stomach pain. If you take it to

action: consider risks

action: if a reaction occurs:
search if it could be a side
effect

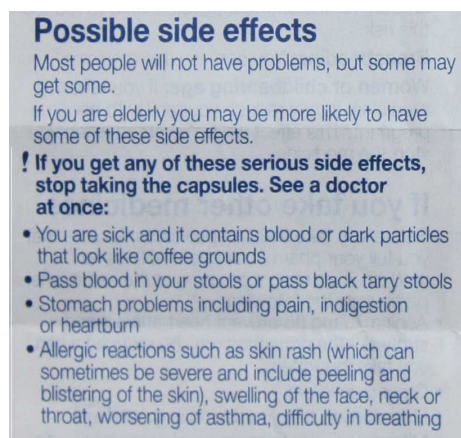
reduce fever, you might get fever. If you take it against a headache, you might get a headache. You can get flu-like symptoms as a side effect of a medicine that is taken to relieve the symptoms of cold and flu. You can increase the number of infections if you try to relieve an inflammation. And you can start swelling because you took ibuprofen against swelling. That is all very strange. And the advice is: *'talk to a pharmacist', or 'tell your pharmacist or doctor'*. I'm not sure if I would be able to distinguish between the headache I had before I took ibuprofen, and the headache that is described as a side-effect caused by ibuprofen.

action: if a possible side effect occurs: search for appropriate reaction

3. In the section 'other important information' (figure 15), it is advised to *'take the lowest amount for the shortest possible time to reduce this risk'*. The leaflet suggests that *'ibuprofen may increase the risk if you take large amounts for a long time'*. In this section it is phrased as *'a small increased risk'*. It is unclear 'what the normal risk is', it is unclear what 'large amounts' are, it is unclear what 'a small increase' is, and it is unclear what 'a long time' is. A similar vagueness can be recognized in the sentence *'if you are elderly you may be more likely to have some of these side effects'*. Words like 'may', 'more likely', 'some' give the impression that the manufacturer wants to reduce the number of reactions and comments by elderly people. This overuse of wavering terms does not really inform patients. It just seems to be there to avoid any responsibility or liability.
4. *'If you notice any side effects not listed here'* is an odd phrase. A patient can notice that something unexpected happens after taking ibuprofen. However, it is not possible for a patient to determine if this is a 'side effect' or not. Patients should tell about 'any symptom they worry about' that occurs after taking ibuprofen.

Figure 21. The Leaflet provides two lists of possible side effects: 'serious' and 'less serious'.

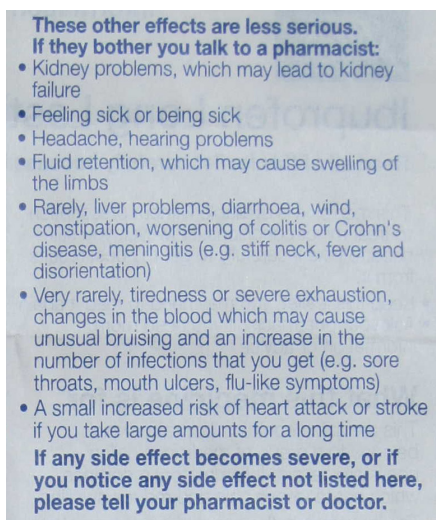
- The sentence 'See a doctor at once:' ends with a semi colon, but there is no continuation of the sentence.
- The first two bullets probably describe the symptoms of as stomach ulcer, a perforation, a bleeding stomach, or stomach bleeding. Strange that these terms are not mentioned.
- The potential effect for women of childbearing age (figure 15) is not mentioned as a side effect?



100%

Figure 22. The second list of side effects are 'less serious'.

- The first bullet suggests that kidney problems might be a possible side effect. How could I notice this?
- The sixth bullet point mentions 'changes in the blood'. I'm not sure how this effect could bother me. I might recognize some of the consequences, but I can't notice changes in my blood.



100%

These four points indicate that the lists of side effects are really unhelpful for me. I've got no idea if and how I should consider these as potential risks in relation to my minor headache. If any of these things would happen to me, it is likely that I would go to a doctor anyway. These lists also give me the impression that the benefits of taking ibuprofen are unreliable or to a large extent unknown. Ibuprofen might work, but there is a fairly substantial chance that it doesn't work at all. It could even trigger effects that are worse. The numerous irresolute and vague indications do not increase my confidence either. And the manufacturer (or the marketing authorisation holder?) does not accept much responsibility for this product by stating: *'if something happens and you need help, do not contact us; go to a pharmacist or doctor'*.

There are four final sections on the leaflet. The first two are:

- *'How to store this medicine'*. This section consists of four separate sentences that seem unrelated. The last sentence 'Use by the date on the end flap of the carton' seems odd here. It indicates the maximum storage time but does not tell what to do if this date passes. This should be mentioned in the section 'Do not take: after the date on the end flap of the carton'.
- *'What is in this medicine'*. These are the 'other ingredients' that are mentioned on the outer package (figure 9, point 3). Patients with allergies should be able to check these before they buy a medicine.

The last two are separated by a horizontal rule (figure 5).

- *'Who makes this medicine'*. The package mentions: *'If you need more advice ask your pharmacist'*. The leaflet repeats this in the second bullet *'Ask your pharmacist if you need more information or advice'*, but it also states at the end: *'If you would like any further information about this medicine, please contact The Boots Company PLC.'* Asking a pharmacist seems a lot more convenient in comparison to writing a letter to Nottingham. What is more surprising is that there are no phone numbers, no e-mail addresses, no websites, nor any indication of social media. Although there is a date on the leaflet 'prepared December 2010', it does not provide any digital support.
- *'Other formats'*. The Royal National Institute for the Blind can provide copies of the leaflet in Braille, large print, or audio.

After reading and considering this information on the package and in the package leaflet, I should now be able to take ibuprofen. I'm aware of the risks and benefits, and I know how much and how to take the capsules. I just should have confidence that ibuprofen will alleviate my headache, without causing any adverse effects.

Part 2: Is this an example of effective communication?

The initial question of this essay is if this combination of information is the most appropriate way to communicate with a person who has a minor headache. Does the information on the packaging and the leaflet really enable me to act appropriately?

There are many different ways to consider the information. From a legal perspective, this information is flawless. It conforms to all relevant regulations and guidelines. And from an economic perspective it is fine too. The costs of producing a complex combination of capsules, packaging and information is financially viable. However, the step-by-step description indicates that there are fairly severe problems with each section from the perspective of a patient-consumer.

1. It turns out that Ibuprofen can be used for several reasons, but these indications are not mentioned together. It is not very clear in which situations ibuprofen could be most beneficial.

action: store safely
action: check expiry date

action: check the ingredients

action: asking questions

2. There is a substantial amount of information that needs to be checked before I take ibuprofen. My situation, my medical history, any other medicines I take, and any other medical treatment needs to be considered. Some of this is mentioned on the outer pack and in the leaflet, other information is only mentioned in the leaflet. Much of it is unclear or vague, and it is therefore worrying.
3. The dose of ibuprofen seems to be one-size-fits-all. 'Take 2 capsules' every time regardless of weight, age, gender, and liver effectiveness? Is one dose always correct in every situation?
4. Ibuprofen could cause a range of side effects. It is strange that some of the side effects that ibuprofen could cause match exactly the same symptoms as ibuprofen might relieve. None of these risks are mentioned on the outer package. This makes it impossible to compare the benefits and the risks when purchasing ibuprofen.

The problems with each of the four information sections are even more severe because the unconventional use of language and visual design. It is likely that a detailed linguistic analysis will reveal many more issues, but I found some of the sentences very long, poorly structured, and hard to understand. Some of the text is patronizing ('it contains important information for you'), and the terminology is at some points inconsistent. Together with the frequent imprecise advice indicated by words like 'may' and 'could', and incomparable lists of risks and benefits, it is not easy for a patient to find a way through this information.

The visual design of this text does not really support readers either. The small typesize, low contrast, condensed and light letterforms make the text on the package and in the leaflet hard to read. But even when the text is deciphered, the visual presentation of the text does not support a comfortable interpretation. The information that is most salient is not the most important. Salient information attracts the attention, but this does not really help readers to find relevant information. For example the main heading '*information for the user*' and the subheading '*Other important information*' waste valuable attention. The sequence of the information follows the main steps of use, but this sequence is not very clearly marked. For example, the title '*Other important information*' disrupts this sequence. This leads to difficulties in interpreting and understanding information.

Consequence 1. It takes substantial time to read

The combination of an unconventional use of language, and an unsupportive visual design makes the information about ibuprofen hard to read.

- Some of the information on the leaflet and the package is repeated, some other information is not. If it is repeated, it is not always identical.
- The references to other sections are hard to follow and do not lead to more detailed information.
- Information appears under headings where I did not expect it. For example the text 'Before you take these capsules' (figure 16) is not under the heading 'Before you take this medicine'? This makes the information hard to find and confusing.

The package and the leaflet do not seem to be devised in a way that is helpful to increase my knowledge about ibuprofen.

Consequence 2. The information does not really support me to make decisions

The information on the package and in the package leaflet of ibuprofen does not optimally help me to use this medicine to alleviate my headache. The balance between the benefits and the potential risks is lost. The benefits are mentioned in three different locations in different words. And there are a lot more side effects than there are benefits. These are mentioned in the package leaflet only. It does not accurately

describe correct use, it does not help me to make decisions, and it does not stimulate appropriate reactions.

Consequence 3: The information is very hard to apply

After reading the information on the package and the leaflet several times, I'm still not sure how to apply some of the instructions. At some points, the information does not seem to take a practical situation into account. The package suggests to check the other ingredients, but these ingredients are only mentioned in the leaflet that cannot be read when the package is bought. I should talk to a pharmacist if a meningitis bothers me. There is no contact information such as an e-mail address, or a phone number or a website. And the information seems to point towards each other if a patient asks any further questions. These last points make me suspicious.

Main conclusion

The package and leaflet of ibuprofen do not really support patients to purchase, consider, and take this medicine correctly. The available information took me a lot of effort and time to read, it did not really help me to make decisions, and it did not support my activities. This lack of helpful support, together with the unclear responsibility for additional information ('ask a pharmacist' or 'ask the manufacturer'), and the complete absence of phonenumbers and digital resources is surprising in 2014. Most products for consumers score much better on these three criteria.

In order to make the information about ibuprofen suitable for patients, it might be necessary to shift the main focus from 'providing information about ibuprofen' to 'enabling patients to act appropriately'. Information for patients should not only adhere to legal requirements and consider financial motivations, but must start from the actual use by patients.

The margins of this visual essay mention the actions that a consumer or patient needs to undertake to take ibuprofen. These are the actions that need to be supported. Not all actions are equally important or relevant for all consumers. However, it should be possible to write and design information about ibuprofen in such a way that I can find the actions that are relevant to me, consider them, and undertake them safely and confidently.

Some limitations of this visual essay.

- I did not make a comparison between ibuprofen information in different European countries, no comparison with other ibuprofen packs, no comparison with the QRD template or regulations, and no internet search. It's just about one single medicine and one single user.
- In order to discuss and show these issues, I had to use a specific package. In this case made by Boots Company PLC and marketed by Galpharm Healthcare Ltd. I'm pleased to say that my headache disappeared very quickly without any adverse reactions. The pharmacist was helpful, friendly, and gave accurate advice. It is clear that the quality of the medicine itself is not related to the quality of the visual information.
- I am aware of the regulations, the guidelines, the registration procedures, the discussions with the regulatory authorities, and the difficulties of combining commercial-, marketing-, production-, ethical-, and legal requirements across Europe. However, the combination of all the requirements results in information about a simple medicine that is very hard to read and understand, not very convincing, and nearly impossible to apply.
- I did not look at the reasons and motivations for the text or visual design. Both are extremely carefully considered by many different groups of people. Each item will have been discussed over a substantial period of time. And the resulting package is really the best possible compromise within the different limitations.
- The photographs show the package and the package leaflet as patients see them. They have not been modified or changed in any way. The poor quality in contrast, colour, folding represents common usage as close as possible. High resolution images are available from the author.
- Most of the comments are not my own. These comments have been made by participants of readability tests and usability tests.