


## Recommendations

### 1. Using graphics

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><b>Recommendation</b></p> <p><b>“Graphics may be used to supplement numerical presentations in texts or tables.”</b></p> <p>Agreed: 11, Disagreed: 0, Abstentions: 0</p> <p><b>Quality of the Evidence:</b> Low quality</p> |
| <p><b>Comment on the recommendation:</b></p> <p>The recommendation refers to the comparison of supplementary graphic presentations in texts or tables with the numerical presentation only.</p> <p>Overall, no relevant effect on the cognitive outcomes could be shown in this comparison. In two out of six studies, a positive effect for using graphics was shown for the outcomes <i>understanding / risk perception</i>. One study showed a positive effect for using tables and three studies showed no effect. For the outcome <i>knowledge</i>, three out of seven studies showed positive effects for using graphics; the other studies showed no effects. Five studies showed no effects or no consistent effects for the outcomes <i>comprehensibility / readability</i>.</p> <p>For the affective outcomes <i>acceptance / attractiveness</i> one study showed a positive effect for using graphics. The results for the outcome <i>trust / credibility</i> (two studies) were inconsistent.</p> |                                                                                                                                                                                                                                |

## Summary of the findings

### Characteristics of the included studies


For this comparison, nine studies were included with a total of 9,019 participants. The sample sizes were between 106 and 4,685; the average age was between 36 and 61 depending on the target group. The studies were carried out in the USA (7-13) and Canada (14). The people included were healthy participants (7, 9, 10, 14), groups such as veterans (8), patients of both sexes (13) as well as special target groups for the respective information (11, 12, 15). The interventions consisted of information

(online or in paper form) about risk factors for illnesses (8), about benefits and risks of possible therapies (7, 11-13) or preventive measures (9, 15), about transfusion medicine (14) as well as information on the results of medical tests (10). Numerical data in text or tables were supplemented by various graphics.

### **Results for the relevant outcomes**

Overall, for the outcomes *understanding / risk perception, knowledge, comprehensibility / readability*, and *trust / credibility* no relevant and consistent effect could be shown (7-15). For the outcomes *acceptance / attractiveness* a positive effect for the use of graphics was shown (13).

## 2. Types of graphics

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p><b>Recommendation</b></p> <p><b>“If graphics are used as a supplement, then either pictograms or bar charts should be used.”</b></p> <p>Agreed: 10, Disagreed: 0, Abstentions: 3</p> <p><b>Quality of the evidence:</b> moderate quality</p> |
| <p><b>Comment on the recommendation:</b></p> <p>The Recommendation refers to the comparison of various types of graphics used for health information (e.g. pictograms, bar charts and pie charts).</p> <p>In this comparison, positive effects for using pictograms and bar charts could be seen for the cognitive outcomes <i>understanding / risk perception</i> (in one out of two studies) and <i>comprehensibility / readability</i> (in one out of two studies). In one out of two studies, a positive effect for the outcome <i>knowledge</i> was shown for using pictograms and pie charts. In the other studies, there were no statistically significant differences.</p> <p>Two studies showed a positive tendency towards bar charts and pictograms with regard to the affective outcomes <i>acceptance / attractiveness</i>.</p> |                                                                                                                                                                                                                                                 |

## Summary of the findings


### Characteristics of the included studies

For this comparison, a total of four studies with 2,978 participants were included. The studies were carried out in the USA (7, 13, 16) and Canada (17). The participants were healthy people (7, 17) or patients of both sexes (13, 16) with an average age of over 49 years. The interventions consisted of information about benefits and risks of possible therapies (7, 13, 17) or of information gained from personalized risk presentations (16). Various graphics were compared, including pictograms, horizontal and vertical bar charts and also modified pictograph (“sparkplug”) and “clock graphs”.

## Results for the relevant outcomes

No positive effects for using pictograms and bar charts were seen for the outcomes *understanding / risk perception* and *comprehensibility / readability* (7, 16, 17). Regarding the outcome *knowledge* no relevant difference was found between pie charts, pictograms and bar charts (7, 13). A positive tendency for bar charts and pictograms was reported for the outcome *acceptance / attractiveness* (13, 16).

### 3. Sorted and unsorted pictograms

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>Recommendation</b></p> <p><b>„If pictograms are used as a supplement, then sorted pictograms should be used.”</b></p> <p>Agreed: 9, Disagreed: 2, Abstentions: 2</p> <p><b>Quality of the evidence:</b> moderate quality</p> |
| <p><b>Comment on the recommendation:</b></p> <p>The Recommendation refers to the comparison of presentations with sorted and unsorted pictograms.</p> <p>In this comparison, four studies showed no consistent effect for the cognitive outcomes <i>understanding / risk perception, knowledge and comprehensibility / readability</i>. A positive effect when using sorted pictograms was shown in only one out of two studies concerning the outcome <i>knowledge</i>.</p> <p>With regard to the affective outcome <i>acceptance / attractiveness</i>, three studies showed a positive effect for the use of sorted pictograms. For the outcome <i>trust / credibility</i> only one study was available, which showed a positive effect for unsorted pictograms.</p> |                                                                                                                                                                                                                                    |

### Summary of the findings


#### Characteristics of the included studies

For this comparison, five studies were included with 6,923 participants, of which 6,202 took part in an online study (18). Patients of both sexes (4, 19), healthy people (17, 18) and the risk group smokers (20) were investigated. The average age was from 43 to over 50 years. The interventions consisted of information concerning possible treatment (4, 17, 18), presentation of the lifetime risk (19) and the presentation of findings from fictitious genetical tests (20). The studies were conducted in the USA (18, 19), Canada (17), Germany (4) and Great Britain (20).

## Results for the relevant outcomes

With regard to the outcomes *understanding / risk perception, knowledge and comprehensibility / readability* no consistent effect was shown (4, 17, 18, 20). A positive effect for using sorted pictograms was shown for the outcome *acceptance / attractiveness*. For the outcome *trust / credibility*, a positive effect was seen for using unsorted pictograms.

#### 4. Animated and static pictograms

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>Recommendation</b></p> <p><b>“Animated pictograms may be used as a supplement instead of static pictograms.”</b></p> <p>Agreed: 11, Disagreed: 0, Abstentions: 0</p> <p><b>Quality of the evidence:</b> moderate quality</p> |
| <p><b>Comment on the recommendation:</b></p> <p>The recommendation refers to the comparison of animated and static pictograms used in online health information.</p> <p>No distinct effect was found in the three included studies regarding the cognitive outcomes <i>understanding / risk perception</i> and <i>knowledge</i>. In one of two studies, a positive effect for the outcome <i>comprehensibility / readability</i> was shown when using static pictograms. The second study showed no difference.</p> <p>Regarding the affective outcomes <i>acceptance / attractiveness</i>, one study reported a positive effect for static pictograms, and for the outcome <i>credibility</i> a positive effect for animated pictograms was shown in another study.</p> |                                                                                                                                                                                                                                    |

#### Summary of the findings

##### Characteristics of the included studies

For this comparison three studies were included. In one study in the USA, 165 healthy people with an average age of 31 and 33 years, respectively, were examined. The intervention consisted of web-based information on the risks of disease and on the benefits and harm of preventive measures (21). Using two versions of animated presentations, the static pictograms were compared (changing between sorted and unsorted; revealing the pictogram by clicking on the fields).

Two studies were carried out online in the USA with 6,202 and 3,354 participants, respectively, with an average age of 49 years (18, 22). The interventions consisted of information on possible forms of treatment for a fictitious type of cancer disease. In one study, static pictograms were compared with presentations that were built up in


stages by clicking on the pictogram (22). In the second study, differently animated pictograms were used that were built up or altered automatically or by clicking on the pictogram (18).

### **Results for the relevant outcomes**

No consistent effect could be shown for the outcomes *understanding / risk perception, knowledge* and *comprehensibility / readability* (18, 21, 22). For the outcomes *acceptance / attractiveness* a positive effect was seen for static representations (19), and for the outcomes *trust / credibility* animated pictograms showed a positive effect (21).



## 5. Types of icon in pictograms

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p><b>Recommendation</b></p> <p><b>“Anthropomorphic icons or geometric icons may be used when pictograms are used as a supplement.”</b></p> <p>Agreed: 9, Disagreed: 1, Abstentions: 2</p> <p><b>Quality of the evidence:</b> low quality</p> |
| <p><b>Comment on the recommendation:</b></p> <p>The recommendation refers to the comparison of various types of icons in pictograms. Various geometric forms were compared with each other (e.g. blocks and dots), and geometric icons were compared with anthropomorphic icons (e.g. figures and photos).</p> <p>In this comparison, no effect could be shown for the cognitive outcomes <i>knowledge</i> (two studies: figurative vs. geometric; blocks vs. dots) and <i>comprehensibility / readability</i> (three studies: figurative vs. geometric; blocks vs. dots; shaded vs. unshaded). For the outcomes <i>understanding / risk perception</i>, a positive effect for using anthropomorphic icons was found in one of four studies. In the other three studies no difference was found between the groups (figurative vs. geometric; blocks vs. dots; shaded vs. unshaded).</p> <p>In three out of five studies, positive effects were seen with regard to the affective outcomes <i>acceptance / attractiveness</i> when using anthropomorphic icons. One study showed a positive effect for shaded blocks compared to unshaded ones. In a further study, no significant difference was found for blocks vs. dots. For the outcomes <i>trust / credibility</i> no effect was seen (figurative vs. geometric) in another study.</p> |                                                                                                                                                                                                                                               |

### Summary of the findings

#### Characteristics of the included studies


For this comparison five studies were included with a total of 2,232 participants. Healthy people (23, 24), students (25), patients of both sexes (19) and people with a low educational standard (26) were included, the average age being between 20 and

58 years. The studies were carried out in the USA (19, 23), Australia (25, 26) and Germany (24). The interventions consisted of representations concerning the benefits and harm of treatments (24, 26), survival rates (25, 26) and risks of diseases (19, 23, 24). Pictograms with various types of icons were compared: blocks and dots, shaded and unshaded, geometric and anthropomorphic, for example figures, human contours or photos.

### **Results for the relevant outcomes**

In one study a positive effect for anthropomorphic icons was recorded concerning the outcomes *understanding / risk perception* (23). In the other studies, no effect for the outcomes *understanding / risk perception, knowledge and comprehension / readability* was found, whether in the comparison between various geometric forms or in the comparison with anthropomorphic icons (24-26). Regarding the outcomes *acceptance / attractiveness*, a positive effect for the use of anthropomorphic icons was shown (19, 23, 24). No significant difference was seen for the comparison of anthropomorphic icons with geometric icons with regard to the outcome *trust / credibility*.

## 6. Simple and combined risk portrayals

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>Recommendation</b></p> <p><b>“Combined presentations or simple risk presentations can be presented in graphic form.”</b></p> <p>Agreed: 9, Disagreed: 2, Abstentions: 1</p> <p><b>Quality of the evidence:</b> moderate quality</p> |
| <p><b>Comment on the recommendation:</b></p> <p>The recommendation refers to the comparison of simple forms of presentation with combined forms of presentation (e.g. risk with or without treatment) by using bar charts or pictograms.</p> <p>For this comparison, no consistent effect for the cognitive outcomes <i>understanding / risk perception</i> and <i>comprehensibility / readability</i> could be shown in three studies. There is a positive tendency towards simple presentations. In one study no effect could be seen for the outcome <i>knowledge</i>.</p> <p>With regard to the affective outcomes <i>acceptance / attractiveness</i>, no consistent effect could be seen in three studies.</p> |                                                                                                                                                                                                                                           |

### Summary of the findings

#### Characteristics of the included studies

For this comparison, four studies with a total of 3,497 participants were included. The sample size was between 76 and 1,648 and the average age was between 20 and 59 years, depending on the target group. The studies were carried out in the USA (15, 27, 28) and Australia (25). Healthy women (15, 27, 28) and students were included (25). The interventions consisted of information about preventive and therapeutic measures for treating breast cancer (15, 27, 28) and about hypothetical survival rates depending on the treatment (25). Simple and combined presentations in pictograms (15, 25, 27, 28) and bar charts (27) were compared.

## Results for the relevant outcomes

For the outcomes *understanding / risk perception, knowledge, comprehension / readability* and *acceptance / attractiveness* no consistent effect could be shown (15, 25, 27, 28).