

Appendix G

Creating Visible and Readable Documents

Preparing accessible written materials requires three considerations: 1) text readability, 2) text visibility and 3) reading grade level. *Readability* refers to the ease that the person can read and comprehend the text. A document's readability depends on the number and types of words used in sentences, and sentence and paragraph construction. Text *visibility* refers to how easily the text can be seen. Font size, style and contrast are important components of visibility. *Reading grade level* indicates the person's average level of reading performance compared with the scores of a nationally representative sample. Most American adults with high school diplomas read at the eighth to ninth grade level, and a quarter of Americans read at the fifth-grade level.¹ Most health information is written at a 10th grade level or higher, which exceeds the skills of the average high school graduate.

How to Determine the Appropriate Print Size for the Client

The Warren Text Card (see section 4.1.2.6 and 4.1.3.1.4) helps you identify the appropriate font size for the client. Administer the test to identify the smallest line of print that a client can accurately and comfortably read wearing their typical eyeglasses. The left side of the chart provides three important numbers. The first column shows the Snellen equivalent (20/20, 20/40 etc.); use it to document the client's level of reading acuity. The middle column shows the size of print the client can read at a 16-inch (40cm) reading distance. It is shown in M (metric) units: 1M unit is = 1.454mm; 2M is 1.454mm x 2 = 2.908mm) and so forth. Knowing the Munit will tell you the exact size of text that can be read with that level of acuity. The final column on the right side of the chart shows the minimum number of diopters needed for the client to read typical **1M** print (the most common size of text print) at a 16-inch (40cm) distance.

Table 1 shows the Snellen acuity equivalent paired with the *approximate* point size the text font needs to be for a client with that acuity level (on the Warren Text Card) to read text. There are **many** factors that influence the relationship of Snellen acuity to font size including the font style and the reading distance. Table 1 provides a *starting place* for figuring out how large the print on your document needs to be for the client to read it. Trial this size print first and enlarge it from there. Keep in mind that most adults like to read print that is 3-5 points larger than the smallest size they can read. Once you have figured out the optimum print size, share it with the team to ensure that all printed materials provided to the client (instructions, labels, home programs...) are accessible.

Table 1: Conversion of Snellen Equivalent to Approximate Letter Point Size

Snellen Equivalent	Approximate Point Size	Reading Examples
20/20-20/25-20/32	4	Typical print in footnotes
20/40	6	Typical print in newspapers and magazines
20/50	8	

biVABA: Brain Injury Visual Assessment Battery for Adults

20/63	12	Books for grades 8-12
20/80	14	Books for grades 4-7
20/100	16	Newspaper sub-headlines, books for grades 1-3
20/125	18	
20/160	20	
20/200	24	Newspaper column headlines
20/250	30	
20/320	42	Newspaper sub headlines
20/400	48	

How to Create a Visible Document

The American Printing House for the Blind (APH) and the American Council of the Blind (ACB) provide excellent in-depth guidelines for creating visible print materials for clients with vision impairment. I strongly encourage you to download and carefully review their guidelines. **Table 2** provides a quick summary of key guidelines from these sources.

American Printing House for the Blind (APH)

[APH Guidelines for Print Document Design](#)

American Council of the Blind (ACB)

[Best practices and guidelines for large print documents used by the low vision community](#)

Table 2: Recommendations for Increasing the Visibility of Printed Materials.

Component	Recommendation
Print Size	Large print ranges in size from 16 point to 36 point. Font size larger than 36 point is OK for single word labels but difficult to read in a sentence.
Font	Avoid complicated, fancy, or italic font styles. Sans serif (block) print is generally recommended over serif type fonts. Examples include Arial, Courier, Tahoma, Lucinda, Helvetica, Calibri.
Letter Spacing	Avoid condensed fonts; look for fonts with good spacing between letters.
Case	A combination of upper-and lower-case words is more familiar and more legible than using all caps.
Contrast	White ink on black may be more legible, but black ink on white is more familiar and acceptable to the reader.
Line Spacing	Use a minimum of 1.25 spaces between lines of text or 25-30% of the point size.
Headings	Make headings larger and bolder to set them apart from the text.
Margins	Use wide margins-at least 1 inch.
Style	Do NOT use columns. Do NOT wrap text around images.

	Do NOT use divided words (e.g., splitting a word in the middle at the end of a line of text). Use extra white space to separate sections of the document.
Graphics	Provide high quality full color or black line art. Avoid shaded drawings. Do NOT overlay the graphic with text (e.g., place text on the graphic).
Paper Finish	Use paper with a matte finish; do NOT use glossy paper. White, ivory, cream or yellow colors provide the best contrast to black ink. Do NOT use dark colored paper.

How to Create a Readable Document

In addition to making the text more visible, you should make the text easier to read. Persons with vision impairment have to allocate more attentional resources to accurately decoding words, which can strain reading speed and comprehension.² The effort they put into decoding words can lower acuity reserve, which is the ability to read for longer periods of time without fatigue.² How text is formatted directly affects acuity reserve. Continuous text formatting requires the person to read through multiple sentences and paragraphs to comprehend the information. The quantity and close proximity of letters in continuous text requires more effort to decode words and drains the acuity reserve.^{2,3} In contrast, a document format comprised of lists and short phrases, sentences, and paragraphs, has less word density. It can be decoded in short bursts which puts less drain on acuity reserves.

The takeaway message from the research on acuity reserve is that “less is more” when creating a readable document. Aim to convey information using as few words and sentences as possible. Guidelines developed to help persons with low literacy understand print material provide a valuable resource for developing readable materials for persons with vision impairment. Several national organizations have launched initiatives to help health care professionals improve the readability of printed health information for patients with low literacy. The recommendations in Table 3 were compiled from the *Pfizer Principles for Clear Health Communication, 2nd edition*, the *Federal Plain Language Guidelines*, and the *CDC Simply Put-A Guide for Creating Easy-to-Understand Materials*. I strongly encourage you to download and carefully review these guidelines. Table 3 provides a quick summary of key guidelines from these sources.

[Pfizer Principles for Clear Health Communication 2nd edition](#)

[Federal Plain Language Guidelines](#)

[Simply Put A Guide for Creating Easy-to-Understand Materials](#)

Table 3: Recommendations for Increasing the Readability of Printed Materials

Component	Recommendations
Word Choices	<ul style="list-style-type: none"> • Use commonplace everyday words and replace multi-syllable words with simpler alternatives. For example, use <i>must</i> instead of <i>shall</i> and <i>do</i> instead of <i>perform</i>. An extensive list of simple words and phrases can be found at www.plainlanguage.gov • Use personal pronouns such as <i>you</i>. • Use action verbs. • Use the present tense. • Avoid undefined technical words and medical jargon • Use positive instead of negative words (for example, use <i>do</i> instead of <i>don't</i>). • Avoid abbreviations and acronyms.
Sentence and Paragraph Structure	<ul style="list-style-type: none"> • Use short sentences (15 words or less). • Keep paragraphs short (6 lines or less). • Avoid semi-colons (easily missed by a client with vision impairment). • Avoid double negatives-instead of “<i>don't forget to turn on the light when you enter a room</i>” use “<i>turn on the light when you enter a room.</i>” • Limit each paragraph to one main idea. • Include only what the reader needs to know. • Provide examples for difficult concepts. For example: “<i>move your head back and forth like a lighthouse to search the countertop</i>” • Be direct-instead of “<i>it's a good idea to try to keep cupboard doors shut to avoid accidentally running into them and hitting your head</i>”, say “<i>keep the cupboard doors shut</i>” • Put context first by stating the action needed followed by descriptive information. For example, instead of “<i>to avoid straining your eyes, rest every 15 minutes when you read</i>” use “<i>rest every 15 minutes when you read to avoid straining your eyes</i>”

References

1. Rudd, R. E. (2007). Health literacy skills of U.S. Adults. *American Journal of Health Behavior*, 31(Supplement 1), S8-S18.
2. Legge, G.E. (2007). Psychophysics of reading in normal and low vision. Mahwah NJ, Erlbaum.
3. Whittaker, S.G. & Lovie-Kitchin, J. (1993). Visual requirements for reading. *Optometry & Vision Science*, 70(1), 54-65.

How to Determine the Reading Grade Level for your Document

The word processing software on your computer will usually provide readability statistics on the documents that you create. The reported readability statistics include the number of words, paragraphs, sentences, sentences per paragraph, words per sentence, and characters per word that make up a selected passage. Microsoft Word also produces a Flesch-Kincaid Reading Grade Level for the document. These statistics help you determine what you need to modify to lower the reading grade level on your document (e.g., use shorter words, shorter sentences, fewer sentences per paragraph etc.). Most readability statistics are incorporated into the spelling and grammar tool found under the tools tab. **You can also use a readability website.** Type “Readability Statistics” into your search engine and choose a free site like **Readable.com**