Don’t Blind Them with Science: How to Write in Plain Language
What Is Plain Language?

- Accurate, grammatically correct, complete sentences
- Simplified, but not dumbed down; professional
- Your audience can understand first time they read it
- Clear, to the point

“Sign here to indicate you have no idea what you’ve signed.”

“Well, yes, I suppose I could explain the test results in ‘plain English’ — but then you’d know how sick you are.”
Why Plain Language?

• It’s the law: **Plain Writing Act of 2010**
  ○ Federal agencies *must* use clear communication that the public can understand and use

• NIH mission: to reach all Americans with health information they can use and *to communicate in ways that help people easily understand research results*

• What’s in it for you?  
  **Makes your writing more effective**
Why Plain Language?

If you can’t explain it **simply**, you don’t understand it well enough.

– Albert Einstein
When Plain Language?

- Grant applications (e.g., lay abstracts)
- Journals (e.g., Cleveland Clinic Journal of Medicine)
- Blogs
- Media relations
- Patient communications
- Licensing
Audience

- Identify the target groups who will read your document or site
- What will they do with it?
- What do they need to know?
- What is their existing level of knowledge?
- Look for examples!
Audience

American Public & Science Literacy

• ~20% can explain what it means to study something scientifically
• 80% “very” or “moderately” interested in science
• 50% say benefits of science strongly outweigh harm
• 53% very confident childhood vaccines are safe & effective (30% somewhat confident)
• 31% very confident that life evolved through natural selection (24% somewhat confident)
• 50% read below an eighth-grade level
Purpose

• Probably not just to “inform the reader”
• Most informative writing is meant to be persuasive (i.e., What message/argument are you trying to convey? What do you want to accomplish?)
• How urgent is your message? (e.g., “Stop! Drop! Roll!” v. “Think about portion control”)

6 Principles of Plain Language

1. Logical organization—draft a blueprint
   - How does your audience expect info to be presented?
   - What questions do you anticipate from your readers?
   - Chronological order often effective
   - Put general info up front, specifics later
   - Purpose/impact should be obvious

2. Personalize (when appropriate)
   - Your team/organization = “we”
   - Reader = “you”
   - Readers relate better when personalized, conversational
6 Principles of Plain Language, cont’d

3. Active voice
   - Passive voice can be confusing, awkward
   - Active more direct
   - Active cuts down on number of words
   - More interesting to read

4. Use common, everyday words
   - Avoid undefined acronyms or abbreviations
   - Use the same term consistently for a specific concept (e.g., brain tumor, brain cancer)
   - Define medical terms
   - Word order is important; place main idea first, then exceptions & conditions
6 Principles of Plain Language, cont’d

5. Short sentences, short paragraphs
   - One subject in each sentence; keep to 20 words
   - One topic sentence in each paragraph
   - Keep subject, verb, & object close together

6. Easy-to-read format/design
   - White space
   - Bullet points
   - Tables
   - DO NOT USE ALL CAPS
   - Emphasize appropriately (e.g., limit use of italics/underline/)
   - Appropriate fonts (serif v. sans-serif, personality)
6 Principles of Plain Language, cont’d

(More on fonts...)

Please don’t use Comic Sans—we are a Fortune 500 Company, not a Lemonade Stand.

EVERYTHING LOOKS OFFICIAL WITH TINY LEAVES AROUND IT

FALSE
It only works if you use a good serif font
Use lay terms

U-M Library: Plain Language Medical Dictionary

- 1100 terms; examples:

  - abrasion → cut, scrape, scratch
  - degenerative → weaken, worsen, decline
  - hypoglycemia → low blood sugar
  - intravenous → into the vein/blood stream
  - morbidity → diseased, sick, ill
  - prophylaxis → prevention, remedy, curative
  - thrombus → clot
Use lay terms

- NIH: [Plain Language Resources](#)
- CDC: [Plain Language Resources](#)
- National Patient Safety Foundation: [Words to Watch](#)
Avoid Clichés

- Ace up his sleeve/in the hole
- All in a day’s work
- As luck would have it
- Back to the drawing board
- Bait and switch
- Ballpark figure
- Be in the same boat
- Between a rock and a hard place
- Blind as a bat
- Boggles the mind
- Close to the vest
- Glass half full

- Missing the boat
- Moving the goalposts
- Plain and simple
- Poison the well
- Pushing the envelope
- “Rocket science”
- Save your breath
- Separate the wheat from the chaff
- Shooting fish in a barrel
- Sink or swim
- Slam dunk
- Thinking outside the box
Simplify language

- Positively impact = help
- Negatively impact = harm, hurt
- Sooner rather than later = soon
- On a daily basis = daily
- At this point in time = now
- Utilize = use
Simplify language

Cut out the emphatics

• It is generally agreed upon

• As we plainly see (clearly, obviously...)

• For all intents and purposes

• “Since the dawn of time...”
Simplify language

Clear, Concise Writing

When an endothermic vertebrate characterized by feathers and beak initiates pursuant activity in an expeditious manner, it exhibits a higher probability of procuring the objective of its endeavor, namely the Lumbricus terrestris.
Simplify language

Clear, Concise Writing

When an endothermic vertebrate characterized by feathers and beak initiates pursuant activity in an expeditious manner, it exhibits a higher probability of procuring the objective of its endeavor, namely the Lumbricus terrestris.

= The early bird gets the worm.
Use figurative language

“I would claim that when scientists themselves write for a general audience, their research is likely to improve. Why? Because writing sets free the oft-suppressed metaphor.”

- “Thought experiments”: thought mappings integral to generating hypotheses, theories, experiments
- Creativity at foundation (but less “rational”)

“A naked metaphor clearly shows the analogy's limitations, its capacity for misinterpretation and its productive extensions. It aids its creator as well as its audience.”

Use figurative language

“Analogies are like forklift trucks.”

Jacob Aron on science writing
Analogies

• Bacterial chromosomes are like spaghetti.
• Blood vessels are like highways.
• Bohr's model of the atom is like a bookcase.
• The camera is like the eye.
• A cell is like a factory.
• DNA is like a spiral staircase.
• A nuclear reaction is like falling dominoes.
• Electricity is like flowing water.
• The immune system is like the police force.
• Layers of the earth are like a peach.
• Building a protein is like building a house.
Analogies

Complex carbohydrates are polymers of sugars, often glucose. They digest much more slowly than pure glucose because of their large size and composition. Visually, a complex carbohydrate is like a **string of pearls** and a glucose is like a **single pearl earring**. To get a sense of how this size difference affects blood glucose levels, imagine dropping a 30 pearl necklace on the floor; the necklace stays in one piece. Now imagine dropping 30 pearl earrings on the floor. The 30 earrings will explode over a wide area. This is what occurs in your blood when you constantly eat high-glycemic index foods; it is a constant explosion of glucose into your blood that stresses your pancreas to produce insulin to lower your glucose levels.
Analogies

A cell membrane is like a cookie, an Oreo. It has two layers of lipids (the cookie wafers) separated by a center (the white cream). Antioxidants reside either outside the first cookie layer or inside the fatty cream layer.

(from a discussion of skin products and how antioxidant molecules are positioned within the cells that make up skin)
Analogies

A Neuron is like a Toilet

1) Both have a resting potential: water stored in the tank has potential energy due to gravity. 2) Both have an action potential: when you flush, an "impulse" is sent down the sewer pipe. 3) Both have a threshold: a minimum quantity of water is required to create a siphon. 4) Both have a refractory period: a toilet cannot be flushed while its tank is filling up.
Visual Analogies

10 μm crystal

72 m

1-ft pumpkin in Salt Lake City, UT

1455 mi

APS source

Ann Arbor, MI

0 m

0 mi

(Courtesy Janet Smith, PhD, University of Michigan)
Examples

**Before:**
High-quality learning environments are a necessary precondition for facilitation and enhancement of the ongoing learning process.

**After:**
Children need good school to learn properly.

(See handout for more examples)
Before You’re Finished...

**TEST IT OUT**

Ask target audience (e.g., non-scientist, non-specialist) to read
- Did they understand main idea?
- Do they have unanswered questions?

REVISE based on what you learn!
Resources

- NIH Plain Language Training: module
- NIH Plain Language: Research examples
- NIH Communications: Clear & Simple
- Center for Plain Language: 5-step Checklist
- Program for Readability in Science & Medicine (PRISM): Toolkit
- PlainLanguage.gov: Federal Plain Language Guidelines
- CMS: Toolkit for Making Written Material Clear & Effective
- thefloorisyours.be: Why not try an analogy?
Thank you!

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