How to Present Your Data

NIH StrokeNet Professional Development Webinar
August 23rd, 2018

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and Women’s Initiatives
Professor of Neurology
Seminar structure

Tell them what you are going to tell them

Tell them

Summarize what you have told them
Outline

CONTENT
• Goals
• Framework
• Common Pitfalls

FORMAT
• Font & Typeface
• Color
• Tables
• Optimize Graphics
• Tips for Oral Presentation
• Tips for Posters
Features of Good Presentation

• Engages the audience
• Simple delivery: “less is more”
• Has a central message
• Logical Flow
• Capitalize on images
• Compassion!
Compassion in a scientific seminar

Make sure they understand.

Do not go over your time.

Golden Rules
The Challenge

[Graph showing the trend in stroke citations and attention span from 2000 to 2013.]

National Center for Biotechnology 2013
Pubmed
Keep Earning your Audience’s Attention

![Graph showing percentage of participants who clicked at different times.]

Bunce et al. Journal Chemical Education 2014
Presentation $\neq$ Dumping Data
Presentation = Communication
Test for Central Message

25 WORD TEST

CENTRAL MESSAGE?
Enhance Central Message

Non-essential Data (OK to Omit)

Supportive Data (Must Keep)

Background “Nice to Know”

Central Message: “Need to Know”

Data that Disputes (Also Keep)
Ideal Framework

- TITLE
- CENTRAL MESSAGE
- BACKGROUND INTRODUCTION OBJECTIVES
- METHODOLOGY
- RESULTS
- CONCLUSION DISCUSSION
Poor Presentation

- Title
- Background Introduction Objectives
- Methodology
- Results
- Conclusion Discussion

Central Message?
Title: Spend time on it

- Influences reviewers & graders
- Selects audience
- Predisposes audience
- Disseminated by search engines
- Some people only read title!
Which Title Do You Prefer?

A  Impact of a stroke trial network on recruiting rates: a before and after study

B  Is a stroke trial network associated with improved recruitment rates?

C  A stroke trial network improves recruitment rates
Title Types

A. Impact of a stroke trial network on recruiting rates: a before and after study
   - DESCRIPTIVE

B. Is a stroke trial network associated with improved recruitment rates?
   - QUESTION TYPE

C. A stroke trial network improves recruitment rates
   - DECLARATIVE
Choosing Right Title

• Short and Catchy
• Descriptive type = boring (unless novel methods or RCT)
• Question type = too much suspense!
• Declarative type= best (get to the point)
## Title Types & Impact

<table>
<thead>
<tr>
<th>Title Type</th>
<th>Median Downloads</th>
<th>Median Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive</td>
<td>2,754</td>
<td>14.2</td>
</tr>
<tr>
<td>Declarative</td>
<td>2,565</td>
<td>12</td>
</tr>
<tr>
<td>Question</td>
<td>3,723</td>
<td>6</td>
</tr>
</tbody>
</table>
Background Section

What is this about? Why should I care? What was the question?

Issue Significance Hypothesis
Background: Pitfalls

- Too long
- Too much history
- Fails to convey relevance
- Stalls interest
Methodology

Study Type
Match for Question
Rigorous approach

What type of study?
Was it adequate?
Was it done right?
CONCEALED METHODS

• We identified all the patients diagnosed with Moya-Moya in our prevention clinic from 1996-2013 and compared it with patients seen in that same period...

DECLARATIVE

• This was a case-control study..
Predispose Audience

Controls? Selection Bias? Recall Bias?

This was a case-control study.
Pitfall: Contamination with Results

BAD

• We analyzed 1254 consecutive patients admitted to our stroke service...

BETTER

• We analyzed consecutive patients admitted to our stroke service...
• Results: 1254 patients were analyzed
Results

This is what I found
This was the order
Objective

Graphics please!
Chronologically
No interpretation
Results: Pitfalls

- Interpretation ("significant")
- Ineffective Graphics
- "I know this is a busy slide."
- Redundancy text-graphic
Conclusion

What do you make of this? How does it fit with previous knowledge?

This is my interpretation of each finding in context.
Conclusion: Flow

PREVIOUS KNOWLEDGE #1

INTERPRETATION #1

FINDING #1

PREVIOUS KNOWLEDGE #2

INTERPRETATION #2

FINDING #2

PREVIOUS KNOWLEDGE #3

INTERPRETATION #3

FINDING #3

SUMMARY
Conclusion: Pitfalls

- Too little interpretation
- Does not interpret the results in context
- Introducing new results
- Disorganized flow
- Ending with “more research is needed...”
<table>
<thead>
<tr>
<th>TEXT 1</th>
<th>TEXT 2</th>
<th>TEXT 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE STROKE TRIALS NETWORK (NIH STROKE.NET) IS DESIGNED TO MAXIMIZE EFFICIENCIES TO PRIORITIZE, HARMONIZE AND STREAMLINE THE DEVELOPMENT OF HIGH-QUALITY, MULTI-SITE CLINICAL TRIALS FOCUSED ON KEY INTERVENTIONS IN STROKE PREVENTION, TREATMENT, AND RECOVERY. EARLY PHASE 1-2 EXPLORATORY AND CONFIRMATORY PHASE 3 TRIALS AS WELL AS BIOMARKER-VALIDATION STUDIES THAT ARE IMMEDIATELY PREPARATORY TO TRIALS WILL BE COORDINATED THROUGH REGIONAL COORDINATING STROKE CENTERS, THE NATIONAL CLINICAL COORDINATING CENTER, AND THE NATIONAL DATA MANAGEMENT CENTER.</td>
<td>The Stroke Trials Network (NIH StrokeNet) is designed to maximize efficiencies to prioritize, harmonize and streamline the development of high-quality, multi-site clinical trials focused on key interventions in stroke prevention, treatment, and recovery. Early phase 1-2 exploratory and confirmatory phase 3 clinical trials as well as biomarker-validation studies that are immediately preparatory to trials will be coordinated through Regional Coordinating Stroke Centers, the National Clinical Coordinating Center, and the National Data Management Center.</td>
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</tr>
</tbody>
</table>
Fonts & Typeface

- ALL CAPITALS DECREASE SPEED BY 14%
- *Italics difficult to read*
- Use ≥22 point font for text
- Uppercase with bullets
Typeface Choices

**SERIF**
- Times New Roman
- Georgia
- Cambria
- Constantia

**FASTER TO READ: BEST TEXT**

**SANS-SERIF**
- Arial
- Calibri
- Tahoma
- Verdana
- Century Gothic

**SLOWER TO READ: BEST HEADLINES**

Paterson and Tinker, J Appl Psych 1932
Background/Design

• Brightness crucial in the search speed
• High contrast text-to-background
• Dark text, light background better
• Yellow text, blue background optional
• Avoid red/green (8% of men deficiency)
Use of Color

- Color has to code a message
- Color is superior to brightness, shape, underlining and other forms of coding
- Use to help **visualize** different variables
- Too many colors slows visual search

Smith 1967
Text and graphics near the edges may get cut off.

Not every colour combination is visually appealing or easy to read, and what looks good on your bright laptop monitor might look pretty crappy on a duller projector.
Tables

- Sentence best for showing 2 values
- Tables best for small data sets
- Allows comparisons
- Gives exact values
- Usually better than a pie chart
Pie Chart Not Precise

PRE-MONITORING
- Atherothrombotic: 25
- Cardioembolism: 27
- Lacunar: 29
- Other: 22

POST-MONITORING
- Atherothrombotic: 31
- Cardioembolism: 22
- Lacunar: 25
- Other: 31
## Tables More Accurate

<table>
<thead>
<tr>
<th>SUBTYPE</th>
<th>PRE-MONITORING</th>
<th>POST-MONITORING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atherothrombotic</td>
<td>28%</td>
<td>26%</td>
</tr>
<tr>
<td>Cardioembolic</td>
<td>26%</td>
<td>32%</td>
</tr>
<tr>
<td>Lacunar</td>
<td>25%</td>
<td>23%</td>
</tr>
<tr>
<td>Other</td>
<td>21%</td>
<td>19%</td>
</tr>
</tbody>
</table>
Features of Good Graphics

• Communicates complex data with clarity
• Encourages comparisons of data
• Keeps focus on substance
• Are efficient: short time & little ink
• Integrity: tells the truth
Features Good Graphics (2)

- Data/Text integration
- Respect scale
- Eye friendly
- Horizontal trend
About Chronic Boredom Syndrome

Chronic Boredome Syndrome, or CBS was first identified in 2010 by a research group in Switzerland.

The symptoms of CBS include ennui, malaise, general feeling of world-weariness.

It was found to be caused by overly strong interaction of certain OMG and BBQ ligands with the WTF receptors in the brain.

WTF inhibitors are found to reduce symptoms of CBS up to 73% in double-blind controlled mouse studies.
About Chronic Boredom Syndrome

(picture version - note all points in previous slide have visual cues on this one)

✓ Identified 2010 in Switzerland.

There is some hope:

OMG and BBQ Neurotransmitter Molecules
WTF Receptor clogged with OMG and BBQ leads to CBS Symptoms
Synapse

OMG and BBQ Neurotransmitter Molecules
WTF inhibitor
WTF Receptor inhibition leads to 73% reduction of symptoms
Synapse

Include references on the individual slides, with enough detail that someone could find the paper. This is strongly preferred over a "references" slide at the end.

Viirre et al. JCBS. 2010, 12301
Extra gentle for the most sensitive skin.

Since your baby’s sensitive skin, add the chemicals and moisture control you have diaper rash.

Baby’s Paper’s unique high-absorbency natural-blend cotton provides cotton-soft, extra thick, gel-free protection for your baby’s sensitive skin. The chlorine-free materials and absorbent polymers is non-toxic and non-irritating. Clinically tested and pediatrician recommended for babies with allergies and sensitive skin.

Cincinnati
Every baby is different, so add the materials and moisture levels that work best for you.

Is it safe? Unique high-absorbency natural-blend cotton pulp provides cotton-soft, extra thick, gel-free protection for your baby’s sensitive skin. The chlorine-free materials and soft polymers is non-toxic and non-irritating. Clinically tested and dermatologist recommended for babies with allergies and sensitive skin.
Graphic Integrity

http://lawinthereelworld.wordpress.com/2013/04/18/justice-served-in-the-legal-comedy/
Integrity: Lack of Context

A

<table>
<thead>
<tr>
<th>Year</th>
<th>Mortality 30 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Pre-Intervention</td>
</tr>
<tr>
<td></td>
<td>Post-Intervention</td>
</tr>
</tbody>
</table>

B

<table>
<thead>
<tr>
<th>Year</th>
<th>Mortality 30 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>Pre-Intervention</td>
</tr>
<tr>
<td>2009</td>
<td>Post-Intervention</td>
</tr>
<tr>
<td>2010</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
</tr>
</tbody>
</table>

P<0.01
Integrity: Respect Discrete Data

A

Mean NIHSS Score

Baseline  Post rtPA  6h  12h  24h

NO

B

Mean NIHSS Score

Baseline  Post rtPA  6h  12h  24h

YES
Integrity: Limit Graphic to Data

A

B

NO

YES
Axis Out of Scale

Control

Infarct Volume

Treatment

91%
Acknowledgements

• Thanking those who helped you get to this point
  – Especially sources of funding!

• Includes logos, photos of labmates, etc
Oral Platform

- Localized in space and time
- You have an audience
- Control sequence and rhythm
- Expect some level of interaction
Oral Platform: Delivery

• Practice, practice
  – Time yourself when giving talk to coauthors or colleagues
  – Practice taking out the “ums”, silence is preferable

There is no such thing as good luck…

*Luck is when preparation meets opportunity*

Practice, makes perfect…

*Perfect practice, make perfect!*
Delivery Tips

• Engage Audience
• Make eye contact
• Speak clearly & calmly
• Convey enthusiasm
• Rhythm: 1 min/slide (slow down!!)
• Use your microphone well (test ahead of time)
• Good posture
  – Don’t look at the screen behind you
Oral Platform: Format

• Few words
• Text supports speech
• Bullet statements
• \(\leq\)Six bullets/slide
• No special effects! Avoid videos at all costs!
• Explain all axis labels
Oral Presentation: don’t

• Read the slides
• Play with laser pointer
• Lose your calm during questions
• Say “I don’t need a microphone”
• Say “this is a busy slide…”

Question time

- Be prepared. Be very prepared.
- Look cool, calm, smile, welcoming.
- Use feedback from peers/mentors to help identify likely questions
- Acknowledge weaknesses in data
- Important: repeat the question (or else)
- Consider ninja slides
Tips for Posters

• Highly localized in space, spread in time
• You have to capture your audience
• Few seconds opportunity
• Control the sequence but no rhythm
• Most people don’t interact
Eye Tracking in Posters

<table>
<thead>
<tr>
<th>Proportion Time Fixating</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>4.2</td>
</tr>
<tr>
<td>Introduction</td>
<td>24.3</td>
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<tr>
<td>Methods</td>
<td>19.3</td>
</tr>
<tr>
<td>Figures</td>
<td>8.9</td>
</tr>
<tr>
<td>Results</td>
<td>19.9</td>
</tr>
<tr>
<td>Conclusions</td>
<td>23.2</td>
</tr>
</tbody>
</table>
Effective posters

- Visually Appealing: Get attention
- Focused: Only “need to know” text
- Bullets and LARGE FONTS
- Use plenty of white space
- 50% Graphics/pictures
- Follow meeting guidelines
Don’t in Posters

• Use logos with title
• Distracting arrangements
• Too busy
• Too little graphics
• Poster guard & stare
Summary

• Be relaxed and enthusiastic
• Have a clear central message
• Work on a good title
• Use a balanced framework
• Optimize color/text
• Plenty of excellent graphics
Acknowledgements

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• Online slide sets of:
  – Dr. Bryan Koivisto, Ryerson University
  – Josh Neufeld, Waterloo University