How to Present Your Data

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Outline

**CONTENT**

- Goals
- Framework
- Common Pitfalls

**FORMAT**

- Font & Typeface
- Color
- Tables
- Optimize Graphics
- Tips for Oral Presentation
- Tips for Poster
Features of Good Presentation

• Engages the audience
• Simple delivery: “less is more”
• Has a central message
• Logical Flow
• Capitalizes on images
• Audience leaves with 1-2 ideas
The Challenge
Keep Earning your Audience’s Attention

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

25 WORD TEST

CENTRAL MESSAGE?
Enhance Central Message

Central Message: “Need to Know”

Background: “Nice to Know”

Supportive Data (MUST KEEP)

Non-Essential Data (OK to Omit)

Data that disputes (also keep)
Ideal Framework

- Title
- Central Message
- Background
  - Introduction
  - Objectives
- Methodology
- Results
- Conclusion
  - Discussion
Poor Presentation

TITLE

BACKGROUND INTRODUCTION OBJECTIVES

CENTRAL MESSAGE?

METHODOLOGY

RESULTS

CONCLUSION DISCUSSION
Title: Spend time on it!

- Influences reviewers & graders
- Selects audience
- Predisposes audience
- Disseminated by search engines
- Some people only read title: make it the central message
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

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

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

• Short, Catchy & Flashy
• Descriptive type = boring (unless novel methods or RCT)
• Question type = too much suspense!
• Declarative type= best (get to the point)

http://static.guim.co.uk/sys-images/Film/Pix/pictures/2013/2/8/1360326092958/Alfred-Hitchcock-010.jpg
# Title Types & Impact

<table>
<thead>
<tr>
<th>Title Type</th>
<th>Median Downloads</th>
<th>Median Citations</th>
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</thead>
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<td>12</td>
</tr>
<tr>
<td>Question</td>
<td>3,723</td>
<td>6</td>
</tr>
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</table>

Jamali et al. Scientometrics 2011
Background Section

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

Issue
Significance
Hypothesis
Background: Pitfalls

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

Diagram:

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

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

Study Type
Match for Question
Rigorous approach
Pitfall: First Sentence

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..

CLINICAL STUDY DESIGN

- OBSERVATIONAL
  - CROSS SECTIONAL
  - RETROSPECTIVE COHORT
  - PROSPECTIVE COHORT
  - CASE CONTROL
- INTERVENTION
  - RANDOMIZED TRIAL
  - QUASI-RANDOMIZED TRIAL
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
• Methods: we analyzed consecutive patients admitted to our stroke service...
• Results: 1254 patients were analyzed
Results

Graphics please!
Chronologically
No interpretation

This is what I found
This was the order
Objective
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

INTERPRETATION

FINDING

PREVIOUS KNOWLEDGE

INTERPRETATION

FINDING

PREVIOUS KNOWLEDGE

INTERPRETATION

FINDING

SUMMARY
Conclusion: Pitfalls

- Too little interpretation
- Does not interpret the results in context
- Introducing new results
- Disorganized flow
- Ending with “more research is needed…”
Format Issues

• Font & Typeface
• Color
• Tables
• Optimize Graphics
• Tips for Oral Presentation
• Tips for Poster
Format

• Text is to support your speech
• Not for independent reading
• 6 Bullets max
• 7 words per line max
• Forget special effects
Which is Easier to Read?

**TEXT 1**

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 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.

**TEXT 2**

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.

**TEXT 3**

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.
Fonts & Typeface

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

Durso et al. Laws & Rules 2011
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 is better
- Yellow text, blue background optional
- Avoid red/green (8% of men deficiency)

Courtesy of Michael Wall MD
Use of Color

• Has to code a message
• Superior to brightness, shape, underlining and other forms of coding
• Use to help **visualize** different variables
• Too many slows visual search

Smith 1967
Tables

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

PRE- MONITORING

- Atherothrombotic: 29
- Cardioembolism: 27
- Lacunar: 25
- Other: 21

POST-MONITORING

- Atherothrombotic: 25
- Cardioembolism: 31
- Lacunar: 22
- Other: 18
### 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>
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</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

Tufte ER. The visual Display of Quantitative Information
Graphic Integrity

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

A

Pre-Intervention

Post-Intervention

P<0.01

B

2008 2009 2010 2011 2012 2013

Mortality 30 days

0% 1% 2% 3% 4% 5% 6% 7% 8% 9%

2012 2013

Pre-Intervention
Post-Intervention
Integrity: Respect Discrete Data

A

B

Mean NIHSS Score

Mean NIHSS Score

Baseline Post rtPA 6h 12h 24h

Baseline post rtPA 6h 12h 24h

NO

YES
Integrity: Limit Graphic to Data

A

NO

B

YES
Axis Out of Scale

Infarct Volume

Control

Treatment
Integrity: Adjusted Scale

Control

Intervention
Oral Platform

- Localized in space and time
- You have an audience
- Control sequence and rhythm
- Expect some level of interaction
- Keep the focus on you
Oral Platform: Format

• Few words
• Text supports speech
• Bullet statements
• Six bullets/slide
• Seven words per line
• No special effects!
• Few Conclusion Points
Oral Platform: Delivery

• Get ready to perform
• Smile & breathe
• Confident Body Language
• Convey enthusiasm
• Talk to the audience (not screen)
• Try to make it a story
Oral Platform: Delivery (2)

- Speak clearly, loud & calm
- Rhythm: 1 min/slide
- Avoid distracting sounds
- Be personable with questions
- Repeat them
- Learn to say ‘I don’t know” or “haven’t thought about that”
Oral Presentation: don’t

• Skip practice
• Read the slides
• Pretend you are alone
• Play with laser pointer
• Take a beta-blocker
• Loose your calm during questions
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>
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<tbody>
<tr>
<td>Title</td>
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<td>Methods</td>
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<tr>
<td>Figures</td>
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</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

http://www.icts.uiowa.edu/sites/default/files/DSCN1349.jpg
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
Questions?

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