Delivering an effective scientific presentation

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Disclosures

None relevant to this talk

Sources:
- **Prior StrokeNet presentations** by Dawn Kleindorfer, MD and Enrique Leira, MD MS
- Personal professional presentations
I would be talking about

- General Principles
- Specific Components
- Visuals: Before and After
- All the P’s
Engage the **audience**
- Understand and empathize

Central **message**
- Test and re-test

Simple **delivery**
- Cohesive, Logically flowing: Storytelling

Capitalize on **visuals**
- Deliberate and cautious

**Respect**
- Time, rules and ethics
Audience

Fairly **predictable** for a typical scientific presentation
- Subtle differences
- Special situations

Who’s the **subject matter expert** in the room?
- SWOT Analysis: Threat → Opportunity

**Empathy**
- ISC 2019: 1600 presentations ≈ 30 hours
- Attendee state of mind: Competing Interests
- Dwindling attention span
Central Message

Anatomy of a 1-min Pitch

**INTRO**: Introduce yourself; mention title / role, team, division group. Focus only on what’s relevant to the central message

**PROBLEM**: Introduce the identified problem. Who experiences the problem and how does it impact them.

**SOLUTION**: Introduce the proposed solution. Address only the problem. Describe how the solution will solve the problem

**ASK**: Have a specific ask. Describe a specific person, resource, skill or action needed to develop your solution

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Central Message
The Ideal Framework: Streamlined Delivery
Mixed Message

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

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Cohesion

Intro & Objectives

Conclusion

Methods

Results

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Title: Spend time on it

Influences reviewers and graders

Audience

- Selects
- Predisposes

Disseminated by search engines

Some people only read the 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 the Right Title

**Descriptive type**
- Boring (unless novel methods or RCT)

**Question type**
- Too much suspense

**Declarative type**
- Usually works best (get to the point)
- Caution
Background

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

Issue
Significance
Hypothesis
Background: Usual Pitfalls

Too long

Too much background
- Stroke is the leading cause of ....

Fails to succinctly convey a problem statement

Fails to briefly highlight what is already known

Fails to convey specific objectives / hypotheses
Methodology

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

Study Type
Match for Question
Rigorous approach
Methods: Be explicit

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...

We consented patients with intracerebral hemorrhage during hospitalization and followed them up for 12 months post hospitalization .....
Methods: Predispose Audience

Controls? Selection Bias? Recall Bias?

This was a case-control study..
Results

This is what I found
This was the order
Objective

Graphics please!
Chronologically
No interpretation
Results: Pitfalls

**Interpretation** and opinion

Ineffective **Graphics**

Extra **long tables** with too small a font
- “I know this is a busy slide....”

**Redundancy**: Text and Graphic

Introducing **results outside of the central message**
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 and Cohesion

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**
- Skipping results and not providing interpretation

Does not interpret the results in **context**

Introduce **new results**

**Disorganized** flow

**Overextending** conclusions

“More research is needed....”
Visuals

Absolutely necessary in a presentation

Stock visuals
- MS Excel & other statistical software

Bad visuals are everywhere
- Overcrowding
- Inappropriate choice of visuals
- Too much or too little color
- Inadequately explained or communicated

Less is more
- Zen Presentation
Less Is More

STORYTELLING WITH DATA
Bad visuals are everywhere

Survey Results

Ticket Trend

Non Profit Support

User Satisfaction

Our Customers

Weighted Performance Index
2 employees quit in May. We nearly kept up with incoming volume in the following two months, but fell behind with the increase in Aug and haven’t been able to catch up since.

Please approve the hire of 2 FTE to backfill those who quit in the past year.

Pilot program was a success

BEFORE program, the majority of children felt just OK about science

AFTER program, more children were Kind of interested & Excited about science.

Based on survey of 100 students conducted before and after pilot program (100% response rate on both surveys).


"Pie charts are evil"
Less is more

Children with a "Traditional" Stay-at-Home Mother

% of children with a married stay-at-home mother with a working husband

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<tr>
<th></th>
<th>1970</th>
<th>2012</th>
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<td>41</td>
<td>20</td>
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Note: Based on children younger than 18. Their mothers are categorized based on employment status in 1970 and 2012.


Color overload: Remember Central Message?

Distribution by customer segment

<table>
<thead>
<tr>
<th>Segment 7</th>
<th>Segment 6</th>
<th>Segment 5</th>
<th>Segment 4</th>
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Burden of Boring Bulleted Lists

STORYTELLING WITH DATA
LHC Initiatives at UTHealth

01. Establish an Administrative Structure
Establish an administrative structure to promote interventional and observational studies in LHC. Identify leaders in rigorous QI and CER research and establish an LHC advisory board.

02. Develop consultation service
To help design, conduct, analyze, and/or disseminate QI and CER studies to promote the use of therapies proven to be beneficial, identify and address ineffective or harmful therapies (implementation and de-implementation).

03. Novel Design for Interventional Research
To conduct model demonstration projects promoting novel interventional studies in LHC such as n-of-1 clinical trials.

04. IRB Assistance and Review of QI and CER
Facilitate prompt, appropriate, and helpful IRB assistance and review for minimal risk QI and CER and advance the methods of seeking patients' engagement and community consent.
Methodology

Database
• National Inpatient Sample (NIS)
• All ages, payers and uninsured
• 90% US Hospitalizations
• 48 US States
• 2006 - 2011

Case Definitions
• Primary discharge diagnosis based on standard ICD-9 codes for IS, ICH, SAH

Rehabilitation Discharge (Outcome)
• All patients who were discharged or transferred to an in-patient rehabilitation facility, including distinct rehabilitation units of acute care hospitals

Population
• Adult (>18) Stroke Patients
• Ischemic and Hemorrhagic Stroke (ICH and SAH)
• Non-traumatic Brain Hemorrhage

Teaching Hospitals (Exposure)
• AMA-approved residency program, and member of the Council of Teaching Hospitals or ratio of full-time equivalent interns and residents to beds of 0.25 or higher

Analysis
• Survey design methods / weights to present national estimates
• Survey design logistic regression methods and report Odds Ratios (OR) and 95% Confidence Intervals (CI)
Statistical Methods

- Distributionally appropriate univariable tests (t-test, Chi Square Test, Wilcoxon Ranksum test, One way anova, Kurskal Wallis Test)
- Log Rank Test for Equality of Survival Functions
- Kaplan Meier Estimates
- Demonstration of relative hazard for males and females at various levels of age
- Sensitivity Analysis - Competing Risk Analysis
- Identify Cohort
- Assess Competing Risk
- Univariable Analyses for sex and age differences
- Unadjusted Estimates of incident CCVD among males and females, and various age categories
- Assessment of effect modification for sex by age for incident CCVD
- Multivariable Cox Proportional Hazard Models for independent association between age and sex with incident CCVD
- Assessment of PH Assumption (Schoenfeld Residuals)
- Assessment of multi-collinearity (correlation matrix)
- Statistical, Clinical, and Epidemiological Criteria – backwards elimination
- Likelihood Ratio Test, Assessment of AIC and BIC
Cohort Selection

Total Number of Patients in the full dataset
4434

Patients who experienced CCVD
1157 (26.1%)
95% CI (25 – 27)

Myocardial Infarction, Fatal Coronary Heart Disease, Ischemic or Hemorrhagic Stroke, Fatal Cerebrovascular Disease

Patients with zero time to CCVD (Prevalent condition at baseline)
161 (13.9%)

Death
128 (79.5)

Prevalent CHD
26 (16.1)

Prevalent Stroke
7 (4.3)

Prevalent CHD
194 (4.4%)
Prevalent MI
86 (1.9%)
Prevalent Angina
147 (3.3%)
Prevalent Stroke
32 (0.7%)

Any Prevalent Condition
219 (4.9%)

Identifying cohort with incident CCVD

Patients with non-zero time to CCVD
996 (86.1%)

All cause death without CCVD
753 / 3219
(23.4%)

Compare CCVD risk factors across CCVD and Potential CR Population

Analysis Cohort
CCVD = 996
23.6%
95% CI (22.4 – 24.9)
Non-CCVD = 3219
4215

All cause death as a possible competing risk (CR) to CCVD
Ethical Data Representation
Integrity: Adjusted Scale

[Bar chart showing comparison between Control and Treatment groups for Infarct Volume, with higher values for the Control group.]

[Bar chart showing comparison between Control and Intervention groups for Infarct Volume, with higher values for the Control group.]
All the Pet P’s of Presentations

WE ALL KNOW THIS ALREADY!
6 P’s to a ‘Perfect’ Presentation

**Personality**
- Your image and your academic brand: consider attire: dress up, posture: stand tall and open

**Poise**
- Stay calm, balanced, graceful and smile | Questions

**Polish**
- Polished outlook on self and on slides: attention to formatting and spell check

**Preparation**
- Get to the room early | Speaker Ready Rooms | Introduce to Moderators | Multimedia use

**Practice**
- Communicate with clarity, confidence and passion | Practice pitch and tone

**Presentation**
- Most people start strong, remember to finish strong

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This concludes my presentation!

Proper Prior Planning and Preparation Prevents Poor Performance!