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January 25, 2017

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#### **ISMPP ANNOUNCEMENTS**

- SAVE THE DATE! 13th Annual Meeting of ISMPP, 1-3 May, 2017, Gaylord National Resort, National Harbor, MD. Registration now open!
- ISMPP will hold its 2nd Asia Pacific educational event in Tokyo on September 5, 2017
- Curious about ISMPP's activities in Asia Pacific? Read about ISMPP's Country Champion Events at ISMPP.org
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#### QUESTIONS...

- To ask a question, please type your query into the Q&A box
  - To ensure anonymity and that all panelists receive your question, please choose the drop down box option,
     "Hosts, Presenters and Panelists." Otherwise, all audience members will be able to see your submitted question
- We will make every effort to respond to all questions



### GRAPHICAL PRESENTATION OF DATA IN MEDICAL PUBLICATIONS

## INTRODUCTIONS

Faculty: Dikran Toroser has been a Medical Writing Manager at Amgen since 2008. He also teaches on the med writing course at the UC San Diego. His PhD is in Biochemistry/Molecular Biology from Newcastle University (UK), and he did postdocs in biochemical genetics at the Cambridge Lab (Norwich, UK) and the USDA. Previously, Dikran was on the research faculty at the University of Southern California and was Project Lead/Sr Scientist at Monsanto.

## INTRODUCTIONS, CONT'D

Faculty: Tom Lang is Principal of Tom Lang Communications and Training International. He is known internationally as a lecturer, trainer, and educator in medical writing, scientific publications, and written communication. His books, How to Report Statistics in Medicine and How to Write, Publish, and Present in the Health Sciences, are established references in evidence-based medicine and medical writing. He is the recipient of the American Medical Writers Association's Golden Apple Award for Outstanding Workshop Leader, the American Statistical Association's Excellence in Continuing Education Award, and the University of Chicago's Graham School of General Studies First Excellence in Teaching Award for **Professional Programs**.

## INTRODUCTIONS, CONT'D

Faculty: Charles J Turck is part owner, Chief Executive Officer, and Chief Healthcare Officer of ScientiaCME, LLC, a continuing education company. Charles has, in addition to a history that includes internal medicine and critical care clinical practice, as well as experience in informatics, done significant medical writing and served for years as a host and medical news writer and content developer for a medicallyoriented media outlet. He has served an assistant professor at the University of Massachusetts Graduate School of Nursing and as an experiential educator for the Massachusetts College of Pharmacy and Sciences in Boston, Worcester, MA, and Manchester, NH; Northeastern University in Boston, MA; and Lake Erie College of Osteopathic Medicine School in Erie, PA.

## INTRODUCTIONS, CONT'D

- Moderator: Hajira Koeller is Associate Director, Scientific Communications, Alkermes, Inc. Hajira is a neuroscientist by training and has conducted basic and clinical research in CNS and oncology. She has previously having worked as a journal Editor, medical writer and is now primarily focused on strategic medical communications, medical publication planning and development. Hajira is a member of the ISMPP-U Committee and is a Certified Medical Publication Professional (CMPP).
- Acknowlegement: Lisa Baker, Medical Director at inScience Communications, Springer Healthcare, New York, NY and ISMPP U committee member since 2013.



At the end of this presentation, attendees should be able to:

- Use a storyboarding approach to plan data presentation in tables and figures
- Identify and avoid common errors in data presentation
- Understand the value and limitations of infographics for effective communication



 Information presented reflects the personal knowledge and opinion of the presenters and does not necessarily represent the position of their current or past employers or the position of ISMPP

#### GRAPHS, FIGURES AND TABLES: USING VISUAL ITEMS IN PUBLICATION THEME BUILDING

#### Dikran Toroser, PhD, ISMPP CMPP™ Amgen Inc

#### BACKGROUND

- Data, figures, tables and images: The core of the research article—give rise to conclusions.
- Without proper planning/design of the presentation, the data can be ignored and even misinterpreted.
- Complex relationships to interpret and understand data fit around the panel items—figures, images and tables.
- The "*story*" is summarized by assembling graphs, figures, and tables.

## THE PROCESS

- The "integrated" full single report incorporates tables, figures, main text, appendices, case report forms, technical information etc<sup>1</sup>
- Selected study data are disclosed in a more easily consumed format...eg, publications
- Interphase between CSR/reports and pubsic

<sup>1</sup>Sharing Clinical Trial Data: Maximizing Benefits, Minimizing Risk. Board on Health Sciences Policy; Institute of Medicine. Washington DC National Academic Press; 2015

#### OVERVIEW Complexity and volume → SIMPLICITY



#### MACROgraphics, A DEFINITION



- Process/steps by which panel items (figs & tables) are fitted around a main theme
- Driver: Usually Publication Professional
- 2 distinct processes
- MACRO graphics: Building the pub around figs and tables
- cf...MICRO graphics: Specific components of each fig and table

#### STORYBOARDING

- Storyboarding is graphic organization in the form of figures, illustrations or images displayed in sequence.<sup>1</sup>
- Process dates back to the early 1900s, used by Walt Disney to captivate audiences
- Storyboarding is even a feature in standard software eg, Powerpoint

<sup>1</sup> <u>https://en.wikipedia.org/wiki/Storyboard</u> <u>http://web.mit.edu/me-ugoffice/communication/writing\_process.pdf</u> <u>http://textlab.io/doc/11305190/mya-poe--effective-written-communication--storyboarding-a...</u> <u>http://web.mit.edu/me-ugoffice/communication/writing\_process.pdf</u>

#### The publication form: a reflection of the common <u>READING behavioural pattern</u>



•Scientific readers maximize potential of the form when they read.

Makes it is easy to locate data & compare experiments (methods, etc.)

- Easy to write? No
- •Easy to read? Yes. Optimized for reading

•Document design and use of figures conveys study cornerstones

•Conventional approach uses the IMRaD format, is linear

- Mya Poe (MIT) Scientific Writing http://textlab.io/doc/11305190/mya-poe--effective-written-communication--storyboarding-a...
- Pain E (2016) How to (seriously) read a scientific paper. Science. "<u>I start with the abstract...I try to identify prominent 1 or 2 figures..</u>" <u>http://www.sciencemag.org/careers/2016/03/how-seriously-read-scientific-paper</u>
- Angel Borja (2014) 11 steps to structuring a science paper editors will take seriously (also see UCSD medical writing course) <u>https://www.elsevier.com/connect/11-steps-to-structuring-a-science-paper-editors-will-take-seriously</u> <u>https://www.elsevier.com/connect/six-things-to-do-before-writing-your-manuscript</u>

#### THE GRAMMAR OF SCIENTIFIC COMMUNICATION

- Science readers do not read chronologically, they skim
- They are often easily derailed
  - When writing, pay attention to the derailers
  - No unnecessary jargon in the figures or text
  - Provide links between visuals and text e.g., "as shown in Figure 4. .."

Readers often want to determine the punchline and main idea/result(s) extremely rapidly

Gopen and Swan. The science of Scientific Writing. Science 1990 http://www.americanscientist.org/issues/pub/the-science-of-scientific-writing OUTLINING approach to writing: *Sometimes* an inefficient process

- Try "Storyboarding" approach
- Cluster/section of the pub is analogous to a "scene"





#### Built around Figures., Tables and Images...cf traditional outline

- Storyboarding 101: Turning Concepts into Visual Forms. Lin Huff-Corzine (1998) <u>http://www.ibiblio.org/ism/articles/huffcorzine.html</u>
- Storyboards in Pharmaceutical, Device, and Other Scientific Settings. Fisher et al (2008) AMWA Journal, 23(3):125-127; <u>http://www.amwa.org/files/Journal/2008v23n3.pdf</u>

#### STEP 1: ORGANIZE FIGURES AND TABLES STORYBOARDING

- Start with figures and tables
- Assemble in a "storyboard"
- Assess how each figure contributes to the major theme (ie, *macrographic approach*)

Upfront decisions on whether Figure or table...and, which figure or table... Use the figures and tables to focus on your main theme(s)

### STEP 2: <u>PLAN</u>

- After you have your data, consider if it is appropriate "screenplay" for your article:
- Who is the audience and what is the journal?
   Level of focus on the subject matter
  - Personal familiarity
- How much space do you have?
  - Cell? Science? NEJM?
  - Can results be combined with Discussion?
  - Does the journal require a unique section (eg, theory)?

#### STEP 3: WRITE IN NON-LINEAR SEQUENCE

- What was the purpose of the trial?
- Readers focus on the results first; start with the visuals.
- Insert other sections after the above.



#### STEP 4: BUILDING OUT—AFTER VISUALS ARE DETERMINED

- Add Discussion, Introduction & Conclusions around the Methods and Results (*consider the article type*)
- Check for coherence between and across sections
- End/Front Matter
  - Title
  - Abstract
  - Acknowledgements, References

Goodman et al 2008 and 2016 Explanation...of the SQUIRE (Standards for Quality Improvement Reporting Excellence) Guidelines. BMJ, 25:e7; <u>http://qualitysafety.bmj.com/content/25/12/e7.full.pdf+html</u>

## FINAL STEPS



- Is all relevant information included?
- Edit for organization and document design
  - Is each section divided logically using subheadings?
  - Does the information link clearly across sections?
  - Do the figures support the text?
- Edit for prose style
  - Is there irrelevant jargon or sections?

### TYPES OF GRAPHS, TABLES, FIGURES PRODUCING INDIVIDUAL PANEL ITEMS

- AMA manual of Style/EQUATOR network
  - Types of Pubs: Clinical, Real World, Basic Science
  - Technical details: tables, figures, statistics
  - Examples of Excellent Figures: See Tom's presentation





The JAMA Network OXFORD

eg, Franzblau (2012) Graphs, tables, and figures in scientific publications. <u>https://www.ncbi.nlm.nih.gov/pubmed/22305731</u> EQUATOR Network. <u>http://www.equator-network.org/</u>

#### MICROgraphics...



Table 5–1. Table titles should be written in words and sentences that are understandable to someone who has not read the text. The table below shows the main components of a typical table in ASA, CSSA, SSSA publications.

| Column heading for stub† | Spanner head\$     |           |            |           |
|--------------------------|--------------------|-----------|------------|-----------|
|                          |                    |           |            |           |
|                          | mit++              | unit      |            | unit      |
| Stub)                    |                    | (Fie      | ld)        |           |
|                          | Independent line‡‡ |           |            |           |
| Stub heading             |                    |           |            |           |
| Row heading              | value 1            | value 2*  | value 3*** | value 4*  |
| Row subheading§§         | value 5            | value 6** | value 7**  | value 8*  |
| Row heading              | value 9            | value 10* | value 11** | value 12* |
|                          | Independent line¶¶ |           |            |           |
| Stub heading             |                    |           |            |           |
| Row heading              | value 13           | value 14  | value15**  | value 16  |

Beware too much "non-data ink"— excessive labeling or superfluous features . "Although each chart page should be self explanatory, be judicious" (Tufte, 2001)

# TYPES of FIGS and TABLES (and components)

- Tables
- Tabulation
- Matrix
- Line Graphs
- Survival Plots
- Scatterplots
- Histograms and freq Plots
  Northerns
- Bar Graphs
- Component Bar Graph
- Pie Charts
- Dot Point Graphs

- Flow Charts
- Decision Trees
- Algorithm
- Pedigree
- Maps
- Westerns
- Illustrations
  - Photographs
  - Symbols, Patterns, Colors, Shading ...etc...



### CASE STUDIES:

#### Case study 1:

- Key manuscript
- Built out using conventional linear model
- Target Journal: IF=6, 75% rejection
- 7 panel items (5 figures, 2 tables)
- Reviewer (composite):
  - Study is of interest
  - Limitations of the study.
  - Suggestion: Revise your manuscript in line with a Brief Report. Max of 3 figures/tables; word limit 2500 words, 6-8 pages), 15 references.
- Result/Outcome
  - ~60% reduction in figures/tables
  - Successfully accepted as Brief Report

#### CASE STUDIES:

#### Case study 2:

- Key manuscript
- Built out using conventional linear model
- Target Journal: IF=4.3; 77% rejection
- The manuscript had 8 panel items (6 figures, 2 tables)

#### Reviewer (composite):

- Manuscript too long, and too many figures and tables
- Suggestion: 1 figure and 1 table, 800 words, 10 references.
- Editor: Focus on a single item!
- Result/Outcome/Options
  - Resubmission pending
  - Ongoing workstream

#### SUMMARY

- Consider augmenting/rethinking the outline-based linear model of writing
- Work on the backbone/storyboard with panel items upfront
- Build the publication around readers behavior—ie, assume "skim the pictures," from the reader, as well as the referees
- Simplify *upfront*, to avoid being made to simplify by the Editor
- Experiment during the brainstorming phase

# THANK YOU!

## SOME ERRORS IN REPORTING QUANTITATIVE INFORMATION

Tom Lang, MA Tom Lang Communications and Training International

## **Qualities of Good Visuals**

# Help readers understand, find, remember, and use information
# **Qualities of Good Visuals**

#### Intelligence: "knowing what to attend to"

## Help readers pay attention to the right things without getting distracted by looking at the wrong things

# **Fundamentals of Presenting Data**

# What level of detail should you show?

- Individual data points
- Groups of data
- Comparisons of individual data points or groups of data



**Presenting individual data points** 



**Presenting groups of data points** 



**Presenting groups of data points** 



**Comparing groups of data** 



**Comparing groups of data** 

#### The wrong medium problem

#### Good for projection; poor for publication



#### Good for publication; poor for projection



#### The wrong-focus problem

#### Things That Reportedly Taste Like Chicken



**Chickeny-ness** 

#### Things That Reportedly Taste Like Chicken



#### **Chickeny-ness**

#### The data overload problem









#### The suppressed zero problem





#### The elastic scale problem



#### **The Elastic Scale Problem**

#### The passive comparison problem







#### The unnecessary dimension problem





# THANK YOU!

#### WHAT ROLES DO INFOGRAPHICS PLAY IN MEDICAL COMMUNICATIONS?

#### Charles J Turck, PharmD, BCPS, BCCCP Principal and CEO, ScientiaCME, LLC





#### THE INFORMATION AGE

Information equivalent of 174 newspapers per day

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| surfrong.      | ere trang        | Service of the servic | Balla Brang      | Ball Bridger     | enter de sans  | territory.   | Trink and      | and the    | THE PARTY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Rosen's        | Reason?          | R. series                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Report           | Alarra 1         | R. sunt.       | A. sure i    | Rissis.        | Rintell.   | Real Property lies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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Up from only 40 newspapers in 1986

- The lay person's exposure to information, newspapers
  - 1986: 40 / day
  - 2007: 174 / day
- In healthcare
  - 25,000 English-language articles published / week

Hilbert M. Mapping the dimensions and characteristics of the world's technological communication capacity during the period of digitalization (1986-2007/2010). World Telecommunication/ICT Indicators Meeting (WTIM-11); December 7-9, 2011.
Ovid Technologies. Available at: ovidsp.tx.ovid.com. Accessed: January 8, 2016.
Krum R. Cool infographics: Effective communication with data visualization and design. 1st ed: Wiley; 2013.

### THE INFORMATION AGE



Hilbert M. Mapping the dimensions and characteristics of the world's technological communication capacity during the period of digitalization (1986-2007/2010). World Telecommunication/ICT Indicators Meeting (WTIM-11); December 7-9, 2011.
Ovid Technologies. Available at: ovidsp.tx.ovid.com. Accessed: January 8, 2016.
Krum R. Cool infographics: Effective communication with data visualization and design. 1st ed: Wiley; 2013.

# INFOGRAPHICS: YOU SEE THEM ALL OVER THE INTERNET





## BACKGROUND

- Commerce
- Strategy
  - Covert marketing
  - Effective rollout campaigns
  - Copyright
  - Embedded website URLs

# Infographics ...

# WHAT ARE THEY???
### SEARCHES, GOOGLE INSIGHTS



Krum R. Cool infographics: Effective communication with data visualization and design. 1st ed: Wiley; 2013.

### **OXFORD DEFINITION**



### noun

 a visual image such as a chart or diagram used to represent information or data

- origin:
  - 1960s (as adjective): blend of INFORMATION and GRAPHIC

http://www.oxforddictionaries.com/us/definition/american\_english/infographic

### SPECIFIC DEFINITION – AND A DISTINCTION

- Graphics
- Data visualizations
  - Visual representations of numerical values
- Infographics
  - A larger graphic design that combines data visualizations, illustrations, text, images
  - Tells a complete story



### **INFOGRAPHICS: WHAT ARE THEY?**

Introduction/Foundation

# Ah-Ha!

The Main Event

### Conclusion/Call-to-action

### INFOGRAPHICS: WHY DO THEY WORK?

### There are approximately

# 2,267,233,742 global Internet users

InternetWorldStats.com Dec 31, 2011

## INFOGRAPHICS: WHY DO THEY WORK?



#### Krum R. Cool infographics: Effective communication with data visualization and design. 1st ed: Wiley; 2013.

# INFOGRAPHICS: WHY DO THEY WORK?

There are approximately





Krum R. Cool infographics: Effective communication with data visualization and design. 1st ed: Wiley; 2013.

July 2012

### INFOGRAPHICS: WHY DO THEY WORK? IT'S ALL ABOUT CONTEXT



### INFOGRAPHICS: WHY DO THEY WORK? THE PICTURE SUPERIORITY EFFECT

Starbucks Corporation

Apple, Inc.

The Coca-Cola Company

Nike, Inc.

The Home Depot U.S.A. Inc.

Budwiser, Anheuser-Busch

FedEx Corporation

### INFOGRAPHICS: WHY DO THEY WORK? THE PICTURE SUPERIORITY EFFECT

Starbucks Corporation

Apple, Inc.

The Coca-Cola Company

Nike, Inc.

The Home Depot U.S.A. Inc.

Budwiser, Anheuser-Busch

FedEx Corporation













### INFOGRAPHICS: WHY DO THEY WORK? THE PICTURE SUPERIORITY EFFECT

### **Picture Superiority Effect**

Memory retention after 3 days





10% Text or Audio Only

65% Text + Picture

- Precise statistic debunked
- Too simple a stat: learning depends on too many variables
- ... but a useful framework

Krum R. Cool infographics: Effective communication with data visualization and design. 1st ed: Wiley; 2013.

Thalheimer W. People remember 10%, 20%...Oh Really? 2017; <u>http://www.willatworklearning.com/</u> 2006/05/people\_remember.html. Accessed: January 6.

### INFOGRAPHICS' APPLICATIONS...

# ... So how about in healthcare???

### INFOGRAPHICS APPLIED TO THE BIOMEDICAL LITERATURE

- Neil Mehta, MD
- Associate Professor of Internal Medicine
- Director of Education Technology, Cleveland Clinic Lerner College of Medicine
- Web Editor for Journal of General Internal Medicine
- Working on the "IBM Watson Goes to Medical School" project



### INFOGRAPHICS APPLIED TO THE BIOMEDICAL LITERATURE

**Context** Administration of traditional chloride-liberal intravenous fluids may precipitate acute kidney injury (AKI).

**Objective** To assess the association of a chloride-restrictive (vs chloride-liberal) intravenous fluid strategy with AKI in critically ill patients.

**Design, Setting, and Patients** Prospective, open-label, sequential period pilot study of 760 patients admitted consecutively to the intensive care unit (ICU) during the control period (February 18 to August 17, 2008) compared with 773 patients admitted consecutively during the intervention period (February 18 to August 17, 2009) at a university-affiliated hospital in Melbourne, Australia.

**Interventions** During the control period, patients received standard intravenous fluids. After a 6month phase-out period (August 18, 2008, to February 17, 2009), any use of chloride-rich intravenous fluids (0.9% saline, 4% succinylated gelatin solution, or 4% albumin solution) was restricted to attending specialist approval only during the intervention period; patients instead received a lactated solution (Hartmann solution), a balanced solution (Plasma-Lyte 148), and chloride-poor 20% albumin.

Main Outcome Measures The primary outcomes included increase from baseline to peak creatinine level in the ICU and incidence of AKI according to the risk, injury, failure, loss, end-stage (RIFLE) classification. Secondary post hoc analysis outcomes included the need for renal replacement therapy (RRT), length of stay in ICU and hospital, and survival.

**Results** Chloride administration decreased by 144 504 mmol (from 694 to 496 mmol/patient) from the control period to the intervention period. Comparing the control period with the intervention period, the mean serum creatinine level increase while in the ICU was 22.6  $\mu$ mol/L (95% CI, 17.5-27.7  $\mu$ mol/L) vs 14.8  $\mu$ mol/L (95% CI, 9.8-19.9  $\mu$ mol/L) (*P* = .03), the incidence of injury and failure class of RIFLE-defined AKI was 14% (95% CI, 11%-16%; n = 105) vs 8.4% (95% CI, 6.4%-10%; n = 65) (*P* <.001), and the use of RRT was 10% (95% CI, 8.1%-12%; n = 78) vs 6.3% (95% CI, 4.6%-8.1%; n = 49) (*P* = .005). After adjustment for covariates, this association remained for incidence of injury and failure class of RIFLE-defined AKI (odds ratio, 0.52 [95% CI, 0.37-0.75]; *P* <.001) and use of RRT (odds ratio, 0.52 [95% CI, 0.33-0.81]; *P* = .004). There were no differences in hospital mortality, hospital or ICU length of stay, or need for RRT after hospital discharge.

**Conclusion** The implementation of a chloride-restrictive strategy in a tertiary ICU was associated with a significant decrease in the incidence of AKI and use of RRT.



VS.

### **INFOGRAPHICS IN HEALTHCARE**

Original Research - Abstract

### A Preliminary Study of Health Care Professionals' Preferences for Infographics Versus Conventional Abstracts for Communicating the Results of Clinical Research

CHARLES J. TURCK, PHARMD, BCPS; MATTHEW A. SILVA, PHARMD, BCPS; SAMANTHA R. TREMBLAY, PHARMD; STEVEN L. SACHSE, BS

Turck CJ et al. A preliminary study of health care professionals' preferences for infographics versus conventional abstracts for communicating the results of clinical research. *J Contin Educ Health Prof.* 2014;34:S36-8.

### ABSTRACT-INFOGRAPHIC COMPARISON IN OUR SURVEY

### Early administration of aspirin in patients treated with alteplase for acute ischaemic stroke: a randomised controlled trial.

Zinkstok SM, Roos YB: ARTIS investigators.

Lancet, 2012 Aug 25;380(9843):731-7. doj: 10.1016/S0140-6736(12)60949-0.

Department of Neurology, Academic Medical Center University, of Amsterdam, Amsterdam, Netherlands,

#### BACKGROUND:

Thrombolysis with intravenous alteplase is the only approved treatment for acute ischaemic stroke. After alteplase-induced recanalisation, reocclusion occurs in 14-34% of patients, probably because of platelet activation. Early administration of antiplatelet therapy after alteplase could reduce the risk of reocclusion and improve outcome. We compared the effects of early addition of intravenous aspirin to alteplase with standard alteplase without aspirin.

#### METHODS:

In this multicentre, randomised, open-label trial with blindendpoint assessment, patients with acute ischaemic stroke treated with alteplase were randomly assigned to 300 mg intravenous aspirin within 90 min after start of alteplase treatment or to no additional treatment. In both groups, oral







#### **Safety Endpoints:**



#### **Conclusion:**

In patients with ischemic stroke treated with alteplase; the addition of IV aspirin therapy within 90 minutes does not improve functional outcome and increases the risk of symatomatic intracronal hemorrhage.

Reference: Zinkstock et al. Lancet. 2012;380:731-37.

### OUR STUDY

- Which format is a more effective way of conveying information in each of the following settings:
  - Social media site (e.g., Facebook) Drug package insert
  - Online medical journal
  - Print medical journal

- Pharmaceutical company webpage



### OUR STUDY

- Which format allows for a <u>quicker</u>, more efficient read?
- Do you think that <u>either format</u> would allow you to <u>remember its content for a longer period of time</u>? If so, which?



### DESCRIPTIVE RESULTS

- Out of 15,320 surveyed, 107 responses
- 0.70% response rate



### DESCRIPTIVE RESULTS

Figure 2. Survey respondent's professions



### SETTING, OVERALL RESPONSE

| Setting                                                       | Median | Mean | Favors? |
|---------------------------------------------------------------|--------|------|---------|
| Social media                                                  | 5      | 4.21 | I       |
| <i>Online</i> journal                                         | 4      | 3.44 | I       |
| Print journal                                                 | 3      | 2.86 | ~A      |
| Drug package insert<br>summarizing clinical<br>trial findings | 4      | 3.60 | Ι       |
| Pharma company<br>summarizing study<br>findings online        | 4      | 3.86 | Ι       |

A = abstract

### I = infographic

### EFFICIENCY & RETENTION, OVERALL RESPONSE

| Торіс             | Median | Mean | Favors? |
|-------------------|--------|------|---------|
| Efficiency        | 5      | 4.13 | I       |
| Factual retention | 4      | 3.94 | I       |

A = abstract

I = infographic

### INFERENTIAL STATISTICS

- Are there any differences between subgroups of interest?
  - Physician vs. non-physician
  - Different age categories
- Statistics
  - Wilcoxon rank sum
  - Adjusted for multiple side-by-side comparisons when > 2 subgroups (age)

### SUBGROUP ANALYSES

- Examined for the different questions and settings (e.g., social media, package insert, etc.)
  - Handfuls of statistically significant differences
  - Younger cohorts favored infographics more than older
  - Journals
    - Online: MDs neutral on I's, non-MDs favored I's
    - Print: MDs preferred A's, non-MDs neutral
  - In all other settings, all subgroups preferred infographics
    - Except age 70+: neutral in social media

### SUMMARY OF FINDINGS

### • Overall

-Infographic preferred in all but print medical journals

 Efficiency and retention responses favor infographics regardless of subgroup analyses (median score ≥ 4 for all subgroups)

### TURCK ET AL. CONCLUSION AND FUTURE DIRECTIONS

- Findings warrant independent replication
- Infographic vs. abstracts: a false choice?
- Infographic format may promising addition
- Standards/guidelines for biomedical infographics?

### WHERE ELSE IN THE LITERATURE?

- Biomedicine: increasingly, infographics are starting to be studied
- Publications: 10 in 2016, 3 in 2015
- Examples of research
  - Characteristics of general infographic effectiveness for infographics' sake (e.g., actionoriented titles<sup>1</sup>)
  - Improvement of retention in patients<sup>2,3</sup> and healthcare professionals<sup>4,5</sup> using surrogate markers like eye-trackers<sup>2,</sup> and questionnaires<sup>3</sup>
  - Infographics are the same or better than static media,<sup>3</sup> underperform vs. video<sup>6</sup>
- One limitation: no consistent measure of infographic effectiveness across studies

1. Wansink B, Robbins R. *Am J Health Behav.* 2016;40:779-87. 2. Wolpin S et al. *Comput Inform Nurs.* 2016;34:288-96. 3. Comello ML, et al. *J Med Internet Res.* 2016;18:e237. 4. Crick K, Hartling L. *PLoS One.* 2015;10:e0140029. 5. Yoon S, Cohen B, Cato KD, et al. Visualization of data regarding infections using eye tracking techniques. *J Nurs Scholarsh.* 2016;48:244-53. 6. Occa A, Suggs LS. *J Health Commun.* 2016;21:1-11.

### STATE OF INFOGRAPHICS IN BIOMEDICINE AS A WHOLE



### STATE OF INFOGRAPHICS IN BIOMEDICINE AS A WHOLE



# THANK YOU!

### QUESTIONS . . .

- To ask a question, please type your query into the Q&A box
- To ensure anonymity, before sending please choose the dropdown box option, "Hosts, Presenters and Panelists." Otherwise, ALL audience members will be able to see your submitted question

### UPCOMING ISMPP U'S

| DATE                      | TOPIC                                                                   | FACULTY                                                                                                                                                                                                                                   |
|---------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| February 22 <sup>nd</sup> | Enhancing<br>Collaboration<br>Between<br>Publications and<br>HEOR Teams | <ul> <li>Rob Matheis, Executive Director, Global Scientific<br/>Communications, Celgene</li> <li>Jennifer Tighe, Senior Manager, Global Medical<br/>Affairs, Celgene</li> <li>Moderator: Tom Drake, Global Outcomes Group, Inc</li> </ul> |
| March 2017                | Highlights of the<br>European Meeting of<br>ISMPP                       | European Programme Committee                                                                                                                                                                                                              |

### THANK YOU FOR ATTENDING!

We hope you enjoyed today's presentation. Please check your email for a link to a survey that should take a few minutes to complete. We depend on your feedback and take your comments into account as we develop future educational offerings. Thank you in advance for your participation!