Using Visual Abstracts to Disseminate Public Health Science

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Morbidity and Mortality Weekly Report (MMWR)

- The “voice of CDC”
- Timely, reliable, useful public health information and recommendations
- Audience: public health and healthcare professionals; public
- Website: more than 17 million page views annually
- Traditional media, social media (Facebook, Twitter, LinkedIn)
2018 in an Internet Minute...

Digital Content Discovery is Changing

Think Digital First!
Deliver health information when and where they're looking for it.
Healthcare Professionals Use Mobile at Work

“I just need the answer, not the details. I don’t have time. I need detailed information at a glance. “

“I want practical information. If I have someone with risk, what do I do next.”

Principles for Effective Communication

• Tell a story
• Communicate in images
• Invoke emotion with intention
• Create meaningful calls to action

Ann Christiano and Annie Neimand “The Science of What Makes People Care”
Published in the Stanford Social Innovation Review, Fall 2018
What is a Visual Abstract?
Adapted from “A Primer on How to Create a Visual Abstract” by Dr. Andrew Ibrahim

- Visual summary of an abstract

- Quickly conveys the study’s key findings

- Not meant to replace the article

- Helps readers quickly find the most relevant content

Visual Abstract Design Principles
Adapted from “A Primer on How to Create a Visual Abstract” by Dr. Andrew Ibrahim

- Focus on the user experience. What does my audience want to know?

- Clarity of purpose. Narrow down the key messages.

- Rapid prototyping. Your first one won’t be the best, keep trying.

- Iterative improvement. Solicit feedback and study other designs.

- Thoughtful restraint. Prioritize key message over completeness.

- Relevant creativity. Balance your design creativity with thoughtful restraint and clarity of purpose.
COMPONENTS OF AN EFFECTIVE VISUAL ABSTRACT

Impact of treating Iron Deficiency Anemia Before Major Abdominal Surgery

Decreased Need for Blood Transfusions
31% ➔ 12% (percent of patients)

Shorter Hospital Length of Stay
9.7 ➔ 7.0 (days)

Recovery of Hemoglobin (Hb) post-discharge
+0.9 ➔ +1.9 (Hb change at 4 weeks)

Author, Citation

Summary of Outcomes

State Outcome Comparison
Visual Display of Outcome
Data of Outcome (Units)
Who Created the Visual Abstract (often the journal)

ADULT CIGARETTE SMOKING DECLINES, BUT ALMOST 38 MILLION AMERICANS STILL SMOKE

SMOKING DOWN

2016 15.5%
2005 20.9%

QUITTING UP

59.0% 2016
50.8% 2005

SMOKING CAUSES SIGNIFICANT DISEASE AND DEATH IN THE U.S.

480,000 DEATHS PER YEAR

CIGARETTE SMOKING HIGHER AMONG THOSE WHO ARE

- Men
- 25–64 years old
- American Indian or Alaska Native or Multiracial
- Lower educated
- Disabled
- Living in poverty
- Living in the Midwest or South
- Uninsured or insured through Medicaid
- Lesbian, gay, or bisexual
- In serious psychological distress

Data published in Jamal et al. MMWR, Jan 2018 (www.cdc.gov/mmwr)
Messages are (Mostly!) Clear

<table>
<thead>
<tr>
<th>Abstract</th>
<th>Target audience</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tianeptine, A Possible Public Health Risk</td>
<td>Public health professionals</td>
<td>✔</td>
</tr>
<tr>
<td>Arthritis and Weigh: Slimming Down Eases Joint Pain</td>
<td>Health care providers</td>
<td>✔</td>
</tr>
<tr>
<td>MRSA: A Threat to People Who Inject Drugs</td>
<td>Health care providers</td>
<td>✔</td>
</tr>
<tr>
<td>Swim Healthy, Stay Healthy</td>
<td>Consumers</td>
<td>✔</td>
</tr>
<tr>
<td>Sleeping in Contact Lenses is Risky</td>
<td>Health care providers</td>
<td>✔</td>
</tr>
<tr>
<td>Know Someone with Memory Loss?</td>
<td>Consumers</td>
<td>✗</td>
</tr>
<tr>
<td>(Description of Risk)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COPD Burden Higher in Rural America</td>
<td>Public health professionals</td>
<td>✗</td>
</tr>
<tr>
<td>(Clearer messages for intended audience)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**MMWR Template (with character counts)**

**Header (press release format) (35)**

*Audience (e.g., general public, health care) clear?*

<table>
<thead>
<tr>
<th>Main message on risk (20–40)</th>
<th>Report’s main data trend (20–40)</th>
<th>Actionable public health messages (20–40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(85)</td>
<td>(85)</td>
<td>(85)</td>
</tr>
<tr>
<td>Who is at risk?</td>
<td>X Illnesses</td>
<td>• Verb</td>
</tr>
<tr>
<td>What is the risk?</td>
<td>X Deaths</td>
<td>• Verb</td>
</tr>
<tr>
<td></td>
<td>X Increase in…</td>
<td>• Verb</td>
</tr>
</tbody>
</table>

Data source, year as reported in first-author et al. MMWR. Month 2018 [shortened link]
Optional space for critical definitions or critical references (such as guidance)

www.CDC.gov

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**Visual Abstract Timeline**

<table>
<thead>
<tr>
<th>WEEK</th>
<th>MON</th>
<th>TUES</th>
<th>WED</th>
<th>THURS</th>
<th>FRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Program and MMWR meet; text and data</td>
<td>To graphics</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>1st graphic version</td>
<td>1st round of edits</td>
<td>2nd graphic version</td>
<td>2nd round of edits</td>
</tr>
<tr>
<td>3</td>
<td>3rd graphic version; Final version</td>
<td>Prep social media and electronic release</td>
<td>Released under embargo</td>
<td>MMWR released at 1pm ET</td>
<td></td>
</tr>
</tbody>
</table>
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Communicate in Images


Data as of March 12, 2019. Report was MMWR’s 4th most popular in 2018
Create meaningful calls to action

CDC's #1 LinkedIn post of 2018 in terms of ‘Likes’ and ‘Shares’

Data as of March 12, 2019.
Similar report in 2017 received an Altmetric score of 22.

Visual Abstracts (VA) Increased Engagement with MMWR Target Audience

*Statistically Significant Difference (p<0.05)
Sysomos data; Twitter mentions in 7 days
**Visual Abstracts in Media**

**CDC: Nearly 2 percent of high school students identify as transgender — and more than one-third of them attempt suicide**

*Forbes*

MMWR | TIANEPTINE, A POSSIBLE PUBLIC HEALTH RISK

- **Antidepressant Not Approved in the U.S.**
- **Poison Control Center Calls Increasing**
- **Treating Tianeptine Misuse**

- **People may be abusing tianeptine because of its opioid-like effects**
- **218 calls from 2000 through 2017**
- **11 calls in first 14 years**
- **207 in most recent 4 years**

- **Consider tianeptine misuse when patients have opioid-like overdose or withdrawal symptoms**
- **Consult poison control centers (1-800-222-1222) for further management**

National Poison Data System data from 2000-2017 as published in El Zaman, MMWR 2018 [https://doi.org/10.15585/mmwr.mm6728a1](https://doi.org/10.15585/mmwr.mm6728a1)

**Heallo Infectious Disease News**

**PND 16 times likelier to develop invasive MRSA infections**

People who lived in areas around 16 times more likely to develop on invasive MRSA infections compared with those who lived in a low-population area from 2012 to 2016, according to findings published in *MMWR*.

Kelly J. Reinhard, MPH, DrPH, and colleagues from the CDC’s Division of Healthcare Quality Promotion, analyzed data collected through the healthcare-associated infections Community Surveillance Network, which included data from 18 states from 2012 through 2016. The researchers found that highly concentrated outbreaks of invasive MRSA outbreaks among patients in high-density populations, including universities, nursing homes and skilled nursing facilities, are more likely to occur in areas with higher population density.
Tips, Tools, Tricks

• Engage a team
• Embrace innovation
  • Rapid prototyping, iterative approach
  • Pilot, measure
• Select an audience
• Review on digital devices
• Use clear communication

Resources

#Visual Abstract; Google images “visual abstract”
A Surgeon’s Journey Through Research and Design
https://www.surgeryredesign.com/resources/

Video: How to Make a Visual Abstract
https://www.youtube.com/watch?v=Cz5vC6Zt5sI

A Primer on How to Create a Visual Abstract

Use of a Visual Abstract to Disseminate Scientific Research
https://static1.squarespace.com/static/5854aaa044024321a353bb0d/t/5a527aa89140b76bbfb2028a/1515354827682/VisualAbstract_Primer_v4_1.pdf

Publication—Seeing is Believing: Using Visual Abstracts to Disseminate Scientific Research
http://www.nature.com/articles/ajg2017268

CDC’s Clear Communication Index
https://www.cdc.gov/ccindex/index.html

Public Health Image Library
https://phil.cdc.gov/
For more information, contact CDC
1-800-CDC-INFO (232-4636)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.