Implementing Infographics into CPR and First Aid Education to Effect (Hopefully?) Students' Achievement and Attitude Towards Helping Behaviors

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Conflict of Interest

- FINANCIAL DISCLOSURE:
  - American Red Cross Travel Grant.
- UNLABELED/UNAPPROVED USES DISCLOSURE:
  - No relevant financial relationship (s) exist.
- AFFILIATIONS
  - American Red Cross Scientific Advisory Board
  - ILCOR First Aid Task Force Member
- Statements, opinions and recommendations contained in this program mine unless indicated.
- Participants must use discretion and clinical reasoning when using the information contained in this presentation.

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Context


Verbal communication
Avoid pitfalls of mis-communication
Non-verbal communication
Adaptive communication style
EFFECTIVE PATIENT COMMUNICATION
Reflective listening
Skilled thinking
Clinical intuition
experience
EFFECTIVE
PATIENT
COMMUNICATION

Context

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Objective

Explore the use of infographics as learning tools, examine standard infographic types and investigate what comprises a powerful infographic for learning and how this medium can influence cardiopulmonary (CPR) and first aid education as an educational tool.

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Background

Serkan Y. Infographics for educational purposes: their structure, properties, and reader approaches. *TOJET*. 2016;15(3):98-110.

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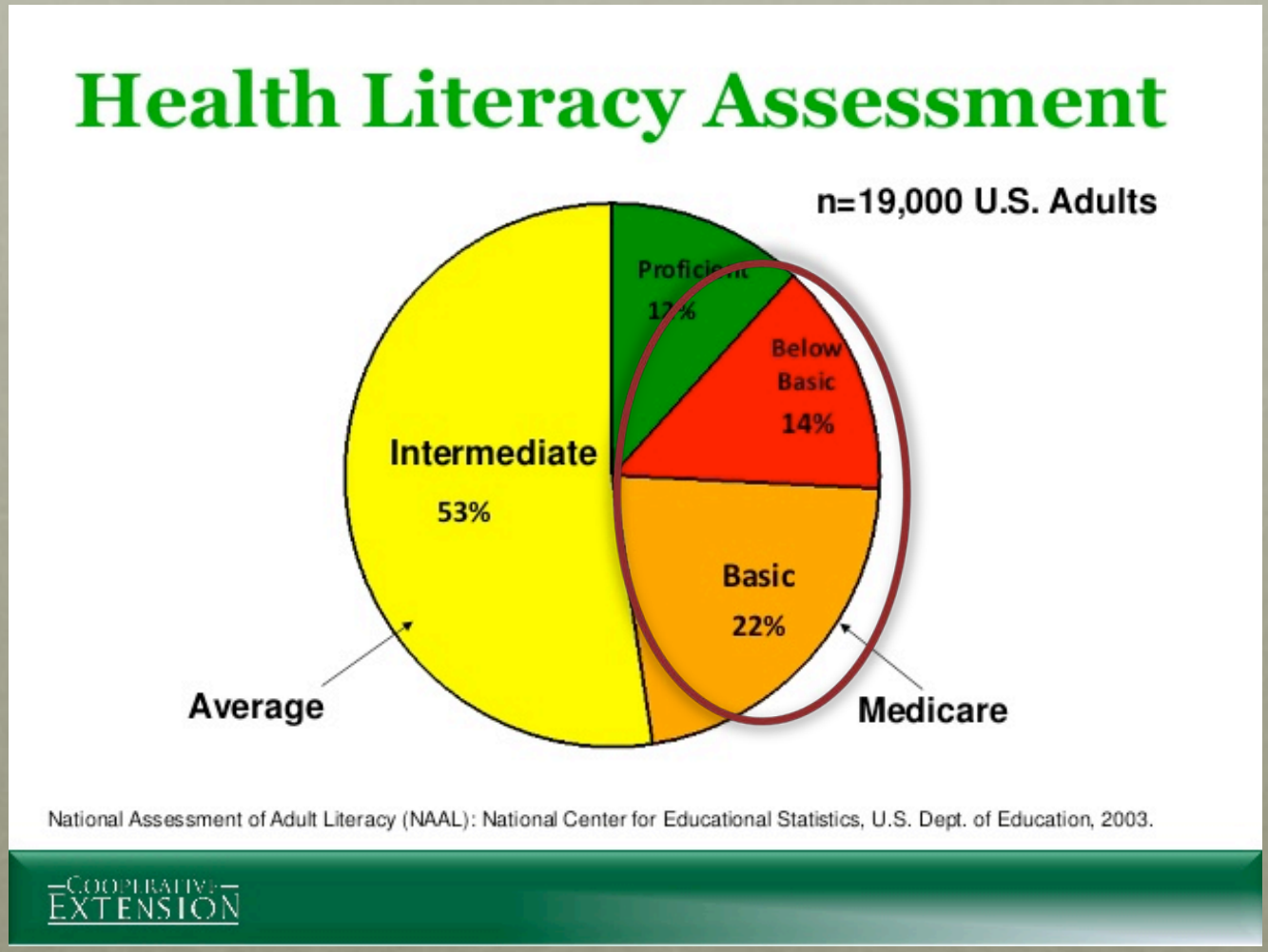
Background



U.S. Department of Education (2006). The health literacy of America's adults: results from the 2003 national assessment of adult literacy. Available at: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006483. Retrieved on October 17, 2017.

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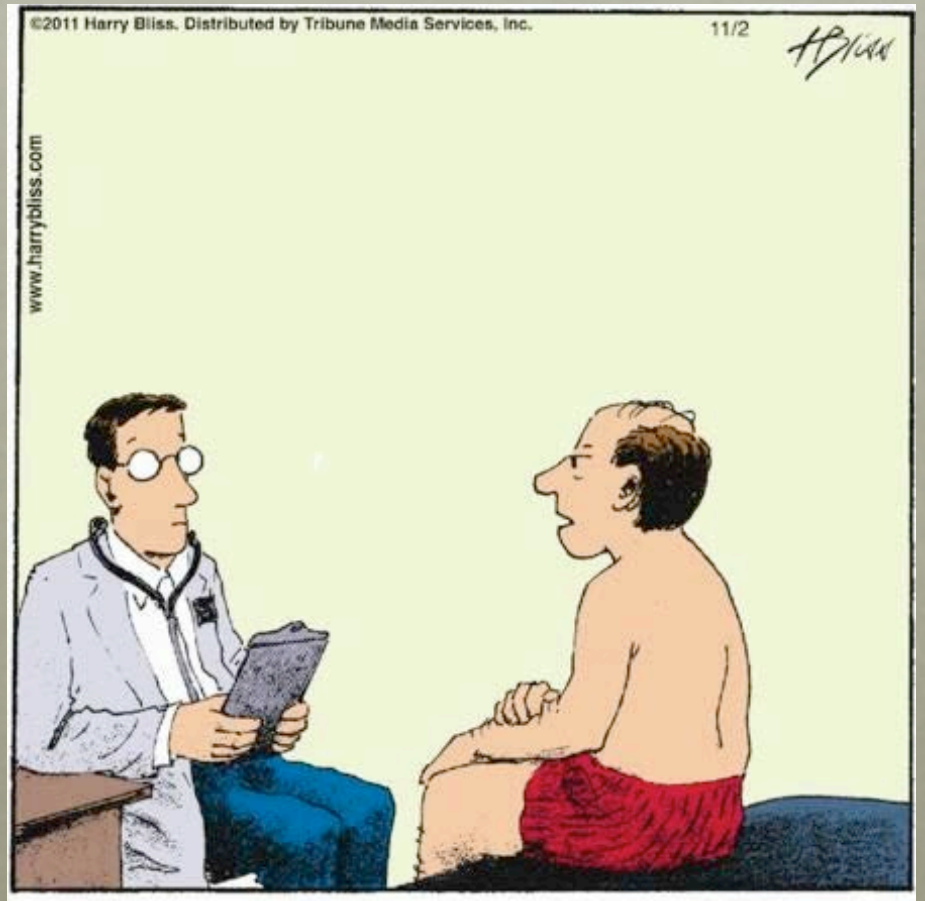
Background



"Doc, enough with the 'English' — just give it to me in plain academic medical terminology!"

U.S. Department of Education (2006). The health literacy of America's adults: results from the 2003 national assessment of adult literacy. Available at: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006483. Retrieved on October 17, 2017.

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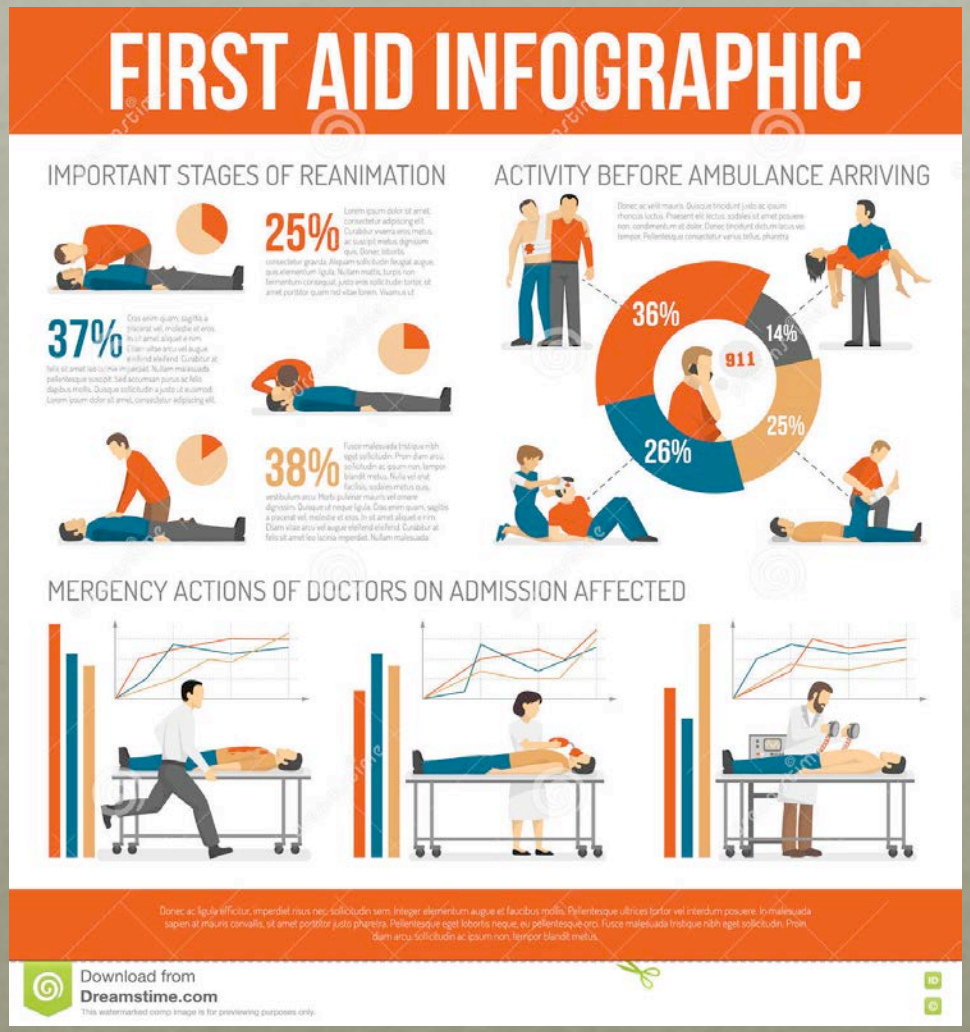
Infographics

Prominent visual representations of information intended to illustrate information **efficiently** and **effectively** using various visuals such as texts, pictures, drawings, diagrams, graphs, etc.



Rex K. Infographics as teaching tools. Available at: https://www.insynctraining.com/external/BYTE/09062016/Geeky%20Girl%20Karin%20Rex%20Infographics%20BYTE%20Handout.pdf

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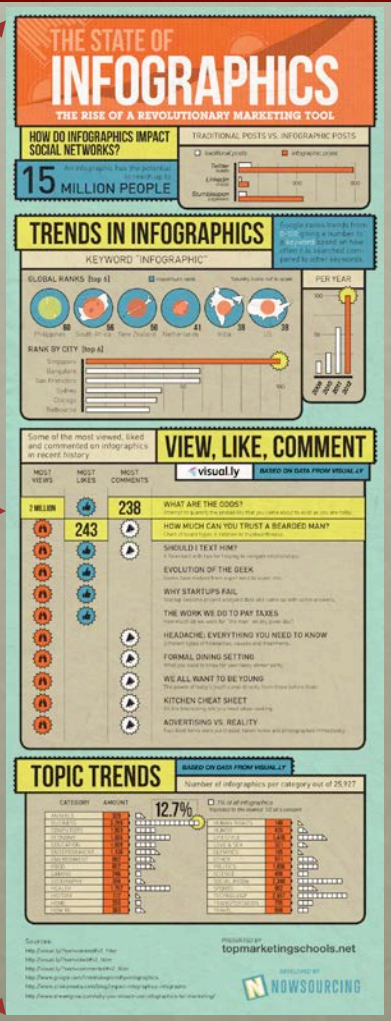
Infographics

Connection



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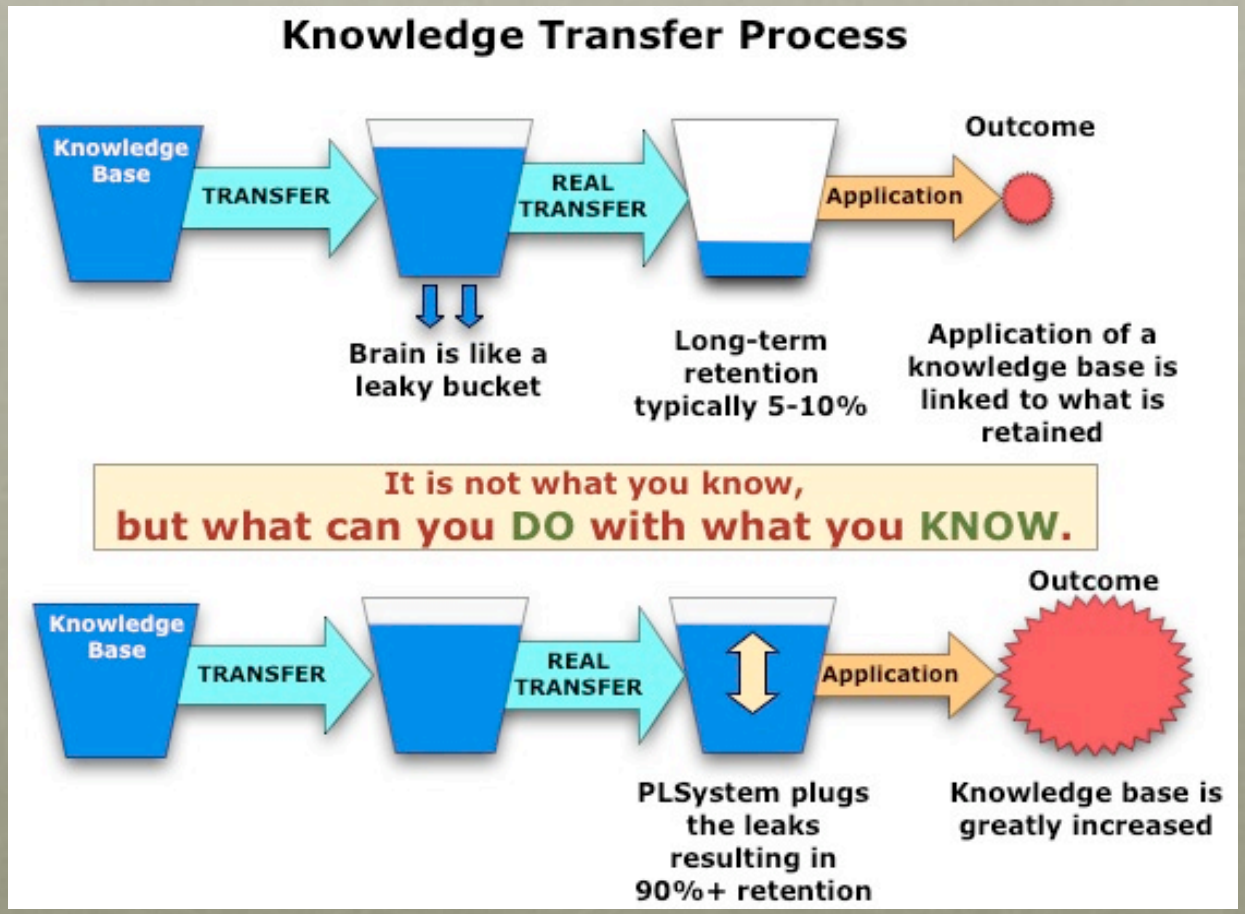
Infographics

Rex K. Infographics as teaching tools. Available at: https://www.insynctraining.com/external/BYTE/09062016/Geeky%20Girl%20Karin%20Rex%20Infographics%20BYTE%20Handout.pdf

Infographics



Borkin, MA, et al. What makes a visualization memorable? *IEEE Transactions On Visualization And Computer Graphics*. 2013;12(19):2306-2315.
William MF. Diversity, thinking styles, and infographics. Paper presented at 12th International Conference of Women in Engineering, Science and Technology, Ottawa July 27-31 2002). Available at: http://www.mun.ca/cwse/icwes_infographics.pdf.

So… what does the evidence show?

- Infographics and CPR; n=0
- Infographics and first aid; n=0
- Infographics and bleeding; n=0
- Infographics and tourniquets; n=0
- Infographics and shock; n=0
- Infographics and burns; n=0
- Infographics and asthma; n=0
- Infographics and diabetes; n=0

So… what does the evidence show?

Objective

Ahmed et al analyzed the content of ***concussion-related*** images and its accompanying meta-data on image-sharing social media platforms.

Ahmed OH, Lee H, Struik LL. A picture tells a thousand words: A content analysis of concussion-related images online. *Phys Ther Sports*. 2016;21:82-6. doi: 10.1016/j.ptsp.2016.03.001. Epub 2016 Apr 12.

So… what does the evidence show?

Methods

Retrieved 300 images from Pinterest, Instagram and Flickr by using a standardized search strategy.

Images were screened and duplicate images were removed.

Ahmed OH, Lee H, Struik LL. A picture tells a thousand words: A content analysis of concussion-related images online. *Phys Ther Sports*. 2016;21:82-6. doi: 10.1016/j.ptsp.2016.03.001. Epub 2016 Apr 12.

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So… what does the evidence show?

Methods

Table 1
Coding scheme, rationale, and categories generated.

Coding aspect	Rationale for inclusion	Categories generated
Type of image	To identify whether individuals are posting images of themselves, other individuals, or of other scenes.	Infographic/non-image; Image taken of another person(s) or a scene; Self-depiction ("selfie").
Primary content of image	To identify what was being posted in the images shared.	Injured individual (s); Un-injured individual (s); Object/product; Medical intervention taking place (e.g. neck collar, stretcher, hospital); Other.
Purpose of image	To identify why individuals were electing to share concussion-related images online.	Sharing a concussion-related incident; Dispensing concussion education; Display concussion-related advocacies/policies; Advertising a product; Display concussion management; Provide concussion-related news; Promote concussion-related research.
Information quality	To attempt to identify whether the overall message from the image reflected or contradicted best-practice concussion guidelines (SCAT3).	Reflecting best-practice concussion guidelines (SCAT3); Contrary to best-practice concussion guidelines (SCAT3); Not applicable.

Ahmed OH, Lee H, Struik LL. A picture tells a thousand words: A content analysis of concussion-related images online. *Phys Ther Sports*. 2016;21:82-6. doi: 10.1016/j.ptsp.2016.03.001. Epub 2016 Apr 12.

So… what does the evidence show?

Results

176 images were included for analysis; ***70*** from ***Pinterest***, ***63*** from ***Flickr***, and ***43 from Instagram***.

Most were of another ***person or a scene*** (64%), with the primary content ***depicting injured individuals*** (39%).

Primary purposes of images were to ***share a concussion-related incident (33%)*** and to ***dispense education (19%)***.

Images where it could be evaluated, the majority (91%) were found to reflect the Sports Concussion Assessment Tool 3 (SCAT3) guidelines.

Ahmed OH, Lee H, Struik LL. A picture tells a thousand words: A content analysis of concussion-related images online. *Phys Ther Sports*. 2016;21:82-6. doi: 10.1016/j.ptsp.2016.03.001. Epub 2016 Apr 12.

So… what does the evidence show?

Conclusion

The ability to rapidly disseminate rich information through photos, images, and infographics to a wide-reaching audience suggests that image-sharing social media platforms could be used as an effective communication tool for sports concussion.

Public health strategies could direct educative content to targeted populations via the use of image-sharing platforms.

Ahmed OH, Lee H, Struik LL. A picture tells a thousand words: A content analysis of concussion-related images online. *Phys Ther Sports*. 2016;21:82-6. doi: 10.1016/j.ptsp.2016.03.001. Epub 2016 Apr 12.

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So… what does the evidence show?

Objective

Wilkinson examined the presence of health behavior theory (HBT) constructs in pins found on Pinterest and assessed the relationship between various pin characteristics and the likelihood of inclusion of HBT.

Wilkinson JL, Strickling K, Payne HE, Jensen KC, West JH. Evaluation of diet-related infographics on pinterest for use of behavior change theories: a content analysis. *JMIR Mhealth Uhealth*. 2016;8;4(4):e133.

So… what does the evidence show?

Methods

Content analysis focused on pins collected from Pinterest identified with the search terms "***nutrition infographic***" and "***healthy eating infographic***."

Coding rubric included HBT constructs, pin characteristics, and visual communication tools. Each construct was coded as **present** or **not present** (yes=1, no=0).

Wilkinson JL, Strickling K, Payne HE, Jensen KC, West JH. Evaluation of diet-related infographics on pinterest for use of behavior change theories: a content analysis. *JMIR Mhealth Uhealth*. 2016;8;4(4):e133.

So… what does the evidence show?

Text[h]	
Text heavy (>50%)	109 (46.2)
Text light (<50%)	127 (53.8)
Color[i]	
Vibrant	155 (65.7)
Muted	78 (33.1)
Black and white	1 (0.4)
Person depicted	
No person depicted	157 (66.2)
Cartoon	66 (27.9)
Photograph	14 (5.9)
Food Depicted	
No food depicted	15 (6.4)
Cartoon	126 (53.4)
Photograph	95 (40.3)
References[j]	100 (43.7)
Professional recommendation[k]	82 (34.8)

Wilkinson JL, Strickling K, Payne HE, Jensen KC, West JH. Evaluation of diet-related infographics on pinterest for use of behavior change theories: a content analysis. *JMIR Mhealth Uhealth*. 2016;8;4(4):e133.

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So… what does the evidence show?

Conclusion

Findings suggest that current Pinterest infographics targeting healthy eating ***contain few HBT elements***.

Health professionals and organizations should create and disseminate infographics that ***contain more elements of HBT*** to better influence healthy eating behavior.

This may be accomplished by creating pins that use both text and images of people and food in order to portray elements of HBT and convey nutritional information.

Wilkinson JL, Strickling K, Payne HE, Jensen KC, West JH. Evaluation of diet-related infographics on pinterest for use of behavior change theories: a content analysis. *JMIR Mhealth Uhealth*. 2016;8;4(4):e133.

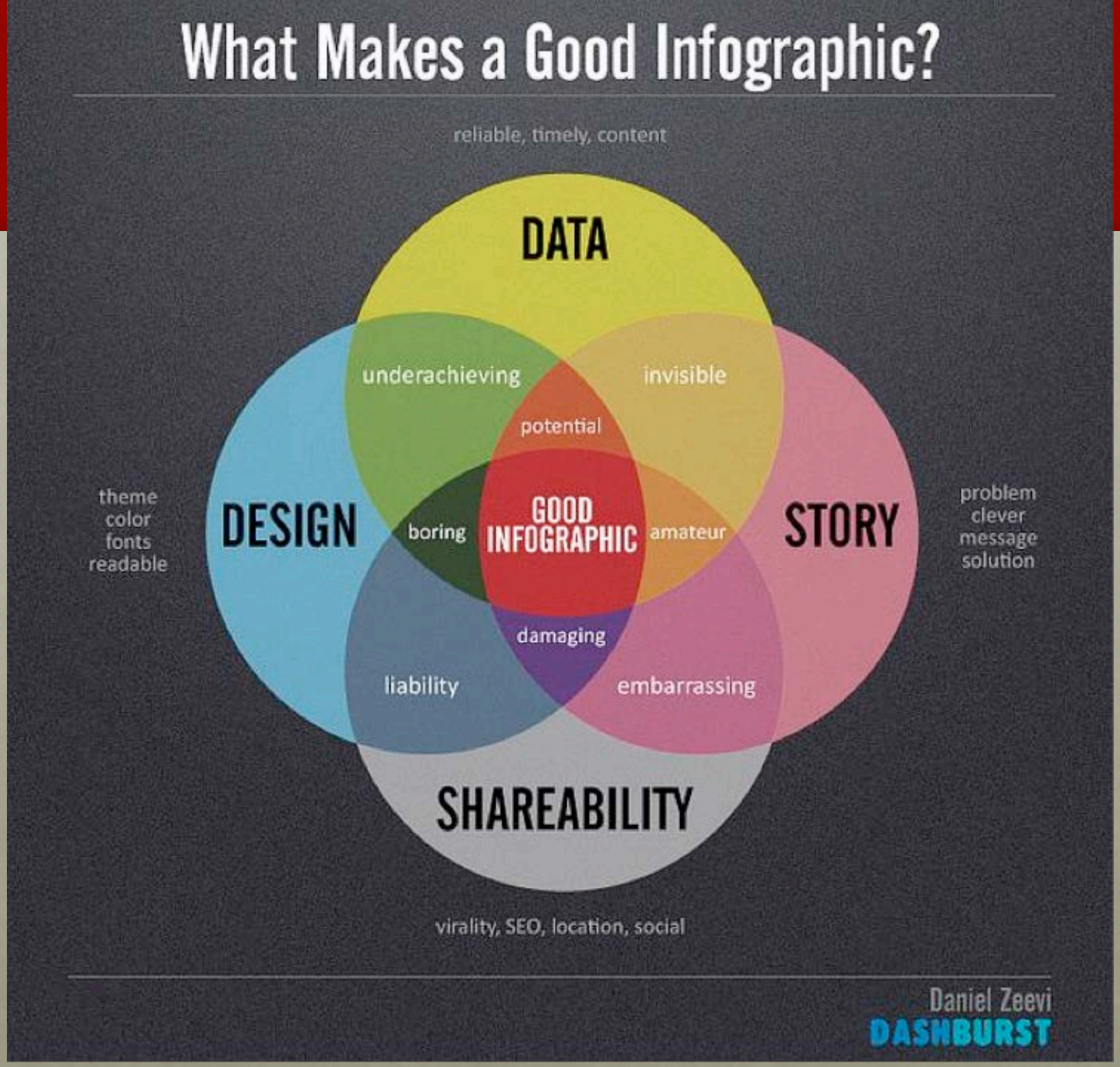
So…is an infographic the right medium to teach CPR and first aid concepts?

- Is the concept visual?
- Does it have a visual slant or a systems dynamic that can be conveyed in a visual way?
- Is the concept data-driven?
- Can a series of ideas and facts be used to tell an effective story?
- Is the topic focused enough for a single infographic?
- Have you chosen a topic that can be told in one image series or on a single page?

DeMers J. (2013). The Definitive Guide to Writing and Promoting a Viral Infographic. SEJ. https://www.searchenginejournal.com/the-definitive-guide-to-writing-and-promoting-a-viral-infographic/64733/

So…what are the different types of infographics?

- Statistical infographics
- Timeline infographics
- Informational Infographics
- Process Information
- Gameboard metaphor
- Personal preference



Ching A. (n.d.) The Ultimate Guide to Link Building with Infographics. (https://piktochart.com/blog/the-ultimate-guide-to-link-building-with-infographics/

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The Data

Infographics stand or fall on **SOLID DATA**!

*"As a reader, there's nothing worse than looking at an infographic with a nice collection of facts and figures then scrolling to the bottom and finding out that the data was **from 10 years ago**."*

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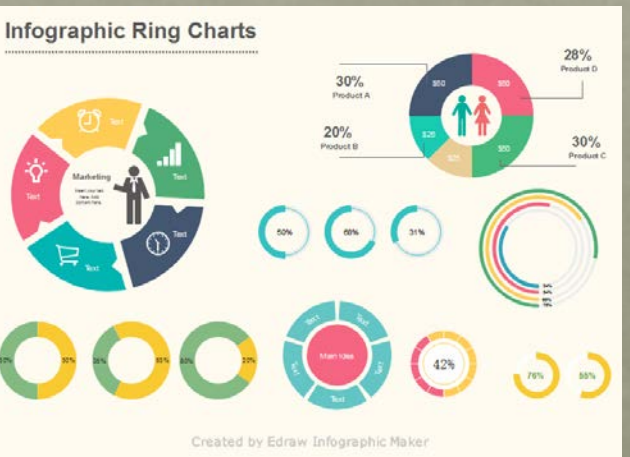
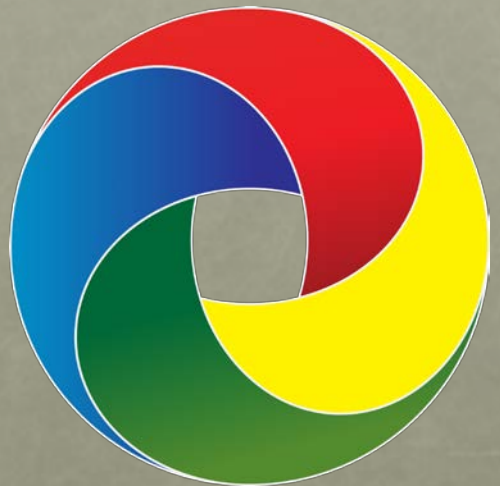
The Graphics

- Turns all that data into something people want to view – the '**graphic**' part of the infographic.
  - Charts and graphs (called data visualization)
  - Icons and vector art
  - Clean photos and illustrations





The Graphics

- Should work together to help highlight the main points of the data.
- Select the first image with care – it's like a visual headline for your infographic and could be a major factor in whether people look at the whole graphic and whether they share it.
- Make sure the flow of **images tells a story**.
- Keep the design **simple**, but harmonious.
- Think about what colors look good together, consider a color palette resource.
- Guide the reader among the different sections using colors, shapes, lines and arrows.

WHAT TO KNOW ABOUT

DENTAL INJURIES

Athletes who don't wear mouthguards are

1.6 - 1.9 TIMES

more likely to sustain an oral or dental injury.

Treatment of dental and oral injuries can cost upwards of

$15,000

over an individual's lifetime.

APPROXIMATELY 39%

of dental injuries in the United States are sports related.

The National Federation of State High School Associations requires fitted mouthguards for

- FIELD HOCKEY
- FOOTBALL
- ICE HOCKEY
- LACROSSE
- WRESTLING

Mouthguards are only mandatory for wrestling if the athlete wears braces or an orthodontic device.

THE NATIONAL COLLEGIATE ATHLETIC ASSOCIATION REQUIRES FITTED MOUTHGUARDS FOR FIELD HOCKEY, FOOTBALL, ICE HOCKEY AND LACROSSE.

WEARING A MOUTHGUARD WILL NOT AFFECT AN ATHLETE'S ABILITY TO BREATHE.

ATHLETES SHOULD WEAR A MOUTHGUARD when participating in sports, even if it's not required.

DENTAL INJURIES FALL INTO THREE CATEGORIES:

1. TOOTH FRACTURES
2. TOOTH DISPLACEMENT INJURIES
3. ROOT FRACTURES

A PROPERLY FITTED MOUTHGUARD CAN PROTECT by splinting the teeth and dissipating energy.

IF YOU SUSPECT A **DENTAL OR ORAL INJURY** → **REPORT ANY DENTAL INJURIES TO YOUR ATHLETIC TRAINER, TEAM PHYSICIAN OR HEALTH CARE PROVIDER IMMEDIATELY.**

A TOOTH COMPLETELY REMOVED FROM THE SOCKET should be re-planted within 5-10 minutes or submerged in a storage medium, such as low-fat milk, until it can be replanted by a medical expert.

MOUTHGUARD CARE TIPS

- **CLEAN YOUR MOUTHGUARD** with lukewarm water and a mild antimicrobial agent before and after use.
- **STORE YOUR MOUTHGUARD** in a clean, rigid, ventilated plastic container.
- **DON'T EXPOSE YOUR MOUTHGUARD TO HEAT** sources or direct sunlight for long periods of time.
- **EXAMINE YOUR MOUTHGUARD DAILY** for fit and any damage, such as tears or loss of resiliency.
- **REPLACE YOUR MOUTHGUARD** if it is damaged or becomes loose.

Source: National Athletic Trainers' Association Infographic provided by the National Athletic Trainers' Association

ttps://www.nata.org/sites/default/files/dental-injury-handout.pdf

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The Writing

- Data and images alone, **DON'T** tell the full story yet. There may not be a lot of words on an infographic, but every one **COUNTS**.
- The right words need to be selected:
  - Create headings and subheadings for infographic sections
  - Highlight interesting facts
  - Call out and caption data

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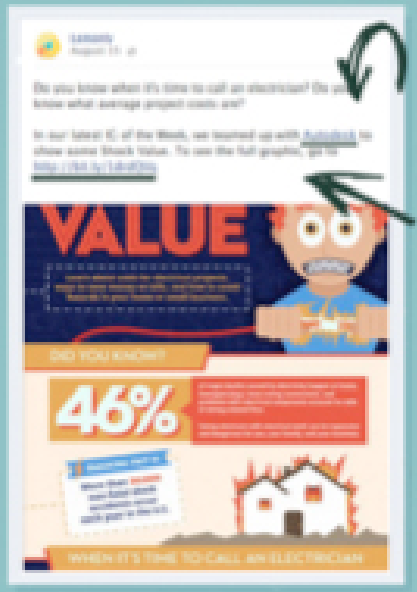
Sharing Your Infographic

When writing, or even if you just upload the infographic alone, a key point is to include the embed code that makes it easy for people to post the infographic on their own site.

This is how you build links back to your original post or your site.

http://socialmarketingwriting.com/tips-sharing-infographic-facebook-twitter-pinterest-linkedin/

Infographics don't format well on Facebook, which is unfortunate because it's so widely used. Here are a few tips to get your infographic noticed.



WIDEN
your reach by mentioning or tagging any people or companies involved

INCLUDE
a shortlink to the full infographic to drive traffic to your site

UPLOAD
a screenshot of the most compelling part of your infographic

TWITTER

Because Twitter is text-based, you obviously will have to tweet a link to your infographic. Here's how to cut through the clutter.

LINK
Make your link a shortlink so you can track clicks and cut down on characters

SIGNAL
that the link is an infographic by including either "#infographic" or "[INFOGRAPHIC]"

PINTEREST

PINTEREST

While Pinterest is purely visual, there are some tips to help your infographic get the repins it deserves.

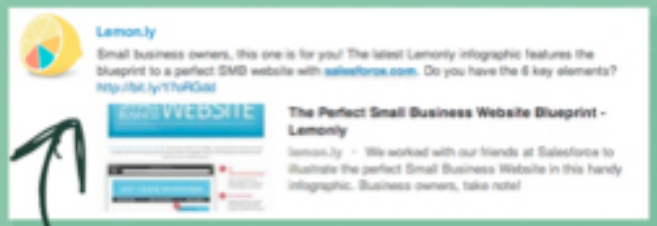
DESCRIBE
what the infographic is about, but don't be boring. Add some character to gain even more repins and clicks

TAG IT
Like Twitter, use hashtags in your description

WIDEN
your graphic's reach by joining group boards

LINKEDIN

LinkedIn can be a very powerful tool to help reach targeted audiences in specific occupations.



ADD SOME TEXT
with the link to your infographic that demonstrates its value and how the reader will benefit from looking at the graphic.

Created by Lemonly

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Sharing Your Infographic

- Submitting the infographic to an infographic directory
  - Wow Internet lists 43 free ones. You'll need that embed code and a short description. (Quicksprout recommends 150-300 words).
- Writing an optimized press release with a link back to your infographic blog post. Not only will this get the word out, but it's good for Search engine optimization (SEO), building links from Press Release Web (PRWeb) and others, and anywhere that republishes your release.
- Sharing the infographic via social media, using relevant hashtags to make it easier to find (including #infographic, of course). When sharing, don't forget **Pinterest** and **Reddit**, both of which have huge collections of infographics.
- Offer it for publication to authoritative blogs and sites in your niche (or upload it to a site like MyBlogGuest which has an infographics guest posting section).

Sharing Your Infographic

- Extract key pieces of data and use them for other posts or social media updates.
- Contact the research sources cited in your infographic and let them know about it – they will probably be glad to share and this will bring you authoritative inbound links.
- Submit it to image directories, suggests Quicksprout, for more link juice.

Tracking and Follow-Up

- Set up tracking for the infographic landing page using analytic software and keep a check on where the traffic is coming from and who's referring people to your site.
- If you're not getting the results you expect, then check that it passes the quality test. See how it measures up against Kissmetrics' list of 19 Warning Signs that your Infographic Stinks.

Neo Mammalian Studios, Duistermaa H. (n.d.). 19 Warning Signs Your Infographic Stinks. https://blog.kissmetrics.com/infographic-warning-signs/

Principles of Infographic Design

Target Audience

Providing context and removing technical jargon, ensure the work is accessible to the widest possible audience.

Murray IR. Maximising the impact of your work using infographics. BJR. 2017;6(11):619-620.

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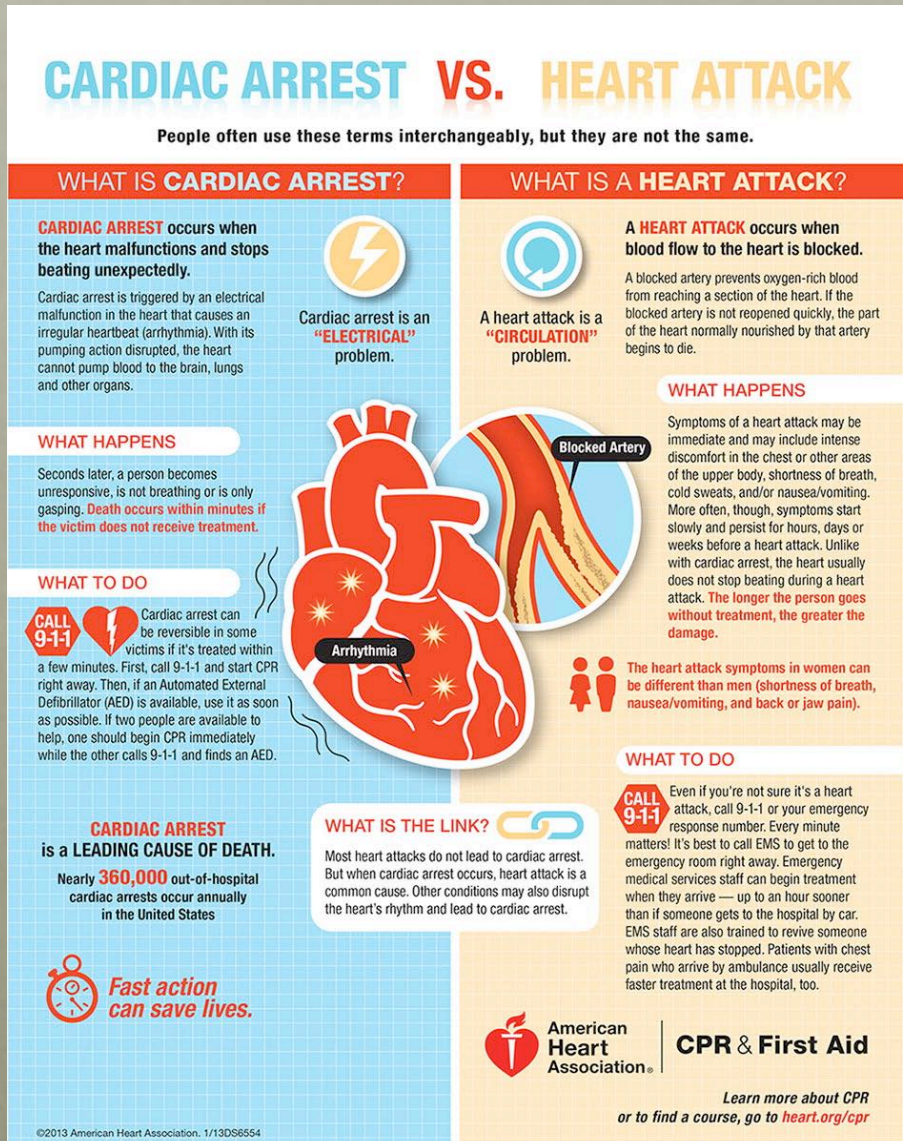
Principles of Infographic Design

Use a compelling title to attract readers.

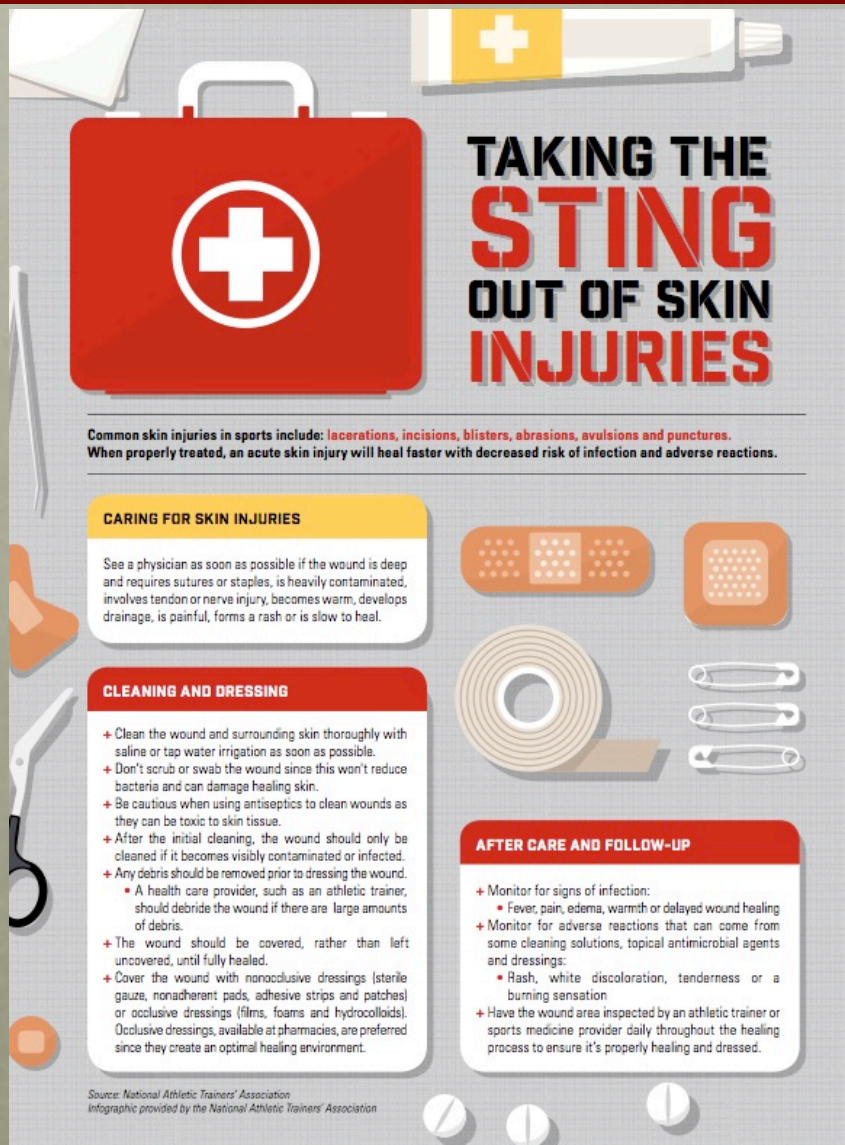
- Consider the "*breaking news headline*" of the research.
- Often the most impactful finding of the study, and is frequently shorter than the full article headline.



Murray IR. Maximising the impact of your work using infographics. BJR. 2017;6(11):619-620.

Principles of Infographic Design

- A good title does 3 things.
  - Grabs people's attention.
  - Conveys core concept of infographic.
  - Includes priority keywords for optimization purposes.



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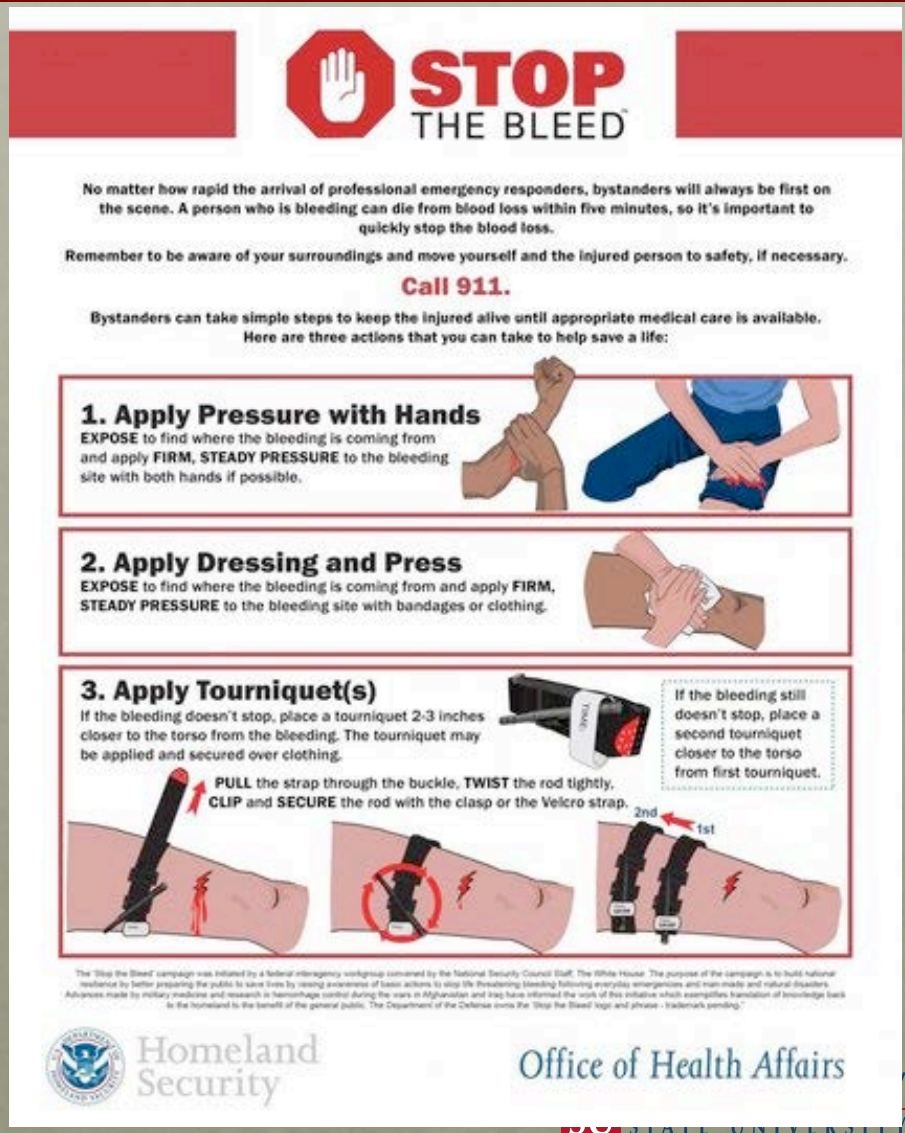
DeMers J. (2013). The Definitive Guide to Writing and Promoting a Viral Infographic. SEJ. https://www.searchenginejournal.com/the-definitive-guide-to-writing-and-promoting-a-viral-infographic/64733/

Principles of Infographic Design

Provide a Narrative

Effective infographics frequently use lines and arrows to guide readers through the information on a graphic.



Principles of Infographic Design

Provide a Narrative

Having a clear start and end ensures that the readers process the information in the order you intend and make sure that no information is missing.

Principles of Infographic Design

Provide a Narrative

"**Nodes**" of information may relate to specific experiments or chapters in the research story.

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Principles of Infographic Design

Provide a Narrative

"**No text test**" can be used to establish whether the key messages are conveyed when the text is removed.

Scott H, Fawkner S, Oliver CW, et al. How to make an engaging infographic? *Br J Sports Med*. 2017;51:1183-1184.

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Principles of Infographic Design

***Emphasize key messages*.**

Key messages can be prioritized by increasing the size of the relevant component as well as increasing text size and using striking colors.

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Principles of Infographic Design

***Emphasize key messages*.**

Like traditional abstracts, infographics are used to provide an overview of research, but are not intended to be a substitute for reading a full research paper.

First aid for burns

chemical burn

Remove the chemical causing the burn while protecting yourself. For dry chemicals, brush off any remaining material. Wear gloves or use a towel or other suitable object, such as a brush.
Remove contaminated clothing or jewelry to prevent further burning.
Rinse the burn immediately. Run a gentle, steady stream of cool tap water over the burn for 10 or more minutes. A shower may be an effective way to do this. Always protect your eyes.
Loosely apply a bandage or gauze.

If needed, take an over-the-counter pain reliever, such as ibuprofen (Advil, Motrin IB, others), naproxen sodium (Aleve) or acetaminophen (Tylenol, others).

Don't try to neutralize the burn with acid or alkali. This could cause a chemical reaction that worsens the burn.
Don't put antibiotic ointment on the burn.

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Principles of Infographic Design

***Balance Images, Charts and Text*.**

It is important to balance data visualization's, images and words.

Try to limit text to striking titles, brief annotations and bullet points.

In general, text-light, image-dense infographics are most successful.

Lyra KT, Isotani S, Reis RC, et al. Infographics or Graphics and Text: Which Material is Best for Robust Learning? [abstract]. Proceedings of the IEEE International Conference on Advanced Learning Technologies (ICALT), 2016.
Stones C, Gent M. 7 G.R.A.P.H.I.C. Principles of public health infographic design http://www.improvementacademy.org/documents/Projects/air_quality/The%20 7%20Graphic%20Principals%20of%20Public%20Health%20Infographic%20Design. pdf. (date last accessed 23 October 2017).

SUN LIFE

MIND & BODY

Did you know...
Epinephrine is a drug form of adrenaline that opens the airways, improves blood pressure and accelerates the heartrate.

Going into shock

Ah, summer. One minute you're outside enjoying a barbecue with friends, the next you're fending off bees. For most people, a bee sting is merely a painful annoyance. For those with severe allergies, however, one sting is all it takes to send them into a potentially fatal anaphylactic shock.

What is it?

Anaphylaxis is a severe allergic reaction that can occur within seconds of exposure.

Consequences

If anaphylaxis isn't treated right away, it can lead to unconsciousness or even death. It requires an immediate trip to the emergency department and an injection of epinephrine.

Common triggers

Peanuts, tree nuts, sesame seeds, soy, milk, eggs, seafood, mustard, wheat and sulphites.

Other known triggers are insect stings, certain medicines, latex, and exercise.

Allergic reactions

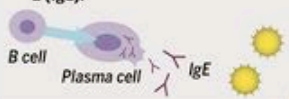
Anaphylaxis is the result of your body's immune system severely overreacting to a harmless substance.

Substances that provoke allergic reactions are known as allergens.

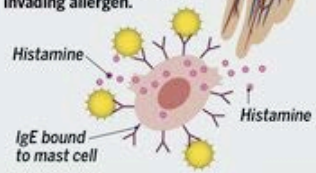
When a person is exposed to that allergen, it mistakenly thinks the substance is harmful:

1. **Allergens enter the body near mast cells.**

2. **B cells are alerted and turn into plasma cells, which release an antibody called immunoglobulin E (IgE).**



3. **IgE binds to mast cell. When the allergen enters the body again, IgE triggers the release of histamine to fight off the invading allergen.**



Anaphylaxis: Signs and symptoms

May begin with severe itching of the eyes or face and, within minutes, progress to more serious symptoms.

Central nervous system:
- Lightheadedness
- Confusion
- Headache
- Loss of consciousness
- Anxiety

Swelling of the conjuctiva *(inside of eyelids and covering whites of eyes)*

Runny nose

Swelling of lips, tongue or throat

The most dangerous symptoms (can lead to death if untreated):

Trouble breathing (caused by swelling of the airways)

A drop in blood pressure (causes dizziness, light-headedness, feeling faint or weak, or passing out)

Respiratory:
- Shortness of breath
- Wheezing or stridor (high-pitched sound when breathing)
- Hoarseness
- Pain when swallowing
- Coughing

Heart and vasculature:
- Fast or slow heart rate
- Low blood pressure

Skin:
- Hives
- Flushing
- Itching

Gastrointestinal
- Crampy abdominal pain
- Diarrhea
- Vomiting

Pelvic pain

Loss of bladder control

If you have symptoms of anaphylaxis, seek emergency medical attention immediately

Emergency steps

Give epinephrine (e.g. EpiPen) at the first signs of an allergic reaction.

Call 911 and tell them that someone is having an anaphylactic reaction.

If the reaction continues or gets worse, give a second dose of epinephrine in 5-15 minutes.

Get the patient to the nearest medical centre immediately (ideally by ambulance), even if symptoms are mild or have stopped. The reaction could get worse or come back after using epinephrine.

Sources: WebMD; Anaphylaxis Canada; chealth.ca; Fotolia

SUSAN BATSFORD, GRAPHICS EDITOR, TWITTER @SBATS1; INFOGRAPHIC BY MEGAN DINNER/QMI AGENCY

Principles of Infographic Design

***Limit the Number of Colors and Fonts*.**

Use three to five complementary color's and limit the number of font types to a maximum of three.

Scott H, Fawkner S, Oliver CW, et al. How to make an engaging infographic? *Br J Sports Med.*2017;51:1183-1184.

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Conclusion

- Infographics can be a powerful educational tool to influence CPR and first aid education as a educational tool by
  - (1) communicating a consistent message
  - (2) presenting a lot of data or information in a way that is compact and easy to comprehend
  - (3) analyzing data in order to discover cause-and-effect relationships
  - (4) periodically monitor the route of specific parameters

QUESTIONS??????

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Thank you!!!

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