



Michael D. McGonigal MD

# Trauma Mythbusters

Down With Dogma!

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No financial disclosures



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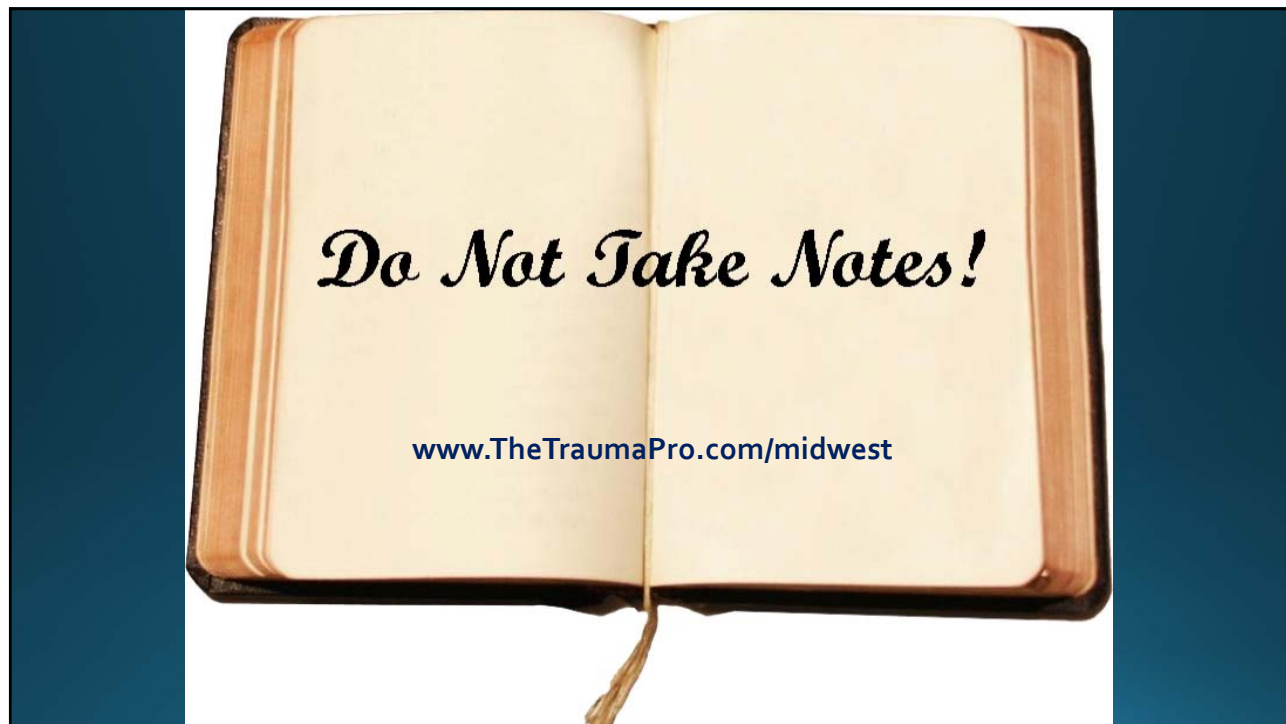
# Objectives

- Critically look at some of the beliefs we take for granted in trauma
- Review some specific trauma myths
- Describe how to determine what is truth and what is dogma

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Slidesets - Michael D. McConigal MD  
May 5-6, 2022

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**CAN'T KEEP UP WITH YOUR LITERATURE?**

Sign up to receive the Trauma MedEd Newsletter, and get a free copy of my report on how to stay current. The newsletter is released every 1-2 months, and delivers four pages packed with trauma information you absolutely need to know! Subscribers get it a week before it's released on the website. Click the image to subscribe! Next issue (March 2022): TBD

**SPEAKING ENGAGEMENTS**

Interested in listening in on one of my talks? Meeting at an in-person speaking event? Here are some of my upcoming engagements:

- Midwest Trauma Society Annual Conference, Independence MO (May 5-6)

**9 TIPS TO AN EFFECTIVE PIPS PROGRAM**

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# What Is Truth?

## truth

/tro̩TH/ 

*noun*

the quality or state of being true.

"he had to accept the truth of her accusation"

*synonyms:* [veracity](#), [truthfulness](#), [verity](#), [sincerity](#), [candor](#), [honesty](#); [More](#)

- that which is true or in accordance with fact or reality.

noun: **the truth**

"tell me the truth"

*synonyms:* what actually happened, the case, [so](#); [More](#)

- a fact or belief that is accepted as true.

plural noun: **truths**

"the emergence of scientific truths"

*synonyms:* [fact](#), [verity](#), [certainty](#), [certitude](#); [More](#)

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# What Is Truth?

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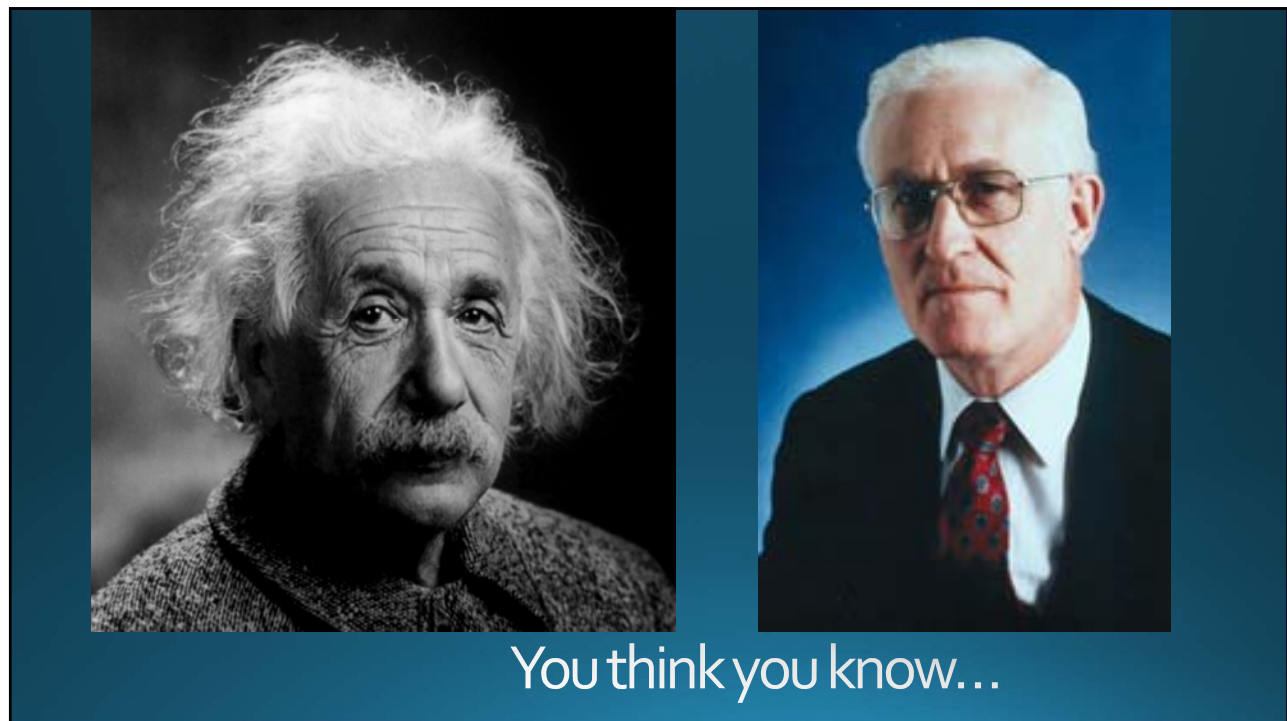
*synonyms:* [fact](#), [verity](#), [certainty](#), [certitude](#); [More](#)

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But you don't know!

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**"Believe me, folks, you'll want to read the important new evidence on the effects of smoking. Then you'll say, as I do... *MUCH Milder* CHESTERFIELD IS BEST FOR ME!"**  
*Walter J. Gifford*

**NOW...Scientific Evidence on Effects of Smoking!**

A MEDICAL SPECIALIST is making regular bi-monthly examinations of a group of people from various walks of life. 45 percent of this group have smoked Chesterfield for an average of over ten years.

After ten months, the medical specialist reports that he observed...

**no adverse effects on the nose, throat and sinuses of the group from smoking Chesterfield.**

**MUCH Milder CHESTERFIELD IS BEST FOR YOU**

Copyright © 1952 by R.J. REYNOLDS TOBACCO CO. APRIL, 1952



He's one of the busiest men in town. While his door may say *Office Hours 2 to 4*, he's actually on call 24 hours a day.

The doctor is a scientist, a diplomat, and a friendly sympathetic human being all in one, no matter how long and hard his schedule.

**According to a recent Nationwide survey:**

**MORE DOCTORS SMOKE CAMELS THAN ANY OTHER CIGARETTE**

DOCTORS in every branch of medicine—113,997 in all—were queried in this nationwide study of cigarette preference. These leading research organizations made the survey. The gist of the query was: "What cigarette do you smoke, Doctor?"

*The brand named most was Camels!*

The rich, full flavor and cool mildness of Camels' superb blend of superior tobaccos were to have the same appeal to the smoking tastes of doctors as to millions of other smokers. If you are a Camel smoker, this preference among doctors will hardly surprise you. If you're not—well, try Camels now.

**Your "T-Zone" Will Tell You...**

**T for Taste...**  
that's your growing ground for any cigarette. See if Camels don't win your "T-Zone" to a "T."

**CAMELS** Costlier Tobaccos

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MAN-MADE CLIMATE CHANGE

It really isn't happening

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## **Rx Drug Ads on TV – Educational or Influential ?**

**Overweight? Suffering from anxiety or erectile dysfunction? Well, relief is just a prescription pill away according to the endless television ads promoting prescription drugs.**

A sculpture of a human head and hand, constructed entirely from various colored and shaped pills and capsules. The head is shown in profile, facing right, with the hand raised to the chin. The background is white, and the entire graphic is set against a dark blue gradient.

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**Pradaxa®**  
 Linked to Internal Bleeding:

- Serious Internal Bleeding
- Hemorrhagic Stroke
- Death

You may be entitled to  
**FINANCIAL COMPENSATION!**  
 Call Right Now!

Attorney  
 Bob Goldwater, Jr.

**1-800-555-1212**  
 Call The Goldwater Law Firm | [www.GoldwaterPradaxa.com](http://www.GoldwaterPradaxa.com)

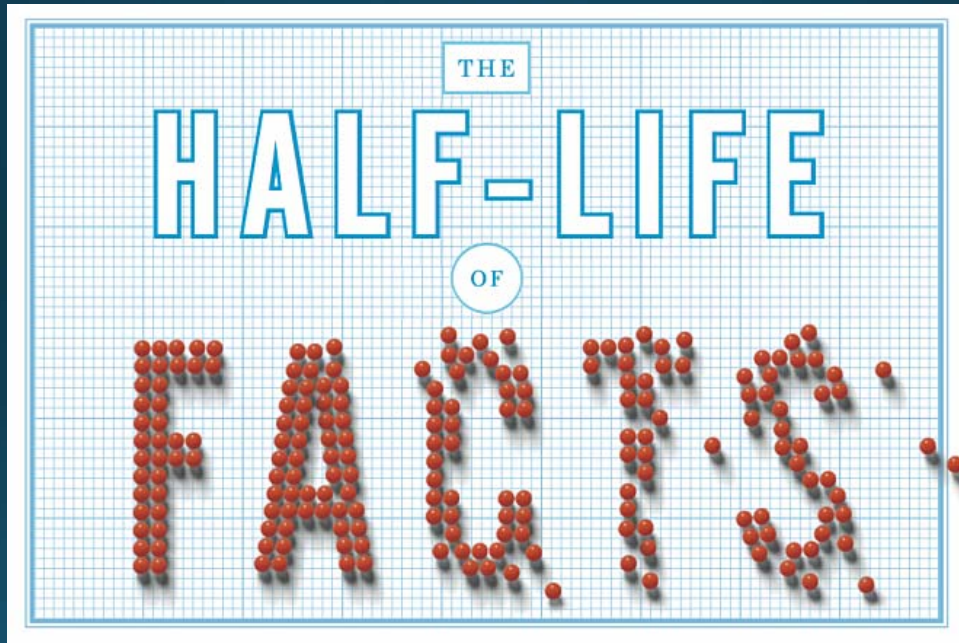
Example Only! Not a promotion!

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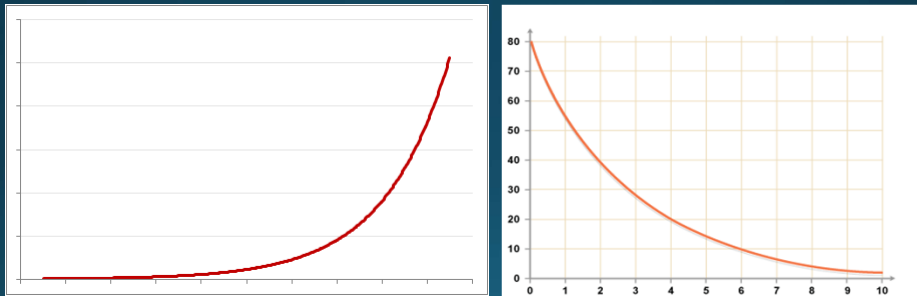
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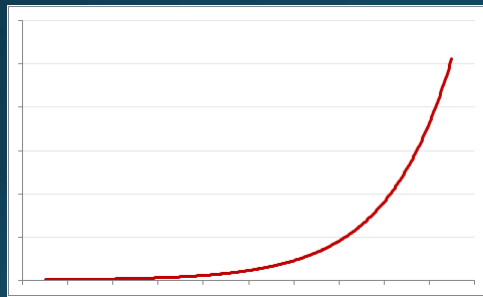
## Doubling Time & Half Life Of data



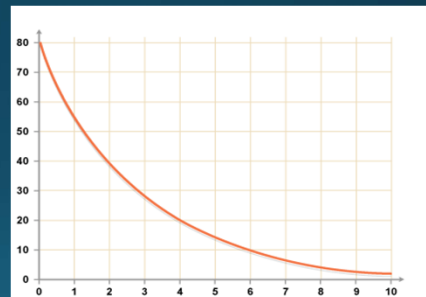
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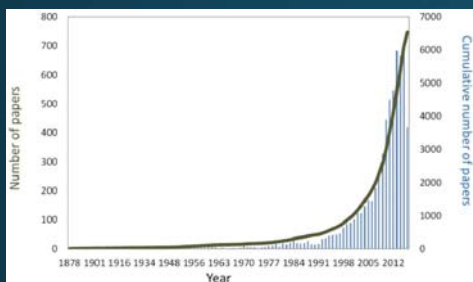
## Doubling Time & Half Life Of data



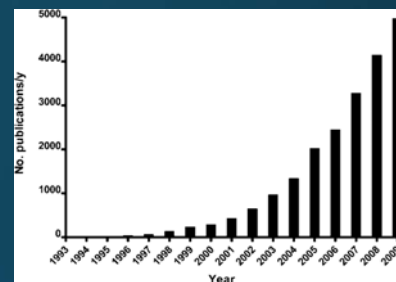
Doubling Time = 80 years



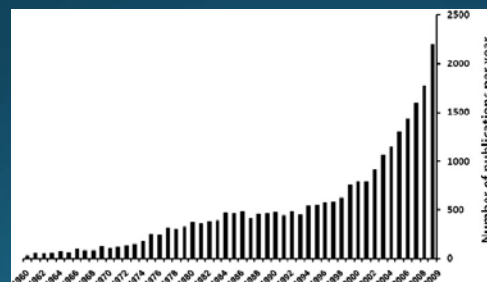
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Ammonia oxidizing archaea

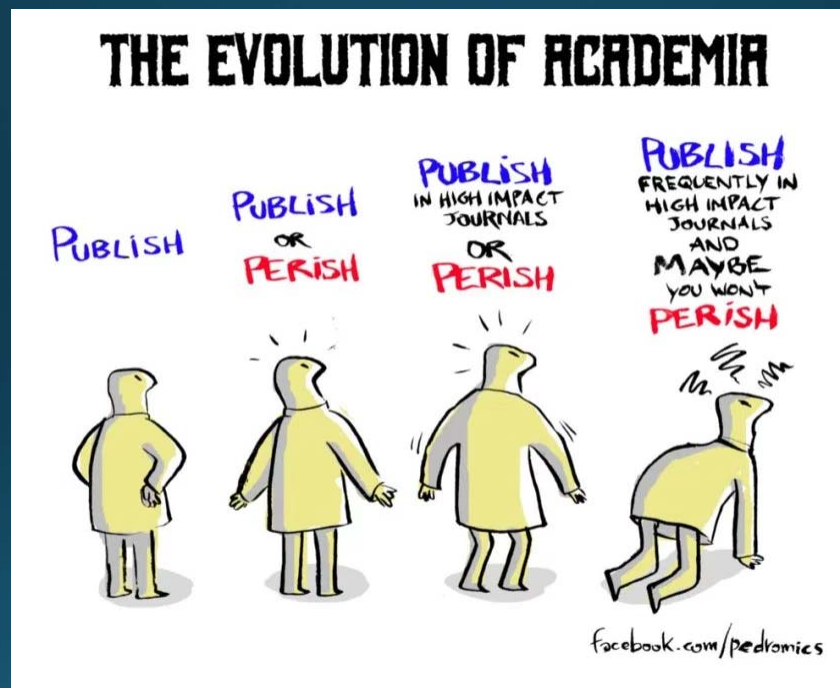


Gold nanoparticles



Vitamin D research

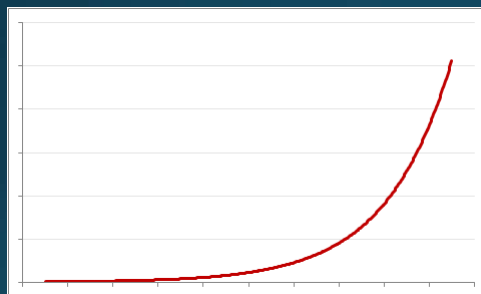
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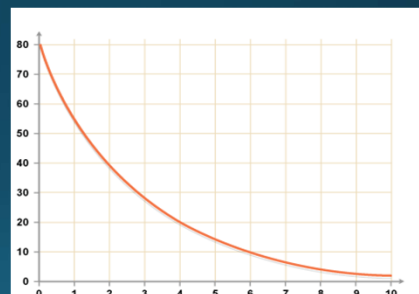
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## Doubling Time & Half Life

Of data



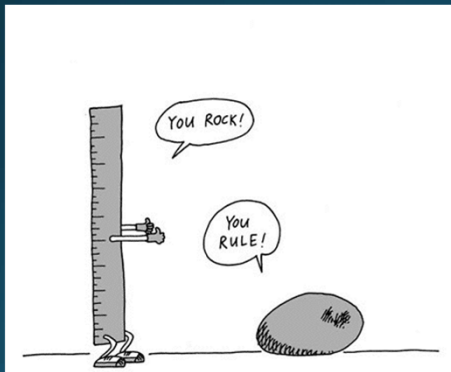
Doubling Time = 80 years



Half Life = 45 years

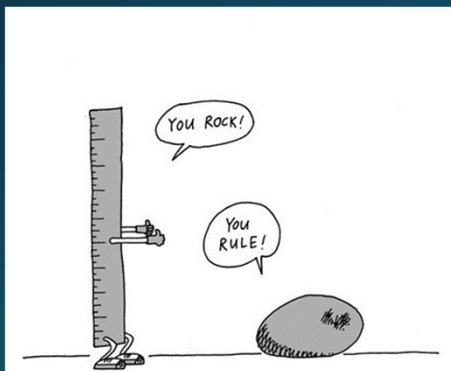
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# The 85:15 Rule



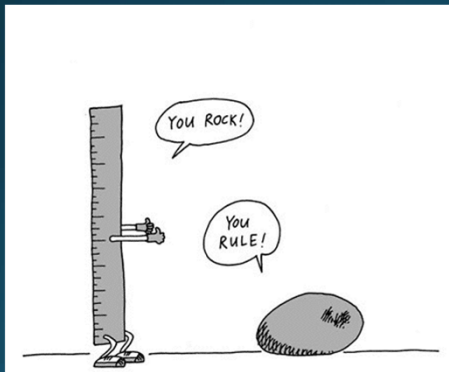
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# The 85:15 Rule

**15%**

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# The 85:15 Rule



85%



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**NINETY  
PERCENT OF  
EVERYTHING  
IS CRAP.**

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# Corollary of Crap

**90% of everything is crap!**

**But...**

If you think you don't like opera, romance novels, TikTok, country music, vegan food, NFTs, keep trying to see if you can find the 10% that is not crap.

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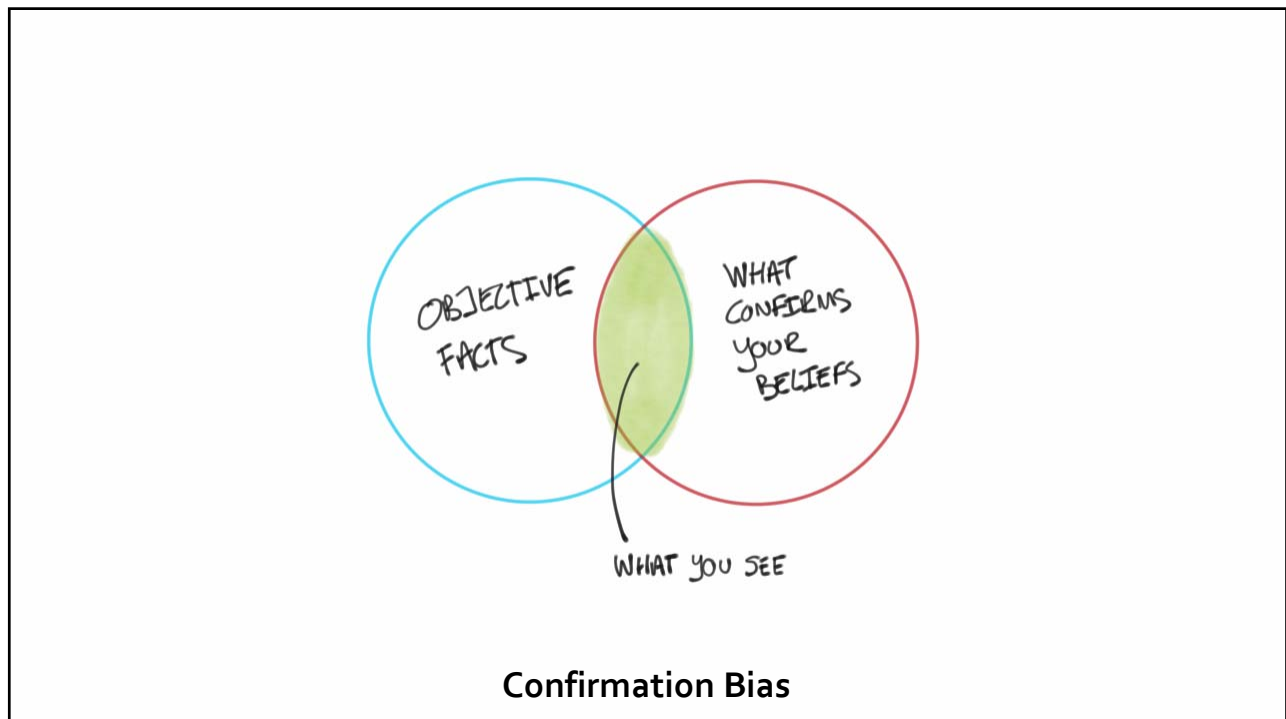
**"When the facts change, I change my mind.  
What do you do, sir?"**

**-John Maynard Keynes  
British economist ca. 1930**

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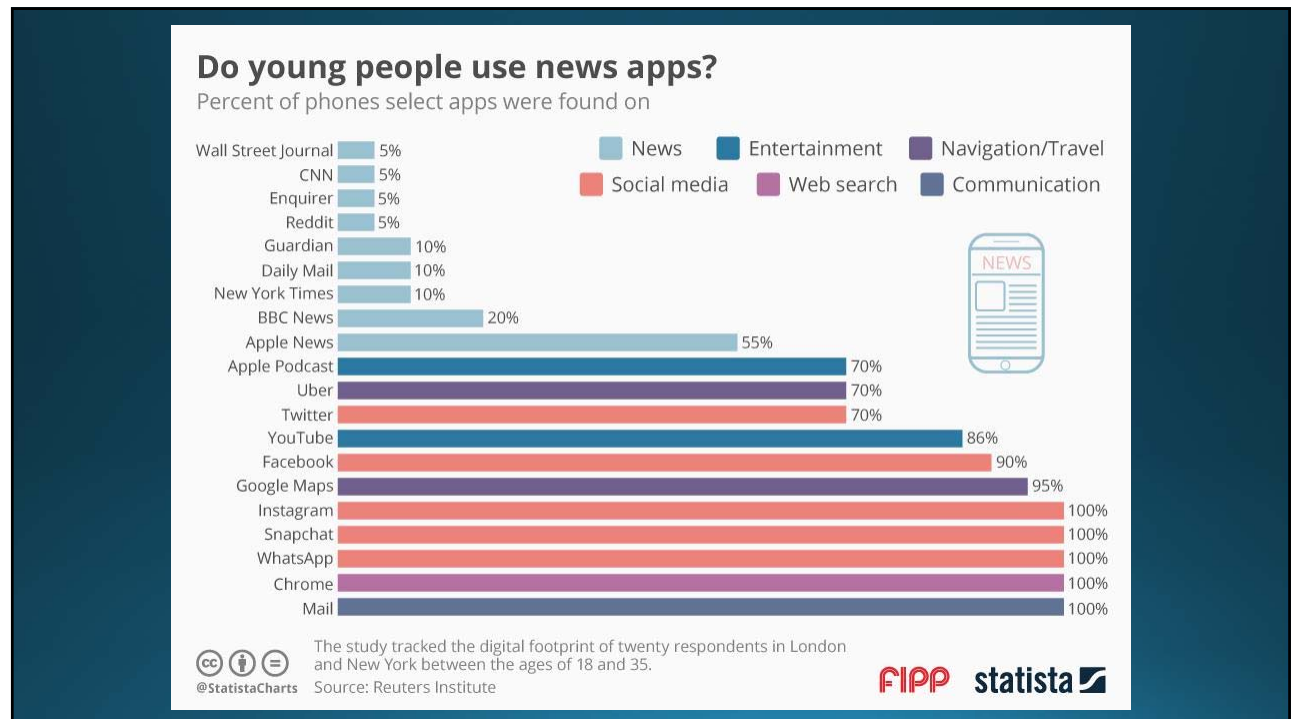
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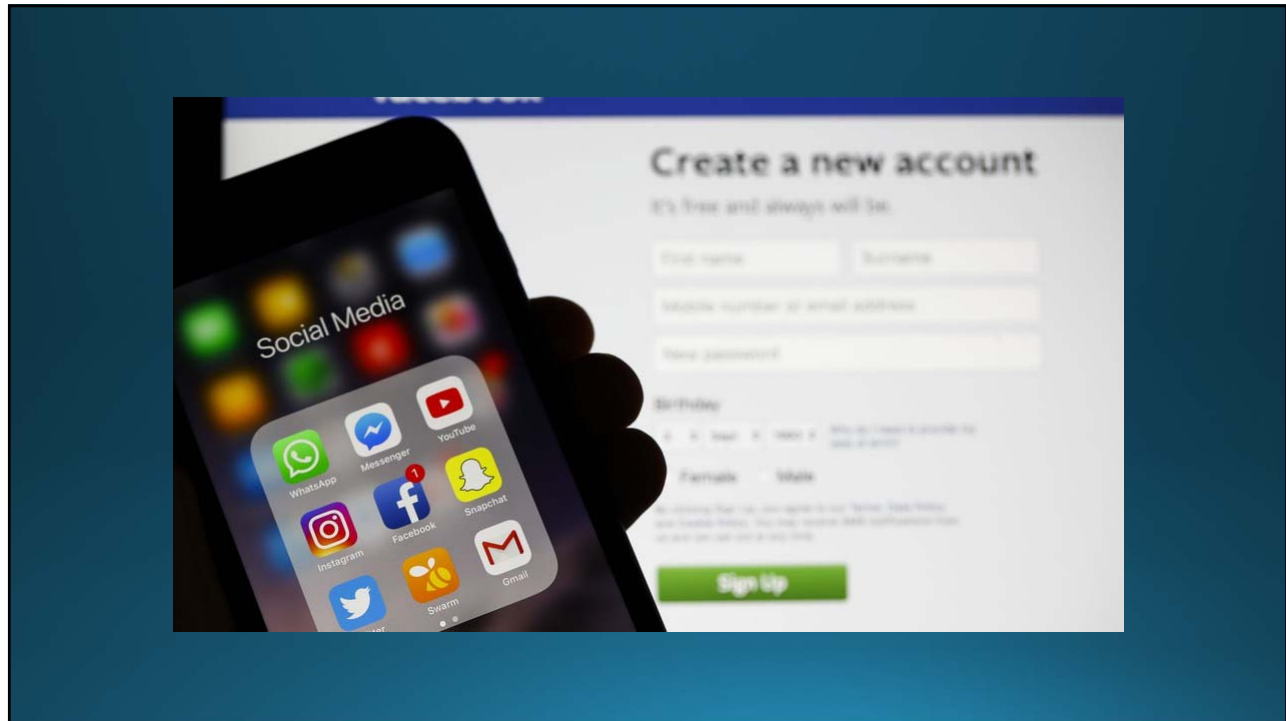
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## Factual Inertia

The tendency to adhere to out-of-date information well after it has lost its truth

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**"The first hour after injury will largely determine a critically-injured person's chances for survival."**

- From a speech by R Adams Cowley MD

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Our search into the background of this term yielded little scientific evidence to support it. It is crucial for medical researchers to critically examine concepts such as the golden hour that are widely accepted but are in fact not scientifically supported. We frequently strive to push ever higher the ceiling of medical knowledge, but we must also ensure that the knowledge base upon which we stand is solid.

Lerner EB, Moscati RM. The golden hour: scientific fact or medical "urban legend"? Acad Emerg Med. 2001 Jul;8(7):758-60.

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## Spinal Cord Injury From Airway Management



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## Spinal Cord Injury From Airway Management

- 1989 – No evidence ever in medical literature since the beginning of time
- Sporadic case reports
- Patient was normal before intubation, paralyzed afterwards

**Has to be the intubation, right?**

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## Spinal Cord Injury From Airway Management

- Study on uninjured models
- **Cricoid pressure – no movement**
- **Chin lift + jaw thrust**
  - Narrowed spinal canal by 1 – 2.5mm
  - Angulation of 4-5 degrees

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## Spinal Cord Injury From Airway Management

- **Oral or nasal intubation**
  - Decreased cord canal by 1.6mm
  - 2.5 degrees of rotation
- **Video laryngoscopy cut rotation in half**

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## Similar Issue

- Taking a patient with known or suspected spinal cord injury off the back board



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## Similar Issue

- Taking a patient with known or suspected spinal cord injury off the back board



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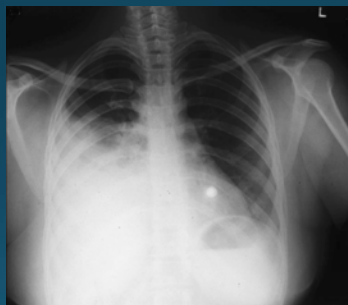


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# Trauma Bay X-rays

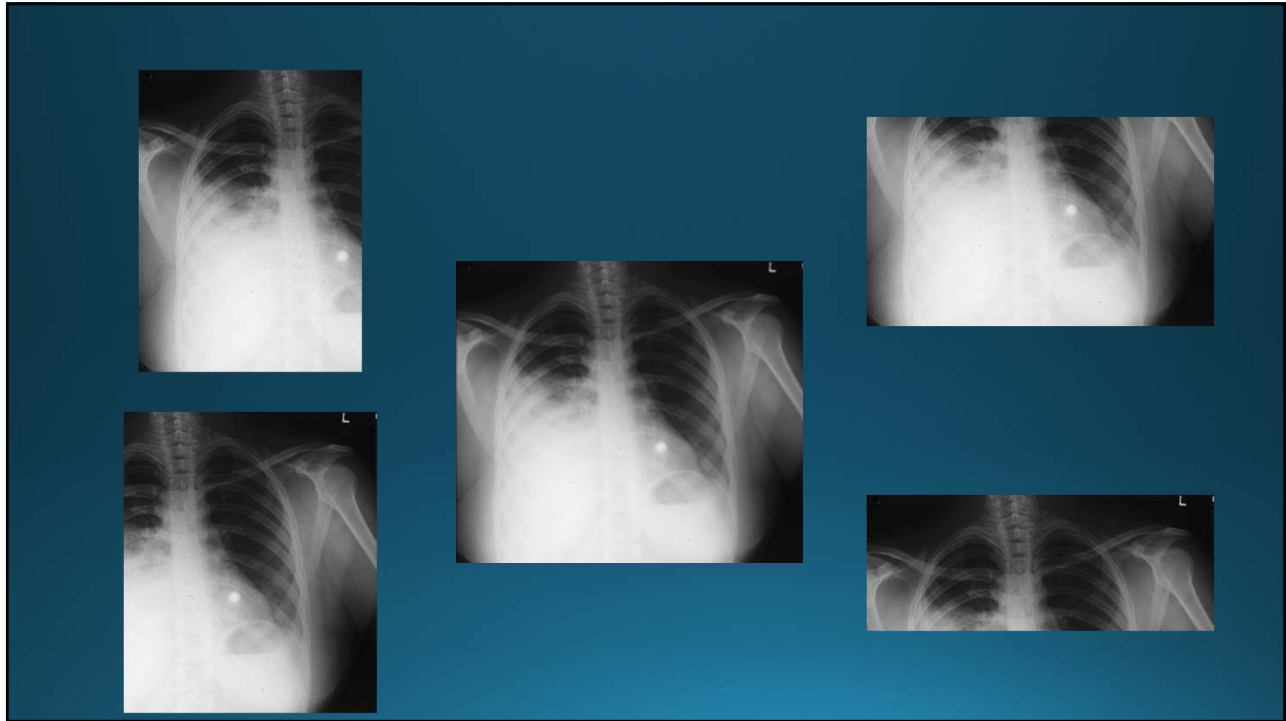
- The chest / pelvic x-ray are not centered right. I have to repeat it!
- corollary
- I've got to get that backboard out before I take the x-ray!

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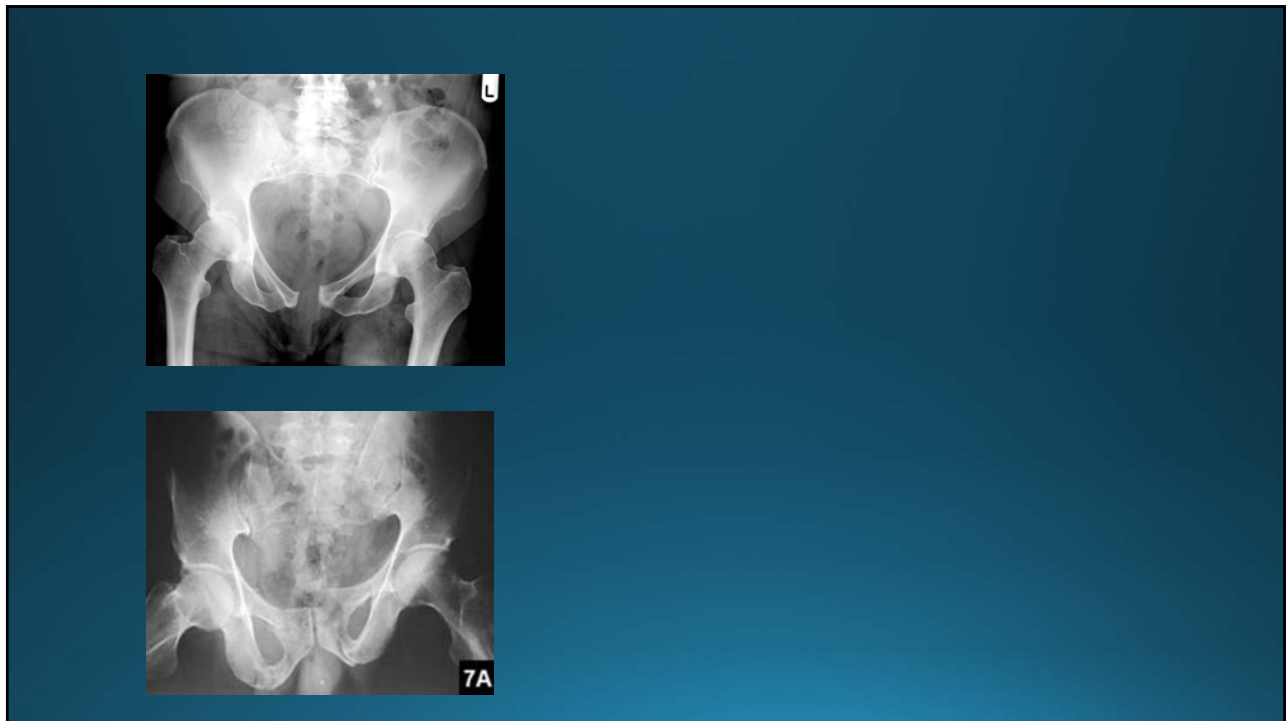


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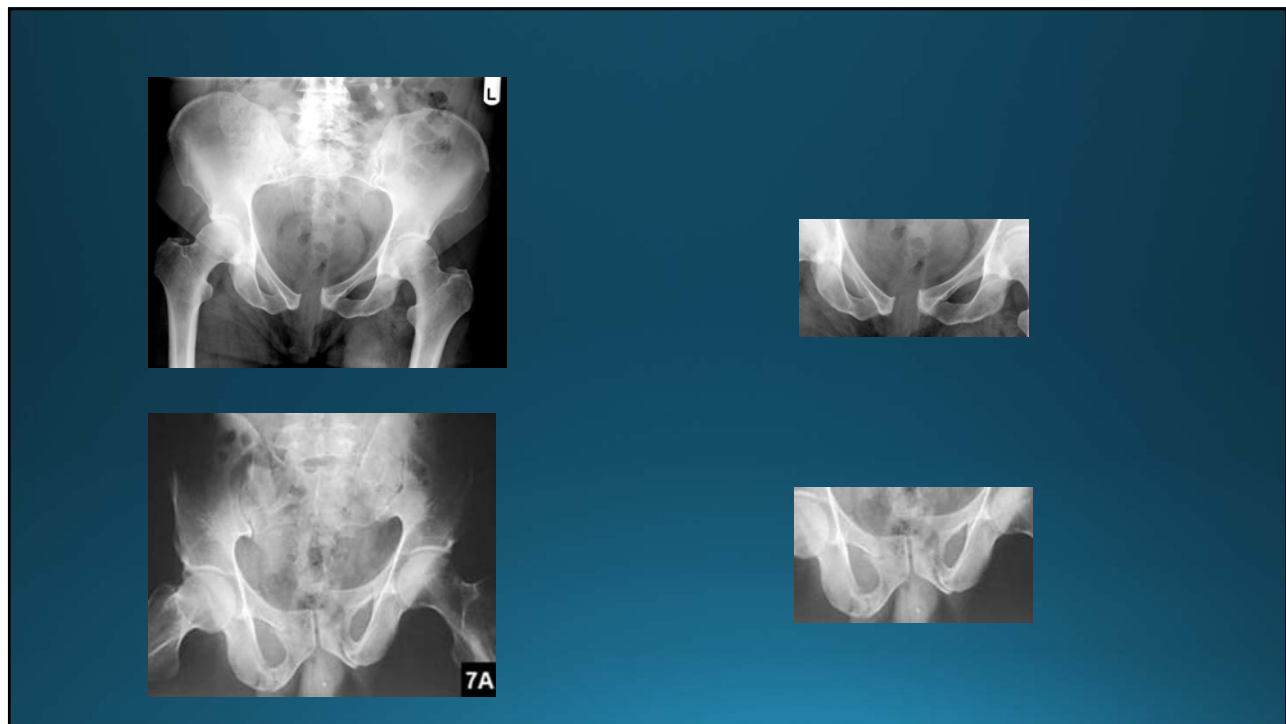




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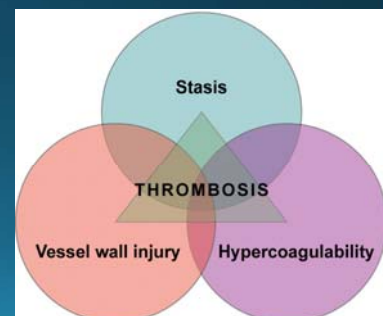
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## VTE Prevention

- Targets one or two legs of Virchow's triad:
  - Mechanical prophylaxis (stasis)
    - Elastic compression stockings? **NO**
    - Intermittent pneumatic compression devices
    - Foot compression devices? **NO**
  - Pharmacological prophylaxis (hypercoagulability)
    - Unfractionated heparin
    - Low-molecular-weight heparins
    - Fondaparinux
    - Aspirin (?)



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# HISTORY

*" A study of protocols of 9,882 postmortem exams including death from injury...in the traumatic group embolisms were found in 61 cases(3.8%) and in the non-traumatic group in 222 cases (2.6%). Statistically, this appears to be a significant difference."*

-J.S. McCartney  
Am J Pathol  
1934

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# HISTORY

- 124 patients with venograms after trauma
- 35% with DVT in fracture patients
- Usually found within 24 hours of injury
- Found in both injured and uninjured extremities
- Two thirds had no symptoms

-Freeark et al  
Arch Surg  
1967

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## Occult DVT / PE (1992)

- 349 patients underwent venography in 1994
- None receiving prophylaxis
- Proximal DVT in 18%
- PE rate 2% with 43% mortality

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## Occult PE After Trauma (2004)

- 90 consecutive patients; ISS > 9
- Asymptomatic; no DVT
- Chest CT: between 3-7 days
- 22 had clot on CT; 4 were major!
- 30% were receiving prophylaxis

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## What Are The Baseline Numbers?

- DVT no prophylaxis – varies widely
- DVT with prophylaxis – varies widely
- PE – 1-5%
- Fatal PE – less than 0.5%

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## Does Thromboprophylaxis Work?

- Cochrane review – 16 randomized studies (~3,000 patients)
  - Mechanical prophylaxis decreased DVT risk by half
  - Chemical prophylaxis decreased DVT risk by half
  - Combination mechanical and chemical was best
  - LMWH was better than unfractionated
  - **No reduction in PE rate or mortality**

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## What If I Increase The Dose?

- Total of 124 patients, one group received 40mg bid
- Anti-Xa levels adequate in 91% vs 66%
- **No significant decrease in VTE**

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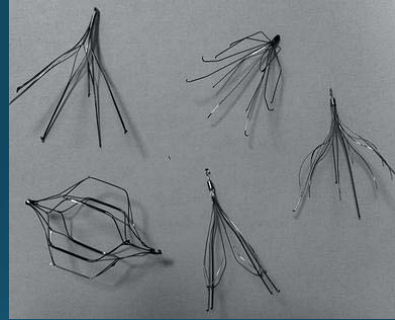
## What If I Monitor Anti-Xa levels?

- Frequently used in obese patients to check whether therapeutic dose has been achieved
- Achieves Anti-Xa goal
- No change in VTE rates!

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## What About IVC Filters?

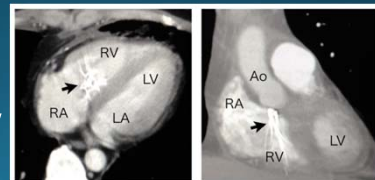
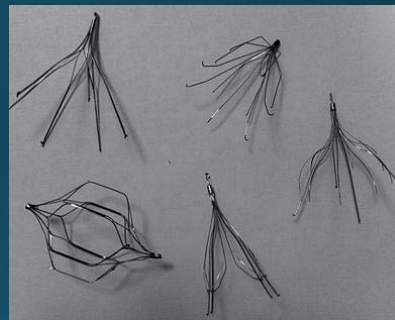
- Recurrent PE rate: 3%
- No protection from DVT
- IVC thrombosis: 10%



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## What About IVC Filters?

- Recurrent PE rate: 3%
- No protection from DVT
- IVC thrombosis: 10%
- Complications: migration, perforation, LE edema



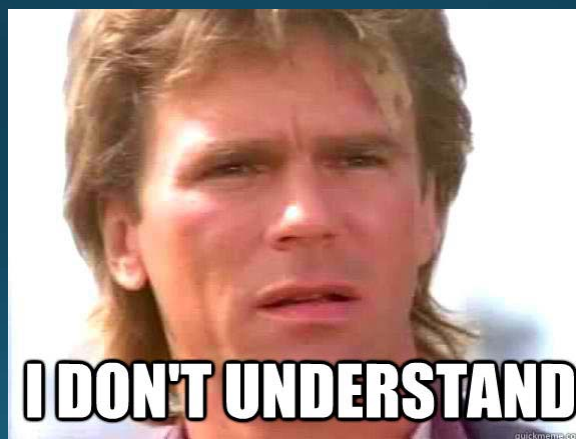
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## What Are The Final Numbers?

- DVT no prophylaxis – varies widely
- DVT with prophylaxis – **improves by half**
- PE – 1-5%
- Fatal PE – less than 0.5%

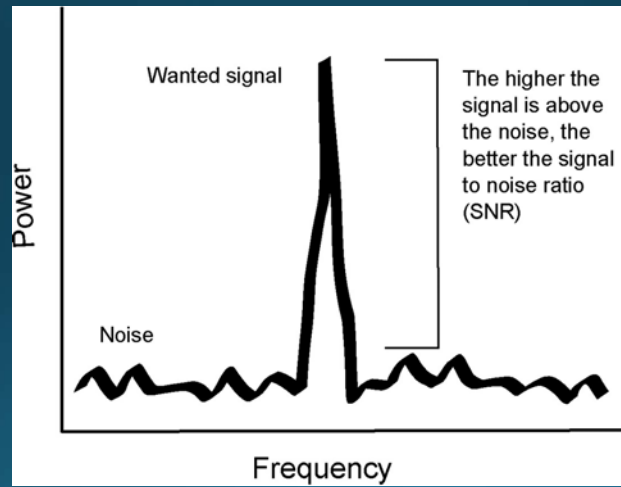
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## What Does It Mean?



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# What Does It Mean?



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## Specific Tips

- Read the original study
- Don't rely on the title or abstract
- What journal was it published in? (check the impact factor)
- Who are the authors and what conflicts do they have?
- Look at the study design, execution, and analysis
- Is it consistent with similar studies? (check them!)

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## General Guidelines

1. Beware of bad data

82

# General Guidelines

1. Beware of bad data
2. Be aware of our human shortcomings

83

# General Guidelines

1. Beware of bad data
2. Be aware of our human shortcomings
3. Always question what you read or hear

84

## General Guidelines

1. Beware of bad data
2. Be aware of our human shortcomings
3. Always question what you read or hear
4. Encourage others to call you out!

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## Tips For Detecting And Avoiding BS

***"nullius in verba"***

**Take nobody's word for it**



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## Tips For Detecting And Avoiding BS

- Questions to ask:
  - Clarify the claim
    - **What?** – What do you mean by...?
  - Evaluate the evidence
    - **How? (and not why)** – How do we know, how could we check that out?
  - Be the devil's advocate
    - **Have you considered...**

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## Tips For Detecting And Avoiding BS

- Clarify the claim
  - What is the claim?
  - Can they restate it another way?
  - Does it sound too good or bad to be true?

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## Tips For Detecting And Avoiding BS

- Assess the communication
  - How credible is their source?
  - What is their expertise in the area? How do they know this?
- Look for BS speak:
  - "Some people / they say..."
  - "I read somewhere..."
- What is the reaction to your questions?

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## Tips For Detecting And Avoiding BS

- Evaluate the claim and evidence
  - Does it contradict common knowledge?
  - What problems does the claim have? What doesn't it explain?

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## Tips For Detecting And Avoiding BS

- What about my reaction to the claim?
  - Are my conclusions based on real evidence?
  - Have I looked at info beyond what I was given?
  - Am I being objective?

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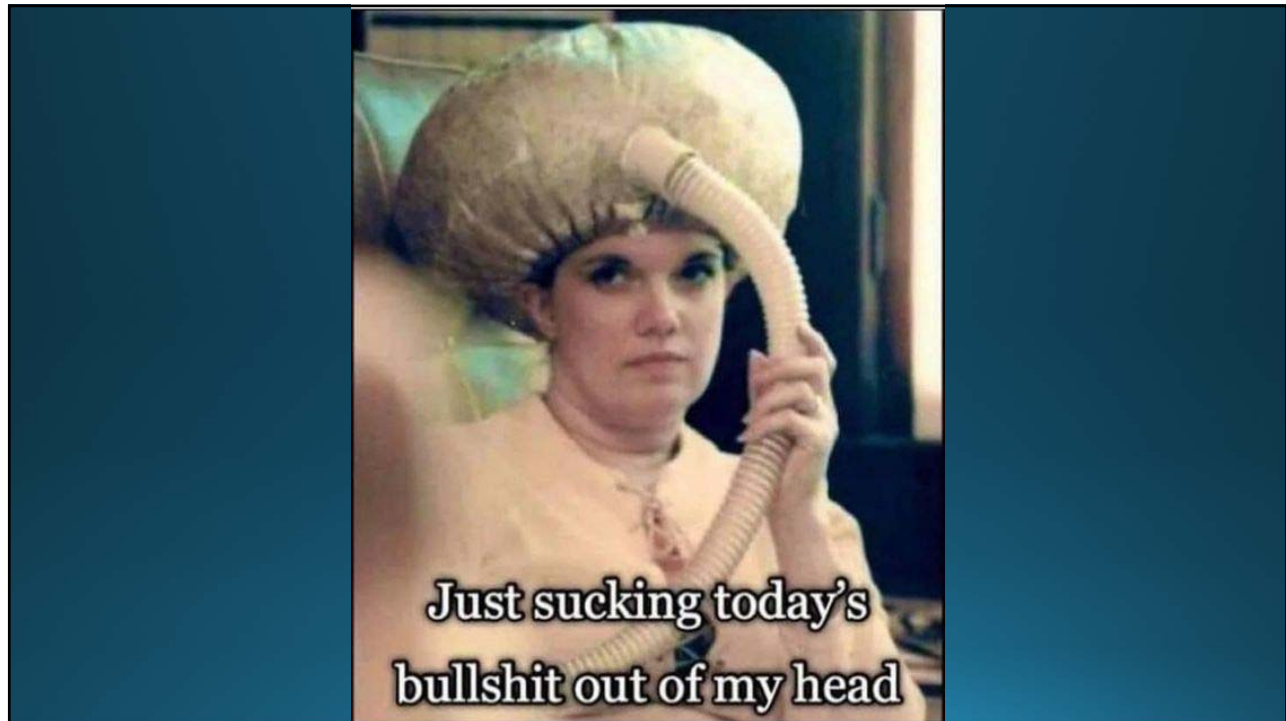
### What refutes science:

- Better science

### What doesn't refute science:

- Your feelings
- Your religion
- Your favorite politician
- Your half-baked opinion after watching two YouTube videos

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## Bibliography

- *The Half-Life of Facts: Why Everything We Know Has an Expiration Date*. Samuel Arbesman, Penguin Group, 2012.
- Lerner EB, Moscati RM. The golden hour: scientific fact or medical "urban legend"? *Acad Emerg Med*. 2001 Jul;8(7):758-60.
- Airway Management in Adults after Cervical Spine Trauma. *Anesthesiology*. 2006 Jun;104:1293-1318.


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