



Hypothesis and Study Design

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Disclosures

- No relevant financial disclosures

Lubitz, Carrie C., M.D.

Hey guys. You have both reached out to me about what to cover in your talks. I know these talks are tough - which is why I asked the two of you to give them. I know it is nearly impossible to make these fun, but if anyone can do it...



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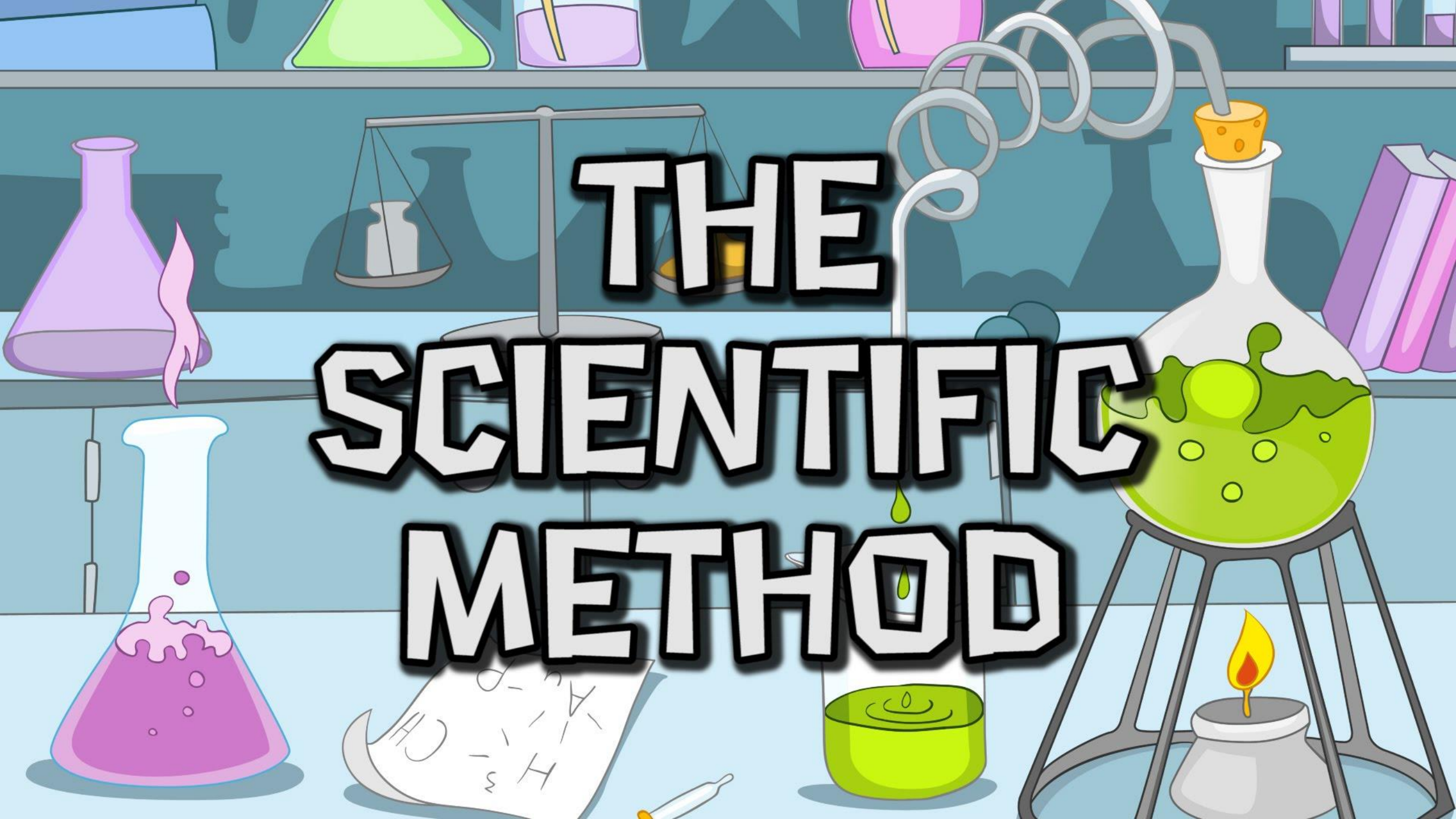


10 Tips For Giving Effective Virtual Presentations

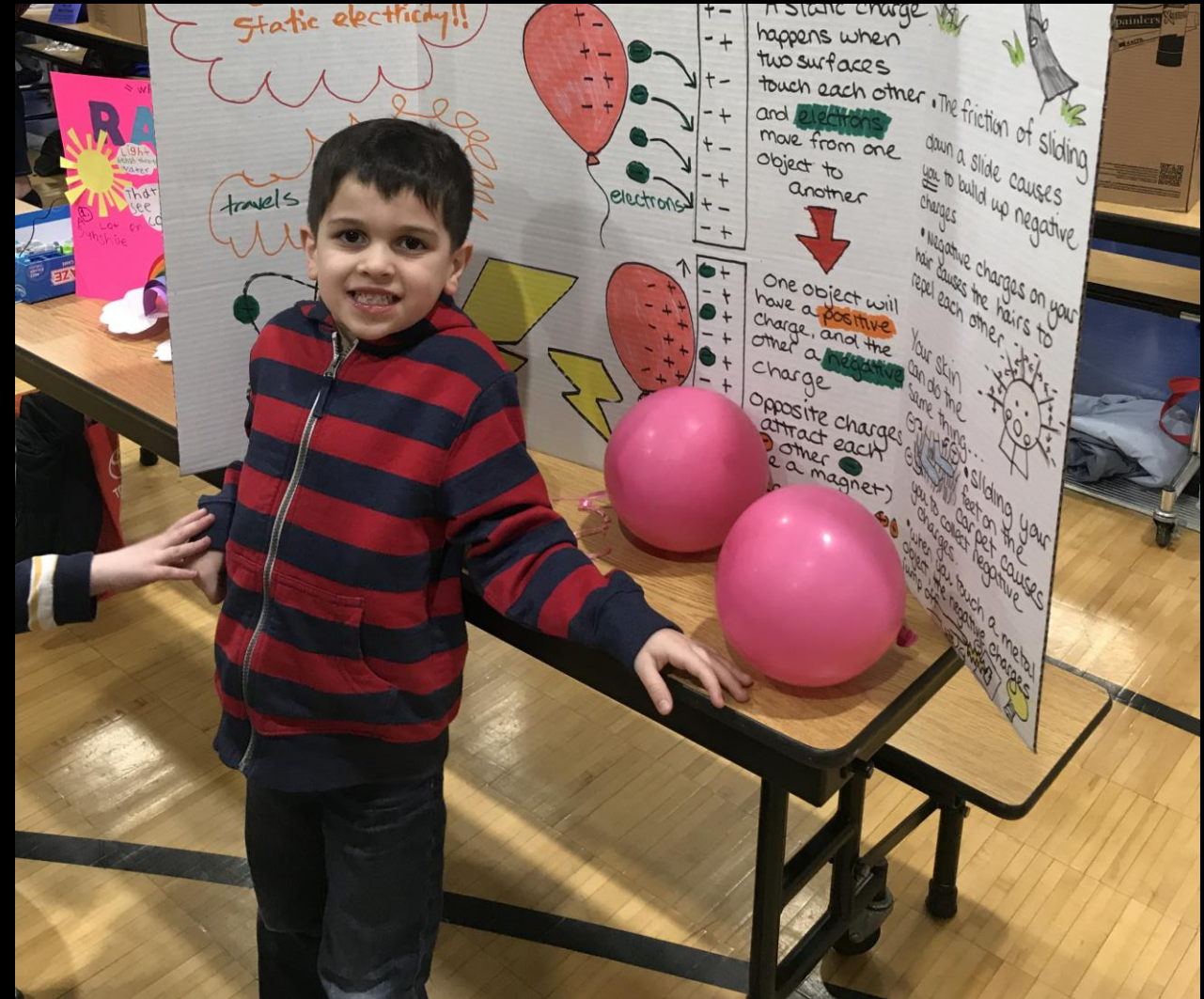
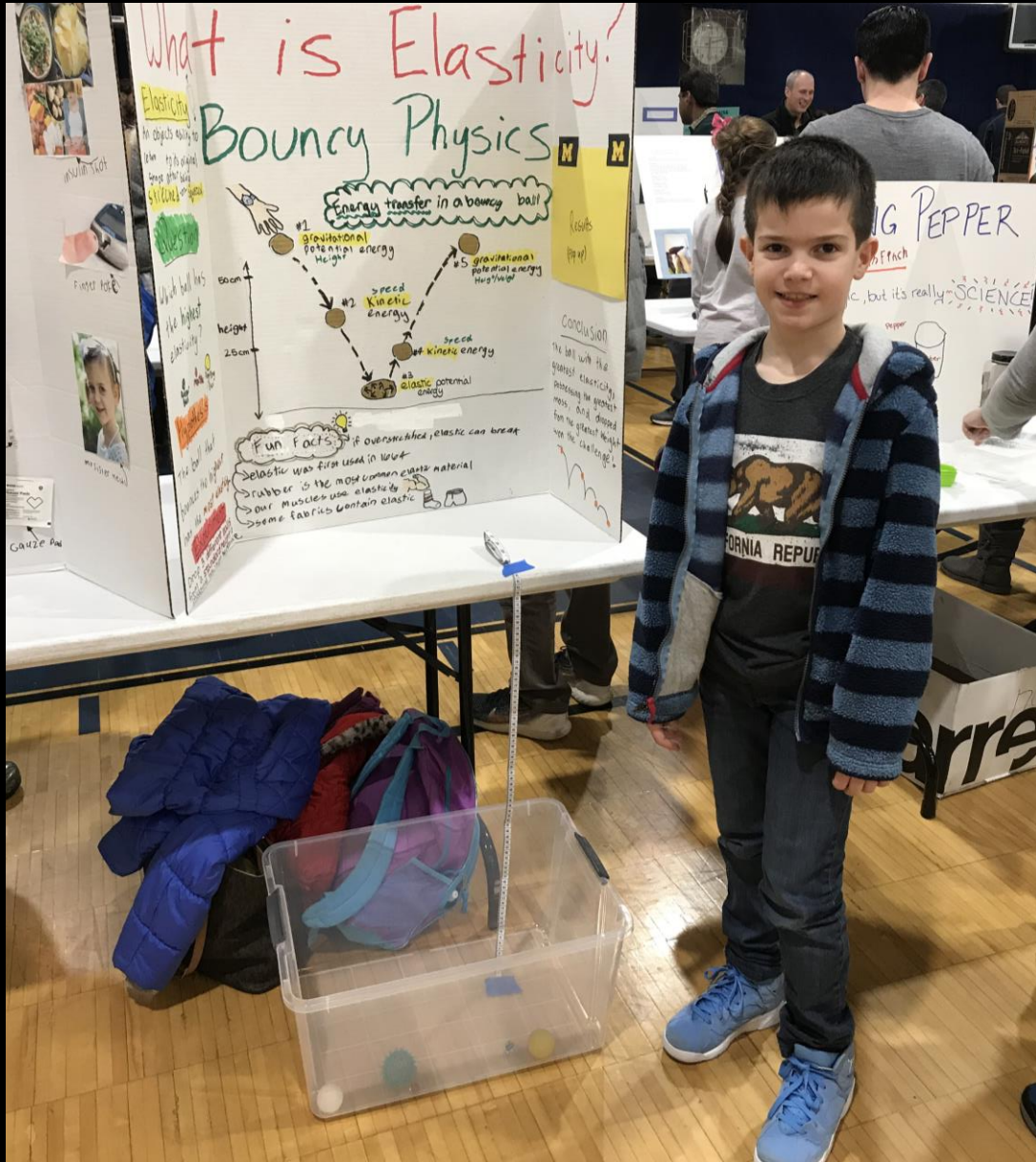
What to know before you go live.

Outline

- Finding your inspiration
- Understand what's known and unknown
- Formulate a hypothesis
- Choose a study design
- Write



THE SCIENTIFIC METHOD



Scientific Method



PURPOSE

What do I want to learn?



RESEARCH

Find out as much about your topic as you can.



HYPOTHESIS

Predict what the answer to the problem is.



EXPERIMENT

Design a test to confirm or disprove your hypothesis.



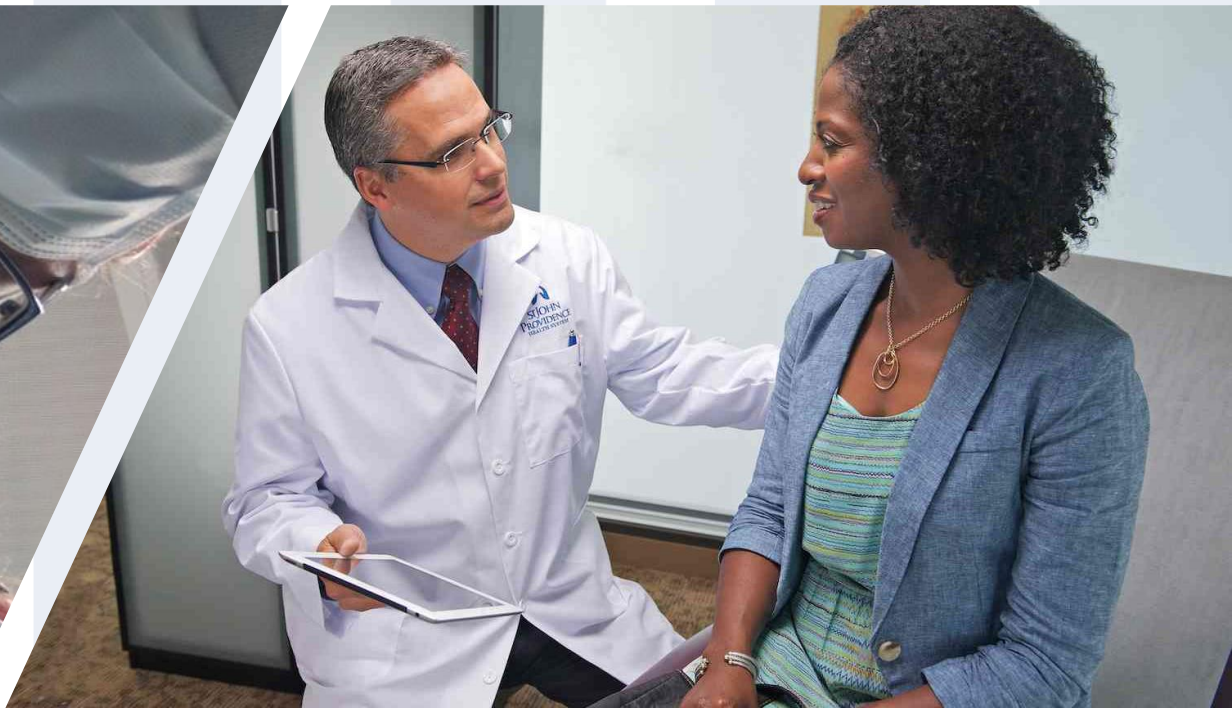
ANALYSIS

Record what happened during the experiment.

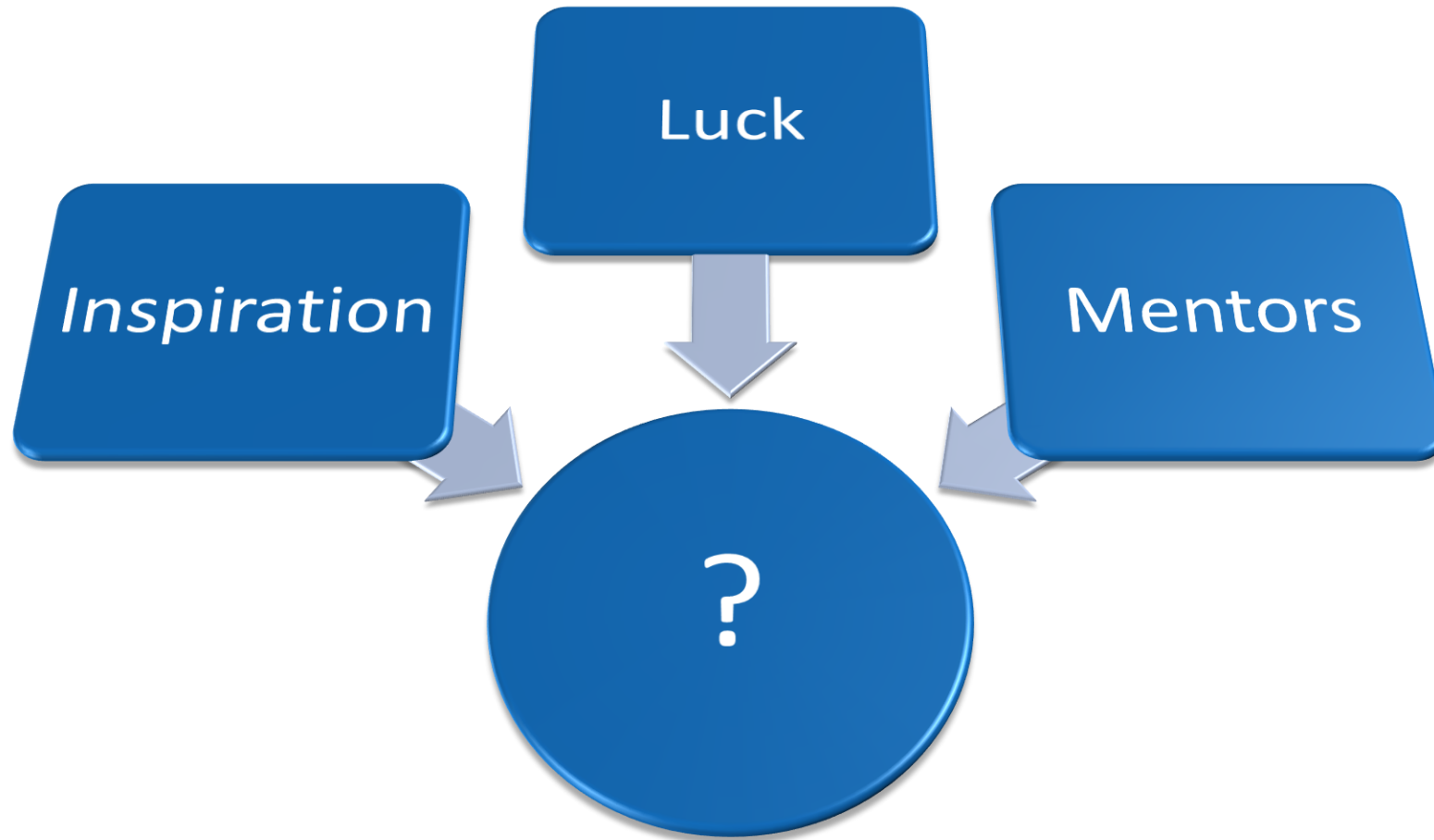


CONCLUSION

Was my hypothesis correct?







Research questions

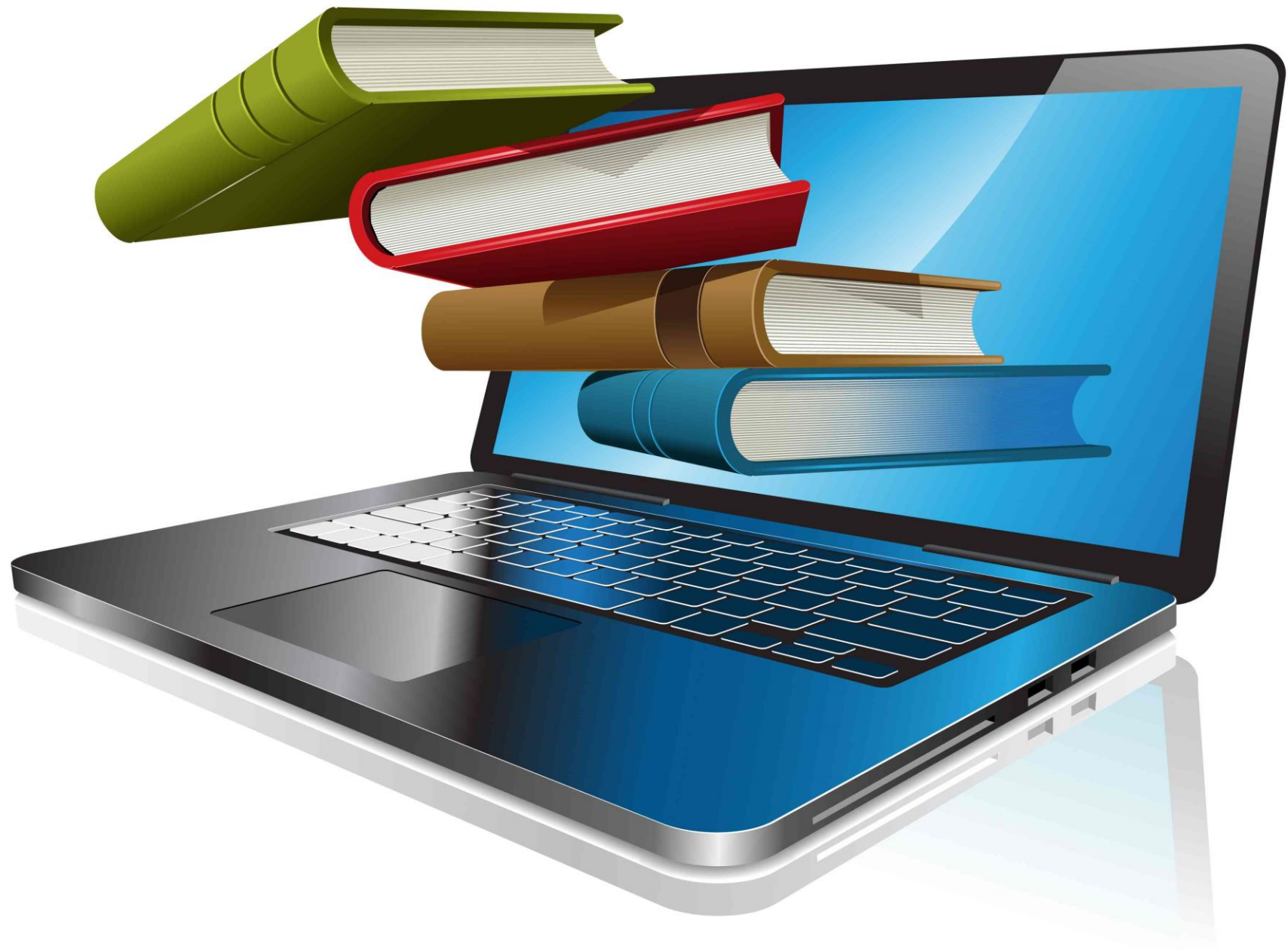
- What is the role of NK cells in regulating macrophage-mediated adipose tissue inflammation?
- Do we prescribe too many opioids after surgery?
- What are main drivers of variations in hospital mortality rates following high risk surgery?
- Are laparoscopic simulators useful in improving technical skills amongst residents?

Outline

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		Author	Year	Title	Journal	Last Updated
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Hospital and Patient Characteristics Associated With Death After Surgery

A Study of Adverse Outcome and Failure to Resuscitate

JEFFREY H. SILBER, MD, PhD,^{1,2} SANKHY V. WILLIAMS, MD,^{1,3} PERRY KRAEMER, MD, PhD,^{2,3} AND J. SANFORD SCHWARTZ, MD,^{1,2}

We asked if the factors that predict overall mortality following two common surgical procedures are different from those that predict adverse outcome (unplanned discharge from the hospitalization or death after an adverse occurrence), which we define as "failure to resuscitate." We examined 1,073 Medicare beneficiaries undergoing elective cholecystectomy or transurethral prostatectomy using three outcome measures: (1) the death rate; (2) the rate of adverse outcome; and (3) the rate of failure to resuscitate. Using logistic regression, we identified adverse outcome (number of patients) and the failure rate (number of deaths in patients who developed an adverse occurrence) as the best predictors of death in patients who developed an adverse occurrence as well as hospital patient characteristics. The adverse outcome rate was not associated with patient characteristics. In contrast, failure to resuscitate was associated more with hospital characteristics, and was best informed by patient characteristics. These findings suggest that the factors that predict death are different from factors associated with adverse occurrence. The adverse outcome rate may be a better indicator of quality than the death rate, and the failure rate may be a better indicator of quality than the adverse outcome rate. *J Gen Intern Med* 1995;10:816-825.

Outcome measurement has become a major focus for those concerned about hospital quality of care.¹⁻⁴ The most frequently used outcome measure is the death rate.⁵ Valid comparisons of hospital death rates require

Received from the Department of Pediatrics, The Medical School, The University of Pennsylvania, Philadelphia, Pa. (Dr. Silber); the Department of Health Systems and the Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, Pa. (Dr. Williams); the Department of Health Systems, the School of Medicine, and the Robert Wood Johnson Foundation, Princeton, N.J. (Dr. Kraemer); and the Department of Health Systems, the School of Medicine, and the Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, Pa. (Dr. Schwartz).

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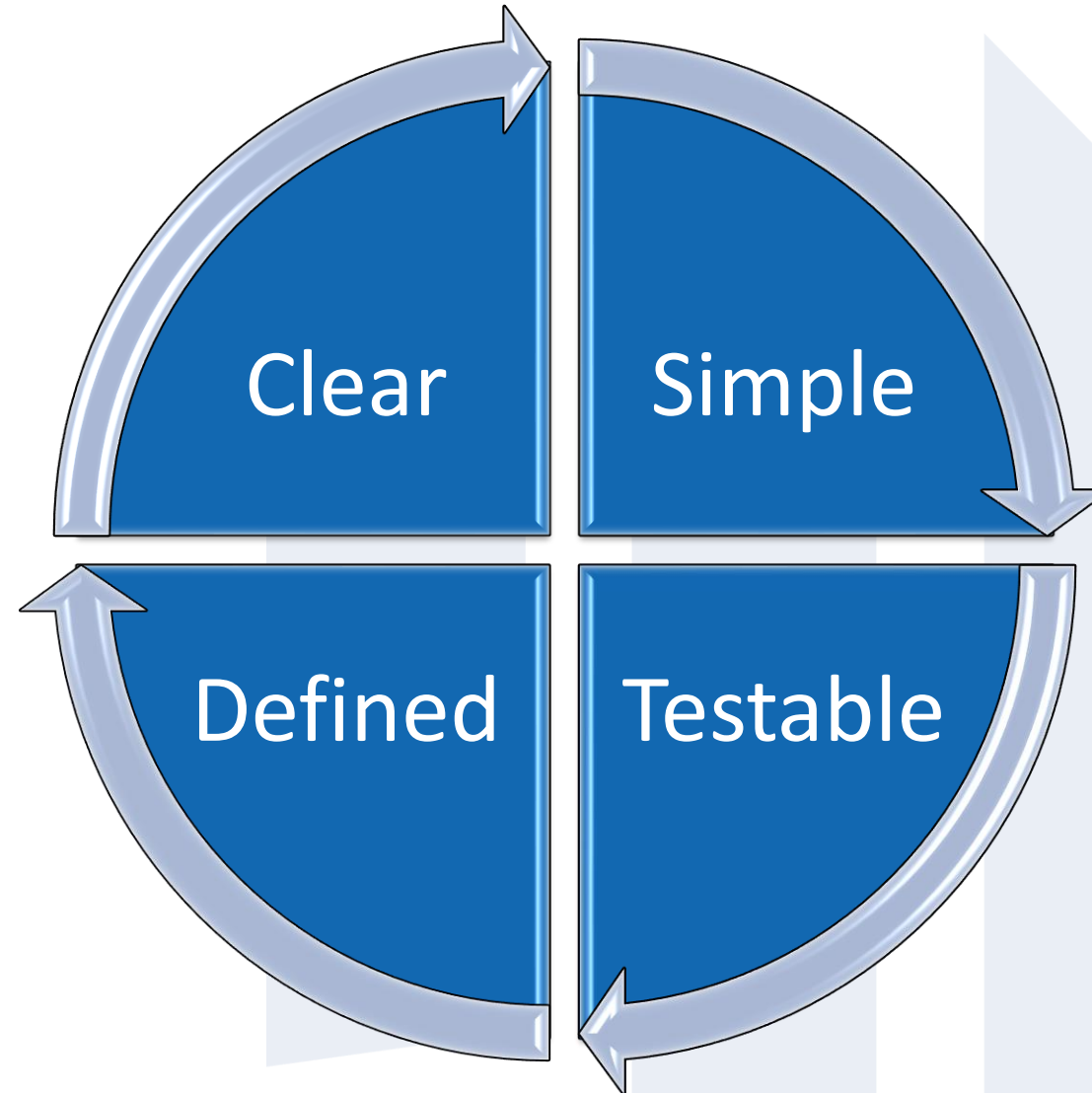
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Outline

- Finding your inspiration
- Understand what's known and unknown
- **Formulate a hypothesis**
- Choose a study design
- Write

Formulate a hypothesis



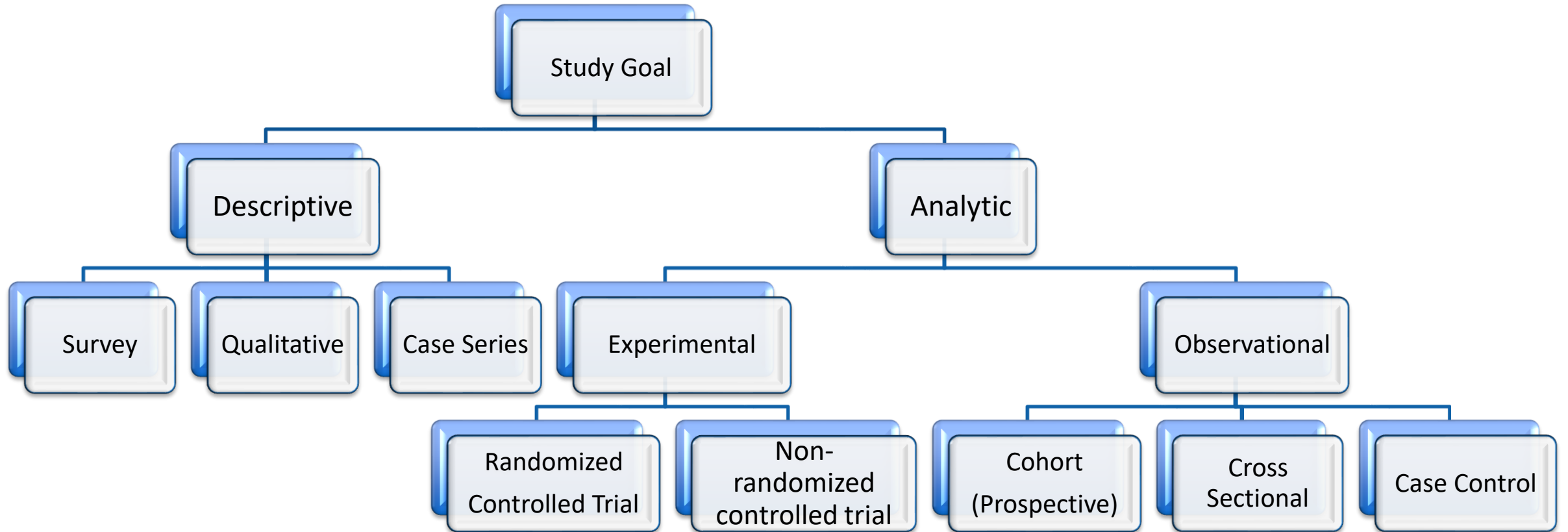
Hypotheses

- Systemic NK cell ablation attenuates intra-abdominal adipose tissue macrophage infiltration in murine obesity
- Following laparoscopic cholecystectomy, patients have >50% of their opioid pills left over
- Failure to rescue is the main driver of variation in hospital mortality after pancreatectomy
- Structured, weekly practice on laparoscopic simulators improves resident OSATS scores more than OR cases alone

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Study Types

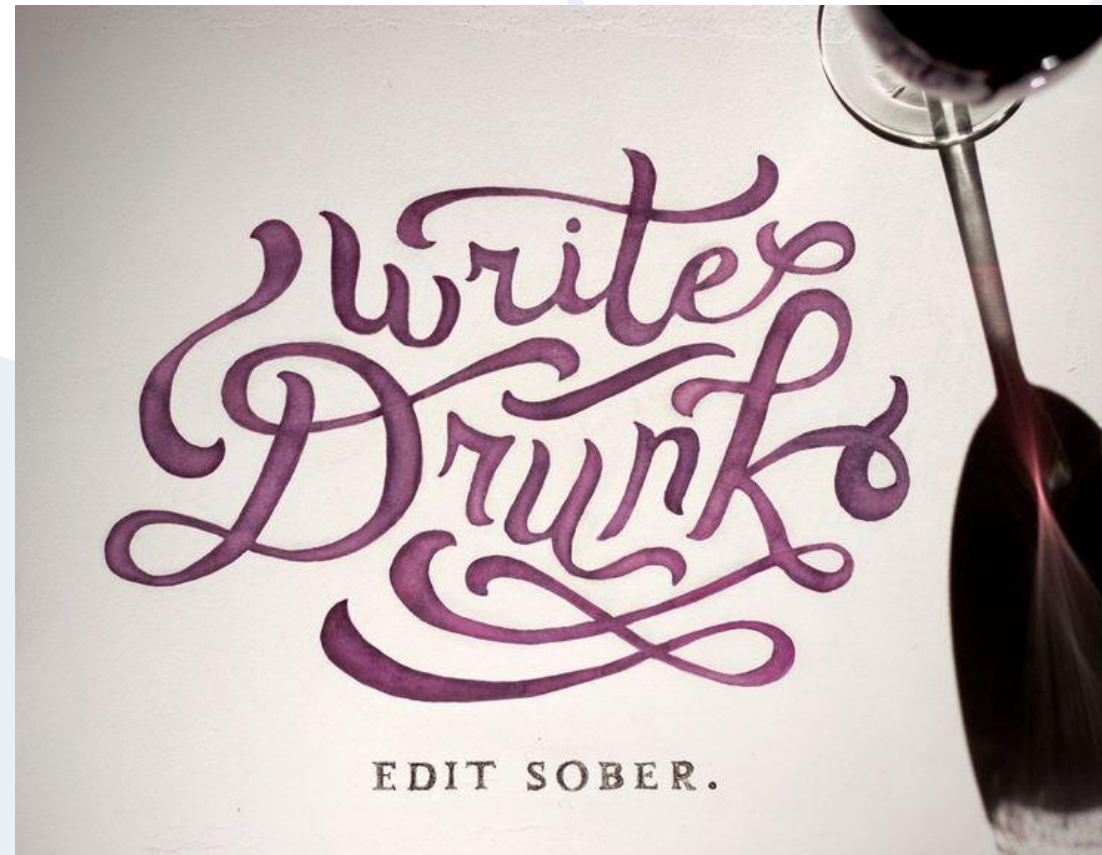


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Write... something

- Review article
- Methods paper
- Research paper
- Pilot grant
- Large grant proposal





Summary

- Find something you are passionate about
- Ask an interesting question
- Do your research
- Run with it

What's your story?



Thank you!

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ImprovingRescue.com

