Crash Course in Designing and Publishing Your Research

Stefanie Linch, PhD

Scientific Project Facilitator, CEDAR at the Knight Cancer Institute

(Former Scientific Publications Writer, Providence Health & Services)

http://phdcomics.com

Disclosures

Nothing to disclose

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What are you hoping to learn in this session? What would you like me to discuss?

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What resources do you have available to help you with research?

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Where do I begin??

Your *first* step…

Clearly define the topic, problem, or question

- Define the hypothesis and objectives
- Continue to refine as you learn more

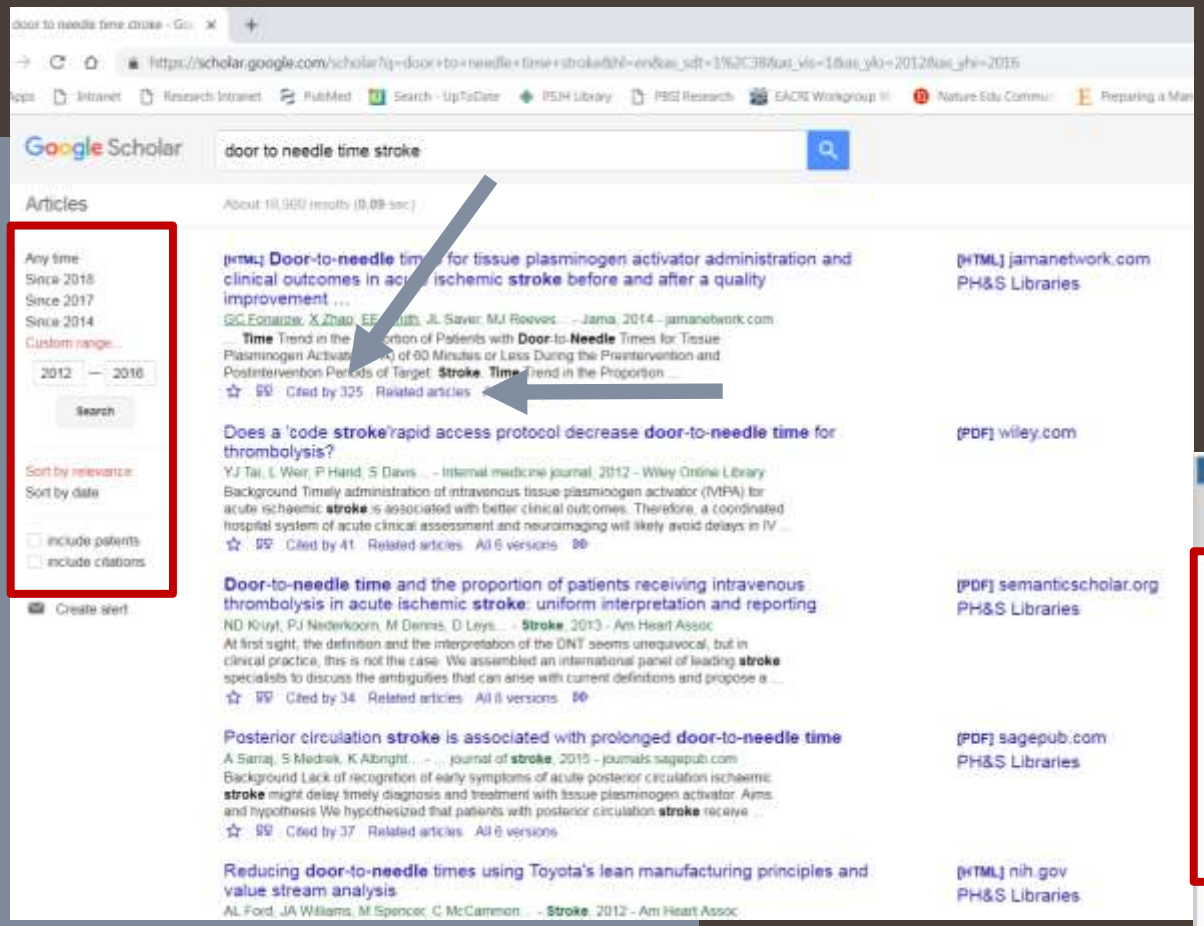
Before you begin…

Review the literature to assess novelty

- Has someone covered this topic extensively?
  - If yes → how much am I advancing the field?
- Buy your librarian coffee or chocolate
- Consult your peers
- Take your time!

Quick Tips for a Thorough Lit Search

- Pubmed AND Google Scholar
  - Great coverage on keyword searches
  - Yield different results
- Does your medical library have additional resources?
  - OVID, CINAHL, Cochrane Library, EBSCO and more
  - Ask your medical librarian to help!
- Look at 'Cited by' and 'Similar' or 'Related articles'
  - Can help find more recent publications
  - Will include papers that agree AND disagree with authors' conclusions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[HTML] Door-to-needle time for tissue plasminogen activator administration and clinical outcomes in acute ischemic stroke before and after a quality improvement ...
GC Fonarow, X Zhao, EE Smith, JL Saver, MJ Reeves ... - Jama, 2014 - jamanetwork.com
... Time Trend in the Proportion of Patients with Door-to-Needle Times for Tissue Plasminogen Activator (tPA) of 60 Minutes or Less During the Preintervention and Postintervention Periods of Target: Stroke Time Trend in the Proportion ...
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Does a 'code stroke'rapid access protocol decrease door-to-needle time for thrombolysis?
YJ Tai, L Weir, P Hand, S Davis ... - Internal medicine journal, 2012 - Wiley Online Library
Background Timely administration of intravenous tissue plasminogen activator (IVtPA) for acute ischaemic stroke is associated with better clinical outcomes. Therefore, a coordinated hospital system of acute clinical assessment and neuroimaging will likely avoid delays in IV ...
Cited by 41 Related articles All 6 versions
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Door-to-needle time and the proportion of patients receiving intravenous thrombolysis in acute ischemic stroke: uniform interpretation and reporting
ND Kruyt, PJ Nederkoorn, M Dennis, D Leys ... - Stroke, 2013 - Am Heart Assoc
At first sight, the definition and the interpretation of the DNT seems unequivocal, but in clinical practice, this is not the case. We assembled an international panel of leading stroke specialists to discuss the ambiguities that can arise with current definitions and propose a ...
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Posterior circulation stroke is associated with prolonged door-to-needle time
A Sarraj, S Medrek, K Albright ... - ... journal of stroke, 2015 - journals.sagepub.com
Background Lack of recognition of early symptoms of acute posterior circulation ischaemic stroke might delay timely diagnosis and treatment with tissue plasminogen activator. Aims and hypothesis We hypothesized that patients with posterior circulation stroke receive ...
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Reducing door-to-needle times using Toyota's lean manufacturing principles and value stream analysis
AL Ford, JA Williams, M Spencer, C McCammon ... - Stroke, 2012 - Am Heart Assoc
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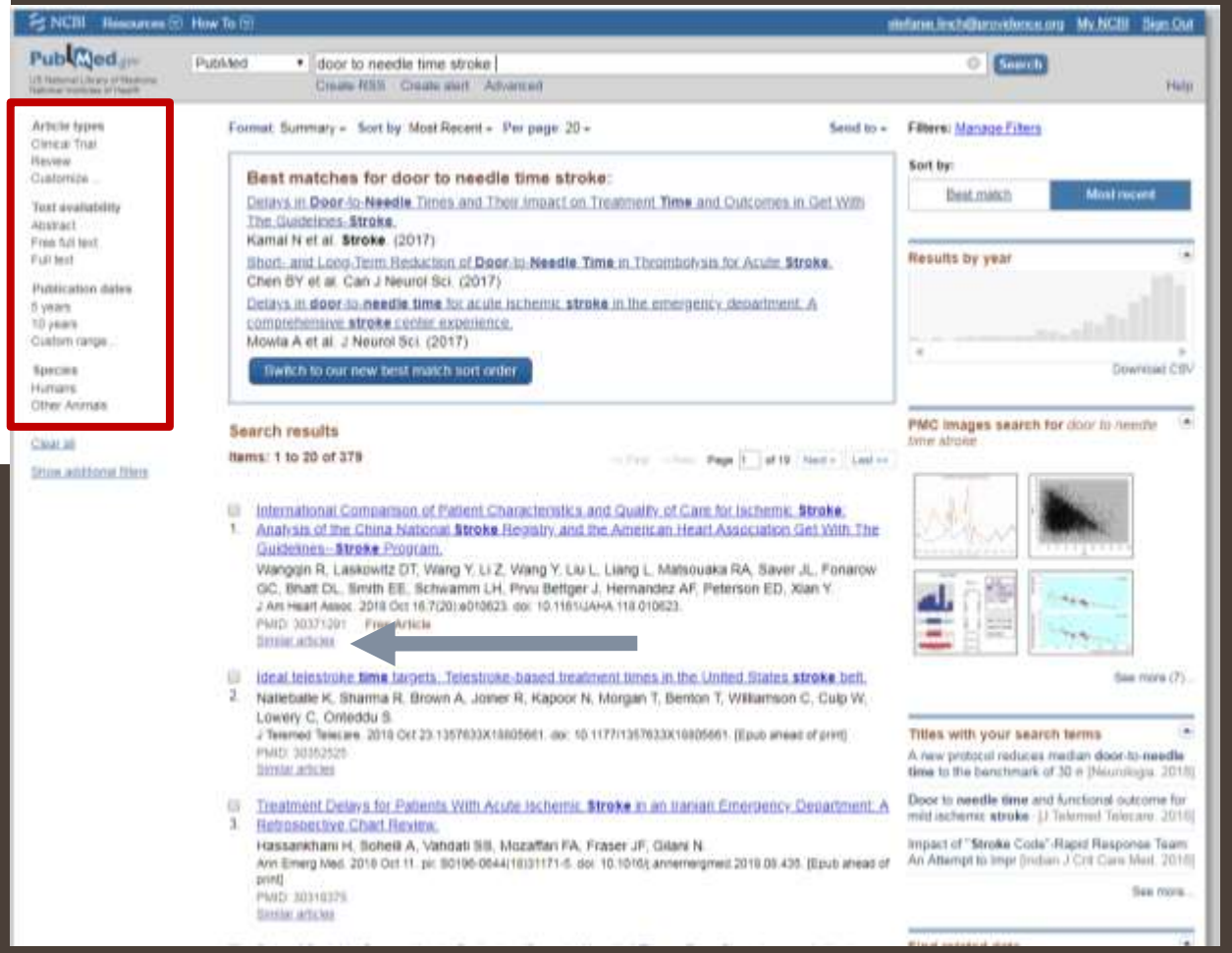
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Full text
Publication dates
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10 years
Custom range...
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Humans
Other Animals
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Best matches for door to needle time stroke:
Delays in Door-to-Needle Times and Their Impact on Treatment Time and Outcomes in Get With The Guidelines-Stroke.
Kamal N et al. Stroke. (2017)
Short- and Long-Term Reduction of Door-to-Needle Time in Thrombolysis for Acute Stroke.
Chen BY et al. Can J Neurol Sci. (2017)
Delays in door-to-needle time for acute ischemic stroke in the emergency department: A comprehensive stroke center experience.
Mowla A et al. J Neurol Sci. (2017)
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1. International Comparison of Patient Characteristics and Quality of Care for Ischemic Stroke.
Analysis of the China National Stroke Registry and the American Heart Association Get With The Guidelines--Stroke Program.
Wanggin R, Laskowitz DT, Wang Y, Li Z, Wang Y, Liu L, Liang L, Matsouaka RA, Saver JL, Fonarow GC, Bhatt DL, Smith EE, Schwamm LH, Pivu Bettger J, Hernandez AF, Peterson ED, Xian Y.
J Am Heart Assoc. 2018 Oct 16;7(20):e010623. doi: 10.1161/JAHA.118.010623.
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J Telemed Telecare. 2018 Oct 23:1357633X18805661. doi: 10.1177/1357633X18805661. [Epub ahead of print]
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Hassankhani H, Soheili A, Vahdati SS, Mozaffari FA, Fraser JF, Gilani N.
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Door to needle time and functional outcome for mild ischemic stroke. (J Telemed Telecare. 2018)
Impact of "Stroke Code"-Rapid Response Team: An Attempt to Impr (Indian J Crit Care Med. 2018)
See more...

I am limited on time…what do I focus on?

Take specific and detailed notes

- HUGE time saver

Literature Review Summary

Topic:

First Author	Year	Title	Journal	Study Design, Participants, and Interventions	Key Results	Elements to include in a manuscript	Weaknesses	Analysis plan Notes

First Author	Year	Title	Journal	Study Design, Participants, and Interventions	Key Results	Elements to include in a manuscript	Weaknesses
Cramer	2014	Healthcare utilization and costs in adults with stable and uncontrolled epilepsy	Epilepsy and Behavior	•Retrospective cohort study using data from Thomson Reuters MarketScan database of insurance claims representing millions of patients in all major US regions •Data used from 1/1/2007 - 12/31/2009 and included pharmacy and medical claims, information on physician visits, medical procedures, hospitalizations, drugs in outpatient settings, prescriptions and amounts in days of medications provided, and tests performed •Included adults 18 and older diagnosed with epilepsy who used an AED, and were classified as having stable epilepsy or uncontrolled epilepsy (if they added an AED during the calendar year, defined as such due to lack of clinical detail in claims) •Patients who switched AEDs were excluded as it could not be determined why they switched •After exclusions, final sample size was 10,107, of which 8571 had stable epilepsy and 1536 had uncontrolled epilepsy •Used the Healthcare cost and Utilization Project Chronic Condition Indicator, a widely validated tool •Included the Charlson comorbidity index to measure the overall burden of illness in their population •Did not evaluate indirect costs like patient transport and time off work	•Patients with stable epilepsy more likely to see PCP vs. uncontrolled seeing neurologist regularly •Patients with stable epilepsy had fewer comorbidities, were hospitalized less often including fewer ED visits, saw their provider less frequently •Majority of patients with stable epilepsy only taking 1 AED, vs. 2 for uncontrolled disease •After controlling for demographi and risk factors, both overall costs and epilepsy-related costs were higher in uncontrolled epilepsy by $7187 and $6023 respectively •Epilepsy-related costs were 40% of overall costs for stable epilepsy and 50% for uncontrolled epilepsy, suggesting a lot of HC utilization comes from comorbidities •Only included insured patients	•References 12 and 33 use different methods to analyze what "controlled" epilepsy means	•Does not directly address whether there are costs differences associated with the type of care team in place; it infers this based on the fact that uncontrolled patients are more likely to go to the ED and regularly see a neurologist vs a PCP
Debicki	2017	Electroencephalography after a single unprovoked seizure	Seizure				
Divino	2015	Clinical and economic burden of breakthrough seizures	Epilepsy and Behavior	•Objective: to evaluate the direct cost impact of breakthrough seizures among AED-adherent patients •Retrospective case/control design using claims from the IMS PharMetrics database •Looked for patients with epilepsy and an ER visit between Jan 2006 and March 2011, with the previous 6 months being seizure free and AED adherence of greater than 80% •Treatment adherent epilepsy patients without any ER visits were used as controls •Sample size was 5729 for first seizure and 14437 for controls; used a matched pairs design using propensity scoring •All-cause and epilepsy-related healthcare costs were calculated and adjusted per person in 2012 US $	•First seizure patients had higher rates of all-cause hospitalizations and ER visits compared to controls and significantly higher healthcare costs •First seizure patients also had higher epilepsy-related costs, driven by higher inpatient costs •Costs increased with each subsequent seizure, related to inpatient costs •Breakthrough seizures occured in 28.4% of treatment adherent first seizure patients •Even with matched cases and controls, cases still had a higher 6-month preindex total for all-cause healthcare costs (p<0.05, $5954 vs %5919), and were using more unique AED classes 40% with 2 AED classes and 13% with 3+ AED classes, vs. 32.8% and 7.7% in controls respectively •Diagnosis type was also still different, with 18% having partial seizures and 62% having other epilepsy, vs 32% and 41% in controls respectively	•Great references for healthcare costs in epilepsy (refs 12-17) •Methods section is a good guide, very detailed •Important to contrast our study with this one	•Study design included using stable epilepsy patients without ER visits as controls, but perhaps there is a better choice of control here? It seems like anyone with an ER visit is likely to incur higher costs. Perhaps controlling for the number of ER visits and then assessing cost? •Even after propensity scoring cases still had higher all-cause healthcare costs, and a 20% higher rate of "other" epilepsy, suggesting worse prognosis/outcomes(?) anyway. Seems like a flaw in methods for choosing controls. Controls were chosen as having no seizures in the entire database timeframe but having a diagnosis of epilepsy and consistently taking meds. •Does not appear that they control for comorbidities •This study cannot show cause-and-effect relationships •Had significant differences in mathing cases and controls; differences may inflate the cost estimates
Faught	2015	Newer antiepileptic drug use and other factors decreasing hospital encounters	Epilepsy and Behavior				
					•LTM-EEG in 51%, MRI in 85% for comprehensive epilepsy care group, 7% and 52% respectively in standard of care group (p<0.001) •Final diagnosis obtained in 64% of comprehensive epilepsy care group		

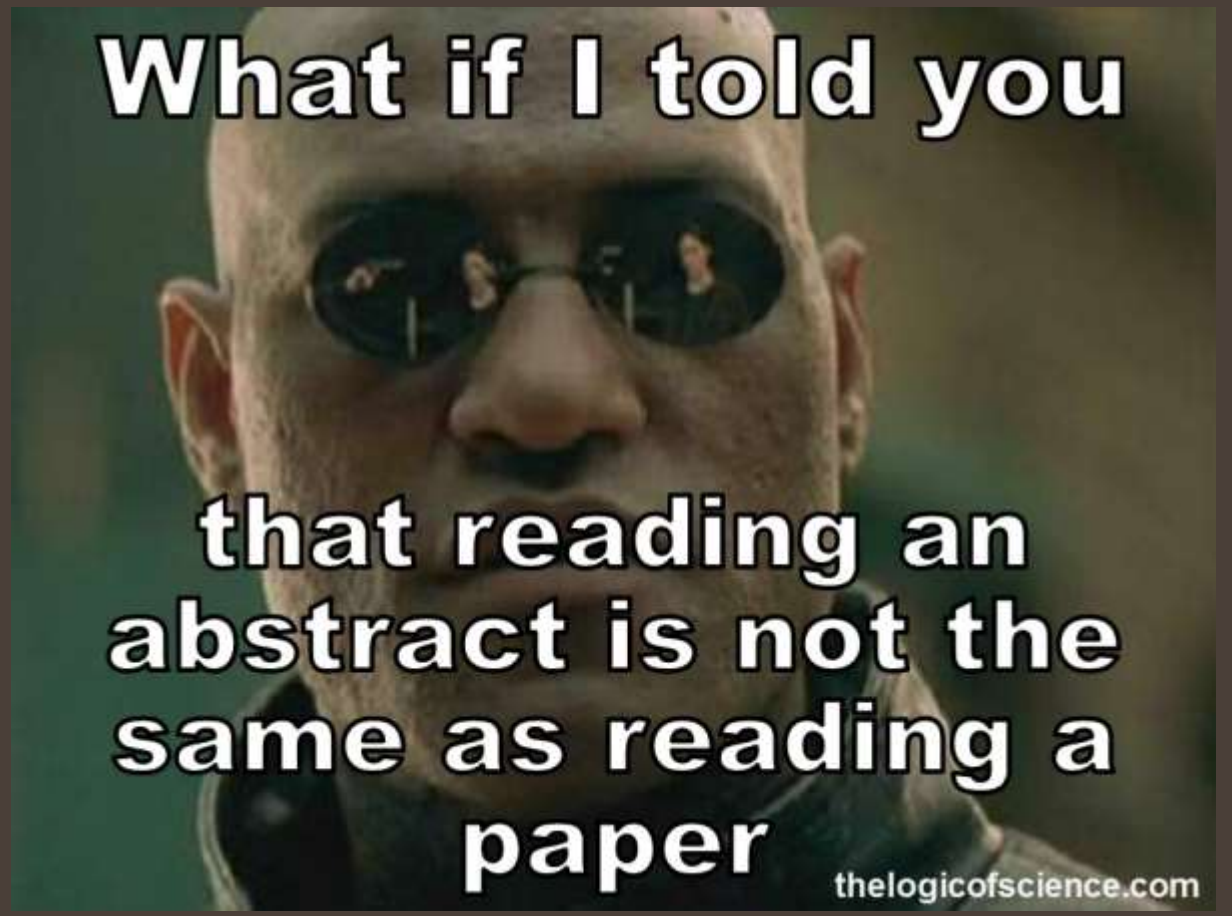
What do you usually read first ?

Abstract!

Group Activity

- Read the abstract on the next slide
- Summarize their conclusions (1-2 sentences)
- Discuss whether or not you agree with their conclusions

Sucralose is an organochlorine artificial sweetener approximately 600 times sweeter than sucrose and used in over 4,500 products. Long-term carcinogenicity bioassays on rats and mice conducted on behalf of the manufacturer have failed to show the evidence of carcinogenic effects. The aim of this study was to evaluate the carcinogenic effect of sucralose in mice, using a sensitive experimental design. Five groups of male (total n = 457) and five groups female (total n = 396) Swiss mice were treated from 12 days of gestation through the lifespan with sucralose in their feed at concentrations of 0, 500, 2,000, 8,000, and 16,000 ppm. We found a significant dose-related increased incidence of males bearing malignant tumors ($p < 0.05$) and a significant dose-related increased incidence ($p < 0.01$) of hematopoietic neoplasias in males, in particular at the dose levels of 2,000 ppm ($p < 0.01$) and 16,000 ppm ($p < 0.01$). These findings do not support previous data that sucralose is biologically inert. More studies are necessary to show the safety of sucralose, including new and more adequate carcinogenic bioassay on rats. Considering that millions of people are likely exposed, follow-up studies are urgent.


What if I told you
that reading an abstract is not the same as reading a paper
thelogicofscience.com

I am limited on time…what do I focus on?

Read more than just the abstract

- Verify their results
- Are their methods sound?
- What about their conclusions?
- There's usually a lot more data!
- Read the discussion for research ideas and future directions

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Source title	CiteScore	Highest percentile	Citations 2018	Documents 2015-17	% Cited	SNIP
Nature Reviews Neuroscience	16.94	99% 1/111 General Neuroscience	6,590	389	53	8.695
The Lancet Neurology	8.81	98% 4/336 Neurology (clinical)	7,790	884	50	8.651
The Lancet Psychiatry	4.02	90% 45/494 Psychiatry and Mental Health	4,045	1,007	46	5.038

Cerebrovascular diseases (Basel, Switzerland) Medline-indexed 1.2 Show articles

Prehosp Emerg Care Medline-indexed 0.7 Show articles

I have my data analyzed...now what?

The Structure of a Scientific Paper

Introduction

- Start with basic background info related to your disease/topic of study
- Identify gaps in knowledge
- Emphasize what remains unknown about your field of study
- Ends with your hypothesis or purpose, generally ties back to what remains unknown

The Structure of a Scientific Paper

Methods

- Starts with basic information, then more detailed procedures
- Provide enough detail for any clinician to reproduce
- Reference previous studies for brevity
- For Clinical studies:
  - Study Design
  - Patient Selection
  - Interventions/Treatments
  - Measurements
  - Endpoints
  - Statistical Methods

The Structure of a Scientific Paper

Results

- Very focused
- Start basic, expand to more complicated analyses/outcomes
- Contains no discussion of meaning

The Structure of a Scientific Paper

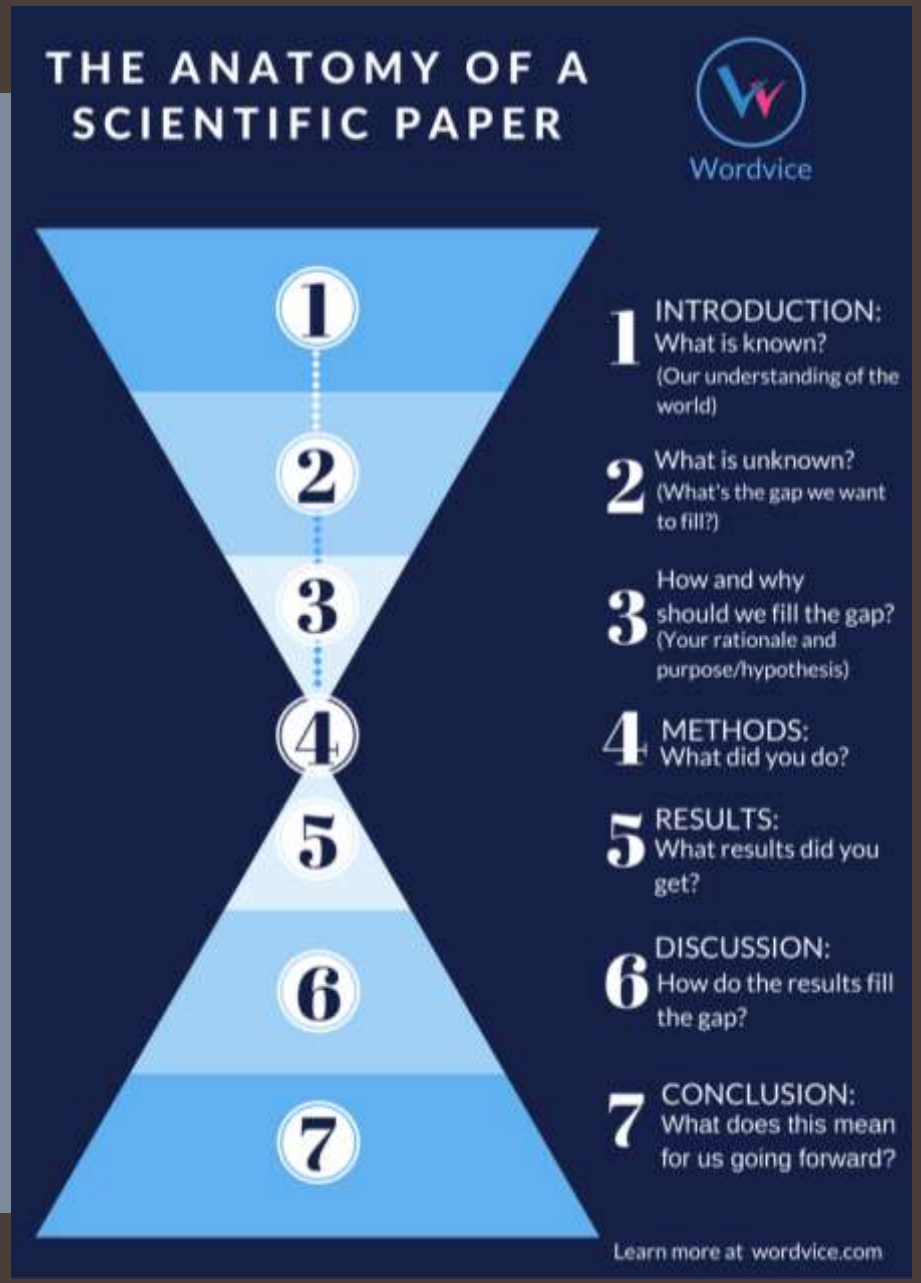
Discussion

- Interpret the meaning of your results
- Discuss how your results fit in with current literature, both in agreement with *and* in contrast to
- Emphasize your novelty
- Be your own worst critic!

The Structure of a Scientific Paper

Conclusion

- Briefly highlight the broader implications of your research for the field
- Can include future directions
- What message do you want the reader to take with them?



So where do I begin the writing process?

1) Methods
2) Results
3) Discussion
4) Conclusion
5) Introduction
6) Abstract
7) Title

Tips for writing success

- Set yourself weekly writing deadlines
- Don’t underestimate group accountability!
- Break the writing into smaller tasks
- Set a goal for each writing session
- Incentivize yourself

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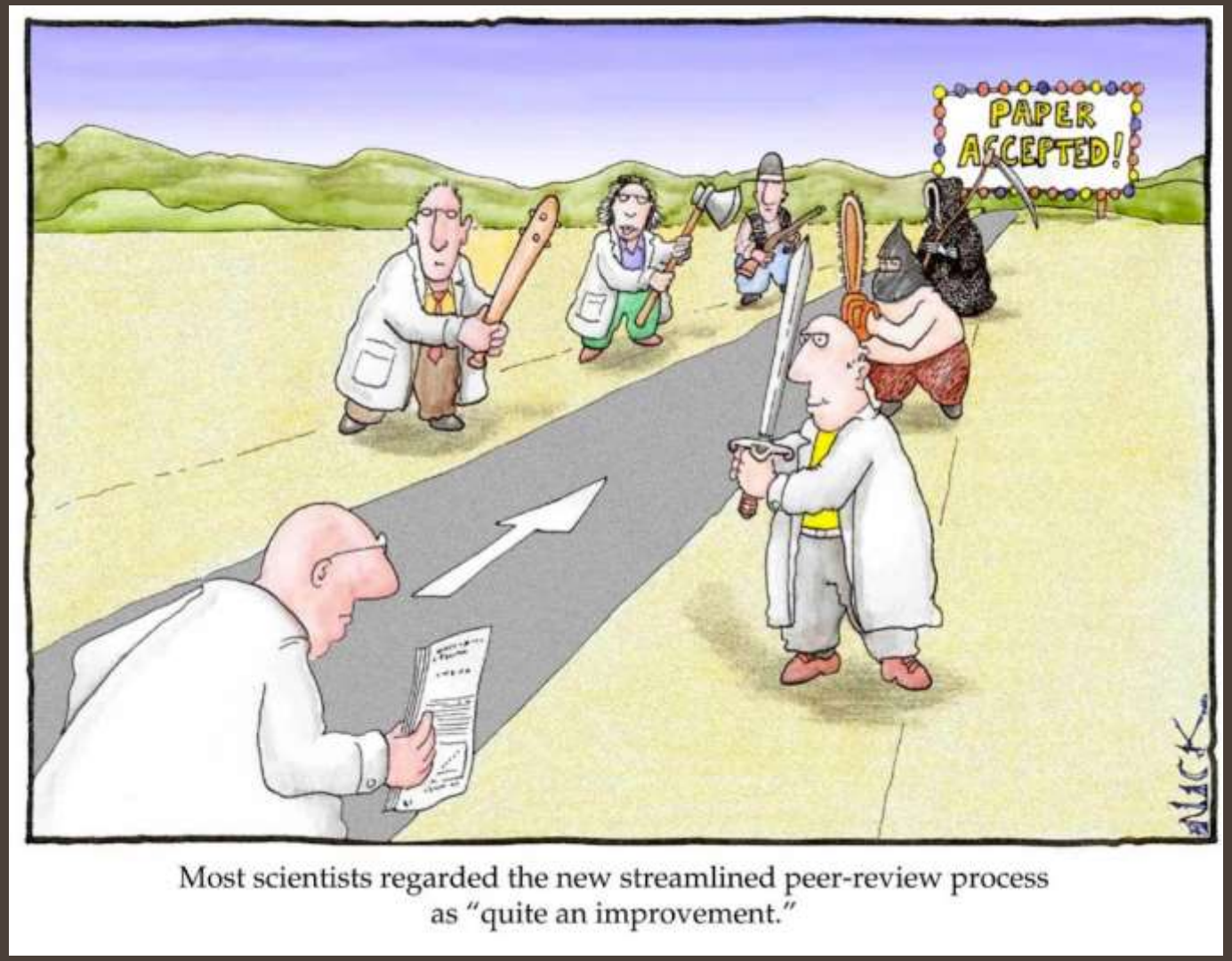
Publishing and Peer Review



Most scientists regarded the new streamlined peer-review process as "quite an improvement."

Menti Poll

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