Writing & Reviewing a Research Paper

Lars E. Peterson, MD, PhD

June 23, 2023

Senior Physician Scientist at ABFM

Professor of Family and Community Medicine at UK

Disclaimer and Conflicts

- Talk largely adopted (read here stolen) from Kurt Stange, Former Editor in Chief of the Annals of Family Medicine

- Lars works for ABFM and UK

- Only AP test I failed…
  - ENGLISH

Objectives

- Explain how the standard components of a research article coalesce into a complete paper and apply those concepts to scientific writing

- Describe the peer review process (in brief)

- Discuss the role of peer reviewers and synthesize how reviews are used by journal editors to make publication decisions

12 Tips for Medical Writing

Tips for Medical Writing

1. Decide what it's about

2. Identify the audience

3. Write the abstract first

4. Make the tables and figures

5. Outline

6. Do a <u>focused</u> literature review

Tips for Medical Writing

7. Involve collaborators
   - Content experts
   - Methodologists
   - Writers/readers

8. Nike (just do it!)
   - Deadlines
   - Daily/weekly writing
     - Block time on you calendar
   - Immersion experience

Tips for Medical Writing

9. Seek critical feedback and draw general concepts from it

10. Iterate between computer and hard copy (in a writing "place")

11. Revise, revise, revise; stop

    (Seek parsimony, logic and clarity)

12. Follow the rules (usually)

Writing is Hard Work

- Being able to clearly convey your findings to others is often difficult
- Writing is a skill
- Like any other skill you have to work at it to improve
- A paper is never finished, it's just submitted

A Research Paper Cookbook

A Research Paper Cookbook

- Title page

- Abstract

- Introduction

- Methods

- Results

- Discussion

- Acknowledgements

- References

- Tables

- Figures

- Appendices

Formatting

- Different journals have different requirements
  - Structured vs. unstructured abstract
  - Family Medicine specifically asks you to only put one space between sentences!
  - Length
  - Number of tables/figures
- Writing for a target journal can save you lots of formatting pain at submission time

Title Page

- Title

- Authors & affiliations

- Corresponding author

- Other (check the journal's info for authors)
  - Word count
  - Funding
  - Potential conflicts of interest

Abstract

- The **only** thing that most readers will see

- Must stand alone as a summary of the main points of the study

The Abstract

- Purpose (Background)

- Methods

- Results

- Conclusions

- Background (context)

- Objective

- Design

- Setting

- Participants

- Intervention(s)

- Main outcome measure(s)

- Results

- Conclusions

Abstract

- ## Purpose
  - 1 sentence on the general problem
  - 1 sentence on the research question or purpose

- ## Methods
  - Design
  - Sites/participants
  - (Experimental procedure)
  - Main outcome measure(s)
  - Analysis

- ## Results
  - Main findings - about 1/2 of the 250 word allotment

- ## Conclusion
  - 1 sentence summary of the main take-home lesson
  - 1 sentence on the implications (So what? Who cares?)

Introduction

- Purpose is to set up **this** study

- **Focused** literature review and rationale

  – Not a college paper where you have to cite every paper ever written on the subject

- End with a paragraph that begins like this: "Therefore, this study was undertaken to…"

Methods (Qualitative)

- Reflexivity
- Design
- Participant sampling procedure
- Experimental procedures
- Data collection
- Analyses
- Consider organizing as a chronology if highly iterative

Methods (Quantitative)

- Design

  - Data sources if secondary

- Sites/subjects (participants)

- Experimental procedures

- Data collection

- Measures

- Analyses

Results

- Refer to and explain main findings from the tables & figures

  - Go in order of the tables / figures

  - Go from simple (descriptive) to complex (multi-level regression)

- Don't repeat in words what can be discerned from the tables/figures

- Include any findings not in the tables or figures

Discussion

- Emphasize / synthesize main findings

- Put findings into context of what is already known

- Draw any new conclusions

- Discuss strengths & weaknesses

- Implications for future studies, clinical application, education or policy

Suggested structure for discussion of scientific papers
- Statement of principal findings
- Strengths and weaknesses of the study
- Strengths and weaknesses in relation to other studies, discussing particularly any differences in results
- Meaning of the study: possible mechanisms and implications for clinicians or policymakers
- Unanswered questions and future research

Acknowledgements

- Those who helped but don't meet criteria for authorship

- Funding sources

References

- Usually numbered, in order cited

- Use a bibliographic database

  - Endnote, Reference Manager, Zotero

Figures

- Information or data best presented graphically

- Examples
  - Theoretical model
  - Flow diagram of participant recruitment, exclusion, retention (required in RCT's)
  - Photos

Tables

- Each should stand alone and be interpretable without reading the paper

- The data!
  - Short, descriptive title and headings
  - Consider putting N in subheading
  - Footnotes for details, defining abbreviations

- For epidemiological studies
  - Table 1 is study participants
  - Table 2 is univariate findings
  - Table 3 is multivariable analysis

Appendix

- Details for a subset of readers
  - Extra tables
  - (Extra) quotations from qualitative data
  - Measurement details (survey, technical procedures…)
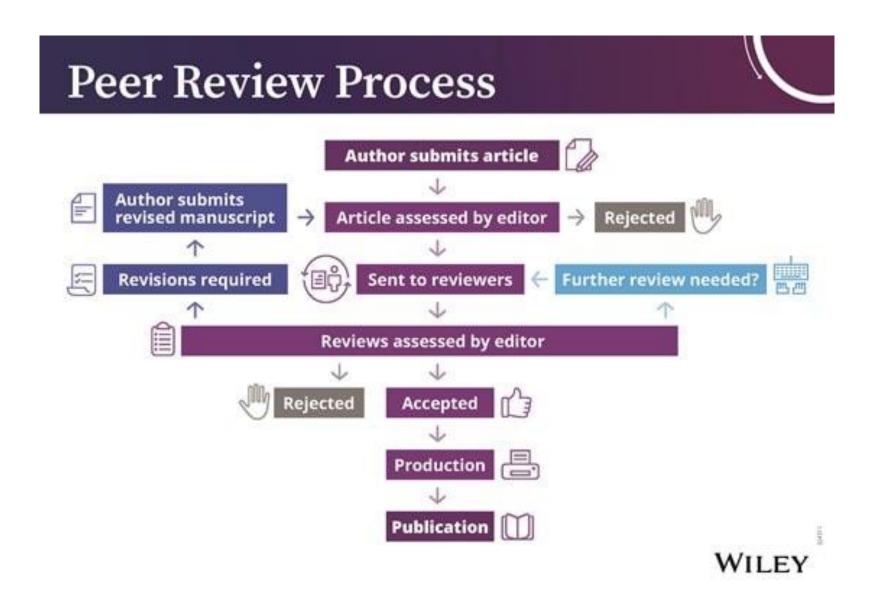
- Some journals may publish only online (and not format)

Cover Letter

- Different philosophies on this
- Address editors and journal
  - No "Dear Editor" letters!
- State why this article would be of interest to the readers of the journal

Peer Review

The Peer Review Process

- Thinking like a reviewer (and editor) makes you a better writer

- Being a reviewer helps you to think like a reviewer

- Thinking about papers makes you a better scientist and clinician!

https://authorservices.wiley.com/asset/Peer-Review-Process-550x389.jpg

Reviewer Role

- Service to the field
  - Help authors to improve the quality of their work
  - Help the editors make a decision
  - Advance the quality of scholarship in the field

- Benefits to the reviewer
  - Understanding of the process
  - Learning to think like a reviewer
  - (Both these help your own writing)

Why me?

- Content expertise
  - usually specified by you

- Methodological expertise

- Represent the voice of readers

Process

- Email query
  - Read abstract
  - Look at your schedule
  - Respond online yes or no

- Doing the review
  - Read article with a red pen
  - Note general questions, concerns, positives
  - Write review

- If first time reviewing for a specific journal, look at the review form as some journals have specific questions for reviewers

- Submit and do rating & recommendation

Writing the Review

- ## Comments to the author
  - General
    - Positives
    - Concerns (Major and Minor)
    - Questions (what wasn't clear)
    - Suggestions for improvement
  - Specific
    - By page, line and paragraph

- ## Comments to the editor
  - Judgment about acceptance
  - Place in the literature
  - Additional concerns (e.g. duplicate publication)

Give Actionable Feedback

In recent months we've had a natural experiment in how physicians learn. Prior to March 2020, knowledge of how to diagnose and treat patients with COVID related illness was sparse among US family physicians, and telemedicine was not a routine part of daily clinical primary care practice. In only a span of months, all that changed. Family physicians now routinely diagnose and treat patients with acute and post-acute COVID illness, and telemedicine is likely a permanent part of daily practice. How did that happen?

Clearly, necessity is a great motivator. Family physicians did lack knowledge and that lack of knowledge did motivate learning. Importantly, if one examines the methods most family physicians used to learn, it gives insight into education. While I do not have data, I found peer learning predominated. Emails and list-serves flowed with how-to information, links to online resources predominated, podcasts erupted, and journals extended free access to pre-publication as well as peer-reviewed manuscripts.

Major Concerns:

1) Missing variables f account for whether analysis. This would meet expected need confound the curren

2) Does rate of accep one way of adding ca possible given the av practices that added of physicians. An un employing NPs and P

Minor Concerns:

3) Provider vs. Clinici bad connotations. It suggests an equivale professionals is bette keep fighting.

4) County level varial workforce. Was this

Major Concerns:

1) Structure of Abstract – The abstract does not provide readers with any sense of whether to believe the findings. There is no mention that the results are from a single program and based on <30 residents. In fact, there are no numbers at all. Claims of "significant improvement" are not supported by actual percentages or proportions. The first sentence of the methods section is mostly the study's hypothesis, which belongs in the background and objectives section.

2) Analytic Strategy – The authors need to defend why they chose to analyze categorical data as continuous. All results reported in Table 3 are based on the mean score of ordinal satisfaction questions. Why were these data not analyzed in the same way as the satisfaction data in Table 2?

3) Results – Similar to major concern #1, the authors do not provide any demographics on the sample in the results section. This absence does not allow readers the chance to estimate the generalizability of the findings. We also are not told whether the samples are truly independent.

Minor Concerns:

1) Introduction first sentence – It's the Accreditation Council on Graduate Medical Education, not Counsel.

2) Introduction, first paragraph – Why must FM residencies have a FM faculty provide OB services? The rationale for the study would be clearer with a short discussion of role modeling. The RRC requires role modeling in more than just OB.

Rating the Manuscript

(1 = not at all, 5 = very much)

- Does this paper present new information?

- How useful is the information in this paper?

- How valid are the conclusions presented in this paper?

- How important is this manuscript?

- In your opinion, will the authors be able to revise this work into a high quality paper?

- Are you interested in participating in the online discussion of the article?

Recommendation

- Consider
  - Manuscript
  - Place in the field
  - Place in the journal

- Options
  - Accept
  - Accept with minor revisions
  - Reconsider after major revisions
  - Reject

Critiquing Your Critique

- Compare your recommendation to the editors' decision

- Compare your reviews to others
  - Tone
  - Specific points you caught or missed
  - Potential usefulness to authors

- Everything doesn't have to match
  - Your unique voice is important

- Use feedback to improve your reviewing and writing

Back to Writing!

Interpreting Reviews

- Revision is almost always required
  - Editors' letter
    - Degree of interest
    - Guide to reviews
    - Specific instructions
  - Are requested revisions possible?
- Rejection may reflect
  - Quality of the study being described
  - Quality of the writing
  - Fit with the journal
  - More good manuscripts than space

Resubmitting

- Do it soon
- Use editors' letter as a guide
- Cover (response) letter is important
  - Enumerate and address each concern
  - Justify disagreements
  - Work to improve the manuscript
  - Work to meet the journal's needs (e.g. shorten)
- Have someone else read manuscript before resubmitting

Rejected Manuscripts

- **Don't be discouraged**

- Submitting to another journal
  - Use critique to improve the paper
  - Consider any suggestions regarding target

- Challenging the decision
  - Reversal unusual
  - Provide argument if paper misunderstood
  - Recognize the decision may reflect considerations of space, fit, variety, etc, in addition to the specifics of your paper

Accepted Manuscripts

- Update your CV

- Respond to managing editor's queries
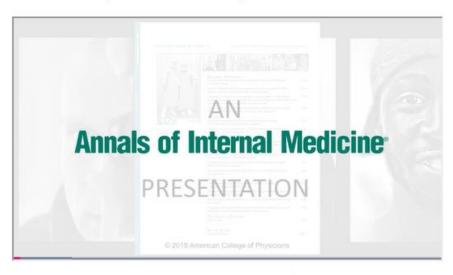
- Return proofs on time

- Consider doing a press release

How to Be, and Not to Be, a Reviewer for a Medical Journal

Annals of Internal Medicine®

AN

PRESENTATION

© 2018 American College of Physicians

If you have difficulty viewing the video above, make sure your proxy/network settings are configured to allow streamed video content.

Register to become a peer reviewer for *Annals of Internal Medicine*. Note that *Annals* reviewers whose reviews are returned on time and are judged satisfactory by the Editors may receive up to 3 Category 1 CME credits per review (maximum, 15 credits in a calendar year).

- CME for Reviewers
- Reviewer Information

Information for authors

Sign up for alerts

RSS Feed

STAY CONNECTED

f Facebook

🐦 Twitter

📷 Instagram

✉ Mail

Consider "Mentored" Reviews

- Accept a review and do it with a learner or junior faculty

Thanks!