THE ART OF WRITING (AND PUBLISHING) A MANUSCRIPT

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  • Prof Leonard Leibovici
  • Prof Jesus Rodrigues-Bano

• For sharing their slides
MOOC

• Writing in the Sciences
• Stanford University

• Free of charge
• Self-paced learning

• https://lagunita.stanford.edu/courses/Medicine/SciWrite-SP/SelfPaced/about
Many ways to learn

- Talk to experienced researchers
- Meet-the-expert sessions
- ESCMID course on Methods: [https://www.escmid.org/profession_career/educational_activities/escmid_courses_and_workshops/past_escmid_courses_and_workshops/better_methods_for_clinical_studies_in_infectious_diseases_and_clinical_microbiology_a_hands_on_workshop/](https://www.escmid.org/profession_career/educational_activities/escmid_courses_and_workshops/past_escmid_courses_and_workshops/better_methods_for_clinical_studies_in_infectious_diseases_and_clinical_microbiology_a_hands_on_workshop/)
HOW TO WRITE

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Basics

• High-quality protocol

• Read good articles
• Write papers. You will improve over time!
• Follow the standard structure of medical articles

• Be meticulous and honest, double check everything
• Tell a story, clear, short and ‘sexy’

• External review of your manuscript by friends and seniors
Other tips

• Short sentences
• Same name for variables throughout the document
• Avoid using too many and uncommon abbreviations

• Check reporting guidelines: https://www.equator-network.org/reporting-guidelines/
• CMI has also useful editorial notes (http://www.clinicalmicrobiologyandinfection.com/content/author-info)
• Comply with instructions to authors
• Language editing if needed
General advice

• Keep a logical line running through your article, starting with your question
  • methods (the methods should be suitable to answer the question)
  • results: the answer to your question should be given mainly based on the main outcome
  • implications that should be based mainly on your results, and mainly on the main outcome

• Avoid having too many messages
Know how you work best

- Time when you are focused and creative
- Ideas will pop up along the way, note them
It will take some time…

- Plan some time (a few months) for the writing, the reviewing and the submission steps
- Follow the literature until submission
Bad protocol and planning = bad article

- Input from experienced colleagues and biostatistician
- Detailed and complying with reporting guidelines
- Ethics committee / Institutional Review Board
  - If you have not obtained approval, be prepared to justify (based on local regulation and legislation)
- Register your clinical trial or systematic review
Don’t copy (even from your own articles)

- Most journals are checking automatically for plagiarism
In which order?

• Methods + Results
  • Use your protocol as a template for the Methods part
  • Start with tables and figures (not too long; understandable on their own)
  • Double check for consistency between the two sections
  • Use a supplementary file to define all variables and detail statistical analyses if too long

• Introduction and Discussion : write your ideas in real time along the way, finalise at the very end
• Use a reference management software

• Abstract and title : when the manuscript is finalised
Title

• Declarative: Shows the conclusion:
  • e.g., Combination treatment improves survival in infections caused by carbapenem-resistant Enterobacteriaceae

• Hypothesis or question:
  • Does combination treatment improve survival in infections caused by carbapenem-resistant Enterobacteriaceae?

• Descriptive: topic and then design of study:
  Combination treatment versus one drug for infections caused by carbapenem-resistant Enterobacteriaceae: a prospective, cohort study
Title

• The descriptive title is more honest for research manuscripts and we prefer it at CMI

• Be as imaginative as you want in opinion pieces
• Check the titles in the journal you’re aiming at

• ‘Bad’ title features (low citation rates)
  - Long titles
  - Name of location in title
Abstract is very important

- It has its own life on the web

- Readers will many times decide whether to read the entire article; or quote it; or examine it for inclusion in a systematic review; based only on the abstract

- Readers will many times read only the abstract

- Editors can and will make decisions based on the abstract only (Groves T, Abbasi K. Screening research papers by reading abstracts. *BMJ* 2004;329:470–1)
Abstract

• Don’t copy-paste from the text! Read your paper and take notes

• Be sure it contains the most important parts of your study: hypothesis or question or aims; the important methods; results; implications

• Results:
  • give always actual numbers: number of patients; numerator and denominator; mean or median and dispersion measures
  • do not quote only p values; or only ORs or only RRs

• Implications:
  • Discuss in short the direct implications of your study
  • Refrain from sweeping statements (especially from: further research is needed)
Introduction has 3 functions

1. **Provide a short background**
   - Avoid facts that are well known to your audience: writing on antibiotics for CMI, don’t start with the discovery of penicillin.
   - But don’t ignore relevant studies: in the Introduction of systematic review do mention that 5 such systematic review were published in the last 6 years.

2. **Show that there was a good reason to do the study**
   - It has (more or less) biological plausibility.
   - It was not performed before in such quantities that another study is completely redundant.
   - The problem you address is important.
   - The method is appropriate.

   ‘The levels of LDH in patients with pyelonephritis were not reported before’ – is not a good reason.

   ‘E. coli is the most common pathogen of cystitis all over the world; but this was not assessed in Laputa’ – not a very good reason.
Introduction has 3 functions

3. Introduce the hypothesis or the question/objective of the study, usually in the last paragraph.

If you have an *a-priori* hypothesis don’t hide it:
‘We tested whether low socio-economic status is related to resistant pathogens in women with cystitis’ rather then ‘We looked for risk factors for resistant pathogens in women with cystitis’.
Methods

• If some (or all) of the patients were described in prior publications, be precise in describing the overlap and quoting these publications.

• ‘Prospective’ and ‘retrospective’ as descriptions are not enough (PMID 27184876).

• Components of an observational study:
  • How were the patients detected
  • How were they recruited
  • How were the follow-up data acquired: e.g., prospective, at given points in time, according to a protocol; or from the electronic patient file
  • How were the outcomes acquired (e.g. data on 30 day mortality)
Methods check-list

- Clinical and epidemiological studies
  - Design, site and study period
  - Patients, eligible population, inclusion and exclusion criteria
  - Detection, selection and follow-up
  - Variables
    - Main and secondary outcomes
    - Explanatory (main and potential confounders)
- Data collection: who and how
- Ethical aspects
- Statistical analysis
Statistical methods

• **Sparse data** (Sparse data bias: a problem hiding in plain sight: BMJ 2016;352:i1981)

• Most of the problems are with the description of the multivariate analysis

• There are several checklists - e.g. Journal of Clinical Epidemiology 57 (2004) 1147–1152
Results

• Be precise about the flow of patients in your study
• Data should be shown in Tables or Figures and not repeated in the text
• Text should serve to highlight important findings
• Avoid trivial figures
• Be honest in reporting data:
  • Always report actual numbers and not only p values or ORs or RRs
  • Always give numerator and denominator for rates or percentages
  • For life-table analysis, report the number of patients available at the beginning of each time interval
  • Report on missing data and how you handle this
  • Distinguish between statistical and clinical significance
Results

• Logical order (not your experiments)

• Clear, concise
• Straight to the point

• Avoid unnecessary data (supplementary?)

• Neither comments nor interpretations

• Consistent with objectives and methods
Results

• Select what goes for tables and figures
  • Tables: data that would need much text to explain and/or description would be confusing
  • Figures: flow charts, impact of imaging

• Tables and figures should be understandable by themselves

• Clinical studies
  • Figure 1 usually a flow chart of patients included
  • Table 1: descriptive data of the series/cohorts/cases and control group
Discussion

Use a structured discussion:

• Main findings: without repeating the results, as if you were speaking to a colleague

• Your findings in the light of what is already known:
  • If unlike previous studies, what can explain the differences? If similar, what further understanding was added by your study?
  • Review the literature but do not repeat what was said in the Introduction; and remember you’re writing an article and not a review: review the literature as far as it has a bearing on your question and results

• Limitations of your study and what bearing they have on your conclusions (if you must strengths of your study as well)

• Did your results taught us something new about mechanisms or pathophysiology?
Discussion

• Implications for further research
  • Try and be precise, to the level of advising on the design of the needed study

• Implications for clinical practice
  • Avoid far-fetched conclusions
After finishing…

• Leave it there and read again 3 days later

• Show to some friend for review

• And send to your supervisor and co-authors for comments
HOW TO PUBLISH

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Main points

• Instructions to authors
• Be familiar with your chosen journal

• The editor is the target; s/he needs to feel you can be trusted

• Cover letter ++
• Point-by-point polite reply to reviewers

• Appeals unlikely to succeed if no major scientific reason
How to choose the journal?

- Ask experienced colleagues for advice
- Who is your audience?
- International vs national
- General vs specialist
- If in doubt, check your references
Cover letter

- Short but convincing
- Give context and background to study
- What question does your study address?
- What method did you use to answer study question?
- Mention you’ve followed reporting guidelines appropriate to study design
- What did you find?
- How do your findings affect totality of knowledge on subject; how might they influence practice or thinking?
- Why is your paper relevant to journal’s readership?
Plan some time for the submission process…

Depending on the journal:
• Supporting documents
• Protocol
• Trial registration
• Signatures
• Conflicts of interest statements
• Patient consent
• References in press
• Permission to reproduce
…
Your task

• Convince the editor and reviewers that your study
  • … was necessary
  • … was well designed and conducted
  • … provides consistent, accurate and interesting results

• so you answered a question or at least open new doors
The important people

• The Editor
  • Usually only reads (at first) the cover letter, title & abstract
  • Makes the final decisions

• The Reviewers
  • Usually very busy and tired of reviewing papers
  • May be expert (or not so much)
  • If you are going to recommend some potential reviewers, be sure to include their important papers in your list of references
Peer review process

- Submitted paper
  - Immediate rejection
  - Peer review
    - 2 or more clinical reviewers
      - Sometimes a statistical reviewer
    - Rejection
      - Negotiation
      - Revised paper
    - ± Peer review
      - Negotiation
  - ± Peer review
    - Rejection
    - Accepted
Reply to reviewers

• You have an opportunity!

• Be grateful and polite to reviewers

• Answer ALL their questions and comments, highlighting changes in your manuscript (with line numbers)

• You may reject suggestions if:
  • They ask for the impossible
  • You can convincingly argue against
Any question?

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