



UNIVERSITÉ
DE LORRAINE

THE ART OF WRITING (AND PUBLISHING) A MANUSCRIPT

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 - *Prof Jesus Rodrigues-Bano*
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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_andworkshops/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/authorinfo>)
- 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

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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

Reporting guidelines



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Essential resources for writing and publishing health research



Library for health research reporting

The Library contains a comprehensive searchable database of reporting guidelines and also links to other resources relevant to research reporting.



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Reporting guidelines for main study types

Randomised trials	CONSORT	Extensions	Other
Observational studies	STROBE	Extensions	Other
Systematic reviews	PRISMA	Extensions	Other
Case reports	CARE		Other
Qualitative research	SRQR	COREQ	Other
Diagnostic / prognostic studies	STARD	TRIPOD	Other
Quality improvement studies	SQUIRE		Other
Economic evaluations	CHEERS		Other
Animal pre-clinical studies	ARRIVE		Other
Study protocols	SPIRIT	PRISMA-P	Other



[Give a talk about research publication and reporting guidelines – slides available here](#)

Don't copy (even from your own articles)

- Most journals are checking automatically for plagiarism

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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 than '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

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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



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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