UNIVERSITY OF OXFORD

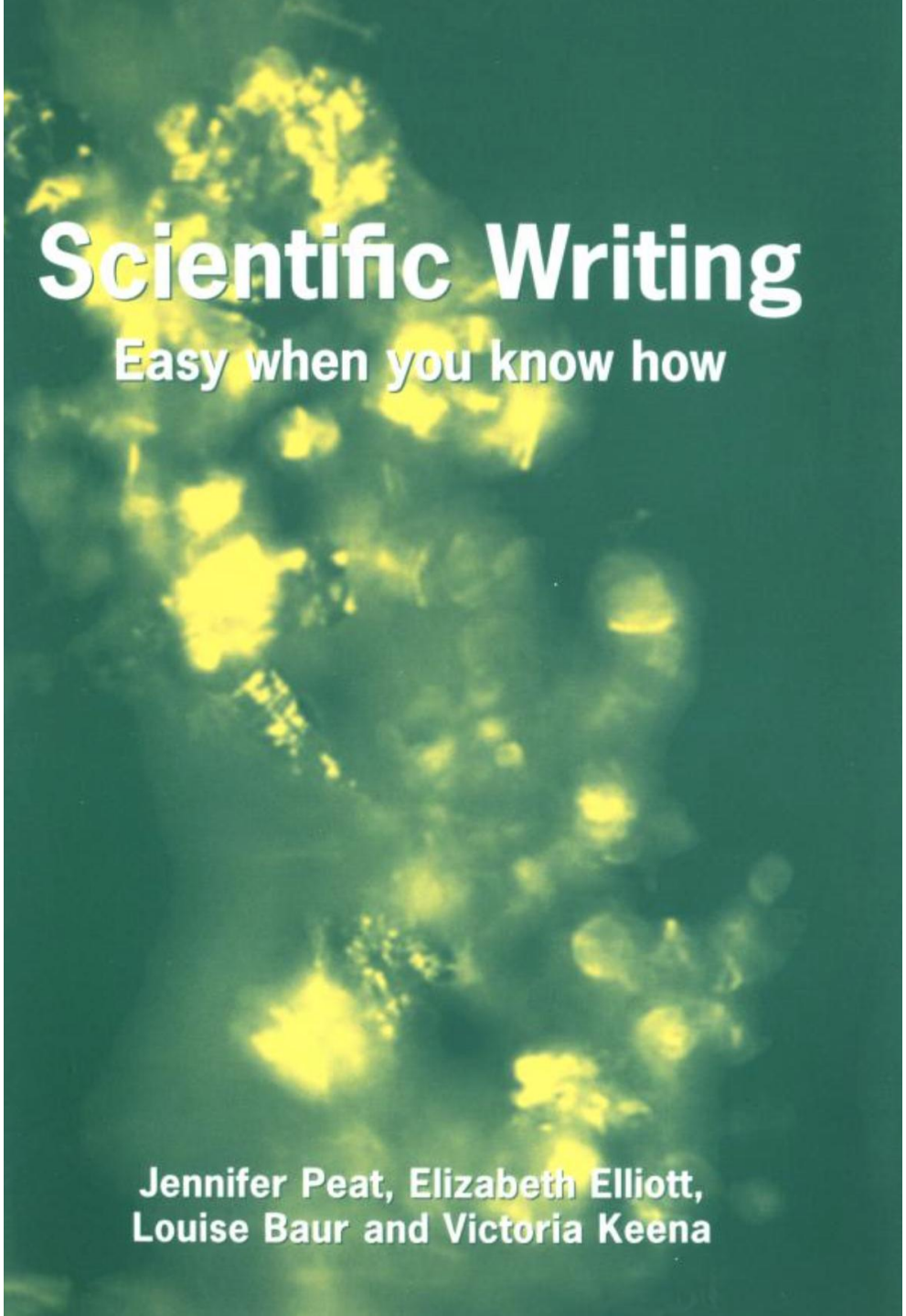
Scientific writing

Jane Hirst

Program Director, Women's Health

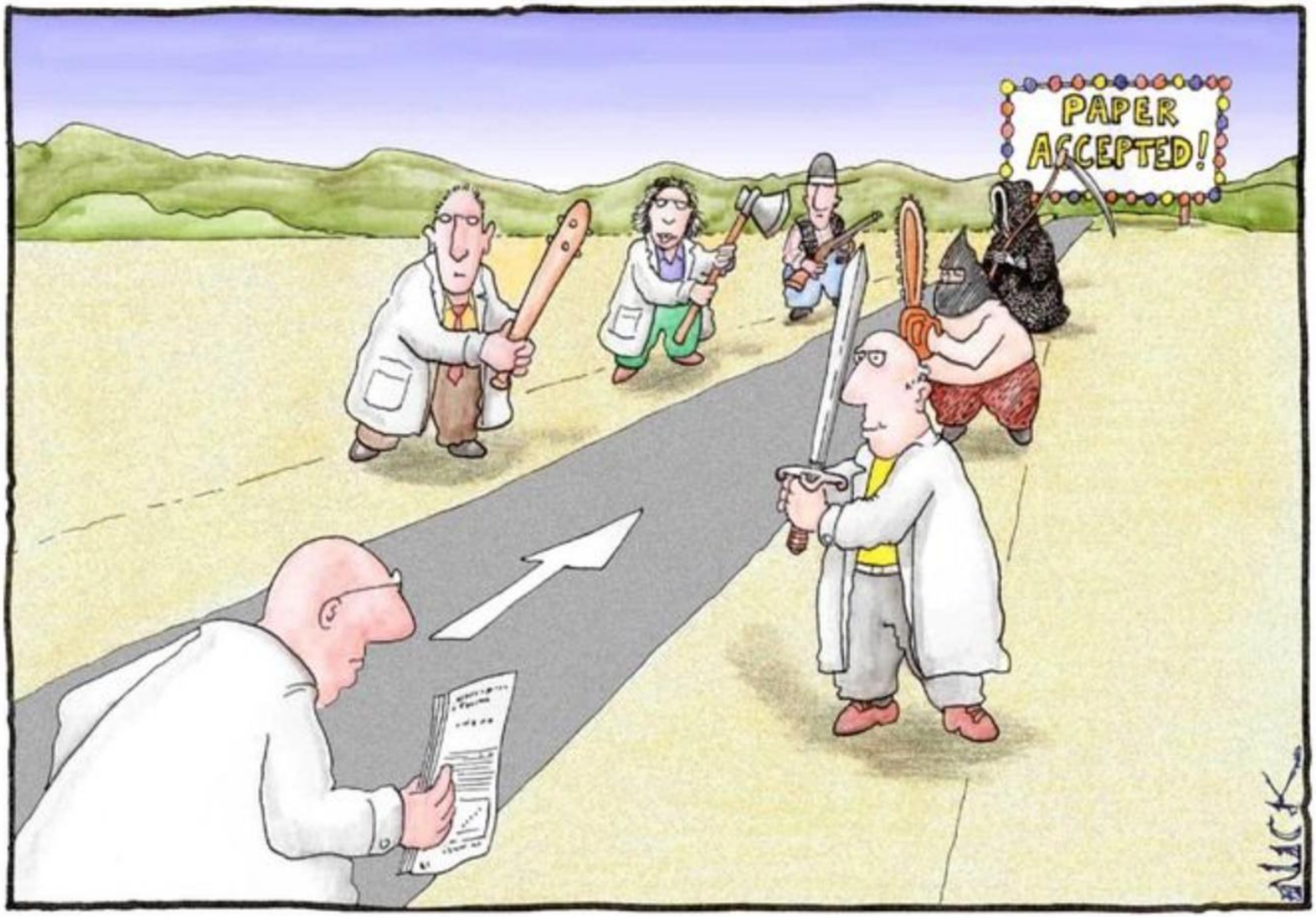
Clinical Chair in Global Women's Health, Imperial College London

Visiting Professor, Nuffield Department of Women's & Reproductive Health, University of Oxford UK



BMJ Publications 2002

Welcome to the Team. Remember, if you follow the University Motto, you'll do fine...



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

Scientific writing

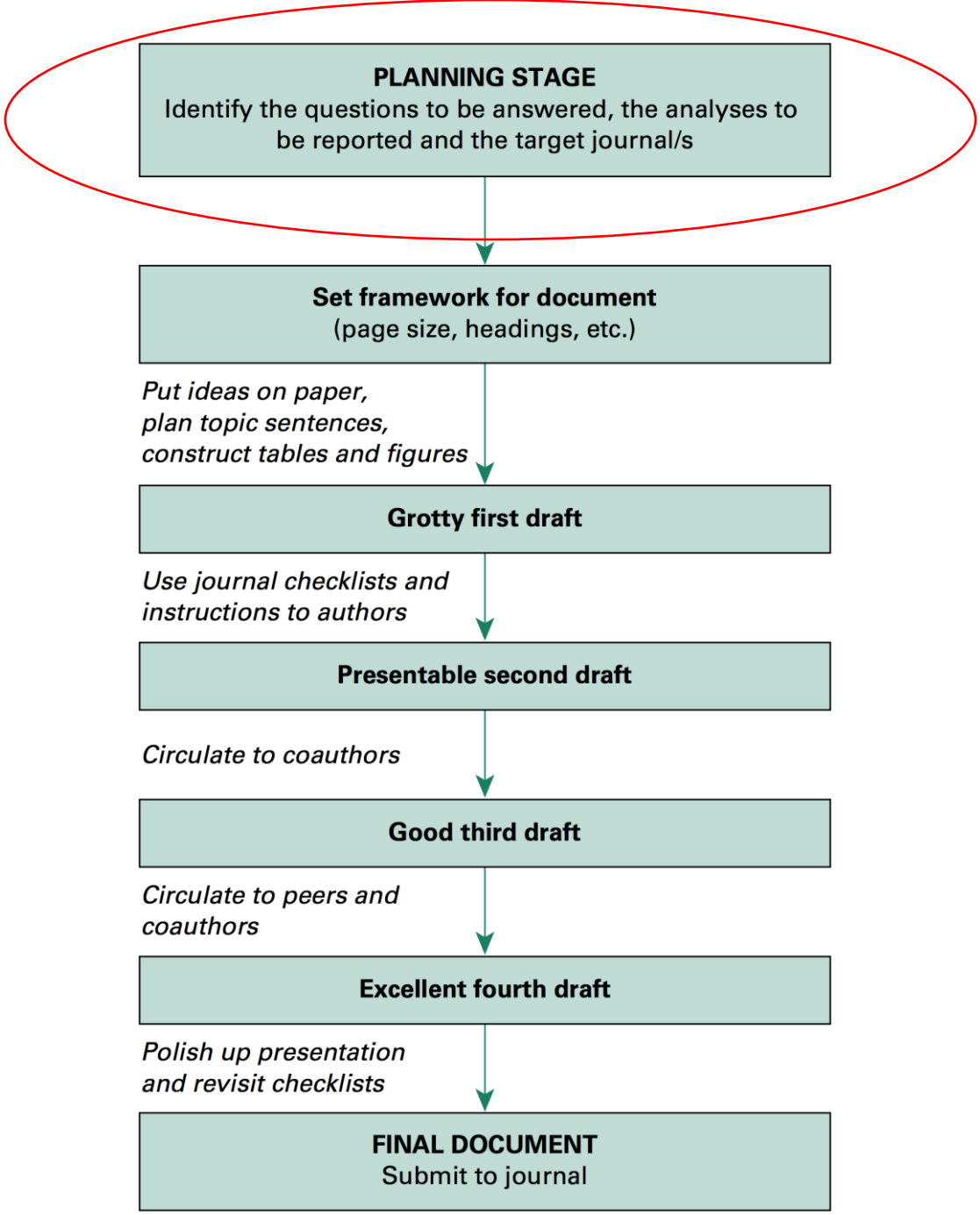
- A precise way to explain what you did, what you found, and why it matters

Making it happen

"Do it every day for a while" my father kept saying. "Do it as you would do scales on the piano. Do it by pre-arrangement with yourself. Do it as a debt of honour. And make a commitment to finishing things."

Anne Lamott[3]

Peat, Scientific Writing, 2002 BMJ Publications



Peat et al 2002

Deciding on a journal

- Where were the articles you cited published?
- What journals do you read?
- Who are your target audience?
- Use an online tool like JANE https://jane.biosemantics.org/
- Check the Journal's website for information
- Send an exploratory e-mail to the editors
- Look out for calls for articles on your topic
- Check impact factors

Journal Impact

- Impact factor: A measure of the frequency with which the 'average article' in a journal has been cited in a particular year
- Helps evaluate a journal's relative importance, especially compared to others in the same field
- Impact factor >5 considered very good
- Other measures: SJR scientific journal rankings

Choosing where to submit

- **'Very High impact' general medicine journals**
  e.g. Lancet, British Medical Journal, New England Journal of Medicine, JAMA etc….

  +Wide readership
  +High impact
  +Great for CV
  +Often very quick to reject

  –Only accept a tiny minority of papers
  –Laborious process of review, revision and publication.

Choosing where to submit

- **Specialist journals**
  e.g. Journal of Public Health, Journal of Epidemiology and Community Health, BJOG

  +More likely to reach an interested audience
  +Tend to accept a greater proportion of papers

  –Lower impact than general medical journals
  –Less likely to attract media coverage
  –Laborious process of review, revision and publication

Choosing where to submit

- **Open Access journals**, e.g. PLOS Medicine, BMC Public Health, BMJ Open

  + Papers can be published within weeks not months
  + Some OA journals accept all papers, so long as they are methodologically sound
  + Full paper available to everyone

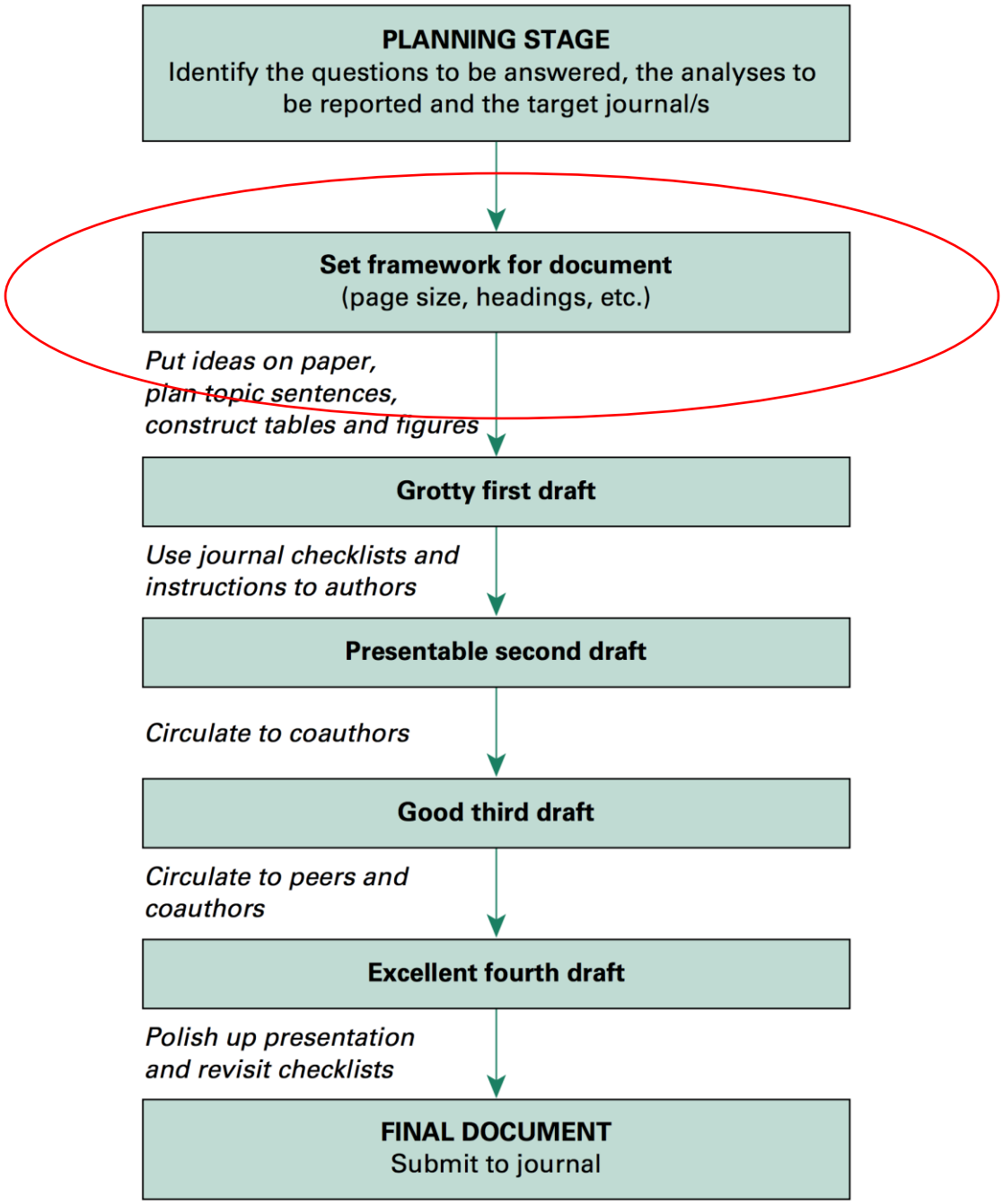
  – Many have high fees to cover costs
  – Variable quality and impact
  –Beware of "predatory journals"

Predatory journals

- Unsolicited emails "greetings" etc
- Names often sound similar to reputable journals, e.g. *Journal of AIDS and Clinical Research*

- However checking out their website can be telling!

Acquired Immune Deficiency Syndrome (AIDS) is a disease caused due to HIV virus that affects the human immune system tremendously eventually leading to death. HIV is considered as one of the fatal cause of death in the present times.



Peat et al 2002

Instructions to authors

- International Council of Medical Journal Editors (ICMJE) uniform requirements
- Clear and concise instructions on how to prepare a manuscript adopted by over 500 journals
- Make sure your paper conforms exactly to the journals specifications
- Most papers can be shortened!

Standardised reporting guidelines

- **CONSORT**: reporting of randomised controlled trials
  - Comprehensive checklist
  - Model flow diagram designed to track patients through the four stages of a trial: enrolment, intervention allocation, follow-up, analysis

- **MOOSE**: Meta-analysis of observational studies in epidemiology
  - How background and search strategies, methods, results and conclusions should be presented

- **QUOROM:** Quality of reporting of meta-analyses
- **PRISMA:** Reporting of Systematic Reviews and meta analyses

- **STARD:** Studies designed to assess diagnostic tests

Writing Styles…..

"I am so clever that sometimes I don't understand a single word of what I am saying."

Oscar Wilde

Writing your paper.....

Think of yourself as a reader for a moment. What kind of papers do you like to read? Short, meaty, and clear most likely. Well, then, write short, meaty, and clear papers yourself. Short, meaty and clear papers are most likely to be understood. The truth of this proposition will come home to you as you read biomedical writing and discover how easy it is to get the wrong message.

Mimi Zeiger[4]

Tips for high quality academic writing

- **Try to avoid the passive voice**, e.g move away from "this was done" to " we did this"
- **Avoid unnecessary adjectives**, e.g. "we demonstrated a very large effect …."
- **Remove the verb " To be" where possible**: e.g. "Evidence suggests…." rather than " There is evidence to suggest…"
- **Keep paragraphs short**
- **Remove unnecessary words**

Guyat 2006, J Clin Epi, 59: 900-906

The 26 eligible studies that matched inclusion criteria used several methods of data collection. Five studies used semistructured qualitative interviews…

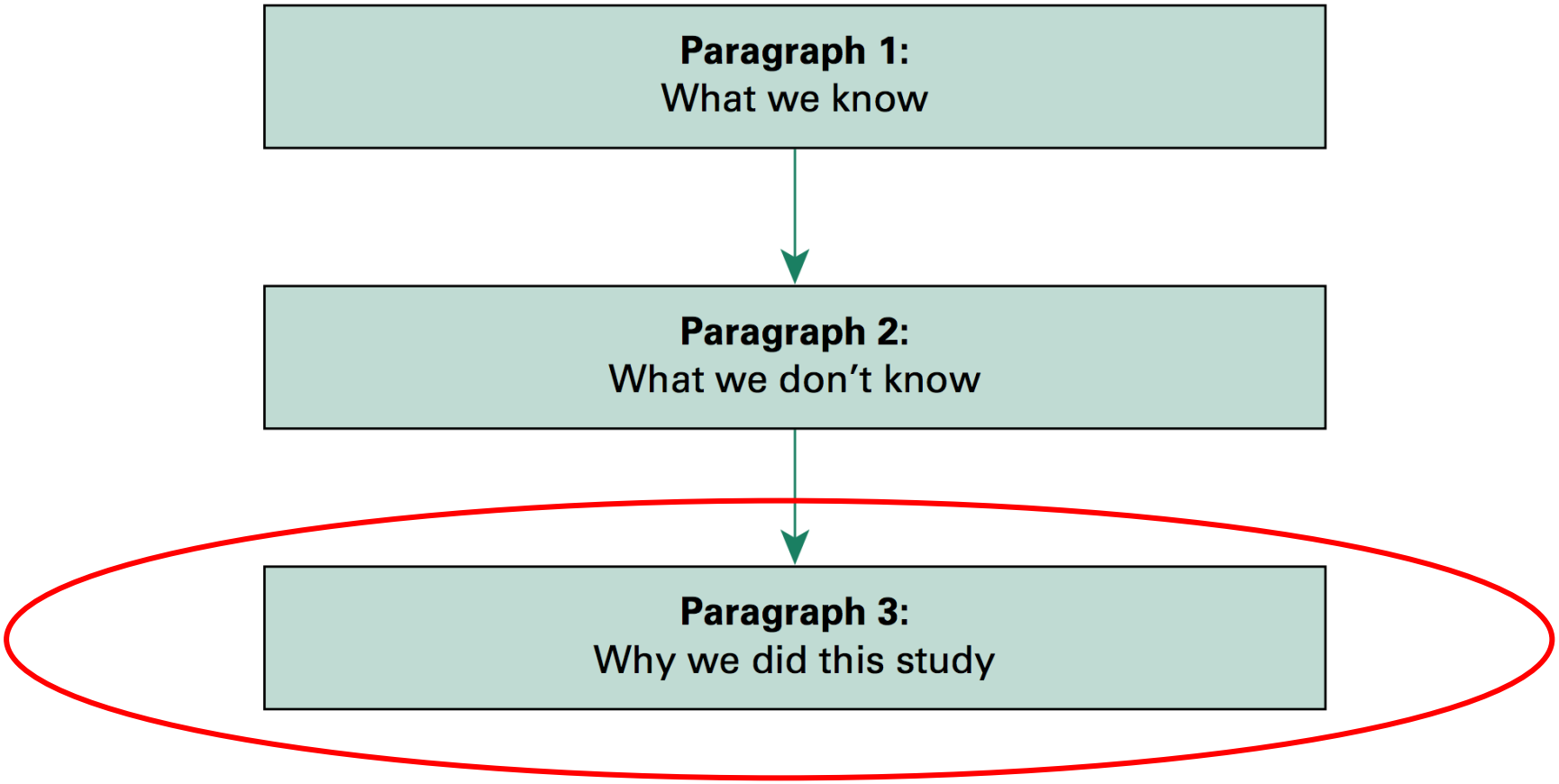
The abstract

- Only convey the most interesting and important parts of your work
- Most journals require you structure the abstract
- Limit to 250 words (MEDLINE limit)
- Results are supported by data and p values
- Interpretation of findings is clearly stated in the conclusion

Start with the subheadings

- Introduction
- Methods
- Results
- Conclusions

The introduction



Introduction

- Draw the reader in
- Decide on the level of background information needed; do not just repeat the obvious first line you have read in every paper
- Be clear about what the problem you are addressing is and how your study proposes to answer this

Methods

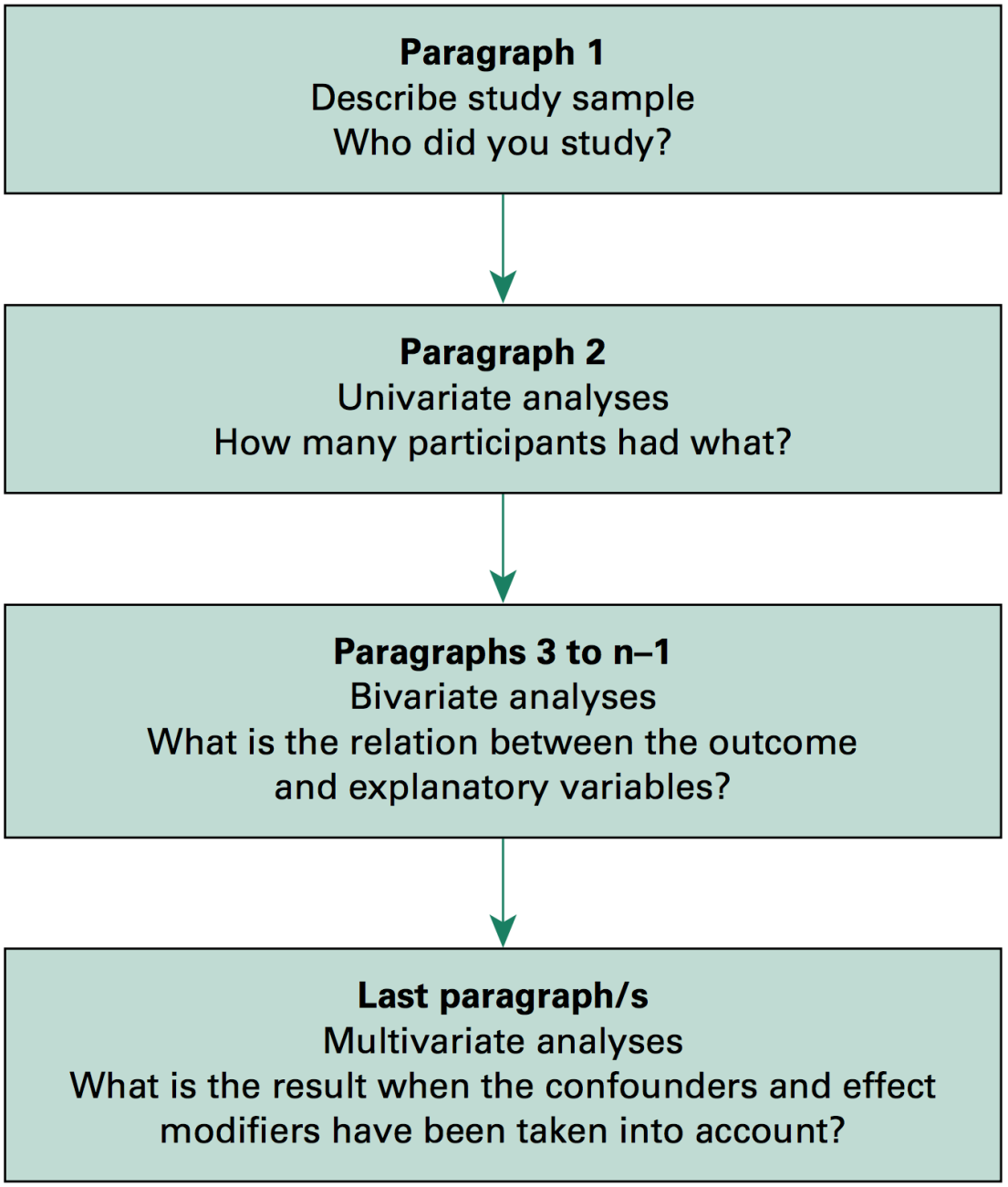
Describe how you obtained your results in a way that others could replicate them (use CONSORT, STROBE or similar structure)

- Study design
- Participants
- Sample size calculation
- Define exposures and outcomes
- Statistical analysis
- Ethical approval

A statistician is a person who likes to prove you wrong, 5% of the time.

Taken from an internet bulletin board

Results


Paragraph 1
Describe study sample
Who did you study?
Paragraph 2
Univariate analyses
How many participants had what?
Paragraphs 3 to n–1
Bivariate analyses
What is the relation between the outcome
and explanatory variables?
Last paragraph/s
Multivariate analyses
What is the result when the confounders and effect
modifiers have been taken into account?

Results

- Be consistent with units and decimal places
- Don't just repeat what is in the tables: guide the reader systematically through the results highlighting important observations
- Avoid 'data dredging': be aware of multiple comparisons and interpretation of significance
- Always use a table for baseline characteristics and a flow diagram to describe participant selection and flow through the study
- Present results in an objective and dispassionate way

  e.g: Not: "*there was an extremely high incidence of disease in the study population"*

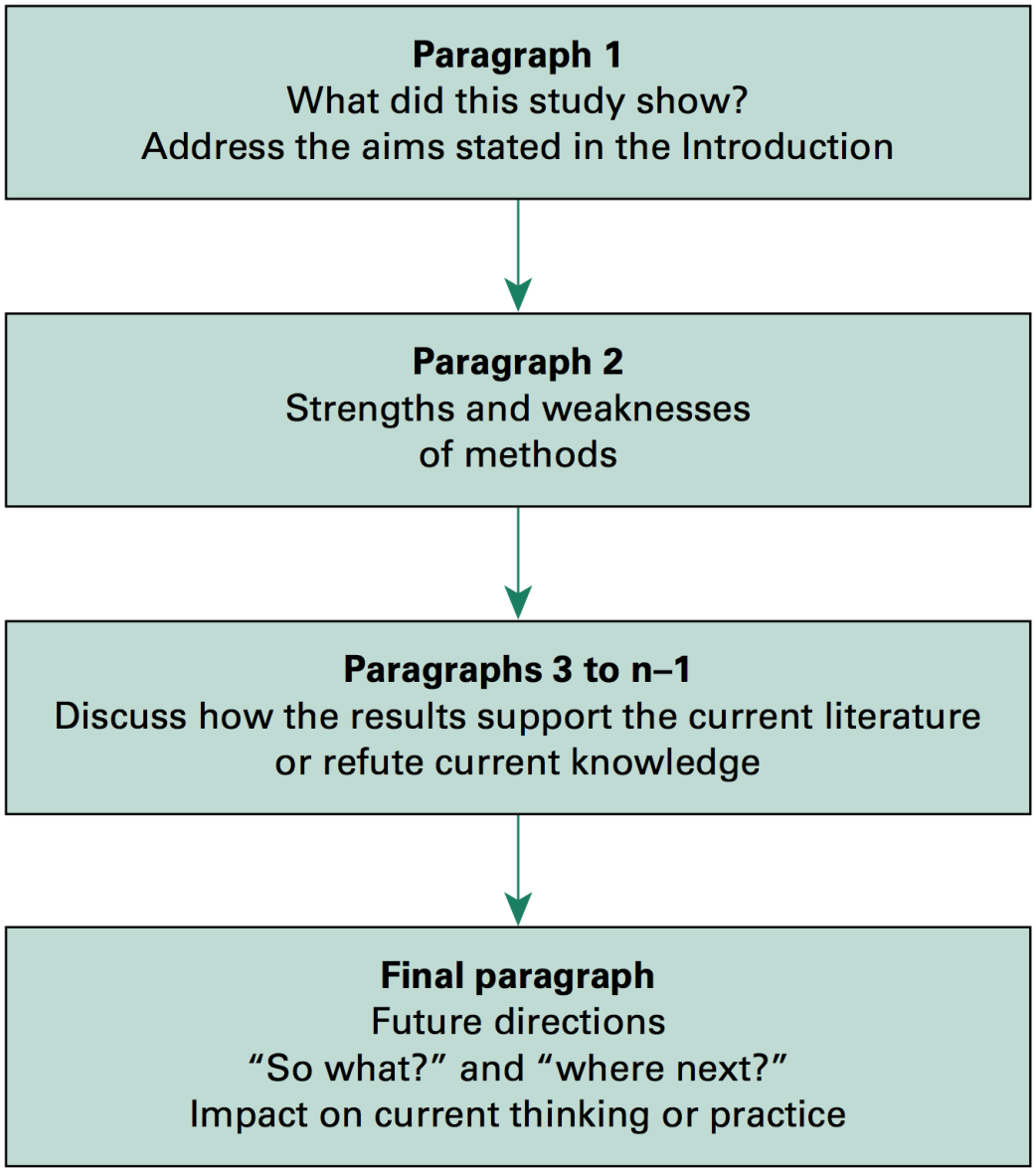
  Better: "The incidence of disease was higher than has been measured previously"

Results

- Never state there was a difference between the two groups if $p > 0.05$
- A point estimate (e.g. odds ratio, relative risk etc) with confidence intervals is better as it gives an estimate of precision
- Avoid confusing statements:

"The active group had a larger change from baseline than the control group, although the difference did not reach statistical significance"

Discussion


Paragraph 1
What did this study show?
Address the aims stated in the Introduction
Paragraph 2
Strengths and weaknesses
of methods
Paragraphs 3 to n–1
Discuss how the results support the current literature
or refute current knowledge
Final paragraph
Future directions
“So what?” and “where next?”
Impact on current thinking or practice

Discussion

- Good phrases to begin:
  - "The results from this study showed that…
  - "Our results indicate that….
  - "*The purpose of this study was to…and we…etc*

- Be bold, explain precisely what you have found and explain how it will add to current knowledge or change healthcare
- Second paragraph address the strengths and limitations
- Third paragraph should put the research in context of what is already known in the field

Conclusion

- Try to avoid concluding that "further research is needed"
- Think about how your research could change the way medicine is practiced and what this could mean for patients and health systems.
- A good paper has answers the question it set out to study and has a clear message of how this adds to what is known

Co-author etiquette

- If it's your paper, you should be the first author
- Often the main supervisor or principal investigator is last
- Link those positions in between to relative contributions made following ICMR guidance for authorship
- Shared 1st authorship is becoming more common

Submission and Peer review

Responses from editor:

- Rejection, no reason or feedback given
- Rejection after peer review
- Opportunity to respond to reviewer comments and resubmit
- Unconditional acceptance (also known as pigs flying…)

Responding to reviewer comments

- Make sure you read the comments very carefully
- Learn to accept criticism and learn from the experience
- Try to remain dispassionate and objective
- Respond to each point individually, with line number references to the changes you have subsequently made in your manuscript

Finding the right journal for your work

Conclusion

- Scientific writing is a skill that we all have to learn
- A structured approach and being clear about your main message is the key
- Always use simple and non- emotive language, however keep your writing interesting and emphasise the bigger picture
- Every one gets rejected
- Keep trying!