Writing and Reviewing for the Journal II:
Critical Skills
ANATOMY OF A PAPER

Title, Abstract, Level of Evidence, Key Words

Introduction
What is known?
What is unknown?
Hypothesis & objectives

Methods

Results

Discussion
Study purpose.
Context.
Specific contribution.
Limitations.

References, Acknowledgements, Authorship
Title: CATCHY, BUT NOT MISLEADING

Balance: Succinct and Informative
Should briefly summarize the findings

Search Engines: Focus on Title

Good:
Limb salvage after complex repairs of extremity arterial injuries is independent of surgical specialty training
Steven R. Shackford, MD, Jessica E. Kahl, BA, Richard Y. Calvo, MPH, Meghan C. Shackford, BS, Leigh A. Dunns, MD, James W. Davis, MD, Gary A. Vercrueyse, MD, David V. Feliciano, MD,
Ernest E. Moore, MD, Hunter B. Moore, MD, M. Margaret Kaudson, MD, Benjamin M. Howard, MD,
Michael J. Sise, MD, Raul S. Coimbra, MD, Todd W. Costantini, MD, Scott C. Brakenridge, MD,
Gail T. Tominga, MD, Kathryn B. Schiffer, MPH, John T. Steele, MD, Frank R. Kennedy, MD,
and Thomas H. Cagbill, MD, San Diego, California

Poor: Major Abdominal Vascular Trauma—A Unified Approach
JEFFRY L. KASHUK, M.D., ERNEST E. MOORE, M.D., J. SCOTT MILLIKAN, M.D., AND JOHN B. MOORE, M.D.
**ABSTRACT:** THE MOST TRUTH IN THE LEAST SPACE

**JOT-ACS:** 300 word limit, structured for original research

*Introduction*: include hypothesis

*Methods*: limit verbiage

*Results*: clear

*Conclusion*: do not overstate

**Level of Evidence:** include if clinical

**Key Words:** 3-5, do not duplicate title
INTRODUCTION: WHY SHOULD I READ THIS PAPER?

Introduction

Known information

Knowledge gap

Hypothesis

Three paragraphs is the ideal size to succinctly transmit to the readers the idea that inspired the authors to conduct and report their research.
Hypothesis should be stated in PICO format

• Population
• Intervention
• Comparator
• Outcomes

“we hypothesize that trauma patients (P) receiving pharmacoprophylaxis for venous thromboembolism (I) will have fewer (C) venous thromboembolisms (O) than patients without”
Methods

• The main purpose of the Methods section in a scientific report is to enable readers to reproduce the study and/or apply the PICO framework.

• Should include the description of the study design, which should be adequate to test the hypothesis(es) or pursue the objectives defined at the end of the Introduction

• The sample description should allow the readers to picture the enrolled population and compare it to their own population
1,008 patients <18 with BLSI

226 excluded on age

782 patients 4-16 years with BLSI

377 excluded for ISS≤15
19 excluded for unknown ISS

386 with ISS>15

76 4-6 years

156 7-12 years

154 13-16 years
<table>
<thead>
<tr>
<th>Level</th>
<th>Therapeutic / Care Management</th>
<th>Prognostic and Epidemiological</th>
<th>Diagnostic Tests or Criteria</th>
<th>Economic &amp; Value-based Evaluations</th>
<th>Systematic Reviews &amp; Meta-analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I</td>
<td>RCT with no negative criterion*</td>
<td>Prospective study with large effect† and no negative criterion*</td>
<td>Testing of previously developed diagnostic criteria in consecutive patients (all compared to &quot;gold&quot; standard) and no negative criteria.</td>
<td>Sensible costs and alternatives; values obtained from many sources; multi-way sensitivity analyses</td>
<td>Systematic Review (SR) or meta-analysis (MA) of predominantly level I studies and no SR/MA negative criteria †</td>
</tr>
<tr>
<td>Level II</td>
<td>• RCT with significant difference and only one negative criterion* • Prospective comparative study without negative criterion* • Prospective / retrospective study with large effect† and only one negative criterion*</td>
<td>• Prospective study with less than large effect‡ and no negative criterion* • Untreated controls from RCT</td>
<td>Development of diagnostic criteria on consecutive patients (all compared to &quot;gold&quot; standard) and only one negative criterion.</td>
<td>Sensible costs and alternatives; values obtained from limited sources; multi-way sensitivity analyses</td>
<td>SR / MA of predominantly level II studies with no SR/MA negative criteria †</td>
</tr>
<tr>
<td>Level III</td>
<td>• Case-control study without negative criterion* • Prospective comparative study with only one negative criterion* • Prospective / retrospective study with up to two negative criteria*</td>
<td>• Case-control study without negative criterion* • Prospective / retrospective study with up to two negative criteria*</td>
<td>Nonconsecutive patients (without consistently applied &quot;gold&quot; standard) with up to two negative criteria.</td>
<td>Analyses based on limited alternatives and costs; poor estimates</td>
<td>SR / MA with up to two negative criteria †</td>
</tr>
<tr>
<td>Level IV</td>
<td>Prospective / retrospective study using historical controls or having more than one negative criterion*</td>
<td>Prospective / retrospective study with up to three negative criteria*</td>
<td>Case-control study with no negative criterion* or other designs with up to three negative criteria.</td>
<td>No sensitivity analyses</td>
<td>SR / MA with more than two negative criteria †</td>
</tr>
<tr>
<td>Level V</td>
<td>• Case series • Studies with quality worse than level IV</td>
<td>• Case series • Studies with quality worse than level IV</td>
<td>No or poor &quot;gold&quot; standard</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results

• The Results section is the most technical, arid section of a scientific report. No interpretative statements, explanations, comparisons with other reports, definitions, or concerns should be included.

• Ideally, univariate and multivariate effect measures (OR, relative risks, hazard ratios, etc.) should be reported in the same table, side by side. This presentation allows the readers to examine the differences between crude and adjusted results, and gauge the confounding controlled by the multivariate analysis.

• Tables and graphs should be “stand-alone” tools to enhance the presentation, with informative titles, legends, units of measurement, and spelling of all the abbreviations. Information reported in them should not be repeated in the text.
DISCUSSION: How does the article I read today change what I will recommend to my patients tomorrow?

Discussion should convince the reader to file the paper

One sentence: Reiterate study hypothesis
Summarize: 3 key findings ("chunking")
Justification: How did the study bridge the existing knowledge gap?
Study limitations: What are the potential issues?
Concluding paragraph: Take-home message !!!
• One sentence to reiterate the purpose of the study, picking up from where Introduction left off

• This sentence is then naturally followed by a summary of up to three key findings
  • The resulting chunks are easier to commit to working memory than a longer and uninterrupted string of information.

• Assess the study in the context of the current “evidence”.

• Justify the level of evidence assigned to their article
  • Include limitations of the study
• Frame the application of the work in a PICO format
• What would the investigators recommend as next steps to further advance the evidence in this topic
• The Discussion section should be finalized with a concise, one paragraph conclusion or take-home message.
  • This paragraph should not be too different from the Conclusions section of the Abstract.
• What are reviewers looking for?
  • Are you telling a good story; is it interesting, logical, compelling?
  • Is your hypothesis important? Why? Was it proven (or disproven)? What will be the impact of your results?
  • Did you pay attention to the details?
  • Is the manuscript clear? Concise?

• What are editors looking for?
  • Does the work fit within the scope of the journal?
  • Impact (as in Impact Factor)
TOP 10 PITFALLS (in no particular order):

1. Overstating your conclusions...
   - Recommending major change in practice based upon a single retrospective study
   - Pearl: retrospective studies are often “hypothesis generating” NOT the definitive answer

2. Putting the discussion in the results

3. Bad grammar, typos—these are distracting at best, and at worst make the reviewer doubt the quality of the science.
4. Discussion pitfalls:

- Repeating the Results section
- Redundant elaboration of the Introduction
- Under representing study limitations
- Remember: The goal of discussion is to assist the reader in translating the findings into clinical practice
- Too long or verbose
5. Bad Statistics (disclaimer: I AM NOT A STATISTICIAN!!)

- For example: “Average GCS”
  - For a study on pediatric head injuries, the investigators found that the mean GCS is 8
  - Does this finding explain the population?
- Too many variables in multi-variable analysis
- Proving something that doesn’t meet the “sniff test”
- Be wary of very large and very small numbers of subjects
- When in doubt, consult a professional
- But, make sure that the professional understands the problem that you are trying to solve
6. No clearly stated hypothesis
7. Data doesn’t support conclusion
8. Conclusion is unrelated to the hypothesis
9. Data mining; corollary, not every experiment is an independent paper
10. Incomplete references (think about who might review your paper)