Writing Successful Journal Articles

Constance D. Baldwin, Ph.D.
Professor of Pediatrics
University of Rochester Medical Center
Handouts

- Powerpoint copies
- Supplementary Handout
  - Planning a Study and Presenting it in an Article
  - Abstract examples and Article Planning Worksheet
  - Guidelines for Writing a Research Article
  - Steps for Efficient Writing of a Journal Article
  - Writing Productivity and Fighting Procrastination
Getting Ready to Write a Paper
1. **How shall I convert my project into a reportable study?**
   - How much new information is enough?
   - What makes an interpretable (or intelligible) data set?

2. **What is this paper trying to prove? Why does it matter?**
More Planning Questions

3. What challenges do I face in putting the argument across? E.g.:

- Strengths and weaknesses in findings
- Design limitations or methodological difficulties
- Comparison with the literature: conflicts and confirmations

Where and how will I address these issues?
4. **What journal should I target?**

- What readers do I want to reach?
- What is the journal’s circulation volume, processing speed, available formats?
- To what level of journal (size of impact factor) can I successfully market the paper?
Plan a Paper Both Backwards and Forwards

- Study your results deeply
- Decide on your **CENTRAL MESSAGE** and draft a conclusion statement
- Then plan article to build the case for this message:
  - **Introd:** What the literature says about its importance
  - **Methods:** What methods were appropriate to answer your question
  - **Results:** Focused presentation of the central data (e.g., using graphics to dramatize key findings)
  - **Discussion:** Highlight key findings, interpret nuances of data, put pieces together to paint a unified picture
Final and Crucial Planning Step

Commit to an action plan and a timeline!
Writing a Research Article
Basic elements of a journal article

- Title
- Abstract
- Introduction
- Methods
- Results
- Discussion

In what order do you read an article?
In what order should you write it?
Selecting a title

- Keep it brief
- Adhere to convention of targeted journal
- Target the correct audience
- Use to highlight your primary question
- In clinical research, generally avoid statement of conclusion

(You will probably rename it as the focus of paper clarifies)
Abstract for an article: Strategies

- Write abstract to help readers decide whether to read or download
- Make it clear and informative
  - importance
  - validity
  - applicability
- Be sure the primary question and conclusions of the paper come through clearly
Abstract: Content and organization

1. Follow order of sections in paper (with subheadings if required)

2. Clear summary is more important than details of data (this is not a meeting abstract)

3. State your conclusion clearly, but with essential qualifications:

   Don’t let the brevity of abstract lure you into overstatement!
Introduction: Strategies

- Keep introduction short and focused
- Define question
- Establish importance and novelty
- Briefly describe the study design
Introduction: Content and organization

1. Adhere to journal style for length, content

2. **Paragraph 1**: state question and why it matters

3. **Paragraph 2-4**: review literature selectively to defend:
   - Choice of question/hypothesis
   - Claim to novelty and significance
   - No detailed comparisons with previous studies
Introduction:
Content and organization

4. **Final paragraph**: briefly describe
   - Study question or hypothesis
   - Design or experimental approach
   - Sample
   - Methods
Hands-on Activity 1: Presentation abstract ➔ Article

Planning the Introduction:

1. What is this paper trying to prove?
2. Why does it matter?
3. What gap in knowledge is addressed?
4. What literature needs to be discussed?
Methods: Strategies

- Keep it simple and brief
- Define key variables and keep names **consistent**
- Document unfamiliar methods more thoroughly
- Use headings for clarity and easy reference
Methods: Content and organization

1. Overview of design
   • Define study type
   • **TIP:** Offer only enough detail to allow reader to evaluate the study

2. Description of sample
   • Population, sample size/power
   • Recruitment plan, inclusion/exclusion criteria
   • Comparison groups, other precautions to minimize bias
   • IRB approval
Methods: Content and organization

3. Study protocol: patient assessment, intervention, evaluation of outcomes; timeline

4. Procedures or instruments:
   - Diagnostic assessments
   - Experimental interventions
   - Outcome measures
   - **TIP:** Give more detail where methods are novel, less where previously published
5. Statistical approach and methods
   - Define terms and describe tests (briefly)
   - Explain rationale for unfamiliar statistical methods
Hands-on Activity 2: Presentation abstract ➔ Article

Planning the Methods:

1. What methods need to be covered?
2. What methods need more detailed description?
3. Do any potential weaknesses need to be addressed?
Results: Strategies

- Present results systematically
- Keep like things alike: e.g. variable names, table/figure formats
- Use past tense to describe your results
- Answer all research questions
- Strictly avoid conclusions and speculations
- Let the data speak for themselves!
Sequencing Information Along the Spectrum of Objectivity

More Objective

Published Results

Facts

Data

Interpretation of Data

Conclusions

Speculations

Recommendations

More Subjective

Objectivity Spectrum

Results

Early Discussion

End of Discussion

Introduction

Methods

Discussion

End of Discussion

Introduction

Methods

Early Discussion

End of Discussion

Discussion
Results:
Content and organization

1. Typical order of presentation:
   - Describe sample collected first
   - Then follow order of hypotheses, or chronology, or design elements
   - In general:
     - present simple results before complex
     - give prominence to strongest findings
   - Provide subsection headings if needed for clarity
Results: Content and organization

2. **Numerical data**
   - Use graphs and tables to highlight key results
   - Choose best presentation format:
     - Use **graphics** to show relations between data sets
     - Use **tables** if specific numbers are essential
     - Otherwise, use **narrative**
   - Briefly interpret figures and tables in narrative (but **don’t** reiterate data)
Results:
Content and organization

3. **Narrative presentation of results**

- **Stick to the facts!**
- Keep story as simple and focused as possible without distorting meaning
  - Avoid over-explanation
  - Avoid misleading statements: E.g.:
    "The drug cured 1/3 of the infected mice, another 1/3 were not affected, and the third mouse got away."
  - Avoid detailed data if summary is adequate
  - Omission of tangential data will usually strengthen your paper
Hands-on Activity 3: Presentation abstract → Article

Planning the Results:

1. Are the results in the abstract enough for a paper?
2. What might be added?
3. What are the strongest and the weakest findings?
4. Which results should be presented in graphics, tables, or narrative?
Discussion: Strategies

- Highlight key findings and forestall criticisms
- Seek balance between over- and understatement
- Be selective! Discuss only results that deserve comment
- Don’t disparage or attack previous studies; do try to explain differences
- Separate conclusions/speculations from interpretations of results
Discussion: Overall framework

- First, highlight key findings in context of the study’s central purpose
- Next, evaluate strengths and weaknesses of findings in relation to literature
- Then discuss limitations of study
- End with conclusions and recommendations/next steps
Discussion: Content and organization

1. **Discuss other studies in order to:**
   - Compare previous results with your findings
   - Clarify complex issues raised by your results
   - **TIP 1:** Begin each paragraph with **YOUR** data
   - **TIP 2:** Don’t repeat literature review from Introduction!
     - **There** you establish study’s importance and novelty
     - **Here** you use previous reports to confirm, question, or clarify your results (or theirs)
Discussion: Content and organization

2. Discuss limitations as well as strengths

- Specific methodologic problems: discuss in their own paragraphs (middle section)
- Design weaknesses: cluster in a paragraph before conclusions
- Serious problems: indicate how much they undermine confidence in validity of results (i.e., minimize the damage)
3. **End with a summary of key findings and brief interpretation of their significance**

- Clearly label any speculations and recommendations that go beyond data
- Propose specific future studies if suggested by novel results (don’t recommend simple confirmatory studies)
Hands-on Activity 4: Presentation abstract ➔ Article

Discussion:

1. What is the strongest, most interesting finding to highlight?

2. What results need more careful discussion (e.g., in relation to previous reports)?

3. What are the limitations of the study?

4. Are the conclusions as stated in the abstract accurate and stated with sufficient qualifiers?
Another way to think about planning an article

SIX STEPS IN PLANNING A RESEARCH STUDY

1. Choose a problem and develop a broad research question
2. Review the literature
3. Refine and focus your research question
4. Select study design and methods
5. Collect and analyze data
6. Interpret data and draw conclusions
Presenting these six elements in an article

<table>
<thead>
<tr>
<th>Study element</th>
<th>Strategies for successful presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Choose a problem, develop broad research question</td>
<td>Introduction</td>
</tr>
<tr>
<td>2. Review the literature</td>
<td>Introduction</td>
</tr>
<tr>
<td></td>
<td>Discussion</td>
</tr>
</tbody>
</table>
### Presenting these six elements in an article

<table>
<thead>
<tr>
<th>3. Refine and focus your research question</th>
<th><strong>Introduction</strong></th>
<th>Clearly state what you are trying to prove, why the question is important, and why your study will provide a novel answer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Methods</strong></td>
<td>Show that you have used the best design and methods to get a valid and reliable answer to the question</td>
</tr>
<tr>
<td></td>
<td><strong>Results</strong></td>
<td>Organize section to systematically present your data relevant to the central question</td>
</tr>
<tr>
<td></td>
<td><strong>Discussion</strong></td>
<td>Highlight and interpret your relevant results, draw sound conclusions, and show how they relate to the question with which you began</td>
</tr>
</tbody>
</table>
Presenting these six elements in an article

<table>
<thead>
<tr>
<th>4. Select study design and methods</th>
<th>Methods</th>
<th>Show how design and methods address your question</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Collect and analyze data</td>
<td>Results</td>
<td>Present results in organized fashion, following your study design</td>
</tr>
<tr>
<td>6. Interpret data and draw conclusions</td>
<td>Discussion</td>
<td>Weigh the value of your findings in answering your central question</td>
</tr>
</tbody>
</table>
Revising a Paper in Response to Reviewer Critiques
What to expect from a journal after paper has been reviewed

• **Letter from the editor stating the journal’s decision to:**
  
  a) Accept paper pending minor revisions  
  b) Reconsider paper if resubmitted with major revisions, or  
  c) Reject the paper.  

  **NOTE:** Both a) and b) are good outcomes!!

• **Editor’s overall comments**

• **Comments from 2-3 reviewers.**

  **NOTE:** Value the specific comments. Most reviewers make an effort to help you improve the paper.
Next Step: Don’t hide the critique in a drawer!

• Don’t let the negative emotions of rejection stop your progress!

• The journal will usually give you a deadline for resubmission (usually ~ 2 months).

• If you decide to submit elsewhere, set your own deadline for resubmission and adhere to it.
Evaluate reviews and plan revisions

1. Read through all the critiques to get a general idea of the response.

2. Re-read manuscript.

3. Study all the critiques in detail, noting manuscript sections needing change. Decide whether further data collection or analysis are required.

4. Decide whether to attempt a resubmission to this journal.

5. If you submit elsewhere, you should still revise the paper based on reviewers’ comments.
If you decide to revise and resubmit

• Prepare a polite, well-organized response to the journal. A letter and/or a table tracking revisions, with narrative comments on strategic issues.

• Always respond to all editor comments and most or all reviewers’ comments.

**Note:** Sometimes not all requested changes are feasible—don’t be afraid to say so, and why—but politely!

• In letter, remind editor about why article is novel and important to the field.
If your paper is rejected, do not despair!!!

- **Good articles are often rejected!**
  - It may not match the journal’s interests.
  - The topic may have been covered recently.
  - Importance of topic may not yet be on the reviewers’ radar (i.e. “ahead of its time”)
- Immediately choose another target journal.
- Use reviewers’ comments to improve the paper—most will be relevant and useful.
- Carefully consider new journal’s readership and mission. Often a paper must be recast for a different dissemination venue.
Survival after rejection

• All academics have had papers rejected. We just keep going.

• The peer review system was created for very good reasons.

• You will learn from this experience.

• Don’t lose your momentum or your confidence.
Three Authoring Challenges
Challenge One: Working at Two Levels of Complexity

1. Mastering the **content**
   - What data in novel, important, and sufficient?
   - How to interpret the data?
   - What to conclude?

2. Mastering the **form**
   - What goes where?
   - What does the reader really need to know?
Challenge Two: Balance the needs and expectations of two different audiences

1. Reviewers are:
   - hard to please
   - like a lot of detail

2. Journal readers are:
   - easy to confuse
   - need more focus and simplicity
Challenge Three: Balance objectivity with subjectivity

1. To adhere to expected standards of objectivity: use **accuracy** and **clarity**

2. To manage the reader’s response to results: use **focus** and **emphasis**

3. The balance changes as paper progresses:
   - Factual focus ➔ Generalization
   - Clarity (objectivity) ➔ Spin (subjectivity)
Writing is hard work!
BUT
It delivers your findings to the world and makes them “real.”