

How to Write an Abstract

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Abstracts are Important

- The abstract is the most read part of an article
- Some readers will read only the abstract
- Other readers will read the rest of the article only if the abstract catches their interest
- For conferences, the abstract is usually the sole criterion on which your presentation is judged

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Qualities of a Good Abstract

- Clear and concise
- Conforms to required length limit (usually ≤ 250 words)
- Has 4 short sections: Introduction, (Materials and) Methods, Results, Conclusions
 - If the abstract is structured, these 4 sections are labeled
- Stresses the most important aspects of your study
- Avoids general statements
- Contains nothing that is not in the body of the article

The Introduction

- Does not simply repeat the information in the title
- Consists of 1-3 sentences that
 - introduce your topic and explain why it is important
 - state the research question and, briefly, how you went about answering it

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Introducing the Topic

- Title: Long-term Support with a Continuous-Flow Left Ventricular Assist Device: Effect of Reduced Pulsatility on Renal Function
- Bad: “Patients with congestive heart failure who develop renal dysfunction are at increased risk of death. Pulsatile LVAD support can restore end-organ function by normalizing cardiac output, allowing some patients to become acceptable transplant candidates. The long-range effects of continuous-flow LVADs on renal function are unknown.”

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Introducing the Topic

- Problems:
 - Much too long (48 words)
 - Contains information not directly relevant to the study

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Introducing the Topic

- “Patients with congestive heart failure who develop renal dysfunction are at increased risk of death. Pulsatile LVAD support can restore end-organ function by normalizing cardiac output, **allowing some patients to become acceptable transplant candidates.** The long-range effects of continuous-flow LVADs on renal function are unknown.”

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Introducing the Topic

- Problems:
 - Much too long
 - Contains information not directly relevant to the study
 - Remember that the title is “Long-term Support with a Continuous-Flow Left Ventricular Assist Device: Effect of Reduced Pulsatility on Renal Function”
 - Connections among the sentences aren't obvious

Introducing the Topic

- “Patients with congestive heart failure who develop renal dysfunction are at increased risk of death. Pulsatile LVAD support can restore end-organ function by normalizing cardiac output, allowing some patients to become acceptable transplant candidates. The long-range effects of continuous-flow LVADs on renal function are unknown.”

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Introducing the Topic

- Better: “Renal dysfunction increases congestive heart failure patients’ risk of death. Pulsatile left ventricular assist devices (LVADs) are known to restore such patients’ renal function by normalizing cardiac output, whereas continuous-flow LVADs’ long-term effects on renal function are unknown.”
- Retains only the most relevant information
- Uses similar terms throughout (“renal dysfunction,” “renal function”)
- Ideas are clearly connected

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The Research Question

- Stated in the last sentence of the Introduction
- Does not start with “This report . . . ,” “We describe a study of . . . ,” etc
- Instead, starts off with what is being reported or what was studied

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The Research Question

- Bad: “This report describes a study undertaken to characterize the renal function differences between patients with different types of LVADs.”
- Problems:
 - “This report describes” wastes words
 - “different types of LVADs” is vague

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The Research Question

- Better: “We examined differences in renal function between patients initially supported by a pulsatile pump who then were converted to an axial-flow pump versus patients supported by an axial-flow pump only.”
- Starts by describing what was done
- Clearly defines the 2 groups studied

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The Rest of the Abstract: Methods, Results, Conclusions

- **Methods:**
 - Indicates the way you addressed the research question by using words and phrases like “survey,” “case-control study,” “brief review,” “exhaustive review,” etc
 - Reports only most critical aspects of study: group assignments, details of new procedures, primary end points, etc
- **Results:**
 - Describes the principal findings of your study
 - Includes data to support all statements of significant findings

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The Rest of the Abstract: Methods, Results, Conclusions

- **Methods, Results, and Conclusions:**
 - Have the same tone and emphasize the same points as the overall manuscript
 - Use complete sentences (usually)
 - Use the active voice whenever possible
 - Use abbreviations and technical terms sparingly

EXAMPLE

(From Nussmeier NA et al. Complications of the COX-2 inhibitors parecoxib and valdecoxib after cardiac surgery. *New Engl J Med* 2005;352(11):862-77.)

Example

Introduction: Valdecoxib and its intravenous prodrug, parecoxib, are used to treat postoperative pain but may involve risk after coronary artery bypass grafting (CABG). We conducted a randomized trial to assess the safety of these drugs after CABG.

Introduces the topic by telling you

- what the research question was and why it is important
- how the authors tried to answer the research question

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Example

Methods: In this **randomized, double-blind** study involving 10 days of treatment and 30 days of follow-up, 1671 patients were randomly assigned to receive **1 of 3 treatments**: intravenous parecoxib for at least 3 days, followed by oral valdecoxib through day 10; intravenous placebo followed by oral valdecoxib; or placebo for 10 days. All patients had access to standard opioid medications. **The primary end point was the frequency of predefined adverse events**, including cardiovascular events, renal failure or dysfunction, gastroduodenal ulceration, and wound-healing complications.

Describes the study design, group assignments, and primary end point.

Example

Results: Both the group given parecoxib and valdecoxib and the group given placebo and valdecoxib had a higher proportion of patients with at least 1 confirmed adverse event than the group given placebo alone (7.4% in each of these 2 groups vs. 4.0% in the placebo group; risk ratio for each comparison, 1.9; 95% confidence interval [CI], 1.1-3.2; P=0.02). In particular, cardiovascular events were more frequent among the patients given parecoxib and valdecoxib than among those given placebo (2.0% vs. 0.5%; risk ratio, 3.7; 95% CI, 1.0-13.5; P=0.03).

Describes the principal findings of the study.

Example

Conclusion: The use of parecoxib and valdecoxib after CABG was associated with an increased incidence of cardiovascular events, arousing serious concern about the use of these drugs in such circumstances.

Summarizes your findings and their implications.

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Summary

- Introduction: State your research question, the reason it is important, and how you answered it
- Methods: Elaborate on how you answered the research question
- Results: Report your principal findings
- Conclusion: Summarize your findings and briefly describe their implications

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Abstracts for Case Reports (and similar short pieces)

Case Report Abstracts

- Usually unstructured
- Often have a low word limit (eg, 100-150 words)
- Should emphasize what is unique, important, or illustrative about the case or treatment described in the report

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Sample Abstract

Open surgical repair of ruptured thoracic aortic aneurysms is associated with high mortality and morbidity, especially in patients with significant comorbidities. In such patients, endovascular aneurysm repair may be a better approach. We successfully deployed endovascular stent-grafts to repair a contained rupture of a descending thoracic aortic aneurysm in an 86-year-old man with prohibitive comorbidities. Magnetic resonance angiography performed 2 months after the procedure showed a patent stent graft, a patent left subclavian artery, and complete exclusion of the aneurysm.

(Adapted from DeFrain M et al. Endovascular repair of a ruptured descending thoracic aortic aneurysm. *Tex Heart Inst J* 2006;33(2):241-5.)

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Reducing Word Count

- Use plurals to eliminate articles
 - “A typical CHF patient has” → “Typical CHF patients have”
- Use abbreviations where permitted (and define at first use)
 - “Of the 403 coronary artery bypass grafting (CABG) operations performed...”

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Reducing Word Count

- Remove words and phrases that convey no information
 - “a past history of” → “a history of”
 - “in order to discover” → “to discover”
- Avoid nominalizations
 - “Induction of anesthesia involved” → “Inducing anesthesia involved”

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Reducing Word Count

- Avoid prepositional phrases
 - “Blood flow to the spinal cord” → “Spinal blood flow”
 - “The mean hospital stay for the control patients” → “The control patients’ mean hospital stay”
- Put no spaces between mathematical operators and numbers
 - “(n = 25)” → “(n=25)”

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Reducing Word Count

- Avoid starting sentences with numbers so that you can use digits
 - “Five hundred and seventy-two patients underwent mitral valve operations” → “Mitral valve operations were performed on 572 patients”
- Avoid using common but lengthy phrases
 - “Cytokines are known to be involved in” → “Cytokines are involved in”

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Conclusion

- Abstracts should
 - be as clear and concise as possible
 - contain only essential information
 - start with the research question, why it is important, and how you answered it
 - report your principal findings
 - end with a summary of your findings and their implications

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Thank You!
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