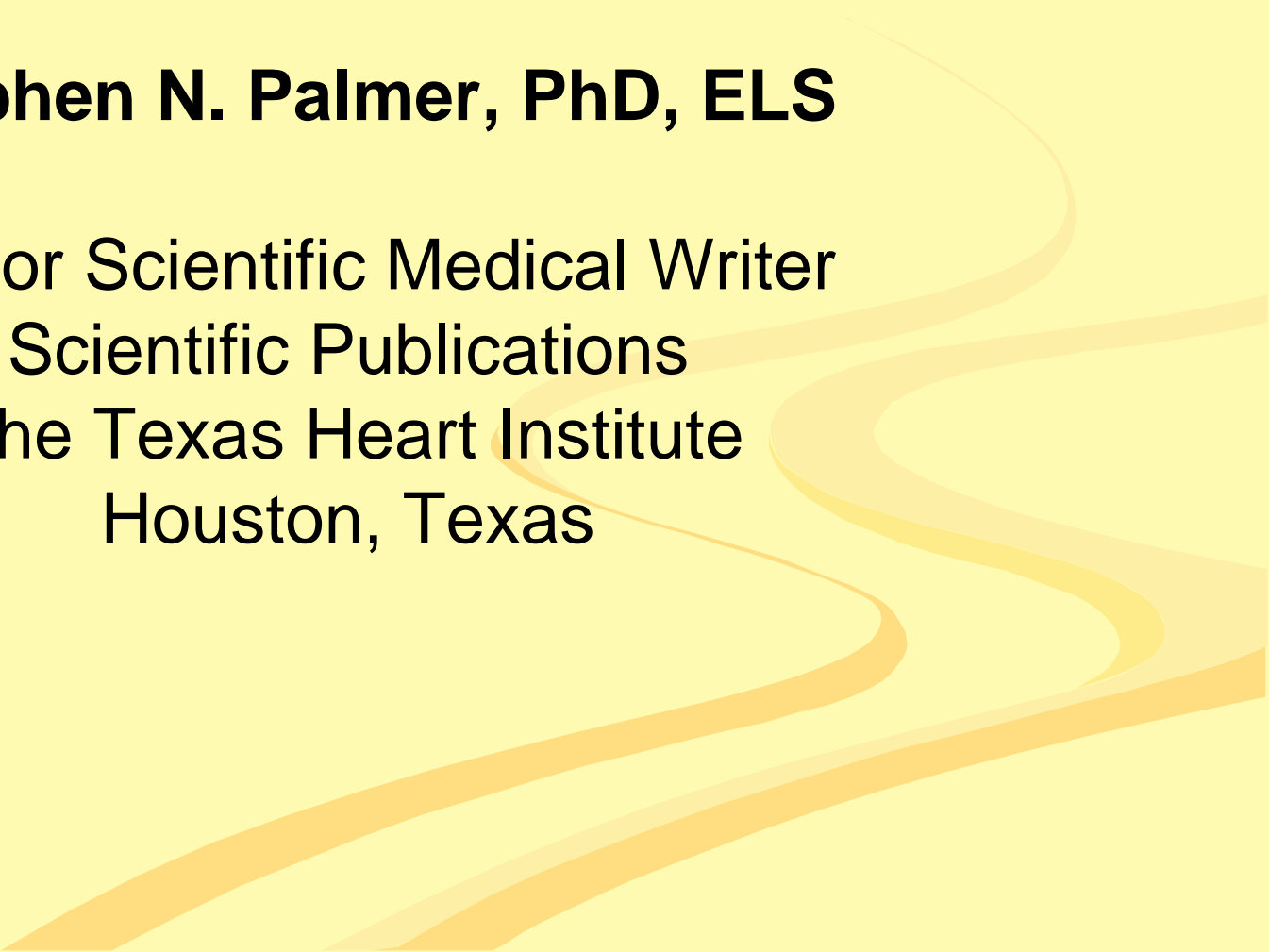


# How to Write an Abstract

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# ABSTRACT

- **IMPORTANT:**
  - The most read part of your article (or poster, etc)
  - Some readers will read only the abstract
  - Other readers will read the rest of the article only if the abstract arouses their interest
  - For conferences, the abstract is usually the sole criterion on which your presentation is judged

# QUALITIES OF A GOOD ABSTRACT

- Clear and concise
- Conforms to required length limit
- Has 4 short sections: Introduction, Methods, Results, Discussion
- Avoids general statements
- Does not contain anything that is not in the body of the article

# STRUCTURED ABSTRACT

**Background** New percutaneous coronary intervention (PCI) device technologies are often rapidly adopted into clinical practice, yet few studies have examined the overall impact of these new technologies on patient outcomes in community practice.

**Methods** In hopes of determining temporal trends in PCI outcomes, we used data from the Centers for Medicare & Medicaid Service's Chronic Condition Warehouse (n = 3,250,836) by comparing patient characteristics and rates of 3-year major adverse cardiac events (MACE) across the balloon angioplasty (POBA) era (01/1991-09/1995), the bare metal stent (BMS) era (02/1998-04/2003), and the drug-eluting stent (DES) era (05/2004-10/2006). The adjusted association between era and outcomes was determined with Cox proportional hazards modeling (POBA era as reference).

**Results** Compared with the POBA era, patients undergoing PCI were significantly older and had more medical comorbidities, and the risk for 3-year MACE was significantly lower during the BMS and DES eras (BMS vs. POBA adjusted HR [95% CI]: 0.930 [0.926–0.935]; DES vs. BMS: 0.831 [0.827–0.835]). Compared with males, the adjusted risk for 3-year MACE among females was lower during the POBA era, but slightly higher during the BMS and DES eras. Across all three eras, patients  $\geq 75$  years of age had higher adjusted risk for MACE compared with younger patients, and the risk for revascularization was lower for both females and older patients.

**Conclusions** Despite its application in older and sicker Medicare beneficiaries, there has been a significant decrease in post-PCI MACE over time. The risk for death or myocardial infarction is higher among females and older patients compared with males and younger patients; therefore, future studies should focus on improving clinical outcomes in these high-risk subgroups. (Am Heart J 2013;166:273-281.e4.)

# UNSTRUCTURED ABSTRACT

Epstein-Barr virus (EBV)-associated posttransplant smooth muscle tumors (PTSMT) are very rare complications. We aimed to provide a clinicopathological characterization which is based on our own case series ( $n = 5$ ) as well as previously reported PTSMT cases ( $n = 63$ ). Meta-analysis of PTSMT and molecular analysis of tumor cells from our cohort was performed. Most PTSMT developed in kidney-transplanted patients ( $n = 41/68$ , 60%). Liver/transplant liver was the main site of manifestation ( $n = 38/68$ , 56%). Tumors occurred after a median interval of 48 months (range 5–348) and developed earlier in children than in adults. Most tumors showed no marked cellular atypia, low mitosis rate and no tumor necrosis. Gene expression analysis of 20 EBV-related genes, including two microRNAs, revealed overexpression of MYC ( $p = 0.0357$ ). Therapy was mainly based on surgical resection or reduced immunosuppression but no significant differences in overall survival were evident. Lower overall survival was associated with multiorgan involvement ( $n = 33/68$ , 48.5%) and particularly with intracranial PTSMT manifestation ( $n = 7/68$ , 10%;  $p < 0.02$ ), but not transplant involvement ( $n = 11/68$ , 16%). In summary, PTSMT differ from conventional leiomyosarcomas by their lack of marked atypia, unusual sites of involvement and defining EBV association. Surgery and reduced immunosuppression show comparable clinical results and prognosis is associated with intracranial manifestation.

# INTRODUCTION

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

# Introducing the topic

- 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.”

# Introducing the topic

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



# 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.”

# Introducing the topic

- Problems:
  - Much too long
  - Contains information not directly relevant to the study
  - 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.”

# 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”)

# 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

# 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

# The research question

- Better: “We examined differences in renal function between patients initially supported by a pulsatile pump who then converted to an axial-flow pump versus patients initially implanted with the axial-flow pump.”

# THE REST OF THE ABSTRACT

- Indicates the way you addressed the research question by using words and phrases like “survey,” “case-control study,” “brief review,” “exhaustive review,” etc
- Has the same tone and emphasizes the same points as the overall manuscript
- Uses complete sentences (usually)
- Uses the active voice whenever possible
- Uses abbreviations and technical terms sparingly



# EXAMPLE

(From Nussmeier NA, Whelton AA, Brown MT, 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
- how the authors tried to answer it

# 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.**

# Summary

- Introduction: State your research question, the reason you asked it, 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

# **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



# 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. This case suggests that endovascular treatment can produce satisfactory outcomes in patients with significant comorbidities.

(Adapted from DeFrain M, Strickman NE, Ljubic BJ, Dougherty KG, Gregoric ID. Endovascular repair of a ruptured descending thoracic aortic aneurysm. *Tex Heart Inst J* 2006;33(2):241-5.)

# Case Report Abstracts

- First sentence introduces the problem:  
“Open surgical repair of ruptured thoracic aortic aneurysms is associated with high mortality and morbidity, especially in patients with significant comorbidities.”
- Second sentence suggests a possible solution:  
“In such patients, endovascular aneurysm repair may be a better approach.”

# Case Report Abstracts

- Third sentence describes the patient and explains what was done:  
“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.”

# Case Report Abstracts

- Fourth sentence reports the outcome:  
“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.”
- Last sentence explains the importance of the case (ie, why anyone should read this report):  
“This case suggests that endovascular treatment can produce satisfactory outcomes in patients with significant comorbidities.”

# Reducing Word Count



# 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...”

# 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”

# Reducing Word Count

- Avoid prepositional phrases
  - “Blood flow to the spinal cord” → “Spinal cord 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)”



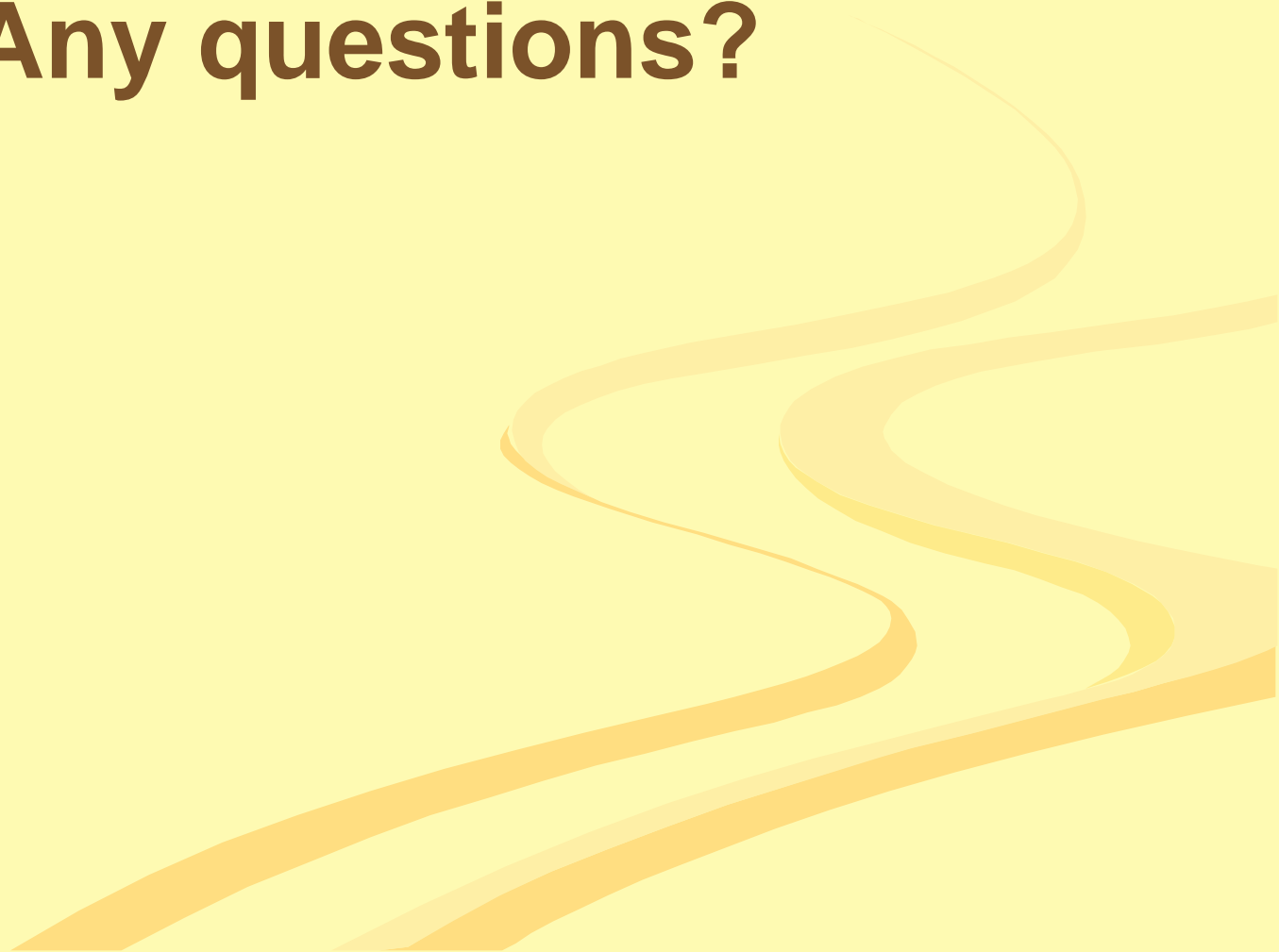
# Reducing Word Count

- 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”

# 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

**Any questions?**



**Thank You!**  
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