Essentials of the Manuscript

4th ranked impact factor

CME - 3 AMA PRA Category 1 Credits per review
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How to Organize a Manuscript

• Title
• Abstract
• Introduction
• Methods
• Results
• Discussion
• Conclusions
• References
• Tables
• Figures and Legends
Introduction

1. Be brief
2. Identify the Controversy
3. State your Purpose
4. State your Hypothesis
Introduction

• 1. Be brief
• 2. Identify the Controversy
• 3. State your Purpose
• 4. State your Hypothesis

• Nothing else!
Example

• **Controversy:** Does double-row rotator cuff improve outcome?

• **Purpose:** To compare double-row repair with single-row.

• **Hypothesis:** What you think answer will be before you start the study.
Methods

**Should include:**

1. Step-by-step description
   - Reproducible
   - Like a cookbook
2. Rationale for experimental design
   for basic science
3. Statistical methods
4. All methods reflected in results and vice versa
Methods Are Most Important

• Fatal Flaws in Methods
  • Can not be fixed

• Get advice on Methods **BEFORE** you start
  • Prospective
    • **Before** starting study
  • Retrospective
    • **Before** extracting data
Levels of Evidence

• Clinical: “Therapeutic” Studies Most Common
• Randomized controlled trial = Level I
  • Rare
• Comparative study = Level II or III
  • Prospective versus retrospective
  • Same time/same institution
• Case series (no control group) = Level IV
• Expert opinion = Level V
Prevent “Reporting Bias”

Appropriate outcome measures are
- Validated
- Universal (allows comparison to similar studies)
- Condition specific and
- General health, and both
- Surgeon reported and
- Patient reported
Selection (Allocation) Bias

- Treatment groups have different prognoses.
  - Apples versus oranges
  - Meniscus repair plus ACL in younger patients versus meniscectomy without ACL in older

• Prevent Selection Bias
  - Randomize
  - Strict inclusion and exclusion criteria
Bias in Clinical Trials

Prevent Recording Bias

• Don’t influence the patient
  • Complete forms in private

• Don’t influence the physical exam
  • Operating surgeon should not perform assessment

• The patient may want to please the surgeon
  • So take steps to minimize recording bias
**Bias in Clinical Trials**

**Transfer bias**
- Patients are lost to follow-up.
- 80% follow-up at 2 years is “gold standard”

**Performance bias**
- Who performs the procedure
  - No “right answer”
- Important to consider
What are the common mistakes?
Which Statistical Test Should Be Used?

• Too many possibilities to show

• Writers should consult a statistician

• Reviewers should consult the detailed PowerPoint on flash drive and web site
Confidence Interval

More Informative Than a $P$ Value

- 95% confidence interval give degree of certainty
- Clinically significant differences
  - Intervals do not overlap
- Statistical significance may be less important.
Statistical Significance

• Statistical significance is only a guide

• Statistical significance cannot address clinical relevance

Non-overlapping Confidence Intervals suggest Clinical Significance
Statistical Significance

• Statistical significance is only a guide
• Statistical significance cannot address clinical relevance

Clinical Significance is more important
Confidence Intervals

- Statistically different results (*)
  - May not be clinically significant
- Watch out for overlapping CIs
  - Easy to see in Figures or Tables
  - Overlapping results may not be clinically different
Reviewing the Statistics

Multiple Statistical Testing

• Lots of outcome measures
  • Researcher will eventually get lucky
    • 1/20 chance = 0.05
    • Results may not be reproducible

• Solution
  • Choose Primary Outcome Measure
    • for hypothesis
    • and power analysis
Reviewing the Statistics

Results show “No difference”

• RED FLAG!!

• Check the power analysis
Null Hypothesis

\( \beta \) (beta error)

BE ALERT FOR RED FLAG

- “No difference between groups”

BECAUSE IF

- too few patients
- too small a sample size
- not enough statistical power

RESULTS COULD BE WRONG
Results

• Organize parallel to Methods
• Everything in Methods must be reported...

... and vice versa...

• Put the data in Tables or Figures
• Cite Table and Figures in text
  – Summarize the highlights in the text
Tables

**Concise Results Summary**

- Group data logically
- Label columns clearly
- Provide stand alone message
  - Include N, Mean, and Confidence Interval
  - Define all abbreviations in each Table
    - May use Headers and/or Footers
Compare and Contrast Similar Publications

• Try to explain contrasts
Limitations wrap up the Discussion

• Point out weaknesses before the conclusion
• Point out weaknesses before the Reviewer

• Consider bias:
  • Reporting
  • Recording
  • Performance
  • Transfer
  • Selection (allocation)
Conclusions

• Is hypothesis supported?
  • Yes or no?

• Based only on the specific reported results

• Conclusion should be word-for-word identical in:
  • Text
  • Abstract
Make the Title extremely interesting

• “Revise the Title and make it sexy”
  • Einar Eriksson, Founding Editor, KSSTA

• Delete “New” or “Novel”
  • Let the readers decide
Abstract

Introduction/Methods/
Results/Conclusion

• Clinical
  • Add Level of evidence

• Basic Science
  • Add Clinical Relevance
References

**Past 2-5 years plus a few classics**

- **Weak**
  - the most references
- **Strong**
  - the most recent references
“A Picture is Worth a Thousand Words.”
Figure Legends

Provide stand-alone message

Include:

Side,
patient position,
viewing portal or imaging view,
Labels and/or arrows
And detailed description.
What’s New?

- SYSTEMATIC REVIEWS
  - Strict search inclusion and exclusion criteria minimize bias in article selection
What’s New?

• SYSTEMATIC REVIEWS
  • Strict search inclusion and exclusion criteria minimize bias in article selection
  • Caveat: “Research waste”? (Lancet, 2015)

• Meta-analysis
  • Level I studies
Arthroscopy on Social Media

AANA Social Media Task Force

J. Martin Leland (Chair)  Cleveland, OH
Robert Gallo  Hershey, PA
Robert Hartzler  San Antonio, TX
Niraj Kalore  Richmond, VA
Nikolaos Paschos  Davis, CA
Dipak Raj  Lincolnshire, UK
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Publish in *Arthroscopy Techniques*!

- Video-oriented
- Peer-reviewed
- Open access
- PubMed cited
- Mobile options
What’s Out?

• CASE REPORTS
  • Rare exceptions
    • New complications
Become a Top Reviewer

• Confidential comments
• Line-by-line review
• Reviewers are not copy editors
• But Copy editors are not surgeons/scientists
  • Copy editors correct spelling and grammar
  • Reviewers correct confusing science
• Merit-based promotion
  • Best reviewers start young
  • Best reviewers join Editorial Board
  • Best Editorial Board reviewers become AEs
Essentials of the Manuscript

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Panel Discussion and Questions

• **Common Errors**
  - Writing repetitious
  - Introduction or Discussion too long
  - Statistical (but not clinical) significance
  - Too few patients (no power analysis)
  - Too short follow-up (< 2 years)
  - Excessive transfer bias (>20% at 2 years)
  - Weak inclusion/exclusion criteria (selection bias)
  - Poor randomization (selection bias)
  - No control group (Level 4 evidence)
  - Out of date references
Thank You!