ENDOUROLOGICAL SOCIETY · FELLOWS COURSE · OFFICE OF RESEARCH

How to Write a High-Impact Manuscript

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ENDOUROLOGICAL SOCIETY · OFFICE OF RESEARCH

Fellowship Research Curriculum

First Wednesday monthly
8 PM ET · Zoom

CURRICULUM MODULES

01	**How to Write a High Impact Manuscript ◀ TODAY**
02	Critical Appraisal & How to Peer Review
03	Hypothesis Development & Trial Design
04	Practical Biostatistics for Surgeons
05	IRB & Research Ethics: A Practical Guide
06	Systematic Reviews & Meta-analyses
07	How to Use Large-Scale Databases
08	AI in Clinical Research
09	How to Write a Grant Proposal
10	Industry Collaboration & Innovation
11	Innovation

FACULTY

What We Will Cover Today

01

Introduction

3-paragraph rule

Hypothesis & impact

02

Methods

Step-by-step

Reporting guidelines

03

Results

Coherent storyline

Tables & figures

04

Discussion

5 thematic steps

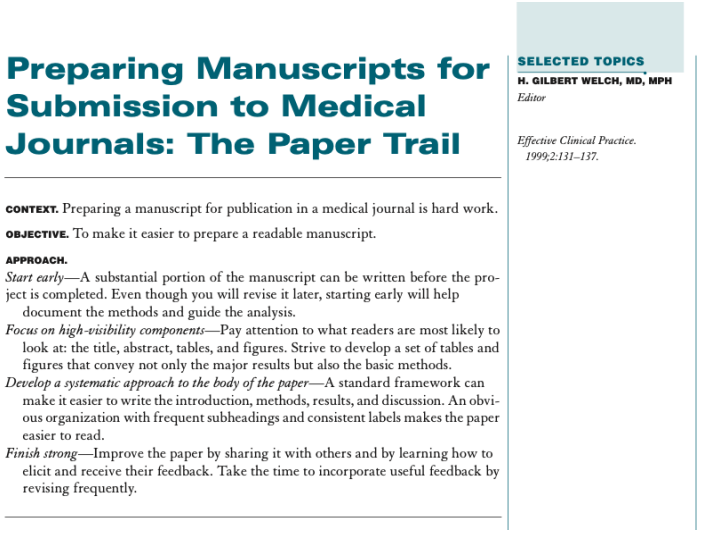
Conclusion

Acknowledgements

Three key sources have shaped this guide:

- University of Michigan Center for Healthcare Outcomes Policy / Urology Dow Division writing guide
  - Authors: Drs Ellimootil & Ryan

- Ghani KR & Siemens DR — The Journal of Urology®–European Urology Writing Course (2023)
  - J Urol. 2023 Aug;210(2):239-241. PMID: 37234024



SELECTED TOPICS

H. GILBERT WELCH, MD, MPH
Editor

Effective Clinical Practice. 1999;2:131–137.

Preparing Manuscripts for Submission to Medical Journals: The Paper Trail

CONTEXT. Preparing a manuscript for publication in a medical journal is hard work.

OBJECTIVE. To make it easier to prepare a readable manuscript.

APPROACH.

Start early—A substantial portion of the manuscript can be written before the project is completed. Even though you will revise it later, starting early will help document the methods and guide the analysis.

Focus on high-visibility components—Pay attention to what readers are most likely to look at: the title, abstract, tables, and figures. Strive to develop a set of tables and figures that convey not only the major results but also the basic methods.

Develop a systematic approach to the body of the paper—A standard framework can make it easier to write the introduction, methods, results, and discussion. An obvious organization with frequent subheadings and consistent labels makes the paper easier to read.

Finish strong—Improve the paper by sharing it with others and by learning how to elicit and receive their feedback. Take the time to incorporate useful feedback by revising frequently.

"Start early. Focus on high-visibility components. Develop a systematic approach. Finish strong."

01

Introduction

Goal: Motivate your audience on WHY and IMPACT

Introduction: The Goal

Motivate the audience on WHY this study matters and its IMPACT.
Maximum 3 paragraphs — 500 words.

¶ 1

What do we KNOW?

Provide background data for your study.

Start broad: open with the clinical landscape.

¶ 2

What DON'T we know?

Identify the knowledge gap and its significance.

Why are existing studies insufficient?

¶ 3

How will THIS paper fill the gap?

State your specific study objective and hypothesis.

End with an IMPACT sentence.

02

Methods

Clear, concise, and reproducible — a recipe anyone can follow

Methods: Clear, Concise, Reproducible

Ask yourself: could someone else replicate your study and get the same results?

1

Data Source

Describe the registry or data source. IRB status, quality controls, scope.

2

Study Population

Who was included and excluded, and why? Date range of cohort.

3

Outcome Measures

Define each outcome precisely. How was it measured?

4

Statistical Analysis

Tests used, model structure, significance level, software (e.g. SAS 9.4).

Follow Reporting Guidelines

- Good adherence makes for a stronger paper — more likely to be published in a high-impact journal
- PLOS One will publish papers with good methodology even if results are negative
- Systematic reviews: PRISMA
- Observational cohort: STROBE
- Patient-reported outcomes: COSMIN
- Survey studies: CROSS
- Evaluation of surgical innovation: IDEAL

ELSEVIER

Journal of Clinical Epidemiology 62 (2009) 594–596

Journal of Clinical Epidemiology

REPORTING GUIDELINES

STREGA, STROBE, STARD, SQUIRE, MOOSE, PRISMA, GNOSIS, TREND, ORION, COREQ, QUOROM, REMARK… and CONSORT: for whom does the guideline toll?

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Reporting Guidelines in Urology — Use Them!

Two essential guidelines for urology manuscripts:

Guidelines for Reporting of Figures and Tables for Clinical Research in Urology

Andrew J Vickers [1], Melissa J Assel [1], Daniel D Sjoberg [1], Rui Qin [2], Zhiguo Zhao [3], Tatsuki Koyama [3], Albert Botchway [4], Xuemei Wang [5], Dezheng Huo [6], Michael Kattan [7], Emily C Zabor [7], Frank Harrell [3]

Vickers et al. PMID: 32441187
Guidelines for Reporting of Statistics for Clinical Research in Urology

Guidelines for reporting of statistics for clinical research in urology

Melissa Assel [1], Daniel Sjoberg [1], Andrew Elders [2], Xuemei Wang [3], Dezheng Huo [4], Albert Botchway [5], Kristin Delfino [5], Yunhua Fan [6], Zhiguo Zhao [7], Tatsuki Koyama [7], Brent Hollenbeck [8], Rui Qin [9], Whitney Zahnd [10], Emily C Zabor [1], Michael W Kattan [11], Andrew J Vickers [1]

Assell et al. PMID: 30537407
Reporting Recommendations for Figures and Tables in Clinical Research in Urology

These guidelines define how to report statistics, figures, and tables in urology papers.

Following them signals rigor and speeds peer review.

03

Results

Report the data — let the Discussion interpret it

Results: A Coherent Storyline

- Open by describing in simple terms what the data show
- Evaluate the trends observed
- The written section should flow from Tables and Figures — they set the structure
- Prose should expand and contextualize results, not just re-state numbers
- Avoid duplicating results in both text and figures or tables

Paragraph Structure

Para 1	Descriptive analysis (total N, observations)
Para 2	Finding 1 — primary MVA result
Para 3	Finding 2 — secondary analysis
Para 4	Finding 3 — additional findings

Tables and Figures: DOs

- Additive to results — not just a repetition of what's written
- Tell a story on their own without requiring the reader to read the text
- Legends must be standalone: define all abbreviations, state population and time frame
- Required reading: Vickers et al., PMID 32441187

Legend Rules

- DESCRIPTIVE title: state the type of experiment — e.g., "Flow cytometry analysis of US6-expressing cells"
- DECLARATIVE title: assert the overall finding — e.g., "The viral protein US6 decreases MHC I surface expression"

Tables and Figures: DON'Ts

✕ Simple Bar Graphs

A basic bar graph showing a single outcome between a small number of cohorts — not informative enough

✕ Gratuitous 3D

Three-dimensional effects distort proportions and add nothing to comprehension

✕ Sparse Bar Graphs

Bar graphs made of only a few data points — just show the raw data instead

✕ Pie Charts

Pie charts are rarely the right tool — humans are poor at comparing angles accurately

Example — Figure & Legend

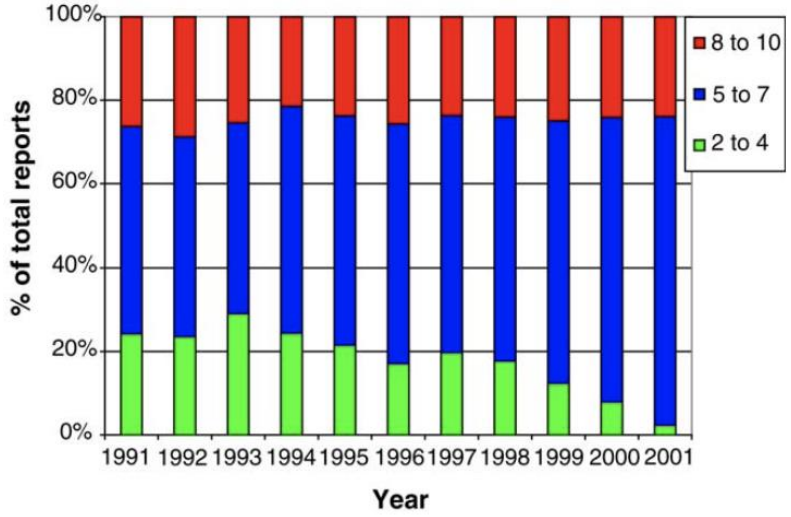

Fig. 4. Reporting of Gleason scores for prostate cancer - changes in grade over time.

What makes this legend work:

- Declarative title states the key finding, not just what was plotted
- Past tense for completed experiments
- Present tense for statements of fact ("…decreases MHC I surface expression")
- Reader can interpret the figure without reading the main text

Example — Table

TABLE 1 The demographics of 760 patients who had six-, eight- or 12-core biopsies, the prevalence and duration of bleeding complications, and the numbers of patients consulting their GP in the first 7 days

	N biopsies		
Variable	Six	Eight	12
No. of patients	307	325	128
Mean (range):			
age, years	68.6 (52–94)	69.8 (48–90)	66 (50–76)
prostate volume, mL	47 (10–183)	51 (14–272)	61 (23–157)
Median (range) PSA, ng/mL	13.2 (2.0–129)	11 (2.6–1000)	12.3 (3.5–36)
Prevalence of bleeding, N (%)			
Haematuria	134 (44)	132 (41)	50 (39)
Rectal*	51 (17)	86 (26)	35 (27)
Haematospermia	41 (13)	52 (16)	15 (12)
Mean (SD, 95% CI) duration, days			
Haematuria	3.0 (1.72, 2.7–3.29)	3.24 (2.0, 2.9–3.6)	3.44 (1.7, 2.96–3.92)
Rectal	2.13 (1.15, 1.8–2.45)	1.96 (1.3, 1.68–2.24)	2.14 (1.19, 1.73–2.55)
Haematospermia	2.19 (1.27, 2.59–1.78)	2.08 (1.44, 1.68–2.48)	2.27 (0.96, 1.74–2.80)
Consultation with GP, n (%)	12 (3.9)	17 (5.2)	7 (5.5)
Reason for visit†, n			
Fever	3	6	4
Pain	4	6	3
Bleeding	7	7	4

**Prevalence statistically different between the groups, chi square test for independence (six vs eight biopsies P = 0.0037; six vs 12 , P = 0.019); chi square for trend in rectal bleeding was also significantly different among the three groups (P = 0.0029). †Some patients indicated more than one reason for consulting their GP.*

04

Discussion

5 thematic steps — from punchline to future directions

What NOT to Do — A Real Example (My First Urology Paper!)

DISCUSSION

Modern prostate biopsy with the appropriate antibiotic prophylaxis has an acceptable safety margin, but mild haematuria, haematospermia and rectal bleeding are common. Table 3 summarizes the previous publications on the complication rates after prostate biopsy, classified according to the number of cores taken [3,6,7,10–27].

Pooled data from these studies gives a rate of haematuria of 12.5–80%, of haematospermia in 5.1–89% and rectal bleeding in 1.3–59%. Most bleeding was mild and self-limiting, but up to 4% of patients will require hospitalization because of a major complication, and 0.2–10% will develop urinary retention, particularly those who have had >13 biopsies taken [10]. The range of reported complications is also wide, reflecting the different methods of study. The prospective questionnaire-based studies

Common problems with this discussion:

- No clear punchline in Para 1
- Immediately jumps to comparison without stating findings
- Dense prose with no paragraph structure
- Has Citations in this section, even a Table!

The fix: use a 5-paragraph framework →

Discussion: 5-Paragraph Framework

1	**The Punchline**	State your main findings. Open: "We found…" — do not bury the result.
2	**Prior Literature**	How do your findings compare? What do they add to existing evidence?
3	**Limitations**	HERE — not at the end. Be explicit about bias and effect size.
4	**Implications**	What should clinicians, patients, or health systems do differently?
5	**Future Directions**	Next research step. Concluding remark supported by your results.

Discussion Framework — Three Core Questions

TABLE 2
Framework for the Discussion Section

QUESTION TO ADDRESS	CONTENT		
What's the central finding?	Restate finding. Place in the context of other work.		
Could it be wrong?	Identify and deal with threats to validity. Consider alternative explanations for your findings given the study design:		
	BEFORE/AFTER	**OBSERVATIONAL**	**RANDOMIZED TRIAL**
	Temporal trend Regression to the mean Selection bias	Loss to follow-up Low response rate Recall bias Unmeasured confounding	Inadequate blinding Ascertainment bias Loss to follow-up
What does it mean?	Put your work in perspective. Assess its generalizability, and speculate about its implications. Specify what you think should happen next.		

Para 1 — The Punchline

Start with your most important finding. Don't make readers work for it.

S1	**Primary finding:**	State Finding 1 — what you discovered in plain language
S2	**Secondary finding:**	State Finding 2 — variation, patterns, or sub-group data
S3	**Additional finding:**	State Finding 3 — associated factors or predictors
S4	**Implication:**	"Collectively, these findings suggest that…" — the policy/clinical takeaway

Para 1 — Example from the Literature

THE JOURNAL of UROLOGY®
www.auajournals.org/journal/juro

Ureteral Stent Placement following Ureteroscopy Increases Emergency Department Visits in a Statewide Surgical Collaborative

Spencer C. Hiller,* Stephanie Daignault-Newton,† Hector Pimentel, Sapan N. Ambani, John Ludlow, John M. Hollingsworth,‡ Khurshid R. Ghani§,‖ and Casey A. Dauw;‖ for the Michigan Urological Surgery Improvement Collaborative

From the Department of Urology (SCH, SD-N, SNA, JMH, KRG, CAD), University of Michigan, Ann Arbor, Michigan, Spectrum Health (HP), Grand Rapids, Michigan, and Western Michigan Urological Associates (JL), Holland, Michigan

S1: "In our study, representing a diverse group of urology practices, we found that stents were placed in nearly three-quarters of URSs."

S2: "Patterns of use varied greatly between individual urologists and practices."

S4: "Collectively, these findings suggest that the decision to place a stent is influenced by both patient and surgeon-level factors but its use is not inconsequential."

Para 2 & 3 — Prior Literature

≈

Are your findings consistent with other researchers?

+

How do the current findings add to the literature?

Example — Para 2:

"There is currently insufficient evidence to accurately characterize every factor that contributes to the decision to place a stent. Although guidelines advocate for stent omission in uncomplicated URS [5,6] the definition of uncomplicated URS remains ambiguous. Investigators representing Clinical Research Office of the Endourological Society identified presence of an intraoperative complication, stone impaction, increasing operative time and stone burden, and increased patient age as predictors for stent placement [7]. These findings are consistent with the results of our study."

Para 3 — Limitations

Include limitations HERE — in the Discussion — not tucked away at the end.

Sentence 1	Opening line — acknowledge the limitations exist
Sentence 2	First limitation — what it is
Sentence 3	Rebuttal — why the limitation doesn't invalidate the findings
Sentence 4	Second limitation
Sentence 5	Rebuttal
Sentence 6	Third limitation
Sentence 7	Rebuttal — close with a positive statement

Example — Limitations Paragraph

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"Our findings must be viewed within the context of some limitations. Although the MUSIC registry includes a wide range of clinical and surgical variables, it is not exhaustive, thus introducing the possibility of confounding… our results are based on practices within a single state and may not be generalizable to a national sample. That stated, our variation in practice size, geographic location, and academic or private affiliation tempers this potential limitation."

Key features in this example:

- Opens with "Our findings must be viewed within the context of some limitations"
- Each limitation paired with a rebuttal
- Ends with a positive forward-looking statement

Para 4 — Implications

Open with: "These limitations notwithstanding, our findings…"

1

Policymakers

How should guidelines or regulations change?

2

Payers

What are the cost or coverage implications?

3

Physicians

How should clinical practice change?

4

Patients

What does this mean for quality of life and outcomes?

Example — Implications Paragraph

"Limitations notwithstanding, our findings are both provocative and novel. We do not capture the cost of these unplanned episodes of care, but they have been previously quantified and amount to a significant financial burden [2]. Extrapolating from previous data ($23,436 per episode), [2] unplanned health care utilization in stented patients during our study period resulted in a $14,155,344 increase in cost of care, not accounting for the indirect costs. We found that stent placement increased the odds of an ED visit by 25%, which, in the context of the scope and burden of stone disease, amounts to a substantial clinical significance."

Para 5 — Future Directions

S1	**Summary:**	Brief restatement of your key findings in context
S2	**Next step:**	The next logical research step — what question remains?
S3	**Closing:**	A concluding remark supported by your results — not a new claim

"…To this end, we recently concluded an appropriateness panel… efforts to measure patient reported outcomes following URS in MUSIC should help us better understand the implications."

05

Conclusion

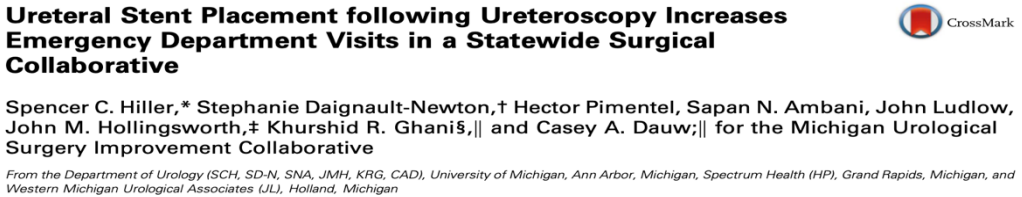
Reflect the results — draw a conclusion, make an impact

Conclusion: Rules

- Must reflect results — every statement needs evidence from your data
- Draw a conclusion — do not just repeat the results
- Do not make up statements that cannot be supported by the results
- End with an impact statement and implications for research and/or clinical practice
- BE CAREFUL of causal inferences — use "associated with" unless your design supports causality

⚠ "Caused by" requires a randomized trial. For observational data, say "associated with."

Example — Conclusion Paragraph



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"Ureteral stent placement is commonly performed following URS in Michigan, and there exists wide variation in stent use at both a provider and practice level, irrespective of case volume. Several factors significantly impact the decision to place a stent. In this analysis, we found stent placement is associated with increased odds of an ED visit following URS and stent omission appears safe. However, randomized trials are needed to substantiate these conclusions. These findings have broad implications for patients, in whom stents negatively impact quality of life, as well as the health care system."

Summary of Key Teaching Points

01 Introduction

· 3-paragraph rule

· Hypothesis & impact sentence

· ≤ 500 words

02 Methods

· Step-by-step recipe

· Reproducible by others

· Follow CONSORT / STROBE / PRISMA

03 Results

· Mirror the methods

· Report data — do not interpret

· Tables & figures tell the story

04 Discussion

· 5 thematic paragraphs

· Punchline → Literature → Limits → Implications → Future

· Conclusion: results → impact

Thank you! Contact me kghani@med.umich.edu

Essential reading for anyone writing a urology manuscript:

THE JOURNAL of UROLOGY®
www.auajournals.org/journal/juro

***The Journal of Urology®-European Urology* Writing Course: Collaboration > Competition**

1. **Ghani KR, Siemens DR. The Journal of Urology®-European Urology Writing Course: Collaboration > Competition. J Urol. 2023 Aug;210(2):239-241. PMID: 37234024**

2. Ghani KR, Siemens DR. The Journal of Urology®-European Urology Writing Course. **AUA News August 2023**

3. Assel M et al. Guidelines for Reporting of Statistics for Clinical Research in Urology. J Urol 2019. PMID: 30537407

4. Vickers A et al. Guidelines for Reporting Figures and Tables in Clinical Research in Urology. Eur Urol. 2021. PMID: 32441187