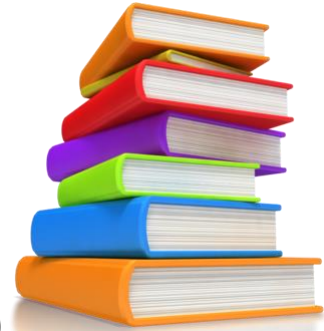


Strategies for Successful Publications



Carey-Ann Burnham, PhD, D(ABMM), FIDSA, F(AAM)

Professor of Pathology & Immunology, Molecular Microbiology, Medicine, and Pediatrics
Vice Chair of Faculty Mentoring & Advancement, Department of Pathology & Immunology
Pathology & Immunology Trainee Lecture Series
February 24, 2021

My perspective....



- Clinical microbiologist
- Investigator, mentor, author
- Editor

Journals

- Editor, *Journal of Clinical Microbiology*
- Editor, *Clinical Microbiology Newsletter*

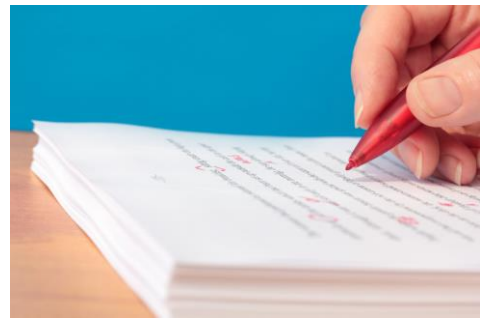
Textbooks

- Tietz Textbook of Clinical Chemistry and Molecular Diagnostics
- Manual of Clinical Microbiology 12th ed
- The Dark Art of Blood Cultures
- Clinical Microbiology Procedures Handbook

Publication Success

- To understand what you can do to increase the chance of publication success, we will discuss:
 - Elements of manuscript preparation
 - The review process
 - Responding to reviews and manuscript revision

Before Submission:
Study Design, Data Analysis, and
Manuscript Preparation



Attributes of Quality Papers

- Provides insight into an important issue
 - This insight stimulates new, important questions
- The methods are appropriate
 - Rigorous
 - Explain why and how the data support the conclusions
- Connections to prior work (in the field or from other fields)
 - Serve to make the article's arguments clear
- Tells a good story
 - Well written
 - Easy to understand
 - Logical arguments

A poor idea or a poorly designed investigation can not be saved by an excellent presentation of the work, and equally an excellent idea that is well investigated can still be doomed by a poor presentation.

Manuscript Preparation—Getting Started

- Think about the answers to the following questions:
 - What do you want to say about this topic?
 - What is your key message?
 - Who is the intended audience?
 - Type of journal/format
 - Why would this audience be interested?
 - Get the readers and reviewers excited about the subject matter
 - Who might participate in manuscript preparation?

Authorship Criteria

- Substantial contributions to the conception or design of the study, acquisition of data, or analysis and interpretation of data
- Drafting the work or revising it critically for important intellectual content
- Final approval of the version to be published
 - Agreement to be accountable for the work
- **Discuss order of authorship early**



Washington University Authorship Criteria

“An author is generally considered to be an individual who has made substantial intellectual contributions to a scientific investigation. All authors should meet the following three criteria, and all those who meet the criteria should be authors”:

- **Scholarship:** Contribute significantly to the conception, design, execution, and/or analysis and interpretation of data
- **Authorship:** Participate in drafting, reviewing, and/or revising the manuscript for intellectual content
- **Approval:** Approve the manuscript to be published

<https://research.wustl.edu/policy-authorship-scientific-scholarly-publications/>

“Co-first” authors

- Two or more individuals are noted as providing equal first-author-level contribution to a published work
- Becoming more common in biomedical fields; diverse skill sets and multi-year collaborative efforts required
- Many journals now require a statement describing the method used in assigning the first-author position

Lapidow and Scudder. 2019. J Med Library Assoc. 107: 618-620

<https://jean.fan/2019/10/20/all-co-first-authors-are-equal-but-some-are-more-equal-than-others.html>

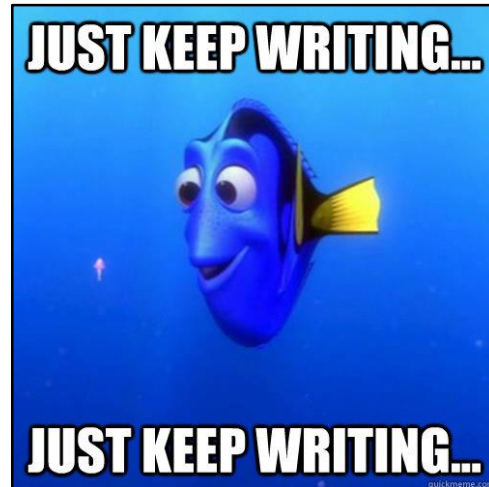
Cadavevall et al. 2019. J Clin Invest. 129: 2167-2168.

Selecting a Journal

- Select a journal before starting to write
- Tailoring to specific target journal can improve chance of success
- Read articles from potential target journals
 - Do the experimental approaches fit within the journal?
 - Are the sample size, technology, and scope indicators in line with your research?
- May look for “sister journals”
 - Can start at the top can journal may filter your submission down the chain

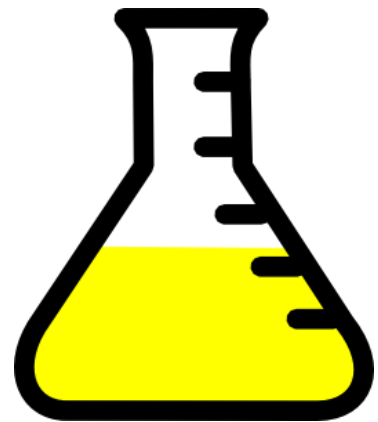
(Suggested) Writing Order

- Materials and Methods
- Results
- Discussion
- Introduction
- Abstract
- Title



Materials and Methods

- Allow the reader to:
 - Understand why the experiments were performed
 - Understand how the results and conclusions were derived from the experiments
- Who, what, where, when, why, and how
- Validity of results and conclusions based on strength of the methods and study design



Materials and Methods

- Divide into sections/subheadings
- Include sufficient technical information to allow the experiments to be reproduced
- Give source of chemicals, media, antibiotics, strains, etc.
- Statistical methods



Materials and Methods

- Key items to include for all clinical studies:
 - Inclusion/exclusion criteria for study subjects
 - Approval for studies involving human subjects
- Ethical animal treatment/committee approval
- Past tense for procedures, observations, and data that are being reported on

Results

- Need to convince the reader that the central claim of the paper is supported by data and logic
- Divide into sections/subheadings
- Options:
 - Chronological order
 - Grouping by topic or experiment
 - General to specific
 - **Most to least important**
- Clearly address the objective of the study



Rule #1

- Deliver the Results as a sequence of statements, **supported by figures**, that are **logically connected** and **support the central claim**

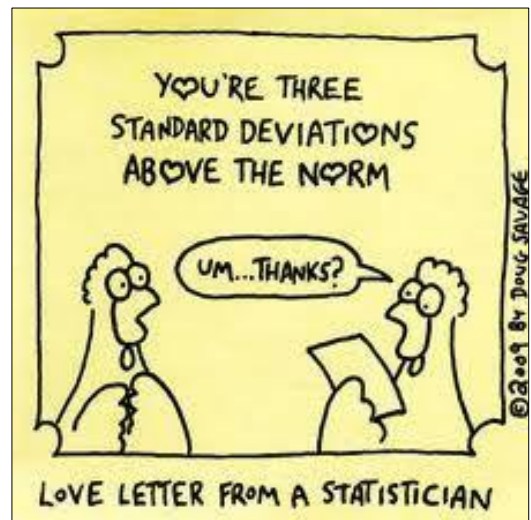
Results

- Rationale for experiments and results
- Present concisely
- **No methods, no discussion**
- Each table/figure must be referred to in the results section (and the numbering should reflect the order of appearance)



Results

- Statements about **significance** should include p values (and a description of the statistical test(s) used)
- Do not misuse “significant, significance, significantly”
 - Considerable, noteworthy, trended...

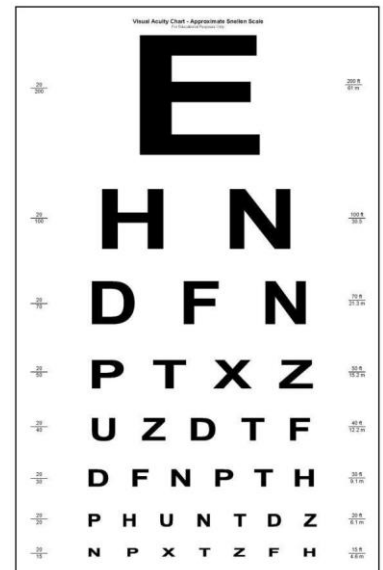


Figures, Graphs, Charts

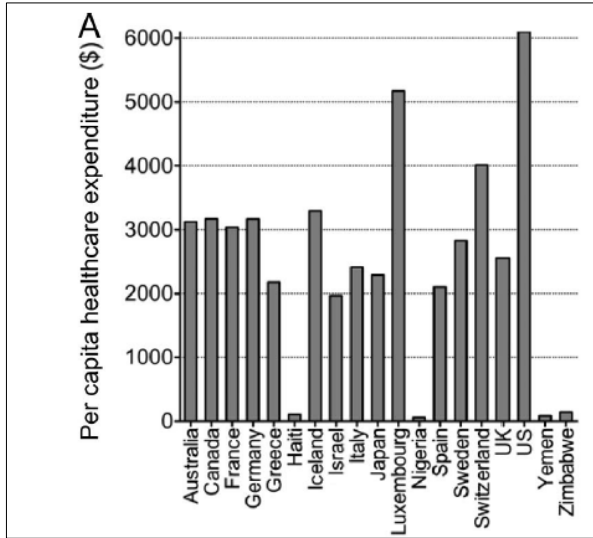
- “Think in figures” before data collection starts
- Figures, titles, and legends are important
 - Many readers skip directly from the abstract to the figures
- Figure title: Communicate the conclusion of the analysis
- Figure legend: Communicate how the analysis was done

Figures, Graphs, Charts

- Figures and tables can be an efficient way to present your results
 - “Picture is worth 1000 words”
 - Visual anchor (see, understand, remember)
- Figures are not an eye exam
- Use the right kind of figure for your data
 - Best represents your message
- Plot out in different ways

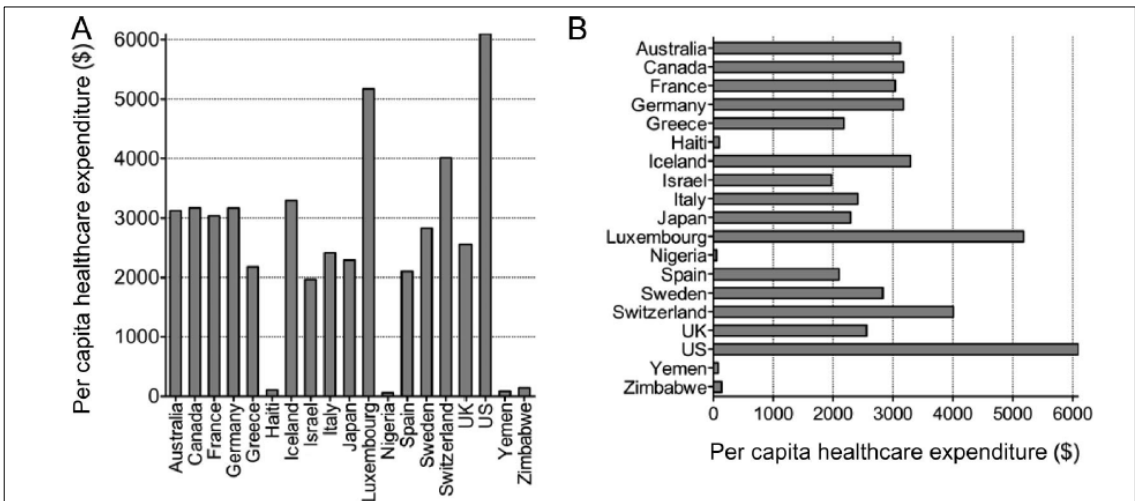


Figures, Graphs, Charts



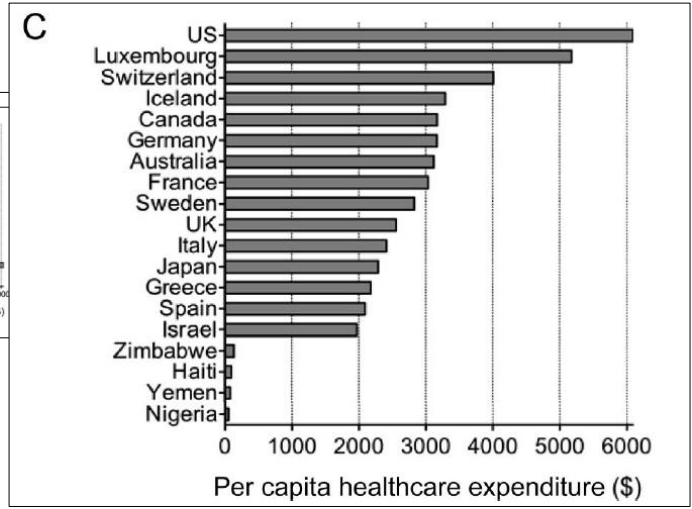
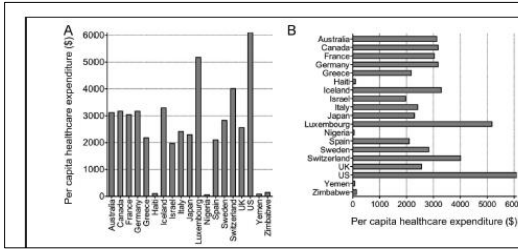
Annesley. Clin Chem. 2010. 56: 1934-1400.

Figures, Graphs, Charts



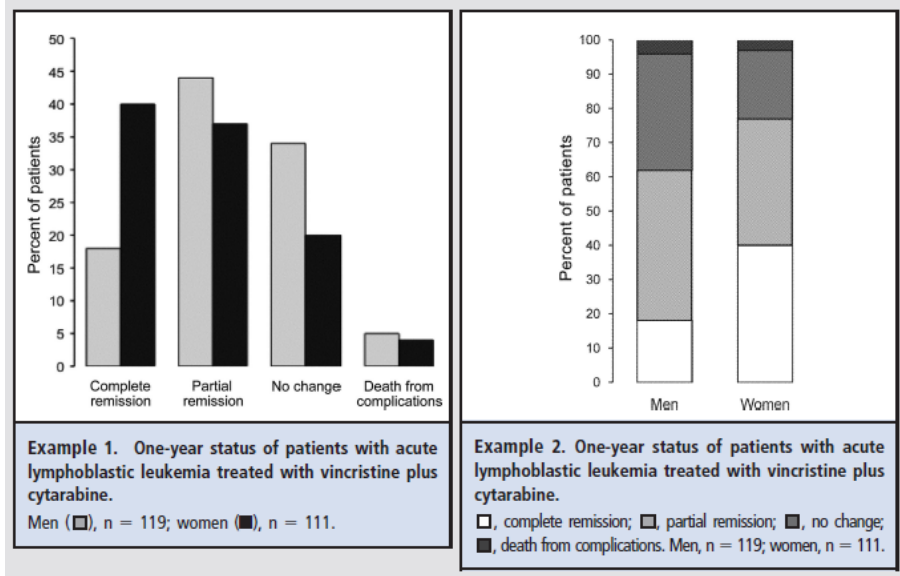
Annesley. Clin Chem. 2010. 56: 1934-1400.

Figures, Graphs, Charts



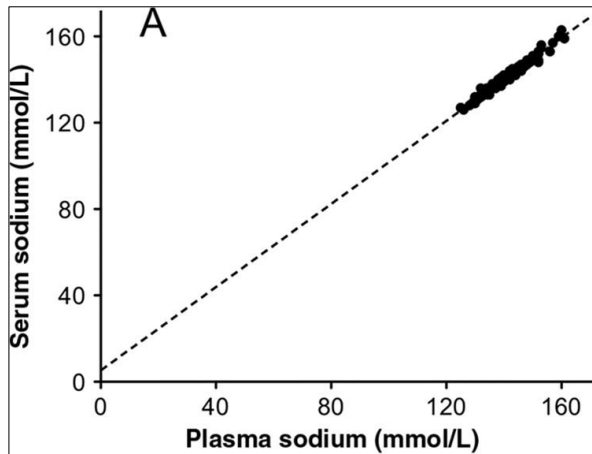
Annesley. Clin Chem. 2010. 56: 1934-1400.

Figures, Graphs, Charts



Annesley. Clin Chem. 2010. 56: 1934-1400.

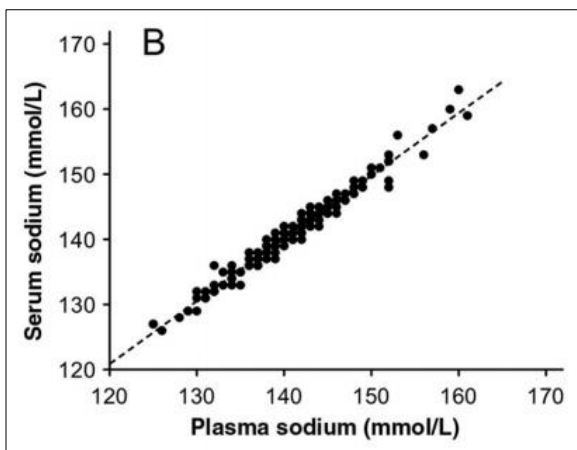
Figures, Graphs, Charts



- Data points are compressed close together
 - Difficult to see any scatter, or abnormal high and low values
- Even with a correlation line, difficult to see whether 1 or 2 outliers may have exerted undue influence on the overall correlation data
- Plot wastes space

Annesley. Clin Chem. 2010. 56: 1229-1233.

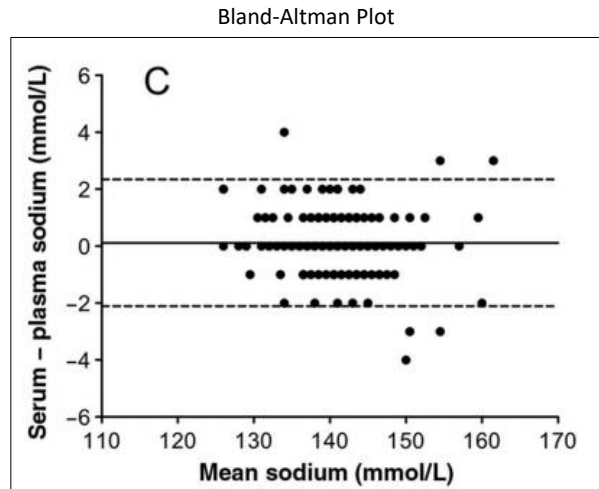
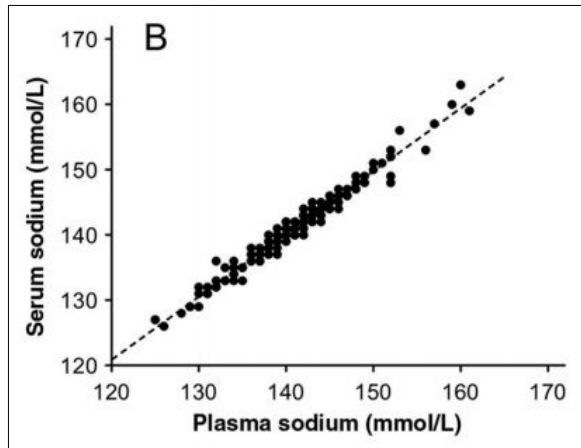
Figures, Graphs, Charts



- Narrow the ranges of the axis scales to fit the true range of the data

Annesley. Clin Chem. 2010. 56: 1229-1233.

Figures, Graphs, Charts



Annesley. Clin Chem. 2010. 56: 1229-1233.

Tables

- Title--informative, clear, concise
- Table should stand alone from main text
- Data must deserve to be in a table (rather than the main text)
- Include units of measure
- If no entry for a data field, do not leave blank

Discussion

- Interpretation of results
 - NOT what your results **show**, but what your results **mean**
- Put study/results in the context of the literature
 - **Do not just re-state the results** or the introduction
- Big picture
 - Contribution to the field, how findings will be applied to future studies
 - Why is this study important?
- Celebrate strengths and acknowledge limitations of the study
- Closing argument
 - Take home point



Discussion

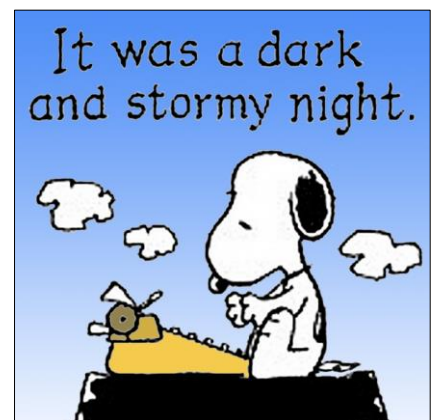
- Is there another way to interpret the results?
 - Speculations on possible interpretations are allowed
 - Rooted in fact (not imagination)
- What further research would be necessary to answer the questions raised by your results?
- Avoid sudden introduction of new terms or ideas
- Avoid statements that go beyond what the results can support

Rule #2

- In the Discussion, describe **how the gap was filled**, the **limitations** of the interpretation, and the **relevance** to the field
- Key elements of Discussion:
 - Message—clear, useful, exciting
 - Constructed in a logical manner
 - Reviewers can easily grasp significance
- Use the context-content-conclusion (C-C-C) scheme
 - Context (why)
 - Content
 - Conclusion (so what)

Introduction

- Brief background
 - Set the scene
- Not an exhaustive literature review
 - Directly relates to study
 - What reader needs to know to understand the study question and why it matters



Rule #3

- Communicate **why the paper matters** in the introduction

Introduction

- A good introduction should answer the following questions:
 - What is the problem to be solved?
 - Gap in current knowledge or methods
 - Why is the problem hard?
 - Why is it important?
 - Are there any existing solutions?
 - What do you hope to achieve?
- Pretend that no one reads the abstract
 - Introduction is actual start of the paper



Introduction

- End of introduction should clearly state your hypothesis/objective and how you addressed the question experimentally
- Hypothesis and objective
 - We hypothesized that....
 - We solved this problem by.....
 - Our purpose was.....
 - The objective of our study was...

Abstract

- Must be understood without reading the full text
- Determine the type of abstract required for your selected journal
 - Structured or unstructured
- Aim and scope of the study
- Methods used, key findings, implications for the field
- Major take home messages (important results and conclusions)

- Think of ratio of abstracts you read to full papers

Rule #4

- **Tell a complete story in the abstract**

Title

- First thing the reader sees
 - “You don’t get a second chance to make a first impression”
- Think of the ratio of titles you read to papers you read
 - Quality of title will determine if reader will invest time in reading the abstract
- Be concise
 - Avoid “A study of”, “An investigation of”, “Observations on”
- Summarize the main theme
- Be clear and informative
- Know the journal and the target audience
- Don’t overextend on your title—it sets expectations and defines scope
 - Reviewers will be looking for you to meet expectations

Mensh and Kording. 2017. PLOS Computational Biology. Paiva et al. 2012. Clinics. 67: 509-313.

Rule #5

- Communicate the **central contribution** of your paper in the title

(The title is the ultimate refinement of your message)

Rule #6

- Write for human beings who do not know your work
- Define technical terms
- Avoid abbreviations and acronyms when possible
- Remember—you think about your research topic all the time—your reader may not

Rule #7

- **Allocate your efforts according to the importance of each section**
- Start with an outline!
 - Plan the text
 - Starting point--write an informal sentence for each paragraph
- Often underestimated, very important: abstract, figures

Follow Instructions

- Formatting
- Sections
- Referencing
- Line numbers
- Page numbers
- Figure/Table numbering

Proofread!
Have someone else proofread!
Run the spell check one last time
before you submit!



Before you submit--authors

- Communicate with anyone who might perceive they contributed to the paper; either list as an author or discuss why they are not included
- Make sure ALL authors have been notified about the submission, have been given a chance to review the submission, and have access to the version of the paper that is being submitted

Manuscript Preparation

- Well designed study (overall idea)
 - Interesting
 - Important
 - Timely
- Execution of work
 - Perform appropriate methods and analysis
 - Statistics
- Presentation of the work
 - Careful manuscript preparation



Manuscript submission, peer review, and responding to reviewers

The How: Manuscript Processing

Initial Quality Control

Manuscript assigned to an editor

Assigned to reviewers

Returned to editor for decision

Initial Decisions

Initial Quality Control

- Changes required?



Manuscript assigned to an editor

- Editorial rejection?
- Transfer to another journal?
- Send out for review?

Editorial Rejection

- Two (or more) editors agree that paper is very unlikely to be accepted
- Out of scope, lacks significance, lacks quality
- Rapid, allows authors to submit to another journal

The How: Manuscript Processing

Initial Quality Control

Manuscript assigned to an editor

Assigned to reviewers

The Peer Review Process

- Editor assigns reviewers with relevant expertise
 - Usually 3 to 4 reviewers to get 2 to 3 reviews
 - May balance expertise of reviewers
- Most reviews by Editorial Board members
- Editor may or may not use author recommended reviewers

Peer Review

- Elements Evaluated
 - Importance
 - Quality
 - Appropriate statistics
 - Novelty
 - Well written
 - Conclusions justified
 - Importance
- Format of Evaluation
 - Summary
 - Major comments
 - Minor comments
 - Comments on supplemental material
 - Overall recommendation
 - Typically includes confidential comments to editor

The How: Manuscript Processing

Assigned to reviewers

Returned to editor for decision

- Reject?
- Revise (Re-review?)
- Accept

Editor Decision

- Editor uses the reviews and manuscript to form opinion
 - The editor does not just count votes!
- The editor issues a decision
 - Accept as submitted
 - **Accept with revision**
 - **Modify, re-review required**
 - Reject

First the Bad News: Dealing with Rejection

- Rejection after review
 - Editor has considered reviews and determined that paper lacks significance or quality (rarely, it is out of scope)
 - Author gets reviews, useful in determining next steps

Handling Rejection

- Decide whether the reviewers are right.... and if you think it was a close call
- If you can address the reasons for rejection, email the editor (don't call)
 - Address only the main reason(s) for rejection
 - Say that the other comments can be readily addressed
- Editor will discuss with Editor-in-Chief, then reply to you

If the paper is rejected....

- Do not send the paper to a second journal without attempting to address the concerns of the original reviewers
 - The same flaws that the original reviewers identified are likely to be detected by the new reviewers
 - Worse--second journal might send the paper to the same reviewers who first evaluated your paper

Reading the Reviews

- Take some time to read over the reviews
- Do not respond immediately
- Get mad..... And then get over it

- Take time to think, “digest”, discuss with collaborators, and plan next steps
- You know the work better than anyone else can; the re-vision and revision are your responsibility
 - Be sure that the most groundbreaking and valuable aspects are communicated with clarity, accuracy, and precision

Now the Good News: Revisions

- The paper can be made acceptable with specific changes

- You must provide a revised manuscript, rebuttal letter and cover letter

- Typically has a deadline (60 days at JCM)
 - Contact editor in advance of deadline if an extension is needed
 - Extensions given to perform work or for personal reasons

Revisions: The Manuscript

- Make all reasonable, practical changes to manuscript
- Avoid making changes that were not requested
- Do not make changes that will reduce quality or clarity
- When responding to reviewers, use brevity/word count to your advantage
- If reviewers make contradictory recommendations on a significant issue, editor should clarify
 - Seek clarification if needed

Rule #8

- Respond to feedback
 - Repair, reduce, revise, and optimize your story

Revision: The Rebuttal Letter

- The rebuttal letter can be as important to the editor's decision as the manuscript revision
- Take the time to write a letter that will convince the editor that you have made all needed and practical changes
- Make it as easy as possible for the editor to understand your responses and modifications!

Revision: The Rebuttal Letter—Dos

- List reviewers' comments, in order, follow each with response
- Emphasize any positive comments from reviewers
- If you make a suggested change, say you agree and indicate the line number(s) of the change
- If you do not make a suggested change, explain why not (and say whether you are willing)
- Respond to **all instructions from the editor**
- Be grateful for the editor's and reviewers' time
- Be polite

Revision: The Rebuttal Letter—Dos

- Be polite



How Reviewer #2
was raised.....



*“Son, if you can’t say something nice, say something
clever but devastating.”*

https://www.newyorker.com/culture/2017-in-review/instagrams-favorite-new-yorker-cartoons-of-2017?mbid=social_twitter

Revision: The Rebuttal Letter—Dos

- Be polite
- Expressing more humility and gratitude is wiser than what you might really want to say
- Have someone give you feedback on your letter



Revision: The Rebuttal Letter—Don'ts

- Question the Reviewers' or Editor's expertise or motives
- Leave out any Reviewer's comments
- Fail to respond to instructions from the editor
- Be impolite

Accepted! Now the Proofs!

- Make sure to check all publisher's queries and respond if needed

Author Queries

AUTHOR PLEASE ANSWER ALL QUERIES

2

AQF—In Table 2, please confirm that the numbers in parentheses in the left column are reference numbers or clarify the descriptions. Also, carefully confirm the units for all values. Different types of values should not be mixed within a table; therefore, all cost information was moved into a footnotes. Please confirm all changes.

AQG—Please carefully confirm the units for all values.

AQH—In Table 3, please clarify the denominator for the values in the column “negative tests cancelled”; the denominator values do not match the “no. negative” values provided (or any other types of values provided in the table).

AQI—In Table 4, please confirm the changes in the descriptions of % values (% of what group?). In particular, confirm the changes for % values for “no. of NAAT assays requested in 2014,” which include negative values.

AQJ—Please confirm Acknowledgments. Do the contributions from the hospital laboratories need to be specified?

AQK—Please provide the doi number in ref. 21, if available.

Accepted! Now the Proofs!

- Make minor clarifications or corrections
- Make sure you can stand by your paper
 - If significant changes are needed, contact the journal
 - Might require input from editor, perhaps resubmission or re-review

Publication Ethics

- Publication issues related to research misconduct

Research misconduct is “fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in the reporting of research results”

The Office of Research Integrity, US Department of Health and Human Services

Publication Ethics: Potential Issues

- Occasional issues with
 - Image duplications
 - Authorship disputes
 - Human subjects/IRB
 - Duplicate publications
 - Undisclosed resubmissions
 - Conflict of interest

Addressing Ethical Concerns

- Take the time to understand the journal policy and relevant guidelines
- Address the issue frankly and openly with the editor or journal representative
- Stay calm: ethics concerns do not always lead to rejection of the paper or other consequences

Consequences of Publications Ethics Breaches

- The Ethics Panel can take corrective actions, including sanction of authors from publishing in ASM journals
- The investigator's institution can be notified if fraud or research misconduct is suspected

Publication Ethics--Key Points

- Work with editors in a collaborative and professional manner to increase the chance of publication
- Remember: the editor's main concern is whether the paper is or can be acceptable for publication

Predatory Journals

- Open access, fee-for-publication journals
 - Lack peer review
 - Lack of quality control and adherence to professional standards
 - Often solicit manuscripts via repeated e-mail invitations (spam)



* External Email - Caution *

Dear Carey-Ann D Burnham,

Greetings!!

I am writing to follow up on the earlier missive.

Based on your previous publication we sent a proposal regarding manuscript contribution to the journal's upcoming issue of **volume 5 issue 3**. But we didn't receive any response from you.

We are in shortfall of one article for the successful release of 2020 Issue. We invite to submit a manuscript related to your current research or any type of article towards the release of the upcoming issue. The submission received will be eligible for 50% or more discount in publication charges.

Please contact editor.nrd@oatext.com to submit a paper for this journal on or before 30 November 2020.

The manuscripts can be of research/ review/ case report/ clinical image/ short communication.

I trust I shall hear from you soon.

Best Regards,

Alyssa Amadio

On behalf of

Prof. Yohei Miyamoto | Editor-in-Chief

Nephrology and Renal Diseases

United Kingdom

<https://www.oatext.com/Neohroloev-and-Renal-Diseases-NRD.oho>

Predatory Journals

- Open access, fee-for-publication journals
 - Lack peer review
 - Lack of quality control and adherence to professional standards
 - Often solicit manuscripts via repeated e-mail invitations (spam)
- Clues to predatory journal¹
 - Homepage with spelling errors
 - Promote bogus impact metric (example: Index Copernicus Value)
 - Editors/editorial board with unverified affiliation
 - Scope includes biomedical and non-biomedical topics

¹Shamseer et al. 2017. BMC Medicine. 15:28.

Preprints

- Full articles made publicly available before going through peer review
- <https://www.biorxiv.org/> bioRxiv
- <https://www.medrxiv.org/> medRxiv
- Pros: speed of publication, open access, accelerate information dissemination, potential to “stake a claim”
- Cons: not peer reviewed, potential for dissemination of poor-quality work, may limit where the work can ultimately be published
- Increasing frequency in era of COVID-19

Impact Factor

- Measure of the frequency with which the “average article” in a journal has been cited in a particular year or period
- Calculated by dividing the number of citations in the reported year by the total number of articles published in the two previous years.
 - Impact Factor of 2.5 means that, on average, the articles published one or two years ago have been cited 2.5 times
- Journal-level metric, not an article-level metric
 - Use to determine the impact of a single article is statistically flawed since citation distribution is skewed for all journals
 - Small number of articles driving the vast majority of citations

<https://clarivate.com/webofsciencelibrary/essays/impact-factor/>

<https://mbio.asm.org/content/7/4/e01150-16>

h-Index

- Maximum value of h such that the given author/journal has published h papers that have each been cited at least h times
 - Does not account for authorship position
 - Cannot decrease; imperfect measure of recent scientific achievement
- h -index combines publication and citation counts
- Calculators (Google Scholar, Scopus, Web of Science)
- Noted in letters of recommendation, evaluation, etc.

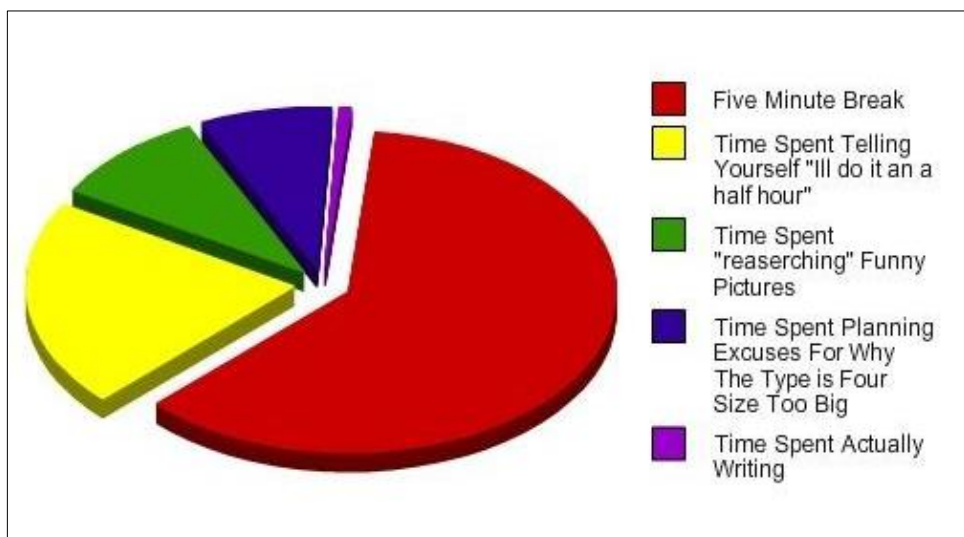
Writing: Just do it!

- Many competing priorities in a day
- Like any other skill, takes practice
 - Quality will improve with practice
- “1 hour workday”
 - Write for 1 hour first thing each morning
- Make consistent writing a habit
 - More efficient when you keep up your momentum



McDonnell. 2016. Science. 353: 718.
 Colon-Franco et al. 2017. Clin Chem. DOI: 10.1373/clinchem.2017.280313.

Time Spent Paper Writing....



Writing: Just do it!

| Obstacle | Solution |
|--------------------|--|
| Not enough time | Schedule an appointment with yourself Conference call with "Dr. MS" Set deadlines for yourself |
| Need encouragement | Talk about your writing with colleagues.... ensures that you will be asked questions about your progress |

Writing: Just do it!

| Obstacle | Solution |
|--------------------|--|
| Not enough time | Schedule an appointment with yourself Conference call with "Dr. MS" Set deadlines for yourself |
| Need encouragement | Talk about your writing with colleagues.... ensures that you will be asked questions about your progress |
| Writer's block | Try dictating your ideas, then shape them into text |
| Task too big | Start small Review the literature Break the project down into mini milestones |

Summary--Follow the Rules!

| Rule | Sign it is being violated |
|---|--|
| Abstract: Compact and complete summary of the paper | Readers cannot give an “elevator pitch” after reading it |
| Introduction: Clarifies why the paper matters | Readers show little interest in the paper |

Mensh and Kording. 2017. PLOS Computational Biology.

Summary--Follow the Rules!

| Rule | Sign it is being violated |
|---|--|
| Abstract: Compact and complete summary of the paper | Readers cannot give an “elevator pitch” after reading it |
| Introduction: Clarifies why the paper matters | Readers show little interest in the paper |
| Results: Why the conclusion is justified | Readers do not agree with your conclusion |
| Discussion: Preempt criticism, give future impact | Readers left with unanswered criticisms and/or questions |

Mensh and Kording. 2017. PLOS Computational Biology.

Summary--Follow the Rules!

| Rule | Sign it is being violated |
|--|--|
| Focus on one big idea | Readers cannot give a 1 sentence summary |
| Write for human beings who do not know your work | Readers do not “get” the paper |

Mensh and Kording. 2017. PLOS Computational Biology.

Summary--Follow the Rules!

| Rule | Sign it is being violated |
|--|---|
| Focus on one big idea | Readers cannot give a 1 sentence summary |
| Write for human beings who do not know your work | Readers do not “get” the paper |
| Iterate the story | The paper is rejected by readers, editors, or reviewers |

Mensh and Kording. 2017. PLOS Computational Biology.

Thank you for your attention!

- Questions?

