

Abstracts 101: the nuts and bolts of writing an effective abstract

CVRI Workshops, 2021

Gagan Bajaj, PhD

Research Development

Office of the Vice President for Research



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Objectives

- Purpose of an abstract
- Types of abstracts
- What to include
 - *...and what to leave out*
- Conference abstracts
 - Dissecting a conference abstract
- When to write the abstract
 - *...and the process*



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*“A good abstract is like a **postcard-sized reprint** of a famous work of art: It captures and illustrates the entire research picture without leaving the reader puzzled or confused.”*



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Abstract Killers: How Not to Kill a Grant Application, Part Two

<https://www.science.org/content/article/abstract-killers-how-not-kill-grant-application-part-two>

Purpose of an Abstract

- After the title, the abstract is the second-most-read part of your article.
- It can expedite peer review for your manuscript
 - Editors use your abstract when they first assess your article.
 - Prospective reviewers see it when they decide whether to accept an invitation to review.
- Conference abstracts are even higher stakes!
 - It can mean the difference between a poster and an oral presentation.
- First introduction to your work for your peers. PubMed and Google Scholar and other databases.
 - Other researchers will use it to evaluate your work for inclusion in systematic reviews and meta-analysis.
- The abstract influences keyword search results.
- It should be a concise **stand-alone** piece that accurately represents your research.



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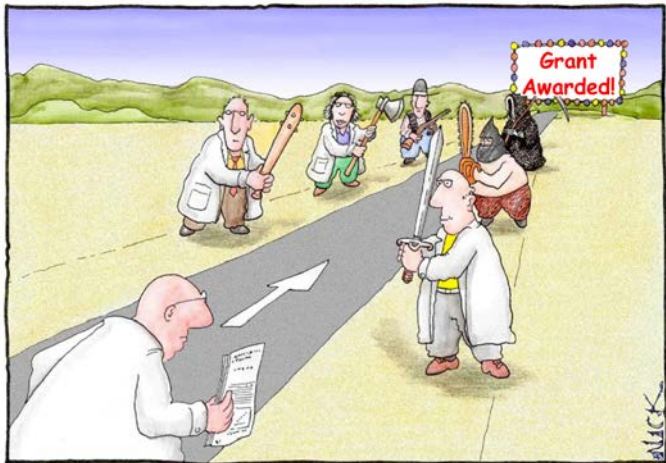
Types of abstracts: intended audience

Grant abstracts

- Forward looking, proposed work
- Persuasive (*ahem!*)
- Hypothesis-driven or needs based
- Aligned with sponsor goals
- Goal-oriented

Article and Conference abstracts

- Summarize work that is already completed
- Informative
- Conclusion-driven
- Scholarly pursuit
- Story-oriented



Most scientists regarded the new streamlined peer-review process as "quite an improvement."

Journey of a Manuscript through Peer Review

The manuscript states that this apple is filled with more nutrients than any other fruit.



Reviewer 1: You should have used peaches instead.



Reviewer 2: This is not an apple, it is a pear.



Reviewer 3: I want this apple to make calls too!



Types of abstracts: what to include

Grant abstracts

- What do you intend to do?
- Why is the work important?
- What has already been done?
 - What are the *gaps*
- How are you going to do the work?

Article and Conference abstracts

- What is currently known?
- What is the study and why did you do it?
- Methods – What did you do?
- Results – What did you find?
- Conclusions – What did you conclude?



Types of abstracts: presentation

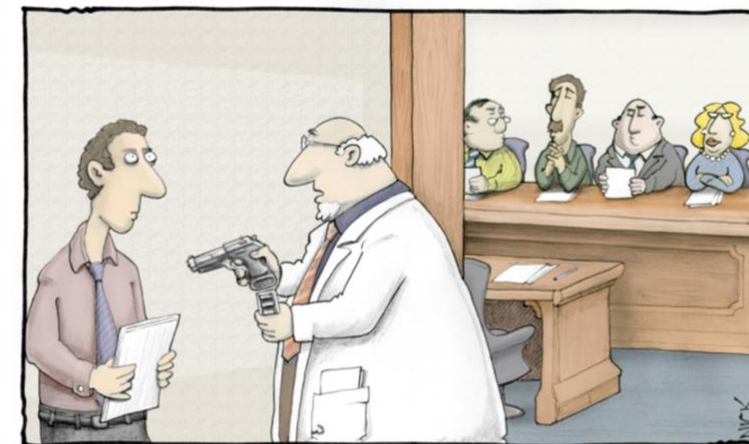
- Structured
- Unstructured



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The Dos

- Check guidelines for word and character limits
- Write for your audience.
- Highlight key results, conclusions, and take-home messages.
- Write your paper first, then create the abstract as a summary.
- Write from the bottom up (results and conclusions first, then methods and intro)
- Read guidelines (structured vs unstructured? Required subheadings?)
- Pepper with keywords or phrases with indexing databases in mind.
- Spelling and grammatical errors.
- Complete picture (but keep it concise).



REVIEWERS
"Change of plan. The policymakers say they're only willing to listen to the science if we can present our ideas in simple bullet-point format."



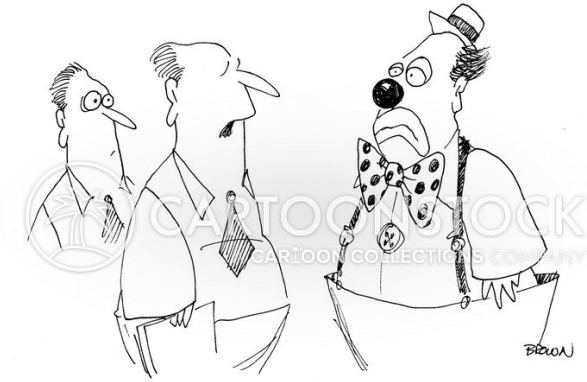
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How to Write an Abstract

<https://plos.org/resource/how-to-write-a-great-abstract/>

..and the *Don'ts*

- Sensationalize your research.
- Speculate about where this research might lead in the future.
- Use unnecessary or lesser-known abbreviations or acronyms
- Repeat yourself unnecessarily, eg. “Methods: We used X technique. Results: Using X technique, we found...”
- Contradict anything in the rest of your manuscript.
- Include content that isn't also covered in the main manuscript.
- Include citations or references.



“When we said to be creative with your grant proposal presentation, this is not what was meant.”



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Conference Abstracts

1. Write a strong title.

- Consider stating your main goal in the title
- Keep it short
- Include essential keywords
- Consider posing it as a question.

2. Familiarize the reader with the background.

- Bring reader up to speed
- Identify gaps
- Rework the hypothesis or conclusion as a gap

3. Explain what you set out to investigate.

- Clearly and concisely specify the gap in knowledge that you aim to fill.

4. Report the main findings.

- main results and
- briefly mention the methods and experimental setup/model.

5. Conclusions and future perspectives.

- briefly discuss possible conclusions with the data you already have.
- do not over-speculate!
- Reiterate importance of the work



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Writing a great abstract: tips from an Editor

<https://febs.onlinelibrary.wiley.com/doi/full/10.1002/1873-3468.13304>

ABSTRACT

Sam Short, LCOM '23
D-Dimer and Death in COVID-19

Introduction: Emerging data suggest coagulation activation may be a key mechanism for acute organ injury and death in critically ill patients with COVID-19. Understanding the clinical implications of abnormal hemostasis biomarkers independent of other risk factors remains an important knowledge gap, especially in the context of ongoing clinical trials of therapeutic anticoagulation. Elevated plasma D-dimer concentration, a biomarker of coagulation activation, has been described in patients with severe COVID-19, but the association between D-dimer and mortality has not been rigorously studied.

Hypothesis: Higher plasma D-dimer concentrations are independently associated with a greater risk of death in critically ill patients with COVID-19.

Methods: We conducted a multicenter cohort study of critically ill adults with COVID-19 admitted to ICUs at 68 US hospitals between March 4 and May 25, 2020. The primary exposure was the highest normalized D-dimer level (assessed in four categories: <2x, 2-3.9x, 4-7.9x, and $\geq 8x$ the upper limit of normal) on ICU day one or two. The primary end point was 28-day mortality. Multivariable logistic regression was used to adjust for confounders.

Results: Among 3418 patients (63.1% male; median age 62 [IQR, 52-71] years), 3352 (93.6%) had a D-dimer concentration above the upper limit of normal. A total of 1180 patients (34.5%) died within 28 days. Patients in the highest compared to lowest D-dimer category had a 3.11-fold higher odds of death (95% CI, 2.56-3.77) in univariate analyses (Figure), decreasing to a 1.81-fold increased odd (95% CI 1.43-2.28) after multivariable adjustment for demographics, comorbidities, and illness severity. Further adjustment for therapeutic anticoagulation did not meaningfully attenuate the relationship between D-dimer and mortality (odds ratio, 1.73; 95% CI, 1.36-2.19).

Conclusions: In a large multicenter study of critically ill patients with COVID-19, higher D-dimer levels were independently associated with ~2 fold greater odds of death.



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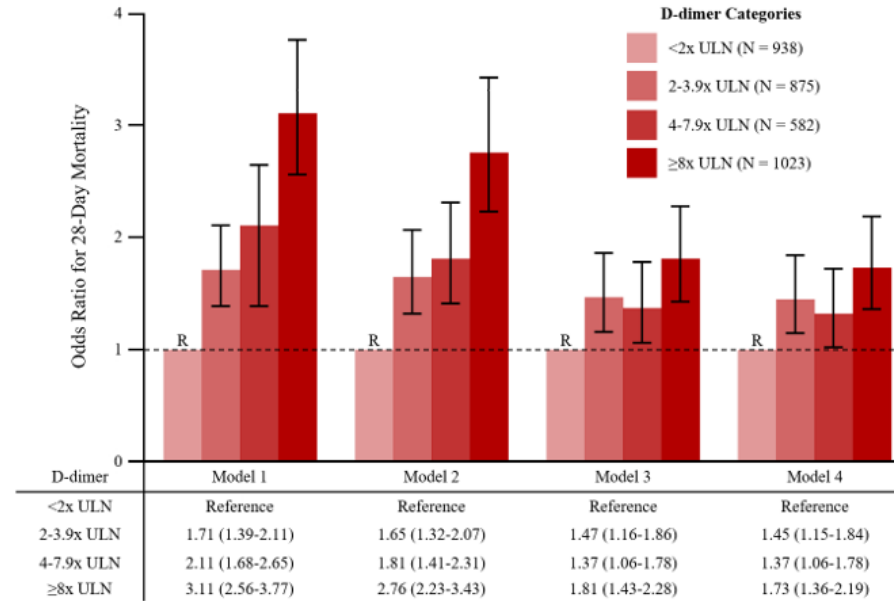
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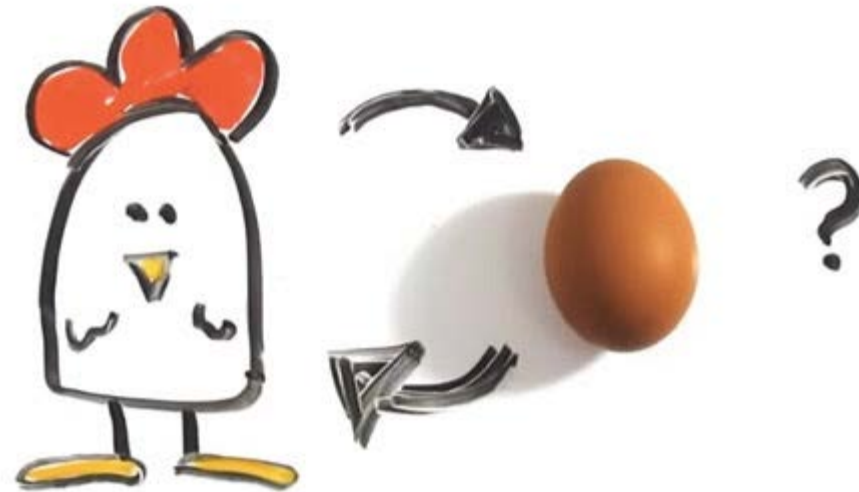
Figure: Logistic regression models for 28-day mortality by D-dimer category.



Model 1 is unadjusted. Model 2 is adjusted for age, sex, race, body mass index, diabetes mellitus, hypertension, coronary artery disease, chronic obstructive pulmonary disease, current smoking status, and active malignancy. Model 3 is further adjusted for receipt of invasive mechanical ventilation, shock, and the renal, coagulation, and liver components of the SOFA score, each assessed within the first two days following ICU admission. Model 4 is further adjusted for home anticoagulation as well as receipt of therapeutic anticoagulation, aspirin, and steroids in the first two days following ICU admission. ULN, upper limit of normal.



When should I write the abstract?



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The process

- **BEFORE YOU START:** Re-read the entire manuscript/grant. Use a highlighter. For conference abstracts, lay out each figure and associated results.
- **STRUCTURE:** Build a structured outline, regardless of whether the abstract is structured or not.
- **START:** Either start with a copy of the entire manuscript, or a concept paper or a specific aims page. Turn on track changes and cut, cut, cut....
- **EDIT:** "You might be making an interesting point, but it might not be relevant".
 - Learning to let go of extraneous words is always the hardest.
 - Start with the relatively “dry”/ “reporting” type of language: eg, the results and conclusion.
 - Use the remaining word or character limit to write your introduction.
- *Mad-libs exercise to follow...*



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Questions??



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