Tips for critical review of scientific products

10TH SEPTEMBER, 2020

Why critical review is important

Ensure that CDC/PEPFAR-supported work is well-presented

Best opportunity to highlight the important work PEPFAR partners are doing

Honing skills and experience in critical reviews can improve your own writing and scientific thought process

Outline

Objectives

Steps and tips for critical review

Practice together

Objectives

1. Share a process and tips for doing critical reviews—practice some of these together
2. Build confidence in your abilities in review (and writing)

Why start with abstracts?

Abstracts are like mini manuscripts

- Organization
- Content
- Key messages

Understanding what makes a good abstract as a critical reviewer will help you with review of manuscripts and your own writing process

A good abstract (manuscript):

Leaves the reader with clear understanding of:

- what was done (methods)
- what was found (results)
- why it is important (intro)
- key take-away message (conclusion)

Flows smoothly from section to section

Uses clear, efficient language

Makes the reader want to hear/read/see more

Other thoughts?

3 Major levels of review

1. Bird's eye view (focus on big picture)
2. Zooming in (focus on content and study details)
3. Nitty gritties (focus on language, grammar, etc.)

Level 1: Bird's eye view

Read the entire abstract at high level once or twice (3–5 min)

Focus on the forest (not the trees)

- After a quick read, do you feel you have a general sense of what the authors did and what they found?
- General organization and flow – is this a smooth or bumpy read?
- Are sections appropriately balanced?
- Any major red flags?
- Is word count at or around limit?

Helps you begin to formulate general comments and focus your next level of review

Tip:

- Avoid getting hung up on details, grammar/language at this point—if study details or nitty gritty issues jump out, just flag with a blank or brief reviewer note as reminder to go back

Level 2: Zoom in to study details (1/2)

Introduction:

- ✓Defines the specific problem, question, issue the study seeks to address
- ✓ Conveys why the study is important/what value it adds
- ✓Explains the purpose/objective of the study

Methods:

- ✓Describes study design/approach
- ✓Defines person, place and time period over which study was conducted
- ✓Describes the type and source of data collected
- ✓Describes statistical methods +/- software used to analyze the data
- ✓Analytic methods described are appropriate / scientifically sound

***Tips*:**

- If introduction is weak, consider starting detailed review at Methods
- Review the title last
- Reach out to SI team for targeted review of statistical methods if you are unsure

Level 2: Zoom in to study details (2/2)

Results:

- ✓ Presents findings from methods described
- ✓ Describes the study sample
  - ✓ Cascade from study population → eligible → included in analysis
  - ✓ Sample characteristics (e.g. descriptive statistics of age, sex)
- ✓ Presents results using appropriate units and measures of association (e.g. OR, HR, RR); presents corresponding p-values and/or confidence intervals as appropriate
- ✓ Strikes a comfortable balance of providing enough information to convey key findings without overwhelming the reader or consuming word count

Conclusions:

- ✓ Presents one or more key take-home messages
- ✓ EVERY statement/recommendation is directly supported by a finding in the results section
- ✓ Interpretation of results is scientifically sound
- ✓ Does not present new data/findings

Tables / Figures

Titles should describe person, place, time—should “stand alone”

Should only be included if add value and support key message

Tables

- ✓Rows and columns clearly labeled
- ✓Numbers add up
- ✓Use consistent number of decimals

Figures

- ✓X and Y axis accurately labeled (with units if applicable)
- ✓Clear legend labels (avoid jargon, acronyms)
- ✓Font/data labels are legible

Level 3. Nitty gritties

- ✓Clear, efficient language
- ✓Consistent punctuation
- ✓Complete sentences
- ✓Acronyms defined
- ✓Avoids jargon (e.g. HTS_Pos)
- ✓No spelling or grammatical errors

Tips:

- Consider reserving this level of review for last
- If major issues with big-picture/study details, then address those first

Tips for sharing feedback

- ✓Provide clear and specific reviewer notes

  "Meaning here is unclear" vs. "Please clarify whether you mean laboratory-confirmed or self-reported HIV status here"

- ✓Give examples to help clarify what you are looking for

  "Please provide additional detail on variables collected (e.g. demographic, clinical, facility-level)"

- ✓Suggested track changes can be helpful and avoid unnecessary back-and-forth

- ✓Summarize key feedback in an email / summary reviewer note

  "This is a well-written, topical abstract. Key areas for improvement are:
  1. Better define the study objective in the introduction
  2. Clearly define inclusion criteria in methods section
  3. Based on finding "X", consider adding a recommendation around "Y" to conclusion section"

Practice Example

Title: “High Incidence of HBV Infection in HIV-coninfected Patients Accessing ART Care”

Authors: Nokukhanya Msomi[1], Kogieleum Naidoo[2], Nonhlanhla Yende-Zuma[2], Kerusha Govender[1], Nesri Padayatchi[2], Jeome Singh[3], Salim S. Abdool Karim[2], Quarraisha Abdool Karim[2], Koleka Mlisana[4]

Link: https://www.croiconference.org/abstract/high-incidence-of-hbv-infection-in-hiv-coinfected-patients-accessing-art-care/

Step 1: Bird's eye review

Read the entire abstract at high level once or twice (3–5 min)

Focus on the forest (not the trees):

- After a quick read, do you feel you have a general sense of what the authors did and what they found?
- General organization and flow – is this a smooth or bumpy read?
- Are sections reasonably balanced?
- Any major red flags?
- Is word count at or around limit? (CROI limit = 2,500 characters with spaces)

Step 2: Zoom in to study details

Review section by section for:

1. Critical elements (checklist on previous slides)
2. Soundness of scientific methods, reasoning, interpretation
3. Errors

Step 3. Nitty gritties

Review finer details:

- ✓Clear, efficient language
- ✓Consistent punctuation
- ✓Complete sentences
- ✓Acronyms defined
- ✓Avoids jargon (e.g. HTS_Pos)
- ✓No spelling or grammatical errors

Step 4: Share feedback

- ✓Summarize key feedback in an email / summary reviewer note

  “This is a well-written, topical abstract. Key areas for improvement are:
  1. Better define the study objective in the introduction
  2. Clearly define inclusion criteria in methods section
  3. Based on finding “X”, consider adding a recommendation around “Y” to conclusion section”

Ideas for next session

1. More practice with abstract review (and/or writing?)
2. Reviewing tables and figures
3. Reviewing manuscripts
4. Journal article review?

Asanteni sana!

I will reach out to you all for feedback on additional support needed / topics of interest