CHEST Postgraduate Education Corner

MEDICAL WRITING TIPS

Plagiarism*

Avoiding the Peril in Scientific Writing

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What Is Plagiarism?

Plagiarism is defined as "using someone else's words, ideas or results without attribution."[1] Plagiarism is unethical in scientific writing and qualifies as a form of scientific misconduct.[1] To be considered an infraction, the action must be a "serious deviation from accepted practices of the relevant research community" and "committed intentionally, knowingly or recklessly" and "proven by a preponderance of evidence."[1] The Office of Research Integrity, US Department of Health and Human Services reports that approximately 25% of the total allegations received concern plagiarism, and that these allegations typically represent misunderstandings of what exactly constitutes plagiarism and accurate citation procedures.[2] Appropriate referencing is important in scientific writing and was a topic covered in *CHEST* Medical Writing Tips.[3]

Plagiarism can occur in various forms: plagiarism of ideas and plagiarism of text. Self-plagiarism, and redundant and duplicate publications also constitute forms of plagiarism and are often not recognized as such by authors. The literature[1–10] on self-plagiarism identifies three major problematic areas: (1) the publication of one article that overlaps substantially with another article published elsewhere, typically without acknowledgment; (2) the partitioning of a large study, which could have been reported in a single article into smaller published articles/studies; this practice is also known as *salami science* or *salami slicing*; and (3) the potential for copyright infringement of previously published material that can occur with duplicate or redundant publications.

Is Plagiarism Really a Problem?

Often, the terms *redundant* and *duplicate* publication are used interchangeably and refer to the practice of substantial overlapping of text and/or data with another article(s) without full cross-referencing in that they share the same hypothesis, data, discussion points, or conclusions.[4] This is a common issue in the scientific literature. Bloemenkamp et al[11] reported that 20% of articles published in a Dutch general medicine journal were also published elsewhere. Similarly, Schein and Paladugu[5] reported that one in six original articles published in three leading surgical journals represented a form of redundant publications.

There are several patterns noted to duplicate or redundant publications.[5] There can be overlap with authors (with or without the same authors and order of authorship), study outcomes (with or without the same outcomes), or study sample (with or without the same study sample). The most consistent pattern is the lack of cross-referencing. Specific examples include the following:

- Presenting control data that appeared in an earlier publication;
- Using Tables or Figures published in an earlier article in subsequent publications;
- Publishing similar articles that deal with subgroups of data previously analyzed, discussed, and published as a larger group;

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- Publishing the data in two articles with one article written with a clinical focus and the other written with a basic science perspective;
- Publishing similar articles with different lead authors submitted to journals of the first author's home country (local-foreign journal).

Duplicate/redundant publication is most certainly improper when done deceptively. Most agree that if the editors, peer reviewers, and end users of the information are informed of the overlap, appropriate decisions can be made.[6–9] However, covert submission and publication of previously published material are deceiving to those reading and applying the information contained in the article. There are three major problems with this practice: deception and ethical issues, wasting of resources, and a negative impact on clinical decision making and future research. Editors and readers of original research reports published in peer-reviewed journals want assurance that new and important information is presented. Otherwise, readers may incorrectly conclude that new information is being presented, leading to a skewing of their evidence base (because readers assume that they are reading two different studies). The practice of publishing duplicate or redundant articles has the potential to tarnish a journal's reputation, reduce its ability to attract good articles, and may also represent infringement of copyright law. Duplicate publication also wastes resources in terms of time, paper, and electronic databases as well as inflating an already overwhelming volume of literature. Most importantly, duplicate publications can affect clinical decision making. Tramer et al[12] performed a systematic review and observed that 17% of the reports were duplicates, 28% of patient data were duplicates, and that as a result there was a 23% overestimation of effectiveness. Duplicate reporting can also skew the evidence base of basic research; it exaggerates the significance of the work in a qualitative manner and may skew the reader's perceived validity and reliability of the methods and results.

How Can I Avoid It?

For the most part, if an article has been peer reviewed and published, republication is unacceptable and is viewed as redundant (duplicate) publication. However, there are times when exceptions to this general rule can be made, given proper disclosure to editors and readers. These include the following[4,6–9]:

- Prior publication in abstract form only (generally $\leq$ 400 words);
- A study is too large and/or complex to be reported in one article. A proposed rule of thumb is an expansion of the original article by 50%.[8] However, each article should address a different distinct and important question;
- Competing submissions of coworkers who disagree on analysis and interpretation of the same study;
- Articles from different groups of authors who have analyzed the same data. This is often the case with very large administrative data sets or large national surveys sponsored by government agencies;
- Republication of an article in another language with cross-referencing. There are mixed thoughts on the acceptability of this practice. Typically the two (or more) journals need to work together and often permission to publish is needed. The International Council of Medical Journal Editors[9] has published criteria for this practice. While publication of data in an uncommon language need not necessarily prevent it being presented in English, secondary publication should follow the International Council of Medical Journal Editors guideline in the uniform requirements.

Recognizing the importance of education in the responsible conduct of research, the Office of Research Integrity sponsored the creation of instructional resources.[10] Using this resource in combination with additional published material, there are 12 strategies described below for avoiding plagiarism that represent a thorough set of strategies based on available evidence and current thinking.[3,6–10]

Strategies To Avoid Plagiarism

1. Read the instructions for authors provided by the journal.
2. Always acknowledge the contributions of others and the source of ideas and words, regardless of whether paraphrased or summarized.
3. Use of verbatim text/material must be enclosed in quotation marks.
4. Acknowledge sources used in the writing.
5. When paraphrasing, understand the material completely and use your own words.
6. When in doubt about whether or not the concept or fact is common knowledge, reference it.
7. Make sure to reference and cite references accurately.
8. If the results of a single complex study are best presented as a cohesive whole, they should not be sliced into multiple separate articles.
9. When submitting a manuscript for publication containing research questions/hypotheses, methods, data, discussion points, or conclusions that have

already been published or disseminated in a significant manner (such as previously published as an article in a separate journal or a report posted on the Internet), alert the editors and readers. Editors should be informed in the cover letter, and readers should be alerted by highlighting and citing the earlier published work.

10. When submitting a manuscript for potential publication, if there are any doubts or uncertainty about duplication or redundancy of manuscripts originating from the same study, the authors should alert the editors of the nature of the overlap and enclose the other manuscripts (published, in press/submitted, unpublished) that might be part of the manuscript under consideration. Augmenting old data that was previously published with new additional data and presenting it as a new study can be an ethical breach and should be fully disclosed to the editors.

11. Write effective cover letters to the editor, especially regarding the potential for overlap in publication. The cover letter should detail the nature of the overlap and previous dissemination and ask for advice on the handling of the matter.

12. Become familiar with the basic elements of copyright law.

Take Home Messages

Plagiarism poses a threat to the integrity of the scientific community. It is one of the most common offenses and often is the result of a lack of knowledge and understanding of the concepts. A nonthreatening culture that encourages open discussion of areas of uncertainty in research and publication is essential. The responsibility for maintaining high standards of peer-reviewed published articles is a shared one, involving journal editors and reviewers, heads of university departments, professional societies, and individual scientists and authors. Authors need to continue their own education on proper publication practices. All journals publish guidelines for authors, and several resources exist to assist scientists to publish their work according to best publishing practices.[1–4,6–10] Redundant or duplicate publishing and salami slicing represent a form of self-plagiarism. This is a topic frequently discussed in the literature regarding research ethics, misconduct, and publication.

There are three main take home messages: (1) the main publication should contain as many aspects of the study as possible; (2) if in doubt about a potential overlap, inform the editors and ask for direction; and (3) always reference the original work. Strategies presented in this article represent a summary of the literature on the subject of plagiarism and its ramifications and should help authors avoid this common pitfall in scientific writing.

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