The goals of scientific publishing – to advance our knowledge of disease mechanisms and treatments – sometimes come into conflict with the professional and personal benefits of publishing. Authors may feel pressure to publish as many scientific articles as possible to advance their careers and reputations. It is the role of journal editors to ensure that scientific articles minimize this conflict by ensuring that each provides a "substantial new contribution to their field."[1]

In this article, we present the second part of an ongoing series focused on ethical principles in publication in the field of gastroenterological endoscopy [2, 3]. We review what constitutes duplicate publication, "salami slicing," and ethical concerns in large multicenter retrospective case series.

Duplicate publication

Duplicate publication is defined by the International Committee on Publication Ethics (COPE) as "Major overlap/redundancy (i.e. based on same data with identical or very similar findings and/or evidence that authors have sought to hide redundancy, e.g. by changing title or author order or not citing previous papers)." In its most obvious form, the same article may be published in more than one journal or translated into another language and republished. In its more common but subtle form, duplicate publication involves republication of the same data set with minor alterations such as the slight addition of patients, or using a subset of the original cohort.

There are many legitimate examples of large cohort studies in which the author(s) publish multiple articles based on the same group of patients. These may include large, prospectively maintained registries that allow multiple new and substantial questions to be addressed. The key principles for avoiding duplication are these:

- Clearly indicate that the new article is an extension of prior work and explain what substantial new questions are addressed.
- Reference the prior work to demonstrate how the new work builds a body of knowledge with novel and significant information.
- Clearly indicate what information overlaps with prior work, such as what proportion of patients in the new study were previously reported.

A full statement by the International Committee of Medical Journal Editors (ICMJE) on proper reporting of duplicate material reads as follows:

"The author must alert the editor if the manuscript includes subjects about which the authors have published a previous report or have submitted a related report to another publication. Any such report must be referred to and referenced in the new
Individual centers that submit data for publication should.

Once small case series are published, larger series should.

"As with all manuscripts, all authors should disclose conflict

Individual centers should submit data to only 1 consortium

Drafting the article or revising it critically for important in-

comes of an ongoing series, with each series slightly larger

cohort and address multiple variables (sex, age, comorbidity)

in women, a separate article on SAE in men, and a third article

on SAE in older individuals. It is preferable to report the entire

literature with excess text that requires readers to sift through

multiple articles to extract a significant body of information. As

with salami itself, it is difficult to know the proper boundary be-

tween a slice that is too thin and a slice that is too thick. Authors

are encouraged to err on the side of substance, making a single

article stronger by addressing multiple relevant hypotheses,

and avoiding numerous, thinly sliced reports.

A theoretical example of salami slicing is reporting multiple

subgroups of a cohort who have a common condition or treat-

ment. For example, a study that evaluates the serious adverse

events (SAE) of colonoscopy could present one article on SAE

in women, a separate article on SAE in men, and a third article

on SAE in older individuals. It is preferable to report the entire

cohort and address multiple variables (sex, age, comorbidity)

within a single manuscript.

A particularly common example is the republication of out-
comes of an ongoing series, with each series slightly larger than

the previous one (eg, outcomes in my first 100 cases, 200

cases, 1000 cases). In such cases, the subsequent studies

should naturally build from a small case series to a large defini-
tive cohort, to a controlled clinical, ideally randomized trial. In

this case, 3 articles would be appropriate because each address-

es a new and substantial question: Can it be done? What are

the outcomes in a larger population? Is it better than current

standards of care?

Large retrospective case series

There has been a particular trend recently to aggregate multi-

ple small case series into large (sometime with more than 50 in-
stitutions) multicenter case series. These typically involve a new

procedure or device. Recent examples include per-oral endo-

scopic myotomy (POEM) and lumen-apposing metal stents
(LAMSs), in which individual centers may have only a small

number of cases. The potential benefits of such data aggrega-
tion include more precise estimations of outcomes, adverse

events, and technical refinements of the procedure. As with all

case series, it is appropriate to present initial experiences of a

novel procedure, but it is crucial to understand the limitations

of case series and the significant potential for biased or even in-
correct information.

A common misconception is that a larger series provides

more accurate information. In fact, the size of the study may

improve precision (tighter confidence intervals), but size does

not improve accuracy unless careful efforts are made to avoid

bias. In uncontrolled studies, particularly cases series, there is

a significant risk of bias such as selection bias by only choosing

patients most likely to benefit from a procedure, reporting bias

by only submitting successful cases, and publication bias where

editors publish only positive outcomes.

There are also ethical concerns when centers perform new

off-label procedures without institutional review board (IRB)

oversight. Although IRB oversight is not always required for

the performance of novel procedures, it is required for the pub-

lication of such data, even when data analysis is performed ret-

rospectively.

Duplicate publishing is also a common concern in such se-

ries, especially where multiple competing groups form consor-
tia to collect cases, often through email requests with stand-

ardized spreadsheets. In such cases, if one contributing group

sends its data to multiple consortia, those data are duplicated.

When another group later aggregates such data in formal or in-

formal meta-analyses, the duplicated patients are overcounted

and thus give a false estimate of precision. How can we pre-

serve the value of aggregating data and minimize the risk of du-

plicate publication and bias? The following are basic principles.

• Individual centers that submit data for publication should

obtain IRB approval specific to that study. General, over-

arching IRB approvals should be avoided.

• Once small case series are published, larger series should

ideally be collected under a prospective, IRB-approved, re-

gistered (eg, clinicaltrials.gov) study that includes all pa-

tients who are eligible for and who undergo such proced-

ures.

• Individual centers should submit data to only 1 consortium

when the studies are similar. Whenever questions of overlap

arise, the contributing center should notify the coordinating

center of potential overlap. It is the responsibility of both the

contributing center and the coordinating center to ensure

no duplication.

• As with all manuscripts, all authors should disclose conflict

of interest (COI), which is especially relevant when a specific

company’s product is described. It is the joint responsibility

of all authors to report COIs and of the corresponding author

to ensure that reporting is complete and correct. Many

journals, including ours, cross-check COI with public data-

bases of industry support, such as https://openpayments-
data.cms.gov/search/physicians.

The authorship of such articles that involve many centers

should follow the ICMJE guidelines, which are reproduced be-

low. Authors must meet all 3 criteria set out here. Of note, sim-

ply contributing patients to a registry does not qualify as au-

thorship.

• "Substantial" contributions to conception and design, or ac-

quisition of data, or analysis and interpretation of data

• Drafting the article or revising it critically for important in-

tellectual content

Final approval of the version to be published (available at icmje.

org) [5]
When and how do editors of different journals share information?

For the vast majority of manuscripts, journals function independently without sharing of information. This is done to ensure the confidentiality of each article. Even in cases of suspected ethical violations, most journals, including ours, conduct investigations with every effort to protect the reputation of authors and institutions during that investigation. Sharing of information is permissible when there is concern about ethical violations and when such sharing is necessary to avoid scientific misconduct. Our journals, *Gastrointestinal Endoscopy* and *Endoscopy*, follow the guidance of COPE as outlined below.

"In view of the importance of confidentiality in the scientific publishing process, COPE believes that sharing of information between Editors in Chief (EiCs) should only be undertaken when the disclosing EIC feels that such sharing is a necessary part of fulfilling the EIC’s obligation to prevent and respond to suspected research misconduct." [6] (available at www.publicationethics.org)

Summary

Medical journals and their editors have a responsibility to ensure that what is published is scientifically rigorous, novel, and relevant to the journal’s audience. Fortunately, most manuscripts submitted to our journals follow the basic principles of publication ethics. In the rare cases of suspected ethical violations, we vigorously investigate such activity while following international guidelines by COPE and ICMJE to ensure that improper manuscripts are not published, proper disciplinary activity is followed when violations are proven, but, at the same time, authors are guaranteed that they will be treated with a respectful and fair process.

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