Note: Abstracts reflect the status of the research at the time the abstracts were accepted for presentation.

AUTHORSHIP

Too Much of a Good Thing? A Study of Prolific Authors

Elizabeth Wager,[1] Sanjay Singhvi,[2] Sabine Kleinert[3]

Objective Authorship of unfeasibly large numbers of publications may indicate guest authorship, plagiarism, or fabrication (eg, the discredited anesthetist Fujii published 30 trials in 1 year). However, it is difficult to accurately assess an individual's true publication history in databases such as MEDLINE using searches for author name alone. We therefore used a bespoke, semiautomated tool, which considers additional author characteristics, to identify authorship patterns for a descriptive study of prolific authors.

Design Publications from a 5-year period (2008-2012) across 4 topics were selected from MEDLINE to provide a varied sample. The bespoke tool was used to disambiguate individual authors by analyzing characteristics such as affiliation, past publication history, and coauthorships, as well as author name. Focusing on 4 discrete topics also reduced the chance of double-counting publications from authors with similar names. Type of publication and authorship position were assessed for the most prolific authors in each topic.

Results The number of publications per topic are shown in **Table 1**. Distinct publication patterns could be identified (eg, individuals who were often first author [max 56%] or last author [max 89%]). The maximum number of publications per year was 43 (for any type) and 15 (for trials). Of the 10 most prolific authors for each topic, 24/40 were listed on ≥1 publication per 10 working days in a single year.

Conclusions Analytical software may be useful to identify prolific authors from public databases with greater accuracy than simple name searches. Although such findings always need careful interpretation, these techniques might be useful to journal editors and research institutions in cases of suspected misconduct or to screen for potential problems (eg, prolific last authors might be guest authors). When measuring productivity, institutions and funders should be alert not only to unproductive researchers but also to unfeasibly prolific ones.

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Conflict of Interest Disclosures Sanjay Singhvi is a director of System Analytic Ltd, which provides expert identification/mapping services, the tools from which were used for this study. Elizabeth Wager has acted as a consultant to System Analytic—this work represents less than 1% of her total income. Sabine Kleinert reports no conflicts of interest.

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Table 1. Total Number of MEDLINE Publications per Individual for 2008-2012 for Selected Topics

	No. of Publications, 2008-2012 (N, %)					
Topic	1-20	21-30	31-40	41-50	>50	Max
Epilepsy	63,866 (99.7)	141 (0.2)	34 (0.05)	11 (0.02)		118
Rheumatoid arthritis	33,953 (98.8)	124 (0.4)	66 (0.2)	30 (0.08)	41 (0.1)	149
Renal transplant	38,575 (99.1)	201 (0.5)	62 (0.2)	34 (0.1)	38 (0.1)	123
Liver transplant	26,350 (98.7)	174 (0.7)	69 (0.3)	36 (0.1)	56 (0.2)	128

Deciding Authorship: Survey Findings From Clinical Investigators, Journal Editors, Publication Planners, and Medical Writers

Ana Marušić,[1] Darko Hren,[2] Ananya Bhattacharya,[3] Matthew Cahill,[4] Juli Clark,[5] Maureen Garrity,[6] Thomas Gesell,[7] Susan Glasser,[8] John Gonzalez,[9] Samantha Gothelf,[10] Carolyn Hustad,[4] Mary-Margaret Lannon,[11] Neil Lineberry,[12] Bernadette Mansi,[13] LaVerne Mooney,[14] Teresa Pena[15]

Objective Low awareness, variable interpretation, and inconsistent application of guidelines can lead to a lack of transparency when recognizing contributors in industry-sponsored clinical trial publications. We sought to identify how different groups who participate in the publication process determine authorship.

Design Interviews with clinical investigators, journal editors, publication planners, and medical writers identified difficult-to-resolve authorship scenarios when applying ICMJE guidelines, such as authorship for significant patient recruitment or medical writing contribution. Seven scenarios were converted into a case-based, online survey to identify how these groups determine appropriate recognition and provide rationale and confidence for their decision. Respondents also indicated their awareness and use of authorship guidelines. A sample of at least 96 participants per group enabled estimates with a 10% margin of error for a 100,000 population. The online survey remained open until all groups surpassed this sample size by at least 10%.

Results We analyzed 498 responses from a global audience of 145 clinical investigators, 132 publication planners, 113 medical writers, and 108 journal editors. Overall, types of recognition chosen for each scenario varied both within and across respondent groups (see **Table 2** for example case results). Despite acknowledged awareness and use of authorship criteria, respondents often adjudicated cases inconsistently with ICMJE guidelines. Clinical investigators provided the most variable responses and had the lowest level of ICMJE awareness (49% [95% CI=42.9-59.4] vs 92% [95% CI=88.5-94.2] for other groups) and use (28% [95% CI=20.5-34.6] vs 61% [95% CI=55.7-65.5] for other groups). Respondents were confident in their answers (mean score, 2.0 [95% CI=1.5-2.5] on a relative scale from 1: extremely confident to 6: not at all confident), regardless of their adjudication. Based on roundtable discussions with 15 editors and qualitative analysis of respondents' answers, Medical Publications Insights and Practices Initiative (MPIP) developed supplemental guidance aimed at helping authors to set common

Table 2. Opinions of Respondents About an Example Authorship Scenario

Authorship Scenario A clinician, who substantially contributed to trial design, data analysis, and data interpretation, leaves the company sponsoring the trial for a new position with a competitor company before the manuscript is drafted. The company sponsoring the trial does not allow the clinician to take part in drafting the manuscript, to prevent access to what is now perceived as "proprietary information." The clinician argues to be invited to serve as an author based on past contributions and the central role played in the trial. In your experience, what would be the most appropriate way to recognize the contribution of the clinician?					
	Response, % (95% CI)				
Answers[a]	Clinical investigators (n=145)	Journal editors (n=108)	Publication planners (n=132)	Medical writers (n=113)	Total (N=498)
I would include the clinician as an author in the byline.	60.7 (52.9-68.1)	54.6 (45.0-63.8)	26.5 (19.1-34.2)	36.3 (27.4-45.1)	44.8 (40.4-49.2)
I would recognize the clinician's contribution in the acknowledgment section.	24.8 (18.2-31.5)	35.2 (26.4-43.9)	63.6 (55.6-72.1)	53.1 (44.2-62.6)	43.8 (39.4-48.2)
I would not recognize this clinician in the publication.	11.7 (6.7-17.1)	4.6 (0.9-9.2)	3.0 (0.7-6.6)	3.5 (0.8-7.2)	6.0 (4.2-8.4)
Other	2.8 (0.6-6.1)	5.6 (1.8-10.4)	6.8 (2.9-11.6)	7.1 (2.5-12.2)	5.4 (3.6-7.6)
Level of confidence in decision regarding how to recognize the contribution,[b] mean (95% CI)[c]	2.0 (1.84-2.17)	2.0 (1.80-2.23)	1.9 (1.75-2.05)	2.0 (1.83-2.19)	2.0 (1.89-2.07)
Estimated frequency this scenario occurs in clinical trial reporting,[b] mean (95% CI)[d]	4.5 (4.15-4.76)	4.6 (4.23-4.89)	3.3 (3.04-3.57)	3.9 (3.61-4.20)	4.0 (3.89-4.20)
Based on the specified contribution listed above, how important is drafting of the manuscript to receiving authorship?[b] mean (95% CI)[e]	2.4 (2.25-2.64)	2.4 (2.17-2.64)	2.0 (1.74-2.18)	2.5 (2.18-2.74)	2.3 (2.20-2.43)

[a]Statistically significant difference among 4 groups in frequencies of answers (χ^2_9=64.28, *P*<.001).

[b]1 = extremely confident/frequent/important, 6 = not at all confident/frequent/important, respectively.

[c]No statistically significant difference among the groups (one-way ANOVA, F_{3494}=0.39, *P*=.760).

[d]Statistically significant difference among the groups (one-way ANOVA, F_{3494}=15.05, *P*<.001); Tukey post hoc test: all pair-wise comparisons are statistically significant (*P*≤.046) except for clinical investigators vs journal editors (*P*=.956).

[e]Statistically significant difference among the groups (1-way ANOVA, F_{3494}=4.54, *P*=.004). Tukey post hoc test: publication planners vs other 3 groups (*P*≤.038).

rules for authorship early in a trial and document all trial contributions to increase transparency.

Conclusions Groups that participate in the publishing process had differing opinions on adjudication of challenging real-world authorship scenarios. Our proposed supplemental guidance is designed to provide a framework to improve transparency when recognizing contributors to all clinical trial publications.

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Conflict of Interest Disclosures Ana Marušić and Darko Hren were supported by a grant from Medical Publishing Insights and Practices (MPIP) Initiative. All others are members of MPIP. Neil Lineberry is an external consultant employed by Leerink Swann Consulting and was paid by the MPIP Initiative for his work. Thomas Gesell serves on the MPIP Initiative Steering Committee as a representative of the International Society for Medical Publication Professionals, neither of which provides funding support to the MPIP Initiative. The other members of the MPIP Initiative Steering Committee are employees of the companies sponsoring the MPIP Initiative, as shown by their individual affiliations.

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Multiauthorship Articles and Subsequent Citations: Does More Yield More?

Joseph Wislar,[1] Marie McVeigh,[2] Annette Flanagin,[1] Mary Lange,[2] Howard Bauchner[1]

Objective To assess if articles published with large numbers of authors are more likely to be cited in subsequent works than articles with fewer authors.

Design Research and review articles published in 2010 in the top 3 general medical journals (*JAMA, Lancet, New England Journal of Medicine*) and the top 3 general science journals (*Nature, Proceedings of the National Academy of Sciences, Science)* according to their rank by Impact Factor were extracted. The number of authors and other article characteristics (eg, article type and topic for the medical journal articles) were recorded. Citations per article were recorded through March 1, 2013.

Results A total of 6,337 research and review articles were published in the 6 journals in 2010 articles (848 in medical journals and 5,489 in science journals); the number of authors per article ranged from 1 to 659. The number of authors and articles were divided into 4 quartiles: 1-3, 4-6, 7-10, 11+ authors, respectively (**Table 3**). There was a median of 8 (IQR: 4-14) authors per medical journal article and 6 (IQR: 4-9) per science journal article. There were more articles among the medical journals than science journals with 11+ authors (39% vs 18%, respectively). Medical journal articles were cited a median of 50 (IQR: 25-100) times and the science journal articles were cited a median of 22 (IQR: 12-42) times during the follow-up period. Median number of citations was highest for articles in the highest quartile of number of authors: 80 vs 29 (*P*<.001) for medical journals and 35 vs 18 (*P*<.001) for science journals.

Table 3. Number of Author by Quartile and Median Number of Citations, by Journal

	No. of Articles	1-3 Authors	4-6 Authors	7-10 Authors	11+ Authors
No. of articles					
Medical journal, No. (%)	848	181 (21)	181 (21)	158 (19)	328 (39)
Science journal, No. (%)	5,489	1,186 (22)	1,859 (34)	1,426 (26)	1,018 (18)
Total, No.	6,637	1,137	2,040	1,584	1,346
Median citations, No.					
JAMA	232	19	31	42	54
Lancet	271	50	38	77	75
New England Journal of Medicine	345	26	5	64	107
Total Medical Journals	848	29	30	54	80
Nature	862	40	46	51	87
PNAS	3,763	14	15	18	21
Science	862	38	38	51	65
Total Science Journals	5,489	18	19	54	35
Total All Journals	6,337	19	20	26	43

Article types among medical journals included 290 observational studies, 259 randomized trials, 176 reviews, 89 case reports, and 34 meta-analyses. Top topics represented among the medical journals articles were infectious disease (14.7%), cardiovascular disease (12.5%), and oncology (11.3%). Preliminary analyses assessing article type and topic in medical journals articles did not reveal a consistent pattern for article type but did show a linear increase in numbers of authors for articles in cardiovascular disease, critical care medicine, obstetrics/gynecology, and oncology and inconsistent patterns for other topics.

Conclusion Articles with 11 or more authors have higher citations than articles with fewer authors; this does not appear to be affected by article type, but there may be an association with article topic.

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CITATIONS

Coercive Citation and the Impact Factor in the Business Category of the Web of Science

Tobias Opthof,[1,2] Loet Leydesdorff,[3] Ruben Coronel[1]

Objective Coercive citation is not unusual in journals within the business category of the Web of Science. Coercive citation is defined as pressure by the editor of a journal on an author to include references to the editor's journal either before the start of the review process or after acceptance of the manuscript. The quantitative effects of this practice on Impact Factors and on the degree of journal self-citation have thus far not been assessed.

Design We have quantified bibliographic parameters of the top 50 journals in the category Business of the Web of Science. Of these, 26 had previously been shown to exert citation coercion by Wilhite and Fong. We have compared these 26 journals with the other 24 journals.

Results The averaged Impact Factors in 2010 of coercive journals and noncoercive journals were 2.665 ± 0.265 (mean ± SEM) vs 2.227 ± 0.134 (P=.141) including journal self-citations and 2.110 ± 0.279 vs 1.635 ± 0.131 (P=.123) without journal self-citations. Compared to noncoercive journals, coercive journals had a higher percentage of journal self-citations to all years (9.5% vs 6.7%, P<.25), a higher percentage of journal self-citations to the years relevant for the Impact Factor (based on the 2 preceding years; 19.5% vs 13.5%, P<.05), and a higher percentage of journal self-citations to the earlier years (8.0% vs 5.2%, P<.01). Within the group of coercive journals, the degree of coercive citation was positively and significantly correlated with the percentage of journal self-citations to the preceding 2 years relevant for the Impact Factor (r=.513, n=26, P<.005), but not to other years.

Conclusion In business journals, coercive citation is effective for coercing editors in the sense that their journals show a higher percentage of journal self-citations to years relevant for the conventional Impact Factor.

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Conflict of Interest Disclosures None reported.

Do Views Online Drive Citations?

Sushrut Jangi,[1,2] Jeffrey A. Eddowes,[1] Jennifer M. Zeis,[1] Jessica R. Ippolito,[1] Edward W. Campion[1]

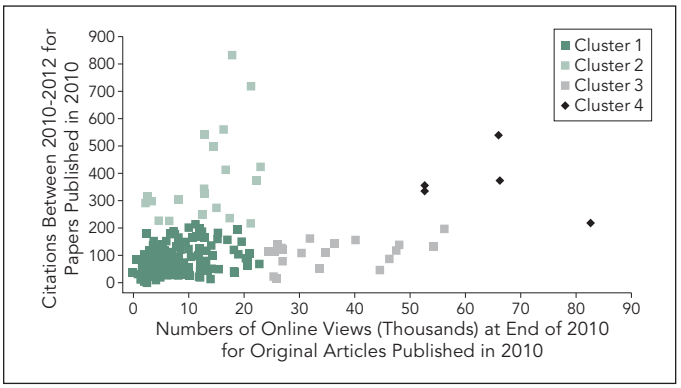
Objective Biomedical journals have a 2-fold aim—to contribute literature that is highly cited and to present articles that are read widely. The first aim is measured by Impact Factor. The second aim is measurable using parameters such as Most Viewed online. We examined whether these publication aims are related: are the most-viewed articles subsequently the most cited?

Design Citations for all 226 original research articles published in 2010 in the *New England Journal of Medicine* were analyzed through the end of 2012. Online usage data were analyzed for 2 time periods: (1) during the first year after publication and (2) from publication to the end of 2012. A linear regression was generated between number of views and citations during these 2 periods.

Results When number of online views at the end of 2010 was compared with citations between 2010-2012, the correlation between online views and citations was near 0 (linear regression slope near 0 with an R^2 of .0015). The inability to create a robust linear regression occurred because these research articles segregated into 4 unique clusters with distinct characteristics (**Figure 1**). When the number of online views over the first 2 years of publication were compared with citations over the same time period, the association between views and citations was stronger (linear regression slope of 3 with an R^2 of .3).

Clusters were determined as follows: articles that fell into cluster 1 all were within the first standard deviation of citations and

Figure 1. Clustering of Original Research Articles



views. Papers that were beyond one standard deviation of citations but were normally viewed were assigned to cluster 2; papers that were beyond one standard deviation of online views but were normally cited were cluster 3; papers that were beyond one standard deviation in both views and citations were cluster 4. Of the 226 original research articles published in 2010, 178 fall into a core cluster 1; 20 into cluster 2; 21 in cluster 3; and 5 in cluster 4. Clustering prevents a robust linear regression (slope of .27 and R^2 of .0015). Each cluster has distinct traits. Cluster 2 papers are primarily randomized control trials in oncology or other specialized fields that are rarely reported by the media; cluster 3 papers concern epidemiology, public health, and general medical practice and are moderately reported by the media; cluster 4 papers were most highly reported by the media.

Conclusions Highly viewed papers within the first year of publication of original research do not robustly predict citations over the following 2 years. Instead, papers that are highly cited become increasingly viewed over time. Furthermore, following the first year of publication, most original research falls into 4 distinct clusters of views and citations, reflecting the varying aims of biomedical publication.

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Conflict of Interest Disclosures None reported.

Uncited or Poorly Cited Articles in the Cardiovascular Literature

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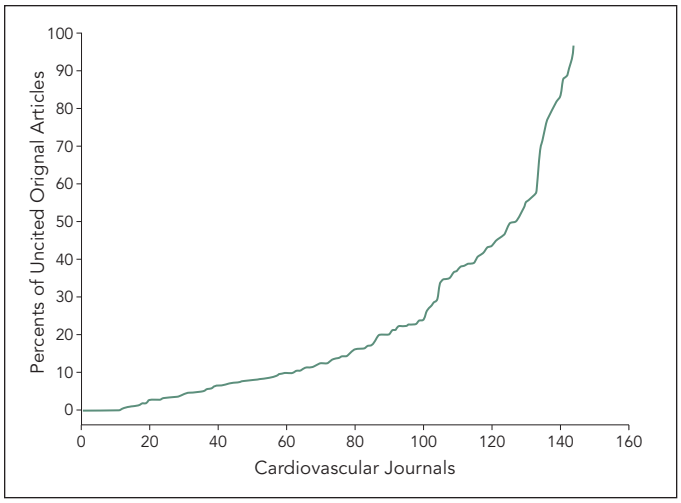
Objective In an efficient system, virtually all studies worthy of publication would be cited in subsequent papers. We sought to determine the percentage of uncited or poorly cited articles in the cardiovascular literature, the factors associated with citations, and the trend in citations.

Design We identified cardiovascular journals indexed in Scopus with 20 or more publications. We determined 5-year citations of each original article published in 2006 and the association between article and journal characteristics with likelihood of citation using multivariable logistic regression. To evaluate trends, we obtained similar cohorts for 2004, 2006, and 2008 with 4-year citations of each original article and compared the percents of uncited articles in these years.

Figure 2. Distribution of Percents of Uncited Original Articles



Results Among 144 cardiovascular journals, we identified a total of 18,411 original articles published in 2006. In the following 5 years, the median number of citations was 6 (IQR: 2-16). Of all articles, 2,756 (15.0%) articles were uncited and 6,122 (33.3%) had 1 to 5 citations. English language (OR 4.3, 95% CI 3.6-5.0), journal Impact Factor >4 (OR 5.6, 95% CI 4.6-6.9 compared with journal Impact Factor <1.0), per-person increase in number of authors (OR 1.1, 95% CI 1.1-1.1), and 3 or more author key words (OR 1.4, 95% CI 1.2-1.6) increased the likelihood being cited. Among the 144 journals, the interquartile range for the percent of uncited papers ranged from 7% to 40% (**Figure 2**). From 2004 to 2008, the overall volume of published articles increased (2004, n=13,880; 2006, n=18,411; 2008, n=19,184), including the volume of uncited publications at 4 years after publication (2004, n=2,393; 2006 n=3,134; 2008, n=3,337); however, the percents of uncited papers were not statistically different (17.2% vs 17.0% vs 17.4%, *P* value for trend =.4).

Conclusion Nearly half of the cardiovascular literature remains uncited or poorly cited after 5 years and are particularly concentrated in certain journals, suggesting substantial waste in some combination of the funding, pursuit, publication, or dissemination of cardiovascular science.

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Conflict of Interest Disclosures Joseph Ross reports that he is a member of a scientific advisory board for FAIR Health, Inc.

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Table 4. PCORI Merit Review Criteria for the Inaugural Funding Cycle

1	Impact of the condition on the health of individuals and populations
2	Innovation and potential for improvement
3	Impact on health care performance
4	Patient centeredness
5	Rigorous research methods
6	Inclusiveness of different populations
7	Research team and environment
8	Efficient use of research resources

PEER REVIEW

Engaging Patients and Stakeholders in Scientific Peer Review of Research Applications: Lessons From PCORI's First Cycle of Funding

Rachael Fleurence,[1] Joe Selby,[1] Laura P. Forsythe,[1] Anne Beal,[1] Martin Duenas,[1] Lori Frank,[1] John P. A. Ioannidis,[2] Michael S. Lauer[3]

Objective The mission of the Patient-Centered Outcomes Research Institute (PCORI) is to fund research that helps people make informed health care decisions. Engagement of patients and stakeholders is essential in all aspects of our work, including research application review. PCORI's first round of peer review was evaluated to measure the impact of different reviewer perspectives on merit review scores.

Design In 2012 PCORI initiated a 2-phase review (phase 1: online review by 3 scientists using 8 criteria (**Table 4**); phase 2: review top one-third of applications by 2 additional scientists, 1 patient, 1 stakeholder (clinicians, providers, manufacturers, etc). Scientists provided overall scores based on the 8 criteria; patients/stakeholders focused on criteria 2, 4, and 7. Proposals were scored prior to an in-person discussion and final scores were assigned after discussion. We conducted (1) correlations and Bland-Altman tests to examine agreement between scientific and patient/stakeholder reviewers, (2) random forest analyses to identify unique contributors to final scores (lower depth implies higher correlation), and (3) postreview focus groups.

Results In phase 2, there was limited agreement on overall scores between scientists and patients/stakeholders prediscussion (r=.18, P=.02), but no observable systematic bias; agreement was stronger postdiscussion (r=.90, P<.001). Random forest analyses indicate the strongest predictors of scientists' final scores were patient/stakeholder final scores and scientist prediscussion scores (depth=1.033 and 1.861, respectively). The strongest predictors of patient/stakeholder final scores were scientific final scores, scientific prediscussion scores, and patient/stakeholder prediscussion scores (depth=1.084, 2.423, and 3.080, respectively). Twenty-five contracts were awarded after the 2-phase review; only 13 of these scored among the top 25 in phase 1. Postreview focus group themes included a collegial learning experience, a steep learning curve around PCORI's new criteria, scientists' appreciation of perspectives offered by patients/stakeholders, scientists' concern about nonscientists' level of technical expertise, and patients'/stakeholders' experiences of being considered less authoritative than scientists.

Conclusions The projects funded differed after the 2-phase merit review compared to 1 phase of scientific review. Patient/stakeholder reviewers may have been more likely to incorporate insights from scientists than vice versa. Further research is being conducted on the available data to deepen our understanding of the process.

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Conflict of Interest Disclosures None reported.

Editorial Triage: Potential Impact

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Objective Increasing manuscript submissions threaten to overwhelm a biomedical journal's ability to process manuscripts and overburden reviewers with manuscripts that have little chance of acceptance. Our purpose was to evaluate editorial triage.

Design In a prospective study of original research manuscripts submitted to a single biomedical journal for an 8-week period beginning July 2012, 329 articles were processed with our normal procedures as well as with a parallel "background triage mode." The editor in chief/deputy editor (EIC/DE) rated on a 5-point scale the likelihood of an article being accepted for publication (with scores of 1 "definitely reject" and 2 "almost certainly reject" considered "low priority" for publication). Editors noted reasons for low priority ratings. Manuscripts were sent for peer review in the typical fashion, with reviewers chosen by noneditor office staff. There typically were 4 to 8 weeks between initial triage and final decisions (based on standard peer review). The EIC who made the final decision was unaware of triage scores given by DEs; however, there were articles where the final and triage decisions were made by the EIC. Spearman correlation was used to correlate final decisions with triage scores and with reviewer mean scores.

Results Triage scores, reviewer scores, and final outcomes are detailed in **Table 5**. Of 124 manuscripts scored as low priority, 6 (4.8%, CI 1.8%-10.2%) were ultimately accepted for publication (P<.0001, correlation .26). "Limited new information" was the primary reason for a low priority score for 57/124 (46%) manuscripts, and 5 manuscripts with low priority score that were ultimately accepted had this reason given. Individual EIC/DE triage scores were weakly to moderately correlated with final decision (r=-.1-.45, with overall EIC/DE group correlation of .24). Reviewer scores were moderately correlated with final decision (r=.62).

Conclusions Editorial peer review triage identified 38% (124/329) of submitted manuscripts as low priority, with lack of new information representing the most common reason for such scoring. Of submitted papers, 1.8% (6/329) would have been "erroneously" triaged, that is, manuscripts potentially worthy of acceptance but triaged as low priority. In our journal, editorial triage represents an efficient method of diminishing reviewer burden without a substantial loss of quality papers.

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Table 5. Triage Scores and Final Decisions

	Triage Score	Reviewer Recommendations (% of Reviewers in That Triage Score Category)	FINAL DECISION				Main Reason for Low Priority Triage Score
			Accept	Reject-Resubmission Allowed	Reject	No. of Manuscripts (%)	
Low priority score – in future would not send for review	1 Definitely reject	39 (72%) reject 9 (17%) R-R 6 (11%) accept	1	4	19	24 (7)	Limited new information, n=8[a] Outside area of reader interest, n=7 Poor description of methodology, n=4 Inadequate sample size, n=4 Other, n=1
	2 Almost certainly reject	131 (59%) reject 43 (19%) R-R 48 (22%) accept	5	10	85	100 (30)	Limited new information, n=50[b] Outside area of reader interest, n=9 Poor description of methodology, n=16 Inadequate sample size, n=16[a] Other, n=9
Indeterminate priority	3 Unsure	131 (40%) reject 75 (23%) R-R 124 (37%) accept	17	29	73	119 (36)	Not applicable
High priority scores	4 Good chance of being accepted	83 (50%) reject 42 (25%) R-R 40 (24%) accept	17	12	42	71 (21)	Not applicable
	5 Almost certainly accept	16 (42%) reject 9 (24%) R-R 13 (34%) accept	2	6	7	15 (5)	Not applicable

R-R indicates reject with resubmission allowed.

[a]1 ultimately accepted.

[b]4 ultimately accepted.

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Authors' Assessment of the Impact and Value of Statistical Review in a General Medical Journal

Catharine Stack,[1,2] John Cornell,[3] Steven Goodman,[4] Michael Griswold,[5] Eliseo Guallar,[6] Christine Laine,[1,2] Russell Localio,[7] Alicia Ludwig,[2] Anne Meibohm,[1,2] Cynthia Mulrow,[1,2] Mary Beth Schaeffer,[1,2] Darren Taichman,[1,2] Arlene Weissman[2]

Objective Statistical methods for clinical research are complex, and statistical review procedures vary across journals. We sought authors' views about the impact of statistical review on the quality of their articles at one general medical journal.

Design Corresponding authors of all articles published in *Annals of Internal Medicine* in 2012 that underwent statistical review received an online survey. Surveys were anonymous and authors were informed that individual responses would not be linked to their papers. Per standard procedures, all provisional acceptances and revisions received statistical review. We asked authors about the amount of effort needed to respond to the statistical review, the difficulty in securing the necessary statistical resources, and the degree to which statistical review had an impact on the quality of specific sections of and the overall published article. Authors of rejected articles were not surveyed because rejected papers rarely receive full statistical review.

Results The online survey was completed by 74 of 94 (79%) corresponding authors. Response rates varied by study design (90% randomized trials, 83% cohort studies, 74% systematic reviews) and number of revisions (90% 3 revisions, 80% 2 revisions, 65% 1 revision). Published studies included reports of original research (73%), systematic reviews/meta-analysis (23%), and decision analysis (4%). Of papers, 21%, 49%, and 29% required 1, 2, and 3 or more revisions, respectively. Of the authors, 61% reported a moderate or large increase in the overall quality of the paper as a result of the statistical review process; 61% and 59% noted improvements to the statistical methods and results sections, respectively; and 19% reported improvements to the conclusions section. Sixty-four percent of authors indicated considerable effort was required to respond to the statistical editor's comments. A similar proportion (65%) reported that the effort required was worth the improved quality. Thirty-two percent of authors reported having some difficulty in securing the statistical support needed to respond to the statistical editor's comments, and 5% reported having a lot of difficulty.

Conclusions The majority of authors whose papers received statistical review reported that the statistical review process improved their articles. Most authors reported that the effort required to respond to the statistical reviewer's comments was considerable but worthwhile.

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Mentored Peer Review of Standardized Manuscripts as an Educational Tool

Victoria S. S. Wong,[1] Roy E. Strowd III,[2] Rebeca Aragón-García,[3] Mitchell S. V. Elkind[3]

Objective To determine whether mentored peer review of standardized scientific manuscripts with introduced errors is a feasible and effective educational tool for teaching neurology residents the fundamental principles of research methodology and peer review.

Design A partially blinded, randomized, controlled multicenter pilot study was designed. Neurology residents (PGY-3 and PGY-4) were recruited from 9 sites. Standardized manuscripts with introduced errors were created and distributed at 2-month intervals: a baseline manuscript, 3 formative manuscripts, and a final (postintervention) manuscript. All residents were asked to peer review these manuscripts. Residents were randomized at enrollment to receive or not receive faculty mentoring on appropriate peer review technique and manuscript assessment after each review. Pretests and posttests were administered to determine improvement in knowledge of research methodology before and after peer reviews. The Review Quality Instrument (RQI), a validated, objective measure to assess quality of peer reviews, was used to evaluate baseline and final reviews blinded to assigned group.

Results Seventy-eight neurology residents were enrolled (mean age of 30.8 ± 2.6 years; 39 [50%] male; mean duration of 3.4 years [range 2-10] since medical school graduation). Mean pretest score was 13.2 ± 2.7 correct of 20 questions. Sixty-four residents (82% of enrolled; 30 nonmentored, 34 mentored) returned a review of the first manuscript, 49 (77% of active participants) returned the second, 35 (55%) returned the third, 28 (47%) returned the forth, and 45 (71%, 24 nonmentored, 21 mentored) returned a review of the final manuscript. Ten residents were withdrawn due to lack of participation, and 5 asked to be withdrawn. Preliminary RQI evaluation of the first manuscript reviews by a single reviewer revealed an average score of 26.4 ± 6.7 out of 40 points. The RQI evaluation of the reviews from the first and final manuscripts by 2 independent reviewers are pending.

Conclusion This multicenter pilot study will determine whether peer review of standardized manuscripts with faculty mentoring is a feasible and potentially effective method for teaching neurology residents about peer review and research methodology.

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The Reporting of Randomized TrIals: Changes After Peer RevIew (CAPRI)

Sally Hopewell,[1-2] Gary Collins,[1] Ly-Mee Yu,[1] Jonathan Cook,[1,3] Isabelle Boutron,[2] Larissa Shamseer,[4] Milensu Shanyinde,[1] Rose Wharton,[1] Douglas G. Altman[1]

Objective Despite wide use of peer reviewing, little is known about its impact on the quality of reporting of published research. From numerous reviews showing poor reporting in published research, it seems that peer reviewers frequently fail to detect important deficiencies. The aims of our study are to examine the (1) nature and extent of changes made to manuscripts after peer review, in relation to reporting of methodological aspects of randomized trials; and (2) type of methodological changes requested by peer reviewers and the extent to which authors adhere to these requests.

Design This is a retrospective, before-and-after study. We included all primary reports of randomized trials published in BMC Medical Series journals in 2012. We chose these journals because they publish all submitted versions of a manuscript and corresponding peer review comments and author responses. By accessing the prepublication history for each published trial report, we examined any differences (ie, additions, changes, or subtractions) in reporting between the original and final submitted versions of the manuscript and second, whether or not specific CONSORT items were reported. From the prepublication history for each report, we also assessed peer reviewers' comments with regard to reporting methodological issues. Our main outcome is the percentage improvement in reporting following peer review, measured as the number of CONSORT checklist items reported.

Results We identified 86 primary reports of randomized trials. The median interval between the original and final submitted version of a manuscript was 146 days (range, 29-333) with 36 days (7-127) from final submission to online publication. The number of submitted versions of a manuscript varied (median 3; 2-7), with a median of two peer reviewers and reviewer rounds per manuscript. Changes between the original and final submitted version were common; overall the median proportion of words deleted from the original manuscript was 11% (1%-59%) and 20% (4%-68%) for words added.

Conclusions There was substantial variation in terms of timescale and the scale of revisions between original and submitted versions. Further data extraction and an in-depth analysis of the nature and extent of these changes are under way.

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ETHICAL ISSUES AND MISCONDUCT

Identical or Nearly So: Duplicate Publication as a Separate Publication Type in PubMed

Mario Malički,[1] Ana Utrobičić,[2] Ana Marušić[1]

Objective "Duplicate Publication" was introduced into Medical Subject Headings (MeSH) of the National Library of Medicine (NLM) in 1991 as a separate publication type and is defined as "work consisting of an article or book of identical or nearly identical material published simultaneously or successively to material previously published elsewhere, without acknowledgment of the prior publication." Our aim was to assess how journals corrected duplicate publications indexed by NLM and how these corrections were visible in PubMed.

Design The data set included 1,011 articles listed as "duplicate publication [pt]" in PubMed on January 16, 2013. We checked PubMed to identify if duplicate articles were linked with a Correction/Comment notice. We also checked the journals' websites for published notices and identified the reasons provided for the duplications in those notices. The time from the duplicate article publication to the notice of duplication/retraction in PubMed and/or journals was also recorded.

Results A total of 624 duplicate publications (61.7%) identified in PubMed lacked any notice in respective journals. There were 152 notices of 342 duplicate publications (ie, published twice or more times) found in journals and marked as Comments/Corrections in PubMed. The reasons for duplications are presented in **Table 6**. Median time from duplicate publication to notice of duplication was 8 months (95% CI, 6-10). Of articles with notices, 130 of 152 were available online, but only 34 (26.1%) had links to the published notices of duplication. Of indexed duplicate publications, 24 (2.4%) articles were retracted: 10 due to publishers' errors, 11 due to authors' errors (3 notices could not be accessed). Of these retractions, 14 were marked as "retracted publication [pt]" in PubMed, and 10 more retractions were found only at journal websites.

Table 6. Reasons for Duplication of Articles With Published Notices of Duplicate Publication (n=152)

Reasons	No. (%)[a]
Author's error	75 (49.3)
More than half of the data published previously and not referenced	28 (37.3)
Same article sent to two journals without declaration to editors	23 (30.7)
Less than half of the data published previously and not referenced	10 (13.3)
Article submitted without coauthors' approval	8 (10.7)
Article first published in a nonindexed journal	3 (4.0)
Article first published in native-language journal	1 (1.3)
Sponsor sent the database to two different teams of researchers	1 (1.3)
Author didn't know that reviews are regarded as duplicate publication	1 (1.3)
Publisher's error	40 (26.3)
Article published in two different issues of the same journal	38 (95.0)
Oversight of author's declaration of secondary submission	2 (5.0)
Articles reprinted in a special issue without declaration	1 (0.7)
Unknown (notices not available online in full text)	36 (23.7)

[a]Percentages for statements within individual categories are to the total sum for the category.

Conclusions More than half of duplicate publications identified in PubMed have not been corrected by journals. All stakeholders in research publishing should take seriously the integrity of the published record and take a proactive role in alerting the publishing community to redundant publications.

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Conflict of Interest Disclosures None reported.

Fate of Articles That Warranted Retraction Due to Ethical Concerns: A Descriptive Cross-sectional Study

Nadia Elia,[1] Elizabeth Wager,[2] Martin R. Tramèr[3]

Objective Guidelines on how to retract articles exist. Our objective was to verify whether articles that warranted retraction due to ethical concerns have been retracted, and whether this had been done according to published guidelines.

Design Descriptive cross-sectional study, as of January 2013, of 88 articles by Joachim Boldt, published in 18 journals, which warranted retraction since the State Medical Association of Rheinland-Pfalz (Germany) was unable to confirm approval by an ethics committee. According to the recommendations of the Committee on Publication Ethics, we regarded a retraction as adequate when a retraction notice was published, linked to the retracted article, identified title and authors of the retracted article in its heading, explained the reason and who took responsibility for the retraction, and was freely accessible. Additionally, we expected the full text of retracted articles to be freely accessible and marked using a transparent watermark that preserved original content. Two authors extracted the data independently and contacted editors in chief for clarification in cases of inadequate retraction.

Results Five articles (5.7%), from 1 journal, fulfilled all criteria for adequate retraction. Nine articles (10.2%) were not retracted (no retraction notice published, full-text article not marked). A total of 79 (90%) retraction notices were published, 76 (86%) were freely accessible, but only 15 (17%) were complete. Seventy-three (83%) full-text articles were marked as retracted, of which 14 (15.9%) had an opaque watermark hiding parts of the original content, and 11 (12.5%) had all original content deleted. Fifty-nine (67%) retracted articles were freely accessible. One editor in chief claimed personal problems to explain incomplete retractions; 8 blamed their publishers. One publisher regretted that no mechanism existed for previous publishers to undertake retractions that were required after the publisher had changed. Two publishers mentioned legal threats from Boldt's coauthors that prevented them from retracting 6 articles.

Conclusions Guidelines for retraction of articles are incompletely followed. The role of publishers in the retraction process needs to be clarified and standards are needed on how to mark the text of retracted articles. Legal safeguards are required to allow the retraction of articles against the wishes of authors.

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Conflict of Interest Disclosures Nadia Elia is associate editor, *European Journal of Anaesthesiology*. Elizabeth Wager is a coauthor of COPE retraction guidelines. Martin Tramèr is editor in chief, *European Journal of Anaesthesiology*. No other disclosures were reported.

Value of Plagiarism Detection for Manuscripts Submitted to a Medical Specialty Journal

Heidi L. Vermette,[1] Rebecca S. Benner,[1] James R. Scott[1,2]

Objective To assess the value of a plagiarism detection system for manuscripts submitted to *Obstetrics & Gynecology*.

Design All revised manuscripts identified as candidates for publication between January 24, 2011, and December 26, 2012, were evaluated using the CrossCheck plagiarism detection software. Outcomes were (1) number and percentage of manuscripts with clear plagiarism, minor copying of short phrases only, redundancy, or no problem as defined by the Committee on Publication Ethics (COPE); (2) time needed to check each manuscript; and (3) actions taken for manuscripts with violations.

Results Clear plagiarism was detected in 1 (0.3%) of 312 manuscripts in 2011 and 0 of 368 manuscripts in 2012 (**Table 7**). Forty (12.8%) manuscripts in 2011 and 21 (5.7%) manuscripts in 2012 contained minor copying of short phrases only or redundancy. Our staff spent a mean time of 19.5 minutes per manuscript checking for plagiarism in 2011, and this decreased to 10.2 minutes per manuscript in 2012 ($P<.001$). The plagiarized manuscript, a case report, was rejected. A detailed description of the plagiarized content was included in the letter to the author. The authors of manuscripts with minor problems and redundancy were asked to rewrite or properly attribute the reused or redundant passages, and all of these manuscripts were eventually published.

Conclusions CrossCheck is a practical tool for detecting duplication of exact phrases, but it is limited to searching the English-language literature accessible via various repositories and the Internet and does not replace careful peer review and editor assessment. Checking manuscripts for plagiarism represents a substantial time investment for staff. Two years of data from our journal indicate that the number of problems detected was low, but systematic assessment of manuscripts uncovered problems that otherwise would have appeared in print.

Table 7. Detection Rate and Time Spent on Plagiarism Checking

Year	Plagiarism Check Results as Defined by COPE[a]	No. of Manuscripts (%)	Total Minutes Spent Checking Manuscript(s)	Minutes Spent per Manuscript (Mean)
2011	Clear plagiarism[b]	1 (0.3)	45.0	45.0
	Minor copying of short phrases only[c]	16 (5.1)	585.0	36.6
	Redundancy[d]	24 (7.7)	1,300.8	54.2
	No problem	271 (86.9)	4,140.0	15.3
	Total	312 (100.0)	6,070.8	19.5
2012	Clear plagiarism[b]	0 (0)	0.0	0.0
	Minor copying of short phrases only[c]	13 (3.5)	405.0	31.2
	Redundancy[d]	8 (2.2)	429.0	53.6
	No problem	347 (94.3)	2,910.0	8.4
	Total	368 (100.0)	3,744.0	10.2

[a]Definitions from COPE available at http://publicationethics.org/files/u2/02A_plagiarism_submitted.pdf.

[b]Per COPE: "unattributed use of large portions of text and/or data, presented as if they were by the plagiarist."

[c]Per COPE: for example, "in discussion of research paper from non-native language speaker; No misattribution of data."

[d]Per COPE: "copying from author's own work."

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Conflict of Interest Disclosures None reported.

Implementation of Plagiarism Screening for the PLOS Journals

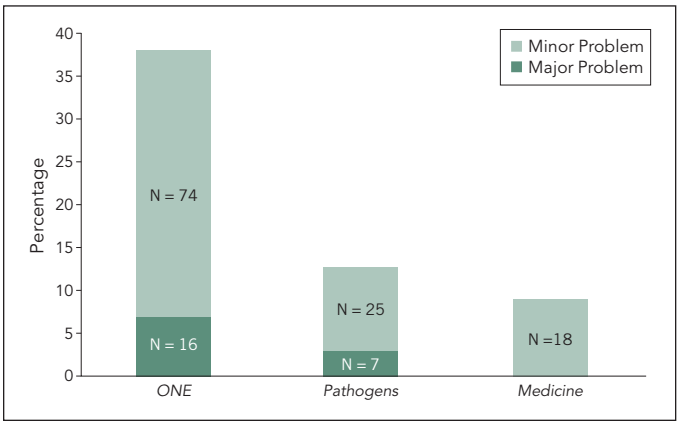
Elizabeth Flavall,[1] Virginia Barbour,[2] Rachel Bernstein,[1] Katie Hickling,[2] Michael Morris[1]

Objective PLOS publishes a range of journals, from highly selective to 1 that assesses submissions based only on objective criteria. Overall the journals receive more than 5,000 submissions per month. We aimed to assess the quantity of submitted manuscripts with potential plagiarism issues along with the staffing requirements and optimal procedures for implementing plagiarism screening using CrossCheck/iThenticate software across the PLOS journals.

Design Consecutively submitted research articles were screened until the following numbers were reached: *PLOS Medicine* (n=203), *PLOS Pathogens* (n=250), and *PLOS ONE* (n=241). Articles were screened at initial submission prior to any revision requests. Initial screening was performed by junior staff members, and potential issues were elevated in house for further screening. Manuscripts were classified as major problem, minor problem, and no problem. Extent, originality, and context were assessed using guidance from the Committee on Publication Ethics (COPE) Discussion Document "How should editors respond to plagiarism?" Manuscripts with major problems were flagged but otherwise continued through the review process as normal. Any flagged manuscripts that were not rejected in the first round of review were elevated to journal editors and managers for follow-up.

Results The percent of manuscripts classified as having any problem (major or minor) are shown in **Figure 3**. Of the manuscripts classified as major problem, almost all were rejected in the first round of review for reasons unrelated to the screening results. Only 1 manuscript with major problems, submitted to *PLOS Pathogens*, was elevated to the editors for follow-up as it was not rejected following peer review. Minor problems consisted primarily of small instances of self-plagiarism and attributed copying; follow-up was deemed unnecessary for the purposes of this study. The time per manuscript for screening was on average 7 minutes (range, 2-60 minutes). More time was

Figure 3. Percent of Manuscripts Classified as Having a Problem When Screened for Plagiarism



spent on articles with problems. The total screening time per journal over the 3 month pilot was *PLOS Medicine*: 16 hours, *PLOS Pathogens*: 29 hours, and *PLOS ONE*: 42 hours.

Conclusion Based on the results of this study, we have determined that plagiarism screening is feasible at PLOS and have made recommendations for the optimal screening procedures on the different journals.

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Conflict of Interest Disclosures Virginia Barbour spoke on behalf of the Committee on Publication Ethics, of which she is Chair, at the 5th International Plagiarism Conference in 2012, which was organized by Plagiarism Today, and which is part of the company that makes iThenticate software. The authors report no other conflicts of interest.

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Publication Ethics: 16 Years of COPE

Irene Hames,[1] Charon A. Pierson,[2] Natalie E. Ridgeway,[3] Virginia Barbour[4]

Objective The Committee on Publication Ethics (COPE) holds a quarterly forum in which journal editors from its 8,500-strong membership can bring publication-ethics cases for discussion and advice. Since it was established in 1997, COPE has amassed a collection of almost 500 cases. We set out to develop a more comprehensive classification scheme and to classify all the cases, providing a finer level of detail for analysis. We wanted to determine trends and establish whether the analysis could be used to guide the development of new ethical guidelines.

Design A new taxonomy was developed, comprising 18 main classification categories and 100 key words. Cases were assigned up to 2 classification categories to denote the main topics and up to 10 key words to cover all the issues. Classification and key word coding denotes that a topic was raised and discussed, not that a particular form of publication misconduct had occurred.

Results Between 1997 and the end of 2012, 485 cases were brought to COPE. These received 730 classification categories. The number of cases presented annually varied (from 16 to 42), but with no clear pattern, and there was no increase in cases when COPE's membership increased from 350 to about 3,500 in 2007-2008. The number of classifications has, however, increased gradually for cases, from a mean of 1.3 per case 1997-2000 to 1.7 per case 2009-2012. Authorship and plagiarism have been and remain major topics (**Figure 4**). Categories of cases that have increased most noticeably are correction of the literature, data, misconduct/questionable behavior, conflicts of interest, and peer review. Cases involving questionable/unethical research and redundant/duplicate publication remain prominent, but have been decreasing in recent years.

Conclusions The increasing number of case classification categories over time suggests an increasing complexity in the cases being brought to COPE. Cases in a number of categories are increasing. A key word analysis is being undertaken to provide a greater level of detail and to determine whether new guidelines could effectively be developed in any of those areas. The study is also being used to identify cases for inclusion in educational packages of publication-ethics cases for use by beginners through to experienced groups.

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Conflict of Interest Disclosures Irene Hames reports being a COPE Council member, director, and trustee since November 2010 (unpaid); and owner of Irene Hames Consulting (an editorial consultancy advising and informing the publishing, higher education, and research sectors); Charon Pierson reports being a COPE Council member since March 2011 (unpaid); and owner of Charon A. Pierson Consulting (paid consultant for geriatric education grants and online course development in gerontology at various universities). Natalie Ridgeway reports being the COPE Operations Manager since March 2010 (paid employee). Virginia Barbour reports being the chair of COPE since March 2012 and was previously COPE Secretary and Council Member (all unpaid);

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Figure 4. Classification of COPE Cases, 1997-2012 (for Categories With More Than 7 Classifications in a 4-Year Period)