Challenges as standards and systems in peer review evolve

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We all want a published literature we can trust & build on but... conflicting priorities and increasing complexity

- **Authors**
  - to be published and funded
- **Institutions/funders**
  - to enable publication of as many “good” papers as possible
  - Retain/acquire funding
- **Editors**
  - to publish “good” papers in their journals
  - Maintain/establish reputation
- **Publishers**
  - Have sustainable journals/businesses
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Reviewers – where do they come in?
Symptoms that all is not well

- Increasing numbers of (irreproducible) papers
- Authors are increasingly chasing publication in high impact journals
- Increased evidence of misconduct
- Increased criticism of the published literature
- Increase in retractions yet few corrections
- Reviewers are overloaded
Fundamental problems

- Proliferation of journals and papers needing review
- Generally, research is a global enterprise, yet managed locally
  - basic training for academics often neglects ethics/good practice
  - few established norms
- Unclear how reviewers fit into the ecosystem
  - peer review is often not recognised for academic credit.
  - Little training at all for peer reviewers
  - What/who is a “reviewer” nowadays anyway
We want a published literature that facilitates:

- Replication
- Validation
- New analysis
- Better interpretation
- Inclusion in meta-analyses
- Facilitation of reproducibility of research
- Closer scrutiny of published work
Peer review is an essential part of validation of the literature

- Pre publication
- Post publication

Both have challenges

Technology can both exacerbate and help resolve them
Prepublication peer review

• Old problems
  – Poor, slow reviews
  – Bias
  – Number of reviews flooding system
  – Lack of credit for reviews

• New problems
  – Problems with replication
  – Increasing complexity of articles
  – Ease of falsifying references and even referees
Promoting integrity in research publication

COPE is a forum for editors and publishers of peer reviewed journals to discuss all aspects of publication ethics. It also advises editors on how to handle cases of research and publication misconduct. Read more about COPE...

FEATURED
New eLearning module launched

‘Corrections, retractions and expressions of concern’ is the new COPE eLearning module just launched. The module will cover the importance of corrections, retractions and expressions of concern; terms and definitions used; and ways to correct the literature. It can be found on the COPE eLearning page.

NEWS & OPINION view all ▶

News / COPE North American seminar 13 August 2014
13/5/2014 4.49pm
Register for COPE’s 5th North American seminar, which will be held in collaboration with ISMTE

News / COPE Australian Seminar 23 June 2014
13/5/2014 2.37pm
COPE is delighted to announce its 3rd Australian Seminar, which will take place at the Karstens
All the cases COPE has discussed since its inception in 1997 have been entered into a searchable database. This database now contains over 400 cases together with the advice given by COPE. For more recent cases, the database also includes follow-up information about outcome. We hope this

- Cases database
- New scheme - 18 main Classifications, up to 2 per case
  - 99 Keywords, up to 10 per case
  - descriptive, not judgemental

*Classifications and Keywords indicate the topics discussed, not that a particular form of misconduct had occurred*
The traditional COPE Forum
Classification of COPE cases, 1997-2012, categories with >7 instances in a 4-year period
‘Fake reviewer’ cases

Retraction Watch

Retraction count grows to 35 for scientist who faked emails to do his own peer review

with 9 comments

Hyung-In Moon, the South Korean plant compound researcher who made up email addresses so he could do his own peer review, is now up to 35 retractions.

The four new retractions are of the papers in the *Journal of Enzyme Inhibition and Medicinal Chemistry* that initially led to suspicions when all the reviews came back within 24 hours. Here’s the notice, which includes the same language as Moon’s 24 other retractions of studies published in Informa Healthcare journals:

“

The corresponding author and publisher hereby retract the following articles from publication in *Journal of Enzyme Inhibition and Medicinal Chemistry*.

Effect of betaine on the hepatic damage from orotic acid-induced fatty liver development in rats

Jae-Young Cha, Hyeong-Soo Kim, Hyung-In Moon, and Young-Su Cho

Organizations can provide advice, but we need other solutions too.

COPE Ethical Guidelines for Peer Reviewers

Irene Hames on behalf of COPE Council
March 2013, v.1

Peer review in all its forms plays an important role in ensuring the integrity of the scholarly record. The process depends to a large extent on trust, and requires that everyone involved behaves responsibly and ethically. Peer reviewers play a central and critical part in the peer-review process, but too often come to the role without any guidance and may be unaware of their ethical obligations. The COPE Ethical Guidelines for Peer Reviewers set out the basic principles and standards to which all peer reviewers should adhere during the peer-review process. It is hoped they will provide helpful guidance to researchers, be a reference for journals and editors in guiding their reviewers, and act as an educational resource for institutions in training their students and researchers.

Basic principles to which peer reviewers should adhere

Peer reviewers should:

• only agree to review manuscripts for which they have the subject expertise required to carry out a proper assessment and which they can assess in a timely manner;

• respect the confidentiality of peer review and not reveal any details of a manuscript or its review, during or after the peer-review process, beyond those that are released by the journal.

Prepublication peer review: new solutions to old problems

• Open peer review
  – Bias
  – Poor, slow reviews

• Portable peer review
  – Number of reviews flooding system

• Unique researcher ID - ORCID
  – Lack of credit for reviews
Prepublication peer review: new solutions to new problems

• **Better granularity of articles** (eg DOIs for tables & figures - reviewers for specific parts of papers)
  – Complexity of articles

• **Open datasets** - allows easier replication
  – Complexity of articles
Figshare
Component Granularity and Functionality

- Digital repository
- File types
  - Text
  - Animation
  - Video
  - Posters
  - Presentations
- Search, download and reuse
Dryad—Component Granularity and Functionality

Data available in Dryad

1. DEPOSIT DATA
2. GET PERMANENT IDENTIFIER
3. WATCH YOUR CITATIONS GROW!
4. RELAX, YOUR DATA ARE DISCOVERABLE AND SECURE

http://dx.doi.org/10.5061/dryad.20
Prepublication peer review: new solutions to new problems

• Better granularity of articles (eg DOIs for tables & figures - reviewers for specific parts of papers
  – Complexity of articles

• Open datasets - allows easier replication
  – Complexity of articles

• ORCID – harder to falsify identity and references
  – Ease of falsifying references and even referees
Pre-publication peer review (few)

Continuous, open evaluation (many)
Post publication peer review

• Old problems
  – Unwillingness to comment, very field specific

• New problems
  – Too many comments
  – Tone of debate/trolling
  – Lack of credit for comments
Postpublication peer review: new solutions to old problems

- Twitter, blogs, PubMedCommons (make it easy)
  - Unwillingness to comment

- Develop a culture, mechanism of academic commenting
  - Tone of debate/trolling
  - Too many comments

- Develop unique reputation systems/ORCID
  - Lack of credit for comments
Reducing waste from incomplete or unusable reports of biomedical research.

Glasziou P¹, Altman DG², Bossuyt P³, Boutron I⁴, Clarke M⁵,Julious S⁶, Moher D⁷, Noyes R⁸, Wager T⁹.

Abstract

Research publication can both communicate and miscommunicate. Unless research is adequately reported, the time and resources invested in the conduct of research is wasted. Reporting guidelines such as CONSORT, STARD, PREMA, and ARRIVE aim to improve the quality of research reports, but all are much less adopted and adhered to than they should be. Adequate reports of research should clearly describe which questions were addressed and why, what was done, what was shown, and what the findings mean. However, substantial failures occur in each of these elements. For example, studies of published trial reports showed that the poor description of interventions meant that 40-89% were non-replicable; comparisons of protocols with publications showed that most studies had at least one primary outcome changed, introduced, or omitted; and investigators of new trials rarely sort their findings in the context of a systematic review, and cited a very small and biased selection of previous relevant trials. Although best documented in reports of controlled trials, inadequate reporting occurs in all types of studies-animal and other preclinical studies, diagnostic studies, epidemiological studies, clinical prediction research, surveys, and qualitative studies. In this report, and in the Series more generally, we point to a waste at all stages in medical research. Although a more nuanced understanding of the complex systems involved in the conduct, writing, and publication of research is desirable, some immediate action can be taken to improve the reporting of research. Evidence for some recommendations is clearer: change the current system of research rewards and regulations to encourage better and more complete reporting, and fund the development and maintenance of infrastructure to support better reporting, linkage, and archiving of all elements of research. However, the high amount of waste also warrants future investment in the monitoring of and research into reporting of research, and active implementation of the findings to ensure that research reports better address the needs of the range of research users.
Reducing waste from incomplete or unusable reports of biomedical research.

Glasziou P1, Atmadja DJ2, Pawson L3, Wolf F4, Byrom N5, East C5, Cahill J6, McEwen B7, Moher D8, Wager F9.

Author information

Paul Glasziou

Dear Ginny,

We certainly agree that, even after full publication of a well designed study set in the context of a systematic review of similar studies, poor access is a subsequent form of waste. We should have been more careful to highlight that our analysis only extended to the point of publication. We did not address the problems of subsequent waste that occurs because of closed access, lack of translation, poor findability, and other problems with the dissemination and use of research. Our original 2009 model (question, design, publication, and reporting quality) represents only a halfway point along the chain from clinical uncertainty to patient benefit. Some of the current authors aim to pursue this subsequent half, but have realized it is more complex and messy than in our previous “awareness to action” pipeline(1).

Glasziou P, Haynes RB. The paths from research to improved health outcomes. ACP J Club. 2005 Mar-Apr;142(2):A8-10.

Paul Glasziou

Ginny Barbour

Among the important topics that Paul Glasziou and colleagues address in the Lancet series on waste in research, of which this is one paper, the key issue of access to published knowledge receives little mention. More than 10 years after Open Access publishing became widely available, lack of awareness persists concerning its potential to reduce waste, as does confusion over the difference between open and free access. Iain Chalmers vividly highlighted this in his tweet about the series.

Iain Chalmers (@iainchalmersTT) 19/14, 5:34 AM Open access Lancet series on reducing waste in pre-clinical, clinical and epidemiological research thelancet.com/series/research

We thought it would be useful to clarify the differences illustrated by this example. Free access means: the article is free to read, it may not be reused (including translated) without permission; authors and readers may be charged for copying the article, and authors may be prohibited from posting their article on an institutional server. Free access is defined as: open, immediate access online; unrestricted distribution and re-use rights in perpetuity for humans and technological applications; author(s) retains rights to attribution; papers are immediately deposited in a public online archive, such as PubMed Central. These principles, backed up by internationally accepted licenses from Creative Commons, means in practice that anything published Open Access can be read and reused in perpetuity by both humans and machines.
PubMed Commons—Post-publication, Community Commenting

Hilda Bastian  October 23, 2013, 5:05 p.m.  1 of 1 people found this helpful
This paper by Jager and Leek (Jager LR. 2013) challenges Ioannidis’s conclusion that “most published research papers are false” (Ioannidis JP, 2005). Ioannidis responds to this discussion, challenging the data and analytical approach here: (Ioannidis JP, 2014). The conclusions of this paper (Ioannidis JP, 2005) were also challenged by Goodman and Greenfield in 2007 (and responded to by Ioannidis JP, 2007). I discuss this debate in a blog post.

Larry Wasserman  October 23, 2013, 8:37 a.m.  2 of 2 people found this helpful
I agree with Rob that this is an interesting paper. However, I would assume that the p-values are uniform under the null. Hidden biases can compromise this assumption leading to a distribution for the p-value that is skewed towards 0.

Scott D McGinnis  October 22, 2013, 12:43 p.m.
Comment deleted by user.

Robert Tibshirani  October 22, 2013, 11:57 a.m.  6 of 6 people found this helpful
A really interesting paper and discussion, that calls into question Ioannidis 2007 widely cited paper “Why Most Published Research Findings Are False”. Definitely worth reading: includes a discussion by D.R. Cox, probably the world’s most famous living statistician.

Hilda Bastian  October 23, 2013, 5:10 p.m.  Was this helpful yes | no
This article was mentioned in a comment by Hilda Bastian  October 23, 2013, 5:10 p.m.  See: Why most published research findings are false. [PLoS Med. 2005.]
I see one or more clear problems with the validity of this work

I have some concerns about the validity of this work

This is an exceptional example of science done well

I believe this work is reliable

If the user selects either of these two options, display the following:

*OPTIONAL:*

- Insufficient detail to support argument
- Inconsistent or erroneous logic
- Problematic methodology and/or study design
- There is no way the experiments could be reproduced or tested
- There were insufficient experimental controls
- The data do not sufficiently justify the conclusions
- Inappropriate statistical design or data analysis

*OPTIONAL:*

- The authors have made an exceptional effort to validate their conclusions
- This work provides an abundance of data for the community
- This dataset has potential for further analysis in the community
- This study is exceptionally well-designed
- I have successfully reproduced this work in whole or in part
Technology and better practice can converge... many related initiatives

- Open Access to publications
- Access to data
- Unique researcher ID
  - ORCID
- Ways of correcting the literature
  - Cross mark
Thank you – from Brisbane!