Peer Review – Past, Present and Future

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Dublin Pathology, June 2015

The Publication Process

Nature 2010;468: 29-31

Who is Involved?

• Authors
• Editors
• Reviewers
• Readers

What Does The Author Want?

• Scientific
  – High standard of peer review
  – Fair process
  – High probability of acceptance
  – Visibility (readership)
  – Citations!
  – Recognition by peers

• Administrative
  – Accessibility
  – Efficiency
  – Short publication lag
  – Low publication cost

What Does The Journal Want?

• Scientific
  – High quality material
  – Novelty
  – Fair process
  – Visibility (readership)
  – Citations!
  – Recognition by peers

• Administrative
  – Accessibility
  – Efficiency
  – Short publication lag

The Grey Areas

• What is quality?
  – Does it fit the Journal?
  – Does it have a clear message?
  – Is the science good?
  – Will it be cited?

• What is a fair process?
  – Consistent editorial decision-making
  – Independent, unbiased peer review
What is Peer Review?

- The process by which research output is subjected to scrutiny and critical assessment by individuals who are experts in those areas
- The critical assessment of manuscripts submitted to journals by experts who are not usually part of the editorial staff
- Advisory to editors, who make decisions

A Huge Endeavour

- > 28 000 peer reviewed journals (and rising)
- Almost 2 million articles per annum

Peer Review – The (Distant) Past

- Paper-based and postal
- Limited range of reviewers
- Slower
- Generally a more ‘passive’ process as communication between editor, reviewers and authors less efficient
- Resulted in a more parochial journal with limited scope for development

Peer Review – The (Recent) Past

- Online system introduced for J Path in 2002
- Dramatic improvement in:
  - Turnaround times
  - Range of reviewers
  - International reach
- Sharp rise in submissions
- Editorial triage and ‘Reject without external review’ introduced

Peer Review – The Present

>1000 submissions per annum

“Think this is bad? You should see the inside of my head.”
Peer Review – The Present

- Triage of submissions, guided by aims and scope, pragmatically essential
  - Represents peer, but not necessarily specialist, review
  - Allows more efficient use of reviewers’ time and expertise
- Blinded peer review followed by editorial decision and iteration as appropriate

Little evidence to support the value of peer review


So why do we do it?
And if we do it, how should it be done?

Is Peer Review Valued?

- ‘Peer review in scholarly publishing, in one form or another, is crucial to the reputation and reliability of scientific research’
- Valued by editors and by the research community
- But recognised not to be perfect

What are the Problems?

- Unreliable and unfair
- No clear standards, idiosyncratic
- Open to abuse and bias
- Stifles innovation
- Slow, causes delays in publication
- Expensive and labour intensive
- Reviewers overloaded, working ‘for free’
- Almost useless at detecting fraud and misconduct

Irene Hames, 2013

What are the Roles of Journals?

- Building a collective knowledge base
- Communicating information
- Validating the quality of research
- Distributing rewards
- Building scientific communities
**What is the Role of Peer Review?**

- As a quality filter
- To identify fraudulent submissions
- As a mechanism for manuscript improvement
- As a mechanism for generating multiple views
- Quality improvement is as (or possibly more) important than quality control
- Should peer review try to ‘spot’ papers that will be highly cited, or not cited at all?

**How can Journal Quality be Assessed?**

- Subjectively
  - Peer opinion
  - Perceived hierarchy of journals
  - To some extent self-fulfilling
- (More) Objectively
  - Impact factor
  - Other bibliometric indices
  - But post hoc
  - And does citation = ‘quality’?

**Impact Factor**

Number of citations during the census year to articles published in the preceding 2 years
divided by
Number of articles published in those 2 years

**Calculation**

2014 Impact Factor
- Cites in 2014 to articles published in:
  - 2013 = 1000
  - 2012 = 1000
  - Sum: 2000
- Number of articles published in:
  - 2004 = 200
  - 2003 = 200
  - Sum: 400
- Impact factor = 2000 / 400 = 5.0

**Other Measures of Quality?**

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<th>Journal</th>
<th>Psychological Review</th>
<th>Research in Nursing and Health</th>
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Frank M J Med Libr Assoc 2003; 91: 4-6
Peer Review – The Future

• Should it be open rather than blinded?
  – Pioneered by BMJ publishing group
  – Unpopular with many reviewers, particularly more junior researchers
  – Blinding of authors not feasible

Peer Review – The Future

• Should open access to the complete review record be provided?
• Should preprints (or the published article) be posted for public comment?
• Should a combination of public comment and traditional review be used?
• Examples include BMC medical journals, EMBO journals, BMJ Open etc

The ‘PLoS One’ Model

• Separate the two functions of peer review
• Publish on the basis of scientific rigour
  – Sound methodology
  – Appropriate reporting of data
• No attempt to assess novelty, impact etc
• Leave assessment of ‘value’ to post-publication processes e.g. citation

International Congress on Peer Review and Biomedical Publication, September 2013

http://www.peerreviewcongress.org/index.html

JAMA 2014; 311: 1019-20

Research on Peer Review and Biomedical Publication
Furthering the Quest to Improve the Quality of Reporting

This issue of JAMA includes a paper that presented at the Seventh International Congress on Peer Review and Biomedical Publication in September 2013. This issue presents a range of papers on the peer review process. The papers included here are intended to provide a comprehensive overview of the peer review process and to encourage further research in this area.

The papers in this issue provide insights into the current state of peer review, as well as potential improvements. The papers cover a wide range of topics, including the role of peer review in ensuring the quality of biomedical publications, the impact of peer review on research outcomes, and the challenges faced by authors and reviewers in the peer review process.

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Conclusions

• Peer review has changed and will continue to do so.
• Focus should be quality improvement rather than just quality control.
• Intrinsic biases are difficult to deal with.
• More ‘open’ processes are difficult to implement when reward systems are so intimately linked to publication.
• Online scientific interaction, particularly post-publication, will expand.

‘At its best I think we would all agree that it (peer review) does improve the quality of scientific reporting and that it can improve, through the pressure of the journal, the quality of the science itself and how it is performed.’


A List of ‘Dos’

• Develop your skills by reading
• Have something to say
• Understand the structure of a scientific article
• Keep your writing simple
• Know your Journals
• Read the instructions for authors
• Attend to the detail
• Understand the vagaries of the peer review system