

Peer review

The past and the present

Peer review

- “can be said to have existed ever since people began to identify and communicate what they thought was new knowledge...because peer review (whether it occurs before or after publication) is an essential and integral part of consensus building and is inherent and necessary for the growth of scientific knowledge”

Kronick DA

Peer review in 18th-century scientific journalism

JAMA 1990;263:1321-2

Early days

- *Philosophical Transactions*, 1665 (?1752)
(Royal Society, London)
- *Journal de Scavans*, 1702
- Royal Society of Edinburgh's Medical Essays and Observations, 1731
- Literary and Philosophical Society, Manchester, 1785

Some form of peer review

Early days

- **Format**
 - Sent to members of the society
 - Committee to oversee process
- **Assumptions, implications**
 - Honesty of author
 - Article: Responsibility of author
 - ‘Novelty, ingenuity or importance’

Early days

- **Skepticism: role, purpose**
- *Jenner's paper on smallpox rejected*
- *Thomas Huxley*
 - “paper I have sent...original and of some importance...referred to the judgement of my particular friend...will not be published. ...not a word against it...pooh-pooh it to dead certainty ...regarded as the greatest authority...no one tread on his heels...I must manouevre a little to get my poor memoir kept out of his hands”

Need?

- **Expansion of knowledge and specialization**
- **Not enough knowledge base within journals**
- **Widespread adoption?**
- **Haphazard acceptance and development of the process: 1800s, early 1900s**
- ***BMJ* (external) vs. *Lancet*, *JAMA***

Acceptance of the process

- *1940s*
 - More widespread use
 - External expert
- *1980s*
 - Three-quarters of all journals
 - Some variations
 - *Russia*: unsigned reviews, final decision by vote of editorial board
 - *China*: 2 reviewers, 75% rejection

Lock S. A difficult balance. 1985

Modern history

- Peer review
- “reached the stage of rational enquiry into the workings of editorial peer review”
- “two independent events...”
- A difficult balance. Stephen Lock, 1985
- JAMA: Peer review congress

**Rennie D. Editorial peer review: Its development and rationale.
In: Godlee F, Jeffersen T. *Peer review in health sciences*. BMJ, 1999**

Criticisms of the *process*

- **Not reliable**
- **Bias**
- **Not reproducible**
- **No standardization**
- **Secrecy: No accountability**
- **Innovations: Little chance of acceptance**
- **Conflict of interest: author and reviewer**
- **Delays publication**
- **Does not improve paper**
- **Expensive**

Players

- *Prepublication*
 - Reviewers
 - Editors
 - Authors

- *Postpublication*
 - Readers
 - Editors
 - Authors

Innovations

- **Blinding**
 - Bias, ? Improve quality, more effort, expensive
- **Electronic**
 - Wider opinion, needs regulation
- **Open**
 - Accountability

Faster, cheaper

Innovations

- **Structured**
 - Checklist, standardization, ?reproducible
- **Guidelines**
 - Outline, framework for assessment
- **Training**
 - Improve awareness, quality

Other additions

- **Statistical reviews**
 - Decrease errors, scarce manpower resource
- **Number of reviewer**
 - One to four, decrease bias
 - Problems for editors
- **Methodological experts**
 - Protocol reviews, decrease errors prior to trial

The present

- Different processes
- ‘More rigorous’ assessment
- Attempts at decreasing flaws
- Innovations: *evolve better system*

- *Has this improved the quality?*
 - Reviews
 - Manuscripts

The reviewer

- **Who?**
 - ‘Young’; <40 years of age
 - Top institution
 - Known to the editor
 - Training in epidemiology and statistics

Summary

- **Peer review**
 - ‘Only’ quality control mechanism
 - Beset with problems
- **Wide acceptance**
- **A new science**
- **Evidence: on various aspects**
- **Innovations: order of the day**