Peer review
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
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

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*
Criticisms of the *process*

- Not reliable: ?weed out bad science
- Bias: ?individual, scientific
- Not reproducible: ?consistent opinions
- No standardization
- Secrecy: No accountability
- Innovations: Little chance of acceptance
- Conflict of interest: author and reviewer
- Delays publication
- Does not improve paper
- Expensive
The players: Pre-publication

Authors

Paper

Editors

Reviewers
The players: Post-publication
Peer review

When?

How?
Peer review: When?

- ‘Colleague treatment’
- Covering letter: *important*
  - Use it to get past the ‘gatekeeper’
  - Brief, highlight importance of paper
  - Do not brag, be modest
The Editorial Office

• In-house assessment
  – Quality
  – Content
  – Topicality

• Why?
  – Peers (good): valuable commodity
  – Use: selectively

• External peer review: Yes
  – Reviewer?
Selection of reviewers

How?
• Database
• Known individuals
• Authors suggestions
• References

How many?
• Usually 2
• May go to a statistical or methodological expert
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 ‘best’ reviewer

- ‘Young’; <45 years of age
- Top institution
- Known to the editor
- Training in epidemiology and statistics
Reviewers’ role

Editor’s expectations
• Fair, honest, detailed comments
• Strengths and weaknesses
• Constructive criticism
• Help improve the paper
• Within a reasonable period: 3-4 weeks
Assessment

- New?
  - Originality

- True?
  - Methods appropriate, analysis, interpretation

- Important?
  - Relevance, context, generalizability
Peer review

- Closed
  - Author blinded
  - Author and reviewer blinded
- Open
- Online
Innovations

• Structured
  – Checklist, standardization, reproducible
• Guidelines
  – Outline, framework for assessment
• Training
  – Improve awareness, quality
Reviewers recommendations

• Not the final word
Final decision

• Multiple factors
  – Space, topicality, repetition
  – Interest to reader
  – Have we published before?
Rejection rates

**Major journals**

- New England Journal of Medicine ~ 92%
- JAMA ~ 90%
- Lancet ~ 90%
- Annals of Internal Medicine ~ 88%
- BMJ ~ 87%
- Natl Med J India ~ 75%
The author: *At the receiving end*

- 30 pp paper: 11 pp of comments; 3 reviewers
- Why 2 ways to characterise Vit D deficiency?
- Do a 2-way ANOVA and not only test of comparisons!!
- Show relationship between Vit D and PTH or Vit D and log PTH
- Don’t say genu valgum and genu varum: say knock knees and bow legs
- Call the subjects children

*11 pages of response (version 2)*
Example

Dear XYZ

Your above-referenced manuscript has been reviewed again. While the manuscript has been improved, further points must be addressed before it can be accepted for publication. Please consider the points raised below and make the requested changes or provide suitable rebuttal.

Additional 14 comments!!!

One reviewer has called it a day

Two still in good form
Example

Comments

• Why did you not do a 3 factor ANOVA??
• Do not report values in mg%.
• Do you mean mg/100 mL?
• Figure 1 should be replaced with a scatter plot.
• The authors plot the 25(OH)D as a function of the log of PTH in Fig 1. It is unclear why they did this. This figure would be strengthened by plotting the absolute PTH values with 25(OH)D.

GOD HELP US!
Dear XYZ

Your above-referenced manuscript has been reviewed again. While the manuscript has been improved, further points must be addressed before it can be accepted for publication. Please consider the points raised in the review(s) below and make the requested changes or provide suitable rebuttal.

NINE MORE COMMENTS!!!!

Finally down to only one reviewer and his/her biases!!!!
Example

• Make the image look crisp!
• 3-factor ANOVA should be better incorporated in the text
• 3-factor ANOVA should be reported in Tables also!!
• Was the difference between boys and girls for genu valgum significantly different from the difference between boys and girls for genu varum?

You wonder: Is this going to ever end?
Message

• Are reviewers meant to try us?
• Respect their view
  – do not unnecessarily capitulate
• Do not get into ego battles
Summary

- Peer review
  - ‘Only’ quality control mechanism
  - Beset with problems
- Understand role
- Decrease frustration
- Editors
  - arbitrators, lean towards authors
Peer-review process

• Quality and impact of reviews
• Timeliness of decision
• Explanation for the decision
• Copyediting
• Timeliness of publication
How researchers choose a journal

- Prestige and circulation
- Likelihood of acceptance
- Quality of peer-review
- Turnaround time
- Biostatistical review
Journal’s perception

- Compete for the best research
- Impact factor
Quality of peer review

• No formal training available

• Attempts to improve quality
  – Blinding reviewers
  – Rating reviewers
  – Checklists
  – Workshops for reviewers
Effect of blinding reviewers

• Expectation
  – Decrease bias

• Facts
  – No apparent effect on quality, time for review
  – Better quality after blinding
    • Quality of reviews higher for blinded manuscripts (3.5 vs 3.1 on a 5-point scale)
      – McNutt JAMA 1990

• Difficulty
  – Blinding reviewers, esp. in specialty journals
Open peer review

• Identity of authors and reviewers known
• Arguments in favor
  – Increased accountability
  – Fairness
  – Transparency
  – Leads to better quality reviews
  – No evidence that anonymous peer review is superior
Advantages

• Increases credit and accountability for peer reviewing
  – Most reviewers agreed to be identified to authors, and most of the authors were in favor of open peer review

• Unjust that authors should be ‘judged’ by reviewers hiding behind anonymity

• Either both should be unknown or both known
Identity of reviewers known

• If reviewers have to sign their reviews
  – Put more effort
  – Produce better reviews
  – (?? blunt their opinions for fear of causing offence)
  – More reviewers will decline to review if their identity will be revealed to authors
Rating of reviewers by editors

– Negative impact on poor quality reviewers
  • Subsequent reviews were of lower quality
  • Declined to review after the rating
– No impact on average quality reviewers
  – Callaham. *JAMA* 2002
Use of checklist

- Beneficial especially to new reviewers
Authors’ perception

- Rejected articles
  - Critical of review
- Rejected without review less satisfied than those rejected after review

Editors role

- Mitigate the sting of rejection so that authors will use the reviews to improve their research and writing
  - Weber JAMA 2002
Post-publication peer review

Readers assume that articles in peer-reviewed journals are scientifically sound

• Evidence to the contrary
• Misleading work identified after publication
• “Ultimate interpretation and decision about the value of an article rests with the reader”
• Publishing corrections, retractions, and letters critical of articles
Is peer review necessary?
• Yes!
• Journals should work to strengthen it
• Methodological review compulsory

• Impossible to eliminate misleading studies
But!

An imperfect peer-review system is a safeguard without which quality of published research would be lower