



## Surviving peer review and publishing your paper

Hans Evers, Andrew Williams

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## Human Reproduction

- Editor-in-Chief:
  - André van Steirteghem
- 2 Deputy Editors:
  - Piergiorgio Crosignani
  - Hans Evers
- 66 Associate Editors
- 4500 Peer Reviewers

- Managing Editor:
  - Andrew Williams

2009 Impact factor: 3.859



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## Writing up biomedical research

- Think of yourself as a reader for a moment.
- What kind of papers do you like to read?
- Short, substantial and clear most likely.
- Well, then, **write** short, substantial and clear papers yourself.



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### 2 questions before deciding to write

- So what ?
- Who cares ?

# 2



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### The organization of articles

1665	Letter	"First I saw this, then I saw that"
1750	Report	Narrative, I saw this, did that, and then this happened....
1850	TED	Theory Experiment Discussion
1950	IMRAD	Introduction Material & Methods Results and Discussion



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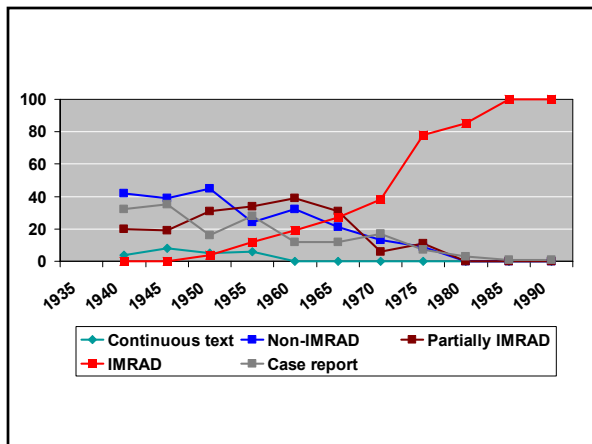
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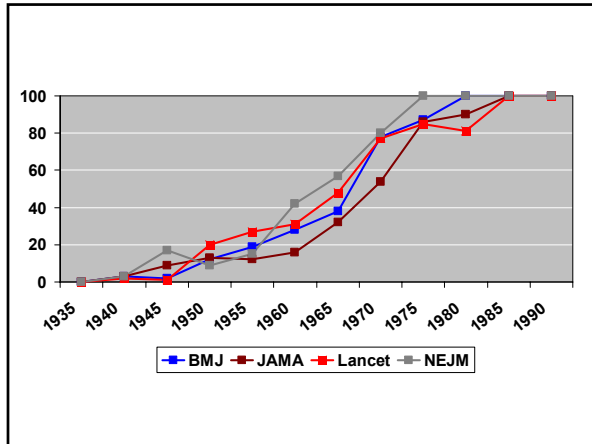
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**There are 3 ways in which clinicians read journals**

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**How do clinicians read journals?**

1. Grazing 80%
2. Hunting 15%
3. Gorging 5%, and falling




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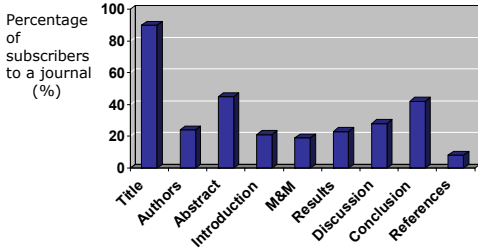
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## What do grazers read?



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## 6 Questions before starting

- Introduction**      *Why did you study this problem?*
- M&M**                *What did you do?*  
*How did you do it?*
- Results**             *What did you find?*
- Discussion**         *What does it mean?*  
*How does it relate to previous work in the field?*

# 6



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# Need help?



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<http://www.consort-statement.org/>

The CONSORT statement is an important research tool that takes an evidence-based approach to improve the quality of reports of randomized trials.




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PAPER SECTION AND TYPE	Item	Description	Reported on Page #
TITLE & ABSTRACT	1	How participants were allocated to interventions (e.g., "random allocation", "randomized", or "randomly assigned").	
INTRODUCTION	2	Scientific background and explanation of rationale.	
METHODS	3	Eligibility criteria for participants and the settings and locations where the data were collected.	
Participants	4	Practical details of the interventions intended for each group and how and when they were actually administered.	
Objectives	5	Specific objectives and hypotheses.	
Outcomes	6	Clearly defined primary and secondary outcome measures and, when applicable, any contrasts used to evaluate the quality of measurements (e.g., multiple observer ratings, training of assessors).	
Sample size	7	How sample size was determined and, when applicable, justification of any interim analyses and stopping rules.	
Randomization – Sequence generation	8	Method used to generate the random allocation sequence, including details of any restrictions (e.g., blocking, stratification).	
Randomization – Allocation concealment	9	Method used to implement the random allocation sequence (e.g., numbered containers or central telephone), clarifying whether the sequence was concealed until interventions were assigned.	
Randomization – Implementation	10	Who generated the allocation sequence, who enrolled participants, and who assigned participants to their groups.	
Blinding (masking)	11	Whether or not participants, those administering the interventions, and those assessing the outcomes were blinded to group assignment. When relevant, how the success of blinding was evaluated.	
Statistical methods	12	Statistical methods used to compare groups for primary outcomes; methods for additional analyses, such as subgroup analyses and adjusted analyses.	
RESULTS	13	Flow of participants through each stage (a diagram is strongly recommended). Specifically, for each group report the numbers of participants randomly assigned, actually started treatment, completing the study protocol, and analyzed for the primary outcome. Describe protocol deviations from study as planned.	
Participant flow	14	Table for each study showing recruitment and follow-up.	
Recruitment	14		
Baseline data	15	Baseline demographic and clinical characteristics of each group.	
Numbers analyzed	16	Number of participants (completers) in each group included in each analysis and whether the analysis uses "intention-to-treat". State the results in absolute numbers when feasible (e.g., 1000, not 50%).	
Outcomes and estimation	17	For each primary and secondary outcome, a summary of results for each group, and the estimated effect size and its precision (e.g., 95% confidence interval).	
Analyses	18	Address any analyses performed, including subgroup analyses and adjusted analyses, indicating those pre-specified and those exploratory.	
Adverse events	19	All important adverse events or side effects in each intervention group.	
DISCUSSION	20	Interpretation of the results, taking into account study hypotheses, sources of potential bias or imprecision and the dangers associated with multiplicity of analyses and outcomes.	
Interpretation	21	Generalizability (external validity) of the trial findings.	
Generalizability	21		
Overall evidence	22	General interpretation of the results in the context of current evidence.	

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### All 519 RCT's in PubMed 2000

- Power calculation mentioned 27%
- Primary outcome defined 45%
- Any blinding 60%
  - Details blinding provided 48%
  - No details blinding provided 52%
- Method of randomization reported 21%
- Method of allocation concealment reported 18%
- Handling of attrition reported (ITT) 34%



Chan & Altman, 2005

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## Technical assistance

CONSORT	Treatment study, RCT
STARD	Diagnostic test study
STROBE	Observational study
QUOROM	Systematic review, meta-analysis of RCT's
MOOSE	Systematic review, meta-analysis of observational studies

<http://www.consort-statement.org/>



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From the journal's point of view:

## What is a good review?



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### MMR timeline

- 28 Feb 1998 Lancet publication:  
MMR – "nonspecific colitis" – brain – regressive autism
- Vaccination rate dropped from 92 to 80%
- 1998: 56 cases of measles in UK
- 2008: 1348 cases, 2 died, measles officially endemic again
- Epidemiology: no increase autism after mass vaccination MMR
- 6 Mar 2004: 10 of 13 authors retract
- First author accepted € 300,000 + research funding
- First author submitted legal claim for "new disease" in 1996



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### Chart & specimen review MMR cases

Child	Lancet	Review
#1	Symptoms <2 wks	Symptoms 10 wks before MMR
#2	Symptoms <2 wks	Symptoms 3-5 months after MMR
#5	Nonspecific colitis	NAD
#6	Symptoms <24 hrs	No regressive autism, in hospital before MMR
#7	Symptoms <1 wk	No regressive autism, in hospital before MMR
#8	Nonspecific colitis	NAD, in hospital before MMR
#9	Nonspecific colitis	NAD
#10	Nonspecific colitis	NAD
#12	Symptoms <2 wks	No regressive autism



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Peer review, the essential arbiter of scientific quality

[www.senseaboutscience.org.uk](http://www.senseaboutscience.org.uk)



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### The *ideal* reviewer .....

- Is fair, courteous, polite and constructive
- Focuses on paper, not on author
- Identifies strengths and weaknesses
- Is critical, unbiased, objective and conscientious
- Establishes scientific quality (methods, statistics), identifies errors and missing references
- Detects misconduct (fraud, plagiarism, unethical behaviour)
- Determines originality
- Recognizes importance
- Identifies redundancy (double publication, salami slicing)



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### ..... but even the *most experienced* reviewer:

- Sometimes is wrong
- May misinterpret results
- May ask for unwarranted extra experiments
- If challenged may provide a harsh response
- May fail to declare a conflict of interest
- May fail to admit having insufficient knowledge of the field
- May respond late, may sometimes be busy (lazy)
- May reject too many or not enough papers
- May fail to detect scientific or ethical misconduct



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### Review the review

- The review itself is a scholarly document.
- Just as a *manuscript may be rejected* by a reviewer...
- ... a *review may be rejected* by an AE, if the reviewer fails to demonstrate knowledge of the field and if the review fails to meet minimal standards.

Adapted from Triggle & Triggle, 2007  
Vasc Health Risk Man 3:39-53



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### From the HR archives

#### Reviewer #1:

*"I found this paper an extremely muddled paper with a large number of deficits"*

#### Reviewer #2:

*"It is written in a clear style and would be understood by any reader"*



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### Serological tests for chlamydia Ab's

#### Reviewer #2, first round:

*"The authors fail to recognize that one of the major advantages of HSG is identifying an incompetent cervix before pregnancy."*

#### Reviewer #2, second round:

*"... (they) have failed to acknowledge that HSG is an important tool to identify an incompetent cervix and thus prevent preterm delivery if the fertility investigation should lead to a pregnancy. This should be added."*



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### 10 simple rules for reviewers

1. Do not accept a review assignment unless you can accomplish the task in the requested timeframe — Learn to say no
2. Avoid conflict of interest
3. Write reviews you would be satisfied with as an author
4. As a reviewer you are part of the authoring process
5. Be sure to enjoy and to learn from the reviewing process
6. Develop a method of reviewing that works for you
7. Spend your precious time on papers worthy of a good review
8. Maintain the anonymity of the review process if the journal requires it
9. Write clearly, succinctly, and in a neutral tone, but be decisive
10. Make use of the "Confidential comments to the Editor"



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## Nature series on peer review, 2006

Peer review is the only quality control we have for approving research and publicizing its results in journals and at conferences.

But it's a largely amateur process: too often poor at detecting errors, slow, expensive and unreliable.

It's not much good at picking up ethics problems or scientific fraud.

At it's worst, it blocks innovation, is unreasonably biased and is open to abuse.

Nature (2006)



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## What *is* peer review?

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## Peer review

A process of subjecting an author's scholarly work, research or ideas to the scrutiny of others who are experts in the same field.

Wikipedia  
(post-peer-reviewed)



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Or more specifically.....

.....the process by which scientific progress is critically appraised by other scientists in order to validate the work. It is one of the most important checks and balances that exists in science. Peer review acts as a quality control on research, ensuring that the highest possible standard exists for all published work.

Sense About Science



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## Peer review

- Academic journal manuscripts
- Book proposals
- Abstracts scientific meetings
- Research grant proposals
- Research reports
- Job applications
- Academic promotions
- The Nobel prize



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## Scientific papers today

- More
- More sophisticated techniques
- More interdisciplinary
- More authors
- Larger volumes of data
- More supplementary material
- Reviewed by more journals (= reviewers)
- Reviews more critical
- Increased competition for limited space



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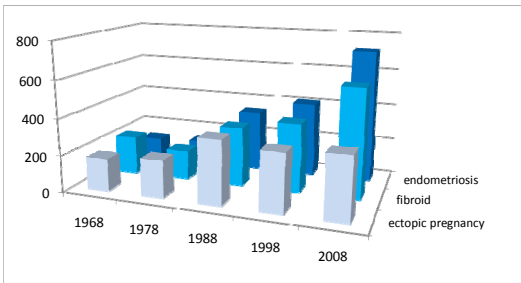
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### Publication increase 1968-2008



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### The reader's view

“Peer review thus supports the system that routes the better papers to the better journals, and this allows academics to focus their reading on a manageable number of core journals”

Mark Ware, Peer Review, 2008



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### The 4 key questions of peer review

#### 1. Do I understand it? (quality)

- Was the experimental design appropriate for the question being studied? Are the findings clear?

#### 2. Is it new? (originality)

- What does it add to what we know already?

#### 3. Do I believe it? (validity)

- Are methods appropriate, are conclusions justified by data?

#### 4. Do I care? (importance)

- Will it bring us any further investigating or treating disease?



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## The 2 key questions of the AE

### 1. Is it good?

- Are the reviewers right, do you agree that the paper is good, novel, valid and important?

### 2. Is it good *enough*?

- Does it meet the standards of HR, HRU or MHR?



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## Types of peer review

- Single blind
- Double blind
- Open
- Post-publication



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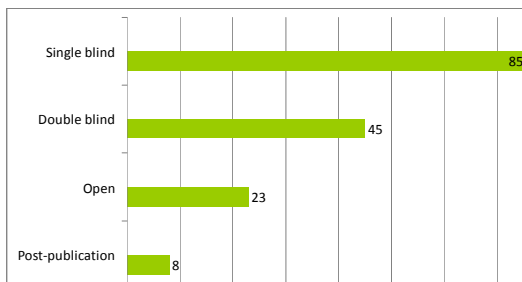
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## Types of peer review as **experienced** and as **preferred** by 3040 authors



Mark Ware, Peer Review, 2008



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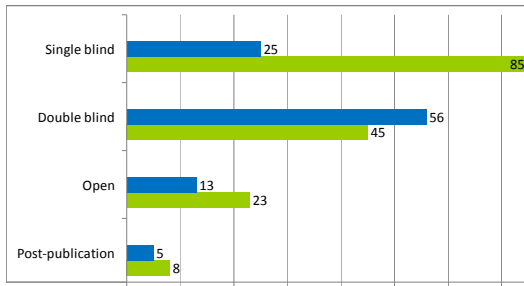
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**Types of peer review as experienced and as preferred by 3040 authors**



Mark Ware, Peer Review, 2008



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**Reviewers are authors wearing a different hat.**

Peter A Lawrence, 2003



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**Authors are reviewers**

- 90% of authors are also reviewers
- Reviewed an average of 8 papers in last 12 months
- Regularly for 3.5 journals
- Occasionally for 4.2 journals
- Took an average of 24 days to complete their last review
- Spent 5-9 hours per review



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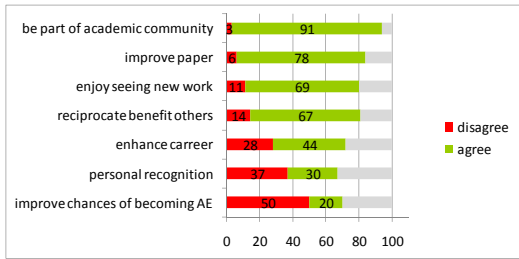
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### Reasons for reviewing



Mark Ware, Peer Review, 2008




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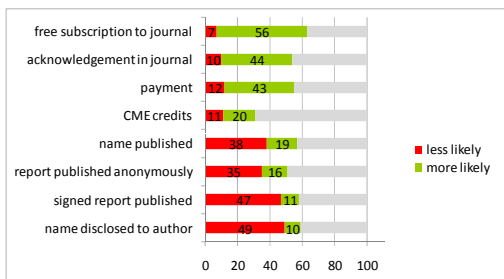
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### Factors affecting likelihood to review



Mark Ware, Peer Review, 2008




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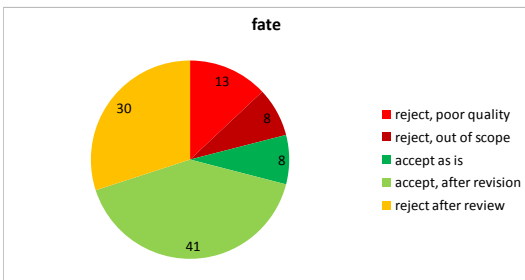
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### Fate of submitted manuscripts



Mark Ware, Peer Review, 2008




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## Benefits of peer review

- (Associate) Editors: support by expert opinion
- Authors: assistance in improving paper
- Authors: status conferred by acceptance in journal with high peer review standards
- Readers: filtering and 'seal of approval'
- Reviewers: feed back
- Reviewers: status conferred by invitation to review for high quality journal
- Reviewers: increased chance of becoming AE




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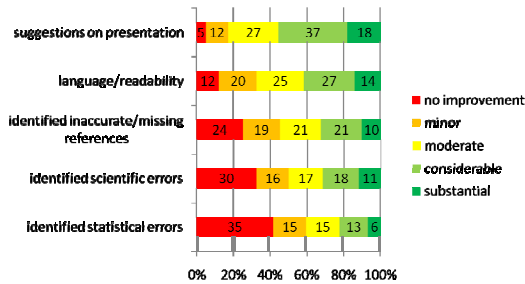
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## Improvements by peer review



Mark Ware, Peer Review, 2008




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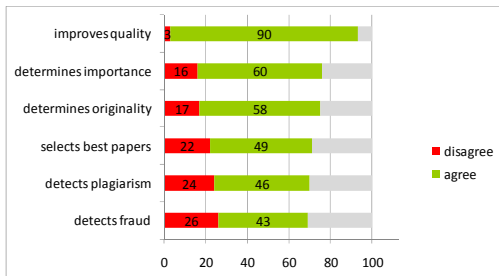
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## Effectiveness of peer review in different areas



Mark Ware, Peer Review, 2008




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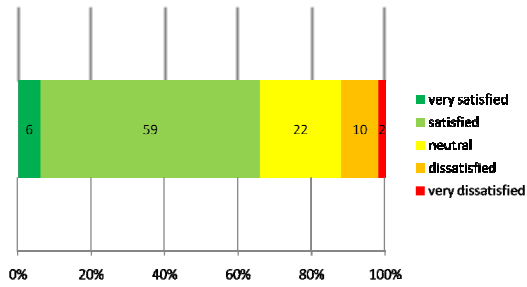
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### Authors' satisfaction with peer review



Mark Ware, Peer Review, 2008



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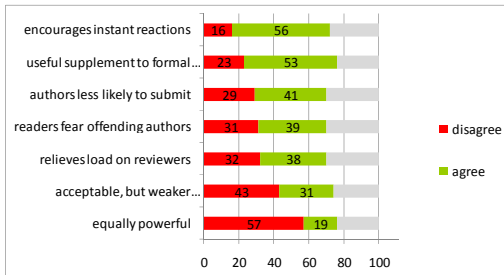
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### Views on post-publication review



Mark Ware, Peer Review, 2008



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### Aims of a review report

1. To help AE and EiC decide on manuscript
2. To help authors improve manuscript



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### What makes a good review?

1. Summary of the content in about three lines
2. Reviewer's overall opinion of the manuscript
3. Recommendations, with reasons
4. General comments, numbered
5. Specific comments, by line number



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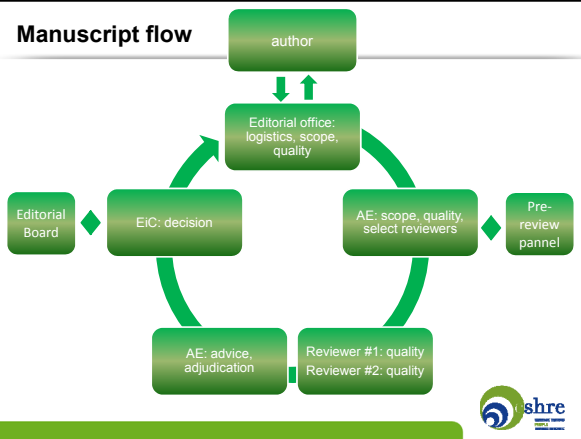
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### Manuscript flow



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### Improving peer review depends on making its human aspects more humane.

- Journals need to ask the right reviewers ...
- To review the right articles ...
- Help them do it quickly ...
- And thoroughly ...
- Make them feel happy ...
- Thank them ...
- Tell them how they did ...
- And encourage recognition of what is too often a thankless task.



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**Richard Horton, Editor, The Lancet**

The mistake is to think that peer review is any more than a crude means of discovering the acceptability – not the validity – of a new finding. We know that the system of peer review is

- Biased
- Unjust
- Unaccountable
- Incomplete
- Easily fixed
- Often insulting
- Usually ignorant
- Occasionally foolish
- Frequently wrong



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**The politics of publication**

Commentary  
Nature 422, 259-261, 2003  
Peter A. Lawrence



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Apart from the traditional technical and scientific assessments, where objective criteria are paramount, reviewers are now being asked to judge whether a manuscript constitutes a "Science" paper — is it sufficiently exciting to interest the "general reader"?

This participation in editorial decisions gives reviewers opportunities to punish authors they do not like, settle old scores and hold up competitors.

Peter A Lawrence, 2003



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A minority of reviewers take advantage of these opportunities.

Some bounce the same paper from more than one journal, making it more difficult for a less politically adept scientist to present his or her work, especially if it goes against the current grain.

Objectivity is also threatened by a tacit understanding between some leading scientists: they invite each other onto committees, to conferences, nominate each other for prizes and awards, and support publication of each other's papers.

Peter A Lawrence, 2003



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**From the authors perspective.....**

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**Wager, Godlee, Jefferson:  
How to survive peer review? 2002**

How to survive  
peer review?



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## Chapter IV

### How to ensure that your paper is rejected?

How to survive peer review  
Wager, Godlee, Jefferson, 2002

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#### Covering letter

- Use Editor's name
- State: importance of question
- State: importance of findings
- Why you have chosen this journal



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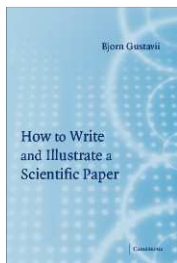
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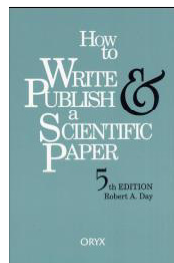
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#### Further reading



Björn Gustavii



Robert A Day



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