

HOW TO WRITE A PAPER?

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Thanks to Professor Hans Evers,
Deputy-editor of Human Reproduction
for providing me the slides of lectures
he has given at Authors' Courses of
ESHRE

I have no competing interest to declare

Eighteen paragraphs can
make a paper.

Hans Evers

First, 5 slides on peer review

At some time in our scientific career,
we all are:

- Author
- Reviewer
- Reader

93% of 3040 researchers said that they reviewed altruistically to play their part as a member of the academic community.

Peer review, benefits, perceptions, alternatives. 2008

Author – **Reviewer** – AE - EiC

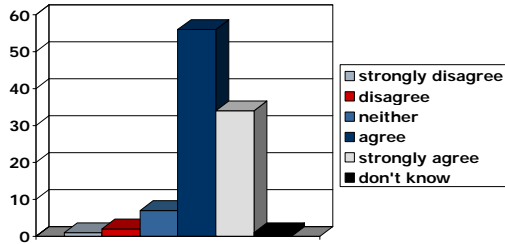
“The critical feature that makes the peer review system work is the skill and insight of the editor”

“Astute editors can use the system well, the less able who follow reviewers comments uncritically bring the system into disrepute”.

“Peer review should be used to inform the author and the editor”

Publishing Research Consortium, 2008: Peer review in scholarly journals

Peer review improves the quality of the published paper



Publishing Research Consortium, 2008: Peer review in scholarly journals

Peer review

"There is little empirical evidence to support the use of editorial peer review as a mechanism to ensure quality of biomedical research publications, despite its widespread use and costs".

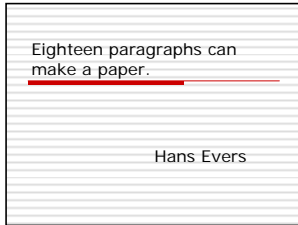
Cochrane Collaboration, 2003

Peer review

Without peer reviewers, the whole edifice of scientific research and publication would have no foundation.

Lancet 371: 447, 2008

First slide please ...



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.

Mimi Zeiger

2 questions before deciding to write

- So what ?
- Who cares ?

2

Scholarly journals



5 January 1665

Denis de Sallo, France

Le Journal des Scavans

Le Journal de Scavans 1665



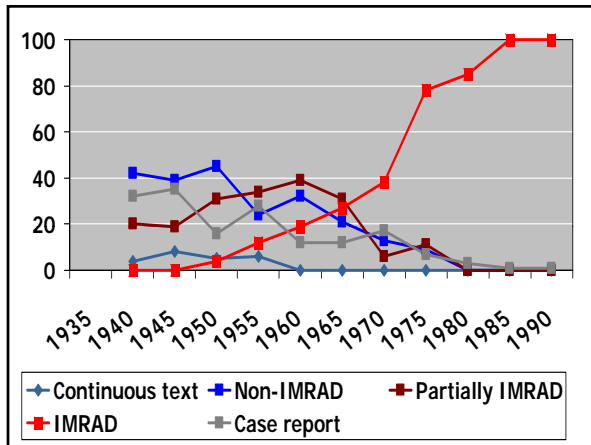
- Catalogue and short description of books
- Obituaries of famous men
- Experiments in physics and chemistry
- Astrological phenomena
- Anatomical findings
- Useful machines
- Decisions of tribunals and universities
- Current events in academia

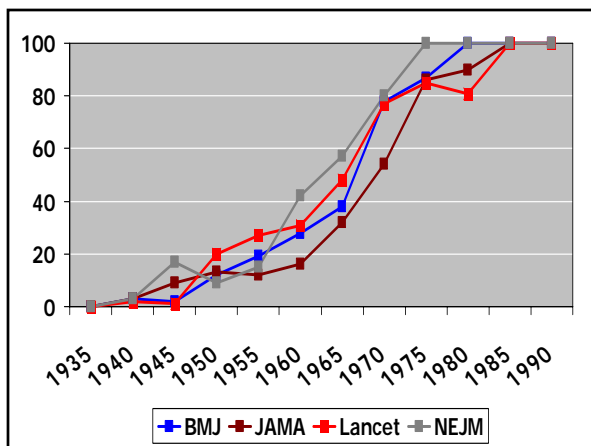
Scholarly journals

1665	Journal de scavans	France
1665	Philosophical transact Royal Society	U.K.
1668	Giornale dei litterati di Roma	Italy
1670	Miscellanea curiosa medico-physica	Germany
1673	Acta medica et philosophica	Denmark
1680	Collectanea medico-physica	Netherlands

The organization of articles

1665	Letter	<i>"First I saw this, then I saw that"</i>
1750	Report	Narrative
1850	TED	Theory Experiment Discussion
1972	IMRAD	Introduction Material & Methods Results and Discussion





There are 3 ways in which
clinicians read journals

3





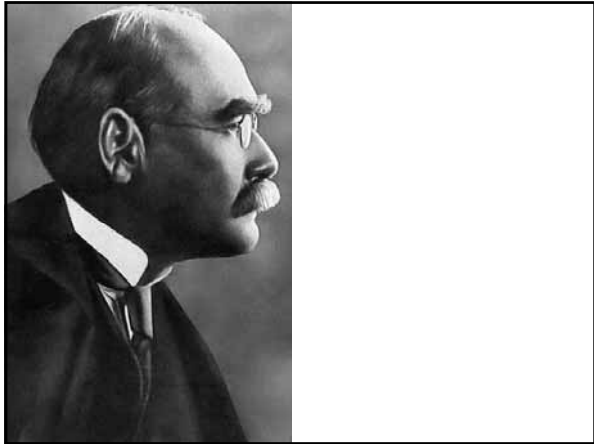


How do clinicians read journals?

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

What do grazers read?

Section	Percentage (%)
Title	90
Authors	25
Abstract	45
Introduction	22
M&M	20
Results	25
Discussion	30
Conclusion	45
References	10



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?



18

Reporting clinical studies effectively in 18 thoughtful paragraphs

Introduction

Paragraph	Text
1. Start	The first sentence should pick up some or most of the words from the title
2. Why	Provide a context and motivation for the investigation
3. What	The last sentence should begin: "The purpose of this study is to ..."

Oral contraceptives and GnRH-agonists show similar outcomes in endometriosis.

It has been suggested that the treatment outcome of GnRH-agonists in endometriosis is superior to any other medical treatment.

Hum Reprod 2006;22, 112-118

Introduction

Paragraph	Text
1. Start	The first sentence should pick up some or most of the words from the title
2. Why	Provide a context and motivation for the investigation
3. What	The last sentence should begin: "The purpose of this study is to ..."

Motivation	Example
Purpose	This paper presents an evidence-based approach to diagnosing PID.
Scope	This paper discusses 5 causes of fertilization failure after ICSI.
Viewpoint	Calling ART clinicians 'providers' insults our professionalism.
Quotation	Recently, in Human Reproduction, Van Steirteghem reported ...
Question	Which is the safest way to perform a laparoscopy?
Argument	The diagnosis of PCOS is not based on ultrasound findings. Is this logical?
Action	Now is the time to reconsider blastocyst transfer.
Case report	The next patient you see may have porphyria. Will you recognize it?
Statistic	1 in 6 high school girls is chlamydia positive.

Introduction

Paragraph	Text
1. Start	The first sentence should pick up some or most of the words from the title
2. Why	Provide a context and motivation for the investigation
3. What	The last sentence should begin: "The purpose of this study is to ..."

Material & Methods

Paragraph	Text
4. Subjects	Study design Inclusion/exclusion criteria, participants Informed consent, IRB approval Demographics (if retrospective): table I
5. Procedures	Detail experiment, drugs, equipment
6. Definitions & criteria	Disease criteria, ranking system (give criteria), staging of disease, (in)dependent variables
7. Data collection	Prospective/retrospective Validation of data, data quality Blinding, intra/interobserver variability Gold standard
8. Statistics	Statistical tests in order in which applied Sample size, power calculation

Results

Paragraph	Text
9. Subjects	Demographics (if prospective): table I
10. Results	Facts & numbers, no editorializing
11. Presentation	Tables & figures (do not repeat text)
12. Correlations	How well did independent variable (predictor) lead to dependent variable (outcome)? Effect sizes of variables Comparison to gold standard Statistical significance (statement of strength of evidence, not of clinical importance)

Discussion

Paragraph	Text
13. Summarize results	Principal findings, i.e. those that address questions posed in Introduction Do not reiterate Results Never, <i>never</i> introduce new data
14. Interpretation of results	Principal findings of paragraph 13 become substrate on which principal conclusions are based Too many conclusions dilute the impact of any one
15. Interpretation in context of the literature	Consistent with or departure from current thinking Give reasons No literature review, focus on relating studies
16. Clinical implications	Clinical study: discuss new insight in disease Basic study: discuss pathophysiology
17. Limitations	Be thoughtful & self-critical, discuss validity of findings, practical limits, interpretations

Conclusion

Paragraph	Text
18. So what	Restate principal findings and conclusions Emphasize clinical and basic science implications of principal findings Indicate logical next step (if any)

Introduction

- 1. Statement of issue
- 2. Why this paper is needed
- 3. Purpose & hypothesis

M&M

- 4. Subjects
- 5. Procedures & techniques
- 6. Definitions & criteria
- 7. Data collection & validation
- 8. Statistical tests

Results

- 9. Descriptive statistics, baseline population comparisons
- 10. Results, outcome
- 11. Measures of data validity
- 12. Statistical analysis

Discussion & Conclusion

- 13. Principal results
- 14. Interpretation of principal results
- 15. Interpretation in context of literature
- 16. Clinical/pathophysiol. implications
- 17. Limitations
- 18. Conclusion, future directions

What IMRAD does not address

- The title
- The authors
- The abstract
- The acknowledgements
- The references

About titles

SET in IVF

About titles

In unselected patients, elective single embryo transfer prevents all multiples, but results in significantly lower pregnancy rates compared with double embryo transfer: a randomized controlled trial.

About titles

NEJM	Concise and descriptive, not declarative
Lancet	Concise but informative
Ann Int Med	As brief as possible while conveying essential features of the article's content
BMJ	Keep them concise
HR	Specific and informative, should not exceed 25 words

Waste words

Auricular electro-**acupuncture** as an additional perioperative **analgesic** method during **oocyte aspiration** in IVF treatment

Waste words

Auricular electro-**acupuncture** as an additional perioperative **analgesic** method during **oocyte aspiration** in IVF treatment

Analgesia by acupuncture during oocyte aspiration

Essential for titles

- Concise and precise
- Informative and descriptive
- Not misleading or unrepresentative
- Specific: type of study (RCT) and numbers (if large)
- Words appropriate for classification
- Interesting, not dull, lure grazer into reading

G.M. Hall, How to write a paper, 2008

Describe paper in 1 or 2 sentences

A epidemiological geographically based study of the quantity and effects of ionising radiation received by male employees of a nuclear reprocessing plant and male residents working elsewhere in the same vicinity shows an increased risk of infertility in nuclear workers only. (41 words)

Describe paper in 1 or 2 sentences	A epidemiological geographically based study of the quantity and effects of ionising radiation received by male employees of a nuclear reprocessing plant and male residents working elsewhere in the same vicinity shows an increased risk of infertility in nuclear workers only. (41 words)
Remove waste words	A epidemiological geographically based study of the quantity and effects of ionising radiation received by male employees of a nuclear reprocessing plant and male residents working elsewhere in the same vicinity shows an increased risk of infertility in nuclear workers only. (41 words)

Describe paper in 1 or 2 sentences	A epidemiological geographically based study of the quantity and effects of ionising radiation received by male employees of a nuclear reprocessing plant and male residents working elsewhere in the same vicinity shows an increased risk of infertility in nuclear workers only. (41 words)
Remove waste words	A epidemiological geographically based study of the quantity and effects of ionising radiation received by male employees of a nuclear reprocessing plant and male residents working elsewhere in the same vicinity shows an increased risk of infertility in nuclear workers only. (41 words)
Write draft title	Epidemiological study of the effect of ionising radiation on fertility in male employees of nuclear reprocessing plants. (17 words)

Describe paper in 1 or 2 sentences	A epidemiological geographically based study of the quantity and effects of ionising radiation received by male employees of a nuclear reprocessing plant and male residents working elsewhere in the same vicinity shows an increased risk of infertility in nuclear workers only. (41 words)
Remove waste words	A epidemiological geographically based study of the quantity and effects of ionising radiation received by male employees of a nuclear reprocessing plant and male residents working elsewhere in the same vicinity shows an increased risk of infertility in nuclear workers only. (41 words)
Write draft title	Epidemiological study of the effect of ionising radiation on fertility in male employees of nuclear reprocessing plants. (17 words)
Reduce it	Nuclear reprocessing, radiation exposure, and male infertility: an epidemiological study. (10 words)

HR structured abstract

Background *Background and objective*

Methods *Design, setting, patients, interventions, main outcome measures*

Results *Main results*

Conclusions *Conclusion
Single most important limitation*

<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.

PAPER SECTION And topic	Item	Description	Reported on Page #
TITLE & ABSTRACT	1	How participants were allocated to interventions (e.g., "random allocation", "randomized", or "randomly assigned").	
INTRODUCTION	2	Rationale, background and justification of rationale.	
Background	3	Eligibility criteria for participants and the settings and locations where the data were collected.	
METHODS	4	Specify details of the interventions intended for each group and how and when they were actually administered.	
Participants	5	Specify objectives and hypotheses.	
Interventions	6	Clearly define primary and secondary outcome measures and, when applicable, any methods used to address the quality of measurement (e.g., multiple observations, training of assessors).	
Objectives	7	How sample size was determined and, when applicable, justification of any interim analyses and stopping rules.	
Outcomes	8	Method used to generate the random allocation sequence, including details of any restrictions (e.g., blocking, stratification).	
Sample size	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 – Sequence generation	10	How generated the allocation sequence, who enrolled participants, and who assigned participants to their groups.	
Randomization – Allocation concealment	11	Whether or not participants, those administering the interventions, and those assessing the outcomes were blinded to group assignments. When relevant, specify the location of blinding and evaluation.	
Randomization – Implementation	12	Statistical methods used to compare groups for primary outcomes. Methods for additional analyses, such as subgroup analyses and adjusted analyses.	
Blinding (masking)	13	Flow of participants through each stage (a diagram is strongly recommended). Specifically, for each group report the numbers of participants randomly assigned, receiving intended treatment, completing the study protocol, and analyzed for the primary outcome. Describe protocol deviations from those originally planned.	
Statistical methods	14	Specify all methods of recruitment and follow-up.	
RESULTS	15	Baseline demographic and clinical characteristics of each group.	
Participant flow	16	Number of participants (denominators) in each group included in each analysis and whether the analysis was "intention-to-treat". State the results in absolute numbers when feasible (e.g., 1000, not 50%).	
Recruitment	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).	
Baseline data	18	Subgroup analyses to be reported were pre-specified and reported, including subgroup analyses and adjusted analyses, indicating those pre-specified and those exploratory.	
Numbers analyzed	19	All important adverse events or side effects in each intervention group.	
Outcomes and estimation	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.	
Ancillary analyses	21	Generalizability (external validity) of the trial findings.	
Adverse events	22	General interpretation of the results in the context of current evidence.	
DISCUSSION			
Interpretation			
Generalizability			
Overall evidence			

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

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/>

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



How to survive
peer review?

How to ensure that your paper is rejected?

- ❑ Adopt a ponderous wordy style and make everything ambiguous – after all, if readers can understand the stuff it can't be that clever

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

How to ensure that your paper is rejected?

- ❑ Insert references to all your previous publications at random, especially if they bear no relation to the current work

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

How to ensure that your paper is rejected?

- ❑ If you must follow a structure make sure that you include some choice results in the M&M section and plenty of discussion in the Results

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

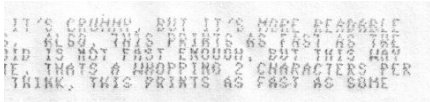
How to ensure that your paper is rejected?

- On no account read the instructions to authors

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

How to ensure that your paper is rejected?

- Print everything single spaced on an ancient dot-matrix printer



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

How to ensure that your paper is rejected?

- Print everything single spaced on an ancient dot-matrix printer
- If you don't have access to such a printer, make sure that the toner is low and, failing that, make illegible photocopies

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

How to ensure that your paper is rejected?

- Make sure your pages are not numbered and, if possible, submit them out of order

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

How to ensure that your paper is rejected?

- Make sure that you exceed the maximum length by at least 1000 words and two tables

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

How to ensure that your paper is rejected?

- Address the covering letter to an editor who died several years ago and misspell his name

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

Further reading



Björn Gustavii



Robert A Day



George M Hall



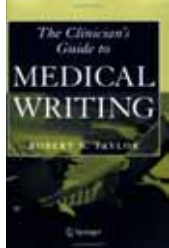
Further reading



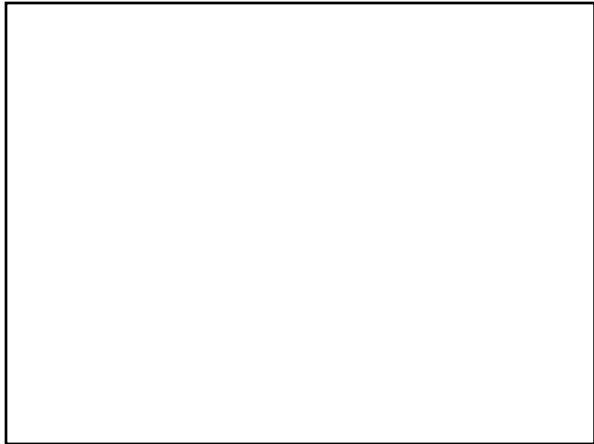
Jennifer Peat



Vernon Booth



Robert Taylor



And finally

What to do if your paper is still rejected?

Rejection letter

Dear Editors,

Thank you for rejecting our paper. As you know we receive a great many rejections, and unfortunately it is not possible for us to accept all of them. Your rejection was carefully reviewed by three experts in our laboratory, and based on their opinions, we find that it is not possible for us to accept your rejection. By this we do not imply any lack of esteem for you or your journal, and we hope that you will not hesitate to reject our papers in the future.

Yours sincerely,
Professor Hedgehog

Mole, J Cell Science 120: 1311-1313, 2007
