Fidelity and Transparency of Research Reporting – Perspectives of Data Integrity

problems associated with the reporting of biomedical research and some possible solutions

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Declaration of competing interests

- Editor-in-Chief, Systematic Reviews
- Editorial board member/advisory board member to several journals
- Member of the Cochrane Library’s oversight committee
- Member of the EQUATOR Network steering group
- Developed CONSORT and PRISMA reporting guidelines
Outline of talk

- Medical industrial complex
- Waste in biomedical research
- Some possible solutions
- Funding the solutions
The medical publishing industrial complex is big business

- $100 - $200 billion dollars globally, annually, on biomedical research
- Produces about 3 million manuscripts
- About 50% of which subsequently get published
  - 6000 publishers
  - 25,000 journals (editors)

Chalmers I. 2009
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- About 50% of which subsequently get published
  - 6000 publishers
  - 25,000 journals (editors)

- 85% wasted

Chalmers I. 2009
SPECIAL ARTICLE

THE IMPORTANCE OF BETA, THE TYPE II ERROR AND SAMPLE SIZE
IN THE DESIGN AND INTERPRETATION OF THE RANDOMIZED CONTROL TRIAL

Survey of 71 “Negative” Trials

Jennie A. Freiman, A.B., Thomas C. Chalmers, M.D., Harry Smith, Jr., Ph.D.,
and Roy R. Kuebler, Ph.D.

Abstract Seventy-one “negative” randomized control trials were re-examined to determine if the investigators had studied large enough samples to give a high probability (>0.90) of detecting a 25 per cent and 50 per cent therapeutic improvement in the response. Sixty-seven of the trials had a greater than 10 per cent risk of missing a true 25 per cent therapeutic improvement, and with the same risk, 50 of the trials could have missed a 50 per cent improvement. Estimates of 90 per cent confidence intervals for the true improvement in each trial showed that in 57 of these “negative” trials, a potential 25 per cent improvement was possible, and 34 of the trials showed a potential 50 per cent improvement. Many of the therapies labeled as “no different from control” in trials using inadequate samples have not received a fair test. Concern for the probability of missing an important therapeutic improvement because of small sample sizes deserves more attention in the planning of clinical trials. (N Engl J Med 299:690-694, 1978)

THIRTY years have elapsed since the publication of the first clinical trials employing randomization.1 Since then the randomized control trial has gradually become accepted as the most effective way of determining the relative efficacy and toxicity of

To facilitate an understanding of the deficiencies of many “negative” trials a description of the technical aspects of the proper choice of size of a clinical trial is presented below.
And still a problem …

The completeness of intervention descriptions in published National Institute of Health Research HTA-funded trials: a cross-sectional study

Lisa Douet,1 Ruairidh Milne,2 Sydnee Anstee,3 Fay Habels,1 Amanda Young,1 David Wright1

ABSTRACT
Objectives: The primary objective of this study was to assess whether National Institute of Health Research (NIHR) Health Technology Assessment (HTA)-funded randomised controlled trials (RCTs) published in the HTA journal were described in sufficient detail to replicate in practice.

Setting: RCTs published in the HTA journal up to March 2011. Completeness of the intervention description was assessed independently by two reviewers using a checklist, which included assessments of participants, intensity, schedule, materials and settings. Disagreements in scoring were discussed in the team; differences were then explored and resolved.

Primary and secondary outcome measures: Propriety of treatment as having a complete description of the intervention (primary outcome measure). The proportion of drug trials versus psychological and non-drug trials rated as having a complete description of the intervention (secondary outcome measure).

Results: Components of the intervention description were missing in 68/98 (69.4%) reports. Baseline characteristics and descriptions of settings had the highest levels of completeness with over 90% of reports complete. Reports were less complete on patient information with 58.2% of the reports having an adequate description. When looking at individual intervention types, drug intervention descriptions were more complete than non-drug interventions with 33.3% and 30.0% levels of completeness, respectively. Although this was not significant statistically. Only 27.3% of RCTs with psychological interventions were deemed to be complete, although again these differences were not significant statistically.

Conclusions: Ensuring the replicability of study interventions is an essential part of adding value in research. All reports publishing clinical trial data need to ensure transparency and completeness in the reporting of interventions to ensure that study interventions can be replicated.

INTRODUCTION
A recent publication by Chalmers and Gluud1 has suggested that as much as 80% of the USD 10 billion spent on health research worldwide each year is potentially wasted due to four key problems of knowledge production and dissemination.

Several studies have specifically assessed the above area for ensuring that the funded research is unbiased and usable by exploring the quality and utility of publications from funded health research. This is a key concern considering the role effective summaries of evidence have in facilitating knowledge transfer and enhancing the uptake of findings in clinical practice. While it is recognized that trial registration databases and scientific journals can be restricted in terms of word allowance, various strategies have been proposed to improve the reporting of interventions in the published trials, including an 'intervention bank' to include manuals and fidelity tools linked to trial registration numbers.2

Studies have highlighted concerns about the descriptions of interventions in final reports and publications. In one study, for example, 80 consecutive studies were
Research

Recherche

Outcome reporting bias in randomized trials funded by the Canadian Institutes of Health Research

An-Wen Chan, Karmela Krela-Jeric, Isabelle Schmid, Douglas G. Altman

† See related article page 750

Abstract

Background: The reporting of outcomes within published randomized trials has previously been shown to be incomplete, biased and inconsistent with study protocols. We sought to determine whether outcome reporting bias would be present in a cohort of government-funded trials subjected to rigorous peer review.

Methods: We compared protocols for randomized trials approved for funding by the Canadian Institutes of Health Research (formerly the Medical Research Council of Canada) from 1990 to 1998 with subsequent reports of the trials identified in journal publications. Characteristics of reported and unreported outcomes were recorded from the protocols and publications. Incompletely reported outcomes were defined as those with insufficient data provided in publications for inclusion in meta-analyses. An overall odds ratio measuring the association between completeness of reporting and statistical significance was calculated stratified by trial. Finally, primary outcomes specified in trial protocols were compared with those reported in publications.

Results: We identified 48 trials with 68 publications and 1402 outcomes. The median number of participants per trial was 259, and 44% of the trials were published in general medical journals. A median of 31% (10th–90th percentile range 5%–67%) of outcomes measured to assess the efficacy of an intervention (efficacy outcomes) and 39% (0%–100%) of those measured to assess the harm of an intervention (harm outcomes) per trial were incompletely reported. Statistically significant efficacy outcomes had a higher odds than non-significant efficacy outcomes of being fully reported (odds ratio 2.7; 95% confidence interval 1.5–5.0). Primary outcomes differed between protocols and publications for 40% of the trials.

Interpretation: Selective reporting of outcomes frequently occurs in publications of high-quality government-funded trials.

Research Council of Canada (MRC) — recognized the need to address this issue and conducted an internal review process in 2002 to evaluate the reporting of results from its funded trials. The primary objectives were to determine (a) the prevalence of incomplete outcome reporting in journal publications of randomized trials; (b) the degree of association between adequate outcome reporting and statistical significance; and (c) the consistency between primary outcomes specified in trial protocols and those specified in subsequent journal publications.

Methods

In November 2002 we identified protocols for randomized trials that were approved for funding from 1990 to 1998 by CIHR or MRC through a comprehensive, extensively peer-reviewed application process. A randomized trial was defined as a prospective study assessing the efficacy or harm of health care interventions and randomly allocating human participants to study groups.

We identified subsequent journal publications for each trial through a survey of principal investigators and through literature searches of PubMed, EMBASE and the Cochrane Controlled Trials Register using investigator names and keywords (final search in January 2003). We included any journal article that reported final results.

We reviewed protocols and all publications to record trial characteristics as well as the number and characteristics of reported outcomes (including statistical significance, completeness of reporting and specification as primary or secondary). An outcome was defined as a variable measured at a specific time point to assess the efficacy or harm of an intervention. Completeness of outcome reporting was defined at 4 levels based on the amount of data presented in the results section of any publications (Fig. 1). Data presented in the form of text, tables or graphs were included. A fully reported outcome was one with sufficient data to determine both an effect size and a measure of precision, thus en-
And still a problem ....

Quality of reporting in systematic reviews of adverse events: systematic review

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Abstract

Objectives To examine the quality of reporting of harms in systematic reviews, and to determine the need for a reporting guideline specific for reviews of harms.

Design Systematic review.

Data sources Cochrane Database of Systematic Reviews (CDSR) and Database of Abstracts of Reviews of Effects (DARE).

Review methods Databases were searched for systematic reviews having an adverse event as the main outcome, published from January 2008 to April 2011. Adverse events included an adverse reaction, harm, or complications associated with any healthcare intervention. Articles with a primary aim to investigate the completeness of an intervention were also included. We developed a list of 37 items to measure the quality of reporting of harms in each review; data were collected on dichotomous outcomes (“yes” or “no” for each item).

Results Of 4644 reviews identified, 359 were systematic reviews or meta-analyses primarily assessing harms (13 from CDSR, 296 from DARE). Despite a shorter time interval, the comparison between the years of 2008 and 2010-11 showed no difference in the quality of reporting over time (P=0.079). Titles in fewer than half the reviews (proportion of reviews 0.48 (95% confidence interval 0.41 to 0.55)) did not mention any harm related terms. Almost one third of DARE reviews (0.26 (0.22 to 0.30)) did not clearly define the adverse event measured, nor did they specify the study design selected or inclusion in their methods section. Almost half of reviews (n=170) did not consider patient risk factors or length of follow-up when reviewing harms at an intervention. Of 37 reviews of complications related to surgery or other procedures, only four (0.10 (0.07 to 0.16)) reported professional qualifications of the individuals involved. The unweighted, proportion of reviews with good reporting was 0.55 (0.55 to 0.57); corresponding proportions were 0.55 (0.53 to 0.57) in 2008, 0.56 (0.54 to 0.57) in 2009, and 0.55 (0.55 to 0.55) in 2010-11.

Conclusions Systematic reviews compound the poor reporting of harms data in primary studies by failing to report on harms or doing so inadequately. Improving reporting of adverse events in systematic reviews is an important step towards a balanced assessment of an intervention.

Introduction

A balanced assessment of interventions requires analysis of both benefits and harms. Systematic reviews and meta-analyses of randomised controlled trials are the preferred method to synthesise evidence in a comprehensive, transparent, and reproducible manner. Randomised controlled trials merely assess harms as their primary outcome; therefore, they typically lack the power to detect differences in harms between groups (table 1). Usually designated to evaluate treatment efficacy or effectiveness, randomised controlled trials are often done over a short period of time, with a relatively small number of participants. These trials are known to be poor at identifying and reporting harms, which can lead to a misconception that a given intervention is safe, when its safety is actually unknown. Systematic reviews with a primary objective to assess harms represent fewer than 3% of all systematic reviews published yearly. Systematic reviews of harms can provide valuable information to describe adverse events (frequency, nature, seriousness), but they are hampered by a lack of standardised
Reporting and Interpretation of Randomized Controlled Trials With Statistically Nonsignificant Results for Primary Outcomes

Isabelle Bouton, MD, PhD
Susan Dutton, MSc
Philippe Ravaud, MD, PhD
Douglas G. Altman, DSc

ACCUrATE PRESENTATION OF the results of a randomized controlled trial (RCT) is the cornerstone of the dissemination of the results and their implementation in clinical practice. The Declaration of Helsinki states that "authors have a duty to make publicly available the results of their research on human subjects and are accountable for the completeness and accuracy of their reports." To help enforce this principle, trial registration is required, and reporting guidelines are available. However, investigators usually have broad latitude in writing their articles; they can choose which data to report and how to report them.

Consequently, scientific articles are not simply reports of facts, and authors have many opportunities to consciously or subconsciously shape the impression of their results for readers.

Context Previous studies indicate that the interpretation of trial results can be distorted by authors of published reports.

Objective To identify the nature and frequency of distorted presentation or "spin" (ie, specific reporting strategies, whatever their motive, to highlight that the experimental treatment is beneficial, despite a statistically nonsignificant difference for the primary outcome, or to distract the reader from statistically nonsignificant results) in published reports of randomized controlled trials (RCTs) with statistically nonsignificant results for primary outcomes.

Data Sources March 2007 search of MEDLINE via PubMed using the Cochrane Highly Sensitive Search Strategy to identify reports of RCTs published in December 2006.

Study Selection Articles were included if they were parallel-group RCTs with a clearly identified primary outcome showing statistically nonsignificant results (ie, P≥.05).

Data Extraction Two readers appraised each selected article using a pretested, standardized data abstraction form developed in a pilot test.

Results From the 616 published reports of RCTs examined, 72 were eligible and appraised. The title was reported with spin in 13 articles (18.0%; 95% confidence interval [CI], 10.0%-28.9%). Spin was identified in the Results and Conclusions sections of the abstracts of 27 (37.5%; 95% CI, 26.4%-49.7%) and 42 (68.3%; 95% CI, 46.1%-69.8%) reports, respectively, with the conclusions of 17 (23.6%; 95% CI, 14.4%-35.1%) focusing only on treatment effectiveness. Spin was identified in the main-text Results, Discussion, and Conclusions sections of 21 (29.2%; 95% CI, 19.0%-41.1%), 31 (43.1%; 95% CI, 31.4%-55.3%), and 36 (50.0%; 95% CI, 38.0%-62.0%) reports, respectively. More than 40% of the reports had spin in at least 2 of these sections in the main text.

Conclusion In this representative sample of RCTs published in 2006 with statistically nonsignificant primary outcomes, the reporting and interpretation of findings was frequently inconsistent with the results.
Retractions and fraud have increased substantially in the last decade
  - 4 fold
2 major cases in anesthesia
  - Fujii retracted 39 reports
  - Boldt retracted 88 articles
• All of this evidence is based on published papers
• Passed peer review and journal editors
COVER The ability to publish papers and underlying data in full on the Internet is changing how scientists communicate. However, trust in the integrity of submissions and in peer reviewers is being tested by a recent disruptive change: open access. In a special section, *Science* probes the dramatic shifts in the landscape of scientific communication. See page 56. Image: David Plunkert
Peer review reviewed. Few journals did substantial review that identified the paper’s flaws.
How Science Goes Wrong.

Einsteinium
“Journals, some of which have been in the business of reporting research for many decades, are still not producing articles that are clear enough to really judge a study’s conduct, quality, and importance – let alone to allow other researchers to reproduce it or build on it”

- Trish Groves, Deputy Editor, BMJ; Editor-in-chief BMJ Open
Luxury journals: The Lancet
Executive summary

The Lancet presents a Series of five papers about research. In the first report, Iain Chalmers et al discuss how decisions about which research to fund should be based on issues relevant to users of research. Next, John Ioannidis et al consider improvements in the appropriateness of research design, methods, and analysis. Rustam Al-Shahi Salman et al then turn to issues of efficient research regulation and management. Next, An-Wen Chan et al examine the role of fully accessible research information. Finally, Paul Glasziou et al discuss the importance of unbiased and usable research reports. These papers set out some of the most pressing issues, recommend how to increase value and reduce waste in biomedical research, and propose metrics for stakeholders to monitor the implementation of these recommendations.

Biomedical research: increasing value, reducing waste

Increasing value and reducing waste in research design, conduct, and analysis
John P A Ioannidis, Sandor Greenland, Mark A Hlatky, Mous J Khoury, Malcolm R Macleod, David Mohar, Kenneth F Schult, Robert Tishband

Increasing value and reducing waste in biomedical research regulation and management

Increasing value and reducing waste: addressing inaccessible research
An-Wen Chan, Fujian Song, Andrew Vickers, Tom Jefferies, Kay Dickins, Peter C Gertigche, Marlin M Krumholz, Davina Ghersi, Mart van der Vloop

Reducing waste from incomplete or unusable reports of biomedical research
Paul Glasziou, Douglas G Altman, Patrick Bossuyt, Isabelle Boutron, Mike Clarke, Steven Jullians, Susan Michie, David Mohar, Elizabeth Wager

Audio
Research: increasing value, reducing waste
Paul Glasziou discusses a new Lancet Series, Research: increasing value, reducing waste
Download mp3, 12:52 mins, 12.4MB

Flipbook version

View flipbook version (tablet friendly)

Related content published in The Lancet
Paul Glasziou: surfing the wave of evidence-based medicine
Richard Lane

Return to Clinical Series | Return to Global Health Series
Figure: Avoidable waste or inefficiency in biomedical research
Research: increasing value, reducing waste 5

Reducing waste from incomplete or unusable reports of biomedical research

Paul Glasziou, Douglas G Altman, Patrick Bossuyt, Isabelle Boutron, Mike Clarke, Steven Julious, Susan Michie, David Moher, Elizabeth Wager

Research publication can both communicate and miscommunicate. Unless research is adequately reported, the time and resources invested in the conduct of research is wasted. Reporting guidelines such as CONSORT, STARD, PRISMA, and ARRIVE aim to improve the quality of research reports, but all are much less adopted and adhered to than they should be. Adequate reports of research should clearly describe which questions were addressed and why, what was done, what was shown, and what the findings mean. However, substantial failures occur in each of these elements. For example, studies of published trial reports showed that the poor description of interventions meant that 40–89% were non-replicable; comparisons of protocols with publications showed that most studies had at least one primary outcome changed, introduced, or omitted; and investigators of new trials rarely set their findings in the context of a systematic review, and cited a very small and biased selection of previous relevant trials. Although best documented in reports of controlled trials, inadequate reporting occurs in all types of studies—animal and other preclinical studies, diagnostic studies, epidemiological studies, clinical prediction research, surveys, and qualitative studies. In this report, and in the Series more generally, we point to a waste at all stages in medical research. Although a more nuanced understanding of the complex systems involved in the conduct, writing, and publication of research is desirable, some immediate action can be taken to improve the reporting of research. Evidence for some recommendations is clear: change the current system of research rewards and regulations to encourage better and more complete reporting, and fund the development and maintenance of infrastructure to support better reporting, linkage, and archiving of all elements of research. However, the high amount of waste also warrants future investment in the monitoring of and research into reporting of research, and active implementation of the findings to ensure that research reports better address the needs of the range of research users.
Much of this waste is correctable
“Yeah, but good luck getting it peer-reviewed.”
• Journal Endorsement and Implementation of Reporting guidelines

• Developing core competencies for editors and peer reviewers against which both groups can be trained, certified, and participate in for credit continuing education activities

• Entrenching teaching peer review skills within academic institutions

• Introducing publications officers in universities and other research institutions
Journal Endorsement and Implementation of Reporting guidelines

- Reporting guidelines
- Evidence of effect
- How best to endorse and implement
Journal Endorsement and Implementation of Reporting guidelines

- Reporting guidelines
  - Checklist, flow diagram or some specific text about development; must include some form of consensus
  - A way of helping authors remember what to tell the reader
  - CONSORT for reporting randomized trials
  - PRISMA for reporting systematic reviews
  - More than 200 reporting guidelines
  - EQUATOR Network

Library for health research reporting

The Library for health research reporting provides an up-to-date collection of guidelines and policy documents related to health research reporting. These are aimed mainly at authors of research articles, journal editors, peer reviewers and reporting guideline developers.

- Search for reporting guidelines
- Reporting guidelines under development
- Translations of reporting guidelines
- Guidance on scientific writing
- Guidance developed by editorial groups
- Research funders’ guidance on reporting requirements
- Industry sponsored research – additional guidance
- Research ethics, publication ethics and good practice guidelines
- Links
- About the Library

Key reporting guidelines

- CONSORT
  - Full Record
  - Checklist
  - Flow Diagram
- STROBE
  - Full Record
  - Checklist
- PRISMA
  - Full Record
  - Checklist
  - Flow Diagram
- STARD
  - Full Record
  - Checklist
  - Flow Diagram
- COREQ
  - Full Record
- ENTREQ
  - Full Record
- SQUIRE
  - Full Record
  - Checklist
- CHEERS
  - Full Record
  - Checklist
- CARE
  - Full Record
  - Checklist
- SAMPL
  - Full Record

Translations

Some reporting guidelines are also available in languages other than English. Find out more in our Translations section.

About the Library

For information about Library scope and content, identification of reporting guidelines and inclusion/exclusion criteria please visit About the Library.

Visit our Help page for information about searching for reporting guidelines and for general information about using our website.

Our full catalogue of reporting guidelines is available to download as a PDF: Reporting Guideline Catalogue August 2013.
• Journal Endorsement and Implementation of Reporting guidelines
  – Evidence of effect
“Endorsement” of CONSORT by a journal is defined as any of the following situations, which imply the CONSORT statement is at least in principle incorporated into the editorial process for a particular journal:

- journal editorial statement endorsing the CONSORT statement, the checklist or both;
- requirement or recommendation in journal's “Instructions to Authors” to follow CONSORT when preparing their manuscript;
- requirement for authors to submit a CONSORT checklist with their manuscript

Reporting quality was assessed by comparing the proportion of RCTs adhering to individual CONSORT items or a total sum score across comparison groups.
Sequence generation is approximately 56% better reported in the 673 trial reports in endorsing journals compared to the 1231 trials published in non-endorse.

Use of reporting guidelines during peer review is associated with better quality publications

RESEARCH

Effect of using reporting guidelines during peer review on quality of final manuscripts submitted to a biomedical journal: masked randomised trial

E Cobo senior statistics editor and senior statistical lecturer, J M Ribera general secretary and chief of clinical haematology department, J A González senior statistican lecturer, J A Sánchez senior lecturer, F Miras statistical researcher, A Urrutia editorial committee member and senior lecturer in internal medicine, B Kostov statistical researcher, L García statistical researcher, D G Altman professor of statistics in medicine, M Vilardell editor in chief and professor of internal medicine, C Rey-Joly current editor and professor of internal medicine

Abstract

Objective To investigate the effect of an additional review based on reporting guidelines such as STROBE and CONSORT on quality of manuscripts.

Design Masked randomised trial.

Population Original research manuscripts submitted to the Medicine Clinical Journal from May 2008 to April 2009 and considered suitable for publication.

Intervention Control group: conventional peer reviews alone. Intervention group: conventional review plus an additional review looking for missing items from reporting guidelines.

Outcomes Manuscript quality, assessed with a 5-point Likert scale (primary: overall quality; secondary: average quality of specific items in groups as reviewed). Adherence to reviewer suggestions assessed with Likert scale.

Results Of 126 consecutive papers receiving conventional review, 34 were not suitable for publication. The remaining 92 papers were allocated to receive conventional reviews alone (n=41) or additional reviews (n=51). Four papers assigned to the conventional review group deviated from protocol; they received an additional review based on reporting guidelines. We saw an improvement in manuscript quality in favour of the additional review group compared to the control group (P=0.001, confidence interval: 0.05 to 0.54; as reviewed, 0.33, 0.03 to 0.63). More papers with additional reviews than with conventional reviews alone improved from baseline (22/43% vs 20%), difference 23.6% (95% confidence interval: 0.02 to 44.9%), number needed to treat 4.2 (from 2.5 to 31.2), relative risk 2.21 (1.10 to 4.44). Authors in the additional review group adhered more
• Journal Endorsement and Implementation of Reporting guidelines
  – Reporting guidelines
  – Evidence of effect
  – How best to endorse and implement
Endorsement

- Endorsement is likely best achieved through strong unambiguous language in the journal’s instructions to authors section

  - “[journal name] requires a completed PRISMA 2014 network meta-analysis checklist as a condition of submission when reporting the results a network meta-analysis. Templates for these can be found [give hyperlink to location if relevant] or on the PRISMA website [www.prisma-statement.org] which also describes other PRISMA extensions and resources. You should ensure that your article, at minimum, reports content addressed by each item of the checklist. Meeting these basic reporting requirements will greatly improve the value of your network meta-analysis report and may enhance its chances for eventual publication.”
• Journal Endorsement and Implementation of Reporting guidelines

• Developing core competencies for editors and peer reviewers against which both groups can be trained, certified, and participate in for credit continuing education activities
  – What are the core competencies for new journal editors?
  – Need to develop core competencies
  – Global agreement between stakeholders
  – Online training
  – Certification
  – Continuing editor education
  – Publishers should proudly display such milestones
• Journal Endorsement and Implementation of Reporting guidelines
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  – What are the core competencies for new journal editors?
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  – Certification
  – Continuing editor education
  – Publishers should proudly display such milestones

  – Training to be a physician
Journal Endorsement and Implementation of Reporting guidelines

Developing core competencies for editors and peer reviewers against which both groups can be trained, certified, and participate in for credit continuing education activities

- What are the core competencies for new journal editors?
- Need to develop core competencies
- Global agreement between stakeholders
- Online training
- Certification
- Continuing editor education
- Publishers should proudly display such milestones

Peer reviewers
- Teaching peer review is probably one of the most important ways to regain trust and confidence in the published record
• Journal Endorsement and Implementation of Reporting guidelines

• Developing core competencies for editors and peer reviewers against which both groups can be trained, certified, and participate in for credit continuing education activities

• **Entrenching teaching peer review skills within academic institutions**
  - Almost a total absence of formally teaching peer review in academic institutions
  - Academic institutions need to take peer review seriously and develop full or half credit semester courses on the topic which should be mandatory for all new graduate students
  - Sufficient institutional resources need to be set aside to ensure these courses can be appropriately developed
• Journal Endorsement and Implementation of Reporting guidelines
• Developing core competencies for editors and peer reviewers against which both groups can be trained, certified, and participate in for credit continuing education activities
• Entrenching teaching peer review skills within academic institutions

• Introducing publications officers in universities and other research institutions
  – Significant resources at the front end of the research enterprise
  – Nothing at the back end
    ▪ Publications officer
• Helping to improve the clarity and transparency of research presentations and manuscript submissions to journals
• Develop seminars on how to write to get published - “fit for purpose”
• Harnessing existing resources relevant to manuscript preparation and publication, including research integrity, and publication ethics
• Facilitate internal peer review of journal manuscripts
• Facilitate a semester length course on using reporting guidelines when preparing manuscript submissions
• Facilitate a semester length course on peer review
• Regular seminars on issues about publication ethics, research integrity, and the open access movement
• Provide seminars (e.g., quarterly) to the local community on ‘making sense of science’
• Ensure whatever efforts are made can be accessed easily and used globally
• Declaration of Helsinki (2008)
  ○ Editors are not meeting their ethical obligations

• COPE (Committee On Publication Ethics)
  ○ Ensure the quality of the material they publish
Funding these initiatives

- Many funding organizations are set up to fund investigations in specific diseases
- Journalalology is cross cutting
  - Selective reporting is not limited to cancer research
- Even successful funding is usually short term
- More long term sustained funding is needed

- Granting agencies and Publishers
3 Recommendations

- Funders and research institutions must shift research regulations and rewards to align with better and more complete reporting.
- Research funders should take responsibility for reporting infrastructure that supports good reporting and archiving.
- Funders, institutions, and publishers should improve the capability and capacity of authors and reviewers in high-quality and complete reporting.