Current activities of the EQUATOR Network

2 May, 10:30 - 12:00

Ana Marusic
Croatian Medical Journal
EQUATOR Steering Group
Why is it important how data are presented?

Example

O’Conner et al

*Medical Journal of Australia* 2004; 180:128-130
Presenting data

Four treatments were tested against placebo in clinical trials for about 5 years. In no trial were there major side effects of the treatments. The results were reported as follows:
Presenting data

**Trial A** 91.8% in the group allocated to the active treatment survived, compared with 88.5% in the placebo group.
Presenting data

**Trial A** 91.8% in the group allocated to the active treatment survived, compared with 88.5% in the placebo group.

**Trial B** Patients allocated to the active treatment had a 30% reduction in the risk of death.
Presenting data

**Trial A** 91.8% in the group allocated to the active treatment survived, compared with 88.5% in the placebo group.

**Trial B** Patients allocated to the active treatment had a 30% reduction in the risk of death.

**Trial C** Mortality was reduced by 3.3% in the group allocated to the active treatment.
Presenting data

**Trial A** 91.8% in the group allocated to the active treatment survived, compared with 88.5% in the placebo group.

**Trial B** Patients allocated to the active treatment had a 30% reduction in the risk of death.

**Trial C** Mortality was reduced by 3.3% in the group allocated to the active treatment.

**Trial D** One death was avoided for every 30 patients treated.
Presenting data

**Trial A** 91.8% in the group allocated to the active treatment survived, compared with 88.5% in the placebo group.

**Trial B** Patients allocated to the active treatment had a 30% reduction in the risk of death.

**Trial C** Mortality was reduced by 3.3% in the group allocated to the active treatment.

**Trial D** One death was avoided for every 30 patients treated.

*On the basis of these reports, and assuming all treatment costs are modest, which treatments would seem reasonable to introduce into your clinical practice?*
Clinicians’ opinions:

- more than 70% considered the active treatments in Trials B and D worth using in clinical practice;
  - **Trial B**: 30% reduction in the risk of death
  - **Trial D**: 1 death avoided for every 30 patients treated

- less than 20% considered the treatments in Trials A and C worthwhile;
  - **Trial A**: survival 91.8% vs. 88.5%
  - **Trial C**: mortality reduced by 3.3%
Presenting data

The same trial:

**Trial A**  
survival 91.8% vs. 88.5%  
EVENT RATE (EER and CER)

**Trial B**  
30% reduction in the risk of death  
RRR

**Trial C**  
mortality reduced by 3.3%  
ARR

**Trial D**  
1 death avoided for every 30 patients treated  
NNT
Presenting data

<table>
<thead>
<tr>
<th>Event</th>
<th>Control Group</th>
<th>Experimental group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>No event</td>
<td>c</td>
<td>d</td>
</tr>
</tbody>
</table>

ER = event rate  
RR = risk reduction

CER = \( \frac{a}{a + c} \)  
EER = \( \frac{b}{b + d} \)  
RRR = \( \frac{(CER - EER)}{CER} \)  
ARR = CER – EER  
NNT = \( \frac{1}{ARR} \)
Ideal reporting of trial results: checklist

- Number of events expected in the control population and the effect size assumed for the sample size calculation
- Numbers of events (ER) observed and numbers at risk in each comparator group separately
- The absolute risk reduction/difference for each event type (ARR)
- Relative risk (RR) or odds ratio (OR) for treatment effect
- 95% confidence interval (CI) for either absolute risk reduction or relative risk (or odds ratio)
- 2-sided $P$ value for determining statistical significance of either absolute risk reduction or relative risk (or odds ratio)
- Number needed to treat (NNT) or harm (NNH) and 95% CI
- The minimum clinically worthwhile benefit of the intervention

O’Connor et al, MJA 2004
EQUATOR Network

- helping editors, peer reviewers and authors to publish well reported research studies
EQUATOR Network

- International initiative that aims to improve reliability and value of health research publications by promoting transparent and accurate reporting of research studies

- Launched in June 2008

- ‘Umbrella’ organisation; key stakeholders:
  - Editors & peer reviewers of general and specialty journals
  - Researchers (authors), medical writers,
  - Developers of reporting guidelines
  - Research funders
  - .. Everyone interested in improving the quality of research publications and of research itself
Why was EQUATOR set up?

- **To support better publication of research:**
  - Wealth of evidence documenting widespread problems in reports of health research studies
  - Good consensus reporting guidelines exist but there are not being widely and routinely known and used
  - (There are many other reporting guidelines where it is not very clear how they were developed and again not used)

- **Advances the work of CONSORT and other guidelines groups - focus on:**
  - Better implementation of reporting guidelines
  - Development of robust reporting guidelines
EQUATOR plans - seven major goals

- Promote responsible research reporting in practice (wider use of RG)
- Develop a comprehensive online resource centre
- Develop and establish an education and training programme
- Assist in the development, dissemination and implementation of robust reporting guidelines
- Expand EQUATOR activities globally
- Assess use of reporting guidelines
- Audit reporting quality across the health research literature
Welcome to the EQUATOR Network website – the resource centre for good reporting of health research studies

Too often, good research evidence is undermined by poor quality reporting.

The EQUATOR Network is an international initiative that seeks to improve reliability and value of medical research literature by promoting transparent and accurate reporting of research studies.

Highlights

Seeking funding and support
We appeal to research funders, publishers and other organisations to support responsible research reporting. Find out how

Promote good reporting
Print and display EQUATOR leaflets

EQUATOR Newsletter
New reporting guidelines, events, and other news. Subscribe now

Latest news  more news
CONSORT 2010 Statement published
New guidance to improve the reporting of randomised trials was published simultaneously on 24 March 2010 by nine leading medical journals
Read the full story
Library for health research reporting

The EQUATOR Network library currently contains:

- An introduction to reporting guidelines
- Comprehensive lists of the available reporting guidelines, listed by study type:
  - Experimental studies
  - Observational studies
  - Diagnostic accuracy studies
  - Reliability and agreement studies
  - Systematic reviews
  - Qualitative research
  - Economic evaluations
  - Quality improvement studies
  - Other reporting guidelines
  - Reporting data
  - Sections of research reports
  - Specific conditions or procedures.

- Reporting guidelines under development
- Reporting guidelines in other research fields
- Guidance on scientific writing
- Guidance developed by editorial groups
- Medical writers – additional resources
- Research ethics, publication ethics and good practice guidelines
- Development and maintenance of reporting guidelines
- Editorials introducing RGs
- Examples of RGs
- Resources related to development and maintenance of reporting guidelines
- Editorials introducing reporting guidelines
- Guidelines for peer reviewers
- Case studies: How journals implement reporting guidelines
- Examples of good research reporting

Download the most frequently-used reporting guidelines:

- CONSORT checklist
- CONSORT flowchart
- CONSORT extensions
- STARD checklist & flowchart
- STROBE checklists
- PRISMA checklist
- PRISMA flow diagram

Download:

- Catalogue of reporting guidelines (2010)
Resources for authors

The following resources will help you to produce high-quality research publications:

- Planning and conducting your research
- Writing up your research
- Medical writers – additional resources
- Ethical guidelines and considerations
- Other resources
- What can I do to support the EQUATOR Network’s effort

Planning and conducting your research

It is important to be aware of reporting requirements and think about reporting when you are planning and conducting your research study.

- UK National Health System Research Flowchart (tool providing resources and points for consideration for all stages of the research process: from formulating a research question to the reporting and dissemination of new findings)
- UK MRC Route Map (Medical Research Council guidance through the legal and good practice requirements when designing conducting and disseminating experimental medicine studies)

Writing up your research

A good scientific article combines clear writing style with a high standard of reporting of the research content.

- Guidance on scientific writing
- Reporting guidelines (comprehensive lists of the available guidelines appropriate to each study type)
- Examples of good research reporting (specific examples showing why and how to correctly describe important aspects of your trial or other types of research studies)

Tip: When you finish your writing ...

When published, your article will start a new independent life – it will be read and critically appraised, and it may contribute to systematic reviews, inform clinical guidelines, and influence clinical practice, etc. So, before you submit your paper to a journal, try to consider whether the article is ‘fit for purpose’ and able to pass this future scrutiny, e.g.
Resources for editors and peer reviewers

The following resources will help you to produce high quality research publications:

- Developing a journal's policies on research reporting
- Guidance for peer reviewers
- Other resources
- Do you want to write an editorial about EQUATOR?
- What can I do to support the EQUATOR Network’s effort

Developing a journal's policies on research reporting

The following resources will be useful for developing or updating a journal’s policies and instructions for research reporting:

- Guidelines developed by influential editorial groups (WAME, ICMJE, COPE, etc.)
- Research ethics, publication ethics and good practice guidelines
- Reporting guidelines
- Case studies: How journals implement reporting guidelines
- Editorials introducing reporting guidelines and new reporting policies into a journal
- Instructions to Authors (collected by the Mulford Library, University of Toledo; note that not all listed instructions provide good guidance on research reporting)

Guidance for peer reviewers

Reporting guidelines are useful tools for strengthening the peer review process. Here are a few examples of how to implement this in your journal:

- Examples of guidelines for peer reviewers

Other resources

International Congress on Peer Review and Biomedical Publication (link to materials from all congresses held so far)

Nature Peer Review Debate (22 articles of analyses and perspectives from leading...
What can editors do to support accurate and transparent reporting

- Incorporate an explicit philosophy of transparent, complete and accurate reporting and the use of reporting guidelines into your editorial policies

- Explore the available reporting guidelines; select well developed guidelines appropriate for the reporting of research studies published in your journal

- Ask or clearly instruct authors to adhere to these guidelines and motivate their use

- Ask or instruct peer reviewers to refer to the appropriate reporting guidelines when assessing manuscripts

- Refer to the EQUATOR Network website in your 'Instructions to Authors'

- Maintain the knowledge of principles of good reporting and available resources in your editorial office (new editors, etc.); EQUATOR newsletter
How can EQUATOR help editors

- Why should you know what is on our website and why to link to our resources:
  - Up to date resources
    - Reporting guidelines
    - Guidelines developed by important editorial groups and organisation
    - News, regular newsletter – important new developments
  - Developing new resources and practical tools
    - New database of reporting guidelines (more information, better taxonomy)
    - Tools for authors, peer reviewers, and editors

- Educating authors to produce better manuscripts

- Examples of support and collaboration
  1. Sharing editors’ experience with implementation of RG
  2. Setting up policies on research reporting
  3. Raising standards in research reporting (collaboration with PAHO)
  4. Development of practical tools (collaboration with ISMTE)
1. Sharing editors’ experience with implementation of RG

- Examples from journals on the EQUATOR website

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**How journals implement reporting guidelines**

Some editors have shared with us their experience of setting up policies and procedures aiming to improve transparency and accuracy of research reporting in their journal. The contributions below describe first-hand personal experience and provide valuable practical information for other colleagues contemplating the same activity.

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**Clinical trial reporting and the Journal of Investigative Dermatology** (January 2010)

*Professor Hywel Williams*, Clinical Trials Editor of the Journal of Investigative Dermatology, has shared with us how their journal implements the CONSORT Statement and compulsory trial registration and how it checks on compliance to CONSORT.

[Full text (pdf)]

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**Reporting policies and the smaller journal** (January 2010)

*Dr. Jason Roberts*, Managing Editor of Headache, summarised the experience of changing submission and peer review processes in their journal in order to raise the quality of published articles. Headache is a smaller sub-specialty medical journal and this article might be of interest to all editors of similar types of journals.

[Full text (pdf)]

Appendices:

- Appendix 1: Behavioral/Nonpharmacological Clinical Trials Checklist for Headache
- Appendix 2: Case Reports Checklist for Headache

Related articles (freely available):


Loder EW, Penzien DB. Improving the Quality of Research Reporting: Headache Steps Up to the Plate. Headache Volume 49 Issue 3, Pages 335 – 340

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**Developmental Medicine & Child Neurology: Introducing new policies on research reporting into guidelines for authors and peer reviewers** (April 2009)

*Dr Chris Morris*, Associate Editor of the Developmental Medicine and Child Neurology

[Full text (pdf)]

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2. Setting up policies on research reporting - steps to consider

- **How to introduce RG into your journal**
  - Assess how (and if at all) are RG used in your organisation
  - Think about best ways of including RG in your working practices (potential barriers; facilitators - “champions”)

- **How to select RG appropriate for your journal**
  - Assess relevance of existing RG to the spectrum of published research articles (EQUATOR website - comprehensive list)
  - Assess important characteristics of selected RG (development process, clarity of recommendations, supporting evidence, consensus, etc.) - EQUATOR to develop an assessment tool

- **How and where to use RG in your journal**
  - Instructions to Authors (decide on required level of adherence by authors, motive RG use)
  - Instructions to Reviewers
  - Educate, motivate - authors, reviewers
  - Make things as easy as possible
3. Raising standards in research reporting in South America and Caribbean (collaboration with PAHO)

EQUATOR Spanish website – launched July 2010

We are looking for collaborators to establish local centres of activities supporting better reporting of research studies.
Welcome

Welcome to the new website of the Revista Panamericana de Salud Pública/Pan American Journal of Public Health (RPS/P/AJPH), an open-access peer-reviewed monthly journal, published as the flagship scientific and technical periodical publication by the Pan American Health Organization (PAHO), headquartered in Washington, D.C., the United States of America.

Read more...

About the new portal of the PAJPH

Starting with the September 2010 special issue, the Revista Panamericana de Salud Pública / Pan American Journal of Public Health (RPS/P/AJPH) is showcased within a redesigned Web site (http://www.paho.org/journal) featuring a smart line-up of new interactive tools enabled by Web 2.0 and capturing new possibilities for interaction and dialogue with readers through participative and collaborative networks.

Read more...
1.6 Guidelines and research protocols

The RPSP/PAJPH follows the Uniform Requirements for Manuscripts Submitted to Biomedical Journals, which was developed and is maintained by the International Committee of Medical Journal Editors (ICMJE), and it is listed among the journals that follow these requirements. These guidelines, also known as the "Vancouver Style," apply to the entire journal, including ethical considerations, such as authorship and contributorship, peer review, conflicts of interest, privacy and confidentiality, protection of human subjects and animals in research, as well as editorial and publishing issues such as advertising, overlapping publications, references, and registering clinical trials.

The RPSP/PAJPH strongly recommends that authors follow the best research protocols available. Research protocols are described in the EQUATOR Network Resource Centre. Also, a complete list of the major biomedical research reporting guidelines is maintained and published by the U.S. National Library of Medicine. The most frequently used in the public health field are: CONSORT (for randomized controlled clinical trials), TREND (for nonrandomized evaluations of behavioral and public health interventions), STROBE (for observational studies in epidemiology), MOOSE (for meta-analyses of observational studies), QUOROM (for systematic reviews and meta-analyses of randomized trials), as well as the COCHRANE handbook (for systematic reviews of interventions).

Following WHO and ICMJE recommendations, the RPSP/PAJPH will require registration of clinical trials in a public trials registry as a condition of consideration for publication. The RPSP/PAJPH does not advocate one particular registry, but recommends that authors register clinical trials in one of the registries certified by WHO and the ICMJE that are available at the International Clinical Trials Registry Platform. The clinical trial registration number will be published at the end of the abstract and will have a link to the corresponding registry.

When reporting experiments on human subjects, authors should indicate...
Old version of I to A
- ensure consistency in your advice to authors and reviewers!
4. Development of practical tools

- Help for editors to improve research reporting, clarity of instructions to authors and reviewers, setting up policies, speeding up administrative tasks (writing to authors, etc.)

- **Tools will include:**
  - Step-by-step guide towards developing a comprehensive policy on research reporting
  - Summary of benefits derived from using RG
  - Sample texts for instructions to authors
  - Template letters for editorial offices to execute reporting policies
  - Guide on spotting study types
  - Summary table of available RG
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Highlights

EQUATOR Spanish website
New site launched on 15 July 2010 in collaboration with the Pan American Health Organization (PAHO). Find out more and visit the site

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Print and display EQUATOR leaflets

EQUATOR Newsletter
New reporting guidelines, events, and other news. Subscribe now

The EQUATOR Network is funded by:
EQUATOR Steering Group

Doug Altman, Centre for Statistics in Medicine, University of Oxford, UK

John Hoey, University of Toronto, Canada

Ana Marusic, University of Split, Croatia

David Moher, Ottawa Health Research Institute, Canada

Kenneth F. Schulz, Family Health International, Chapel Hill, USA
Checklists?
Implementing reporting standards: CONSORT

Does the CONSORT checklist improve the quality of reports of randomised controlled trials? A systematic review

Amy C Plint, David Moher, Andra Morrison, Kenneth Schulz, Douglas G Altman, Catherine Hill and Isabelle Gaboury

CONSORT adopters vs. Non-adopters had significantly better reporting of *method of sequence generation* (risk ratio [RR], 1.67; 95% CI, 1.19–2.33) *allocation concealment* (RR, 1.66; 95% CI, 1.37–2.00) overall number of CONSORT items (standardised mean difference, 0.83; 95% CI, 0.46–1.19)
Implementing reporting standards: CONSORT for abstracts


527 abstracts in 4 journals

From pre-CONSORT to post-CONSORT guidelines for abstract reporting, there were significant improvements in correctly identifying blinding (18.2-29%) and harmful effects (31.6-42.1%). Despite some promising improvements and inter-journal differences, the overall quality of RCT abstracts and adherence to the CONSORT checklist for abstracts remains poor.
Implementing reporting standards: experience from a journal


ELSEVIER

Editorial

A new standard for reporting clinical research in the Journal of Pediatric Surgery
Table 1  Guidelines for the reporting of clinical research data in the *Journal of Pediatric Surgery*

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<th>Methods:</th>
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### Results:

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<tr>
<th>Reported</th>
<th>Not Applicable</th>
<th>Reporting detail</th>
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<tr>
<td>☐</td>
<td>☐</td>
<td>The range and mean of all relevant demographic and baseline variables</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>The range and median (not mean) for length of follow-up reporting</td>
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<td>☐</td>
<td>☐</td>
<td>Relevant outcome variables are presented with appropriate measures of range and variability (e.g. standard deviation)</td>
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<td>Methods for measuring outcomes of interest are clearly described</td>
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<td>Statement regarding whether any data is missing (and how missing data is addressed in the analysis of outcome variables)</td>
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<td>☐</td>
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<td>Number and appropriate details regarding all complications</td>
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### Additional details for studies reporting more than one treatment group (e.g. controls):

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<th>Not Applicable</th>
<th>Reporting detail</th>
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<tr>
<td>☐</td>
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<td>Mean and range for all relevant demographic and baseline variables for all treatment groups.</td>
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<td>The range and median (not mean) for length of follow-up reporting for each treatment group.</td>
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<td>A precise timeline during which all patients were treated for each group</td>
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<td>Outcome variables being compared between groups are presented with appropriate measures of variability (e.g. standard deviation)</td>
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<td>Measures of type II error (P-values) for comparison statistics are presented with actual values if $P = .01$ or larger (e.g. $P = \text{NS}$ and $P &lt; .05$ are not acceptable)</td>
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<td>☐</td>
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<td>A description of how patients were selected into each treatment group</td>
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<td>☐</td>
<td>☐</td>
<td>A statement is made as to whether the same surgeons operated on patients from different treatment groups</td>
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Results of a longitudinal study of rigorous manuscript submission guidelines designed to improve the quality of clinical research reporting in a peer-reviewed surgical journal

Kathryn E. Wynne\textsuperscript{a}, B. Joyce Simpson\textsuperscript{a}, Loren Berman\textsuperscript{a}, Shawn J. Rangel\textsuperscript{b}, Jay L. Grosfeld\textsuperscript{c}, R. Lawrence Moss\textsuperscript{a,*}

\textsuperscript{a}Department of Surgery, Yale School of Medicine, New Haven, CT, USA
\textsuperscript{b}Department of Surgery, Children's Hospital, Boston, MA, USA
\textsuperscript{c}Department of Surgery, Indiana University School of Medicine, IN, USA
Results

Mean global composite scores increased from 72.2 pre-Guidelines to 80.1 post-Guidelines (P<0.0001).

Scores increased in each subcategory:
Methods, 71.9 to 78.6 (P<0.0001)
Results, 77.2 to 83.0 (P=0.002)

Post-Guidelines implementation scores have increased over time.
Twenty Statistical Errors Even YOU Can Find in Biomedical Research Articles

Tom Lang

Tom Lang Communications, Murphys, Ca, USA
Free online resources:
- Reporting guidelines
- Scientific writing guidance
- Research and publication ethics

Education and training: for
- Scientists and research students
- Editors and peer reviewers

Assistance:
- Development and implementation of reporting guidelines

www.equator-network.org
Thank you.
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