Implementation of medical research in clinical practice

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German Cochrane Centre
University Medical Centre Freiburg

Workshop on Health Research Strategic Needs in Europe
Brussels, 13 March 2015
Contents

- More quality: Initiative by Lancet, NIH, Science and Nature
- Quality in health research: priorisation, prioritization, transparency
- Tools, processes, structures, events
Implementation: Transfer of Research into Practice

Answers to medical questions

- Clinical (randomised / controlled) studies
- Epidemiological (observational) studies

... 

Knowledge Translation

- Practicing physicians
- Health authorities, sickness funds, insurances, institutions
- Clinical research
- Patients

Evidence production

Evidence application

50 %
Research: increasing value, reducing waste

Published January 8, 2014

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.

Comments

How should medical science change?
Sabine Kleinert, Richard Horton
A How should medical science change?
B Biomedical research: increasing value, reducing waste
1. How to increase value and reduce waste when research priorities are set
2. Increasing value and reducing waste in research design, conduct, and analysis
3. Increasing value and reducing waste in biomedical research regulation and management
4. Increasing value and reducing waste: addressing inaccessible research
5. Reducing waste from incomplete or unusable reports of biomedical research
Journals unite for reproducibility

R

eproducibility, rigor, transparency, and independent verification are cornerstones of the scientific method. Of course, just because a result is reproducible does not necessarily make it right, and just because it is not reproducible does not necessarily make it wrong. A transparent and rigorous approach, however, can almost always shine a light on issues of reproducibility. This light ensures that science moves forward, through independent verifications as well as the course corrections that come from refutations and the objective examination of the resulting data.

The gathering was convened by the U.S. National Institutes of Health, Nature,* and Science. The discussion ranged from what journals were already doing to address reproducibility and the effectiveness of those measures, to the magnitude of the problem and the cost of solutions. The attendees agreed on a common set of Principles and Guidelines in Reporting Preclinical Research (www.nih.gov/about/reporting-preclinical-research.htm) that list proposed journal policies.

“...scientific journals are standing together in their conviction that reproducibility and transparency are important...”

The more open-ended por-

strain characteristics, or transgenic animals, etc. For cell lines, one might report the source, authentication, and mycoplasma contamination status. The existence of these guidelines does not obviate the need for replication or independent verification of research results, but should make it easier to perform such replication.

Some of the journals at the meeting already had implemented all or most of these principles and guidelines. But the important point is that a
Proposed Principles and Guidelines for Reporting Preclinical Research

The signatories represent journals that publish preclinical biological research — an area of research that encompasses both exploratory studies and hypothesis-testing studies, with many different designs. The reproducibility of these studies is expected to vary. The journals agree to adhere to the following principles with the aim of facilitating the interpretation and repetition of experiments as they have been conducted in the published study. These measures and principles do not obviate the need for replication and reproduction in subsequent investigations to establish the robustness of published results across multiple biological systems.

1. **Rigorous statistical analysis**
   
   A section outlining the journal’s policies for statistical analysis should be included in the Information for Authors, and the journal should have a mechanism to check the statistical accuracy of submissions.

2. **Transparency in reporting**
   
   Journals should have no limit or generous limits on the length of manuscripts, and authors should be encouraged to provide sufficient detail to enable peer reviewers and other readers to judge the reliability of findings.
Findings? How can we improve the accessibility and usability of research findings, and data availability? And, finally, how can we further raise awareness and continue discussions on the topic of research productivity?

As a first step, we are strengthening our requirement to put research into context. Knowing and rigorously assessing the context and value of research will help editors make decisions about whether to publish a paper, and will help readers to interpret the importance of published research in addressing unanswered questions and building an evidence base. From Jan 1, 2015, all research papers, apart from systematic reviews and meta-analyses, submitted to any journal in The Lancet family must include a Research in context panel with an enhanced structure and subheadings (panel). Editors will use this information at the first assessment stage and
Impact?

– Generally poor

– Very country, system and culture dependent

– Slow progress with relevant indicators, e.g. proportion of registered and published trials

– Ongoing hidden agendas, open or hidden resistance
RCTs in Medline (PubMed)
Total: 340834

50% not published

Only on paper
1. Formulating the question

2. Systematic search for relevant trials

3. Critical appraisal of trials - inclusion

4. Summary and quantitative synthesis (if possible)

5. Interpretation of results

UPDATING!!

July 2011
Studies and trials must be considered in context.
Deficites - Who is guilty?
The axis of evil

- Industry
- Researchers and scientists
- Universities and faculties
- Ethics boards
- Doctors
- Journals and publishers
- Funders
- Regulators
- HTA agencies, guidelines groups etc.
- WHO
- Parliaments and governments
Discovery/Basic Science

Preclinical development

Animal Studies

Human Studies

Health Services Res.

Public Health

Cochrane

Methodology of SRs
Allies and events on the path to better quality
Research Waste/EQUATOR Conference

The 2015 Research Waste / EQUATOR Conference will be held in Edinburgh, UK

Dates: 28-30 September 2015

Venue: John McIntyre Conference Centre, Edinburgh, UK
(www.edinburghfirst.co.uk/venues/john-mcintyre-conference-centre)

Local organising committee: Judi Clarke, Rustam Al-Shahi Salman, Malcolm Macleod

Programme committee: EQUATOR (Doug Altman, Philippe Ravaud, David Moher, Ana Marusic, Iveta Sirmera), WASTE (Paul Glasziou, Iain Chalmers, Rustam Al-Shahi Salman, Malcolm Macleod, John Ioannidis, An-Wen Chan)

Conference aims

1. Review the progress made by research regulators, academic institutions, researchers, funders, and publishers against Research Waste series recommendations
2. Presentations and posters on problems and potential solutions aimed at making research production more efficient and better reported
3. Develop a consensus statement and action plan for making progress against Research Waste series recommendations

Recent Posts

- Rigour mortis: How bad research is killing science
- The Need for Randomisation in Animal Trials
- Waste in medical academia must be addressed, Chalmers urges in The BMJ Awards acceptance speech
- Reducing waste in preclinical research through better mouse studies
- Videos from symposium on the Lancet series online
Enhancing the QUALity and Transparency Of health Research

The resource centre for good reporting of health research studies

Library for health research reporting

The Library contains a comprehensive searchable database of reporting guidelines and also links to other resources relevant to research reporting.

Search for reporting guidelines
Visit the library for more resources

Key reporting guidelines

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Toolkits

The EQUATOR Network works to improve the reliability and value of medical research literature by

EQUATOR highlights

13/08/2014 - Videos now available from the scientific meeting in Paris: Improving reporting to decrease the waste of research

News

Journals and industry collaborate on new authorship framework to improve transparency of industry-sponsored research
12/11/2014
Among research regulators, the guidance for researchers issued by the Health Research Authority in the UK now states “Any project should build on a review of current knowledge. Replication to check the validity of previous research is justified, but unnecessary duplication is unethical.”

Research on research has exposed a general failure to refer to existing evidence when reporting additional primary research. Other research has shown that this

To embark on research without reviewing systematically evidence of what is already known, particularly when the research involves people or animals, is unethical, unscientific, and wasteful. More than two decades have passed since Antman and colleagues showed that research on some treatments for myocardial infarction had gone on for as long as a decade after benefit or harm had been established in earlier research. Failure to analyse epidemiological research cumulatively has also had devastating effects.
Progress in Using Systematic Reviews of Animal Studies to Improve Translational Research

C. R. Hooijmans*, M. Ritskes-Hoitinga

Radboud University Nijmegen Medical Centre, SYRCLE at Central Animal Laboratory, Nijmegen, The Netherlands

July 2013

Collaborative Approach to Meta Analysis and CAMARADES

Review of Animal Data from Experimental Studies

Bringing Evidence to Translational Medicine

CAMARADES (Collaborative Approach to Meta-Analysis and Review of Animal Data from Experimental Studies) provides a supporting framework for groups involved in the systematic review and meta-analysis of data from experimental animal studies...
How YOU can promote better research for better healthcare

Start here:

1. Why do we need fair tests of treatments?
2. What are fair tests of treatments?
3. What can be done to improve tests of treatments?
4. How can YOU help to improve tests of treatments?

Caution

This website is NOT about whether particular treatments work or not. For up to date information about SPECIFIC treatments, we recommend:

- PubMed Health
- TRIP database
- NHS Choices
- NHS Evidence

Browse videos, cartoons and more

We are always on the lookout for great interactive resources about fair tests of treatments. Please tell us if you find any you think we should include.

Quality for patients and healthy citizens
Willkommen zu Testing Treatments interactive

Wie können wir wissen, ob eine bestimmte medizinische Therapie wirksamer ist als eine andere?

Wie können wir wissen, ob die derzeitige wissenschaftliche Beweislage hinsichtlich des Nutzens und des Schadens einer medizinischen Therapie zuverlässig ist?

Testing Treatments interactive richtet sich an PatientInnen, ArztInnen, Personen in Gesundheitsberufen und all jene, die sich für diese Fragen interessieren.

Testing Treatments interactive ist die Website zum gleichnamigen Buch mit dem Titel Testing Treatments, das bereits in der zweiten Auflage erschienen ist.

"Biologization of medical research"

- Increasing imbalance of funding against implementation
- Small uptake of or resistance against waste/value debate
- "Freedom" of science/research

Prioritization?

Healthcare
- Regulation, laws, restrictions . . .
- Errors in medicine, patient safety, . . .
- Empirical research in the healthcare system
Transfer of Research into Practice

“Biologization of medical research“

- increasing imbalance of funding against implementation
- Small uptake of or resistance against waste/value debate
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Healthcare

- regulation, laws, restrictions . . .
- errors in medicine, patient safety, . . .
- empirical research in the healthcare system
Focus

- Transparency and completeness in reporting research
- Quality of research in general
- “Genuine“ translation
- Harmonization across countries
- The problem is bigger than most people recognize – no simple one-dimensional solutions