Implementation of medical research in clinical practice

Gerd Antes

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, priorization, transparency
- Tools, processes, structures, events

Implementation: Transfer of Research into Practice

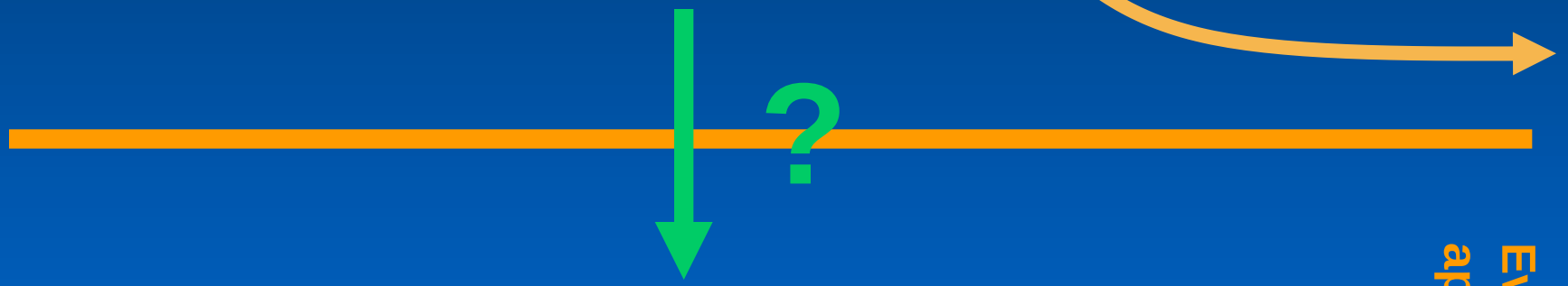
Evidencd production

Answers to medical questions

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

. . . .

50 %



Knowledge Translaton

Evidence application

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

THE LANCET

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

Annually (2010)

240 Billion U$

for life sciences, (mostly biomedical)

Lancet Series (8 Jan 2014, London; on internet)
Research: increasing value, reducing waste

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

EDITORIAL

7 Nov 2014

Journals unite for reproducibility

Reproducibility, 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.

menters were blind to the conduct of the experiment, how the sample size was determined, and what criteria were used to include or exclude any data. Journals should recommend the deposition of data in public repositories where available and link data bidirectionally to the published paper. Journals should strongly encourage, as appropriate, that all materials used in the experiment be shared with those who wish to replicate the experiment. Once a journal publishes a paper, it assumes the obligation to consider publication of a refutation of that paper, subject to its usual standards of quality.

The more open-ended por-

Marcia McNutt
Editor-in-Chief
Science *Journals*

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..."

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

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Visitor Information
Visitor Tours
Visitor Parking
Campus Shuttle

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

Background

NIH held a joint workshop in June 2014 with the Nature Publishing Group and Science on the issue of reproducibility and rigor of research findings, with journal editors representing over 30 basic/preclinical science journals in which NIH-funded investigators have most often published. The workshop focused on the common opportunities in the scientific publishing arena to enhance rigor and further support research that is reproducible, robust, and transparent.

The journal editors at that workshop came to consensus on a set of principles to facilitate these goals, which a number of journals have agreed to endorse. These principles and the journals that have agreed to endorse them are shown below.

Related Links

THE LANCET

Online First Current Issue All Issues Special Issues Multimedia Information for Authors

All Content Search Advanced Search

< Previous Article Volume 384, No. 9961, p2176–2177, 20 December 2014 Next Article >

Comment

Further emphasis on research in context

Sabine Kleinert, Laura Benham, David Collingridge, William Summe

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

Panel: **Research in context**

Evidence before this study

This section should include a description of all the evidence that the authors considered before undertaking this study. Authors should state: the sources (databases, journal or book reference lists, etc) searched; the criteria used to include or exclude studies (including the exact start and end dates of the search), which should not be limited to English language publications; the search terms used; the quality (risk of bias) of that evidence; and the pooled estimate derived from meta-analysis of the evidence, if appropriate.

Added value of this study

Authors should describe here how their findings add value to the existing evidence (including an updated meta-analysis, if appropriate).

Implications of all the available evidence

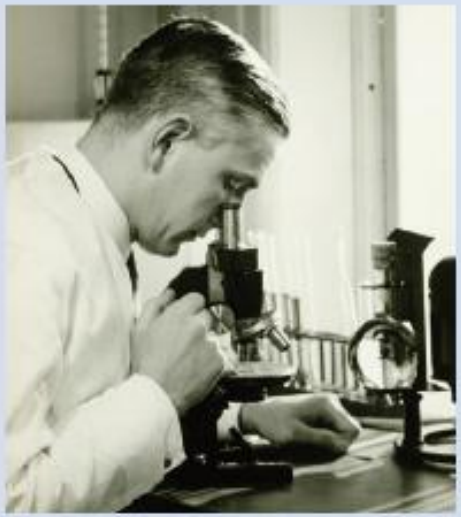
Authors should state the implications for practice or policy and future research of their study combined with existing evidence.

EUROPEAN SCIENCE FOUNDATION

SETTING SCIENCE AGENDAS FOR EUROPE

FORWARD LOOK

Implementation of Medical Research in Clinical Practice

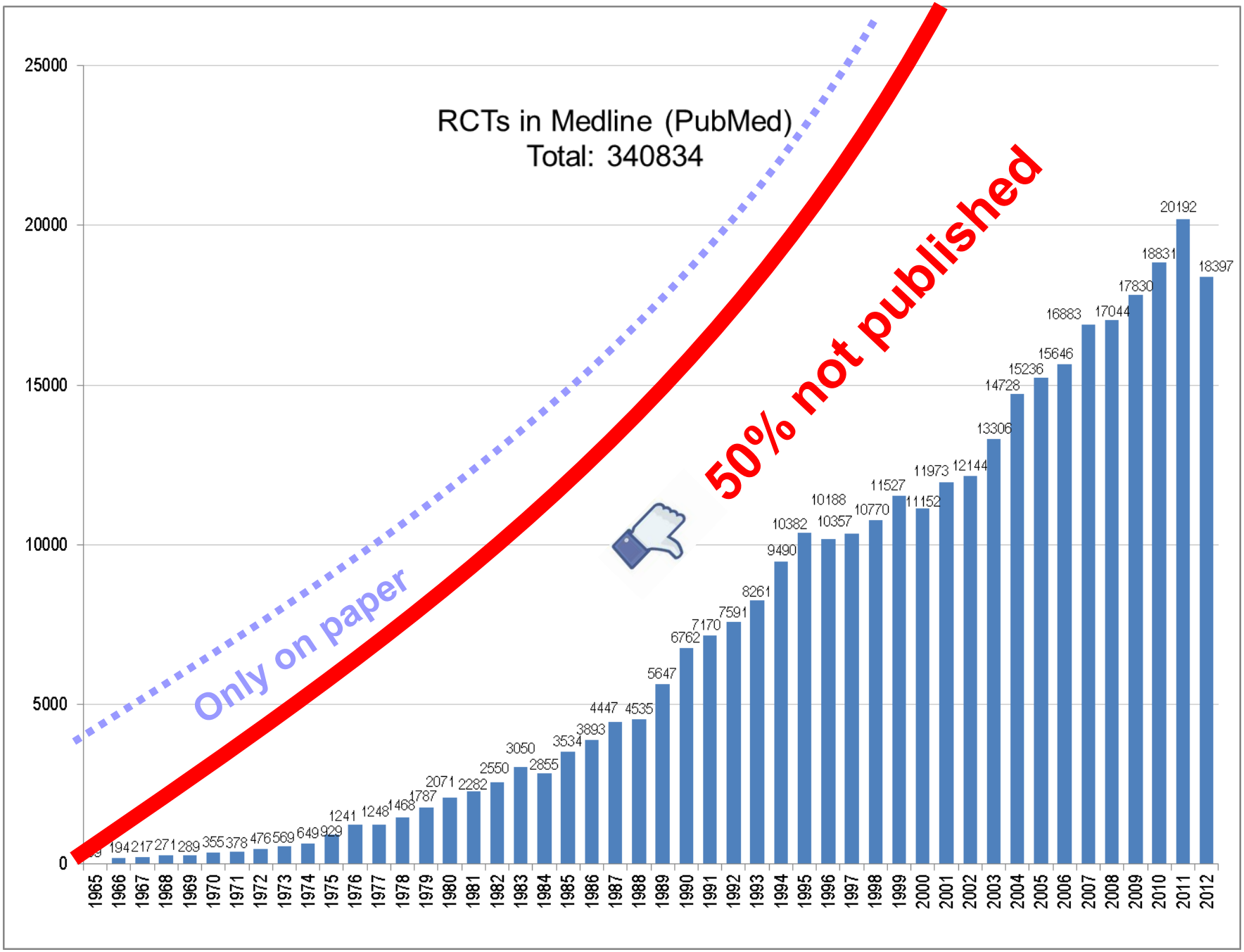





Berlin, 11. Mai 2011

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
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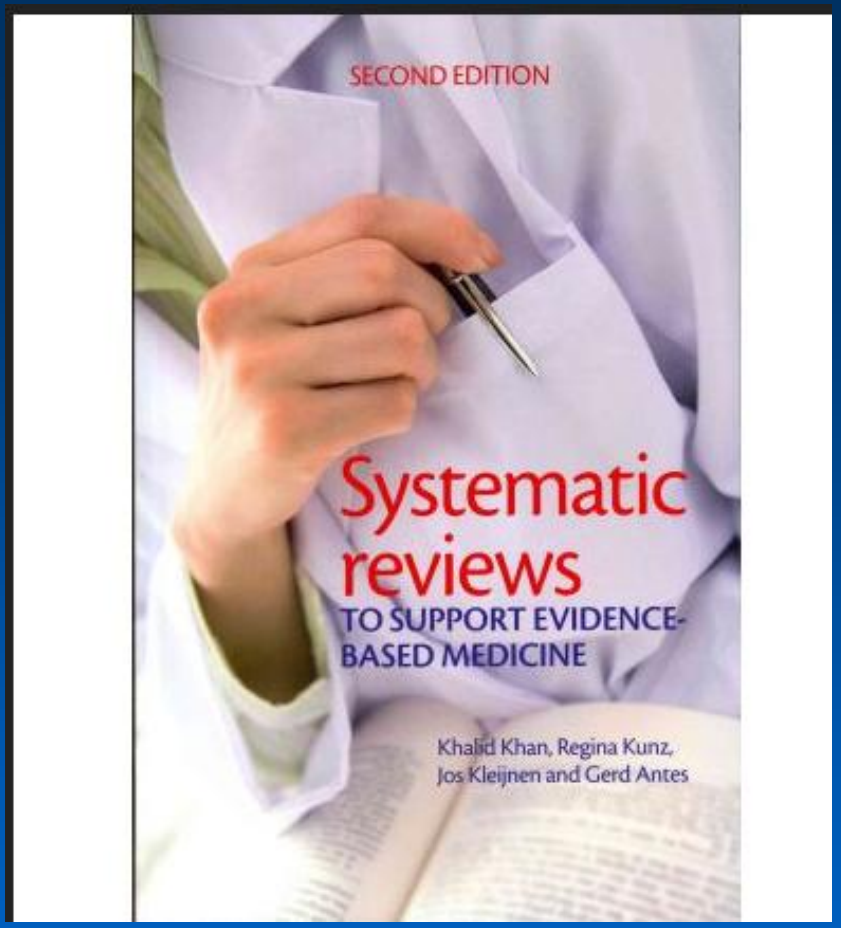
1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

1. Formulating the question
2. Systematic search for relevant trials
3. Critical appraisal of trials - inclusion
4. Summary and quantivative synthesis (if possible)
5. Interpretation of results



July 2011

UPDATING!!

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

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Report

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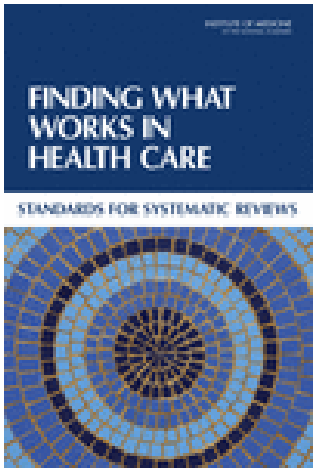


Finding What Works in Health Care: Standards for Systematic Reviews

Released: March 23, 2011

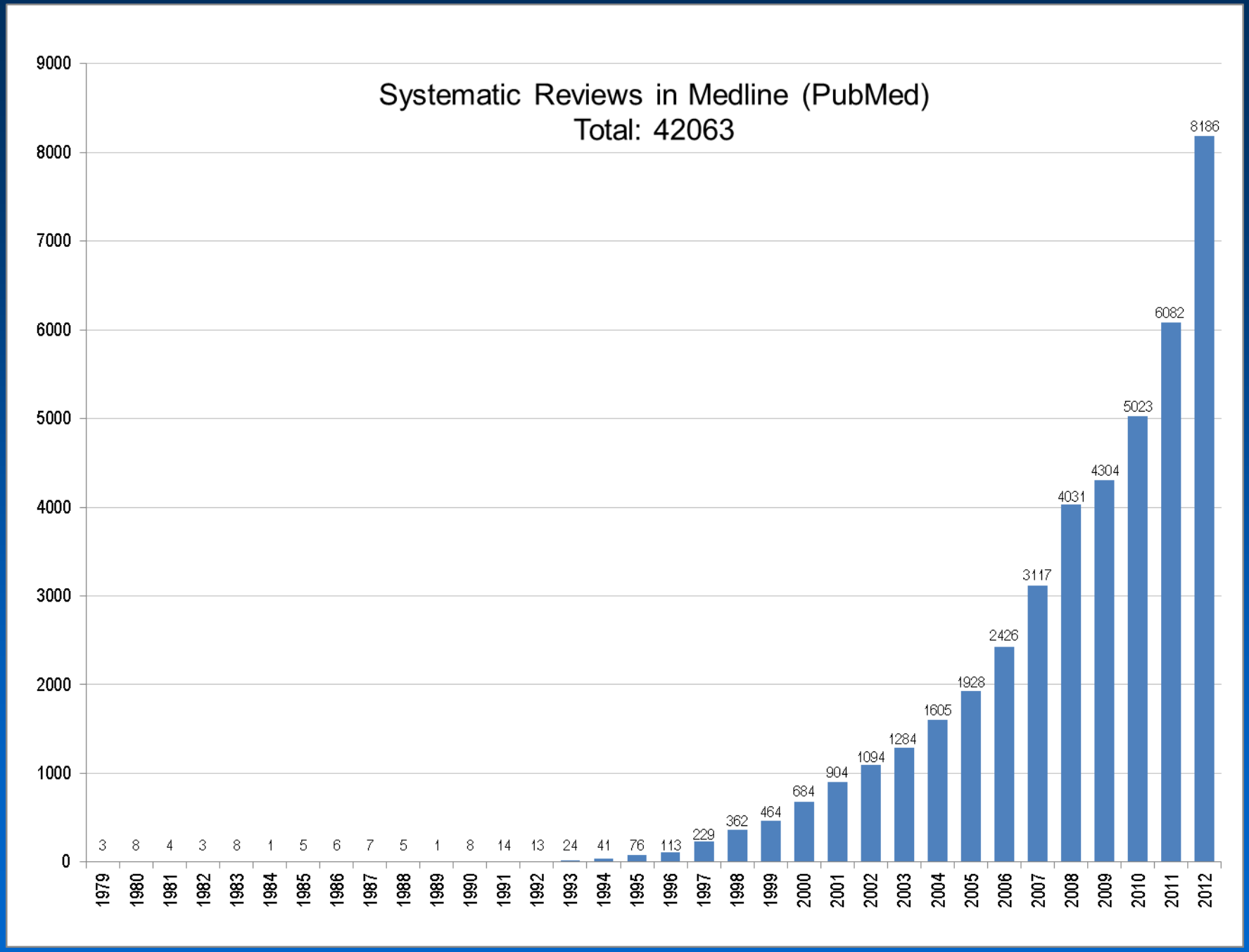
Type: Consensus Report

Topics: Biomedical and Health Research, Public Health, Quality and Patient Safety

Activity: Standards for Systematic Reviews of Comparative Effectiveness Research

Board: Board on Health Care Services

„Studies and trials must be considered in context “


Systematic Reviews in Medline (PubMed)
Total: 42063
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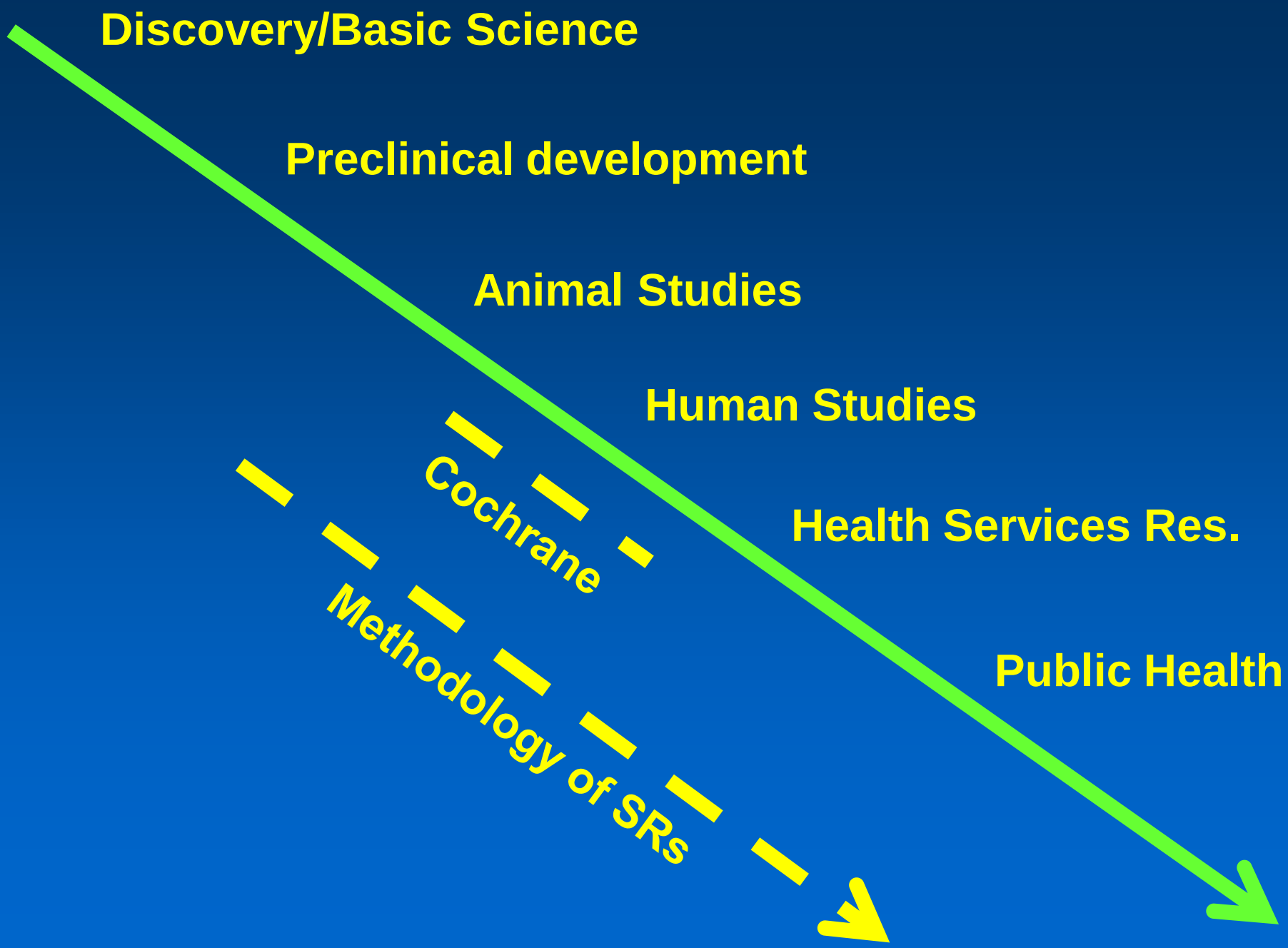
2012

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 goverments


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

Posted on November 21, 2014 by admin — No Comments ↓

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 Simera), 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

equator network

Enhancing the QUAlity and Transparency Of health Research

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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

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
CARE	Full Record | Checklist
SAMPL	Full Record
SPIRIT	Full Record | Checklist

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

THE LANCET

Comment

A new network to promote evidence-based research

Iain Chalmers, Magne Nylenna

DOI: http://dx.doi.org/10.1016/S0140-6736(14)62252-2

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.[1,2] More than two decades have passed since Antman and colleagues[3] 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.

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."[9]

Research on research has exposed a general failure to refer to existing evidence when reporting additional primary research.[7] Other research has shown that this

OPEN ACCESS Freely available online

PLOS | MEDICINE

Essay

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

·C·A·M·A·R·A·D·E·S·

Review of Animal Data from Experimental Studies

Bringing Evidence to Translational Medicine

CAMARADES (**C**ollaborative **A**pproach to **M**eta-**A**nalysis and **R**eview of **A**nimal **D**ata from **E**xperimental **S**tudies) provides a supporting framework for groups involved in the systematic review and meta-analysis of data from experimental animal studies...

العربية 中文 Deutsch **English** Español Français Hrvatski Italiano Norsk Português Svenska Türkçe

English

Testing Treatments *interactive*

Promoting better research for better healthcare

Home | About | Read the book | Test your knowledge | Learn more | Feedback

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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.

What's new?

New resources

- Absolute versus relative risk – making sense of media stories
- AllTrials: All Trials Registered | All Results Reported (update, August 2014)
- Correlation is not causation. Let's say that again: correlation is not causation!

Testing Treatments Twitter

- Researchers: the PRISMA-P statement will improve your systematic reviews! http://t.co/9xzCDGkJ9o #systematicreviews 09:26 AM January 06, 2015 from Twitter for Websites
- RT @pash22: "@MotherJones: When medical apps do more harm than good http://t.co/g7OCzDeW2x http://t.co/NaU3ORz7zR" 03:47 PM January 05, 2015 from Twitter Web Client

Follow @testtreatments 525 followers

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, ÄrztInnen, 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.

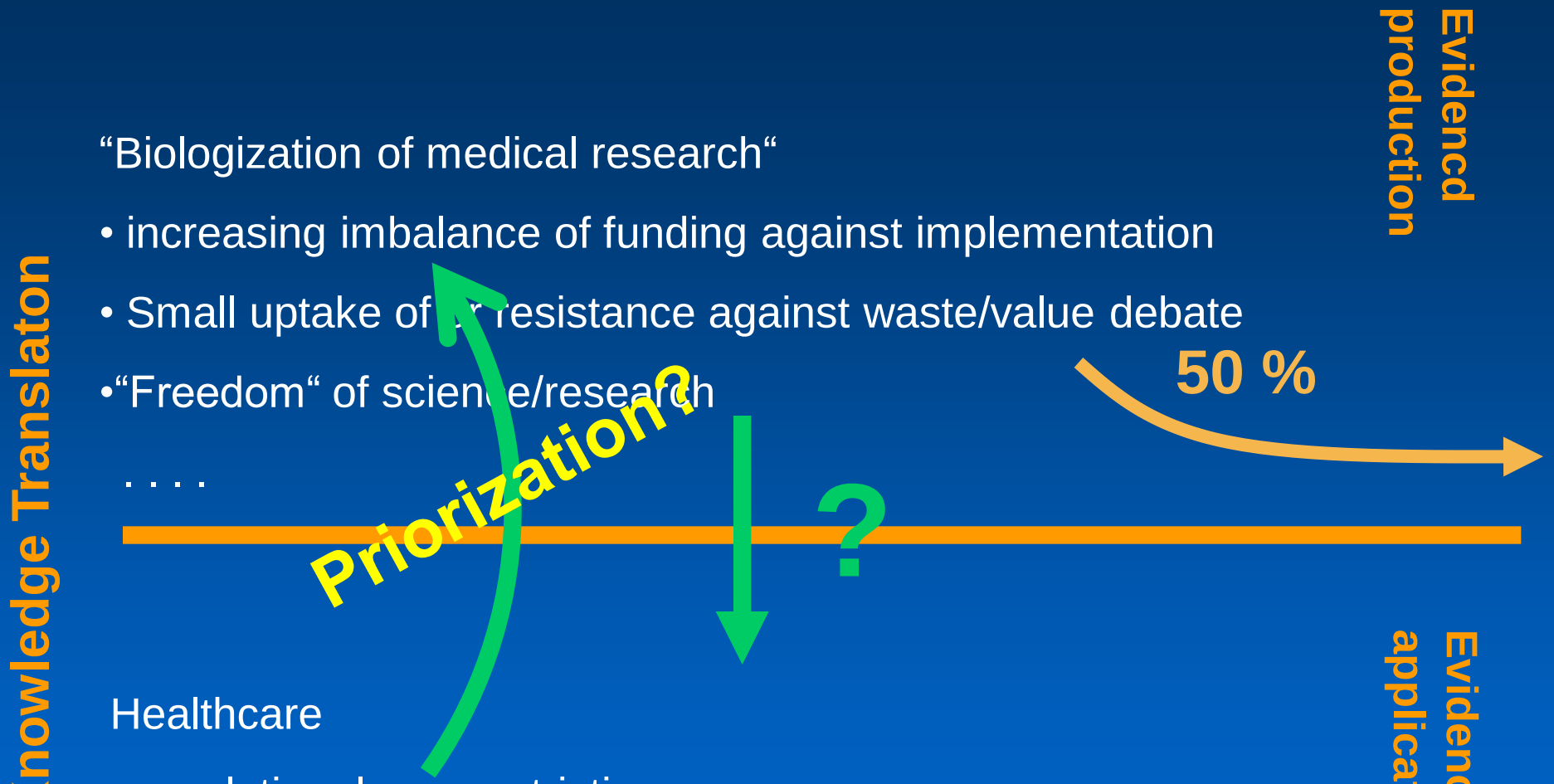
Die deutsche Übersetzung dieser zweiten Auflage ist im Mai 2013 als Buch unter dem Titel "Wo ist der Beweis?" erschienen.

News

Neue Ressourcen

Diese Seite teilen

Transfer of Research into Practice



"Biologization of medical research"

- increasing imbalance of funding against implementation
- Small uptake of / resistance against waste/value debate
- "Freedom" of scien e/research

. . . .

Healthcare

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

Transfer of Research into Practice

Clash of different worlds

Research System
Tax-funded

“Biologization of medical research“

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

. . . .

50 %

?

Healthcare system
Contribution-funded

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