Impactful biomedical research: reporting guidelines can help you to maximise the value and impact of your systematic review

Shona Kirtley, Senior Research Information Specialist, EQUATOR Network, Centre for Statistics in Medicine, NDORMS, University of Oxford, UK

Presentation Outline

* Importance of accurate and transparent research reports
* Impact of poor reporting on systematic reviews
* Highlight reporting guidelines and the EQUATOR Network
* Discuss the implementation of reporting guidelines within your research and their potential impact

The EQUATOR Network is funded by:

Systematic review: purpose

"Systematic reviews aim to identify, evaluate and summarise the findings of all relevant individual studies, thereby making the available evidence more accessible to decision-makers…Systematic reviews adhere to a strict scientific design based on explicit, pre-specified and reproducible methods. Because of this, when carried out well, they provide reliable estimates about the effects of interventions so that conclusions are defensible"

Systematic Reviews. CRD's Guidance for undertaking reviews in health care. Centre for Reviews and Dissemination, University of York. 2008.

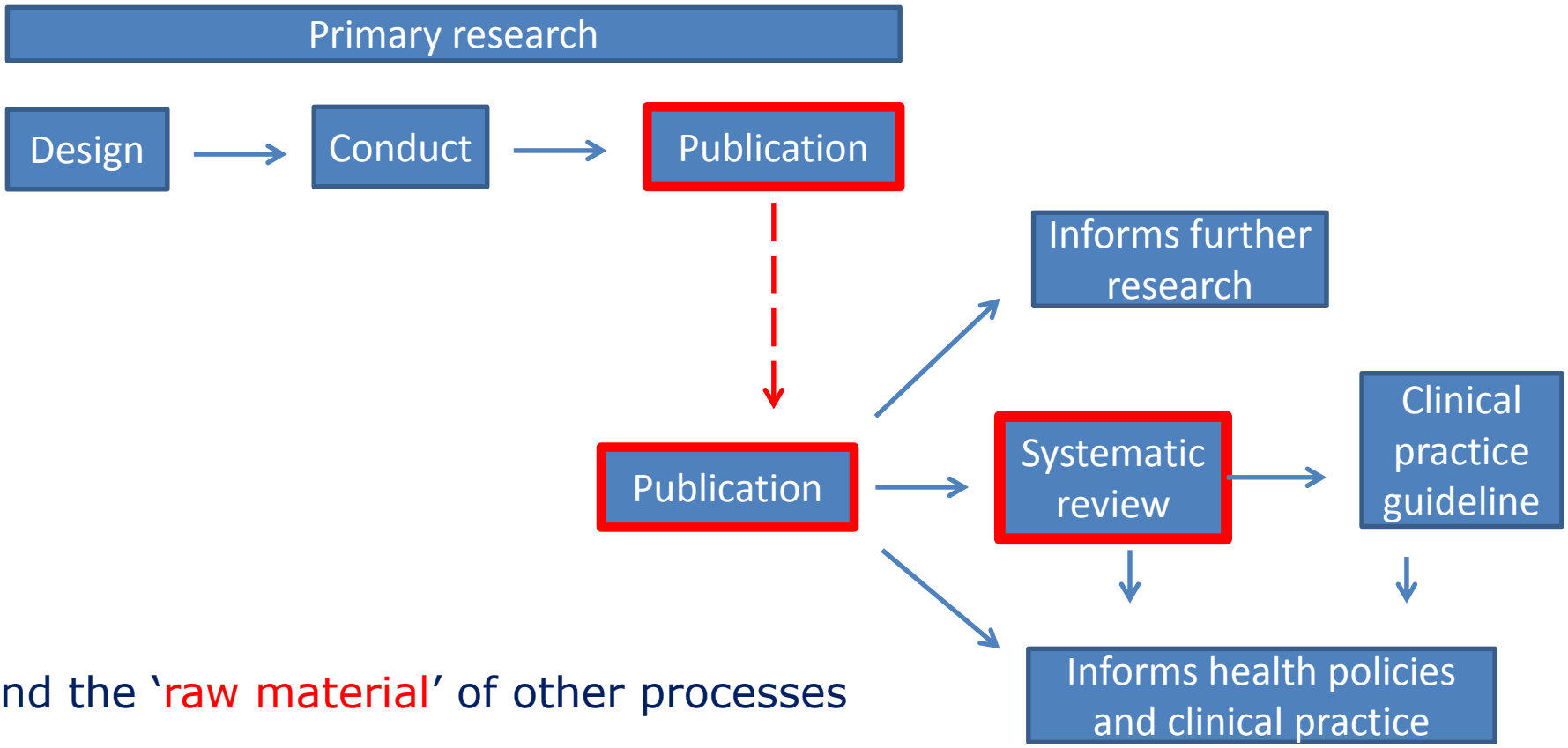
Systematic review: key steps

* Formulation of a clear question
* Eligibility criteria for studies
* Search for potentially relevant studies
* Selection of studies into the review
* Extraction of data
* Assessment of methodological quality of included studies (risk of bias)
* Synthesis of findings (possibly using meta-analysis)
* Presentation of data and results
* Interpretation and drawing conclusions

Each step is important in ensuring that the results are reliable and reproducible

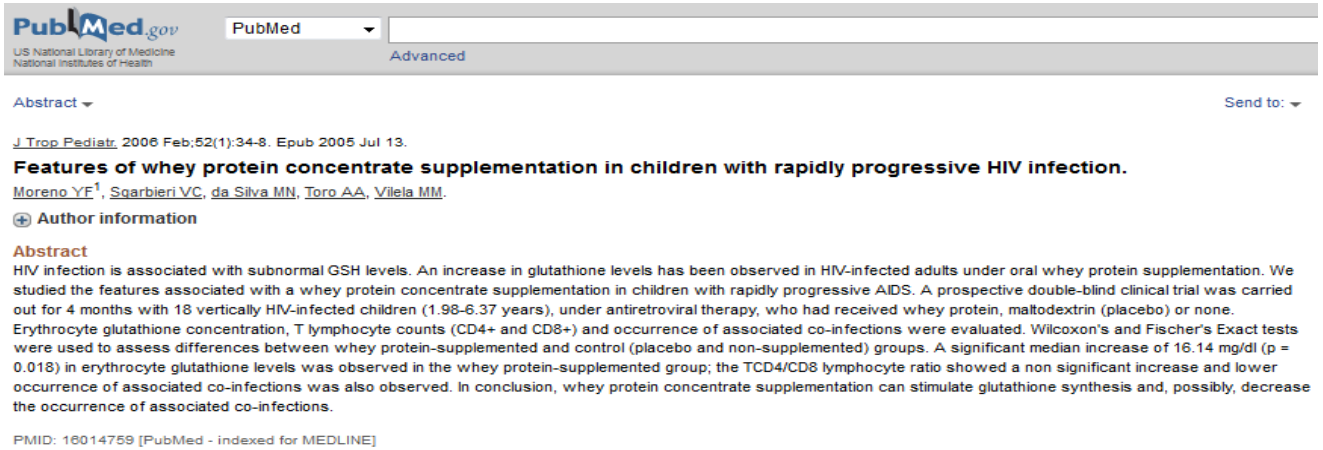
Systematic review: key component

A research article is the 'end product' of one process…



…and the 'raw material' of other processes

Systematic review: reliability


PubMed.gov
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Abstract

Send to:

J Trop Pediatr. 2006 Feb;52(1):34-8. Epub 2005 Jul 13.

Features of whey protein concentrate supplementation in children with rapidly progressive HIV infection.

Moreno YF[1], Sgarbieri VC, da Silva MN, Toro AA, Vilela MM.

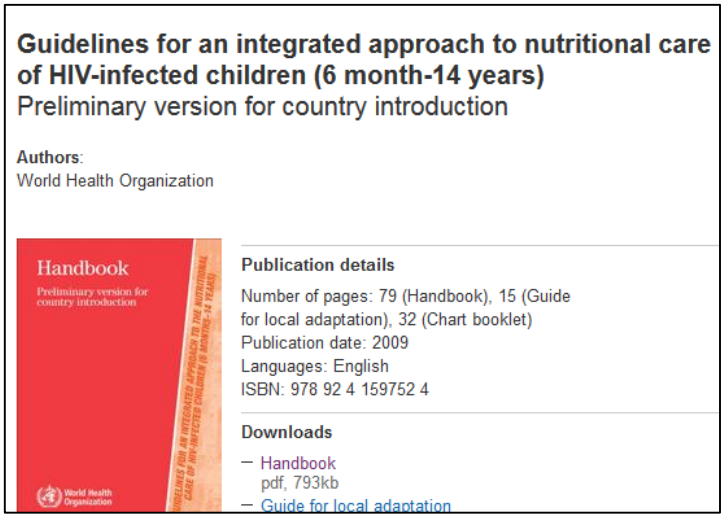
Author information

Abstract

HIV infection is associated with subnormal GSH levels. An increase in glutathione levels has been observed in HIV-infected adults under oral whey protein supplementation. We studied the features associated with a whey protein concentrate supplementation in children with rapidly progressive AIDS. A prospective double-blind clinical trial was carried out for 4 months with 18 vertically HIV-infected children (1.98-6.37 years), under antiretroviral therapy, who had received whey protein, maltodextrin (placebo) or none. Erythrocyte glutathione concentration, T lymphocyte counts (CD4+ and CD8+) and occurrence of associated co-infections were evaluated. Wilcoxon's and Fischer's Exact tests were used to assess differences between whey protein-supplemented and control (placebo and non-supplemented) groups. A significant median increase of 16.14 mg/dl (p = 0.018) in erythrocyte glutathione levels was observed in the whey protein-supplemented group; the TCD4/CD8 lymphocyte ratio showed a non significant increase and lower occurrence of associated co-infections was also observed. In conclusion, whey protein concentrate supplementation can stimulate glutathione synthesis and, possibly, decrease the occurrence of associated co-infections.

PMID: 16014759 [PubMed - indexed for MEDLINE]

Systematic reviews rely on the robustness of the methods and results of primary research and on how primary studies are reported


Guidelines for an integrated approach to nutritional care of HIV-infected children (6 month-14 years)

Preliminary version for country introduction

Authors:
World Health Organization

Handbook
Preliminary version for country introduction

Publication details

Number of pages: 79 (Handbook), 15 (Guide for local adaptation), 32 (Chart booklet)
Publication date: 2009
Languages: English
ISBN: 978 92 4 159752 4

Downloads

– Handbook
pdf, 793kb
– Guide for local adaptation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Cochrane Database of Systematic Reviews

PDF | Info | References

Nutritional interventions for reducing morbidity and mortality in people with HIV

Review | Intervention

Liesl Grobler, Nandi Siegfried, Marianne E Visser, Sarah SN Mahlungulu, Jimmy Volmink

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Systematic review: risk of bias

A crucial part of preparing a systematic review involves an assessment of the risk of bias for included studies

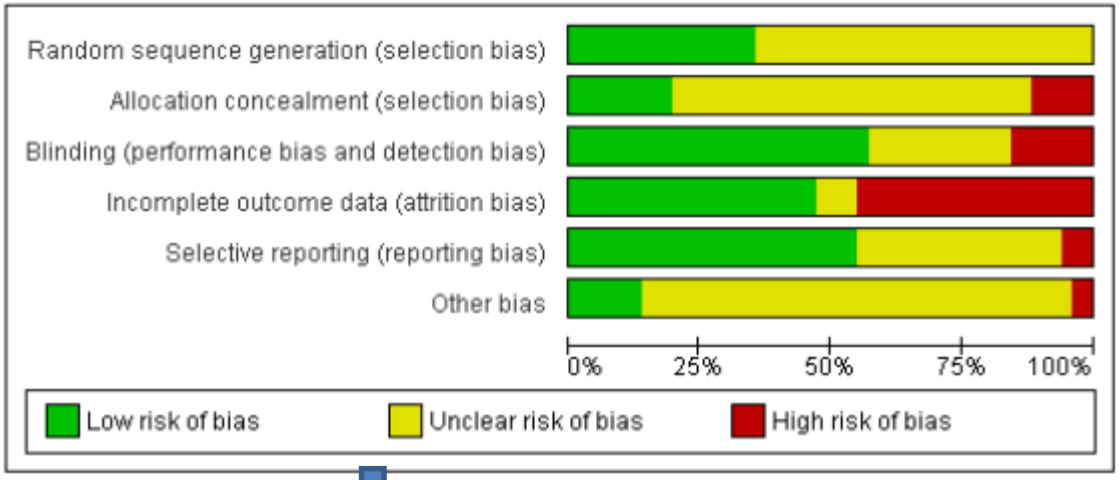
* Risk of bias results from suboptimal methods
* Methods must be reported well to allow risk of bias assessment

METHODS – each aspect of the methods

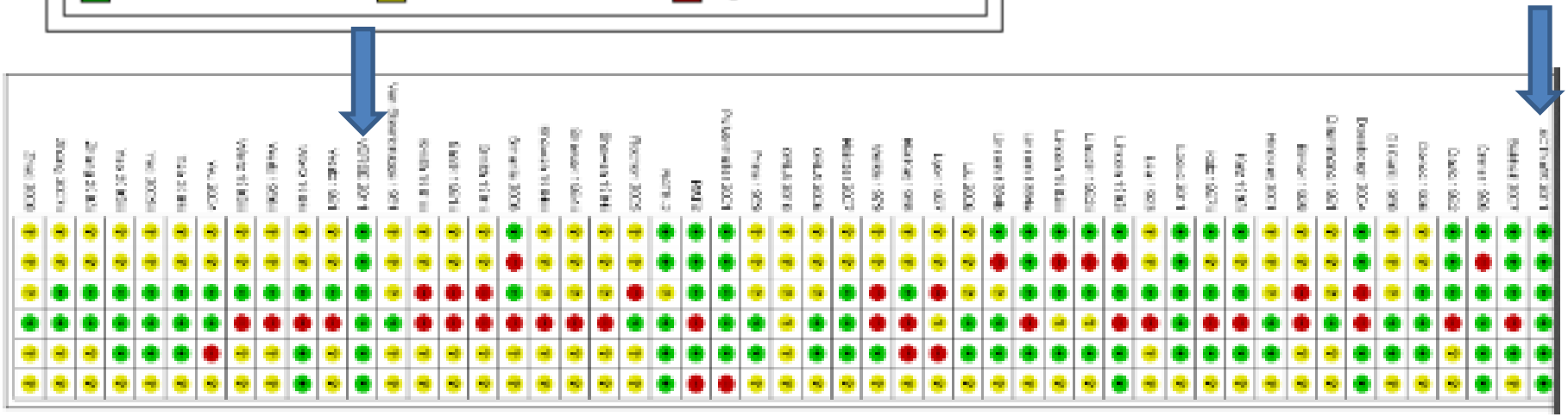
	Done well	Done poorly	Not done
Fully reported (=reproducible)			
Ambiguously or incompletely reported			
Not reported			

Cochrane risk of bias tool

Figure 5. 'Risk of bias' graph: review authors' judgements about each 'Risk of bias' item presented as percentages across all included studies.



Yellow is a problem – we simply do not know as not enough details are provided in the study report

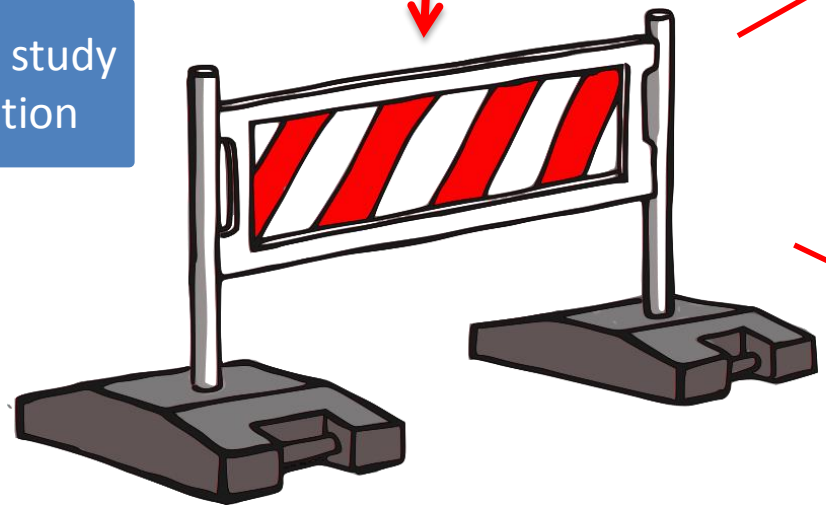


Importance of accurate and transparent research reports

Failure to provide a detailed and clear description of what was done and what was found by a research study prevents its full utilisation

Research study publication

Cannot assess research quality, reliability or relevance



Not included in a systematic review

Or clinical practice guideline

Cannot inform health policies, clinical practice or further research

Consequences of poor reporting

Poor reporting is a serious problem particularly for systematic reviews and clinical guideline development. It prevents the inclusion of all eligible studies and comparison across studies:

Data reporting was poor. 15 trials met the inclusion criteria for this review but only 4 could be included as data were impossible to use in the other 11"

"...the trial did not report many data in a form that we could analyse in this review"

"The biggest problem was the quality of reporting, which did not allow us to judge the important methodological items ..."

"...in one trial it was not clear whether data were appropriately reported"

"Reporting quality in the studies was generally poor by current standards"

"randomised clinical trials...are warranted...Such trials ought to be conducted with low risk of systematic error (bias) and low risk of random error (play of chance), and should follow the SPIRIT and CONSORT guidelines"

"...this systematic review included only three trials of poor methodological quality... Additionally, the data are incomplete, and some important clinical outcomes were not reported"

Cochrane Library, accessed on 4 May 2016)

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Deficiencies in health research reporting

A research article is often the only available record that a research study was conducted

Scientific manuscripts should present sufficient data so that the reader can fully evaluate the information

Readers need a clear understanding of exactly what was done and found

5 main areas where deficiencies have been identified in the health research literature:

- **Non-reporting (or delayed reporting) of studies**
- **Incomplete reporting of studies**
- **Selective reporting**
- **Misleading reporting**
- **Unacknowledged discrepancies between sources**

Recently there has been an explosion in the publication of studies highlighting poor reporting practices.

Research

Impact of document type on reporting quality of clinical drug trials: a comparison of registry reports, clinical study reports, and journal publications

What is missing from descriptions of treatment in trials and reviews?

Replicating non-pharmacological treatments in practice depends on how well they have been described in research studies, say **Paul Glasziou** and **colleagues**

Have you ever read a trial or review and wondered exactly how to carry out treatments such as a "behavioural intervention."

receiving numerous requests for additional details from doctors and patients, the author of a randomised trial on graded exercise for

Exercise prescription: a case for standardised reporting

Susan Carolyn Slade, Jennifer Lyn Keating

ABSTRACT

Background Structured, regul
recommended to improve health
takes many forms and varies in t
and frequency. The authors used
exercise for chronic health condi
exercise programmes are descri
c reviews.
Two independent rev
f exercise reporting pr
of exercise effects for
terial. Inclusion criteri
narised the effects of
with chronic health conditions. Exclusion
views of studies of children and adolescent

Empirical Evidence for Selective Reporting of Outcomes in Randomized Trials

Comparison of Protocols to Published Articles

An-Wen Chan, MD, DPhil
Asbjørn Hróbjartsson, MD, PhD
Mette T. Haahr, BSc
Peter C. Gøtzsche, MD, DrMedSci
Douglas G. Altman, DSc

Context Selective reporting of outcomes within published studies based on the nature or direction of their results has been widely suspected, but direct evidence of such bias is currently limited to case reports.

Objective To study empirically the extent and nature of outcome reporting bias in a cohort of randomized trials.

Design Cohort study using protocols and published reports of randomized trials approved by the Scientific-Ethical Committees for Copenhagen and Frederiksberg, Denmark, in 1994-1995. The number and characteristics of reported and unreported trial outcomes were recorded from protocols, journal articles, and a survey of trialists. An outcome was considered incompletely reported if insufficient data were presented in the published articles for meta-analysis. Odds ratios relating the completeness of outcome reporting to statistical significance were calculated

Selective publication of studies with statistically significant results has received widespread recognition.[1] In contrast, selective reporting of favorable

ARTICLE

Adequacy of Published Oncology Randomized Controlled Trials to Provide Therapeutic Details Needed for Clinical Application

Jennifer M. Duff, Helen Leather, Edmund O. Walden, Kourtney D. LaPlant, Thomas J. George Jr.

Manuscript received July 9, 2009; revised March 15, 2010; accepted March 16, 2010.

Correspondence to: Thomas J. George Jr, MD, FACP, Division of Hematology Oncology, Department of M
Florida, PO Box 100278, Gainesville, FL 32610-0278 (e-mail: thom.george@medicine.ufl.edu).

Background Randomized controlled trials (RCTs) improve clinical care through eviden
RCT result reporting, but specific details of therapeutic administration pron
tion of the trial design. We assess the reporting methodology in RCTs pub

Methods Ten essential elements of RCT reporting were identified and included d
maximum number of cycles, premedication, growth factor support, patien
adjustments for hematologic and organ-specific toxicity. All therapy-base
2005 and 2008 in the *New England Journal of Medicine (NEJM)*, *Journal of Clinical Oncology (JCO)*, *Journal of*

Clin Chem Lab Med 2012;50(3):411–413 © 2012 by Walter de Gruyter • Berlin • Boston. DOI 10.1515/cclm-2011-0904

An appeal to medical journal editors: the need for a full description of laboratory methods and specimen handling in clinical study reports

Reporting of adverse events in randomized controlled trials of highly active antiretroviral therapy: systematic review

Michal Y. Chowers[1,2*], Bat Sheva Gottesman[1,2], Leonard Leibovici[1,3], Ulrike Pielmeier[4], Steen Andreassen[4] and Mical Paul[1,3]

[1]*Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel;* [2]*Meir M*
[3]*Rabin Medical Center, Beilinson Campus, Petah-Tiqva, Israel;* [4]*Center for*
Support, Aalborg University, Aalborg, Denma

OPEN ACCESS Freely available online

Publication Bias in Antipsychotic Trials: A Efficacy Comparing the Published Literat Food and Drug Administration Database

Lee Shapley[5]

Oregon, United States of America, 2 Departme
Health Care, Oregon Health & Science Univers
Medical Center, Portland, Oregon, United Sta

Reporting and Interpretation of Randomized Controlled Trials With Statistically Nonsignificant Results for Primary Outcomes

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

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.

ACCURATE PRESENTATION OF the results of a randomized controlled trial (RCT) is the cornerstone of the dissemi-

RESEARCH ARTICLE Open Access

Electronic search strategies to identify reports of cluster randomized trials in MEDLINE: low precision will improve with adherence to reporting standards

Monica Taljaard[1,2*], Jessie McGowan[1,3,4,5], Jeremy M Grimshaw[1,6], Jamie C Brehaut[1,2], Andrew McRae[7], Martin P Eccles[8], Allan Donner[7,9]

Quality of reporting in systematic reviews

Volume 31 , Issue 2
March/April 2016
Pages 338–351

Quality Assessment of Systematic Reviews on Oral Implants

Momen A. Atieh, BDS, MSc, DClinDent, PhD/Warwick J. Duncan, BDS, MDS,

Applicable or non-applicable: investigations of clinical heterogeneity in systematic reviews

Laura E. Chess and Joel J. Gagnier

BMC Medical Research Methodology BMC series – open, inclusive and trusted 2016 16:19
DOI: 10.1186/s12874-016-0121-7 | © Chess and Gagnier. 2016

Compliance of Systematic Reviews in Plastic Surgery With the PRISMA Statement

Seon-Young Lee, BMedSc[1]; Harkiran Sagoo, BSc(Hons)[2]; Katharine Whitehurst, B
Georgina Wellstead, BSc(Hons)[4]; Alexander J. Fowler, BSc(Hons), MBBS[5]; Riaz A
(Oxf), MRCSEng, FHEA, FRSPH[6]; Dennis Orgill, MD, PhD[7]

J Clin Epidemiol. 2016 Jan 13. pii: S0895-4356(16)00039-1. doi: 10.1016/j.jclinepi.2016.01.008. [Epub al

Strong heterogeneity of outcome reporting in systematic reviews.

Sautenet B[1], Contentin L[2], Bigot A[3], Giraudeau B[4].

Systematic reviews experience major limitations in reporting absolute effects

Pablo Alonso-Coello, Alonso Carrasco-Labra, Romina Brignardello-Pete
A. Akl, Robin W.M. Vernooij, Brad C. Johnston, Xin Sun, Matthias Briel, Jason
Carlos E. Granados, Alfonso Iorio, Affan Irfan, Laura Martínez García, Reem
Morera, Anna Selva, Ivan Solà, Andrea Juliana Sanabria, Kari A.O. Tikkinen,
Zazueta, Yuqing Zhang, Qi Zhou, Holger Schünemann, Gordon H. Guyatt

Risk of Bias in Systematic Reviews of Non-Randomized Studies of Adverse Cardiovascular Effects of Thiazolidinediones and Cyclooxygenase-2 Inhibitors: Application of a New Cochrane Risk of Bias Tool

Anja Bilandzic, Tiffany Fitzpatrick, Laura Rosella, David Henry

Published: April 5, 2016 • http://dx.doi.org/10.1371/journal.pmed.1001987

A third of systematic reviews changed or did not specify the primary outcome: A PROSPERO register study

Andrea C. Tricco[a, b], Elise Cogo[a], Matthew J. Page[c], Julie Polisena[d, e], Alison Booth[f], Kerry Dwan[g], Heather MacDonald[a], Tammy J. Clifford[d], Lesley A. Stewart[f], Sharon E. Straus[a, h], David Moher[i]

About the EQUATOR Network

Enhancing the QUAlity and Transparency Of health Research

International initiative to improve the reliability and value of medical research literature by promoting transparent and accurate reporting.

Our main focus:

* Raising awareness
* Provision of resources
* Education and training
* Research

Established due to growing evidence of serious deficiencies in research literature and its effect on the reliability and usability of research results.

Many reporting guidelines available but awareness and adherence still low.

EQUATOR website: www.equator-network.org

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Enhancing the QUAlity and Transparency Of health Research

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Essential resources for writing and publishing health research

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
- Not sure which reporting guideline to use?
- Reporting guidelines under development
- Visit the library for more resources

Reporting guidelines for main study types

Randomised trials	CONSORT	Extensions	Other
Observational studies	STROBE	Extensions	Other
Systematic reviews	PRISMA	Extensions	Other
Case reports	CARE		Other
Qualitative research	SRQR	COREQ	Other
Diagnostic / prognostic studies	STARD	TRIPOD	Other
Quality improvement studies	SQUIRE		Other
Economic evaluations	CHEERS		Other
Animal pre-clinical studies	ARRIVE		Other
Study protocols	SPIRIT	PRISMA-P	Other

See all 316 reporting guidelines

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Enhancing the QUAlity and Transparency Of health Research

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Home > About us > Canadian EQUATOR Centre

Canadian EQUATOR Centre

In addition to helping to carry out the strategic vision of the EQUATOR Network in Canada, the focus of the Canadian EQUATOR centre is on initiatives that have relevant down stream consequences for the conduct and reporting of biomedical research. Our current programs include:

- A broad research program on predatory journals
- Developing core competencies for journal editors
- Instituting, piloting, and evaluating a publications officer
- Teaching a course on journalology (academic graduate level)

EQUATOR Wizard tool
www.peneloperesearch.com/equator-wizard

Have you remembered everything?

Forgetting important details can delay publication and stop your work being cited or replicated. Checklists, made by experts and tailored to different study designs, can help.

This tool will help you find the right checklist for your work from the EQUATOR library.

start press ENTER

Toolkits

The EQUATOR Network works to improve the reliability and value of medical research literature by promoting transparent and accurate reporting of research studies.

Our Toolkits support different user groups, including:

Authors
Information and resources for authors

Editors

EQUATOR highlights

30/03/2016 - EQUATOR and PAHO develop practical action plan for universities to support their scientists in responsible reporting

On 15 March 2016, Dr Iveta Simera, Deputy Director of the UK EQUATOR Centre gave the presentation: Research papers that make a difference: how to increase research value, reputation, and impact at the 4th University Internationalizaton Seminar held in Washington ... Read More

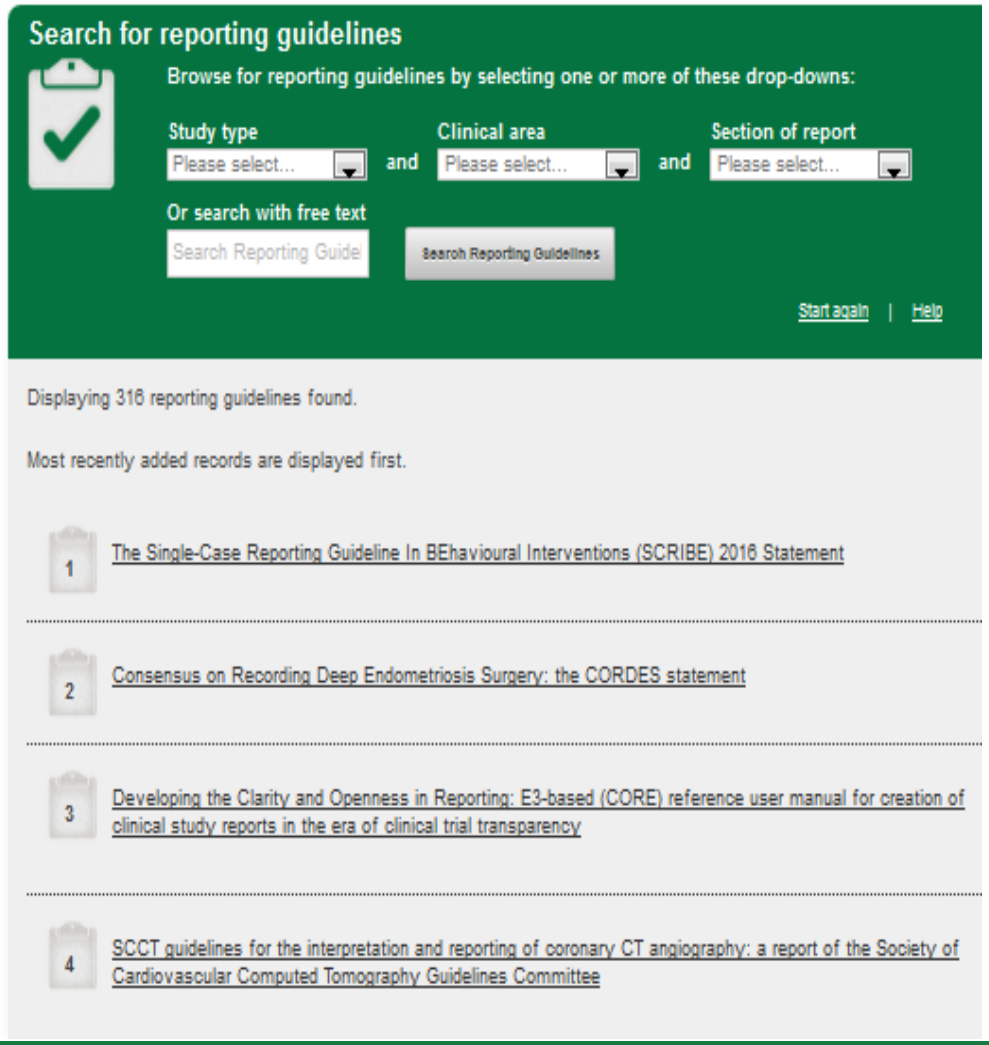
23/03/2016 - Two great EQUATOR events in Oxford this summer

EQUATOR will be at Evidence

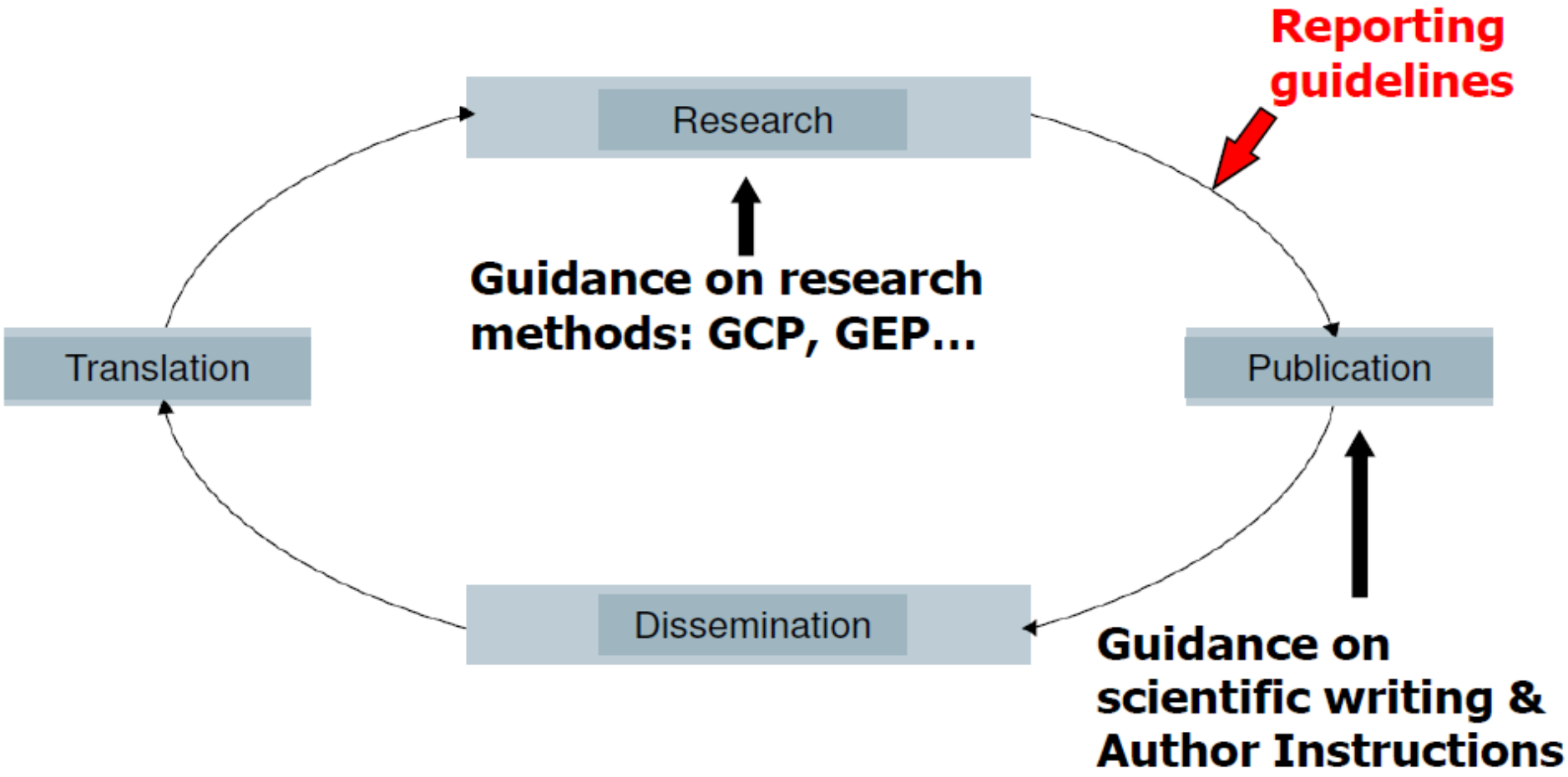
22/02/2016

New Australasian EQUATOR Centre opening in March

EQUATOR database of reporting guidelines



How to improve reporting



What are reporting guidelines?

* Statements that provide advice on how to report research methods and findings
* Specify a minimum set of items required for a clear and transparent account of what was done and what was found in a research study
* Typically take the form of a checklist, flow diagram or piece of explicit text
* Based on available evidence and reflect the consensus opinion of experts in a particular field
* Complement advice on scientific writing and journals' instructions to authors
* Some examples include:

CONSORT
TRANSPARENT REPORTING of TRIALS

PRISMA
TRANSPARENT REPORTING of SYSTEMATIC REVIEWS and META-ANALYSES

STROBE Statement
Strengthening the reporting of observational studies in epidemiology

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PRISMA Statement

PRISMA

TRANSPARENT REPORTING OF SYSTEMATIC REVIEWS AND META-ANALYSES

www.prisma-statement.org/

Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement

David Moher, Alessandro Liberati, Jennifer Tetzlaff, Douglas G. Altman, The PRISMA Group

Published: July 21, 2009 • http://dx.doi.org/10.1371/journal.pmed.1000097

The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions: Explanation and Elaboration

Alessandro Liberati, Douglas G. Altman, Jennifer Tetzlaff, Cynthia Mulrow, Peter C. Gøtzsche, John P. A. Ioannidis, Mike Clarke, P. J. Devereaux, Jos Kleijnen, David Moher

Published: July 21, 2009 • http://dx.doi.org/10.1371/journal.pmed.1000100

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PRISMA checklist and flow diagram

PRISMA Statement 2009 – Reporting guideline for systematic reviews and meta-analyses

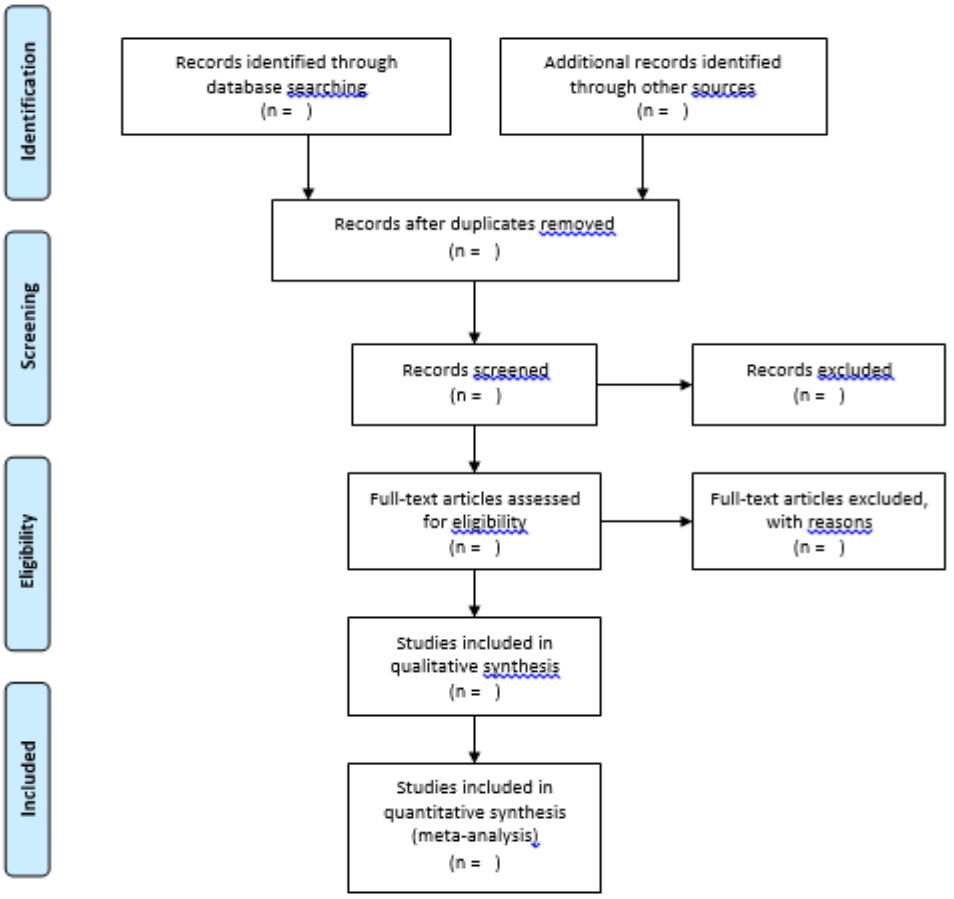
PRISMA stands for Preferred Reporting Items for Systematic reviews and Meta-Analyses. It is an evidence-based minimum set of standards for reporting systematic reviews and meta-analyses. It consists of a 27-item checklist and a flow diagram which depicts the flow of information through the different phases of a systematic review.

This guideline replaces the existing QUOROM Statement; journals and other organisations are encouraged to update their instructions and resources and refer authors to the new PRISMA guidance.

PRISMA 2009 Checklist **www.prisma-statement.org**

Section / topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	

PRISMA 2009 Flow Diagram



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PRISMA extensions

PRISMA harms checklist: improving harms reporting in systematic reviews

The PRISMA Extension Statement for Reporting of Systematic Reviews Incorporating Network Meta-analyses of Health Care Interventions: Checklist and Explanations

Preferred Reporting Items for Systematic Review and Meta-Analyses of individual participant data: the PRISMA-IPD Statement

Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 statement

PRISMA-Equity 2012 Extension: Reporting Guidelines for Systematic Reviews with a Focus on Health Equity

PRISMA for Abstracts: Reporting Systematic Reviews in Journal and Conference Abstracts

PRISMA-P

PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

Section and topic	Item No	Checklist item
ADMINISTRATIVE INFORMATION		
Title:		
Identification	1a	Identify the
Update	1b	If the proto
Registration	2	If registere
Authors:		
Contact	3a	Provide na correspond
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list cha otherwise, state plan for documenting important protocol amendments
Support:		
Sources	5a	Indicate sources of financial or other support for the review
Sponsor	5b	Provide name for the review funder and/or sponsor
Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol
INTRODUCTION		
Rationale	6	Describe the rationale for the review in the context of what is already known
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions,
METHODS		
Eligibility criteria	8	
Information sources	9	

Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement

David Moher ✉, Larissa Shamseer, Mike Clarke, Davina Ghersi, Alessandro Liberati, Mark Petticrew, Paul Shekelle, Lesley A Stewart and PRISMA-P Group

Systematic Reviews 2015 4:1 | DOI: 10.1186/2046-4053-4-1

Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation

BMJ 2015 ; 349 doi: http://dx.doi.org/10.1136/bmj.g7647 (Published 02 January 2015)
Cite this as: *BMJ* 2015;349:g7647

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PROSPERO

UNIVERSITY of York
Centre for Reviews and Dissemination

NHS
National Institute for Health Research

www.crd.york.ac.uk/PROSPERO/

* **International database of prospectively registered systematic reviews in health and social care**

* **Important features from the protocol are recorded and maintained as a permanent record**

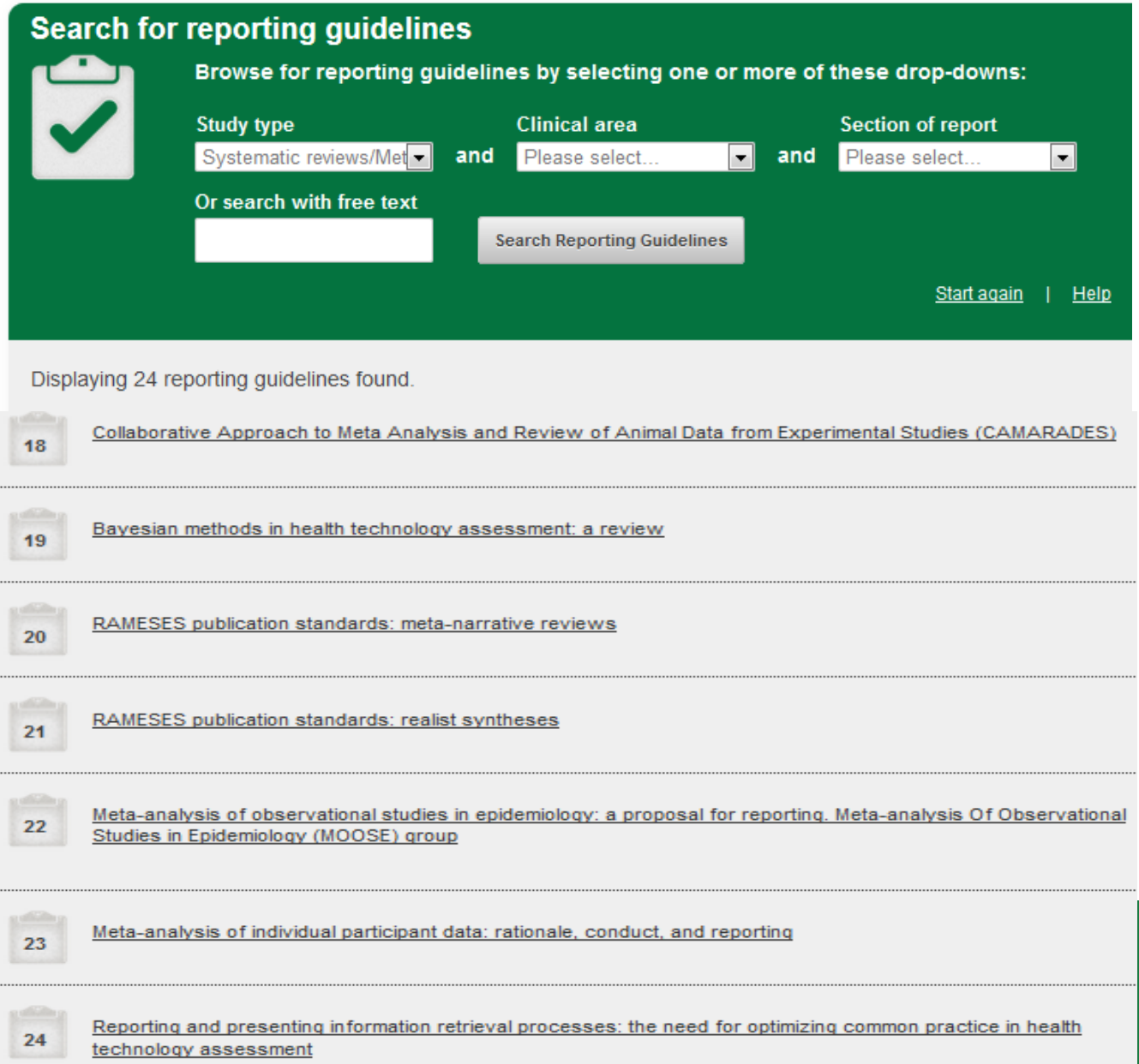
* **Helps to avoid unplanned duplication and to enable comparison of reported review methods with what was planned in the protocol**

Disorganized Systematic Reviews and Meta-analyses: Time to Systematize the Conduct and Publication of These Study Overviews?

Irbaz Bin Riaz, MD, Muhammad Shahzeb Khan, MBBS, Haris Riaz, MD, Robert J. Goldberg, PhD

"...there was an abundance of redundant and disorganized meta-analyses, creating confusion…The registration of systematic reviews should be mandatory in prospective registries, such as PROSPERO, and the PRISMA checklist should be updated…"

Published reporting guidelines for systematic reviews



Examples of journal requirements

Standards of reporting

BioMed Central
The Open Access Publisher

BioMed Central advocates complete and transparent reporting of biomedical and biological research. Please refer to the Minimum standards of reporting checklist when reporting your research (published in *BMC Biology*). Exact requirements may vary depending on the journal; please refer to the journal's instructions for authors. We also strongly recommend that authors refer to the minimum reporting guidelines for health research hosted by the EQUATOR Network when preparing their manuscript, and the BioSharing Portal for reporting checklists for biological and biomedical research, where applicable. Authors should adhere to these guidelines when drafting their manuscript, and peer reviewers will be asked to refer to these checklists when evaluating such studies.

Checklists are available for a number of study designs, including:

- Randomized controlled trials (CONSORT) and protocols (SPIRIT)
- Systematic reviews and meta-analyses* (PRISMA) and protocols (PRISMA-P)
- Observational studies (STROBE)
- Case reports (CARE)
- Qualitative research (COREQ)
- Diagnostic/prognostic studies (STARD and TRIPOD)
- Economic evaluations (CHEERS)
- Pre-clinical animal studies (ARRIVE)

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As supplemental files

- The original protocol for a clinical trial or, if the protocol has been published in an open access online journal, its reference and URL. We appreciate that studies sometimes deviate from protocols, but please explain any important deviations in the manuscript, particularly those about choice of outcomes and analyses or change in sample size.
- The original protocol for an observational study or systematic review, if available. We recommend that protocols for randomised trials are written using the SPIRIT checklist.
- For a randomised controlled trial, the appropriate completed CONSORT checklist showing on which page of your manuscript each checklist item appears, the CONSORT-style structured abstract, and the CONSORT flowchart (CONSORT has several extension statements - for example, for cluster RCTs, pragmatic trials).
- For a randomised controlled trial, a completed TIDieR checklist - this helps to ensure that trial interventions are fully described in ways that are reproducible, usable by other clinicians, and clear enough for systematic reviewers and guideline writers.
- PRISMA checklist and flowchart for a systematic review or meta-analysis of randomised trials and other evaluation studies.
- STARD checklist and flowchart for a study of diagnostic accuracy.
- STROBE checklist for an observational study.

Please use the STROBE extensions, where appropriate:

- RECORD: The REporting of studies Conducted using Observational R Statement
- RDS: Strengthening the Reporting of Observational Studies in Epidemiology for Respondent-Driven Sampling Studies: 'STROBE-RD
- ME: STrengthening t (E-ME)
- A: STrengther

THE LANCET

- Reports of trials must conform to CONSORT 2010 guidelines, and should be submitted with their prot
- All reports of randomised trials should include a section entitled Randomisation and masking, within formatting guidelines for randomised trials.
- Cluster-randomised trials must be reported according to CONSORT extended guidelines
- Randomised trials that report harms must be described according to extended CONSORT guidelines
- Studies of diagnostic accuracy must be reported according to STARD guidelines
- Observational studies (cohort, case-control, or cross-sectional designs) must be reported according t with their protocols
- We encourage the registration of all observational studies on a WHO-compliant registry (see Lancet 2
- Genetic association studies must be reported according to STREGA guidelines
- Systematic reviews and meta-analyses must be reported according to PRISMA guidelines
- To find reporting guidelines see http://www.equator-network.org

Annals of Internal Medicine

ESTABLISHED IN 1927 BY THE AMERICAN COLLEGE OF PHYSICIANS

genetic risk p
or an econon

Reporting guidelines	Follow relevant reporting recommendations. The EQUATOR includes the follo
	PRISMA reporting guideline for systematic reviews and meta-analysis
	MOOSE reporting guidelines for meta-analysis of observational studies
	ENTREQ reporting guideline for synthesis of qualitative research

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ICMJE

ICMJE INTERNATIONAL COMMITTEE of MEDICAL JOURNAL EDITORS

Recommendations | Conflicts of Interest | Journals
Following the ICMJE Recommendations

Recommendations


Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals*

1. About the Recommendations
A. Purpose of the Recommendations

A. Preparing a Manuscript for Submission to a Journal

Read the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals.

www.icmje.org/icmje-recommendations.pdf

ted and sent for peer review simultaneously with the primary manuscript.

2. Reporting Guidelines

Reporting guidelines have been developed for different study designs; examples include CONSORT (www.consort-statement.org) for randomized trials, STROBE for observational studies (http://strobe-statement.org/), PRISMA for systematic reviews and meta-analyses (http://prisma-statement.org/), and STARD for studies of diagnostic accuracy (www.stard-statement.org/). Journals are encouraged to ask authors to follow these guidelines because they help authors describe the study in enough detail for it to be evaluated by editors, reviewers, readers, and other researchers evaluating the medical literature. Authors of review manuscripts are encouraged to describe the methods used for locating, selecting, extracting, and synthesizing data; this is mandatory for systematic reviews. Good sources for reporting guidelines are the EQUATOR Network (www.equator-network.org/home/) and the NLM's Research Reporting Guidelines and Initiatives (www.nlm.nih.gov/services/research_report_guide.html).

3. Manuscript Sections

The following are general requirements for reporting within sections of all study designs and manuscript for-

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Why use reporting guidelines for systematic reviews?

Reporting guidelines are simply an aide memoire - a list of items deemed essential for a clear and transparent account of what was done and what was found in a research study

They help you to:

* improve the accuracy, completeness and reproducibility of your review
* comply with journal submission requirements
* ensure that your research study provides a more reliable basis for making clinical decisions or for inclusion in further research
* ensure the results of your review can be transferred into practice more quickly
* improve the quality of the research output of your department / institution / organisation

You can improve not only the quality and subsequent usability of published health research but also help advance the global body of health knowledge ultimately leading to improved patient care!

Impact (1)

European Heart Journal - Cardiovascular Imaging

Reporting standards in cardiac MRI, CT, and SPECT diagnostic accuracy studies: analysis of the impact of STARD criteria

Edd N. Maclean, Ian S. Stone, Felix Ceelen, Xabier Garcia-Albeniz, Wieland H. Sommer, Steffen E. Petersen

DOI: http://dx.doi.org/10.1093/ehjci/jet277 691-700 First published online: 23 January 2014

"The reporting standards of diagnostic accuracy studies in the field of non-invasive cardiac imaging are satisfactory at best and have **improved since the introduction of STARD**. **Those journals that advise authors to refer to STARD have significantly higher impact factors**, and authors should be encouraged that **journals of relatively high impact factors publish diagnostic accuracy studies of higher reporting quality**."

INTERNATIONAL JOURNAL OF SURGERY

Impact of the mandatory implementation of reporting guidelines on reporting quality in a surgical journal: A before and after study

Riaz Ahmed Agha, Alexander J. Fowler, Chris Limb, Katie Whitehurst, Robert Coe, Harkiran Sagoo, Daniyal Jafree, Charmilie Chandrakumar, Buket Gundogan

"...**STROBE compliance** following implementation of the policy, **increased by a statistically significant 12%** (68% to 77%, p=0.00018)...**CONSORT compliance increased (50% to 70%)** as did **PRISMA compliance (48% to 76%)**..."

Calls for development of additional reporting guidelines for reviews:

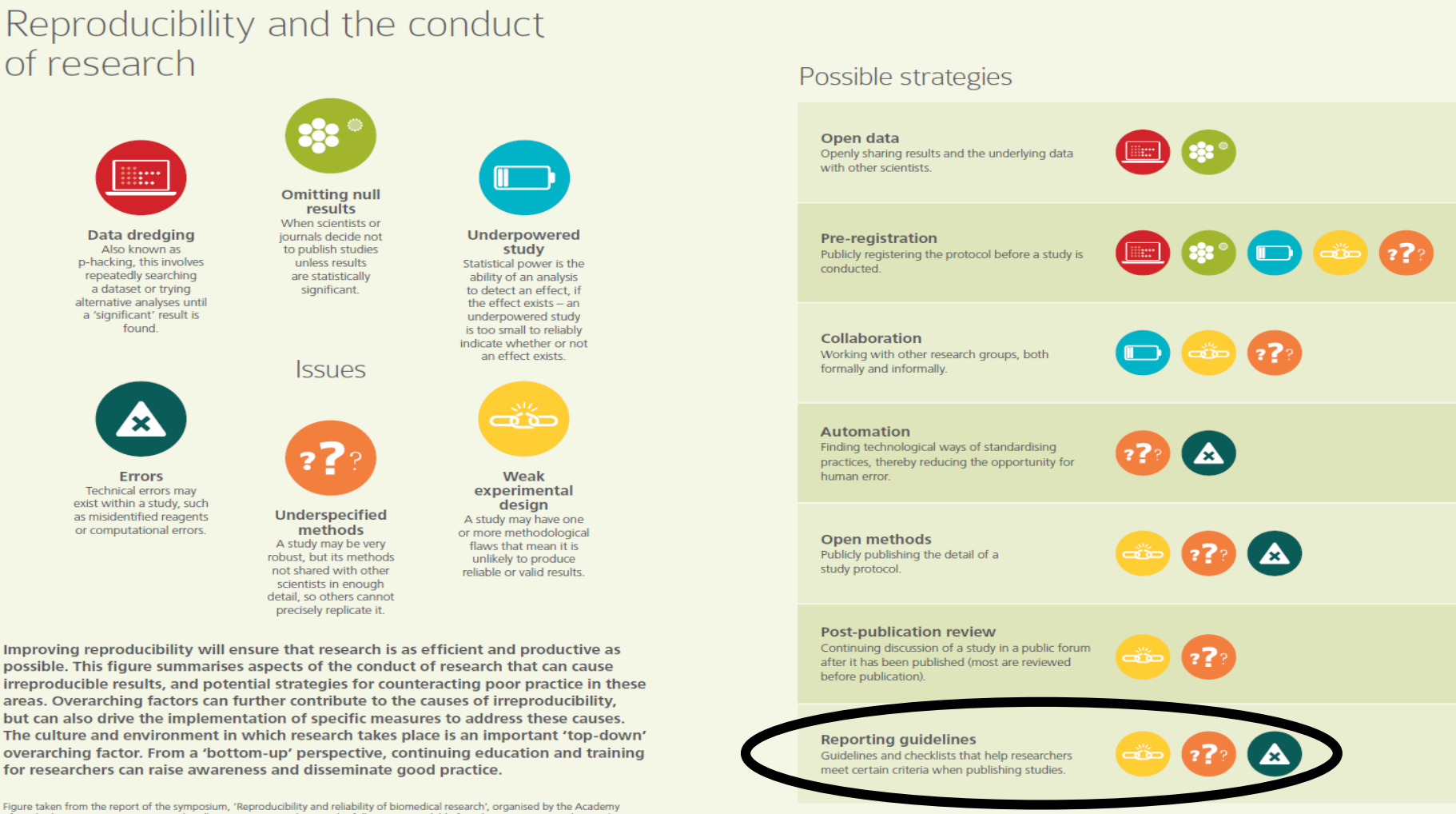
A scoping review on the conduct and reporting of scoping reviews

Andrea C. Tricco, Erin Lillie, Wasifa Zarin, Kelly O'Brien, Heather Colquhoun, Monika Kastner, Danielle Levac, Carmen Ng, Jane Pearson Sharpe, Katherine Wilson, Meghan Kenny, Rachel Warren, Charlotte Wilson, Henry T. Stelfox and Sharon E. Straus

BMC Medical Research Methodology BMC series – open, inclusive and trusted 2016 16:15
DOI: 10.1186/s12874-016-0116-4

Conclusion: "...improvements in reporting and conduct are imperative. Further research on scoping review methodology is warranted, and in particular, **there is need for a guideline to standardize reporting."**

Impact (2): UK Academy of Medical Sciences



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Impact (3): HEFCE

HIGHER EDUCATION FUNDING COUNCIL FOR ENGLAND hefce

RESEARCH POLICY | November 10th 2015

Research impact: learning lessons from the REF

Lesson 5: Researchers who deliver high-quality academic research also deliver high-quality impact

Impact (4)

PLOS ONE

RESEARCH ARTICLE

Is Quality and Completeness of Reporting of Systematic Reviews and Meta-Analyses Published in High Impact Radiology Journals Associated with Citation Rates?

Christian B. van der Pol[1], Matthew D. F. McInnes[1,2]*, William Petrcich[2], Adam S. Tunis[1], Ramez Hanna[1]

1 Department of Radiology, University of Ottawa, Ottawa, Ontario, Canada, **2** Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, Ontario, Canada

* mmcinnes@toh.on.ca

CrossMark click for updates

OPEN ACCESS

Citation: van der Pol CB, McInnes MDF, Petrcich W, Tunis AS, Hanna R (2015) Is Quality and Completeness of Reporting of Systematic Reviews

Conclusion

There is a positive correlation between the quality and the completeness of a reported SR or MA with citation rate which persists when adjusted for journal IF and journal 5-year IF.

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Final thoughts…

Research reporting is just one aspect of a much wider problem within biomedical research today involving industry, publishers, governments, funders, regulators, researchers and academic institutions which is attracting increasing debate and examination.

"Perhaps all of us engaged in the enterprise we call “science” need to pause and reflect on the present state of what we do...How should the entire scientific enterprise change to produce reliable and accessible evidence that addresses the challenges faced by society and the individuals who make up those societies?"

Kleinert S, Horton R. How should medical science change? Lancet. 2014 Jan 18;383(9913):197-8.

Research waste & REWARD campaign

REWARD

Priorities | Design conduct analysis | Regulation & management | Accessibility | C

The *Lancet* REWARD (REduce research Waste And Reward Diligence) Campaign invites everyone involved in biomedical research to critically examine the way they work to reduce waste and maximise efficiency.

Read the REWARD statement and join the campaign

Updates

REWARD Alliance Update April 2016, by Professor Paul Glasziou

The 2015 REWARD/EQUATOR conference in Edinburgh abstracts are downloadable at http://rewardalliance.net/research-wasteequator-conference/. The first video in a series from the conference is an 8-minute video providing a great overview of the main issues of research waste: https://youtu.be/KDwyc5w6bQE. Several other short videos from the conference on different themes are in preparation and will be available in the next few weeks. Please watch, enjoy and tweet.

More...

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The Lancet, Vol. 387, No. 10028, p1601
Published in Issue: April 16, 2016
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The Lancet Neurology, Vol. 14, No. 11, p1065
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The Lancet, Vol. 383, No. 9912, p101–104

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Research

Increasing value, reducing waste

It has been estimated that 85% of research is wasted, usually because it asks the wrong questions, is badly designed, not published or poorly reported. This diminishes the value of research and also represents a significant financial loss. However, many causes of this waste are simple problems that could easily be fixed, such as appropriate randomisation or blinding of a clinical trial. A first step towards increasing the value of research and reducing waste is to monitor the problems and develop solutions that aim to fix them.

http://researchwaste.net/

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.

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Sabine Kleinert, Richard Horton
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Malcolm R Macleod, Susan Michie, Ian Roberts, Ulrich Dirnagl, Iain Chalmers, John P A Ioannidis, Rustam Al-Shahi Salman, An-Wen Chan, Paul Glasziou
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How to increase value and reduce waste when research priorities are set
Iain Chalmers, Michael B Bracken, Ben Djulbegovic, Silvio Garattini, Jonathan Grant, A Metin Gülmezoglu, David W Howells, John P A Ioannidis, Sandy Oliver
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Paul Glasziou, Douglas G Altman, Patrick Bossuyt, Isabelle Boutron, Mike Clarke, Steven Julious, Susan Michie, David Moher, Elizabeth Wager
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Acknowledgements

Many thanks to both Professor Doug Altman and Dr Iveta Simera for permission to reproduce some of their slides and for helpful comments on this presentation.

Thank you!

www.equator-network.org

Contact: shona.kirtley@csm.ox.ac.uk