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EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

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Research waste when designing new research

What do funders do to increase value and reduce waste in research?

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EVIR (Ensuring Value In Research) collaboration

2014

2017

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THE LANCET

What are funders doing to minimise waste in research?

Mona Nasser • Mike Clarke • Iain Chalmers • Kjetil Gundro Brurberg • Hanna Nykvist • Hans Lund • et al.

Increasing value and reducing waste in biomedical research: who's listening?

Dr David Moher, PhD • Paul Glasziou, FRACGP • Iain Chalmers, DSc • Mona Nasser, DDS • Patrick M M Bossuyt, PhD • Daniël A Korevaar, MD • et al. Show all authors

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- More and More Billionaires and Millionaires start supporting research and controlling what scientific topics gets forward
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- Everyone can submit research questions to panel
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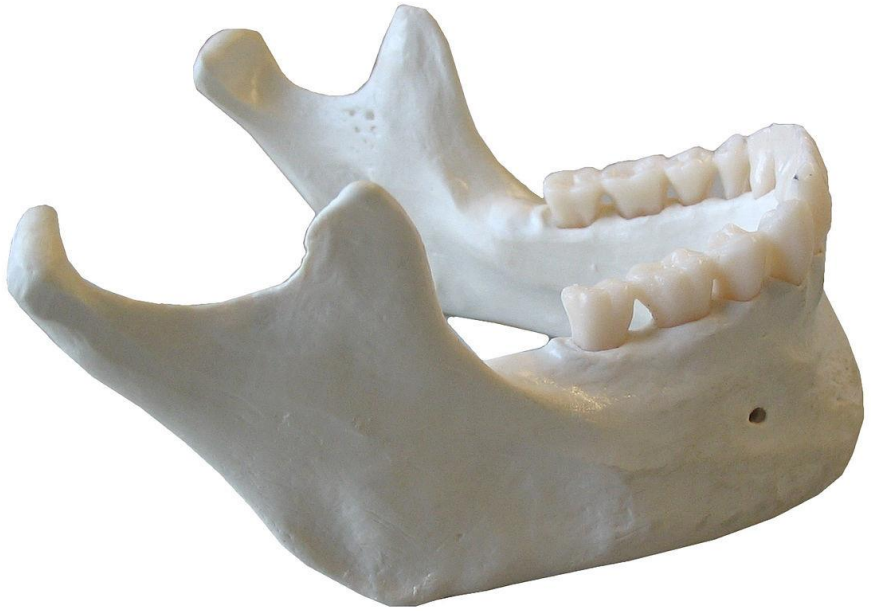
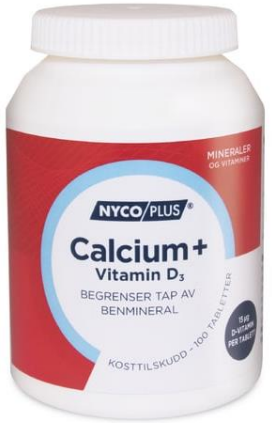
- Effect to bias ratio
- Choice of question



Nasser M, Pandis N, Fleming PS, Fedorowicz Z, Ellis E, Ali K. Interventions for the management of mandibular fractures. Cochrane Database Syst Rev. 2013 Jul 8;(7):CD006087.
Ioannidis JP, Greenland S, Hlatky MA, Khoury MJ, Macleod MR, Moher D, Schulz KF, Tibshirani R. Increasing value and reducing waste in research design, conduct, and analysis. Lancet. 2014 Jan 11;383(9912):166-75.



- Observational studies >> RCTs (3.3-4.5 times)
- Studies with surrogate endpoints >> clinical endpoints (1.6-3 times)

Bolland MJ, Avenell A, Grey A. Assessment of research waste part 1: an exemplar from examining study design, surrogate and clinical endpoints in studies of calcium intake and vitamin D supplementation. BMC Med Res Methodol. 2018 Oct 10;18(1):103.

Cochrane review with meta-analysis (Apr 2012-Mar 2013)

- 556/1286 (43%) trials (205 meta-analyses) ->> at least one domain of high risk of bias.
- Adjustment possible in 142 of them and easy adjustment with no or minor cost in 71 of them (50%)

Yordanov Y, Dechartres A, Atal I, Tran VT, Boutron I, Crequit P, Ravaud P. Avoidable waste of research related to outcome planning and reporting in clinical trials. BMC Med. 2018 Jun 11;16(1):87 .

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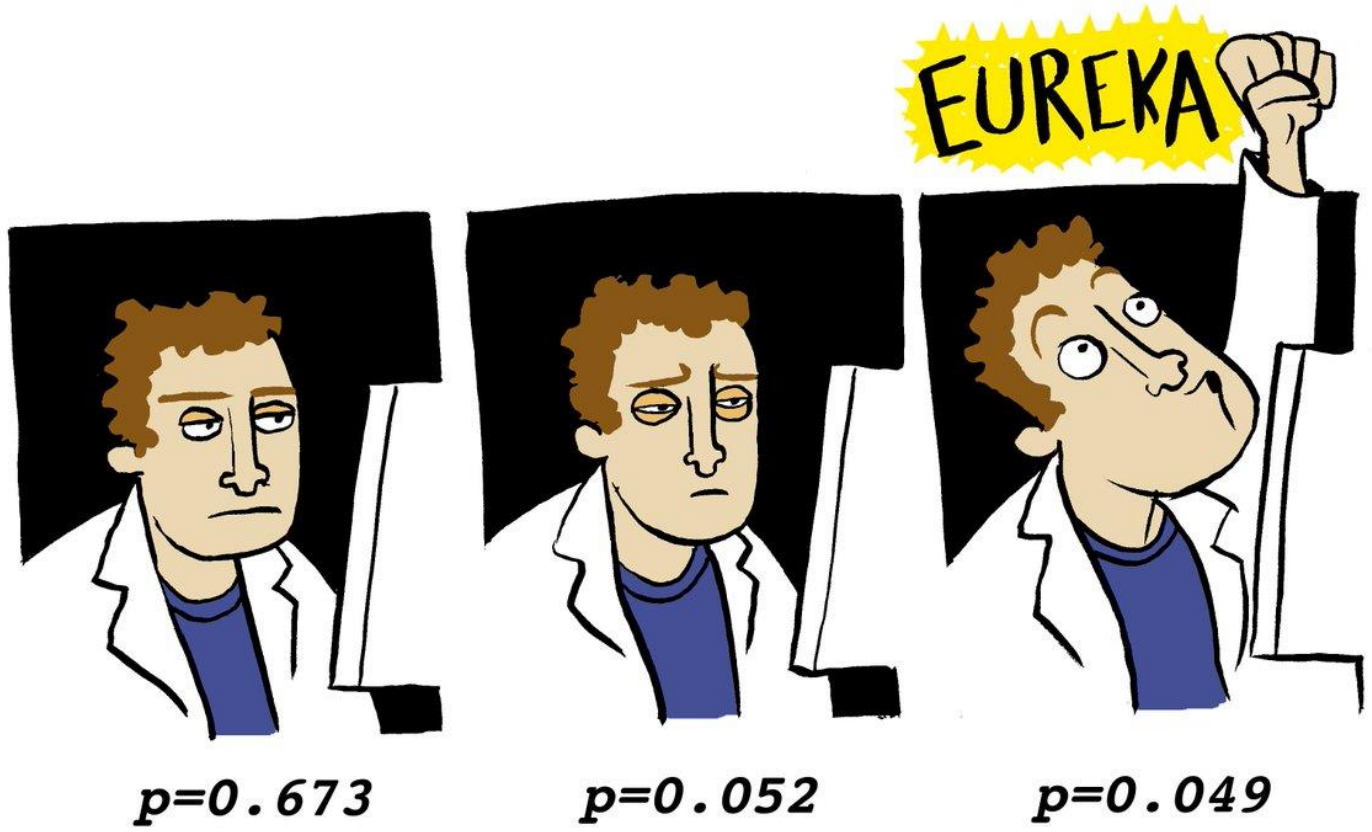

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HPV
vaccine

Funding agency	Country
National Institute for Health Research **(NIHR)**	UK/England
Medical Research Council **(MRC)**	UK
French Ministry of Health **(FMoH)**	France
l'Agence Nationale de la Recherche **(ANR)**	France
Deutsche ForschungsgemeinschaftDeutsche **(DFG)**	Germany
The Netherlands Organisation for Health Research and Development **(ZonMw)**	Netherlands
Danske Regioner **(DR)**	Denmark
Regional Health Authorities **(RHA)**	Norway
National Health and Medical Research Council **(NHMRC)**	Australia
Canadian Institutes of Health Research **(CIHR)**	Canada
National Institutes of Health **(NIH)**	USA
Patient Centred Outcomes Research Group **(PCORI)**	USA

Table 1 – Funding agencies used in the survey and samples of data from the project (further details available in S5 and S6)

Funding agency	Country	Are patients and the public involved?	New research requires systematic reviews of existing evidence?	Public access to full protocols for completed or ongoing research?	Funding to undertake "research on research"?
Patient-Centered Outcomes Research Institute (PCORI)	USA				
Nederlandse organisatie voor gezondsheidsonderzoek en zorinnovatie (ZonMw)	Netherlands				
National Institute for Health Research (NIHR)	UK				
Medical Research Council (MRC)	UK				
National Health and Medical Research Council (NHMRC)	Australia				
Canadian Institutes of Health Research (CIHR)	Canada				
National Institutes of Health (NIH)	USA				
Deutsche Forschungsgemeinschaft (German Research Foundation) (DFG)	Germany				
French Ministry of Health (FoH)	France				
l'Agence Nationale de la Recherche (ANR)	France				
Danske Regioner (DR)	Denmark				

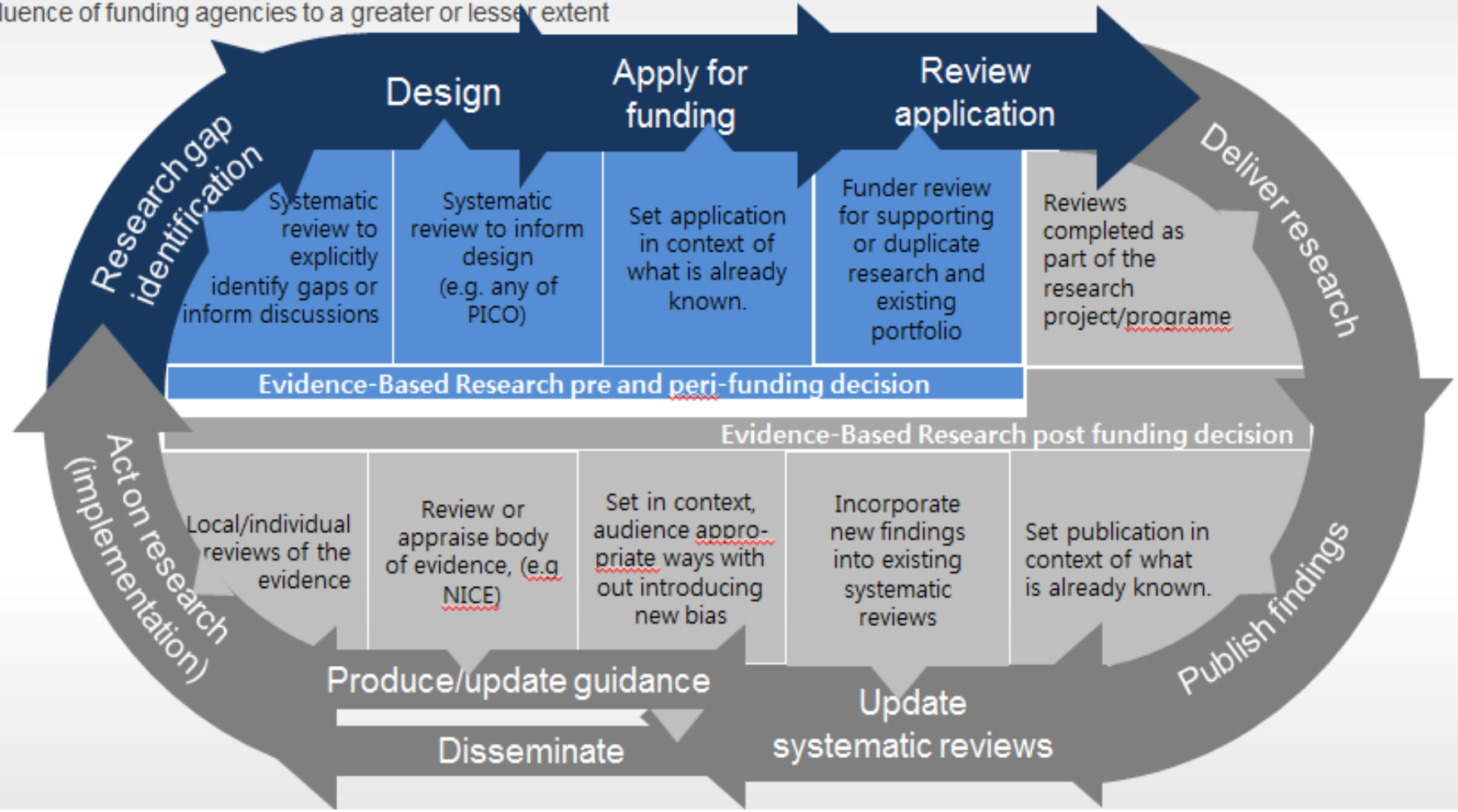
Nasser M, Clarke M, Chalmers I, Brurberg KG, Nykvist H, Lund H, Glasziou P. What are funders doing to minimise waste in research? Lancet. 2017 Mar 11;389(10073):1006-1007. doi: 10.1016/S0140-6736(17)30657-8.
Nasser M, Clarke M, Chalmers I, Brurberg KG, Nykvist H, Lund H, Glasziou P. How can research funders add value to research as part of a special session on responsible research conduct for funding agencies. Work Research integrity conference, Amsterdam, Netherlands. 28-31 May 2017

Funder	Definition of systematic reviews
NIHR	*"New primary research will only be funded if it is based on a review of existing evidence that is* ***credible to your peers*** *and is completed according to a* ***predetermined*** *methodology…. maximises completeness in a way proportionate to the* ***risk*** *of an inappropriate funding decision, ….****critically*** *appraises for quality and relevance, synthesises […..****without introduce new bias****]*
PCORI	*PCORI defines systematic reviews ..The PCORI Methodology Committee endorses* ***the standards issued by the National Academy of Medicine (NAM),*** *formerly the Institute of Medicine. This committee recognizes the importance of conducting systematic reviews consistent with updates to methodological best practices. But it also acknowledges* ***that flexibility*** *in the application of some standards may not compromise the validity of the review.*
CIHR	The policy on clinical trials say - " *The researcher has a responsibility to present the proposed research in the context of a systematic review of the literature on that topic. Clinical trials should not be conducted unnecessarily on questions that have already been definitively answered*." We did not find any additional information.

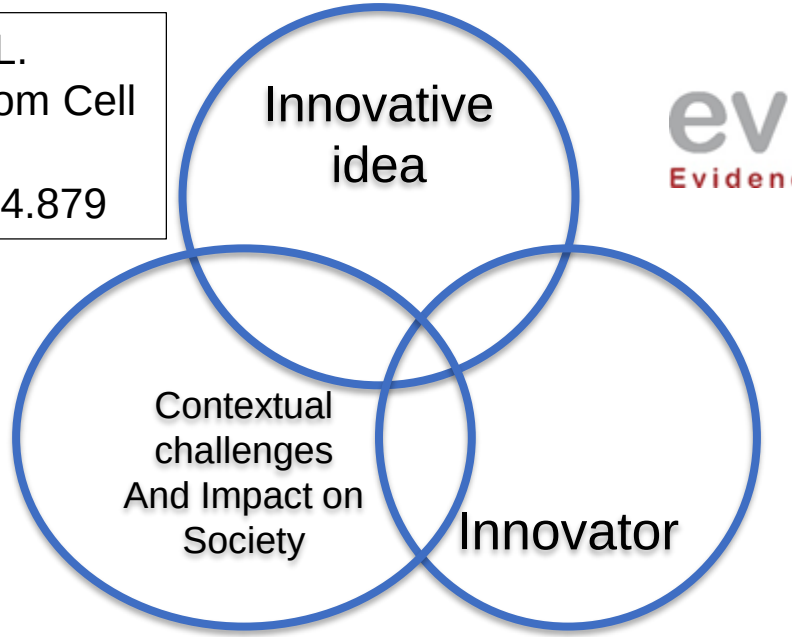
Funded project	Which part of the proposal used a systematic review	How is was used
A multicentre prospective randomised open-label blinded end-point controlled trial of cardiac troponin I-guided combination angiotensin receptor blockade and beta blocker therapy to prevent cardiac toxicity in anthracycline treated breast cancer patients	They cite NICE guideline and a meta-analysis	To choose the intervention and comparison
Randomised double-blind controlled efficacy and mechanism study of sub-sensory sacral neuromodulation in adults with faecal incontinence	They cite three systematic reviews and a third self-conducted one	Demonstrating previous studies were observational or RCTS with quality issues
IASO: A phase II randomised placebo controlled double blind trial of Interleukin 1 blockade in Acute Severe Colitis	They cite one systematic review	They use the review to design their study (choice of outcome measures)

Implications of Evidence Based Research for funders of primary research:

Stages of the research cycle that could be informed by a review of the evidence. Different stages are within the influence of funding agencies to a greater or lesser extent



Gummerum, M., & Denham, S. L. (2014). Cognitive Innovation: From Cell to Society, 10. https://doi.org/10.5964/ejop.v10i4.879



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Original Investigation

The Mass Production of Redundant, Misleading, and Conflicted Systematic Reviews and Meta-analyses

JOHN P.A. IOANNIDIS

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with for comparison. Most investigators in most fields loathe performing a replica of a previous study. This is probably a consequence of the requirement to promise novelty and innovation imposed on researchers by funding agencies and promotion committees. Only a tiny fraction of biomedical articles are truly disruptively innovative. [15] The vast majority of articles are neither innovative nor identical to previous work. Studies may be similar, but they are made deliberately different in one or more aspects. For example, in an empirical evaluation of 60 published studies on risk factors for pterygium (a very common eye condition), no pair of studies considered the exact same factors or used identical adjustments for "known" risk factors.[16]

Nasser M 2017 'How Do Selected National Funding Agencies Communicate the Concept of Cognitive Innovation on Their Public Website?' AVANT. Trends in Interdisciplinary Studies Publisher Site , DOI

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Western Norway University of Applied Sciences