

**What is holding us back  
in the prevention of QRPs?**

***Lex Bouter***

# Content

- What does most harm?
- Selective reporting
- Plea for transparency
- Conclusions



# Spectrum of research practices

How it should be done:

**Relevant, Valid, Reproducible, Efficient**

Sloppy science:

*Ignorance, honest error or dubious integrity*

Scientific fraud:

**Fabrication, Falsification, Plagiarism**

*Responsible  
Conduct of  
Research*

*Questionable  
Research  
Practices*

*Research  
Misconduct*

# How often do RM and QRP occur?

average of 21 surveys

- Self-reported **FF** at least once in last 3 yrs → **2%**
- Self-reported **QRP** at least once in last 3 yrs → **34%**

# Ranking research misbehavior

60 items ranked by 34/59 experts

## ■ How often will this misbehavior occur?

*very rarely (1) – rarely (2) – regularly (3) - often (4) - very often (5)*

## ■ If it occurs, how large will its impact be on the **validity of knowledge?**

*negligible (1) – small (2) – medium (3) - large (4) - enormous (5)*

# Top 5 – Freq X Truth

rank	item	score
1	Not publish a valid negative study	16.4
2	Let your beliefs and convictions influence the conclusions	13.4
3	Not report replication problems	12.9
4	Conceal results that contradict your earlier findings or your convictions	12.9
5	Keep inadequate notes of research process	12.8

# Fabrication and Falsification

Freq X Truth

rank	item	score
23	Selectively delete data, modify data or add fabricated data after performing initial data-analyses	9.3
32	Delete data before performing data analysis without disclosure	8.5
35	Fabricate data	8.1

# Plagiarism - Freq X Truth

rank	item	score
39	Re-use part of your own publications without referencing	7.3
41	Re-use of previously published data without disclosure	7.0
42	Duplicate publication without disclosure	6.8
44	Use published phrases or ideas of others without referencing	6.5
47	Use unpublished phrases or ideas of others without their permission	6.2



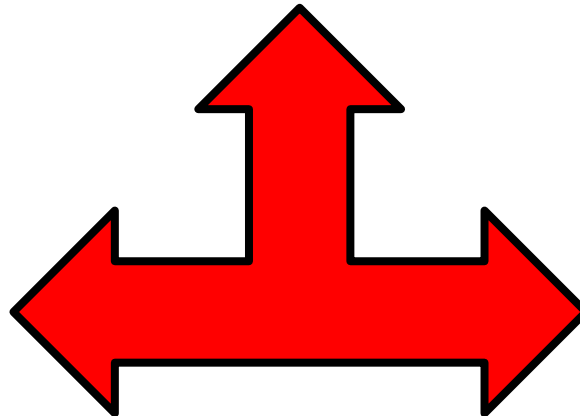
# DETERMINANTS OF BAD PRACTICES

## SYSTEM

*publication pressure  
hyper competition  
low risk – high rewards*

## CULTURE

*wrong role models  
insufficient mentoring  
no RCR education  
no clear guidance*



## INDIVIDUAL

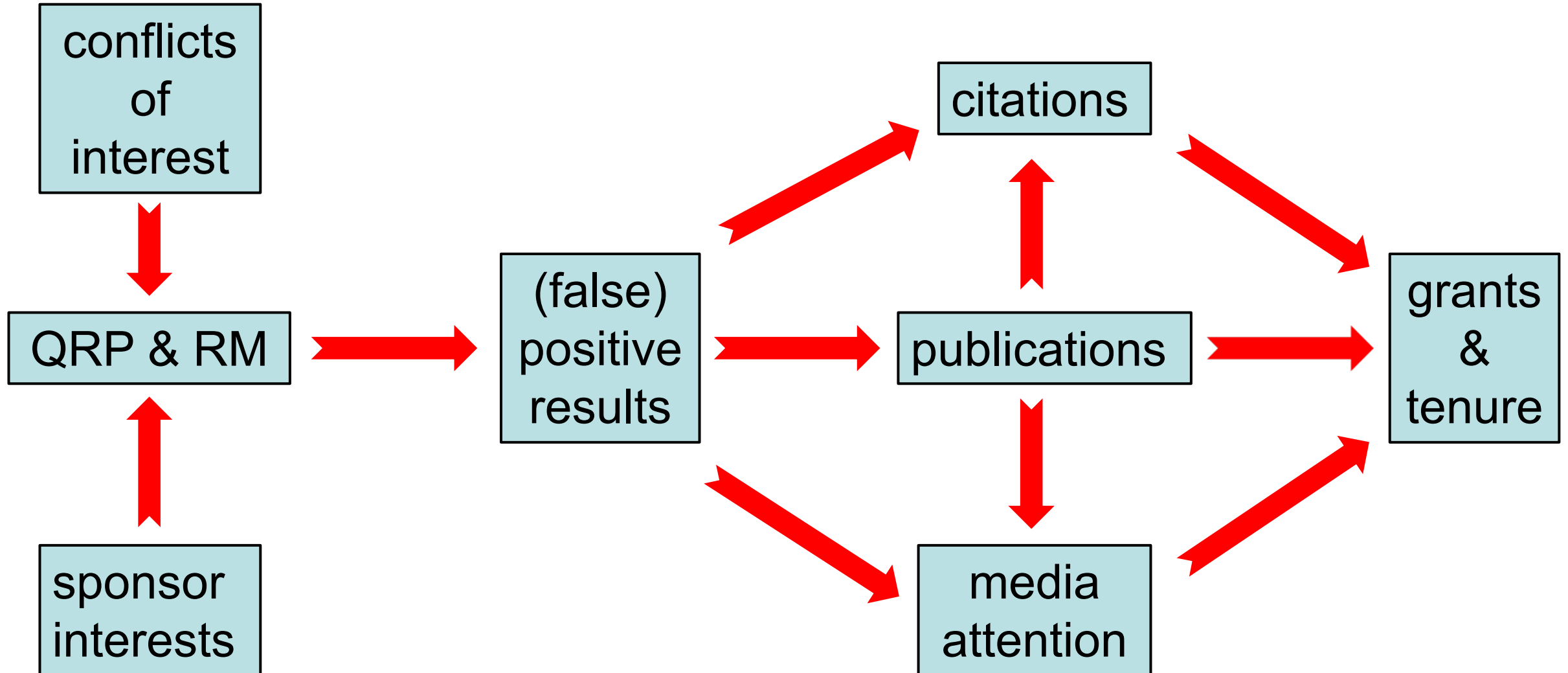
*justifying misbehavior  
conflicts of interest  
moral attitudes  
personality traits*

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# HOW THINGS CAN GO WRONG



Non-publication → **publication bias**

Selective reporting → **reporting bias**

- Both favour preferred ('positive') findings
- Leading to a distorted picture in the published body of evidence

→ **Flawed Systematic Reviews**

→ **Low Replication Rates**

# Raise standards for preclinical cancer research

C. Glenn Begley and Lee M. Ellis propose how methods, publications and incentives must change if patients are to benefit.

## **Only 6 of 53 preclinical landmark cancer studies could be confirmed by replication**

When negative studies are rarely published,  
published positive studies are likely to be chance findings

### **Non-confirmed studies**

- sometimes inspire many new studies → **research waste!**
- sometimes lead to clinical trials → **unethical situation!**

# @ Avoidable waste in the production and reporting of research evidence

*Iain Chalmers, Paul Glasziou*



*Lancet* 2009; 374: 86–89

Published Online

June 15, 2009

DOI:10.1016/S0140-

6736(09)60329-9

James Lind Library, James Lind Initiative, Oxford, UK

(Sir I Chalmers DSc); and Centre

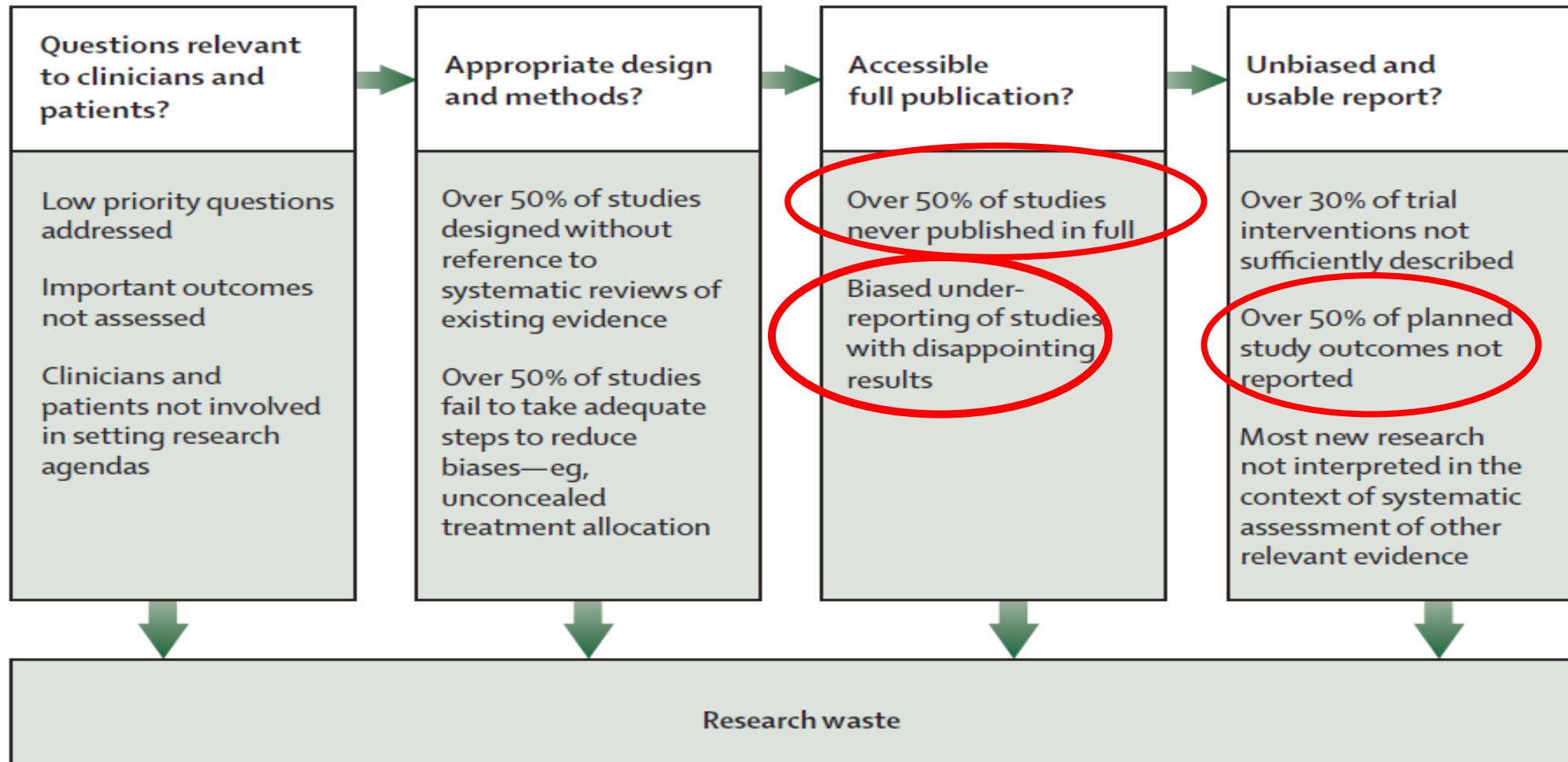
for Evidence-Based Medicine,

Department of Primary Care,

University of Oxford, Oxford,

UK (Prof P Glasziou RACGP)

<http://researchwaste.net/>



**Avoidable waste may be up to 85%**



# Prevention of selective reporting of clinical trials

- Registration + uploading of protocols, data and publications
- Quality of reporting



Enhancing the QUALity and  
Transparency Of health Research

[www.equator-network.org](http://www.equator-network.org)



## Reporting guidelines for main study types **N = 270**

<u>Randomised trials</u>	<u>CONSORT</u>	<u>Extensions</u>	<u>Other</u>
<u>Observational studies</u>	<u>STROBE</u>	<u>Extensions</u>	<u>Other</u>
<u>Systematic reviews</u>	<u>PRISMA</u>	<u>Extensions</u>	<u>Other</u>
<u>Case reports</u>	<u>CARE</u>		<u>Other</u>
<u>Qualitative research</u>	<u>SRQR</u>	<u>COREQ</u>	<u>Other</u>
<u>Diagnostic / prognostic studies</u>	<u>STARD</u>	<u>TRIPOD</u>	<u>Other</u>
<u>Quality improvement studies</u>	<u>SQUIRE</u>		<u>Other</u>
<u>Economic evaluations</u>	<u>CHEERS</u>		<u>Other</u>
<u>Animal pre-clinical studies</u>	<u>ARRIVE</u>		<u>Other</u>
<u>Study protocols</u>	<u>SPIRIT</u>	<u>PRISMA-P<sup>17</sup></u>	<u>Other</u>

A large, diverse crowd of people, likely at a public event or protest, filling the background of the central text area.

Hundreds of thousands of people have taken part  
in clinical trials that have not published results.

**Make their contributions count.**

[www.alltrials.net](http://www.alltrials.net)

# The sad news

- **Slow rate of adoption**

- 50% of registered RCTs is not published
- 50% of published RCTs is not registered
- Open Data is slowly gaining momentum

- **Room for improvement**

- 46 recommendations for the stakeholders at issue
- Other forms of clinical and preclinical research
- But an inspiring example for other disciplinary fields

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- Selective reporting
- **Plea for transparency**
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# Transparency of

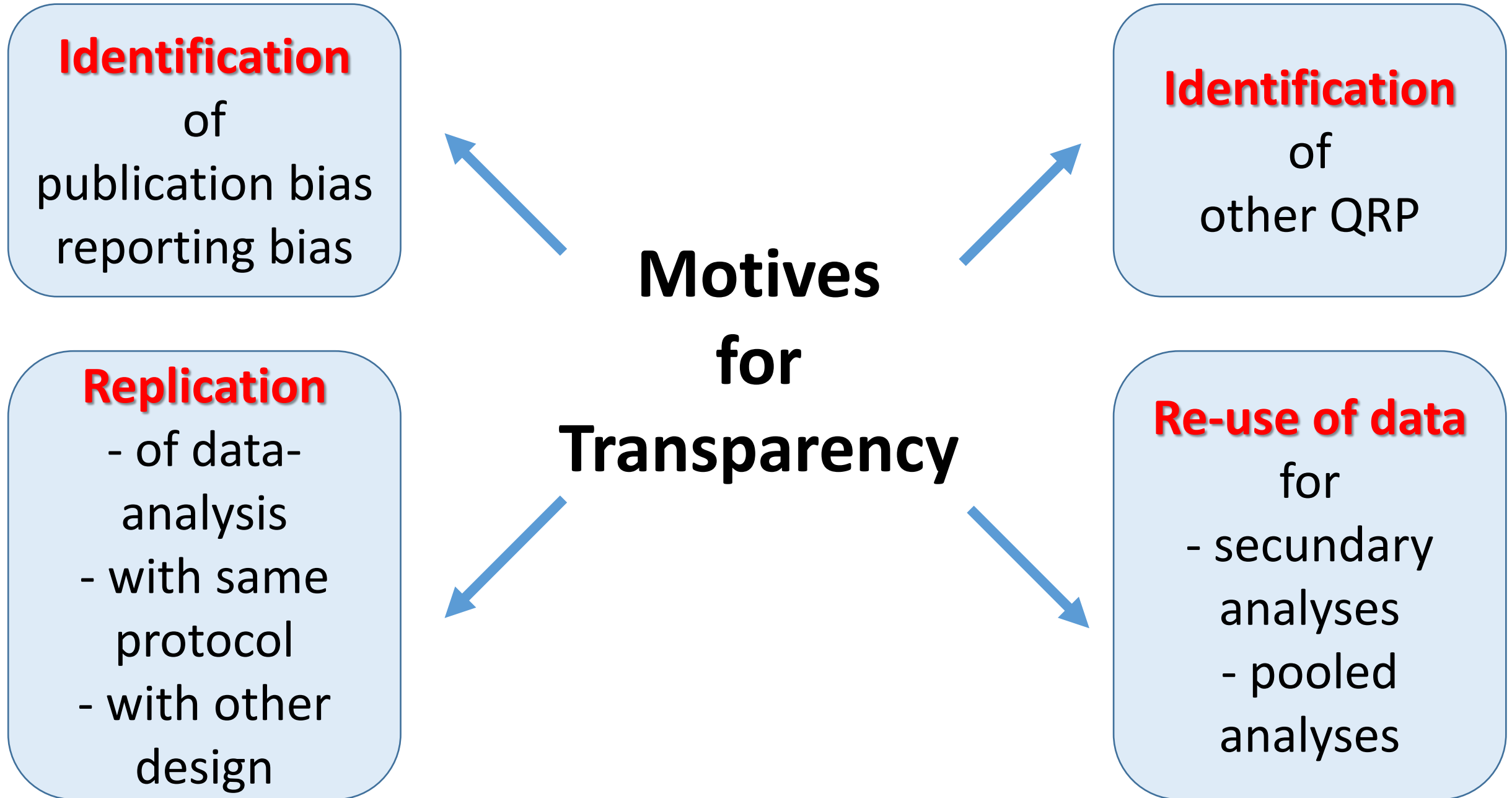


prospectively



publicly

**Study Protocol**  
**Log of Data Collection**  
**Analysis Plan**  
**Syntaxes**  
**Conflicts of Interest**  
**Amendments**  
**Data Sets → Open Data**  
**Reports → Open Access**



# Conditions for transparency

- adequate **skills, systems** and **facilities**
- some months of **embargo**
- proper **acknowledgements**
- opportunity to participate
- guarantees against breaches of **privacy** and **misuse**
- predefined study **protocol** for re-use of data



# How can we promote transparency?



→ *re-design reward system*

- Prestige and tenure depend on publications, citations and grants
- Having spectacular and significant results helps
- Reward publication of protocols and ‘negative’ results
- And reward data sharing and replication



Item in PQRST Index	Example
P (productivity)	Number of publications in the top tier % of citations for the scientific field and year
	Proportion of funded proposals that have resulted in $\geq 1$ published reports of the main results
	Proportion of registered protocols that have been published 2 y after the completion of the studies
Q (quality of scientific work)	Proportion of publications that fulfill $\geq 1$ quality standards
R (reproducibility of scientific work)	Proportion of publications that are reproducible
S (sharing of data and other resources)	Proportion of publications that share their data, materials, and/or protocols (whichever items are relevant)
T (translational influence of research)	Proportion of publications that have resulted in successful accomplishment of a distal translational milestone, eg, getting promising results in human trials for intervention tested in animals or cell cultures, or licensing of intervention for clinical trials

# How can we promote transparency?



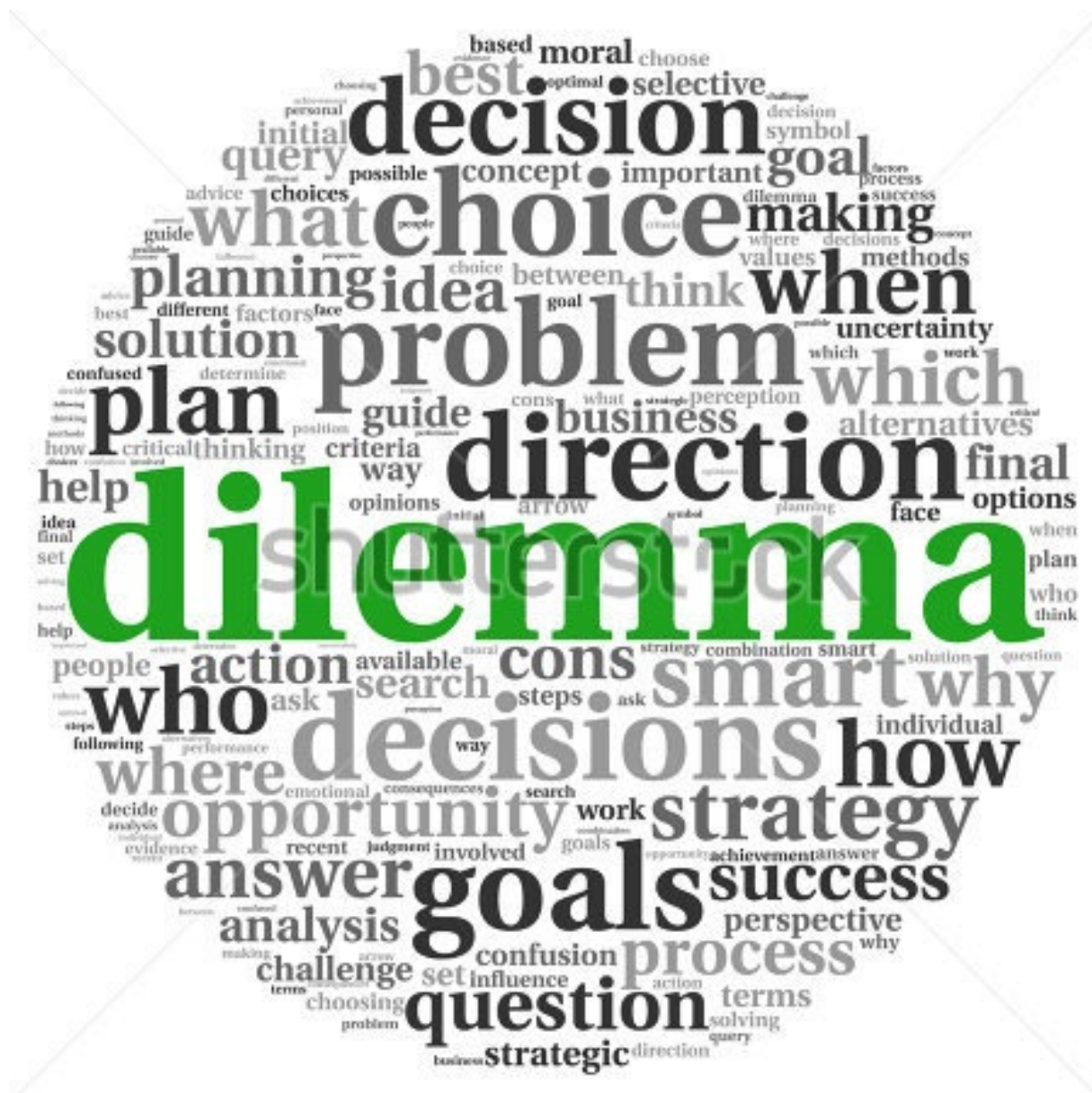
→ *by nudging and forcing*

- Permission to conduct study → (review) boards
- Condition for (last) payment → funders
- Eligibility for next grant application → funders
- Condition for publication → journals

# What else can we do?

- Take **RCR Education** and **Quality Care** serious
- Good **facilities** → data storage and expert help
- Senior staff giving the correct example → **role modeling**
- Promote open seminar culture → talk about **dilemmas**





# Conclusions

- **Sloppy science** is a larger evil than research misconduct
- Especially **selective reporting** threatens validity and efficiency
- More **transparency** is urgently needed
- Factors in **system, culture** and **individual** are 'holding us back'
- We must change the **reward system** and face our **dilemmas**



# 5<sup>th</sup> World Conference on Research Integrity



[www.wcri2017.org](http://www.wcri2017.org)

The Netherlands  
May 28<sup>th</sup>-31<sup>st</sup>, 2017





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