Blinding of Trial Statisticians: a review of current practice

M Iflaifel[1], K Sprange[1], J Bell[2], A Cook[3], C Gamble[4], S Julious[5], E Juszczak[1], L Linsell[2], A Montgomery[1], C Partlett[1]

1 Nottingham Clinical Trials Unit, University of Nottingham, Nottingham, UK. 2 National Perinatal Epidemiology Unit, Nuffield Department of Population Health, University of Oxford, Oxford, UK. 3 University of Southampton, Southampton, UK. 4 Liverpool Clinical Trials Centre, University of Liverpool, Liverpool, UK. 5 School of Health and Related Research, University of Sheffield, Sheffield, UK.

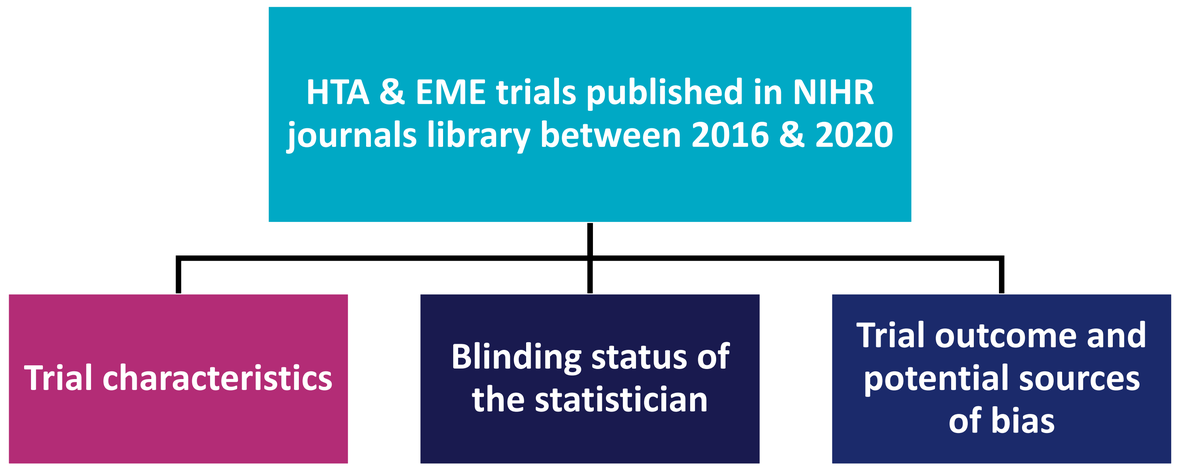
Background

The Blinding of Trial Statisticians (BOTS) study aimed to develop guidance to advise CTUs on a risk-proportionate approach to blinding trial statisticians (TSs) within clinical trials.

The aim of this review was to compare the reporting of statistically significant findings for the primary outcome in recently published randomised trials according to blinding status of the statistician.

Methods

Data collection



Analysis sets

Primary analysis	Sensitivity analysis
Included only those studies where the blinding status of the TS could be confirmed.	Included all studies, by assuming that the TS was not blinded for those studies where the blinding status was unclear.

Results

Figure 1: Study flow diagram

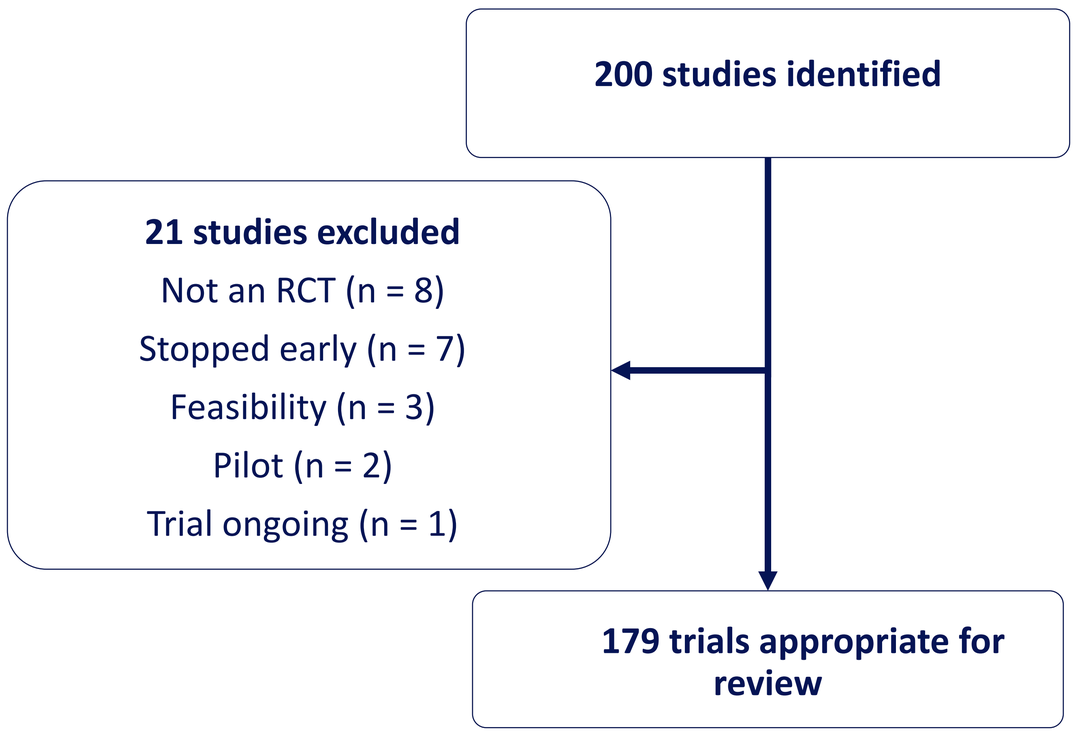


Table 1: Statistically significant findings

	Statistician blinded prior to the final analysis		
	No	Yes	Unclear
Statistically significant finding reported for primary outcome, n/N (%)	23/83 (28%)	19/69 (28%)	8/27 (30%)

Table 2: Odds ratio describing the association between selected study design features and the reporting of statistically significant findings

	Primary analysis (N = 152)	Sensitivity analysis (N = 179)
Blinded statistician	**0.98 (0.47, 2.05)**	**0.96 (0.48, 1.92)**
Multiple comparisons[1]	1.34 (0.63, 2.86)	1.38 (0.69, 2.78)
Sample size not achieved	0.87 (0.38, 1.97)	0.72 (0.34, 1.52)
Blinded trial[2]	0.33 (0.13, 0.86)	0.36 (0.15, 0.88)

[1] A composite of multiple treatment groups and multiple primary outcomes.

[2] Participants, clinicians, and outcome assessors all blinded; where blinding status is unclear this was assumed as "no blinding".

Discussion

- **There is no evidence that the blinding status of the statistician is associated with the probability of a significant finding being reported.**
- There remains some uncertainty around this finding; however, it appears risk of bias is certainly smaller compared to when other groups are unblinded.
- The reporting of blinding methodology was often absent or of low quality.

A risk-proportionate approach

Alongside the BOTS qualitative findings, this study provides evidence for a ***risk-proportionate*** approach to blinding statisticians. That is, the decision about whether to blind or not blind the statistician should be based upon the specific risks and merits for a given trial.

BOTS was funded by the NIHR (CTU Support Funding – Supporting efficient/innovative delivery of NIHR research). The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care.