Appropriate design and reporting of superiority, equivalence and non-inferiority clinical trials incorporating a benefit–risk assessment: the BRAINS study including expert workshop

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Plain language summary

Appropriate design and reporting of superiority, equivalence and non-inferiority clinical trials incorporating a benefit–risk assessment: the BRAINS study including expert workshop

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Plain language summary

Randomised controlled trials are considered the best way to gather evidence about potential NHS treatments. They can be designed from different perspectives depending whether the aim is to show that a new treatment is better than, equal to or no worse than the current best available treatment. The selection of this design relates to the single most important outcome; however, often multiple outcomes can be affected by a treatment. For example, a new treatment may improve disease management but increase side effects. Patients want a treatment to work but not at the price of poor quality of life; therefore, a trade-off must be made, and the recommended treatment depends on this trade-off.

Benefit–risk methods can assess the trade-off between multiple outcomes and can include patient preference. These methods could improve the way that decisions are made about treatments in the NHS, but there is currently limited research about the use of these methods in publicly funded trials.

The aim of this report is to improve the design of clinical trials by helping researchers to select the most appropriate trial design and to decide when to include a benefit–risk method.

The recommendations were created using the opinions of experts within the field and consisted of a survey, review of the literature and a workshop.

The project created a list of 19 factors that can assist researchers to select the most appropriate trial design. Furthermore, six key areas were identified in which researchers may consider including a benefit–risk method within a trial. Finally, if a benefit–risk assessment is being used, a checklist of items has been created that identifies the information important to include in reports.

This report is, however, limited in its applicability and further research should extend this work, as well as provide more detail on individual methods that are available.

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This report

This issue of the Health Technology Assessment journal series contains a project commissioned by the MRC–NIHR Methodology Research Programme (MRP). MRP aims to improve efficiency, quality and impact across the entire spectrum of biomedical and health- related research. In addition to the MRC and NIHR funding partners, MRP takes into account the needs of other stakeholders including the devolved administrations, industry R&D, and regulatory/advisory agencies and other public bodies. MRP supports investigator-led methodology research from across the UK that maximises benefits for researchers, patients and the general population – improving the methods available to ensure health research, decisions and policy are built on the best possible evidence.

To improve availability and uptake of methodological innovation, MRC and NIHR jointly supported a series of workshops to develop guidance in specified areas of methodological controversy or uncertainty (Methodology State-of-the-Art Workshop Programme).

Workshops were commissioned by open calls for applications led by UK-based researchers. Workshop outputs are incorporated into this report, and MRC and NIHR endorse the methodological recommendations as state-of-the-art guidance at time of publication.

The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this report.

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