

Making the most of data collected in clinical trials

The majority of clinical trials aim to find out whether a particular therapy, medication or package of support helps people in a cost-effective manner. But the information collected in a trial can often be further analysed – to shed more light on why or how a particular therapy works, for example. It is that further, more sophisticated analysis that interests the Mental Health Research Networks' Methodology Research Group – a team of about a dozen statisticians and health economists who have been working together since 2005.

The Group's primary aim is to develop, evaluate and promote new methods of designing a trial and analysing the data collected. To that end, members of the Group have successfully applied for a number of grants to support methodological research.

'Our research looks at ways of getting answers to the more interesting, theoretical questions by analysing the data collected in a different way,' says Professor Graham Dunn, a professor of

biomedical statistics at the University of Manchester who convenes the Methodology Research Group.

That analysis focuses on understanding what might influence the success of a particular treatment. So for example, one piece of research is looking at how to analyse the effects of factors that might have a part to play in people's response to talking therapies – the number of therapy sessions people attend, the strength of the relationship with the therapist,

other treatment an individual might be having, an individual's background or treatment history, for example. 'The way a therapist interacts with a client may influence response to treatment,' says Graham. 'So our work is about how you can design a trial to measure that variation, and how you can analyse it.'

Another grant is supporting work on the design of trials testing group therapy and analysis of the data collected. 'If you treat people

in a group, they interact and influence each other, and the independence of outcomes disappears,' says Graham. 'We are working on various aspects of design to take account of the correlated outcomes of group therapy.'

A secondary role of the Methodology Research Group is to offer support and guidance about methodology, or specialist advice, to the expert trial statisticians and health economists working on studies supported by the Mental Health Research Network (MHRN). The Group's members also share their knowledge and promote new methodologies through training courses and workshops, traditionally run alongside the MHRN's annual National Meeting.

There are about a dozen people in the Group, all experts in the field: a handful are from the University of Manchester, others work at the University of Bristol, the University of Leeds and the Institute of Psychiatry (IoP), King's College London, and one member is based at the Medical Research Council Biostatistics Unit in Cambridge.

Graham has worked on mental health studies throughout his career as a medical statistician. He is based in the Health Sciences Research Group within the School of Community Based Medicine at University of Manchester.

For many years, he has worked on the analysis of information collected during trials assessing the success of talking therapies for people with psychosis, collaborating with researchers at various universities, including the IoP where he started his career as a statistician.

He says over recent years, the methodology used in clinical trials has becoming increasingly more



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important, not only to ensure questions posed can be answered accurately, and not be affected by bias of any kind, but also to help extract meaning from often complex sets of data.

'Clinical trials units are relatively recent and registration and licensing of such units has only happened over the past three to four years,' he says. 'The National Institute for Health Research and other funding bodies have decided that trials they support should be run with licensed clinical trials units, where remote randomisation by telephone or internet can happen, to ensure really good quality results.'

'All trials should have a statistician on board. The basic skill needed for a statistical analysis is very specialist. That person should always be a co-applicant on the trial, as their role starts at the very beginning. They should advise on the design of the trial, the power calculation (the number of people that should be recruited), be involved in deciding the primary outcomes and how they are measured. The statistician will come up with

preliminary proposals for how information collected will be analysed – he or she will produce a data analysis plan quite early on before anyone sees any data to ensure high quality final results.'

Graham stresses the new analyses that he and fellow members of the Methodology Research Group are developing are 'supplementary' and don't set out to replace the 'gold standard' analysis used in clinical trials that determines whether one treatment is better than another and informs many policy decisions about what services and treatments should be available.

'What we want to do is to make the most of the data collected,' he says. 'A well-designed trial can yield far more than just an estimate of treatment effectiveness or cost-effectiveness. Trials should be designed so they are able to answer the conventional pragmatic questions – does a therapy or medication work and is it cost-effective? – as well as explain how it works, what components are responsible for efficacy and costs. We are interested in these explanatory questions, and there is no reason why improving both the design and analysis of a trial to answer those explanatory questions should in any way compromise its ability to answer the management-orientated pragmatic ones.'

Ultimately, he says, insights into and understanding of the mechanisms involved in the success or failure of a treatment like a talking therapy can allow it to be refined and improved – or tailored to help individual people more effectively.

■ For more information about the MHRN Methodology Research Group, visit www.mhrn.info/methodology



The Mental Health Research Network is part of the National Institute for Health Research and supports studies in England.

KING'S
College
LONDON

**Institute of
Psychiatry**

MANCHESTER
1824
The University of Manchester

Published by the NIHR Mental Health Research Network
June 2011
NIHR MHRN Coordinating Centre
Institute of Psychiatry, PO77
De Crespigny Park, London SE5 8AF
www.mhrn.info