Why is so much clinical research ignored and what can we do about it?

Health-care professionals' use of the best available evidence is essential to providing high quality care in a high functioning health-care system. Globally we spend billions of pounds each year on clinical, health services and public health research. Unfortunately, many patients treated in health-care systems across the world fail to benefit from this research because the findings are not relevant to them, or they are not translated into policy and practice in a timely manner. It has been estimated that it takes on average 17 years for knowledge from research to get into practice (Morris et al, 2011). While some research is adopted much more quickly than this (e.g. the football-centred FFIT trial aimed to reduce the weight of overweight, middle-aged men – it did do this and the FFIT programme was implemented immediately by football clubs; Hunt et al, 2014), the average length of time taken represents enormous waste as well as missed opportunities to improve health care. It has been estimated that 85% of medical research investment is squandered (Chalmers and Glasziou, 2009), making the problem of 'research waste' an international priority (Chalmers et al, 2014). A key focus is to improve the translation of research into clinical practice.

Much of this work is targeted at getting the results of randomized controlled trials into practice. For example, in heart failure there is over 20 years' worth of evidence from trials showing strong effects for treatments which reduce symptoms and chance of death. Despite a plethora of good evidence, data from clinical practice show uptake is low (McDonagh et al, 2011). There is often huge inconsistency between research evidence and routine clinical practice.

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Why is so much clinical research being ignored?

There are three key reasons for this:

1. There is not enough contextual information provided to transfer the results from the trial setting into other settings
2. Many trials are of low quality
3. The results of many trials are not published because the results were not as good as expected.

Initiatives such as the All Trials campaign (www.alltrials.net/), which aims to see all trials registered and their data published, are part of the solution but are not the complete answer. Evidence is only useful when it makes sense to decision-makers and is meaningful for their particular practice or policy context.

Trials focus on optimizing efficacy or effectiveness (internal validity) but not on identifying how the intervention works and how dependent this was on the context in which it was implemented (external validity). This information is fundamental to allow judgements as to whether the results can be transferred to another setting outside the specific trial context (Wells et al, 2012). In other words, it can be difficult or impossible to answer the question: 'Yes, but will it work in my setting?' A systematic summary of surgical trials concluded that lack of detail is the main contributing factor in poor uptake of trial findings (Blencowe et al, 2015).

Health-care practitioners and policy makers need to be able to understand the cause of the observed effect detected in the trial. However, the cause could be the treatment alone, elements of the context within which the treatment is being delivered, elements of the research process or a combination of all three. As a result it can be difficult to separate the treatment from the context within which it was evaluated (Wells et al, 2012).

Even a seemingly simple switch from one pill to another can stumble because of system constraints such as storage requirements of the new drug, its cost and availability, patient preferences, or existing beliefs among staff as to the benefits of the old drug. More complex treatments, such as radiotherapy, are more vulnerable to context effects. For example, the CHART trial showed that CHART (continuous, hyperfractionated, accelerated radiotherapy) was superior to conventional radiotherapy for non-small cell lung cancer (Saunders et al, 1999). However, despite its higher potential of cure, it was not widely adopted in clinical practice, not because it was not cost-effective but because of a 'combination of socio-economical, institutional, practical departmental and physician-bound factors' (Lievens et al, 2005). Where multi-component, team-delivered treatments such as surgery and rehabilitation approaches are being tested, the scope for context to matter increases enormously.

What can and should be done?

Understanding the contextual factors influencing health-care practices within trials requires careful attention. At present, there is agreement within the academic community that we need to better understand the context of trials but there is no accepted and widely used definition and the domains of context that are important to the effectiveness (or not) of interventions is highly contested. There is support in the UK for running process evaluation studies alongside trials, which aim to understand the trial processes and underlying mechanisms in relation to context, setting, professionals and patients (Grant et al, 2013). Indeed, the UK Medical Research Council (2015) has published guidance on how to conduct these studies, recommending that three aspects should be explored: implementation,

mechanisms of action and context. However, the guidance provides little clarification on how context should be explored. Given the lack of conceptualisation, understanding and reporting of the effects of context, this is perhaps not surprising. A substantial review of 70 systematic reviews (Lau et al, 2015) looking at the evidence-to-practice gap in primary care concluded that future research needs to concentrate on how and why contextual factors influence the uptake of particular treatments. Although this work had a primary care focus, its findings are likely to be more widely relevant.

Ideas about how context affects the outcome of trials include:

- The health-care system and political values
- The belief and motivation in the research questions, the intervention and the trial outcome by professionals and patients
- Having the appropriate processes and systems in place to ensure the intervention is compatible and can be delivered as required (e.g. leadership, computer systems, financial support, adequate staff resources)
- Readiness to change, appropriate skills and training of staff
- Competing demands (including routine work, other research projects).

At present, it is difficult to know how much of an impact context has because there is a lack of a practical conceptual model, lack of clear definitions of contextual factors, and a lack of well-specified measures (Kaplan et al, 2010).

To inform practice and policy consistent and standardized reporting of context is needed. Through better reporting, interventions and trials can be designed to take account of contextual factors and influences so there is a better fit between intervention, trial design and context. This would provide a better picture of how interventions work and how they interact with context. For contextual information to inform the trial findings the trial and process evaluation need to be more integrated. Process evaluations cannot be published until after the main trial result and process evaluations are often such large projects that they are split into a number of publications, which can lead to a significant publication delay between trial and the various process evaluation publications. Publishing the process evaluation papers alongside the trial, as an integral part of the trial reporting, would greatly improve the transferability of the trial findings. Even better evidence would be a synthesis of the findings of both the trial and the process evaluation, but this will only be achieved with better conceptualisation and reporting of contextual factors.

Conclusions

Researchers and funders are under increasing scrutiny to provide evidence of the impact of their research on clinical care. Research is unlikely to achieve its potential impact unless the way in which different contexts and contextual factors influence the delivery and outcomes of interventions is better understood. If we are to stop wasting 85% of all spending on health research, we need to incorporate aspects of context into trial and intervention design, and need to improve reporting. There is growing recognition of the importance of understanding context, especially with regard to identifying the important factors to consider when transferring research results into a diverse range of clinical and policy settings. The disconnect between the importance of the problem and the ability to do anything about it will remain, so long as funding for methodology research remains such a small part of the overall health research funding budget. **BJHM**

KEY POINTS

- Research evidence from clinical trials is not being translated into clinical practice in a timely manner, representing an enormous waste of resources and missed opportunities.
- Trials do not publish information about the context in which the intervention was implemented to allow the results to be transferred beyond the trial setting.
- Health-care professionals need contextual information to be able to judge 'will it work in my setting?'
- The outcome detected in the trial could be the treatment, elements of the context, the research process or a combination of all three.
- Context is recognized as important but there is poor conceptualisation and no agreed definition.
- Funding into methodological research is urgently required to address this problem and to stop wasting up to 85% of research investment.

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