Research and innovation in the NHS: part1

Professor Wendy B. Tindale OBE[1,2,3] provides advice on how researchers in healthcare can find opportunities for support and funding, and what to consider

In the last 10 years, the climate in the National Health Service has changed almost beyond recognition. There has been a fundamental restructure, huge steps forward in terms of technological innovation, a reframing of what it means to be a caring professional following the Francis enquiry,[1] and a focus on patient-centricity and care closer to home. All this has been against a growing backdrop of financial uncertainty and affordability. The research culture in the NHS has also changed, despite, or possibly because of, the broader context. Research and innovation is now seen as being key to delivering transformation and sustainable change; indeed, the Health and Social Care Act of 2012[2] identified the NHS Commissioning Board (now NHS England) as having a duty to promote both research and innovation in matters relevant to the provision of health services.

The fact that research and innovation are welcomed in today's NHS is not in doubt, but the context is substantially different to what some still see as the 'good old days', when anyone could 'have a go at a bit of research', where the costs of research could somehow be lost in the system and not accounted for, and where research approval simply meant your boss saying it was OK. Today's NHS research environment is serious business and it extends far beyond the major teaching hospitals. Research is perceived as a core activity; it is transparent and fully accountable, with a national infrastructure and a performance-based approach to funding. It is also collaborative, in the same sense that university-based research is now much more collaborative, with the most successful research now being delivered by large, sometimes geographically disparate teams – the age of the lone researcher has long since passed. But it is also highly competitive and the NHS research activity league tables[3] are a coveted measure of esteem.

Never has there been a better time for budding researchers in healthcare; opportunities abound for those who are able and committed. This article describes the context that researchers need to be aware of and the support and funding streams that are available, and provides advice about how to get started and some of the key considerations that need to be addressed.

The National Institute for Health Research

There is little doubt that the National Institute for Health Research (NIHR) has been a catalyst for major change. Created in 2006 and funded by the Department of Health, its vision is 'to improve the health and wealth of the nation through research' and its mission is 'to provide a health research system in which the NHS supports outstanding individuals working in world-class facilities, conducting leading-edge research focused on the needs of patients and the public'. It has a budget in excess of £1bn. Prior to the creation of NIHR, funding for research activities in the NHS was ad hoc, monies were not necessarily allocated to areas of research need and there were capacity and operational challenges in delivering research activity. Today, there is a clear national research framework, with transparency, quality and impact assessment as core principles.[4]

The NIHR is often termed 'the research arm of the NHS'. To the uninitiated, its structure and myriad of programmes can seem complex, but time spent understanding what is on offer will pay dividends and is certainly recommended for the novice health researcher. Essentially, the NIHR has four main strands of activity, covering the funding of:

- research projects and programmes themselves;
- infrastructure (people and facilities) to support research;
- individuals undertaking research (including research training), and
- centralised research management systems.

The first three of these are likely to be most relevant to those embarking on a health research career. There are a number of research project funding schemes which are nationally competitive, many of which have both themed commissioned calls and open calls. Of particular interest, though, are the infrastructure organisations and programmes, as these can often be a useful entry point for the less experienced researcher. Examples include Biomedical Research Centres and Units (BRCs and BRUs), Experimental Cancer Medicine Centres (ECMCs), Diagnostic Evidence Co-operatives and Healthcare Technology Co-

AFFILIATIONS

[1]Scientific Director of Medical Imaging & Medical Physics, Sheffield Teaching Hospitals

[2]Clinical Director of NIHR Devices for Dignity Healthcare Technology Co-operative

[3]Insigneo Institute for in silico Medicine

operatives (DECs and HTCs), Collaborations for Leadership in Applied Health Research and Care (CLAHRCs) and Patient Safety Translational Research Centres (PSTRCs). All of these have a different focus but share a common aim to provide the support and facilities that the NHS needs to underpin its research. It is through these types of organisations that those wishing to pursue a career in research can often find opportunities, perhaps to join a research team, collaborate with others or receive training.

The NIHR also funds a Research Design Service (RDS) which exists to provide support for research study design and methodological approaches. It supports NHS researchers and those working in partnership with the NHS, for example university staff or researchers, and is intended to help those developing an application for funding. It can be invaluable for those who are less experienced in crafting an application or who need guidance in terms of what a funding panel would be expecting to see in an application. The RDS operates through 10 regional centres which cover the whole of England.[5]

The NIHR funding schemes support health research in England and, usually, also Wales (but note that not all schemes are open to applicants from Wales and it is advisable to study the eligibility criteria carefully). Some schemes require the award to be administered by an NHS organisation, although the applicant does not need to be an employee of that organisation providing they have an appropriate relationship (for example, an honorary contract). This is not the case for all schemes – in some, the lead organisation may be a university, an NHS organisation or a company. The best advice is to study the 'frequently asked questions' which are relevant to the grant scheme of interest.

For those in Scotland and Northern Ireland, the nearest equivalents to the NIHR are NHS Research Scotland,[6] which is a partnership between the Scottish Health Boards and the Chief Scientist Office of the Scottish Government, and the Health and Social Care Research and Development Division[7] which is part of the Public Health Agency in Northern Ireland.

Scientists in the NHS

Healthcare scientists in the NHS have a key role in shaping future services and work at the forefront of science and technology. Their training provides a sound basis for leadership in applied research and innovation. In addition, being embedded in the NHS means that they have first-hand experience of the needs of the NHS and its patients. They have the opportunity to lead healthcare developments and to generate evidence about impact, and they have an important role in the adoption of new research outcomes, technologies and systems. With the current emphasis on data management, analytics and precision medicine, never before has there been such a need for physics- and engineering-based disciplines in healthcare. But partnership between scientists and engineers working in the NHS and those in academia is crucial if we are to make more than incremental changes to the way in which health and care are delivered; disruptive technologies which can underpin transformational change are more likely to arise from innovative partnerships which can create 'out of the box' thinking. Increasingly, research partnerships with industry are more commonplace, as we move from transactional to collaborative relationships with relevant industries. The message is clear – healthcare scientists must look externally as well as internally for partners, and academics must collaborate with the NHS in order to deliver genuinely impactful research.

The terms 'research' and 'innovation' are often used in a rather imprecise way in relation to healthcare. In fact, they are part of the same spectrum and usually both are necessary to create impactful change. The Cambridge English Dictionary[8] defines research as: 'A detailed study of a subject, especially in order to discover (new) information or reach a (new) understanding'. It defines innovation as: '(the use of) a new idea or method'. The NHS[9] has defined innovation as: 'An idea, service or product, new to the NHS or applied in a way which is new to the NHS, which significantly improves the quality of health and care wherever it is applied'. All scientists in the NHS are expected to innovate; not all will be involved in research.

Where NHS scientists are undertaking research, it is important to recognise that this may not involve clinical trials; indeed, it may not directly involve patients. Much of the research performed by physicists and engineers may be bench- or computer-based; for example, involving technique or device development or data analysis. However, this activity should still be subject to the relevant research approvals processes and be formally identified as such.

Irrespective of whether an NHS scientist is involved in research or innovation, it should be incumbent upon them to disseminate their outputs, for the benefits to patients and to inform the broader healthcare community. The dissemination route will vary depending upon the context and will range from publication in peer-reviewed journals (usually an expectation for formal research) to information-sharing workshops, facilitated events and the use of a variety of media to promote sharing of best practice and novel ideas with proven benefit.

It is worth noting that, in addition to the NIHR funds for research, NHS England (the commissioning body for healthcare services in England) separately funds innovation activities, usually through competitions, and this can be a valuable source of money to support local improvements in services or the transition to new models of care.

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→ CONTACT

If you have a comment on this article please email Wendy Tindal: **Wendy.Tindale@sth.nhs.uk**