



Royal College
of Physicians

Setting higher standards

Research for all



Building a research-active
medical workforce

Mark R. Ross

Foreword

The UK is a world leader in research. As a nation, and as doctors, we have much to be proud of. Across the UK, doctors and their teams are identifying breakthroughs in clinical treatment and care that will change the lives of generations of patients. Every day in our hospitals, health professionals at all careers stages are working together with patients to investigate how services can improve and to apply the findings of clinical research. Research saves lives.



A rich and diverse health research economy – that reaches from lab to bedside – helps patients and invigorates hospitals. When we have a research-engaged medical workforce, everyone benefits. Research projects are focused closely on patient priorities, meaning our limited research resources are spent in

the right areas. Patients in trials gain access to cutting-edge medicine, and as results are disseminated all patients benefit from new treatments and diagnostics. Doctors become better versed in the literature of their field, and develop transferable skills and enquiring minds. From involvement in academic medicine to participation in quality improvement, research brings dynamism to any medical career.

I have been fortunate to work with academic colleagues in virology, immunology, epidemiology and statistics throughout my career. As a specialist in respiratory and HIV medicine when it was a recently discovered disease, I witnessed first-hand the desperation patients feel when there are very few treatment options. But this also meant it was an area rich in research potential, and I have found enormous satisfaction in being able to look back and see patients who have survived and are now living normal lives because they were able to access treatments through clinical trials. Overall, being a part of the research community has allowed me to have a fantastic career in both research and clinical practice, and I am passionate about ensuring that many other doctors have the opportunity to enjoy this kind of work too.

Supporting research-active physicians is an important priority for the Royal College of Physicians (RCP), and a key theme of our ground-breaking Future Hospital Programme.¹ We know patients in research-active institutions have better outcomes than those in other institutions, and are more likely to benefit from earlier access to new treatments, technologies and approaches. We want to move more research to the bedside, so that more NHS patients can enjoy these improved outcomes. We also want more physicians to engage in research, so that future patients can benefit from discoveries that have not yet been made. We want these discoveries to lead the rest of the world.

¹Royal College of Physicians Future Hospital Programme, www.rcplondon.ac.uk/fhp [Accessed 29 January 2016].

For bringing this report about, my sincere thanks must go to two people in particular. First, to my predecessor as RCP academic vice president, Professor John Wass, under whose leadership this project was first set up, and whose enthusiasm for research is both tremendous and infectious. Secondly, to Ella Edginton, whose work was integral to the success of this project. My thanks also go to the members of the RCP's Research and Academic Medicine Committee and the New Consultants Committee for their wisdom and sage advice, and the 2,000 doctors who took the time to respond to the survey on which this report is based.

This is a challenging time for the NHS, but the only way we will continue to keep people well and provide the best treatments is by investing in research that helps us to find efficient new treatments and service solutions. I very much hope that this report will improve our understanding of research in the NHS, and that its recommendations will be taken up for the benefit of doctors and patients alike.

A handwritten signature in black ink that reads "M Johnson".

Professor Margaret Johnson, academic vice president

Introduction

This report draws on the findings of a 2015 UK survey exploring the current barriers to doctors' engagement in medical research. Almost 2,000 doctors across all specialties and career stages completed the survey, enabling us to develop a comprehensive picture of how the UK's flourishing health research economy can develop yet further. The report takes a broad view of research, recognising that activities such as audit and quality improvement research have as important a role to play in building the best possible healthcare for everyone as clinical trials or genomic sequencing.

This report tells a story of a medical workforce that is enthusiastic to advance medical knowledge and improve care. By listening to their views, we have the opportunity to remove real and perceived barriers to research. By harnessing untapped potential in the medical workforce, we can drive the next generation of clinical discoveries and support doctors at all levels to innovate and improve care.

Quality research and quality clinical care go hand in hand, and so being at the cutting edge of a subject means that I know my patients are getting the best care available.² Consultant, previously employed in a research role.

An essential part of healthcare

The UK has a long tradition of medical innovation. It was UK researchers who first established the link between smoking and lung cancer. Early *in vitro* fertilisation (IVF) research took place, and indeed the first IVF baby was born, here in the NHS. Research in the UK was behind the vaccines for smallpox, typhoid and human papillomavirus, the latter being the first vaccine to prevent cancer. British scientists have unravelled the structure of DNA and the mysteries of how to culture embryonic stem cells. They invented the contraceptive pill and the variable rate pace-maker. They discovered penicillin and Parkinson's disease. They pioneered blood transfusion, general anaesthetics, beta-blocking drugs and whole hip replacements.

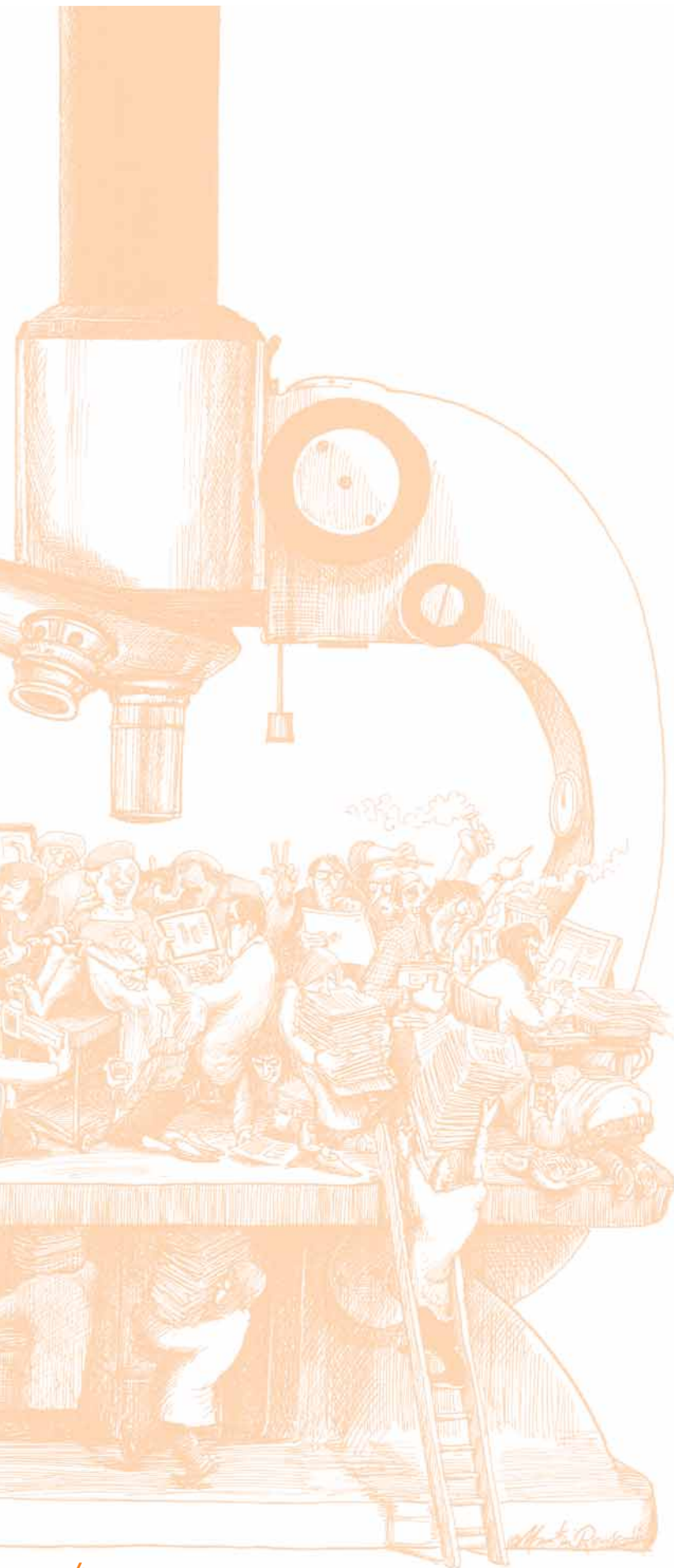
Research is essential to keep working knowledge of the causes and treatments of disease up to date, to develop new treatments and ways of working, and thus to improve the health and quality of life of patients. Additionally, participating in research hones transferable skills that create better doctors – improving knowledge of current literature, the ability to interpret and communicate risk, and professional skills like team-working, mentoring and communication.

We know that patients in research-active institutions have better outcomes than those in other institutions, and are more likely to benefit from earlier access to new treatments, technologies and approaches. We want to move more research to the bedside, so that more NHS patients can enjoy these improved outcomes. We want more physicians to engage in research, so that future patients can benefit from discoveries that have not yet been made. Moreover, we want those discoveries to lead the rest of the world. That is why the RCP believes there's a place for everyone in research – whether that is pursuing a career as a clinical academic, contributing to large collaborative projects, recruiting into other people's trials, or contributing to quality improvement and audit research.

A unique role for doctors

It is essential that doctors play a key role in the research process, and that research does not become solely the domain of academic scientists. There are two things that make doctors uniquely well placed to contribute to research and ensure medical advances are patient centred. First, their regular clinical contact with patients makes them uniquely able to observe patterns and identify the research needs that make the most difference to patients. Second, their understanding of what is realistically translatable into day-to-day practice enables research findings to be disseminated and implemented in ways that make a difference for people. It is essential, therefore, to ensure that doctors remain involved in research at all levels.

²Royal College of Physicians. *Research engagement toolkit* (produced with the support of the National Institute for Health Research (NIHR)). London: RCP, 2015. www.rcplondon.ac.uk/researchtoolkit [Accessed 22 January 2016].



The future of research

With the cross-party Science and Technology Committee warning that UK spending on science has recently fallen below the Organisation for Economic Co-operation and Development (OECD) average, the UK's history of research leadership does not mean there is room for complacency. We must work hard to maintain and build on our heritage of scientific endeavour, so that the potential in our experts and institutions is not lost. The growing pressures on the NHS are well known to us all: an ageing population; increasing incidence of long-term conditions; and ever-ballooning costs despite tight budgets. In this context, research must not be seen as a nice-to-have luxury for times of less pressure. On the contrary, it underscores the urgency with which we should be seeking innovative solutions that will let us efficiently care for more patients to ever higher standards – solutions that will only be found through investing in medical and quality improvement research.

The rise of big data means that in many ways the future of research is more quantitative than ever before. However, there is also a counterweight to this, in that when money is tight many of the 'easy gains' will be made through small-scale quality improvement work at the frontline of service delivery, and by ensuring that services are being delivered to existing standards through rigorous audit research.

This report

The data we present in this report come from a survey of almost 2,000 doctors across all specialties and career stages. The broad message is that doctors want to be more engaged in research, but that many do not currently have the time, funding or skills support to realise their potential contributions. In particular, it highlights a need for more services tailored to the different needs of doctors at different career stages – ensuring that students and trainees have the support they need to get involved early on in their careers, and also that consultants can gain access to the new or refreshed skills they may need to engage in research later in their careers. It also highlights discrepancies between the ease with which men and women fit research into a clinical career, and some of the issues with the way the culture of research is perceived.

The recommendations in this report (see page 14) have been developed based on three things: the barriers identified by the survey; input from experts in the medical research system; and, most importantly, the voices of doctors telling us what would make a difference to them. We hope that the recommendations will be implemented, so that the potential in our medical workforce can be better realised for the benefit of all patients.

What next?

This report is just one part of the RCP's commitment to supporting physicians, aspiring physicians and other health professionals to engage in research. In 2006, the RCP played an active role in the creation of the National Institute for Health Research (NIHR), which provides a well-regarded health research support system and has improved opportunities for doctors to contribute to medical research. At the end of this report (see page 16), there is a list of resources available from the NIHR and others that aim to help doctors make sense of the research system and access research support services. Throughout 2016, the RCP will work with partners to develop the support it offers to physicians who are active, engaged or interested in research – from sharing examples of good practice to offering practical resources. The findings of this report will be used to shape that work and help the RCP to further enhance the UK's world-class research culture.

Methodology and profile of respondents

The survey was drafted by policy staff in consultation with RCP clinical fellows. The questions were then refined in consultation with the RCP's Research and Academic Medicine Committee, and piloted with the New Consultants Committee. Questions were phrased to avoid leading the respondent, and ordered to avoid priming. The questions covered respondents' demographic information, medical training, involvement in research, degree and drivers of interest in research, perceived barriers to research, and what respondents felt could be done about those barriers. Both quantitative and qualitative data were sought.

The survey was made available online for 6 weeks in April and May 2015, and was open to doctors in all specialties and across all career stages, including medical students. It was promoted via the medical royal colleges, specialty societies, and some research organisations. Respondents were entered into a draw to win an iPad Mini, which was offered to encourage responses and reduce the risk of self-selection biasing the pool in favour of those who are particularly interested in research.

In total, 1,966 responses were received. Fifty-nine per cent of respondents were male. Most were based in England (90%), followed by Scotland (6%), Wales (3%) and Northern Ireland (1%). We received responses from clinicians in 60 specialties. The largest number of responses by specialty came from geriatric medicine, endocrinology and diabetes, cardiology and respiratory medicine. Overall, 68% of respondents were physicians, 23% were in non-physician specialties, and the remainder had not yet specialised.

Most respondents (62%) were consultants. Medical students provided 4% of responses, with the balance spread across various other career stages. Just over 10% of respondents had completed or were completing an academic programme (academic foundation programme (AFP), academic clinical fellowship (ACF) or clinical lectureship).

It should be noted that the survey questions were designed to explore barriers to research and potential improvements to the research system. Respondents were not asked to highlight examples of good practice.

What do we mean by research?

There is huge variety in both the way doctors engage in research and in the activities that contribute to advancing medical knowledge and practice. All of these activities are valuable and have an important role to play in improving patient care. Consequently, this piece of work has looked at research engagement as very broadly defined. The survey that we carried out covered the following areas.

Research types

- > Medical education research
- > Health service improvement research
- > Clinical trials
- > Translational research
- > Basic research
- > Epidemiological research

Research activities

- > Leading and assisting clinical research
- > Recruiting patients into trials
- > Publishing research papers as leading or contributing author
- > Leading or assisting audit research
- > Leading or assisting observational research
- > Leading or assisting laboratory work
- > Developing new guidelines

Key findings

- > Over a quarter of all research hours reported were worked by doctors who are not formally employed in a research role. Many more doctors would like to do more research if they could.
- > Time and funding are the biggest barriers to doctors doing more research.
- > Women and men are equally likely to be employed in a research role, but men are more likely to engage in research in addition to their regular clinical duties.
- > Men and women are drawn to research for similar reasons, but women feel less confident about their skills than men.
- > Women find it harder than men to fit research in with family life, and some feel it can be unwelcoming to them when they do.
- > Both men and women consider it is unlikely that they will receive protected time for research, but women are significantly less confident than men to ask for it.
- > Foundation trainees and consultants are the most likely to engage in research outside of a formal research role, with a substantial dip in the core training (CT) and specialist training (ST) years.
- > Consultants are drawn to research because it is enjoyable and makes a difference, but for trainees getting a competitive edge is important.
- > As doctors' careers progress, they become more confident about their skills and relationships – but for many this may come too late to feel they can become involved in research.
- > Exposure to research early in medical training is essential, but we also need a range of pathways into research later in doctors' careers.
- > Being more engaged in research increases knowledge of the ethics approval process, but the perception that it is excessively complex remains consistent.

Findings

Engagement and interest in research

There are many demands on a doctor's time, and in a pressured NHS with ever-increasing demand and a growing, older population, this is not going to change. It is heartening, then, to see findings that show that doctors are enthused about research and wish to do more. A workforce that is ready and willing to develop innovative new treatments and efficient solutions to healthcare problems will be an important part of meeting the challenges of the future. However, much of this resource is currently untapped, with large numbers of doctors who are interested in research but are not currently participating in it. The results of the survey indicate that more action is needed to encourage and support this section of the workforce.

Over a quarter of all research hours reported were worked by doctors who are not formally employed in a research role. However, there remain many more doctors who would like to do more research if they could.

Questions about doctors' rates of engagement in research yielded an enthusiastic picture overall, with only 8% of respondents identifying as 'not interested in research'. The data indicate a high degree of engagement in research alongside regular clinical careers, with over half of respondents reporting being involved in research. However, the majority (62%) of those involved were not formally employed in a research role. Overall, 23% of respondents reported being formally employed in a research role, while 36% reported being involved in research but not formally employed in a research role.

Those in a research role reported spending an average of 25.7 hours per week on research activities. This figure is slightly higher than might be expected, probably due to a combination of the large amount of research work that is done outside of scheduled work hours (some full-time clinical researchers possibly pulling up the average), and the possibility of some over-reporting. Those who are involved but not formally employed in research reported spending an average of 4.7 hours per week on research activities. Overall, 26% of all research hours reported were undertaken by those who are involved in research but not formally employed in a research role.

Overall, 64% of respondents stated that they were interested in becoming more involved in research than they currently are. Of the one-third of respondents who reported being interested in research but not currently involved in any, only 11% reported not wanting to become involved (see Fig 1).

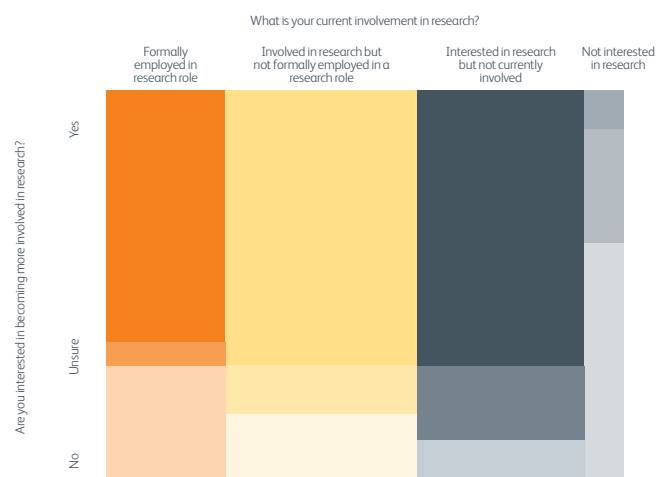


Fig 1 Degree of involvement and interest in increasing research activity

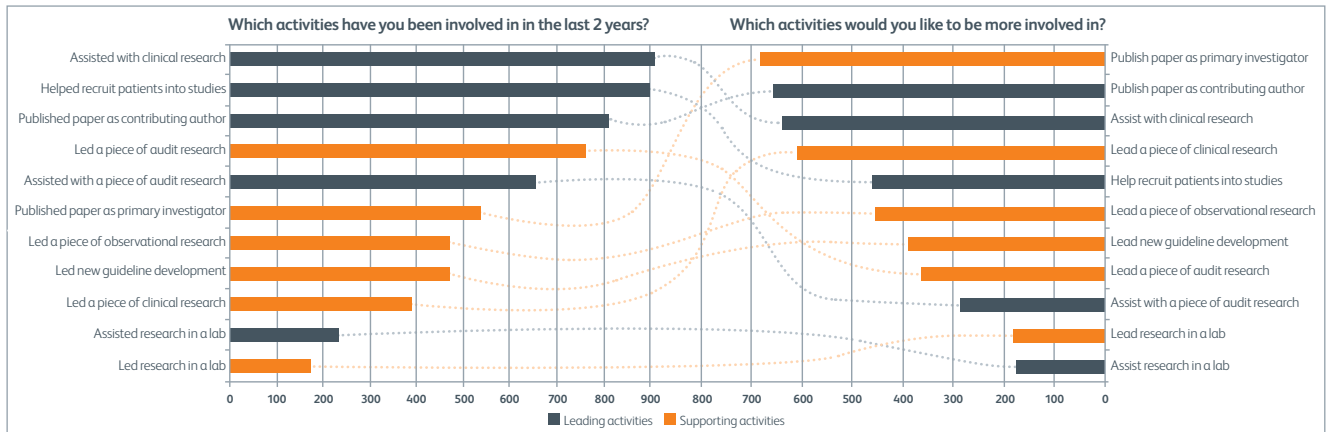


Fig 2 Current and aspirational research activities

Many of those engaging in research would like to take on more leadership.

The three most common research activities that respondents reported participating in over the last 2 years were all supporting roles – ‘Assisted with clinical research’ (910), ‘Helped recruit patients into clinical research studies’ (899) and ‘Published research paper as contributing author’ (812).

However, it is clear that many respondents saw more appeal in taking leadership roles within research teams; when asked which activities respondents would like to be more involved in, publishing research papers as a primary author moved to the top place (from sixth out of 11), and leading clinical research rose five places from ninth to fourth. Overall, when comparing the rankings of activities that respondents engaged in during the last 2 years with activities that they would like to do more of, four out of five supporting/assisting roles dropped places, while five out of six leading roles gained places.

Audit research seems to be much less popular than it would initially appear, with leading and assisting in audit coming in fourth and fifth respectively for participation in the last 2 years, but dropping to eighth and ninth in activities that respondents would like to be more involved in (see Fig 2).

Those not involved in research view it as less collegial than those who are involved.

Regarding the degree of engagement, for almost all drivers the highest proportion of affirmative responses came from those who are formally employed in a research role, followed by those involved in research but not formally employed in a research role, then those who are interested in research but not currently involved, with a significant drop for those who are not interested in research – an unsurprising result. It is notable, however, that the result for the statement ‘it is collaborative and collegial’, which presented a significantly higher than usual rise of 25 percentage points, compared with an average of seven for all other drivers,³ between those who are ‘interested but not involved’ and those who are actually involved in research. This may indicate a view that some also articulated in qualitative comments, namely that research is often seen by those outside as a ‘closed shop’ that can be competitive and unwelcoming to newcomers. This is a perception that both researchers and those promoting research engagement must work to overcome.

³Z test for difference between two proportions: Z=-8.231, p<0.0001.

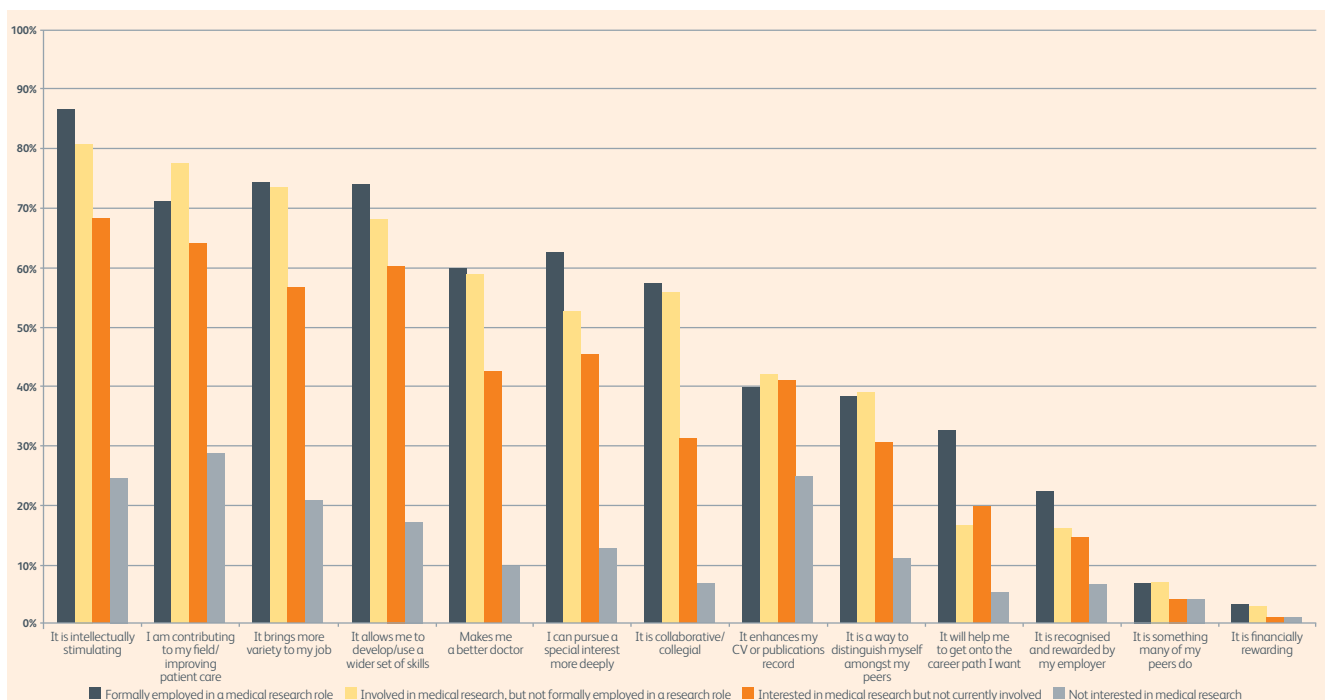


Fig 3 Percentage of respondents selecting driver as ‘appealing’ by degree of research engagement

Overall, time and funding are the biggest barriers to doctors doing more research.

Respondents were asked to rate a variety of barriers on a scale from 0 to 5, with 0 indicating 'no impact on my engagement in research' and 5 indicating 'significant impact on my engagement in research'. When the cumulative scores of these ratings are ranked, barriers related to time and funding dominate the top of the chart. People rated highly the barriers that relate to both applying for and receiving both protected time and funding. These barriers were also the most common issues mentioned in qualitative comments, and reiterate findings in other studies such as Cancer Research UK's recent report on research in the NHS: *Every patient a research patient?*⁴ or the Medical Research Council's *A cross-funder review of early-career clinical academics*.⁵

The highest-rated barrier not related to time or funding was: 'the ethics approval process is too complicated or takes too long', which was ranked sixth out of 23. However, as this survey was administered in early 2015, these answers will not have taken account of the new approvals system that is currently being phased in; under this, Health Research Authority approval will replace the local research and development approval, simplifying the approvals process. However, the survey responses indicate the importance of ensuring that there is effective communication about the new system, in order to overcome the existing perception that ethics approval is excessively onerous.

In respect of the skills required to carry out research, the area where respondents reported feeling the biggest need was in quantitative skills (ranked seventh overall), followed by research design skills (10th), with expertise in specialty area being much lower at 17th. However, all three skills areas were rated higher than 0 – that is, they were identified as having at least some impact on engagement in research – by over half of all respondents.

Research and development departments play a crucial role in enabling and promoting research, but levels of service and support are variable.

Research and development (R&D) departments are an essential component of medical research infrastructure. They play a crucial role in enabling doctors to carry out research, ensuring they do so safely. Where this works well, R&D departments promote involvement in research, and are an important source of expertise and intelligence on all aspects of the research system – from information on funding opportunities, to access to support services.

⁴Brown H, Hewison A, Gale N, Snelling I, Shneerson C. *Every patient a research patient? Evaluating the current state of research in the NHS*. London: Cancer Research UK, 2015. www.cancerresearchuk.org/sites/default/files/cruk_every_patient_may2015_web.pdf [Accessed 29 January 2016].

⁵Medical Research Council, the Academy of Medical Sciences, British Heart Foundation, Cancer Research UK, National Institute for Health Research, Wellcome Trust. *A cross-funder review of early-career clinical academics: enablers and barriers to progression*. London: Medical Research Council, 2015. www.mrc.ac.uk/documents/pdf/review-of-early-career-clinical-academics/ [Accessed 29 January 2016].

Our survey did not ask respondents for examples of where the system – including R&D departments – worked well, but it focused on identifying barriers to research and areas where improvements could be made. Qualitative responses suggest that the performance of R&D departments is variable. For some respondents, R&D departments are perceived as opaque, inaccessible and, in some instances, a barrier to research. Perceived barriers referenced by respondents included: excessive bureaucracy; lack of transparency; a focus on compliance, rather than enabling research; and a focus on well-established or 'big name' researchers around the hospital, rather than proactive encouragement of research participation across the workforce.

A number of respondents used their free-text comments to reference a lack of support around aspects such as funding and approval applications, or challenges accessing trial administrators, nursing support or mentoring. Much of the support that respondents perceived to be insufficient or inaccessible is, in fact, available through the NIHR Clinical Research Network (CRN) or Research Design Service (RDS). However, the comparative frequency with which these issues were raised by respondents suggests that some R&D departments need to consider how they can make better use of such resources, or how they promote awareness among researchers and aspiring researchers.

The qualitative comments received suggest significant opportunities for learning across and between R&D departments, with the best R&D departments cascading good practice to those that are less developed or embedded. The RCP is committed to working with partners to share these examples of good practice.

Gender

The RCP's annual census of the medical workforce has continued to show that, at least among medical specialties, the number of women in medicine continues to grow; indeed, data from the 2013–14 workforce census showed that more than half of consultants under 35 are women which indicates growing gender equality in the medical profession as a whole. However, the data from the research survey show that research engagement lags behind in this respect, with women less likely than men to be able to accommodate research around their clinical demands, with a common comment being that the culture of research still feels like a 'boys' club'.

Women and men are equally likely to be employed in a research role, but men are more likely to engage in research in addition to their regular clinical duties.

Male and female respondents were similarly likely to report being formally employed in a research role, at 24% and 22% respectively. However, if not formally employed in a research role, women were less likely than men to be engaging in research, with only 29% doing so, compared with 43% of men. Research-engaged men spent a smaller average number of hours on research per week than women (12 hours and 15 hours respectively) – which is possibly a reflection of the greater proportion of men undertaking a small amount of research around their existing jobs.

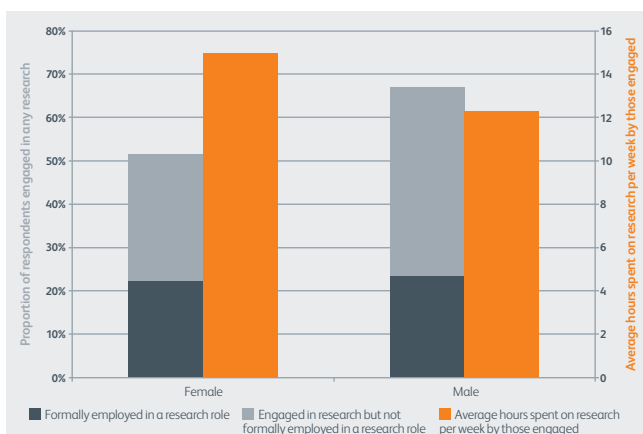


Fig 4 Research engagement by gender

There was no difference in the proportion of women and men who are interested in being more involved in research than they currently are. However, a significantly greater proportion of women reported being 'interested in research but not currently involved' (37.2% compared with 25.7%),⁶ indicating that women who wanted to be more involved were more likely to be thinking of going from no research to some, whereas men were more likely to want to increase the research they are already doing. A significantly greater number of women than men were 'unsure' whether they wanted to be more involved in research (19% compared with 11%).⁷

Although women are less likely than men to be engaged in research, there is no significant difference in the proportion of men and women taking leadership in research projects beyond the overall differences in their engagement.

⁶Z test for difference in two proportions Z=5.28, p<0.0001.

⁷Z test for difference in two proportions Z=4.15, p<0.0001.

Women were less likely to report engaging in all research activities except leading an audit. The average gap between women's and men's engagement in activities did not differ substantially for 'leading' roles as compared with 'supporting' roles. Overall, 63.8% of women and 65.5% of men reported participating in a 'leading role' in the last 2 years, and 73.4% of women and 78.0% of men reported participating in a 'supporting' role; neither of these differences is statistically significant.

Men and women are drawn to research for similar reasons.

The differences between men and women in respect of research drivers are mostly not substantial, although women were 10 percentage points less likely than men to believe it makes them a better doctor, at 46.1% compared with 56.2%.⁸

Women feel less confident in their skills than men.

The three skills-related barriers all received significantly higher average ratings from women than men (see Fig 6). The highest-rated barrier ('I don't feel I have the statistical skills necessary') was rated an average of 2.74 by women, 28% higher than the 2.14 average it received from male respondents.⁹

The next highest rated skills barrier ('I don't feel I have the research design skills necessary') received an average of 2.15 from women, 26% higher than men's average rating for this barrier, 1.7.¹⁰

'I don't feel I have adequate expertise in the specialty area in which I would like to do research' received an average of 1.50 from women – a low rating in the scheme of all barriers in the survey, but 30% higher than men's average rating of 1.15.¹¹

⁸Z test for difference between two proportions: Z=-4.07, p<0.001.

⁹Two-sample T-test assuming unequal variance: t(1380)=5.40, p<0.001.

¹⁰Two-sample T-test assuming unequal variance: t(1420)=6.70, p<0.001.

¹¹Two-sample T-test assuming unequal variance: t(1336)=4.46, p<0.001.

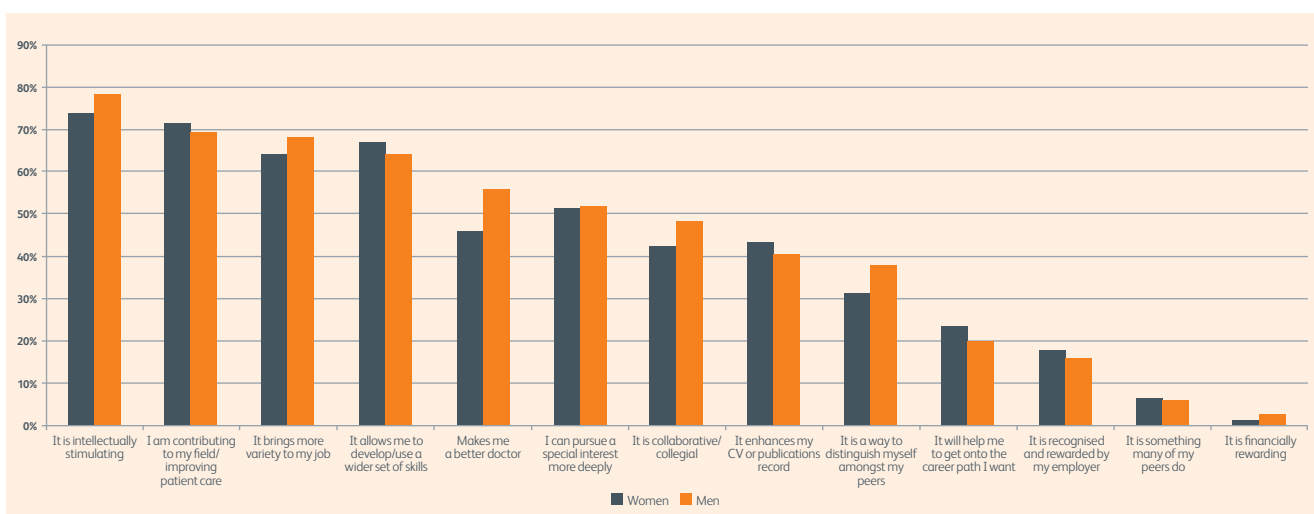


Fig 5 Percentage of respondents selecting driver as 'appealing' by gender

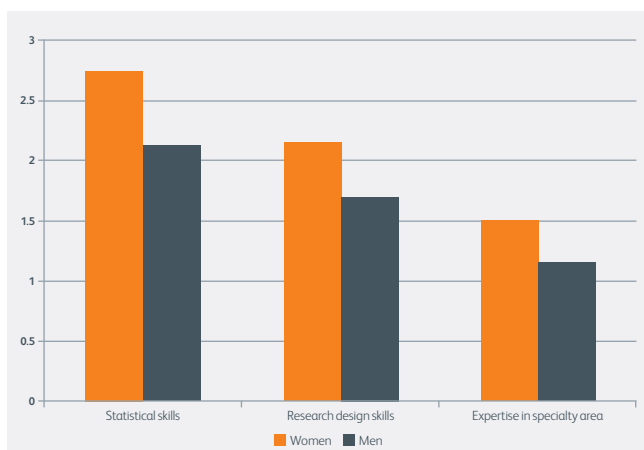


Fig 6 Average scores for skills-based barriers by gender

Women find it harder than men to fit research in with family life, and some feel it can be unwelcoming to them when they do.

Of 135 qualitative comments made by women in response to a question about whether additional barriers that had not yet been listed were having an impact on research engagement, the most common response was that the expectation that a significant amount of research be done in one's own time was not compatible with family life. This is consistent with the Academy of Medical Sciences' report, *What do applicants want from SUSTAIN?*¹² which found that the most important thing female scientists wanted when applying to a programme aimed at supporting their development as researchers was to achieve work-life balance. More needs to be done to ensure that all promising researchers have the protected time they need to carry out research during work hours, so that the expectation that research be done in 'spare' time is minimised.

A smaller, but still significant, number of women (5%) expressed a perception that research was in some way biased against or unwelcoming to women. This is something the research community must actively strive to overcome.

¹²Hallett R, Iversen A. *What do applicants want from SUSTAIN?* London: Academy of Medical Sciences, 2015. www.acmedsci.ac.uk/careers/mentoring-and-careers/sustain/ [Accessed 29 January 2016].

I am a woman who works LTFT [less than full time] and have two young children. The majority of current researchers are male, Caucasian and have a partner supporting them at home to enable them to pursue the career path they do. There is no reason why research could not be made more accessible for individuals with young children however there is currently little incentive for those already in research not to recruit in their own image. Other specialist registrar (SPR), infectious diseases, involved in medical research but not formally employed in a research role.

Both men and women consider it unlikely that they will receive protected time for research, but women are significantly less confident than men to ask for it.

There was no significant difference between the average scores that men and women gave for the statement 'my employer will not grant me the protected time I need'. However, despite perceiving the likelihood of success similarly to men, female respondents were, on average, significantly more likely to feel uncomfortable seeking protected time. The average score from women for the statement 'I do not feel like I can ask for the protected time necessary to spend on research' was 3.10, 12% higher than the average for men of 2.76.¹³

¹³Two-sample T-test assuming unequal variance: $t(1466)=3.49$ $p<0.001$.



Academic training

Those who have not been involved in an academic training programme were twice as likely to report being interested in research but not currently engaged in it.

Of respondents who have not been involved in an academic training programme, 30.4% reported being interested in research but not currently engaged in it, compared with 15.6% for those who had been involved in an academic programme.¹⁴

Predictably, respondents who had completed or were currently completing an academic training programme (AFP, ACF or clinical lectureship) were significantly more likely to be formally employed in a research role; 52.3% compared with 16.1%.¹⁵ Respondents who were not involved in an academic training programme were more likely overall to report being engaged in research despite not being employed in a research role (34.8% compared with 22.5%).¹⁶

In qualitative comments some respondents expressed the view that those without academic training felt that they were unlikely to be taken seriously if they tried to become involved in research.

I am concerned that if somebody is not in an AFP/ACF they might feel excluded from developing research ... there are strengths in integrated academic training, but deaneries need to also make sure 'non-academic' trainees receive news bulletins and opportunities regarding funding, mentorship etc. Consultant, clinical pharmacology, formally employed in a research role.

Career stage

Trainees are a vital part of the NHS workforce whose contribution far exceeds the direct delivery of care, and how we ensure our trainee workforce is well rounded and feels valued is a live and important question. Research must be taken into account in education and training/workforce planning, both so that there are adequate research posts available at all levels and, most importantly, so that all doctors have the opportunity to be exposed to research early and consistently across their careers.

On the other side of qualification, it is clear from our data that many people develop confidence in their skills and interest in research later in their careers. It should never be too late to become research active – and both the formal research system, and the culture of research groups, must be configured to welcome those who want to get involved at any stage.

¹⁴Z test for difference in two proportions Z=-2.738, p<0.01.

¹⁵Z test for difference in two proportions Z=-13.29, p<0.001.

¹⁶Z test for difference in two proportions Z=2.59, p<0.01.

Foundation trainees and consultants are the most likely to engage in research outside of a formal research role, with a substantial dip in the core (CT) and specialist training (ST) years.

The highest frequency of engagement in research outside of a formal research role was among foundation trainees (37%) and consultants (46%), with a dip to 18% across core/CT3+/other SPRs and other SHOs. This is likely to reflect the difficulty, raised in several qualitative comments, with becoming or staying involved in a research project when frequently moving between different roles.

However, despite high rates of participation, research-engaged foundation doctors had the lowest weekly rate of hours spent on research by those engaged, at just over 6 hours. The highest average hours spent on research per week was among CT3+/other SPRs – lifted by the high proportion of those engaged in research who reported doing so as part of a formal research job. Overall, those qualified as consultants worked 55% of all reported research hours, spread across a wider base of doctors engaging in research, despite not being formally employed in a research role.

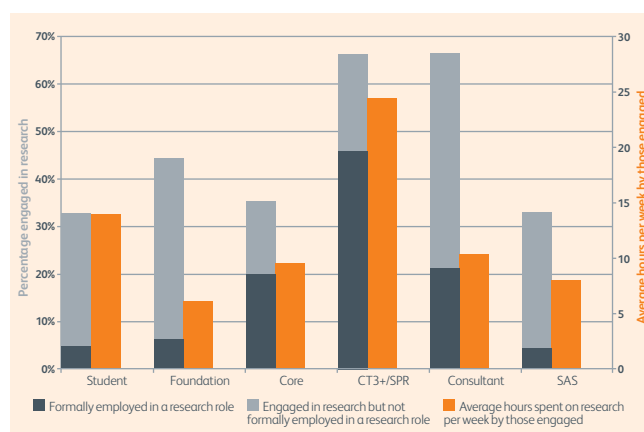


Fig 7 Research engagement by career field

Consultants are drawn to research as it's enjoyable and makes a difference, but for trainees a competitive edge is important.

When asked what aspects of research respondents found most appealing, the most popular answers were intrinsic motivators – finding it rewarding to be intellectually stimulated, pursue particular interests and skills, and enjoy variety in one's job. Conversely, the bottom half of the ranking is dominated by external motivators such as publications or keeping up with colleagues and peers. At the very bottom were the statements, 'it is something many of my peers do' (109) and 'it is financially rewarding' (40), indicating that the vast majority of respondents consider these either untrue or unimportant.

When broken down by career stage (see Fig 8), the trend described above applies clearly to consultants. However, for those not yet at this stage in their career, extrinsic motivators were reported to be much more important. The most clear example of this is for the statement 'it enhances my CV or publications record', which was selected by 74% and 81% of students and foundation trainees respectively, dropping to 51% and 57% for CTs and CT3+ respectively, then further to only 32% for consultants. Similar trends hold for other external motivators, such as distinguishing oneself among peers, getting onto a particular career path, or being recognised and rewarded by employers. This seems to indicate that being involved in research is seen as a good boost to the employability for those still in training. This is an important lesson for those promoting research engagement to doctors, to ensure that messages are targeted appropriately to different audiences.

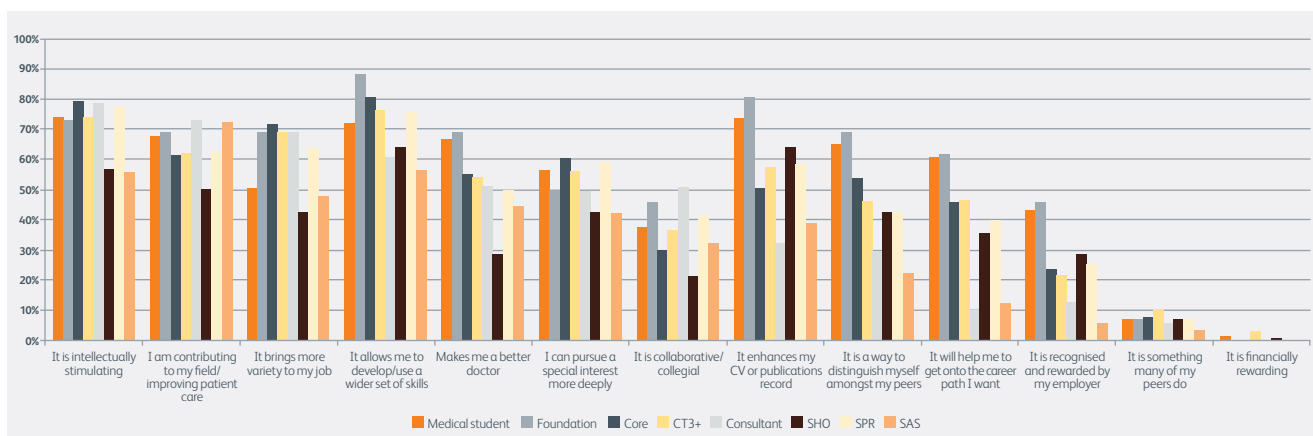


Fig 8 Percentage of respondents selecting driver as 'appealing' by career stage

As doctors' careers progress, they become more confident in their skills and relationships – but for many this may come too late to feel they can become involved.

For most barriers related to knowledge, the average rating declined substantially as career stage progressed (see Fig 9). For example, not knowing how to apply for ethics approval declined from 2.3 among medical students to 1.0 among consultants; not knowing how to apply for funding declined from 2.7 to 1.6; and lack of confidence in all three skills areas also dropped – from 2.9 to 1.7 for research design skills, 3.3 to 2.2 for statistical skills, and 3.0 to 0.9 for speciality area expertise.

As well as confidence in skills, confidence in relationships also increases as career progresses. This is most clearly illustrated by responses regarding mentoring, which was ranked 14th overall, with an average score of 1.5, but was ranked third highest among foundation trainees and fifth among core trainees, with scores of 2.9 and 3.0 respectively. Consultants were also much less likely to say they did not have a collaborator – with an average of 1.2, compared with 2.68 among foundation trainees and 2.3 among core. These differences are likely to be a consequence of the difficulty of forging relationships with colleagues when moving frequently between different roles, as well as the fact that being less confident in one's skills makes someone less likely to reach out to colleagues for collaboration or mentoring.

Exposure to research early in medical training is essential, but there also needs to be a range of pathways into research later in one's career.

Many qualitative comments reinforced these findings, particularly in response to questions about what could be done to help people overcome the barriers they felt held them back from research engagement. Many respondents stated that being exposed to research earlier in their careers would have helped, so that they could have better appreciated its importance and rewards, felt less intimidated by the skills necessary, and in some cases simply to make them consider it as an option.

Some respondents also stated that they felt it was too late in their career to become involved in research. Many of these comments noted that the advent of academic training programmes had inadvertently created the perception that if one 'missed the boat' on academic training, it would be extremely difficult to find alternative pathways into research later in their careers.

Early in your career, it may not be clear whether this is the path you wish to pursue. I think all trainees should have some form of research involvement within an established research team as part of their training ... This would give all doctors an appreciation of research, strengthen critical literature appraisal, and give a good start for those who may wish to involve research to a greater degree within their career in the future. Other SPR, respiratory medicine, formally employed in a research role.

Whilst it is important to target young researchers, a number of us want to enter as part of a late career development, for which there is little infrastructure. It would make a difference to have the opportunity for start-up funding to get the pilot work done and skills refreshed so a grant can then be gone for. Consultant, psychiatric medicine, involved in medical research but not formally employed in a research role.

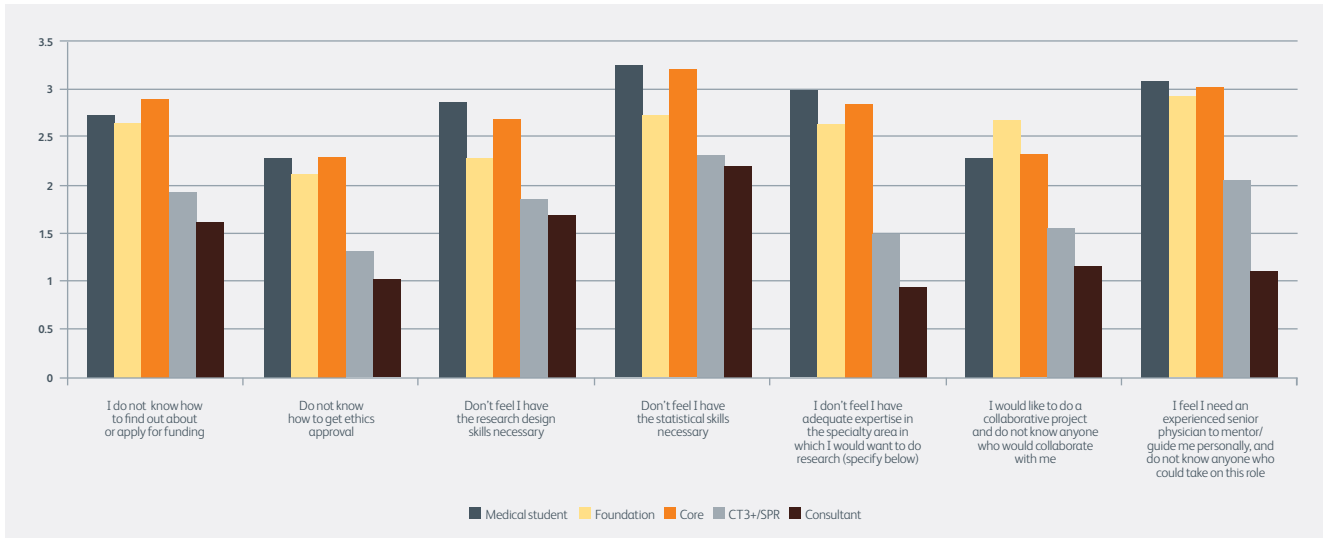


Fig 9 Average scores for knowledge- and relationship-related barriers by career stage

Nations

Reported research engagement was highest in England, although there is insufficient data for robust geographic comparisons.

The highest proportion of respondents who reported being employed in a research role was in England (23.6%) followed by Scotland (21.0%), Wales (13.5%), and Northern Ireland at 9.5%. Scotland had the highest rates of involvement in research outside of formal research roles, at 42.9%, followed by England (36.6%), Wales (34.6%) and Northern Ireland (28.6%).

The highest interest in increasing engagement in research was reported by respondents in Wales (80.3%), followed by England (63.8%), Scotland (57.8%) and Northern Ireland (50%). Overall, there were no statistically significant results for nation in respect of any measure of research engagement, due to the small sample sizes from devolved nations.

Ethics and approvals

Qualitative comments made it clear that many respondents conflated the ethics system with the wider approvals system when thinking about the difficulty of setting up a research project.

Being more engaged in research increases knowledge of the ethics approval process, but the perception that it is excessively complex remains consistent.

Reported knowledge of the ethics approval process increases both with career stage and with degree of engagement (see Fig 10 and Fig 11). Not knowing how to apply for ethics approval declined from an average score of 2.3 among medical students to 1.0 among consultants, and between those formally employed in a research role and those interested but not currently engaged, it dropped from 1.9 to 0.6. However, the perception that the system is too complicated and takes too long remains consistently higher across both of these categories – indicating that this perception is more than merely a stereotype held by those without real experience of the system.

An important caveat to this finding, however, is that this survey was carried out early in the roll-out process of the Health Research Authority's new approvals system. It is hoped that this new system will address many of the commonly held concerns about how this process has operated in the past, but it is likely that these improvements are not reflected in the responses to this survey. This finding remains, however, an important reminder about the importance of disseminating information about the new system in order to overcome this perception.

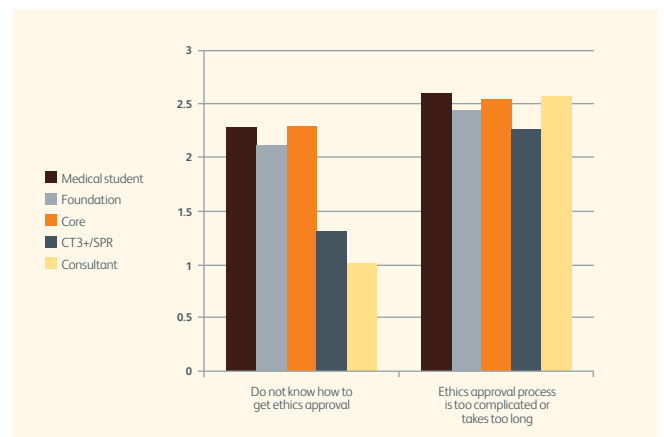


Fig 10 Knowledge and perception of ethics process by career stage

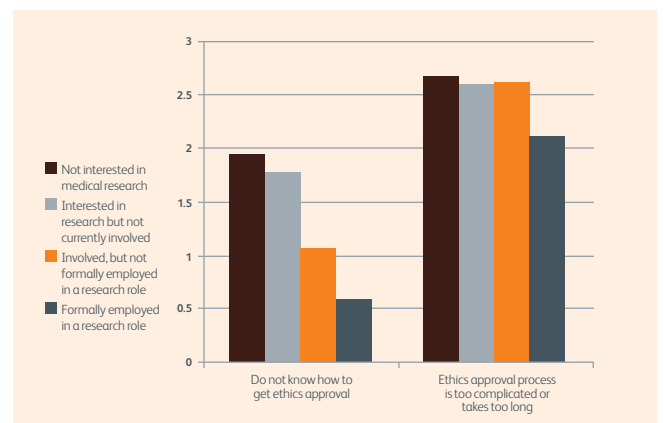


Fig 11 Knowledge and perception of ethics process by degree of engagement

Recommendations

1 Funding is essential to maintaining the UK's place as a world leader in medical research, and to driving the innovation that boosts efficiency and patient care. Building on the favourable settlement for science and research made in the Comprehensive Spending Review, **government** must ensure that medical research funding is maintained and that research is never seen as an easy target for spending cuts.

2 **Trusts** should take steps to ensure that doctors have protected time for research and can make efficient use of that time. In particular:

- a **R&D departments** should review CVs of all new appointments, and anyone with relevant interest or experience in research should be offered a meeting to discuss ways in which their involvement in research can be facilitated. This should include consideration for dedicated SPA time to develop and deliver research through activities such as opening and recruiting to NIHR portfolio studies (commercial and non-commercial), and/or developing specific research projects that will underpin a future grant application. The Association of UK University Hospitals' guidelines on research job planning will be helpful to many trusts, and their principles should be applied in district general hospitals (DGHs) as well as teaching hospitals.¹⁷ To ensure the most is made out of all available research PAs, they should be regularly reviewed and reassigned if they are not being used to produce measurable outcomes.
- b To enable doctors' limited research time to be well spent, sufficient research support staff such as nurses and administrators should be provided. In many instances, funding for such support is available via the NIHR Clinical Research Networks; this funding may be centrally managed by the Networks or devolved to the R&D departments of individual trusts. All **R&D departments and CRNs** need to ensure that available support services are well publicised so that those who feel they need more support know how to access it.
- c **Trusts** should use all available funding streams, including charitable funds and NIHR research capability funding, to ensure that all doctors, including those who wish to get involved for the first time or re-engage after a research career break, have the opportunity to undertake research projects of all sizes and scopes, including smaller projects for quality improvement, pump-priming, and developing proposals and pilots. The funds available and mechanisms for their distribution should be fair and transparent, and calls for applications should be widely advertised to all staff groups.

3 **Trusts and universities** need to adopt employment policies that facilitate employees to move between NHS and university employment without losing employment benefits that are contingent on the length of service. This is a particular issue in respect of parental leave, and there have been reports that the loss of maternity benefits is a factor deterring some women from going into research. University College London provides an example of best practice in this area, where all employment rights are maintained seamlessly when academic trainees move between NHS and university employment.

4 Many respondents noted that the time and effort required to apply for funding felt excessive and was a significant deterrent to their involvement. **Research funders** should consider collaborating to make the grant application process more straightforward. In particular:

- a Grant-giving bodies should consider extending small grant schemes to facilitate quality improvement research, preliminary data generation and/or dedicated research time for consultants to underpin larger grant applications.
- b A well-publicised, centralised information hub providing details of available grants, closing dates and eligibility criteria would help to make searching for funding sources less time-consuming and overwhelming for potential researchers. This would reduce the opportunities lost because of lack of awareness of possible funding source or because of a lack of time to investigate funding options, especially in DGHs or other hospitals where the R&D department may be smaller or less well connected to a university. It will be essential that funders commit to keeping this resource up to date, and that it is well publicised to potential users. It may be possible for such a hub to be developed out of existing work being carried out by the **Medical Research Council**.
- c Standardising many application questions would help to reduce the time researchers spend redrafting work when applications ask very similar questions, but with slightly different wording or emphasis.

5 Good practice in respect of the management and allocation of research funds within hospitals needs to be understood, disseminated to all involved, and practised consistently. Good practice should reflect both the need for funding to be available to pump prime projects before they receive full grants and the need for researchers to have sufficient financial control over the grants they have been awarded.

- a **The NIHR, Health Research Authority and R&D Forum** should consider conducting a review of the different ways research funding is controlled and allocated within hospitals and produce guidance on good practice.

¹⁷Association of UK University Hospitals. *Allocation of programmed activities for research in NHS trusts*. www.aukuh.org.uk/index.php/documents [Accessed 29 January 2016].

- b Principles that all **hospitals** should follow include:
- i transparency and clarity in the way money, particularly from funded studies, is allocated
 - ii research taken into account at the highest decision-making levels, with direct R&D department input at board level. Different models for this will be appropriate in different places, but one example of good practice is Leeds' research subcommittee to the board. The subcommittee includes executive directors, university representatives and the local dean, and is chaired by the medical director. Another model might be to require the R&D director to regularly report to the board on the department's performance.

6 **R&D departments** need to ensure they are active enablers of research as well as maintaining their governance and oversight roles. This means taking a proportionate approach to the risk of research studies. **Hospitals** should make simple inexpensive changes to show that research is valued and supported. R&D departments should be responsible for this, but sector leaders such as the **Health Research Authority, CRNs** and the **NHS R&D Forum** should also work together to identify and disseminate good practice, and support departments to execute changes. Some examples of good practice are:

- a **All R&D departments** not currently doing so should use lean business process analysis to reduce unnecessary processes and bureaucracy.
- b New recruits' CVs should be triaged as described in recommendation 2a.
- c Hospitals should make inexpensive changes to foster a culture that values research and makes it accessible; for example, by providing an online directory of local researchers and their interests and contact details, ensuring there are opportunities to present research work to other staff, publicising staff members' publications on the hospital website and intranet, or providing research notice boards in common areas. Grand round sessions should be used to engage representatives from research organisations and disseminate information about funding opportunities, approvals system changes, available support, and local research projects.

7 More needs to be done to enable doctors' access to essential research skills.

- a **Health Education England, royal colleges, specialty societies and the General Medical Council (GMC)** should ensure that evidence evaluation and quantitative and research design skills are embedded in all trainee curricula to support both clinical practice and research. Understanding and assessing evidence must be an ongoing component of continuing professional development for all doctors.
- b A means to become certified in research design and statistical skills should be made available, in order to enable those who have not completed academic training pathways to enter research at later points in their careers. Opportunities to use credentialing for this purpose should be explored.

- c **Royal colleges** should support, through funding, networking opportunities and brokering, research consortia/network initiatives to promote collaborations, and skills-sharing. An example of good practice is the Research and Audit Federation of Trainees, a network of anaesthetic trainee research groups.

8 Research-oriented mentoring should be more widely available and better publicised than it is currently, in order to serve the large number of trainees who indicated that they feel they need mentoring but do not currently have it. **Royal colleges, the Academy of Medical Sciences, and other organisations seeking to support research** all have a role to play in fulfilling this need, and existing schemes run by these organisations should be extended and better publicised.

9 **Clinical commissioning groups and specialised commissioning groups** should include access to research opportunities in all contracts.

10 **National bodies** should embed research and evaluation in all new models of care, and consider how workforces will be skilled to deliver quality improvement.

11 The ethics and approvals system should be simple transparent, and well understood.

- a **The Health Research Authority** should promote the new streamlined ethics and NHS approval system to doctors at all career stages, whether they are currently involved in research or not, to reduce the perception of complexity.
- b **R&D and Research Design Service departments** should ensure advice is readily available to those unfamiliar with the ethics and approvals system, to ensure that time is not wasted on applications that are unlikely to get approval, unnecessary applications for projects with no ethical impact, or multiple applications where only one would suffice. The availability of this advice needs to be well publicised to staff.

12 **Royal colleges and specialty societies** should include sessions on research skills and engagement in regular conferences.

13 **Doctors** need to be proactive in talking to their medical director or R&D department about what research opportunities are available. They should consider making contact with local research networks so they are aware of trials in their specialty, and engage with the host of online information about the support that is available. In return the NHS must equip doctors with the skills to engage in research throughout their careers.

Research resources

There is a wide range of resources available to help doctors make sense of the research system and access the support services they need to become involved.

RCP research engagement toolkit
(produced with the support of the NIHR)
www.rcplondon.ac.uk/researchtoolkit

National Student Association of Medical Research
(NSAMR) guides to clinical research
<http://nsamr.org/resources/guides/>

Association of UK University Hospitals position paper on
allocation of programmed activities for research in NHS trusts
www.aukuh.org.uk/index.php/component/docman/doc_download/175-research-spa-position-paper

Local networks

England

NIHR Clinical Research Networks
www.crn.nihr.ac.uk/networks/

NIHR Research Design Service
www.rds.nihr.ac.uk/

Wales

Health and Care Research Wales infrastructure
www.healthandcareresearch.gov.wales/infrastructure/

Health and Care Research Wales Research Design and
Conduct Service
www.healthandcareresearch.gov.wales/research-design-and-conduct-service/

Scotland

Chief Scientist Office Research Units
www.cso.scot.nhs.uk/research-units

Northern Ireland

Northern Ireland Clinical Research Network
www.nicrn.hscni.net/

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About the RCP

The RCP aims to improve patient care and reduce illness, in the UK and across the globe. We are patient centred and clinically led. Our 30,000 members worldwide work in hospitals and the community across 30 different medical specialties, diagnosing and treating millions of patients with a huge range of medical conditions.

Involving patients and carers at every step, the RCP works to ensure that physicians are educated and trained to provide high-quality care. We audit and accredit clinical services, and provide resources for our members to assess their own services. We work with other health organisations to enhance the quality of medical care, and promote research and innovation. We also promote evidence-based policies to government to encourage healthy lifestyles and reduce illness from preventable causes.

Working in partnership with our faculties, specialist societies and other medical royal colleges on issues ranging from clinical education and training to health policy, we present a powerful and unified voice to improve health and healthcare.

