



The Evidence Base for the Impact of Research Activity on Quality of Care: What We Know, What We Need to Know

31st January 2020 Workshop Report

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1. Summary

There is increasing evidence of an association between research activity in NHS trusts and patient outcomes. This evidence has supported activities to enhance research culture, such as including research in the CQC 'Well Led' inspection framework.

We need to strengthen this evidence to support further improvements in research culture. The NIHR Clinical Research Network organised a workshop in January 2020 to discuss what we currently know about the link between research activity and outcomes, to identify priorities for further research in this area. We brought together academic researchers, users of research in health and care, funders and patients and the public.

Following the workshop, we make 3 recommendations:

Recommendation 1:

That further work in this field is supported by the research community and funders

Recommendation 2:

That this further work builds on the existing evidence, with a focus on the following priority areas:

- In which settings is there a relationship between research activity and outcomes?
- What are the mechanisms linking research activity and outcomes?
- Can the associations between research activity and outcomes be used for quality improvement?

Recommendation 3:

That further work in this field is supported by mapping the data needed for further investigation, especially in contexts outside hospitals

2. Background

The NHS Engagement workstream has existed in the NIHR Clinical Research Network (NIHR CRN) since 2016 and has been an active catalyst for improving clinical research culture within NHS organisations.

One major achievement was to establish clinical research in the CQC Well Led inspection framework, providing a rounded view of how research in NHS trusts is supported by the organisation.

Since this achievement in 2018, there has been a wealth of other activity, the most recent example being the Academy of Medical Sciences report '[Transforming health through innovation: Integrating the NHS and academia](#)'.

Box 1 The CQC Well led framework

NEXT PHASE METHODOLOGY (2018)
WELL-LED

Inspection framework: NHS trusts and foundation trusts

Trust-wide well-led

The new research prompts introduced in 2018 (W8)

- Are divisional staff aware of research undertaken in and through the Trust, how it contributes to improvement and the service level needed across departments to support it?
- How do senior leaders support internal investigators initiating and managing clinical studies?
- Does the vision and strategy incorporate plans for supporting clinical research activity as a key contributor to best patient care?
- Does the Trust have clear internal reporting systems for its research range, volume, activity, safety and performance?
- How are patients and carers given the opportunity to participate in or become actively involved in clinical research studies in the trust?

https://www.cqc.org.uk/sites/default/files/20200115_Trust_wide_well_led_inspection_framework_V7.pdf

The case to the CQC for including research in NHS inspection was based on evidence of an association between research activity in NHS trusts and patient outcomes, especially a 2017 study of colorectal cancer outcomes.¹

There has been a range of similar research evidence that has developed as part of a broader case for research in the NHS. This body of evidence has been used in discussions with NHS staff and management to help enhance research culture alongside patient care. But there is still a long way to go.

It was clear that it was necessary to strengthen the evidence linking research activity and patient outcomes. This was the stimulus for the NIHR CRN to organise a workshop on 31st January 2020, bringing together researchers, evidence users, funders and commissioners to discuss two issues:

- What do we currently know about the link between research activity and outcomes?
- What are the priorities for further research, to achieve a better understanding of the impact of research activity on organisations and patients?

3. Approach

We structured our meeting in line with published guidelines for setting research priorities²:

Context

The NIHR CRN has found it effective to use the existing body of evidence to support NHS Engagement activities. It is recognised that there remains a need for further evidence in this field to continue to support the case for fully embedded research in health and care. The NIHR CRN therefore funded and supported the workshop on 31st January 2020 to bring together stakeholders with a view to prioritising further research activity in this field.

Inclusiveness

We brought together academic researchers, NHS research users, research funders and patients and the public to discuss the issues and priorities. 35 people attended the workshop.

Information gathering

We summarised existing evidence on the link between research activity in NHS organisations and improved outcomes. A summary of this evidence was sent to stakeholders prior to the workshop. Some of this work was presented in detail at the start of the event, together with an example of current research work that is ongoing in this area.

Planning and Implementation

The workshop was planned to identify future research priorities.

Criteria

We used the following questions to structure the workshop and the discussions:

- What are the most important next questions?
- What methodologies are available? What data might be used?
- What are the key barriers to this research and how might they be overcome?
- Who are the key partners?

Method of deciding priorities

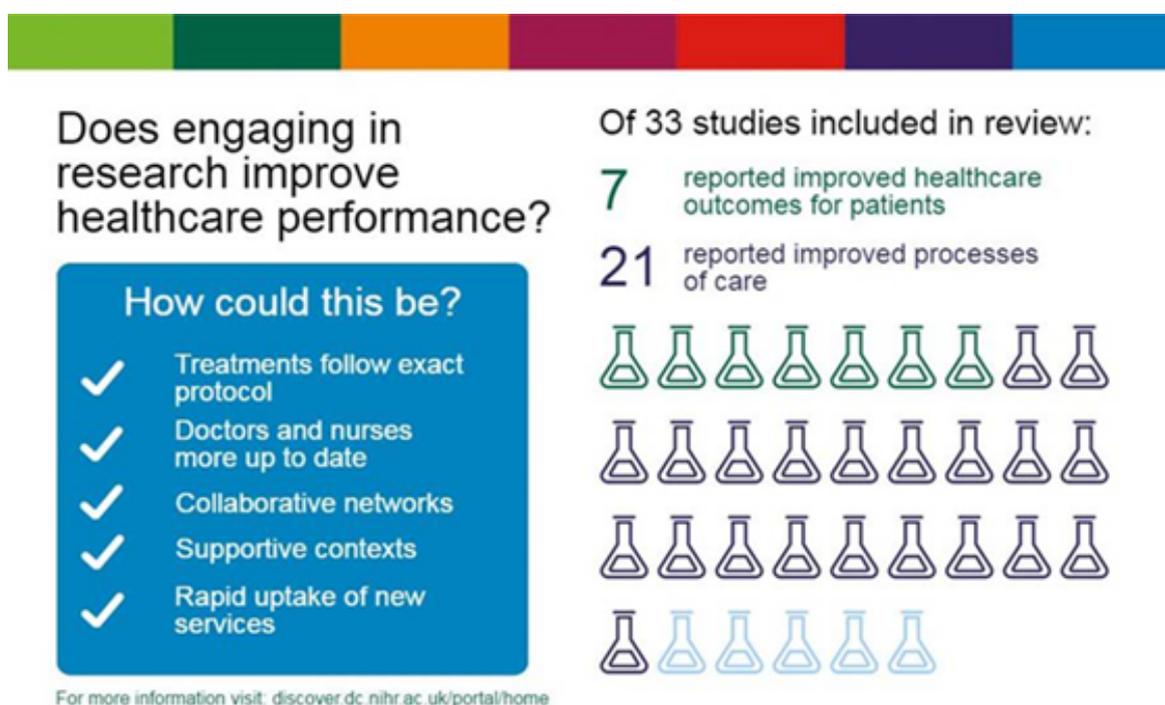
- 7 possible research priorities were suggested at the beginning of small group discussion sessions. Participants were invited to add to these
- These priorities were discussed in groups, with key points gathered from each group (electronically by *vWall*)
- 3 votes were used to identify priorities

4. What we know

There are a range of studies that have been undertaken in the last few years that show associations between research activity in health and care organisations and improved healthcare performance. These were summarised ahead of the workshop and current evidence presented during the workshop.

A recent NIHR Health Services & Delivery Research study ('Does engaging in research improve healthcare performance?') reviewed 33 studies.³ The core findings are summarised in the infographic below.

Figure 1 Summary of the evidence from Hanney et al

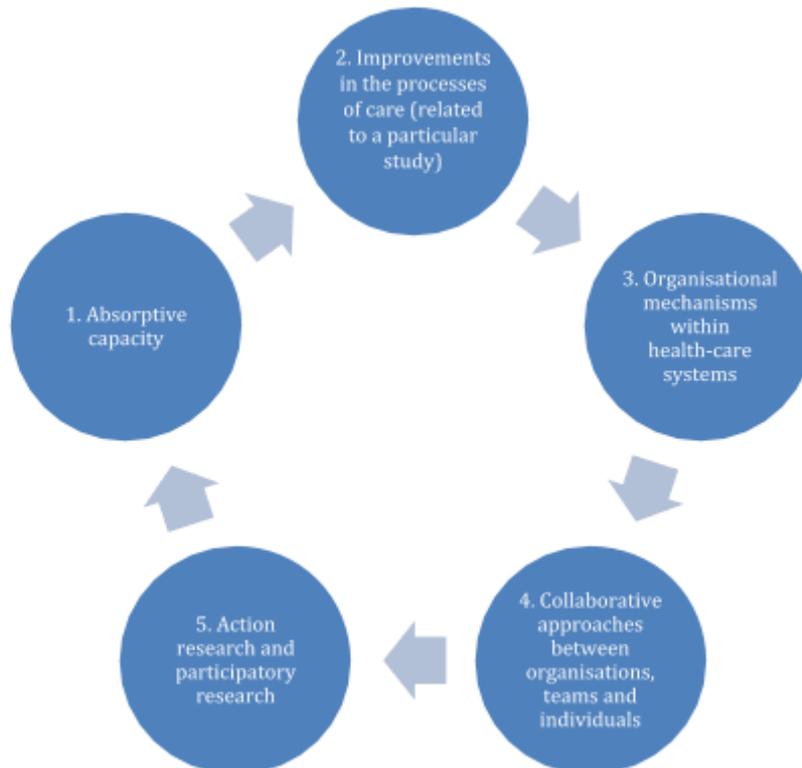


One of the questions explored by the review concerned 'mechanisms'. Mechanisms have been defined by Hanney et al as 'levers that instigate or sustain a relationship between those activities and improved health-care performance'. This refers to the ways in which research activity might actually lead to improved outcomes – what changes might occur when research is conducted that eventually result in improved care and health? The review suggested a number of potential mechanisms that might account for the associations (see Figure 2). These range from changes that directly result from the research activity (such as introduction of new procedures or equipment) to broader changes in organisational culture.

'Absorptive capacity' refers to changes in the structure of organisations (such as new equipment that remains after research is completed) or their human capital (such as staff training) that improve the ability to take advantage of new information from research and other sources. Improvements in care processes are more specific to the research and might involve the greater monitoring and support available to trial patients. Organisational mechanisms within health care systems involve a wider range of activities, such as using research to identify issues that need change or to set performance targets. Collaborative approaches refer to broader linkages between organisations, such as those linking

researchers and clinicians, or the development of wider research networks (the NIHR ARCs would be an example). Finally, action and participatory research refers to specific models which link research users with research activity in a process of action and research activity.

Figure 2 Potential mechanisms underlying associations between research activity and outcomes from Hanney et al



There were other important factors to consider. In some cases, research was undertaken, and the benefits were a by-product of this activity. In other cases, taking part in research was done with the intention of making improvements to performance (such as ‘participatory research’).

Secondly, the impact of research activity on outcomes varied in scope. Some impacts were specific - research activity on a particular subject might lead to improvements in performance on that activity only. Other impacts were broader, such that taking part in research led to wider changes in behaviour.

Since the publication of this review, additional studies have been published, which are summarised in Box 2.

These studies have significantly added to the evidence base from the earlier systematic review. They are primarily observational studies and have explored the link between research activity and outcomes in various NHS settings.

Box 2: Summary of recent studies

- **Research activity and the association with mortality⁴**

This study found that levels of both research funding and patient recruitment were associated with lower mortality among non-elective admissions in English Trusts.

- **High hospital research participation and improved colorectal cancer survival outcomes: a population-based study¹**

This study found a link between recruitment of patients to interventional studies and lower mortality among patients with colorectal cancer. The effects were found across all trusts (not just specific centres of excellence) after adjustment for casemix, and there was evidence of a dose-response relationship with increasing levels of participation leading to better survival.

- **The correlation between National Health Service trusts' clinical trial activity and both mortality rates and care quality commission ratings: a retrospective cross-sectional study⁵**

- **Patients admitted to more research-active hospitals have more confidence in staff and are better informed about their condition and medication: Results from a retrospective cross-sectional study⁶**

These linked papers looked at 129 English trusts and found associations between NIHR research activity and indicators of mortality and quality. Associations were particularly marked for interventional research activity. Research activity was also related to patient and staff reports.

5. The priority setting process

As noted earlier, the workshop involved the presentation of 7 initial research priorities. Participants were invited to add to these. There was an extensive discussion on the priorities, but in the main they were felt to cover the main issues. Participants then provided an initial vote on the priorities.

The priorities (and the initial ranking) were discussed in small groups, and the key points from the discussions were gathered from each group (electronically by vWall)

There was another round of voting after the discussion to assess whether priorities had changed. Table 1 shows the initial and final votes, ordered by the final vote. Although there was some change in priorities between votes, the broad ordering was maintained.

Table 1 Voting on the 7 priorities

Priority	% of initial votes	% of final votes
In which settings is there a relationship between research activity and outcomes?	17.5%	21.0%
What are the mechanisms linking research activity and outcomes?	26.3%	19.4%
Can the associations between research activity and outcomes be used for quality improvement?	17.5%	14.3%
What types of research activity are most and least likely to impact on outcomes?	15.8%	13.1%
What outcomes are most and least likely to be impacted by research activity?	8.8%	12.7%
Is the association between research activity and outcomes causal?	8.8%	11.5%
Do we have good enough measures of research activity to assess links to outcomes?	5.3%	7.9%

In this section, we briefly discuss the top 3 priorities, drawing on the content of the discussions in the small groups.

In which settings is there a relationship between research activity and outcomes?

As shown in the evidence review earlier, the bulk of the evidence linking research activity to outcomes comes from hospital based research, although the effects in hospital are not restricted to 'centres of excellence'.

It is not clear whether the same associations would be found in general practice. In the general practice setting, the patient populations (and the problems they bring) are different, the care provided is less technical (and may be less standardised), and the organisations are smaller and more geographically distributed. There is evidence linking research activity and outcomes in general practice, but it is less extensive – the Hanney et al review found 4 studies reporting mixed results, and a further observational study supported the existence of a modest relationship.⁷

The type of research done in public health is quite different, with different levels of organisational and patient involvement, and the argument that the same relationships that are found in hospitals exist in this setting may be harder to support.

There is a significant push to increase the volume and quality of social care research. Patterns of research in social care differ from medical research, and the same mechanisms may not be evident. However, if the baseline of research activity is also lower, changes in research activity in this context may have greater impact than in settings that are already 'research active'.

What are the mechanisms linking research activity and outcomes?

Our workshop highlighted the importance of mechanisms, as this will provide a better understanding of how research activity might lead to improved outcomes. This is more specific than the causal question (i.e. is there a link between research activity and outcomes?) and seeks to drill down to understand what specific changes might account for the link.

As noted earlier, a variety of mechanisms have been suggested (see Figure 2). Some mechanisms may be relevant for particular types of research (for example the benefits of investment in equipment may be most associated with interventional studies). Different mechanisms may be important in different contexts.

Can the associations between research activity and outcomes be used for quality improvement?

The final priority is the practical question, which links to the previous question about mechanisms. Assuming we can identify mechanisms that link research activity to outcomes, can we use those in practical ways to maximise the benefits of research?

For example, if research activity leads to benefits through improved confidence among patients about the calibre of an NHS organisation, that might suggest that better marketing of research activity among patients might maximise those benefits.

Alternatively, if the benefits of research relate to greater standardisation of activity and improved data quality, this might suggest different methods to maximise the benefits of research. Some mechanisms may be less amenable to active manipulation than others. Multiple mechanisms are likely to be important and distinguishing between them is likely to be a major challenge for research in this area.

Wider issues

When organising the meeting, we also asked a number of other questions. The workshop discussions touched on a number of these questions, and we summarise the main discussions below

- What methodologies are available? What data might be used?

Clearly, assessment of such complex questions will benefit from a multidisciplinary approach using a variety of methods. Much of the work done so far has taken advantage of the existence of routine data to support quantitative methods to explore associations. The priority question about mechanisms would suggest more detailed analyses of those data sets to drill down and understand what might be accounting for those broad associations. This is likely to require complementary observational and qualitative data. For example, if change in culture related to participation in research is a key mechanism, this is likely to require detailed psychometric and qualitative research

- What are the key barriers/challenges to this research and how might they be overcome?

As noted above, much of the work done so far has taken advantage of the existence of routine data to support analysis. Detailed data on research activity is available from the NIHR CRN, but this does not cover all research studies, or types of research, and simple counts of recruits may miss other mechanisms of relevance.

Data availability is also likely to vary by context. Biomedical research and hospital outcomes are well served, but data on research and outcomes in social care settings may be sparse, which may place significant limits on our ability to answer our priority question. There is a danger that future research in this area will be poorly matched to our needs for information about different settings.

- Who are the key partners?

A key discussion throughout the workshop was the importance of understanding which decision-makers we are trying to convince. Patient representatives restated the importance of research to them but also highlighted their frustration in getting recognition in many organisations for the contribution of research to best patient care.

For some contexts (such as research in hospitals) there may already be high levels of agreement about the importance of research, whereas the case may still need to be made in other settings such as primary care and social care. For each context, we need to understand what sort of evidence would convince decision-makers. If we are looking to change practice and policy, there is also a steer that we have to consider devolved powers and the research set up, practices and policies in the different nations. Starting with an economic model for a study on impact, there may be a need to consider who you need to

convince, and how best to change attitudes of stakeholders. This may not involve a measure researchers value, but one which is of most value in the wider system.

Another key question related to who would be funding these sorts of 'research on research' studies? Some funders (such as NIHR HTA) have already provided small amounts to support such research. The priority questions we identified would have relevance for other funders such as NIHR HS&DR. It is not clear whether our priority questions require primary research studies focussed on this issue or would be better served by nesting 'research on research' onto existing studies.

Appendix 1 maps out themes from the discussions.

6. Conclusion and recommendations

The three highest priorities identified by our workshop were:

- In which settings is there a relationship between research activity and outcomes?
- What are the mechanisms linking research activity and outcomes?
- Can the associations between research activity and outcomes be used for quality improvement?

As noted earlier, the 3 priority questions are interdependent, and research could be designed to explore several priority areas.

It is important to highlight that voting was close, and we have chosen the top 3 as a guide to immediate priorities. Where possible, research studies should maximise their coverage of as many of the priority areas as possible.

Based on the priority setting exercise and the wider discussions, we make three recommendations:

Recommendation 1: That further work in this field is supported by the research community and funders

Recommendation 2: That this further work builds on the existing evidence to study the:

- impact of research activity in different settings
- mechanisms by which research activity might improve patient outcomes
- how those mechanisms might be used for quality improvement
- new research studies should also take into account the broader issues covered in this prioritisation process

Recommendation 3: That further work in this field is supported by mapping the data needed for further investigation, especially in contexts outside hospitals

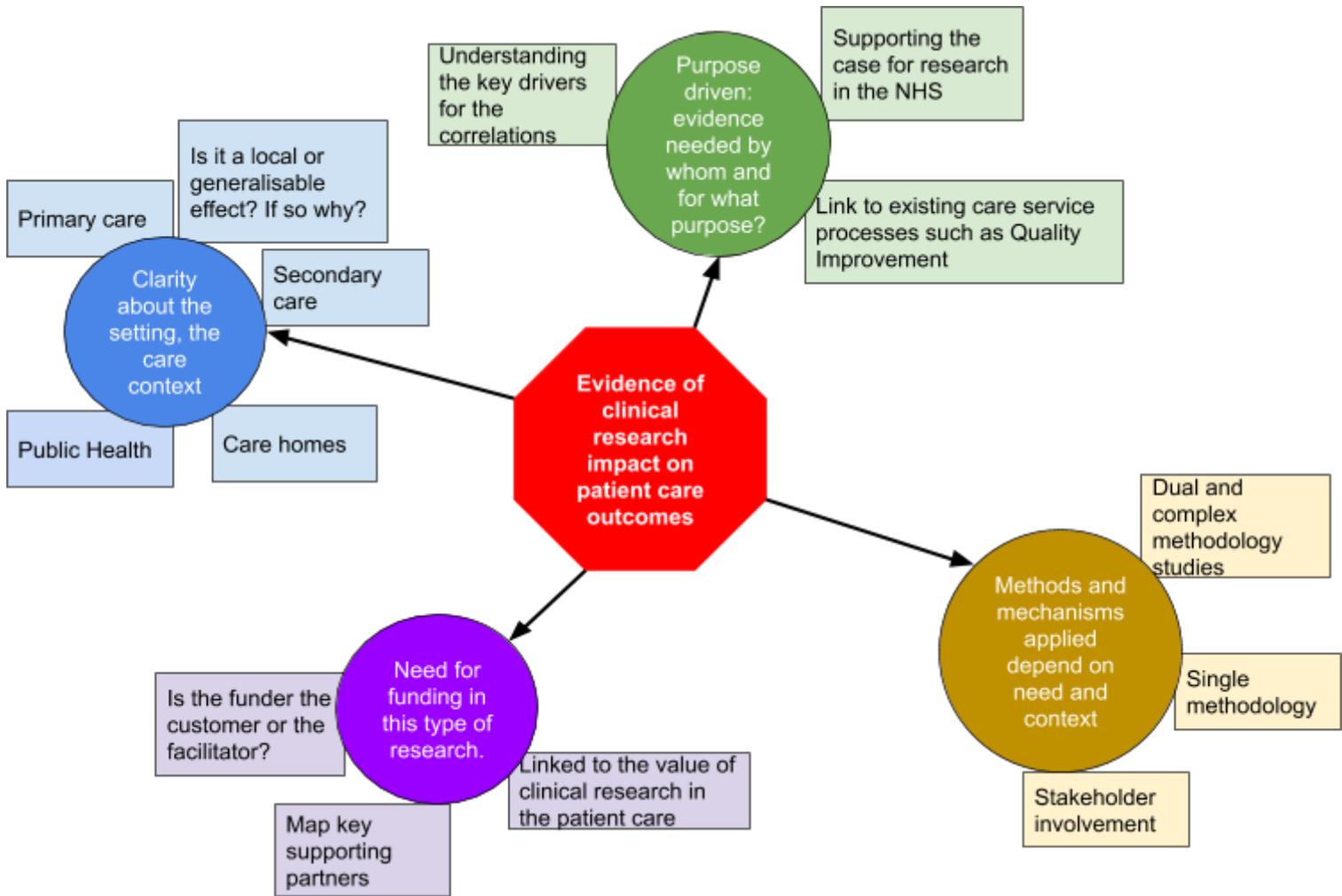
This report was compiled by:

- **Professor Peter Bower, NIHR CRN National Specialty Lead for Health Services Research**
- **Roger Steel, NIHR CRN NHS Engagement Programme Manager**

7. References

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Appendix 1: Visual summary of the discussion themes.



Appendix 2: Agenda from the day:

Evidence base for impact of clinical research on quality of patient care: what is there, what's needed?

31st January 2020

Robens Suite, Guy's Hospital, Great Maze Pond, London SE1 9RT

Purpose: A workshop to bring together researchers, evidence users, funders and policy makers to discuss the evidence base for the impact of research on quality of patient care

Aims:

- To provide an update on the relevance of this research to the NHS
- To appraise the current evidence
- To identify what further evidence is needed and its likely value
- To identify what is needed to build the evidence base

Outputs:

A summary report of the published evidence and recommendations for key opportunities for future research. The report will be shared with all delegates, key health and research organisations as well as funders.

Draft Programme:

Speaker

10.00	Registration and Coffee	
10.30	Welcome and Introductions	William van't Hoff
10.45	Keynote talk	Jo Rycroft Malone
	Clinical research impacts on care	
11.15	What evidence is there?	Peter Bower
11.40	What might be the mechanisms?	Annette Boaz
12.05	Research in progress	Katie Spencer
12.30	Lunch	
13.15	Round table talks	
	Some key topics for discussion/prioritisation amongst groups	
	1. What are the most important next questions?	
	2. What methodologies are available?	
	3. What data might be used?	
	4. What are the key barriers/challenges and how might they be overcome?	
	5. Who are the key partners?	
14.45	Feedback from tables and plenary discussion	
15.30	Summary of actions, consider an editorial group and close	

Appendix 3: List of invited participants:

Name	Organisation
Cat Ball	Association of Medical Research Charities
Aisling Burnand	Association of Medical Research Charities
Stuart Logan	NIHR ARCs
John Wright	NIHR ARCs
Bryony Soper	Brunel University
Adam Kamenetzky	NIHR CCF
Anne River	NIHR (CCF)
Nick Lemoine	NIHR Clinical Research Network
Jessica Newberry LeVay	Cancer Research UK
Emlyn Samuel	Cancer Research UK
Louise Knowles	DHSC
Mark Toal	DHSC
John Wilkinson	DHSC
Melissa Brown	Health Data Research UK
Jo Rycroft-Malone	Health Services and Delivery Research

Matt Sutton	Health Services and Delivery Research
Joanne Reeve	Hull York Medical School
Charles Wolfe	Kings College London & Guys and St Thomas's
Steph Garfield-Birkbeck	NETSCC
Amanda Blatch-Jones	NETSCC
Jo Nurse	NETSCC/HS&DR
Lindsey Hughes	NHS England
Peter Bower	NIHR Clinical Research Network
Lucy Gallagher	NIHR CRN (Support)
Ruth Wallbank	NIHR CRN (Support)
Jennie Hejdenberg	NIHR CCF
Philip Evans	NIHR Clinical Research Network
Matt Seymour	University of Leeds and NIHR
Roger Steel	NIHR CRN (Support)
William van't Hoff	NIHR Clinical Research Network
Jane West	NIHR Clinical Research Network
Roger Leek	Patient representative
Keith Wilson	Patient representative

Elaine Hay	Programme Grants for Applied Research
Jill Manthorpe	Policy Research Programme
James Wilsden	Research on Research (Wellcome Trust)
Brian Davidson	Research for Patient Benefit
Sue Ziebland	Research for Patient Benefit
Annette Boaz	St George's University of London and Kingston University
David Wynick	University Hospitals Association (R&D)
Mike Roberts	University College London Partners
Unmesh Chauhan	University of Central Lancashire
Katie Spencer	University of Leeds
Yitka Graham	University of Sunderland
Emma Yhnell	#WhyWeDoResearch

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