



EUROPE

THE ARTS
CHILD POLICY
CIVIL JUSTICE
EDUCATION
ENERGY AND ENVIRONMENT
HEALTH AND HEALTH CARE
INTERNATIONAL AFFAIRS
NATIONAL SECURITY
POPULATION AND AGING
PUBLIC SAFETY
SCIENCE AND TECHNOLOGY
SUBSTANCE ABUSE
TERRORISM AND
HOMELAND SECURITY
TRANSPORTATION AND
INFRASTRUCTURE
WORKFORCE AND WORKPLACE

This PDF document was made available from www.rand.org as a public service of the RAND Corporation.

[Jump down to document](#) ▼

The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world.

Support RAND

[Browse Books & Publications](#)

[Make a charitable contribution](#)

For More Information

Visit RAND at www.rand.org

Explore [RAND Europe](#)

View [document details](#)

Limited Electronic Distribution Rights

This document and trademark(s) contained herein are protected by law as indicated in a notice appearing later in this work. This electronic representation of RAND intellectual property is provided for non-commercial use only. Unauthorized posting of RAND PDFs to a non-RAND Web site is prohibited. RAND PDFs are protected under copyright law. Permission is required from RAND to reproduce, or reuse in another form, any of our research documents for commercial use. For information on reprint and linking permissions, please see [RAND Permissions](#).

This product is part of the RAND Corporation technical report series. Reports may include research findings on a specific topic that is limited in scope; present discussions of the methodology employed in research; provide literature reviews, survey instruments, modeling exercises, guidelines for practitioners and research professionals, and supporting documentation; or deliver preliminary findings. All RAND reports undergo rigorous peer review to ensure that they meet high standards for research quality and objectivity.

Changing the translational research landscape

a review of the impacts of
Biomedical Research Centres
in England

Sonja Marjanovic, Bryony Soper, Ala'a Shehabi,
Claire Celia, Anais Reding, Tom Ling

Prepared for the Department of Health England

The research described in this report was prepared for the Department of Health England.

The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors.

RAND® is a registered trademark.

© Copyright 2009 RAND Corporation

Permission is given to duplicate this document for personal use only, as long as it is unaltered and complete. Copies may not be duplicated for commercial purposes. Unauthorized posting of RAND documents to a non-RAND Web site is prohibited. RAND documents are protected under copyright law. For information on reprint and linking permissions, please visit the RAND permissions page (<http://www.rand.org/publications/permissions.html>).

Published 2009 by the RAND Corporation
1776 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138
1200 South Hayes Street, Arlington, VA 22202-5050
4570 Fifth Avenue, Suite 600, Pittsburgh, PA 15213-2665
Westbrook Centre, Milton Road, Cambridge CB4 1YG, United Kingdom
RAND URL: <http://www.rand.org>
RAND Europe URL: <http://www.rand.org/randeurope>
To order RAND documents or to obtain additional information, contact
Distribution Services: Telephone: (310) 451-7002;
Fax: (310) 451-6915; Email: order@rand.org

Summary

Overview

- 1) In January 2006 the Department of Health's (DH) *Best Research for Best Health*² strategy (BRfBH) was launched, "to create 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 public"³. BRfBH's overarching objectives are to realise improvements in health research system quality, capacity, patient benefits, efficiency and ethics.

One of the flagship initiatives of BRfBH was the creation in April 2007 of 11 Biomedical Research Centres (BRCs) within leading NHS/university partnerships. The aims of this scheme are to: drive innovation in the prevention, diagnosis and treatment of ill-health; translate advances in biomedical research into benefits for patients; and provide a key component of the NHS contribution to UK's international competitiveness, by "making the best centres even better"⁴.

- 2) This report describes a review of the BRC scheme, undertaken for the DH 18 months after the BRCs were commissioned. This review was a perceptions audit of senior executives involved in the scheme, and explored whether the scheme is working in the way intended. It considered how translational research and innovation were pursued prior to the BRC scheme (including the opportunities and barriers experienced in the past by NHS and academic partners); whether and how institutional relationships are changing because of the scheme; and (if so) how these changes are influencing the health research system.

² Department of Health (Research and Development Directorate) *Best Research for Best Health: A new national health research strategy*, London: Department of Health 2006. <www.dh.gov.uk/publications> (as of 25 March 2009)

³ Department of Health (Research and Development Directorate) *Best Research for Best Health: A new national health research strategy*, London: Department of Health 2006; pg5

⁴ Department of Health (Research and Development Directorate) *Best Research for Best Health Implementation Plan 5.6. NIHR Research Centres* (Version 6: final) London: www.nihr.ac.uk/about/Pages/about_implementation_plans.aspx; pg1

- 3) The information obtained through our interviews⁵ suggests that the BRC scheme is already contributing to observable *changes in institutional relationships* between the NHS, academia, industry and other players, and is helping shape the health research system to pursue translational research and innovation with the clear goal of realising patient benefit.

The scheme, and the associated changes in stakeholder relationships it has fostered, is also making a significant contribution to *capacity-building* in the health research system, and is leading to *improved resource-targeting, management and governance*. We elaborate on these key impacts, based on the perceptions expressed by those we interviewed, and present examples that were given in support of their views. Table 1 then illustrates some of the key impacts of the scheme, at each individual BRC.

- 4) It is important to understand that this review was conducted at an early stage of BRC existence – 18 months since their inception. Interview-based evidence collection can be subject to the deliberate or unintended biases resulting from the position and experiences of the interviewees. In addition, we interviewed the most senior executives of BRCs (chief executives of trusts, deans of academic partner organisations, directors of BRCs). We tried, as far as possible, to ask interviewees for concrete examples of their views. However, given our wider knowledge of the health research system, we felt that the claims made by interviewees were credible and plausible.

A more detailed review of the scheme at a later stage of BRC evolution could benefit from investigating the views and experiences of other participants (such as academics and clinicians involved in research projects, as well as NHS managers). It is also important to bear in mind that the trusts and academic organisations that are now part of BRCs were leaders in their activities even prior to the scheme. Our review gathered interviewee perceptions on the changes the scheme is bringing about, with supportive evidence. Selection criteria for being awarded BRC status focused on existing research quality, research capacity (critical mass), a record of excellence in partnership with key players (academia and industry) as early adopters of new insights in technologies, techniques and treatments for improving health, and a strong plan focused on biomedical innovation and translational research for the benefit of patients.

A future review may consider a more detailed examination of the value added by the BRC scheme – for example by gathering information from a broader range of informants, and by comparing how NHS and academic organisations outside the BRC scheme are pursuing translational research and innovation. This was beyond the scope of the current study. These caveats should be borne in mind when drawing conclusions from the report.

⁵ We conducted 29 interviews at 11 BRCs.

Changes in institutional relationships between the NHS, academia and industry

5) NHS-academia relationships as an enabler of translational research and innovation

Addressing historical barriers to collaboration between the NHS, academia and industry is at the core of the BRC mission. BRC leaders feel that one of the strongest impacts of the BRC scheme has been to bring NHS and academic stakeholders closer together to develop joint strategies for research intended to improve patients' health and general well-being. The BRC scheme has put the spotlight on translational research, and is changing the attitudes of NHS staff and academic researchers towards mutual collaboration. According to most interviewees – including trust chief executives themselves – the scheme's impact on the attitudes of trust staff to research and research collaboration with academics, has been particularly significant.

The BRC application process led academic and NHS partners to jointly revisit their existing research portfolios and determine future priority themes, with research relevance for patients as the focus. At all BRCs, there is now more debate about research activities and joint collaboration (and how they can be organised to maximise outputs and patient benefit) at the senior management and board levels of trusts and universities; academics are more involved in trust boards and committees, and vice versa.

There are more interactions between clinicians and academics, and a developing appreciation of the crucial links between the quality of research and the quality of patient care, manifested in the scale of collaborative activities, and the growing status of research in the NHS. The catalytic effect of the BRC scheme appears to be particularly striking in settings where collaboration has previously been less well established. New external relationships with trusts and academic institutions outside BRCs, nationally and internationally, as well as between BRCs, are being enabled and consolidated.

6) Collaboration with industry

The UK health research system functions in an increasingly competitive global environment. Ensuring industry participation in the system depends on the ability of health research organisations to offer competitive costs, superior quality and increased efficiency in the management and conduct of clinical trials. According to most interviewees, the BRC scheme has brought about improved collaboration between the NHS, academia and industry. BRCs are aware of the value industry can bring, and of the disadvantages of not leveraging industry collaboration to deliver innovations to the market. At one BRC, an interviewee

emphasised that academic reluctance to collaborate with industry due to fears of impropriety has been notably reduced. There is now a stronger focus on retaining existing collaborators, *and* on attracting new ones. Several BRCs have private sector members on advisory panels, and are creating specific functions (for example, business managers) to coordinate relationships with industry.

Some interviewees expect that BRC status, a critical research mass, and an increased emphasis on research governance probity and on infrastructure development, will further increase the attractiveness of BRC campuses to industry in the long run. At three BRCs, we were told that partner organisations have become more focused on exploiting intellectual property (IP) to generate commercial revenues. In general, government emphasis on the importance of the contribution that medical research and the NHS can make to GDP has placed a greater focus on collaborations with the private sector; and while changes in academic and NHS attitudes to collaborating with industry have not been driven *solely* by the BRC movement, most BRC leaders feel that they have been *significantly* reinforced by it.

7) **Collaboration with other players**

Most of the interviewees felt that BRCs are the ‘engines’, driving applications for Academic Health Science Centre (AHSC) status. The BRC scheme has set a template for clinical-academic partnerships, significantly influencing AHSC bids that include plans to extend collaborations with other acute trusts and primary care trusts (PCTs). BRCs are also collaborating with the NIHR Comprehensive Clinical Research Network programme and the NIHR Clinical Research Network Coordinating Centres, and also, in one case, with a regional development agency.

We were told that most BRCs are also working to raise awareness about translational research among the general public, and to involve patient groups in developing health research priorities. New structures and initiatives have been developed to ensure that BRCs maximise engagement and two-way communication with the public (via BRC management committees, patient advisory boards, information leaflets, and studies aimed at capturing how patients feel about research, what their concerns are, and what actions BRCs can take to encourage patient participation in studies). At three BRCs, we were told that the scheme is also leading to stronger contacts between NHS trusts and university departments outside medical faculties (for example, departments of physics, chemistry, engineering, health economics, psychology), as partnerships develop a more interdisciplinary translational research agenda.

The impact of the BRC scheme – and of associated changes in institutional relationships – on capacity-building

- 8) The information presented by the people we interviewed suggests that the BRC scheme is enabling:
- the development of new physical infrastructures for academic and NHS partners
 - the acquisition of new capabilities for translational research, by improving recruitment and retention, as well as the training and development of human resources
 - the establishment of new organisational structures, systems and functions to facilitate translational research and innovation more effectively.

9) **Physical infrastructure**

Across the BRCs we interviewed study informants widely agreed that biomedical research laboratories and clinical trial facilities are bringing together basic biomedical and clinical researchers under one roof, to facilitate closer interaction, exchange of experiences, and to accelerate research translation. Often this infrastructure is directly funded by the BRC scheme. Additional Department of Health capital expenditure has also contributed to infrastructure development. At seven of the BRCs, we were told that BRC funding has also been used to leverage funding for infrastructure development from additional sources (such as the MRC, Wellcome Trust, and industry). It is widely thought that the BRC scheme makes trust-academia collaborations more attractive to industry (for example, pharmaceutical and biotech companies), charities and individual benefactors, and to have increased the confidence of other funders in the capacity of partnerships to deliver high-quality research.

BRC leaders at all the initiatives that we reviewed feel that capital funding availability needs to be sustained for the long term, because it is crucial in making a considerable difference to BRC capacities in translational research.

10) **New capabilities**

At many BRCs, designated BRC funding has been used by trusts to make several high-profile appointments (for example, clinical academics and some chairs). One interviewee felt this has a positive effect not only for research, but also for the quality of service provision. The scheme has had the effect of raising the importance of applicants' research credibility in decisions about hiring NHS consultants. During interviews at three BRCs we were told that the scheme has encouraged trusts to dedicate their own financial resources to support protected research time in consultant job plans. In one interview, we were told that BRC support has also enabled new appointments of research nurses, administrators and database technicians. At all campuses, BRC funds are also supporting training in translational research: at some there are designated training themes. Integrated PhD studentships are being supported, allowing trainees to develop multidisciplinary skills through exposure to different disciplines (for example,

biomedical, engineering, physics) and through working in both hospital and academic environments. BRC-created training fellowships, which place clinical academics into a research laboratory (from where they can apply for funding to MRC, Wellcome and others), have been received with enthusiasm.

The BRC scheme is widely felt to have empowered investigators, and BRC support for training complements other national training schemes that are running in parallel. These include NIHR doctoral research fellowships, postdoctoral fellowships, career development fellowships and senior research fellowships. Academic-clinician training fellowships are also supported by the Wellcome Trust and the MRC, as well as by industry (for example, GlaxoSmithKline [GSK]). BRC leaders feel that a critical mass of experienced senior 'supervisors' is needed to provide research training of PhDs and MDs, as well as an appropriate research infrastructure. Some BRCs presented the need for critical mass availability as an argument for a limited number of academic health science centres (AHSCs).

11) **New organisational structures, systems and functions**

According to all interviewees, the BRC scheme and the collaboration that it has encouraged are driving the establishment of new organisational structures, divisions and functions to facilitate translational research, as well as supporting new means of communication.

At some BRCs new research roles and responsibilities for clinical staff have been created and in one centre significant changes in hospital organisation have taken place – with divisions along research theme lines that are linked to parallel changes in university structures. At many BRCs, industry and patient representatives are members of BRC advisory boards and governance committees, and BRC business managers are being appointed, helping to engage industry and the public in translational research agendas. At two BRCs we were told that the scheme has influenced the establishment of structures to enhance international competitiveness: clinical, academic and managerial staff are interacting with international experts sitting on BRC advisory boards and committees.

BRCs are bringing together partners with common interests in research, and facilitating communication through channels such as research forums, new functions such as communication managers, and, more generally, the recognition that effective ICT systems are crucial to collaborative research.

Resource-targeting, management and governance

12) **Transparency in financial and performance management**

Our interviewees reported that all BRCs are approaching research in a more businesslike manner, cleaning up their budgets and making sure BRC funding

covers eligible translational research costs. BRCs are becoming more diligent in how they monitor research spending and track the outputs from research. BRC funding is managed on strict budgetary terms, although there is some room for manoeuvre in how funding is allocated, which enables strategic responsiveness to emergent research needs and flexibility in distributing funds to university (as opposed to trust) principal investigators (PIs). At most BRCs, improvements in resource management and governance are being achieved through dedicated research offices, often shared by the trust and medical school/academic partner.

All BRCs have developed, or are developing, more streamlined processes for producing and supporting grant applications to external funders and addressing the requirements of research regulation. Some of the BRC leadership representatives we spoke to said that external advisory panels and steering committees peer-review the research taking place within a BRC (and ensure it is translational research for patient benefit and adheres to quality control measures), 'audit' performance, and monitor finances.

On reflection

- 13) This perceptions audit has been undertaken at an early stage in the BRC scheme. All interviewees feel that it is too early to expect (and therefore measure) the impacts on research productivity and patient benefit, but there have already been significant changes. New partnerships have been developed, collaborations have been strengthened, hearts and minds have been won, and new organisational and physical structures have been established to implement the BRC scheme. The scheme is about the integration of research and service, about promoting research advances leading to improvements in service, and identifying service needs to inform research agendas. It was widely felt by the BRC leaders to whom we spoke that vision, drive and an ability to think outside the box have been required to get BRCs to this stage.

BRCs are cementing stakeholder relationships, starting new research projects in priority health areas, recruiting new staff, and developing human resources to ensure long-term research and innovation capacity. The scheme is also in some cases fostering more interdisciplinary research approaches. Although all BRC leaders emphasise that measurable outputs 'cannot happen overnight', there is evidence of some incremental achievements: examples include publications; research advances that are expected to translate into clinical trials in the coming year, promising hints of some novel products in the pipeline, and improved support systems for translational research and patient benefit (for example, electronic patient record systems).

- 14) BRCs represent a complex scheme, attempting a radical shift in the attitudes of clinicians, academics and NHS managers to the complex relationships between lab-based biomedical research, clinical research and the use of research results to improve clinical care. This is a challenging task, which takes time to achieve, in a

context that has historically not always been easy. Instant transformations cannot be expected. Nor is it likely that one scheme can achieve the task alone. Our study found that there is great enthusiasm for the BRC scheme, which was widely seen as a brave new effort on the part of the Department of Health.

The following quotes from some of the representatives we interviewed illustrate aptly the general perceptions on the impacts of the scheme:

- The BRC “*has changed the medical research landscape beyond recognition over last 18 months*”.
- “*The BRCs have been a fantastic catalyst to bring about integration between the NHS and university partners. That is what was expected from the BRC movement, what they were designed to do, and what they are achieving.*”
- “*The BRC is more than just grant funding. It has enabled all organisations to take a step up. It is a declaration of faith that the NHS has at last begun to understand research.*”

However, it is important to consider the early stage of this scheme . For the benefits of *Best Research for Best Health* and of the BRC scheme to continue to be realised, the leaders of BRCs expect the NIHR to play a major role, and build on the already realised achievements in steering the health research system. We were told that important areas for NIHR engagement include:

- providing feedback and guidance to BRCs on their performance and progress
- communicating with BRCs about how they can tap into various complementary BRfBH funding streams and interact with other initiatives
- coordinating, collaborating and liaising with other health research funders
- mitigating the uncertainties of the current socioeconomic and political climate
- nurturing effective channels for enabling NHS and academic organisations that are not part of BRCs and other major NIHR initiatives to be included in the health research system – both to contribute their own expertise and share experiences, and to benefit from the advancements that centres of excellence are making
- ensuring sufficient levels of flexibility in the scheme
- continuing to encourage existing efforts for professions such as nursing and allied health professionals to engage in the research system.

Table 1. Some examples of the impact of the BRC scheme identified through interviews

BRC	A summary of the impact of BRC schemes
<i>Comprehensive BRCs</i>	
<p>Cambridge University Hospitals NHS Foundation Trust/University of Cambridge</p>	<ul style="list-style-type: none"> – NHS and academic partners have jointly revisited past research portfolios in the build-up to the BRC, and determined BRC priorities (ie themes). There is a stronger willingness to cooperate. – There has been more interest among investigators in the medical school as to how they can move research from a biomedical to a clinical research context. – The BRC is focusing on closer collaboration with PCTs for AHSC bid. – Introduced PET CT scanning through three-way support from trust, university and Merck. BRC funding helped leverage industry support. – There has been restructuring of clinical staff in trust, to introduce a designated line of research management authority in each division. – BRC funding has been used to make high-profile appointments. – 11th theme of BRC is specifically for training: Trainees at mid-levels in career pursue PhDs to become translational research specialists. PhDs are interdisciplinary. There are also jointly funded research fellowships with industry (for example, BRC/GSK support). NIHR F&S funding and BRC funding is used to establish academic clinical fellow schemes and integrated academic training clinical lectureships (the latter is 50 per cent funded by the local organisations). Nearly 50 ‘BRC posts’ for clinical academics have been created, with 50 per cent NHS support for clinical work, and 50 per cent BRC support for committed research time. – There are jointly funded training fellowships with GSK. – Contingency funding from the BRC budget has been set aside so that the trust and university can respond to emerging research priorities, over time. – Publications from BRC-supported work have been produced, and research advances are expected to translate into clinical trials in the coming year. – More rigorous research management and governance systems have been implemented.
<p>Guy's and St Thomas' NHS Foundation Trust/Kings College London</p>	<ul style="list-style-type: none"> – The relationships between the trust and King’s College London have dramatically improved as a result of the BRC. Staff at both organisations now understand far better than in the past that, “<i>if you want to do research you really need good-quality patient care. And really good patient care will only be delivered in an environment where there is research</i>”⁶. The trust and the university were two ‘parallel universes’ in pre-BRC times, but now collaborate very closely and share joint goals. – A biomedical research forum has been created for clinicians and academics to interact across all levels in partner organisations, as well as to enable them to link up with translational research experts across the UK and from overseas. – Patient advisory board allows public to have a say in research. – A BRC communications manager has been hired to help mobilise and sustain

⁶ Interview with BRC leadership representative, November 2008

	<p>interest in joint research between collaborators, and also to market the BRC to the public.</p> <ul style="list-style-type: none"> – BRC status helped secure funding from Wyeth for an early clinical development centre. – The centre has set up a joint clinical trials facility to act as a one-stop shop for industry and help retain interest and support of the pharmaceutical sector. The facility will provide centralised facilities and coordinated clinical trial regulatory and management support for trial sponsors. – Because of BRC, the trust is more committed to dedicating its own additional funds to research (for example, supporting research in consultant job plans). The trust has funded approximately 100 clinicians to use 1.5 days a week of their programmed job-plan activities for research. – The BRC is supporting the creation of clinical research consultant posts, as well as four- year PhD studentships for training junior doctors to do translational research. – More rigorous research management and governance systems have been implemented and joint research offices between NHS and academic partners have been set up.
<p>Hammersmith Hospitals NHS Trust and St Mary's Hospital NHS Trust/Imperial College London</p>	<ul style="list-style-type: none"> – The BRC has focused the minds of academic and NHS staff on the need to work more closely together. There is a realisation that the research opportunities are greater in the new combined entity. – Building on existing strengths, there is an even stronger focus on collaboration with industry, such as GSK support for an imaging centre. Academic concerns about the possible impropriety of links with industry are diminishing. – BRC funding helped develop physical facilities: it helped persuade the university to spend £80m redeveloping blocks at Hammersmith Hospital, and secured funding from Wellcome Trust and £20m from the MRC for building and renovation of clinical research facilities. – BRC allowed Imperial College to set up a foundation academic school with 40 places for PhDs and academics; 20 per cent more clinical fellows (177) and 10 per cent more clinical lecturers (59) have been appointed. All new consultant posts have three sessions per week for research. – Recruitment and retention has improved: there has been a resurgence of interest in posts and international recruitment from Europe and the US. – There are now 250 research nurses. –More rigorous research management and governance systems have been implemented .
<p>Oxford Radcliffe Hospitals NHS Trust/University of Oxford</p>	<ul style="list-style-type: none"> – BRC has had a dramatic impact in bringing the hospital and medical school leadership closer together and is helping resolve past tensions. There is a joint partnership board that meets weekly. – NHS and academic partners jointly revisited research portfolios in the build-up to the BRC, and together determined BRC priorities (i.e. themes). – Derelict hospital sites are being rebuilt and clinical research facilities located next to laboratories for biomedical studies.

	<ul style="list-style-type: none"> – There have been major changes in hospital organisational structures to facilitate organisation around research themes. – BRC funding has helped leverage funding from MRC and NIHR for a new cyclotron and a cancer imaging centre. – Joint BRC/trust funded translational research posts have been established: 52 consultants now have a research component in their NHS job plans in fields where there is no precedent for joint appointments. – More rigorous research management and governance systems have been implemented.
<p>University College London Hospitals NHS Foundation Trust/University College London</p>	<ul style="list-style-type: none"> – The process of applying to become a BRC initiative helped improve relationships between the trust and university by leading the partners to adopt a more disciplined approach to joint planning of R&D activities. – There has been a visible increase in the interest of university staff in demonstrating the impacts of their research on patient care. – New appointments facilitated by the BRC scheme have increased the breadth of research strengths. – Joint research offices for UCL/UC LH research were set up as a direct result of applying for BRC. Research governance is much better under the new arrangements, with all research activity being within specific integrated themes, in line with the partners’ joint strategy, ethical best practice and a translational aspiration.
<p><i>Specialist BRCs</i></p>	
<p>Great Ormond Street Hospital for Children NHS Trust/UCL Institute of Child Health</p>	<ul style="list-style-type: none"> – The BRC has placed translational research high on the joint agenda of the trust and academic partners, and BRC leaders feel that there is now a more appropriate balance between the pursuit of basic and translational research. New relationships, such as those with a range of departments at University College London (UCL) are also being consolidated. The BRC experience has helped bring the trust closer to UCL, and to the other BRCs under the UCL umbrella. – The BRC is pursuing increased collaboration with new disciplines in the social sciences, such as the psychology department and the health economics department at University College London, and is developing joint-funded research projects with UCH and Moorfields. – Studies to understand what is needed to increase public participation in research are being conducted. There is a strong focus on understanding and managing public needs and expectations. An external advisory group with consumer representation is being developed. – BRC financial support, together with that from charity, has been crucial for recruitment. <p>A number of clinical research fellows and clinical scientists to work in paediatric research have been recruited.</p> <ul style="list-style-type: none"> – More rigorous research management and governance systems have been implemented

<p>Moorfields Eye Hospital NHS Foundation Trust/UCL Institute of Ophthalmology</p>	<ul style="list-style-type: none"> -The BRC has acted as a catalyst to the aspiration to develop a joint organisation. University researchers are more interested in how their research can benefit patients, and in how they can contribute to and benefit from the strengths and expertise of trust staff. - The BRC’s ability to offer an environment of faster translation was an important factor in sealing a significant financial deal with GSK. -The BRC has allowed the trust and university partners to begin work on rarer diseases and translational therapeutic approaches to diseases such as scarring in retinopathy of prematurity, which would otherwise be too small in disease incidence to attract research, and yet they have enormous long-term implications for national health with no current effective treatment for very severe stages of disease. - The BRC is developing relationships with the MCRN (NIHR Medicines for Children Research Network) and LCRN (NIHR Local Clinical Research Network). It is also collaborating with other BRCs (for example, Great Ormond Street Hospital for Children NHS Trust/UCL Institute for Child Health). - The BRC is enabling international recruitment, most recently of a chair from the US - The BRC has provided a vehicle for much greater financial transparency and planning across our joint site.
<p>Newcastle upon Tyne Hospitals NHS Foundation Trust/Newcastle University</p>	<ul style="list-style-type: none"> - The BRC is enhancing the reputation of the trust as a centre of excellence, and focusing the resources of the university on the needs of the local population. There is now a stronger tie-in between local service needs and research interests The BRC has also enhanced the interests of the trust’s board in supporting research. <i>“It’s created a change in mindset, a can-do attitude”</i>.⁷ - As a result of the BRC and the growing research reputation, the trust is in a position to partner with industry in new ways. It is in the process of appointing a cardiac MRI specialist in partnership with Siemens, which will help the trust develop a research-active cardiac MRI service. - As a result of the critical mass of the BRC, the trust and university are able to provide a more attractive offering to other research funders. The trust has recently received support from Sir Bobby Robson’s charity to open a cancer clinical trials research centre. The BRC has also played a big part in winning institutional grants from other funders (for example, £5m from the MRC and £6m from the Biotechnology and Biological Sciences Research Council [BBSRC]). Capital funding provided by NIHR (£2m) as part of the BRC award has been used to leverage additional funding from the regional development agency and from the university. - Interdisciplinary collaboration between the trust and the faculties of engineering and arts are leading to new projects in the areas of assisted living technologies and social change. - The BRC has helped attract new clinical academic personnel, and this has had a positive effect, not only for research but also for the quality of service provision. BRC funds have also enabled new appointments of research nurses, administrators

⁷ Interview with BRC leadership representative, February 2009

	<p>and database technicians.</p> <ul style="list-style-type: none"> – Integrated academic training posts are helping to recruit young doctors to Newcastle. There are now clinical PhD studentships funded by the Wellcome Trust in partnership with industry. BRC funding is being used to support the training of both doctors and allied health professionals.
<p>Royal Liverpool and Broadgreen University Hospitals NHS Trust/ University of Liverpool</p>	<ul style="list-style-type: none"> – The BRC scheme has made research more integral to trust activities. More hospital NHS staff are beginning to see the benefits of working with academics, bringing in new trainees and new technologies into the NHS system (for example, for imaging), and of gaining access to joint labs. The hospital environment is becoming more receptive to research, and there is a growing interest in collaboration with academics. – There is active interdisciplinary collaboration. Some recent research projects (novel diagnosis, intelligent materials and new ways of decontaminating surfaces) are involving the chemistry and engineering departments of the university, and some sensor research work is involving academics from the physics department. – There is an external advisory group with international experts to govern the allocation of BRC budgets and facilitate the establishment of new collaborative relationships with US institutions (for example, Cornell University and Centre for Disease Control). This group also has industry membership, to facilitate interactions with private sector. – Patient representatives are now on the BRC management committee. – New clinical research facilities for phase 1 trials are being built. – BRC funding is helping leverage capital funding from North West Development Agency. – BRC funding is being used to help attract high-profile scientists and fill key positions. Currently, the BRC team includes a number of research nurses and about 25 postdoctoral scientists, who are working in the university but are actually employees of the trust. The BRC also has a small number of funded positions for medical staff. – There are hints in the pipeline of novel diagnostic technologies, intelligent materials, new ways of decontaminating surfaces. – More rigorous research management and governance systems have been implemented.
<p>The Royal Marsden NHS Foundation Trust/The Institute of Cancer Research</p>	<ul style="list-style-type: none"> – NHS and academic partners have jointly revisited past research portfolios in the build up to the BRC, and together determined BRC priorities (ie themes). – There has been a focus on building relationships with comprehensive BRCs. – People with management experience and financial expertise have been hired to BRC leadership positions. – More transparent research funding and costing mechanisms have been put in place by academic and NHS partners.
<p>South London and Maudsley NHS</p>	<ul style="list-style-type: none"> – The BRC has fundamentally changed the medical research landscape. Maudsley and IoP drifted apart somewhat in the aftermath of the South London and

<p>Trust/Institute of Psychiatry, King's College London</p>	<p>Maudsley Trust merger (into SLAM). The BRC has had a dramatic effect on re-establishing close relationships around common SLAM-IoP missions.</p> <ul style="list-style-type: none"> – University (ie IoP) attitudes to translational research are also changing, largely influenced by ring-fenced funding that the BRC scheme is providing. There are more collaborative projects between trust and university staff. Clinical studies in particular have increased in scale in the last 6–9 months. Front-line clinical staff are now designated to facilitate translational research, with appropriate ethical considerations. Research is also becoming an explicit component of clinical jobs. – BRC external advisory panel has industry representatives. – BRC-funded work is being published. – A sophisticated electronic patient record system has been set up, enabling far more efficient clinical research. BRC support has contributed to developing a search tool for all patient records in the database. The BRC has recently been awarded a £3m infrastructure grant (funded by Guy's and St Thomas' Charity and the South London and Maudsley NHS Trust) to create what is expected to be the biggest single-case register and biobank for mental health in Europe (BRC nucleus data collection and analysis facility). – More rigorous research management and governance systems have been implemented.
--	--