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There has never been such an exciting time for health research. As bio-medicine unlocks the power of genetics, informatics, and a range of new technologies, there is huge potential for the UK to lead the way in developing exciting new 21st Century cutting edge diagnostic treatments that can benefit patients across the world.

The National Institute for Health Research (NIHR) is vital to this work and is why we are committed to funding more than £1bn into a range of research and infrastructure projects across the country.

More people than ever before want to be involved in medical research. It was great to see the NIHR reach the milestone of three million NHS patients in England taking part in research studies over the last six years through its Clinical Research Network, with more than 600,000 patients taking part in clinical research studies over the last year alone. They are playing a massive part in making a difference to thousands of people's lives. Without their participation we wouldn’t be able to support the range of ground-breaking projects that we do.

But it’s not only patients benefiting from scientific research. Our world class NHS research infrastructure is attracting huge investment to the UK and ensuring that we remain a life science powerhouse. I am a firm believer that the NIHR is the jewel in the crown of our clinical research infrastructure, benefiting patients, the NHS, and our wider economy. This annual report is testament to that and showcases the fantastic work that is taking place across the country.

George Freeman MP
Minister for Life Sciences
I am delighted with this Annual Report from the NIHR. It is full of good news – from inspirational stories showing how taking part in research has transformed people’s lives to providing clear evidence of ways the NHS can increase productivity and safety and reduce spend.

For example, a new blood management system trialled and tested by our Oxford NIHR Biomedical Research Centre saved Oxford University Hospitals NHS Trust half a million pounds last year. It uses a barcode patient identification system, guaranteeing each and every patient receives the right blood in the right amount. This system, if implemented across the NHS, could create savings of more than £50m each year and is a fool-proof way of ensuring patients’ safety.

Another study, by the NIHR’s internationally renowned Health Technology Assessment Programme, highlights that the NHS could save a further £40m each year by not purchasing mechanical chest compression devices because survival rates are as good through manual heart resuscitation.

Charities are increasingly utilising the NIHR’s world-leading NHS research infrastructure and scientific expertise for their funded studies, adding immeasurable value to charity research funding and their donors’ contributions. In addition, this world-class environment continues to attract an ever rising level of life sciences industry investment. This is all vitally important.

People are living longer and this means co-morbidities and chronic long-term conditions are becoming more prevalent. Costs are rising and the NHS and other providers are increasingly stretched and under pressure to meet demand. There are real concerns about the rising rates of obesity, diabetes and dementia and an increasing need to be alert for new infectious diseases and anti-microbial resistance – particularly deep concerns of mine.

What can be done to help reconcile these unprecedented stresses and strains with helping people to live healthy, long and independent lives? I firmly believe that science and robust evidence can help us to find solutions, and the National Institute for Health Research shows us a great many.
The NIHR has embraced the revolution in technology, opening up new possibilities for research through industrial scale processing of data and samples such as in our Biosample Centre which has the capacity to store, process and retrieve up to 20 million samples for research purposes.

One great success of this year has been ‘Join Dementia Research’, a partnership between the NIHR, Alzheimer’s Research UK, the Alzheimer’s Society and Alzheimer Scotland, which enables people to register their interest in taking part in dementias research. Launched in February 2015, just over one month later it already had 7,000 people signed up to be contacted about taking part in studies. This is wonderful because only through people taking part in research can we advance our knowledge and be able to develop new and better treatments.

Last year nearly 620,000 people took part in studies supported by the NIHR’s Clinical Research Network and many more participated in studies through the NIHR’s research programmes. Over 1,000 people helped the NIHR to define and prioritise research questions, reviewing research applications or taking part in funding panels. We really thank them all. Through everyone’s generosity and altruism we are able to find the right answers to the right questions to gain the evidence that helps to make patients, health generally and the NHS better.

Finally, this report establishes just how important it is to invest in people who will lead the research advances of the future. It shows us some of the people who are inspired and skilled in seeking effective treatments for rare and neglected conditions as well as more common diseases, and those who can cut through complexities with insightful and transforming innovation.

I value and appreciate all those who make the work of the NIHR possible. The current and future health and economic challenges are great but I am confident that with the involvement of patients, the public and all our research partners, the NIHR will continue to find solutions to some of the nation’s largest and most intractable health issues.

Professor Dame Sally C Davies FRS FMedSci
The National Institute for Health Research (NIHR) is funded through the Department of Health to improve the health and wealth of the nation through research. It is a large, multi-faceted and nationally distributed organisation. Together, NIHR people, facilities and systems represent the most integrated clinical research system in the world, driving research from bench to bedside for the benefit of patients and the economy.

Since its establishment in April 2006, the NIHR has transformed research in the NHS. It has increased the volume of applied health research for the benefit of patients and the public, driven faster translation of basic science discoveries into tangible benefits for patients and the economy, and developed and supported the people who conduct and contribute to applied health research.
VISION
To improve the health and wealth of the nation through research.

MISSION
To provide a health research system in which the NHS supports outstanding individuals working in world-class facilities, conducting leading-edge research focused on the needs of patients and the public.

AIMS
- Establish the NHS as an internationally recognised centre of research excellence
- Attract, develop and retain the best research professionals to conduct people-based research
- Commission research focused on improving health and social care
- Strengthen and streamline systems for research management and governance
- Increase the opportunities for patients and the public to participate in, and benefit from, research
- Promote and protect the interests of patients and the public in health research
- Drive faster translation of scientific discoveries into tangible benefits for patients
- Maximise the research potential of the NHS to contribute to the economic growth of the country through the life science industries
- Act as sound custodians of public money for the public good

SETTING STRATEGIC DIRECTIONS AND PRIORITIES

NIHR Advisory Board
The NIHR Advisory Board’s role is to advise on improving the culture and performance of health and social care in supporting, conducting and hosting research. The Board supports the NIHR to meet the research needs of health and social care and to play its part in contributing to the country’s economic growth. The NIHR Advisory Board includes NHS chief executives, representatives of key bodies in health and social care as well as leaders of academic organisations and representatives from patient-focused organisations.

NIHR Strategy Board
The NIHR Strategy Board advises on the strategic issues relating to the management of NIHR and the implementation of the NIHR’s strategic plans. It helps to ensure that the NIHR acts as one entity and communicates effectively both externally and internally. The Board includes directors of the NIHR coordinating centres, programmes and infrastructure, and the senior management team of the Department of Health’s Research and Development Directorate.
The NIHR manages its health research activities through four main work strands:

- **Research**: commissioning and funding research
- **Infrastructure**: providing the facilities and people for a thriving research environment
- **Faculty**: supporting the individuals carrying out and leading research
- **Systems**: promoting faster, easier clinical research through unified, streamlined and simple systems for managing ethical research and its outputs

The main work strands of the NIHR are managed by the following NIHR Coordinating Centres:

- Infrastructure is managed by the **NIHR Clinical Research Network Coordinating Centre (CRNCC)** and the **Central Commissioning Facility (CCF)**
- Research is managed by the **NIHR Evaluation, Studies and Trials Coordinating Centre (NETSCC)** and the CCF
- Faculty is managed by the **NIHR Trainees Coordinating Centre (TCC)**
- Information management and research management systems are managed by the CRNCC and through a cooperative venture between the work strands and the Department of Health

The following diagram shows the NIHR health research system, with the interests of patients and the public at its heart.
These are some of the activities that have had the most significant impact during the year.

**New transfusion technology saves lives and money**
NIHR research has shown that, if implemented across the NHS, electronic management of blood delivery could reduce medical errors and save NHS resources worth over £50m per annum.

**Lucentis vs Avastin £84.5m annual saving**
An NIHR Health Technology Assessment Programme research project comparing two drugs, Lucentis and Avastin, administered for wet age-related macular degeneration (AMD) has highlighted that Avastin is around 10 times cheaper than Lucentis potentially saving the NHS £84.5m annually. As a result, the World Health Organisation has endorsed the cheaper drug Avastin.

**Manual compression trial triumph**
The finding that there is no benefit from mechanical chest compression over manual chest compression could save the NHS £40m in technology spend. The clinical trial won the US-based Society for Clinical Trials ‘Trial-of-the-Year’ award.

**Easier access to dementia research**
Join Dementia Research, a ground-breaking new national online and telephone service to help the public take part in vital dementia research, was launched in February 2015 in partnership with Alzheimer’s Research UK, the Alzheimer’s Society and Alzheimer Scotland. The service allows people with and without dementia to register their interest in studies, helping researchers find the right participants at the right time.

**A rapid response to Ebola**
NIHR Health Protection Research Units provided a rapid response to the Ebola crisis by supporting vaccine trials to help control the spread of the virus in West Africa and reduce the risk of importing Ebola to the UK. The work has since been cited in WHO guidance and informed evidence for NICE, the Science and Technology Commons Select Committee and the National Risk Assessment Behavioural Science Expert Group.

**Domestic solutions for cancer**
NIHR funding supported Creo Medical Ltd, a company that has developed a new sophisticated medical device for the safe, accurate and swift removal of pre-cancerous and early-stage cancerous growths in the bowel. This year the project was CE Marked and, if fully adopted across the NHS, could save up to £111m per year.
A three million patient recruitment milestone
The NIHR reached a recruitment milestone of three million NHS patients in England taking part in research studies over the last six years through its Clinical Research Network. More than 600,000 patients took part in clinical research studies during 2014/15.

First global and European patients
A total of 17 first global patients and 10 first European first patients were recorded for 2014/15, a strong indicator that the UK is a highly competitive environment for the life sciences industry in terms of rapid study set-up.

CONTRACTED

A new national Coordinating Centre for the NIHR Clinical Research Network
A five-year contract for a new national Coordinating Centre for the NIHR Clinical Research Network was awarded in December 2014 to provide support, including the clinical research nurse workforce, for the delivery of funded research in the NHS. The contract was awarded to a consortium comprising the University of Leeds and Guy’s & St Thomas’ NHS Foundation Trust and included an alliance between King’s College London, Imperial College London, the Universities of Liverpool and Newcastle, and PA Consulting.

New contracts awarded
In 2014, following competitive tender exercises, the NIHR awarded new contracts for the UK Cochrane Centre to the Oxford University Hospitals NHS Trust, for the NIHR Dissemination Centre to the Wessex Institute at the University of Southampton in partnership with Bazian, and for nine Technology Assessment Review teams with eight based in England and one in Scotland.

Refreshed and renewed membership of the NIHR School for Primary Care Research
Following an open competition in the summer of 2014, new membership of the NIHR School for Primary Care Research was confirmed as the Universities of Bristol, Cambridge, Keele, Manchester, Newcastle, Nottingham, Oxford, Southampton and University College London. Professor Richard Hobbs was re-appointed as Director for the school’s second five-year term.
The NIHR National Biosample Centre

The £24m NIHR National Biosample Centre was launched by George Freeman, Minister for Life Sciences, in January 2015 to provide a significant national health resource for researchers. The Centre will help researchers meet the challenges associated with establishing, running and maintaining large volumes of biological samples.

Three new NIHR Blood and Transplant Research Units

Following an open competition in February 2015, the NIHR launched three new Blood and Transplant Research Units with an investment of £12.1m to support the future needs of donors, patients and NHS Blood and Transplant.

The ‘make it clear’ campaign

‘Make it clear’, launched in May 2014, supports the NIHR’s commitment to making sure that each research study it funds has a clear and concise plain English summary. This is vital for patients, carers and the public to understand research and its possible relevance to their health and care.

A new NIHR website

The new NIHR website was launched in July 2014, with a structure based on meeting stakeholders’ requirements. The site incorporates the websites of many parts of the NIHR thereby reducing running costs, meeting the Government’s digital policy expectations and improving the corporate integration of the NIHR.

Photo Competition 2014

With the theme of ‘people and research’, the NIHR launched its first photographic competition to create its own image library. It attracted 150 entries from more than 30 people across the NIHR. The eight winning entries were selected by an independent panel including public and NIHR representatives. The Chief Medical Officer, Professor Dame Sally C Davies, chose the overall winner, submitted by James Thompson from the NIHR Wellcome Trust Clinical Research Facility.

A pilot programme to increase research capacity in dementia care

In 2014 four NIHR Collaborations for Leadership in Applied Health Research and Care launched the £1.2m Research Capacity in Dementia Care Pilot Programme to develop new leading researchers in dementia care from non-medical backgrounds.

A themed call on multi-morbidities

The NIHR and the Royal College of General Practitioners collaborated to prioritise research areas for the NIHR multi morbidities themed call for research which launched in January 2015.

Nursing Times Clinical Research Nursing Award

The NIHR sponsored the first Nursing Times Award in October 2014 to recognise the vital work of the clinical research nursing workforce in delivering high quality patient care as well as dealing with data collection, follow-ups, patient groups and industry. The winner, from 77 entries, was Lancashire Care Foundation Trust for the project ‘Developing a Clinical Research Service to Meet the Dementia Challenge’.
The Research Engagement Award
In partnership with the National Association for Patient Participation, the NIHR launched the Research Engagement Award to recognise the work carried out by Patient Participation Groups in primary care settings to promote research.

A pilot Benefits Advice Service for involvement in research
The Benefits Advice Service was launched in January 2015 in partnership with NHS England, the Health Research Authority, Involving People (Wales), the Social Care Institute for Excellence and Think Local, Act Personal, to offer personal and confidential advice on how payment of fees and expenses for public involvement in NIHR research might affect people in receipt of state benefits.

PUBLISHED

Going the extra mile: a strategic review of public involvement in the NIHR
Going the extra mile, published in March, was commissioned by the Chief Medical Officer as an independent review of public involvement in the NIHR. It assessed the achievements to date and recommended a direction for future action to further embed PPI activities at the core of the NIHR’s work.

Growth through health research
The NIHR as an engine for growth, launched by Minister for Life Sciences, George Freeman and Professor Dame Sally C. Davies to leaders from across the life sciences industry, charities, academia and the NHS in March, set out how the NIHR is contributing to economic growth through creating an internationally competitive research environment.

The Efficacy and Mechanism Evaluation Journal
The NIHR Journals Library expanded its portfolio with a new Efficacy and Mechanism Evaluation journal, publishing the final reports of science driven studies into the effectiveness of new treatments, including those that prevent disease. The programme supports research to progress through early clinical trials and on to larger, later clinical trials.
Our commitment to the ‘Gold’ approach to Open Access
In April 2014 the NIHR committed to the ‘Gold’ approach to Open Access – that any peer-reviewed research articles supported in whole or in part by NIHR funding should be made available free at the time of publication. Full compliance is expected across the NIHR within four years.

A new Integrated Clinical Academic Programme (ICA)
A new Health Education England (HEE) and NIHR Integrated Clinical Academic (ICA) Programme replaced the previous Clinical Academic Training (CAT) and Healthcare Science Research Fellowships programmes. The ICA Programme is for all non-medical/dental healthcare professionals requiring statutory registration and provides personal research training awards to develop careers that combine clinical research and research leadership with continued clinical practice and clinical development.

Increased accessibility to the NIHR Hub via mobile device
The NIHR Hub, the collaboration workspace for the entire NIHR, was made accessible at any time, from wherever it is needed, on mobile devices giving access to mail, calendar and contacts on the move, alongside the other key NIHR Hub applications.

New appointments for the NIHR Health Services and Delivery Research Programme and Public Health Research Programme
Professor Jo Rycroft-Malone was appointed as the new Director of the NIHR Health Services and Delivery Research Programme, and Professors Martin White and Frank Kee were respectively appointed as Programme Director and Chair for the NIHR Public Health Research Programme.

In the Research Excellence Framework, 2014
The Panel Reports for the Research Excellence Framework 2014, published by the Higher Education Funding Councils in January 2015 highlighted the major role played by NIHR in underpinning the outstanding quality and impact of research in health and life sciences produced by universities working in collaboration with the NHS.

Technology Assessment Journal impact factor
The impact factor of the NIHR Health Technology Assessment (HTA) journal rose to 5.116 in 2014. The Journal Citation Reports show that HTA is ranked second out of 85 in the Health Care Sciences and Services category. Impact factors are calculated yearly by Thomson Reuters on the basis of how frequently research in peer-review journals is cited in a defined period.

ACHIEVEMENTS
A YEAR OF ACHIEVEMENTS FOR OUR PEOPLE

Dame Sally Davies and Professor Raj Thakker were elected as Fellows of the Royal Society

Nilesh Samani, Director of the NIHR Leicester Cardiovascular Biomedical Research Unit, and Professor Norman Williams, Co-Clinical Director of the NIHR Enteric Health Technology Cooperative received Knighthoods

NIHR Emeriti Senior Investigators Professor Ros Smyth and Professor Cyrus Cooper were awarded a CBE and an OBE respectively

School for Primary Care Research fellow Helen Atherton received the Yvonne Carter Award for Outstanding New Researcher from the Royal College of GPs

Professor Til Wykes, National Theme Co-Lead for Mental Health at the NIHR Clinical Research Network, won the British Psychological Society Award for Promoting Equality of Opportunity

The Royal College of Psychiatrists ‘Psychiatrist of the Year’ award was given to Professor Michael Sharpe of the University of Oxford and NIHR CLAHRC Oxford theme lead

NIHR-funded researcher Dr Alexander Miras, from Imperial College London, was awarded the prestigious 2014 Nutrition Society Cuthbertson Medal

NIHR Biomedical Research Centre-supported Professor Rachel McKendry, won the Royal Society Rosalind Franklin medal

Nine NIHR Senior Investigators and six Investigators were elected as Fellows of the Academy of Medical Sciences
New and better treatments would not become available without patients and healthy volunteers taking part in research which ultimately leads to better ways to provide health and care for us all.

Many act as advisers on research, helping to identify and prioritise research and assess funding proposals, and some conduct research themselves. This internationally-leading involvement ensures that what we do reflects their needs and views, and adds immeasurable value to the quality of NHS, public health and social care research.

Over 600,000 patients took part in NIHR supported or funded studies in 2014 and the work taking place across the NIHR continues to create a research community that is more inclusive and representative of the population than ever before.
More than 1,000 patients and members of the public were actively involved in our work.

In our research programmes alone more than 110 members of the public were involved in our funding panels and committees.

More than 700 research applications received by the NIHR were reviewed by members of the public.
Safety underpins patient care and health research helps to inform the best possible provision.

The wellbeing and dignity of every member of the public continues to steer the priorities of the NIHR.

Patient safety first
This year the NIHR Greater Manchester Primary Care Patient Safety Translational Research Centre (PSTRC) with the School for Primary Care Research (SPCR) showed that a pharmacist-led, information technology-based intervention was effective in reducing the number of patients at risk of medication errors.

This approach is known as the ‘PINCER’ intervention, and is an effective method for reducing a range of medication errors in general practices with computerised clinical records. PINCER is an audit tool freely available to UK general practices by download from the PRIMIS Hub.

Since launching a PINCER query library on PRIMIS, almost 1,900 GP practices across 196 Clinical Commissioning Groups have used the resource.

The PINCER intervention has now been endorsed by NICE in its ‘Medicines Optimisation Clinical Guideline’.

Rapid response to Ebola
High quality research is critical to decision-making in the event of a major health protection incident, not least the 2014 Ebola outbreak crisis in West Africa.

In April 2014, the NIHR had established 13 Health Protection Research Units (HPRUs), as partnerships between PHE and leading English universities, to help protect the public's health and respond to emergencies.

The HPRUs responded immediately to the crisis and delivered research evidence to inform decision-making and support the flexible staffing capacity which is vital in such an emergency. They helped train and skill up the workforce in West Africa and the UK to control the spread of the virus and reduce the risk of importing the virus to the UK, and deployed the European Mobile Laboratory to support the EBOV vaccine trials.

This work has been cited in WHO guidance on the decommissioning of Ebola treatment centres, in NICE evidence summaries, informed the Science and Technology Commons Select Committee looking into Antimicrobial Resistance (AMR), and a series of five reviews has been delivered to the Cabinet Office to inform the National Risk Assessment as part of its Behavioural Science Expert Group work.
End of life care is becoming increasingly important as more people experience a lengthy period when they have symptoms or chronic problems, and while their family care for them, before they die. Research has shown that most people, more than three in five, want to be cared for and to die at home, although currently only around one in five people do.

This year a research team at King’s College London, funded through our Health Services and Delivery Research Programme analysed the death registration records of over 13 million people over a 27 year period to find out where people die and what factors might affect place of death. They found that most people currently die in hospital and that place of death varies depending on age, marital status, location, and levels of deprivation concluding inequalities exist even in end-of-life care.

The research team are now working with Public Health England to establish how best to utilise the resource they have created. Commissioning groups and service providers now have access to this high quality evidence to support the planning and delivery of end-of-life care and better meet each individual’s wishes at the end of their life.

**Football Fans in Training (FFIT)**

Being overweight or obese are major causes of ill-health. Many men are overweight or obese, but men are reluctant to join existing weight loss programmes which may be perceived as targeting women. Professional football clubs, with their large mainly male fan base, have the potential to attract and support men to lose weight and live more healthily.

This year a study looked into this very issue. The Football Fans in Training (FFIT) study evaluated a 12-week weight loss and healthy living programme for men aged 35-65 set in Scottish Premier League (SPL) football clubs, and revealed that participants lost weight and maintained significant weight loss after one year follow-up. The study showed that football-based, targeted exercise programmes for men are a cost effective means to help men lose weight and live a healthier life style.

Professor Sally Wyke, the chief investigator, said: “We now have ‘gold standard’ evidence that the FFIT programme can help men lose weight and keep it off. After 12 months, the difference in weight loss between men who did the programme and men in a comparison group, who had not yet done the programme, was 4.94kg.”

The scheme has now been rolled out across more clubs in England, and the NIHR is funding a follow-on study to look at the longer term impact.
Before any research is funded the NIHR works with stakeholders, including patients and the public, to identify the most important unanswered questions impeding better care.

We then call for targeted project applications which directly address the most important issues. The funding selection is then focused on project design, expertise and value-for-money evidence answering these pre-identified questions.

Who helps identify research questions?
We work with a broad range of stakeholders, including key decision makers in the NHS and public health community. Our work with the James Lind Alliance (JLA) Priority Setting Partnerships (PSPs), brings patients, carers and clinicians together to identify and prioritise the treatment uncertainties which they agree are the most important for research. We also invite anyone to suggest research questions using our on-line form on the website.

How we prioritise research questions
A range of reviewers, both patients and professionals, contribute to a summary of the research evidence and treatment questions in each area which is considered by an advisory group relevant to the research area. These groups bring a diverse external membership as well as research expertise, ensuring a balanced view from public contributors, clinicians and other healthcare professionals.

How funding decisions are made
The funding boards consider questions like:

- Do the study outcomes matter to patients, families, NHS managers and decision-makers?
- Will the study lead to significant improvements in health or health services?
- Is there appropriate public involvement in the design and conduct of the study?
- Is the proposal methodologically and scientifically sound?
- Does the research team have the skills and experience to complete the project?
- Is the research good value for money?

The NIHR also funds NHS needs-led research, through ‘researcher-led’ or ‘response-mode’ calls. This allows bright ideas emerging from clinical observation or following earlier promising research to receive project funding, whilst maintaining an overall funding focus on what is most needed by patients and the public.
THEMED CALLS

Each year the NIHR invites experts to submit funding applications on specific themes that require research in order to inform NHS decisions.

Mesothelioma
The NIHR call for applied research into Mesothelioma was launched in June 2014 and looked to receive proposals on any aspect of mesothelioma where there are likely to be benefits for patients or their families. By the end of March 2015, 11 proposals had been submitted.

Multimorbidities in older people
We also issued a call for research into the evaluation of interventions or services delivered for older people with multimorbidities (defined as the co-occurrence of two or more chronic conditions in one person) in January 2015. This call is in recognition of the need for further research-based evidence to support the delivery of the best possible care to people with multiple conditions and to enable them to maintain or improve their capabilities and quality of life.
The NIHR is committed to public involvement in NHS, public health and social care research, and expects the active involvement of members of the public in the work we fund.

Active public involvement helps us to ensure that research is relevant, better designed, with clearer outcomes, and uptake of new evidence is faster.

Patients and the public are involved in a range of activities such as:

- Reviewing and commenting on research funding applications
- Advising on funding and commissioning boards and panels
- Drafting and editing NIHR publications and guidance documents
- Mentoring and supporting NIHR trainees
- Interviewing applicants for training awards
- Advising on the design of research
- Being co-applicants on research funding applications
- Disseminating research

Patients and the public are core to the NIHR and its activities, and it’s important to demonstrate the impact of having involvement throughout the research process. The NIHR Clinical Research Network undertook a study in 2014: *Closed Study Evaluation: Measuring Impacts of Patient and Public Involvement and Research Quality and Performance*. This collated information from 281 studies and showed that 80 percent of studies which had patient and public involvement achieved recruitment to time and target.

So important is public involvement in the work of the NIHR, in 2014, Professor Dame Sally C Davies, Director General Research and Development and Chief Medical Officer, commissioned a strategic review of public involvement in our health, social care and public health research. The findings ‘Going the extra mile’ set out a new vision for public involvement across the NIHR.
INVOLVE, the NIHR's national advisory group on public involvement in research, is one of the few government-funded programmes of its kind in the world.

INVOLVE works closely with researchers, funders and the public to raise awareness of the value and contribution of public involvement in all research activities.

The value of the work of INVOLVE is evidenced by more than 1.2 million people visiting the INVOLVE website during 2014/15.

In 2014/15 INVOLVE developed three new resources with researchers and members of the public:

- A summary of references on public involvement in NHS, public health and social care research; Evidence Bibliography 5
- Guidance on the use of social media in public involvement in research
- A joint INVOLVE and Health Research Authority (HRA) resource looking at the information researchers provide on public involvement in funding applications; Public involvement in research applications to the National Research Ethics Service

INVOLVE also piloted the Benefits Advice Service for Involvement a free, confidential service offering personal advice and support on how payment of fees and expenses for public involvement might affect people in receipt of state benefits.

The NIHR, in partnership with others, offers this service to members of the public involved with NIHR organisations or NIHR funded research projects and staff who are supporting members of the public to get involved. The pilot is managed by Bedford Citizens Advice Bureau.
GenerationR was born out of the National Young Person’s Advisory Group (YPAG), made up of local groups across the UK.

GenerationR was initiated by NIHR’s Clinical Research Network and was set up to provide a forum where young people could provide their views and support the design and delivery of paediatric research in the UK and Internationally.

This year members of GenerationR YPAG have been working directly with researchers around the country to provide master classes with Sir Iain Chalmers and Jenny Preston, Clinical Research Network Patient and Public Priority Lead, teaching researchers how to involve young people and families in research.

GenerationR is now an internationally recognised initiative and has recently developed closer international links with other YPAG groups to form an International Children’s Advisory Network: iCAN.
ENCOURAGING PATIENTS TO PARTICIPATE

Powerful patient stories
In July 2014, the Clinical Research Network launched ‘patient stories’ to increase public understanding of how and why patients get involved in research. The campaign aims to give patients, members of the public and carers a voice to demonstrate how taking part can be a positive and sometimes life changing experience.

‘Patient stories’ has attracted a wide range of participants who are keen to share their inspirational stories.

Bethan Davies, 33 from Newcastle, decided to get involved with the campaign after her first ever experience of taking part in clinical research alongside her daughter, Alicia. Alicia was the 1,000th baby to participate in the multi-centre trial at Newcastle Royal Victoria Infirmary Special Care Baby Unit. The trial looked at the most effective way to feed pre-term or very low weight infants. In her patient story Bethan explains why taking part was so important for Alicia.

Nineteen people including Bethan have helped to raise the profile of research in 2014 through our patient stories.

Making it clear
Research is a huge and often complex subject, but the NIHR believes it should be explained in an understandable way so that everyone can understand what it means for them or their loved ones.

From 14 May 2014 a good quality plain English summary is required as part of every standard research application form. Our ‘make it clear’ guidance has been developed for researchers on how to write a summary, and for reviewers and board and panel members on how to assess a summary.

PATIENTS AND THE PUBLIC...
Spotlight campaigns
In 2014/15 the Clinical Research Network introduced a series of specialty-focused ‘spotlight’ campaigns based around national and international health days.

The online information resources for patients, health professionals, researchers, and the life-sciences industry present an opportunity to build and reinforce links with health charities and associations.

Spotlight on Hepatitis was the first resource, launched in July 2014 on World Hepatitis Day. The campaign used patient stories to showcase recent breakthroughs in Hepatitis C research and describe some of the clinical research studies which are leading to better treatments for Hepatitis C patients.

Spotlight on COPD (Chronic Obstructive Pulmonary Disease) followed in November on World COPD Day. A key feature of this campaign was the ground-breaking Salford Lung Study – a major advance in the way we do clinical trials combining the robust scientific methodology of a randomised controlled trial with the benefits of observing ‘real patients’ in a ‘real-setting.’

Spotlight on Epilepsy highlighted innovative epilepsy studies on World Purple Day in March 2015. The campaign featured the revolutionary EpiPGX research project which is looking at optimising treatments for epilepsy patients using personalised medicine.

A gateway for patients
The NIHR wants as many people as possible to take part in clinical research as this is the way we find out which interventions and treatments work best and have the potential to improve care.

The UK Clinical Trials Gateway is a service designed to enable patients and clinicians to find out about ongoing (and closed) clinical trials that may be of interest to them. It draws data from a range of different sources and is unique in that it augments information on the studies with additional lay summary data designed to make the purpose of the study more easily understandable. The Gateway has grown significantly since inception, with 410,000 unique visitors viewing nearly 1.3 million pages and downloading 15,000 copies of the mobile app by the end of March 2015.

In 2014 as part of the re-procurement of the NIHR Information Systems Function, the Department of Health committed to a major update to the UK Clinical Trials Gateway. A refreshed Project Board was established and started work on revising both the functionality and the design of the system for delivery in late 2015.

OK to ask about clinical research
The NIHR’s ‘OK to ask’ national campaign continued this year, encouraging more patients and carers to ask about research opportunities that could be available to them and their family and friends.

International Clinical Trials Day in May 2014 was celebrated across the NIHR and NHS with local events. One example was at Leeds Musculoskeletal Biomedical Research Unit where patients and carers met with researchers and research nurses and had the chance to take a tour of the gait lab, learn about MRI images and experience demonstrations of ultrasound by specialist staff.
ENCOURAGING A RESEARCH-ACTIVE NHS

The Guardian Clinical Research Zone continues to play an important role for the Clinical Research Network, providing an alternative platform to raise awareness of clinical research amongst NHS leaders and health professionals.

The site provides a home for publishing the annual NHS Trust research activity league table, and this year we also used it to bring attention to the roles of a range of clinical research professionals, from data architects to research nurses.

For example, the role of the clinical research nurse was explored through an article, online Q&A and an animated film. This helped us bring nurses together and develop work that could be shared across social media, providing multiple opportunities to promote clinical research.

In 2014 the Clinical Research Network also sponsored the HSJ Clinical Research Impact award for the fourth consecutive year. The award celebrates the inspirational work that’s taking place across the NHS to make clinical research a core activity and deliver real benefits for patients.

Portsmouth Hospitals NHS Trust won the award after demonstrating how it has introduced numerous new initiatives throughout the organisation to maximise the impact of research. Dr Greta Westwood, Deputy Director of Research of Portsmouth Hospitals NHS Trust, explained why she believes: “The more research active an organisation is, the better the outcomes are for patients.”

Danetre Medical Practice (primary care) was highly commended for achieving a step-change in research activity and implementing strategies to make clinical research an integral part of what this general practice does on a daily basis. Dr Amandeep Heer, GP, and Laura Hopwood, Research Nurse, described their journeys to make research a core activity of GP services.
SPOTLIGHT ON: DEMENTIA

In 2012 the Prime Minister David Cameron issued a challenge on dementia, to deliver major improvements in dementia care and research by 2015. In February of this year the Government issued a fresh challenge to 2020. The PM praised national efforts on research as having been world leading, with major research and infrastructure programmes now in place, supported by a doubling of research spending on dementia.

The year saw significant achievements by the NIHR in terms of increasing participation and supporting research in the NHS.

People are participating

As government and charity funding for dementia research has doubled, researchers urgently need more people to participate in studies. A significant step in supporting the public in taking part in research has been the development of an online and telephone service called Join Dementia Research, which was launched in February 2015. The service, developed by the NIHR in partnership with the charities Alzheimer’s Research UK, Alzheimer’s Society and Alzheimer Scotland, allows people with and without dementia to register their interest in being approached about research.

With over 7,000 people already signed up to Join Dementia Research by March 2015 and 42 research studies using the system to recruit participants, the initiative has been a vital step in boosting the numbers of people enrolled in dementia research.

In 2014/15:

More people than ever before were recruited to dementia studies.

A record-breaking 21,499 people took part in dementia research supported by the NIHR, a huge increase of 58% from last year.

78% of studies achieved their recruitment targets within agreed timescales.

81 new dementia studies were adopted onto the NIHR portfolio and were supported by the Clinical Research Network (CRN), with a total of 202 studies open for recruitment, up from 182 in 2013/14.
More dementia researchers
As demand for taking part in dementia research grows, so does the need for more people skilled in this vital research area. The NIHR has invested significantly in expanding the dementia research workforce, through our Integrated Academic Training Programme for medical researchers, and also via a new scheme led by the NIHR Collaborations for Leadership in Applied Health and Care (CLAHRCs), which is training nurses, social care and allied health professionals to increase capacity and skills in all areas of dementia research.

Dementia research in our Translational Research Collaboration (TRC)
The NIHR Dementia TRC, announced as part of the Prime Minister’s Challenge on Dementia, sets out measures to deliver major improvements in dementia care and research by 2015. The TRC brings together four NIHR Dementia Biomedical Research Units (BRUs), as well as six NIHR Biomedical Research Centres (BRCs) with dementia-related research themes.

During the year, a UK consortium involving a number of TRC-Dementia centres was invited to tender for the European Innovative Medicine Initiative-European Prevention of Alzheimer’s Dementia (IMI-EPAD) initiative. It successfully secured the IMI research contract and delivered a significant proportion of the Alzheimer’s disease cohort and subsequent adaptive clinical trial.

Other notable work this year includes:
- Establishing the first European capability for the Good Manufacturing Practice (GMP) of a diagnostic tau Positron Emission Tomography (PET) radiotracer at the BRU at Cambridge where the first human imaging studies using this radiotracer have taken place. This radioligand supply network from Cambridge has saved other dementia TRCs significant costs and investment in local radiochemistry development, and has helped to take the dementia TRC to the international forefront of this research area
- Achieving a first-in-human demonstration of diagnosis with a new PET radioligand targeting activated astrocytes by the BRU at Imperial. Initial studies in dementia patients are expected by Spring 2016
Dementias Platform UK

The Dementias Platform UK (DPUK), launched in March 2015, is a £53m public-private partnership between the Medical Research Council and industry, which is supported by the NIHR’s Dementia Translational Research Collaboration and the MRC-NIHR National Phenome Centre. Leading researchers from UK universities have teamed up with drug companies including GlaxoSmithKline, Janssen Research & Development, AstraZeneca-MedImmune, Ixico, SomaLogic and Araclon, and are working together to transform the best research into the best treatments as quickly as possible.

The DPUK has created the world’s largest population study for use in dementias research, bringing together two million participants aged 50 and over, from 22 existing study groups within the UK. Included are people from the general population, people known to be at-risk of developing dementia, and people diagnosed with early-stage dementia.

DPUK is an integrated way of conducting dementia research, to help world leading experts deliver better studies more quickly and at a lower cost. Their aim is to accelerate research and knowledge leading to new drug treatments and therapies that could prevent or delay the onset and progression of dementias.

Global Action Against Dementia

In December 2013 Health Ministers from the G8 countries outlined national, sub-national and local responsibilities at the Dementia Summit to stimulate innovation, development and commercialisation of life enhancing drugs, treatments and care for people with dementia, or at risk of dementia, within a generation.

The World Dementia Council (WDC) was established to progress these responsibilities by providing independent, non-governmental advocacy and global leadership. The WDC has convened five times in 2014/15 culminating in the first WHO Ministerial Conference on Global Action Against Dementia. Professor Martin Rossor the NIHR National Director for Dementia Research has been working closely with the WDC and the OECD to progress the initiatives on Open Science and Data.
The NIHR’s mission is to improve the health and wealth of the nation through research. The contribution the NIHR makes to the economy through attracting investment by the UK and global life sciences industry, and through collaboration with charities, is vital. NIHR’s infrastructure in the NHS and integrated health research system contributes to driving the nation’s economic growth.

Because of this, the Government has continued to allocate a substantial research budget to the NIHR and the NIHR is committed to achieving the best possible value and return on investment in terms of health and wealth for every pound it spends.
Health research taking place in the NIHR’s NHS infrastructure has continued to increase in volume, enabling faster translation of basic scientific discoveries into tangible benefits for patients and the economy. This has been another year of increased productivity, with the number of projects enabled by the Clinical Research Network rising from 2,822 to 4,349, the number of commercially-sponsored studies growing by 260 per cent and the total number of patients recruited rising to more than 260,000.

Since 2008/09:
The NIHR’s infrastructure has attracted £4.5bn of research investment from industry, the Government and charities over and above that provided by the Department of Health.

- Attracted nearly £1bn external research investment
- Attracted more than £41m from intellectual assets
- Generated in excess of £41m from intellectual assets
- Produced more than 10,600 publications
- Had 1111 patents granted
- Had 114 licensing deals conducted
- Involved more than 260,000 participants in research
- Had 111 patenting deals conducted
- Attracted more than 3,000 industry studies

ECONOMIC GROWTH
The NIHR as an engine for growth, was published in March 2015, at an event hosted by George Freeman MP, Minister for Life Sciences, and the Chief Medical Officer, Professor Dame Sally C Davies.

The publication brings together the evidence provided by leaders from across the life sciences industry, charities, academia, and the NHS, and illustrates the many ways the NIHR contributes to growth. These include:

- Supporting collaborations and contract research studies with the life sciences industry to optimise the research environment for business
- Creating the research environment that supports the nation’s international competitiveness, with the NIHR Clinical Research Network achieving first global patients in 17 multi-centre commercial studies and first EU patients in 10 European studies in 2014/15
- Attracting, developing and retaining a highly skilled health research workforce, a key enabler for growth by increasing human capital
- Providing the clinical evidence to help the NHS and public sector to make efficient use of resources. For example, a recent RAND Europe report identified 10 high-impact research studies funded by the NIHR Health Technology Assessment (HTA) Programme and concluded that if the results of these studies were fully implemented in the NHS for one year, they would produce a net-benefit of £3bn
- Providing the research evidence that contributes to establishing a healthier workforce and wider population, ultimately helping people to stay healthy and in work, or to return to work as quickly as possible, contributing to the economy through increasing productivity
The UK is the only country in the world where health data has been recorded for every person registered with the health service, from birth to death, since the 1940s. This amounts to a wealth of data that researchers can learn from to help save lives.

During 2014/15, the NIHR took forward a range of key initiatives that directly support and strengthen life sciences research on a national level.

A BioResource for Research
The NIHR BioResource provides a national cohort of patients, their relatives and volunteers who are willing to provide clinical information and samples that will enable them to be recalled by genotype and phenotype for early translational (experimental medicine) research studies and early phase trials.

The NIHR BioResource now includes eight NIHR Biomedical Research Centres across England: Cambridge, Guy’s and St Thomas’, Imperial, Leicester, Oxford, South London and Maudsley, University College London Hospitals; with Newcastle joining the initiative in April 2014, specialising in diseases associated with ageing.

In 2014/15 alone the BioResource supported more than 50 Stage 2 studies, recalling existing volunteers and patients to research studies or clinical trials, including several multi-centre and industry studies. In 2014/15 a total of 37 scientific publications resulted from Stage 2 studies.

Over 61,000 healthy volunteers and patients have been recruited to the NIHR BioResource, including approximately 8,600 in rare diseases, and R&D approval for rare diseases research studies has been granted in 37 NHS Hospital Trust sites.

Blood donations trial
The INTERVAL study was set up in 2012 to compare the effects of donating blood at different time intervals. This randomised controlled trial, supported by funding from the MRC/Wellcome Trust, NHS Blood and Transplant, and the NIHR Cambridge Biomedical Research Centre, has successfully recruited 50,000 participants from 25 locations across England.

The INTERVAL participants will provide a substantial number of healthy volunteers to local centres and be of benefit for large or complex studies supported by the NIHR BioResource.
**100,000 Genome Project**

The NIHR BioResource is working with Genomics England Limited (GEL) on the 100,000 Genome Project. In 2014/15 the BioResource and our Rare Diseases Translational Research Collaboration, working with other parts of the NIHR, facilitated the delivery of the 100,000 Genomes Project pilot, and has delivered the sequencing of over 4,600 whole genomes. The work undertaken as part of the pilot directly led to two families being diagnosed with rare conditions. These families are now receiving personalised treatment, and their involvement in the project is helping prevent future generations from suffering uncertainty about similar symptoms.

**A wealth of data – a wealth of research uses**

Studies using the Clinical Practice Research Datalink (CPRD), a joint venture between the NIHR and the Medicines and Healthcare Regulatory Authority (MHRA), have provided data to 18 pharmaceutical companies and resulted in the approval of 153 studies and more than 253 research papers and abstracts.

**In 2014/15, CPRD:**

- Saw a 10 per cent increase in applications for use of CPRD data, culminating in 247 approved protocols for new observational studies
- Customers now include 17 of the top 20 global pharmaceutical companies, in addition to the established relationship with both UK and international academics
- Data used in research studies secured two shortlisted publications in BMJ UK ‘research paper of the year’
- Data used for the management, investigation and referral for most cancers largely, and in some cases entirely, from General Practice Research Database and CPRD studies was used in NICE Guidance for Suspected Cancer: recognition and management of suspected cancer in children, young people and adults

The **NIHR National Biosample Centre** was launched in January 2015 by George Freeman, Minister for Life Sciences, with a £24m capital grant from the Department of Health. The Centre has the capacity to store up to 20 million samples and provides high throughput and high quality biosample processing, storage and retrieval services.

The **MRC-NIHR National Phenome Centre (NPC)** provides a national resource for both the academic and commercial biomedical research community. Recognising a national requirement for enhanced clinical sample phenotyping, a call was issued in November 2014 and awards went to six new pilot projects in March 2015:

- The study evaluating the impact of the microbiota in radiation enteropathy
- The study for metabolic profiles in prediction of hepatocellular carcinoma
- The study for metabolic profiling in cerebral small vessel disease
- The Renal Transplant study looking for urinary metabolic signature to diagnose acute rejection following renal transplantation
- The Asthma study for urine biomarkers in the stratification of severe asthma
- The Rheumatoid Arthritis study for metabolic profiling of methotrexate response in rheumatoid arthritis
The NIHR Health Informatics Collaborative (HIC) is a programme within our Oxford, Cambridge, Guy’s and St Thomas’, UCL and Imperial Biomedical Research Centres. These Centres, which cover a patient population of some 20 million, are sharing data in order to realise benefits to translational health research and, ultimately, to frontline clinical care, NHS health services planning, patients and the public.

The programme has already delivered a governance framework for data sharing, developed a set of data models or data standards for five key therapeutic areas – acute coronary syndromes, ovarian, cancer, hepatitis, renal transplantation and intensive care – which describe the data collected in the course of routine care, and created a common metadata catalogue, describing the provenance and intended interpretation of the data held locally.

This year, the HIC achievements include:

- The initiation and support of exemplar studies in each of the therapeutic areas with the objective of demonstrating and testing the new capability through the delivery of novel research outcomes and/or significant insights into data quality and service delivery
- Expansion of two of the five therapeutic areas – ovarian cancer and viral hepatitis – to address four other cancers identified for the NHS Genomic Medicine programme and an initial set of pathogens selected for the Public Health England genomics programme
- The re-use of data definitions created for the five therapeutic areas in the establishment of data models for a range of rare, inherited disorders, again as part of the NHS Genomic Medicine programme / UK 100,000 Genomes Project
- The ongoing extension of the metadata sets for the repositories to include summary metadata on repository contents sufficient for the purposes of study design and feasibility evaluation, and the publication of these sets via a federated collection of data catalogues
- The ongoing development of data access and sharing arrangements across the five centres, in alignment with other NIHR work streams
INFRASTRUCTURE FOR EXPERIMENTAL MEDICINE RESEARCH

The NIHR’s world-class infrastructure in the NHS and partner universities play a crucial role in translating discoveries from basic science into effective and cost effective health and economic benefits.

The nation’s leading research teams across the infrastructure work with the life science sector to realise these benefits. These include teams in NIHR’s Experimental Cancer Medical Centres, Clinical Research Facilities for Experimental Medicine, the Translational Research Partnerships, Biomedical Research Centres and Units, Healthcare Technology Cooperatives, Diagnostic Evidence Cooperatives and Translational Research Collaborations.

The NIHR Office for Clinical Research Infrastructure (NOCRI) enables the global life sciences industry and charities to access world-leading facilities for their research.
The NIHR Office for Clinical Research Infrastructure (NOCRI) is a unique resource for the global life sciences industry and charities.

As well as providing access to NIHR’s world-leading research facilities it enables rapid connections to the country’s leading investigators and well characterised cohorts of NHS patients.

Since it was created, NOCRI has generated contracts with industry which, when delivered, will total more than £20m of life sciences research.

NOCRI works with the pharmaceutical, biotechnology, medical devices, and diagnostics industries as well as charities to develop opportunities for partnership and collaboration. This includes signposting companies to experimental and applied health research experts that help companies understand the potential of their study, shortening life-cycle times and enabling earlier go / no go decisions.

Throughout the year, NOCRI has continued to work with a wide range of industries and charities to maximise their contribution to the nation’s economic growth and to promote the UK’s environment for clinical research on an international stage.

This year NOCRI has:

- Introduced 46 new companies to the NIHR Infrastructure
- Provided information and briefings that have supported government officials and high-level policy-making
- Supported or delivered 20 conference and events
- Established three new groups to grow talent, share best practice and improve outcomes for NHS patients:
  - The NIHR Statistics Group, growing this community to over 300 members. Working nationally, the group published six educational articles and a paper in an open access journal (RIPOSTE – a framework for improving the design and analysis of laboratory-based research)
  - A Cancer and Nutrition NIHR infrastructure collaboration with Cancer Research UK and the World Cancer Research Fund which is exploring the important role that nutrition plays in the prevention and treatment of cancer
  - The Diagnostic Evidence Cooperative (DEC) Methodology Group, bringing together methodologists to improve how diagnostics are evaluated and help form consensus on best practice in this area, which is important for NICE and the NHS to ascertain which diagnostic tests to use
Bridging gaps, unlocking opportunities

In December 2014 NOCRI supported the NIHR Rare Diseases Translational Research Collaboration (TRC) on a unique invitation to industry for collaborative in-depth phenotyping projects. By the end of March 2015, 19 expressions of interest had been submitted to NIHR Rare Disease TRC with 11 full applications invited for submission, and funding agreed for the first successful application.

NOCRI also continued to work closely with the Dementia TRC (TRC-D), creating materials to support promotion at industry events such as the MRC UK Dementias Platform launch event in October 2014. More information about this is found in the ‘Spotlight on: Dementia’ on page 27.

Enabling research opportunities and investment

NOCRI has also worked to connect the NIHR infrastructure and companies seeking to conduct clinical research in the UK through the delivery of the NIHR Translational Research Partnerships (TRPs). The TRPs have developed a portfolio of studies with over £12m investment committed from industry.

2014/15 has seen:

- A strategic partnership with Vectura in asthma
- Five new TRP research projects, including major clinical studies in rheumatoid arthritis and the UK’s first commercial trial of a new treatment for Sjögren’s syndrome, a rare disease which otherwise may not have received funding

NOCRI has also developed marketing offers to industry in specialist technology areas including:

- The NIHR offer for In Vitro Diagnostics (IVD), with a specific focus on the role of the Diagnostic Evidence Co-operatives (DECs) in the development pathway of new commercial IVDs
- A comprehensive NIHR offer for diagnostics and medical technologies, strengthening relationships with major stakeholders including NICE, The British In Vitro Diagnostics Association, The Association of British Healthcare Industries, NIHR Horizon Scanning Research & Intelligence Centre and UK Trade and Investment. NOCRI also collaborated with the Royal College of Surgeons to integrate their activities for surgical devices into the UK’s offer for the medtech industry
**SPOTLIGHT ON:**

**EXPERIMENTAL CANCER MEDICINE CENTRES**

The Experimental Cancer Medicine Centre (ECMC) Network is made up of 18 centres across the UK, jointly funded by Cancer Research UK (CRUK), the NIHR in England and the Health Departments for Scotland, Wales and Northern Ireland.

Since 2007 the initiative has enabled pioneering, early-stage clinical trials and the translation of scientific discoveries into new cancer treatments for patients.

**International collaborations extend cancer therapy**

In 2014 Astex Pharmaceuticals initiated discussions with CRUK and the ECMC Network in relation to the new Combinations Alliance initiative.

Astex now has a framework agreement in place covering two of the company’s mid to late stage oncology products, and the first batch of investigator-driven proposals have been reviewed and approved by the CRUK New Agents Committee. The first of the approved combination studies is now in advanced planning stage and paves the way forward in cancer therapy.

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In 2014/15:

- **140** companies used the ECMC Network
- **2,500** patients were recruited
- **110** new early phase / randomised trials were undertaken
- **300** trials were conducted
- **75%** of studies were sponsored or funded by industry
Amplifying drug company alliance

Even with their significant resources, drug companies can only explore a fraction of all possible treatment combinations. The ECMC Network provides a solution.

The ECMC Combinations Alliance was established in 2010 with Astra Zeneca (AZ) as the founding partner. This year the alliance expanded to seven partners with Lilly, Astex, MedImmune, Biothera, Verastem and Clovis joining AZ. The CRUK Centre for Drug Development works with these partners to set up investigator-led combinations trials across the ECMC network, based on ideas generated from UK clinicians.

The Combinations Alliance facilitates the testing of novel combinations of oncology drugs, both those already approved, and those still in clinical development. It helps companies to explore a broader range of options than could be undertaken by the company alone. It also allows ECMC investigators to test rational combinations of drugs still in development but originated by different companies, a task that can otherwise be challenging to achieve prior to approval of the different drugs. This can help to bring novel combinations to patients sooner than otherwise would have been the case.

In 2014/15 the Combinations Alliance portfolio had 10 early phase trials open to recruitment, including three radiotherapy combinations, with another four trials in set up.

National molecular pre-screening

In the national molecular pre-screening network, late stage lung cancer patients are tested for a number of genetic aberrations in 28 cancer-related genes on a Next Generation Sequencing (NGS) panel.

During 2014/15, 12 centres participated in the national pre-screening initiative. The programme takes advantage of a hub and spoke model, where feeder hospitals are coordinated by the respective ECMC in their region. So far, around 50 NHS trusts are involved in the programme, effectively doubling the size of the network and meaning the Hubs are able to test for a larger number of genomic aberrations that have clinical relevance in lung cancer. Up to May 2015, 590 samples had been sent for analysis to the new NGS panel and 360 results had been released.

Partnerships with industry

Southampton ECMC and The CRUK Centre for Drug Development entered into Clinical Development Partnerships with three new industry partners, Amgen, Asterias Biotherapeutics, and BioInvent. These alliances ensure that promising drugs that might not otherwise be advanced are brought back into active clinical development.

Newcastle ECMC with Clovis Oncology and in collaboration with eight other centres across the ECMC Network has been integral to the development of the first-in-class PARP inhibitor rucaparib. In early 2015 the US Food and Drug Administration granted Breakthrough Therapy designation which expedites the development and review of drugs to treat serious or life-threatening medical conditions. Rucaparib is now in active investigation as a new treatment for high-grade serious ovarian cancer.
NIHR Clinical Research Facilities (CRFs) for Experimental Medicine are dedicated purpose-built facilities that support world-class experimental medicine research to translate scientific advances into benefits for patients and support life sciences industry research.

NIHR funding meets the necessary NHS costs of CRFs including provision for clinical research nurses, technicians and facility running costs. This funding gives patients access to brand new treatments, diagnostics and care, and is crucial in helping to secure sustainable economic growth by supporting research funded by the life sciences industry.

**Asthma trial first**

The Southampton Wellcome Trust CRF delivered the first ever clinical trial in asthma of inhaled interferon beta as a treatment to reduce severity and duration of acute disease exacerbations. This therapy, developed by the University of Southampton spin out company Synairgen, is based on the research led by Professor Donna Davies showing that the airway epithelium of asthmatics does not generate sufficient interferon during viral infections. Normally the airway epithelium generates interferon that affords protection from the virus. This research was published in the world’s leading respiratory journal, The American Journal of Respiratory and Critical Care Medicine, in 2014.

**The value of funding is in the bank**

By 2015, the Exeter NIHR Clinical Research Facility recruited 8,000 volunteers into the Exeter 10,000 biobank and research register – a large collection of data and tissue samples, essential for research purposes. The impact of this investment has meant that:

- 90 different projects have benefited from this pre-screened database of research-ready volunteers, with more than a 50 per cent response rate to studies
- Over 20,000 samples have been provided for biomarker analysis
- More than £10m of external funding has been awarded to utilise the data generated by this project
NIHR Biomedical Research Centres (BRCs) and Biomedical Research Units (BRUs) contribute significantly to the health research ecosystem by working with partners to underpin, support and conduct early translational and experimental medicine research.

The substantial levels of sustained funding they receive creates an environment in which scientific endeavour thrives, and it attracts the nation’s foremost health researchers, producing world-class results and contributing to the international knowledge economy.

Since 2008/9, through collaborations between industry and NIHR BRCs and BRUs, over 300 patents have been granted, over 40 licensing deals have been conducted, over 32,000 scientific papers have been published and an estimated six million patients have taken part in their research studies.

In 2014/15 BRCs have:
- Attracted over £750m external research investment
- Generated more than £28m from intellectual assets
- Had 95 patents granted
- Conducted 36 licensing deals
- 5,400 active research projects
- Produced over 5,500 publications

In 2014/15 BRUs have:
- Attracted over £165m external research investment
- Generated more than £9m from intellectual assets
- Had 13 patents granted
- Conducted 10 licensing deals
- 1,305 active research projects
- Produced in excess of 2,000 publications
Development of an image-guided catheter system for the heart
The NIHR Guy’s and St Thomas’ Biomedical Research Centre has worked in partnership with Philips Research and Imricor Medical Systems to develop a robotic image-guidance system for electrophysiological procedures in the heart. The system uses a novel catheter device which has been designed to allow flexible steering within the heart chamber. All components of the catheter have been made to be compatible with magnetic resonance imaging (MRI) and this allows fast localisation of the device through tracking with MRI. Initial pre-clinical testing has led to a first-in-man study of the catheter system. The expertise within BRC has been pivotal in translating the initial research in biomedical engineering into a device that can be evaluated in clinical practice.

A world-first for prostate cancer
Prostate cancer is one of the most common cancers in men in the UK. Now life-changing research conducted by our BRC at the Royal Marsden and Institute of Cancer Research could boost patient survival by 30%.

Strontium-89 and other radiation therapies have been used to treat the spread of prostate cancer for decades. They provide pain relief but their use suppresses bone marrow production of red blood cells.

A new drug called radium-223 has been trialled for men with advanced prostate cancer. Radium-223 acts like calcium and sticks to the bone, targeting the tumours and enabling men to live longer and experience less pain with fewer side effects.

The drug was so successful that the trial phase was stopped early once it became clear that the drug was effective. In December 2014, draft NICE guidance approved radium-223 for the treatment of men with bone metastatic castration-resistant prostate cancer (CRPC).

Radium-223 has been licensed and is now available for use in England via the Cancer Drugs Fund.
Eight NIHR Healthcare Technology Co-operatives (HTCs) develop concepts, demonstrate proof of principle and devise research protocols for new medical devices, healthcare technologies or technology dependent interventions for under-served patient groups.

In response to the Chief Medical Officer’s 2012 annual report ‘Our Children Deserve Better: Prevention Pays’, which called for greater paediatric focus in all aspects of health service innovation, the Department of Health recognised that there was an opportunity to focus on medical devices and healthcare technologies intended specifically for children.

Following a limited open competition, additional funding of up to £50,000 per annum was awarded from 1 February 2015 to five of the HTCs for the remaining duration of their contract to stimulate research activity in paediatric healthcare technologies.

Real time diagnosis of precancerous colon polyps
In collaboration with the NIHR Colorectal Therapies Healthcare Technology Co-operative, SpectraScience has developed the WavSTAT4 Optical Biopsy System® for the real time diagnosis of precancerous colon polyps.

WavSTAT4® uses laser induced autofluorescence to obtain an objective, In Vivo analysis of polyps during colonoscopy. WavSTAT4® is CE marked and is currently in use at St James’s University Hospital in Leeds, as part of a European trial. A full commercial launch in the UK is expected during 2015.

WavSTAT4® has the potential to distinguish between hyperplastic (benign) and adenomatous (precancerous) polyps during colonoscopy and is expected to reduce the risks associated with polyp removal during the colonoscopy. If WavSTAT4® proves to be effective, it has the potential to reduce both the number of histological biopsies and the costs involved in processing them.

The world’s first virtual lower urinary tract symptoms assessment clinic
‘Bladder diaries’ provide a useful tool for clinicians in assessment, diagnosis and triage decisions in lower urinary tract symptoms. However very few patients complete the diaries. A new medical device overcomes this by enabling patients to monitor their own health at home and on the move through an app, which automatically uploads the data to a cloud-based server which is immediately accessible by clinicians. This ELAROS 24/7 service, devised by the NIHR Devices for Dignity HTC in collaboration with partners is designed to be integrated into GP practices, special continence providers, community health organisations and acute trusts.
Four NIHR Diagnostic Evidence Co-operatives (DECs) are focused on medtech and diagnostic devices.

The DECs are centres of expertise that support the generation of evidence on commercially available *In Vitro* Diagnostic Devices (IVDs). This is necessary for the NHS and IVD manufacturers to enable patients to access the most appropriate treatments more quickly and to help the NHS make the best use of its resources.

**Novel technology to diagnose acute coronary syndrome**

Capillary Film Technology (CFT), a UK life sciences product development company, has developed a novel technology to diagnose acute coronary syndrome. A fully quantitative multiplexed point-of-care microfluidic testing technology prototype has been developed and needs to be clinically validated in UK hospitals to support regulatory approval. The London DEC is working with CFT to generate the evidence for use of the device in the NHS. This work is funded from a Phase 2 Small Business Research Initiative Healthcare grant.

**Development of a rapid, point-of-care test for influenza**

The global diagnostic device company Alere Inc. approached the Newcastle DEC about evaluating the sensitivity and specificity of its rapid point-of-care influenza test.

The company had preliminary data from an initial small study that ran during the 2013/14 flu season and was keen to evaluate the test in a larger multi-centre study during the 2014/15 flu season.

The DEC designed a new study protocol, developed the statistical analysis plan, and provided recruitment documentation and electronic data capture using its Work Packet System. Recruitment was completed to time and target in March 2015, with 812 patients enrolled across four sites. The data from the study will allow refinement of the technical performance of Alere’s test, analysis of potential economic impact, and potentially more rapid implementation of the test into clinical practice.
NIHR Translational Research Collaborations (TRCs) bring together groupings of expertise from across different parts of the NIHR infrastructure to drive forward translational research in specific therapeutic areas.

Life science partners now have access to two TRCs to help tackle experimental medicine challenges.

The NIHR Dementia TRC, announced as part of the Prime Minister’s Challenge on Dementia, sets out measures to deliver major improvements in dementia care and research by 2015. It brings together four NIHR Dementia BRUs, as well as six NIHR BRCs with dementia-related research themes. Partnerships with industry, academia and the NHS are crucial in developing new treatments for dementia, and TRC-D members are working on questions of early diagnosis, patient stratification, phase I and phase II experimental medicine and proof of concept trials. More information about TRC-D is found in the ‘Spotlight On: Dementia’ on page 27.

Tackling rare diseases

The UK is an international leader in rare diseases research and the NIHR Rare Diseases TRC was created to support the UK Strategy for Rare Diseases and to provide a culture of innovation leading to faster access to evidence based care. More than 5,000 rare diseases have been identified, and although individually these diseases are rare, affecting fewer than five in 10,000 people, collectively they affect seven per cent of the UK population with a high impact on people’s lives and NHS services.

The first studies set up by the Rare Diseases TRC are about to be completed and have recruited almost 7,700 participants, exceeding targets by over 4,000. The next step will be the migration of data from the individual studies into a new database.
Clinical research thrives in the UK

The NIHR Clinical Research Network (CRN) supports late phase industry studies and patient recruitment, driving improvements to study set-up and delivery to increase the attractiveness of the UK as a destination for commercial contract clinical research.

Throughout the year, and as part of the continuing emphasis on the growth agenda, the CRN undertook an extensive programme of work focused on making significant improvements in both study set-up times and in the delivery of commercial contract clinical research studies – the criteria that underpins life-sciences industry confidence in the nation’s research environment.

A record level of 83 per cent of studies achieved NHS Permission within 40 calendar days at all study sites. The median time for gaining NHS permission for commercial contract studies at all study sites was 19 calendar days with no ‘clock-stops’.

Over 200 different companies engaged with feasibility services in 2014/15, with 951 unique studies and 1,819 individual services requests.

This all took place during a period of major organisational change within the CRN to transition to a simplified structure in order to become more streamlined and efficient. This involved embedding the 15 new Local Clinical Research Networks (LCRNs) in the NHS and combining the operations of the nine national Coordinating Centres to divisional structures within a single CRN Coordinating Centre.

Supporting a trial of an innovative device for the treatment of breast cancer

Novian Health Inc, a US-based medical device manufacturer, completed enrolment in May 2015 into its multicentre, international clinical trial to evaluate the treatment of small breast cancers with Novilase® laser ablation (Br-002).

This was our first UK trial and working with the NIHR CRN enabled us to hit the ground running in the UK. From quick adoption of the trial into its research portfolio and identifying interested investigators and sites within NHS, to ongoing monitoring of enrolment against performance objectives, we felt like we had a partner who was genuinely interested in a successful outcome.

Gene Bajorinas
Novian Health’s Vice President of Operations
17 global first patients and 10 European first patients were recruited into commercial contract studies.

A record 34,885 participants were recruited into commercial contract studies, a 35% increase from 2013/14.

17% increase in new commercial contract studies entered onto the NIHR CRN portfolio compared to 2013/14.

618,453 participants were recruited into CRN portfolio studies.

78% of NHS Trusts recruited to commercial contract studies.

21,449 participants were recruited into portfolio dementia studies, surpassing a target of 13,500 towards the Dementia Challenge.

98% of NHS Trusts recruited to CRN portfolio studies.

41% of General Medical Practices in England recruited participants into portfolio studies this year, 16% above target.

Commercial contract studies obtained NHS permission through the NIHR Coordinated System for gaining NHS Permission (CSP) within a median of 19 days, whilst for non-commercial studies the median for NHS Permission is 20 days.

10,088 local permissions were granted through CSP, compared to 9,099 last year.
NIHR Collaborations for Leadership in Applied Health Research and Care (CLAHRCs) work to ensure that applied health research is transferable across the NHS so that the highest quality of patient care and outcomes are provided.

NIHR CLAHRCs are each hosted by a single NHS organisation or provider of NHS services, acting on behalf of a collaboration of local providers and NHS commissioners, universities, other relevant local organisations and the relevant Academic Health Science Network (AHSN). They work closely with a range of industry sectors, such as pharmaceutical companies, software companies and medical device manufacturers as they look for cost-effective ways to improve patient care. CLAHRCs work in partnership with their local NHS to translate research findings into improved outcomes for patients. Through this work, they contribute to the nation’s economic growth. The 13 CLAHRCs primarily focus on research targeted at chronic disease and public health interventions.

Development of an electronic index to assess frailty

NIHR Yorkshire and Humberside CLAHRC has worked in collaboration with the clinical software development company TPP to develop an electronic Frailty Index (eFI) for informing care decisions.

The eFI is designed to identify and severity grade frailty, allowing clinicians to identify the frailest people in their practice. The index uses routine primary care data contained in electronic health records and does not require additional clinical assessment. The eFI has since been made available through SystmOne, the electronic patient record system used by over 2,000 General Practices.
NIHR SUPPORT FOR HOME GROWN COMPANIES IN THE SME SECTOR

As well as working with major global pharmaceuticals, biotech, devices and diagnostics companies, the NIHR also supports small to medium sized enterprises (SMEs) in England working in health and care research to assist growth and innovation.

This support for SMEs is provided across the NIHR-funded infrastructure and within a number of NIHR research programmes.
The NIHR i4i programme

The NIHR’s Invention for Innovation (i4i) research funding supports the development of innovative healthcare technologies involving the NHS, academia and the SME sector and enables prototypes to be commercially developed for the NHS and care providers. Over 160 projects have now been funded through the i4i Programme.

Domestic solutions for cancer

Bowel cancer is the second most common cause of cancer related death. Over 40,000 cases of colorectal cancer are diagnosed each year in the UK and 150,000 cases each year in the US. Every middle-aged person is prone to growing polyps in the gastrointestinal (GI) tract and one percent has a chance of them turning cancerous.

Most patients are referred from the GI endoscopist to the general surgeon and treated by colorectal resection, which is a major surgical intervention with a high-risk profile that may require the patient to wear a colostomy bag for the rest of their life.

NIHR has supported Creo Medical Ltd, a company that has developed a new sophisticated medical device for the safe, accurate and swift removal of pre-cancerous and early-stage cancerous growths in the bowel. This year the device received a validated CE Mark.

If fully adopted across the NHS, this device could save up to £111m per year. It also offers the NHS an opportunity for reducing costs in surgical theatre time, overnight stays and attendant costs, whilst improving patient outcomes from surgery and the risks associated.

Home dialysis solutions

Dialysis is required when the kidneys are unable to perform their function of removing toxins from the body. For 98 per cent of UK haemodialysis (HD) patients, this procedure is undergone in hospital, usually in four-hour sessions carried out three times a week. When travel time to and from hospital is accounted for, it’s clear that hospital based HD is a time consuming treatment which is disruptive to patients’ lives. The average cost of dialysis is £30,800 per patient which costs the NHS around £700m each year.

HD is primarily provided by specialist clinics and centres. However it is clinically proven that more regular dialysis improves quality of life and that 30-40 per cent of patients are capable of performing self-dialysis. However, current home dialysis machines are generally large and cumbersome, require specialist products to be delivered to patients on a regular basis and can be complicated to use.

Quanta Fluid Solutions (QFS) is a medtech SME based in the West Midlands developing renal solutions for HD patients. Along with St James’ Hospital Leeds, Newcastle University and the National Kidney foundation, the company applied to i4i for funds to develop its home dialysis machines.

Quanta has developed a unique solution by simplifying the operation, dramatically reducing the size of the machine and using a cassette based system. This year the project obtained CE marking for the device and received £29m in investment.

Home-based HD could save the NHS £14,259 per patient.
Representing the most integrated clinical research system in the world, the NIHR has transformed research in the NHS increasing the volume of applied health research, year on year, for the benefit of patients and the public.

NIHR research evaluates the effectiveness and impact of new healthcare treatments, finds new ways of preventing, identifying and treating ill health, and makes this evidence widely available to ensure that decisions about health and social care are being informed by the best possible evidence.

The NIHR continues to invest in research projects and systematic reviews that identify which treatments offer the most cost-effective solutions for the NHS and other care providers to adopt. It also helps NHS leaders and decision makers identify the potential cost or savings of introducing a new technology, treatment or service.
**£50M ANNUAL SAVING WITH TRANSFUSION TECHNOLOGY**

NIHR research has demonstrated that electronic management of blood delivery can reduce medical errors, the time taken for delivering blood to patients and the resources required in hospitals. If implemented across the NHS the savings could exceed £50m per year.

Our Oxford Biomedical Research Centre developed an end-to-end electronic transfusion process that involves barcode patient identification, hand held computers at the bedside and electronically controlled blood fridges linked to the blood transfusion laboratory information system.

The result has been a major improvement on safety and quality and 100 per cent of staff now follow the process for correct bedside patient identification.

The cost saving on the use of blood in 2014/15 in the Trust was £500,000 which means there could be a potential saving of over £50m annually, if implemented across the NHS, through a reduction in blood use, a 10 per cent reduction of existing blood expenditure, minimised blood wastage, and productivity savings through reduced nursing and laboratory time.

**Digital hospitals**

An additional initiative is the development and implementation of electronic blood ordering in the Oxford University Hospitals (OUH) Electronic Patient Record. The system provides ‘decision support’ for doctors ordering blood with the aim of minimising inappropriate use of blood as part of the patient blood management programme.

Following implementation, the overall usage of red cell and platelet transfusions has reduced despite an increase in the clinical activity of the service. This is now being replicated across other clinical services in the OUH.

The outcomes of this project are a significant step in reaching the OUH vision of becoming a ‘digital hospital.’

**Using this technology 100 per cent of staff followed the correct process for bedside patient identification.**
AT THE HEART OF FAMILY GENETICS

Why do more than 500 young people a year in the UK die suddenly of lethal dangerous heart rhythms, despite having a normal heart at post mortem?

This was a research question our NIHR University College London Hospitals (UCLH) Biomedical Research Centre sought to answer.

The usual approach to find a cause for this condition, known as ‘Sudden Arrhythmic Death Syndrome’ (SADS), is to perform heart tests in all direct family members but this only finds a cause in 30-50 per cent of cases, can be costly and unfocused, and is resource intensive on staff time and equipment.

Now the use of genetic sequencing analysis post mortem is making it possible to identify relatives of the deceased at increased risk.

This year Dr Lambiase undertook genetic testing in SADS victims to see if they had defects in the genes that control heart rhythm. He used a new approach to scan all 135 genes known to cause heart diseases and found new undiagnosed causes of sudden death in 40 per cent of cases that had not been found by screening the family members using standard heart tests.

This study has provided important information on how to better investigate families with this condition and the use of molecular autopsy has now been established as routine practice in the UCLH Inherited Arrhythmia SADS screening programme.

This approach has also enabled the saving of healthcare resources avoiding unnecessary expensive clinical screening of relatives who are unaffected.

It is now incorporated in the Royal College of Pathologists guidelines on investigation of SADS.
The UK faces a serious problem with increasing incidence and death from liver disease in young people. Unlike most other diseases, standardised mortality rates have increased four-fold since 1970.

Hospital admissions for liver disease are increasing year on year with the majority of patients having serious end stage disease, liver cirrhosis or liver failure.

A disease of the young
The majority of patients who die are of working age, and it is the third biggest cause of premature mortality according to the Office of National Statistics. In England and Wales:

- 600,000 people have liver disease
- 60,000 have cirrhosis
- 62,000 years of working life are lost

Lifestyle related risk factors account for three quarters of liver deaths and the increase in mortality can be attributed almost exclusively to an increase in alcohol related liver disease, with some contribution in recent years from overweight and obesity.

This year a programme of clinical research, led by Dr Nick Sheron of our Southampton Biomedical Research Centre (BRC), has resulted in a marked increase in public and political awareness locally.

Early intervention essential
New evidence from the Southampton BRC shows that around three quarters of patients admitted to hospital with liver disease had not been diagnosed in primary care where an effective early intervention may have prevented the progression of fibrosis to cirrhosis and ultimately liver failure.

This focused attention on developing clinical services in primary care to detect and treat early-stage liver disease and direct NHS resources towards reducing costly hospitalisations and unnecessary treatments and services.

Southampton has pioneered a cheap and accurate primary care liver disease diagnosis using a simple amber/red traffic light system based on routinely-collected biochemistry data. Linking this simple and effective approach to identify and manage patients with previously undiagnosed cirrhosis through a nurse-led community clinic has been shown to have the potential to stop harmful drinking in 65 per cent of cases.

This research has contributed significantly to the Lancet Commission: ‘Crisis of Liver Disease in the UK’ published in November 2014.
GOOD FAT VS BAD FAT

Non-alcoholic fatty liver disease begins when liver fat accumulates and progresses over time to cirrhosis and cancer.

Some patients die from the consequences because the condition increases risk of type 2 diabetes and heart attacks. Presently, there is no licensed treatment for non-alcoholic fatty liver disease and it is urgent that new treatments are found that are safe, well tolerated and inexpensive.

Rising to the challenge, the Southampton BRC tested whether a purified concentrated form of fish oil decreases liver fat in a clinical trial lasting 15 months. This trial, known by the acronym WELCOME, was the largest and longest trial of omega-3 fatty acids for this condition.

The results showed that liver fat decreased in patients who achieved high tissue concentrations of the fish oil fatty acid that is called docosahexanoic acid (DHA).

The results from the trial are currently being used to inform the opinion of a NICE panel as part of the first guidelines for the management of the condition in England and Wales.

A NOSE FOR CF DIAGNOSIS

An innovative nasal test has the potential to inform the accurate diagnosis of cystic fibrosis (CF) and could save the NHS up to £2m per year.

Developed by researchers at our Respiratory Biomedical Research Unit at Royal Brompton and Harefield NHS Foundation Trust and Imperial College London, the nasal PD (Potential Difference) test electronically detects the genetic defect that causes a reduction or absence in chloride movement across cells that line the cavities in the body.

Cystic fibrosis is the most common inherited life-shortening condition in white populations. In the UK over 10,000 individuals are affected by the disease. Whilst the diagnosis is straight-forward for most patients, there remains a significant proportion who have a delayed or inaccurate diagnosis due to the complexities of the genetic defect and its clinical expression.

The NHS currently spends in the region of £110m per year on CF care so providing an accurate diagnosis has economic implications for improved access to health status and to limit inappropriate burdensome treatment.

The nasal PD service has been fully incorporated into the UK’s first and only ‘Difficult CF Diagnosis Service’ providing a comprehensive state-of-the-art expert assessment. The service has grown, receiving 50-75 new patients per annum. This pioneering technique is increasingly employed as an outcome measure in clinical trials of drugs and is being applied alongside the sweat test worldwide.
SARAH’S HELPING HAND

There are over 10 million people in the UK with Rheumatoid Arthritis and this year our Oxford Biomedical Research Unit hosted a large trial of a physiotherapy intervention for patients with rheumatoid arthritis of the hand.

The Strengthening and Stretching for Rheumatoid Arthritis of the Hand (SARAH) trial, funded by the our Health Technology Assessment Programme, demonstrated improved hand function at four and 12 month follow-up, without increased pain.

Based on six physiotherapy sessions, the trial showed that the intervention costs more than usual care but the increase in quality of life would make the intervention cost effective resulting in potential NHS cost savings.

The estimated mean healthcare costs are approximately £100 higher than current best practice standard care but the mean quality of life value (known as QALY) accrued over 12 months was 0.01 greater. At £17,941 per QALY gained, the estimated incremental cost effectiveness is within NICE’s lower threshold of £20,000.

Published in the Lancet, the intervention has been accessed and downloaded by 80 health professionals, including physiotherapists, occupational health therapists and GPs since July 2014.

HALVING THE COST OF IBS TREATMENT

In the UK there are over a million sufferers with severe irritable bowel syndrome who do not respond to conventional treatment.

Gut focused hypnotherapy can help up to two thirds of these individuals, but it is a time consuming and costly intervention. As a result, despite being endorsed by NICE, the provision of gut focused hypnotherapy has not been widely adopted.

An NIHR Research for Patient Benefit Programme-funded study, led by Peter Whorwell of University Hospital of South Manchester NHS Foundation Trust, assessed whether a streamlined form of hypnotherapy for irritable bowel syndrome over a shorter period of time is as effective as the conventionally provided treatment.

Six sessions of structured versus 12 sessions of conventionally delivered gut focused hypnotherapy were compared and showed that six sessions were no less effective than 12. There was also a significantly lower patient dropout rate. Adopting this regime could result in a 50 per cent reduction in the cost and time of delivering this treatment, which could encourage wider provision and allow many more patients to be offered the benefits.
PAIN RELIEF IN PATIENTS’ HANDS

Pain is very common in patients attending emergency departments, but it is often difficult to treat effectively, and individual patient satisfaction and levels of pain control vary.

If a patient is in severe pain, they usually receive morphine through a drip that is administered by a nurse. However, a patient-controlled analgesia device allows the patient to deliver their own pain relief. These devices are common in other hospital departments but are not usually used in the emergency department.

Funded through the NIHR Research for Patient Benefit Programme, Professor Jason Smith of Plymouth Hospitals NHS Trust led trials which compared the use of a patient-controlled analgesia device to analgesia delivered by a nurse in patients admitted to A&E.

The findings showed that, on average, for patients with non-traumatic abdominal pain, the patient-controlled analgesia device significantly reduced the total pain and improved patient satisfaction with the emergency department in comparison to the usual treatment and is therefore a viable option.

The findings have been published in the *Emergency Medicine Journal*, and adoption of this technology across the NHS could be a relatively straightforward process that could provide significant patient benefit.

STEP CHANGES FOR OLDER PEOPLE

Physical activity is vitally important for older people's health, yet less than a fifth of UK 65-74 year olds report achieving the recommended moderate intensity activity levels of 30 minutes daily, five days a week.

Our Research for Patient Benefit Programme PACE-lift (Pedometer Accelerometer Consultation Evaluation–lift) trial, which published in 2014, looked at how to increase walking in patients aged between 60-74 years.

This trial demonstrated that the use of a pedometer and accelerometer feedback provided as part of physical activity consultations can increase walking in 60-75 year olds, and that this increase is maintained at 12 months without any increase in adverse effects. Whilst the findings suggested that the intervention is of benefit to patients in this group, further work was required prior to implementation within the NHS.

A follow up trial, the PACE-UP (Pedometer And Consultation Evaluation) trial, funded by our Health Technology Assessment Programme is currently underway.
EARLY-INTERVENTION PAYS FOR YOUNG PEOPLE WITH PSYCHOSIS

Psychosis is a common, disabling disorder that costs the UK economy an estimated £11.8bn per year.

A study conducted by the NIHR Oxford Collaboration for Leadership in Applied Health Research and Care (CLAHRC) examined whether the implementation of Early Intervention in Psychosis (EIP) services into NHS practice resulted in improved outcomes for psychosis patients aged 16–35 and cost savings for the service.

More than 4,640 patients were identified for the study and 20 per cent were found to have been treated under an EIP service. Rates of admission to mental health hospitals, length of stay, employment outcomes and A&E attendances were compared between those who were treated in an EIP service, and those who were not.

The study revealed that savings could equate to £5,200 per patient in EIP per year, and include significantly fewer mental health bed days and reduce attendances at A&E. This evidence was accepted by the Health Services Journal for publication and resulted in an invitation by NHS England to organise a national expert reference group to draft the first mental health Referral to Treatment Time for EIP which was submitted to the Health and Social Care Information Centre in December 2014.

AWARD-WINNING PARAMEDIC TRIAL

The PARAMEDIC study that compared a mechanical chest compression device to the manual delivery of cardiopulmonary resuscitation (CPR) was awarded ‘Trial of the Year 2014’ by the US-based Society for Clinical Trials (SCT).

Our NIHR Health Technology Assessment Programme-funded study looked at over four thousand people who had out of hospital cardiac arrests and found no evidence to show that being treated with mechanical compressions gave better survival rates than treatment with manual CPR.

Gavin Perkins, Professor of Critical Care Medicine at University of Warwick and Co-Chief Investigator said:

“Conducting research in out-of-hospital cardiac arrest is particularly challenging. The award of the SCT Trial of the Year is testament to the huge achievement by our NHS Ambulance Service partners who delivered the largest randomised controlled trial in out-of-hospital cardiac arrest in Europe.

“The study has helped refine the ambulance service response to out-of-hospital cardiac arrest and confirmed the importance of focusing on high quality manual CPR.”

In finding no benefit from mechanical devices, the study could save the NHS £40m in technology spend.
DRUG TRIAL COULD SAVE NHS £84.5M A YEAR

The NHS could save £84.5m annually by switching drugs used to treat a condition that commonly leads to sight loss in older people.

This is a fundamental finding of the NIHR Health Technology Assessment Programme supported research project called IVAN that compared two drugs, Lucentis and Avastin, administered for wet age-related macular degeneration (wet AMD).

Over 23,000 people are diagnosed with wet AMD in the UK each year and two thirds of people with the condition experience severe loss of sight within two years of being diagnosed.

Professor Usha Chakravarthy, the project’s lead researcher at Queen’s University Belfast, said: “The IVAN results at the end of year two show that Lucentis and Avastin have similar functional effectiveness regardless of the drug received.”

The study highlighted that Avastin is around 10 times cheaper than Lucentis potentially saving the NHS £84.5m annually.

Following a review of the IVAN evidence, the World Health Organisation has rejected an application to have Lucentis added to their essential medicines list and instead endorsed the cheaper drug Avastin.
The NHS, care providers and policy-makers rely on direct access to information and high quality evidence to guide health care decision making and the commissioning of services. We support decision-making through evaluating new health technologies, our evidence databases and our systematic reviews infrastructure.

On our horizon

The NIHR Horizon Scanning Research & Intelligence Centre (HSRIC) supplies information to policy and decision-makers within the NHS and research funders about emerging health technologies that may have a significant impact on patients or the provision of health services in the near future.

This year, the HSRIC identified 1,105 technologies including 834 pharmaceutical and cell therapies, 158 devices and biotechnology products, 85 diagnostic and imaging technologies, and 28 other technology types, such as surgical and non-surgical procedures and therapies of potential future interest.

Over a third of identified topics in 2014/15 related to the diagnosis or treatment of cancer followed by diseases of the nervous system, endocrine system and musculoskeletal system.

Evidence at the core

The NIHR’s three internationally renowned evidence databases are managed by our Centre for Reviews and Dissemination (CRD) at the University of York.

DARE (Database of Abstracts of Reviews of Effects) and NHS EED (Economic Evaluation Database) provide NHS decision makers with direct access to thousands of critical summaries of quality assessed systematic reviews and economic evaluations.

During 2014/15, DARE abstracts critically appraising systematic reviews of health and social care interventions became available in the US via PubMed. PubMed is the leading source for finding published health literature, containing over 24 million citations. A free resource, PubMed is developed and maintained by the National Library of Medicine at the National Institutes of Health.

The HTA (Health Technology Assessments) database is a single repository for brief details of ongoing and completed HTA reports from around the world. Bringing this information together helps promote the use of HTAs in health care decision making and can help avoid duplication of effort.

January 2015 saw the launch of a new Canadian search interface for the HTA database. Funded by the Canadians, the interface is the result of collaboration between the CRD as producers of the HTA database on behalf of NIHR and the Pan-Canadian HTA Collaborative Working Group for a Canadian HTA Repository. The dedicated Canadian search interface is bilingual and defaults to searching for Canadian records, with the option to limit by province, or expand to international.

In combination these databases provide access to high quality evidence to inform national and international decision making and commissioning.
In 2014/15:

1,336,019 searching sessions on the CRD database interface and CRD added:

- 204 quality assessed and critically appraised systematic reviews and
- 6,827 bibliographic records to DARE

This year 1,796 new registrations were added to PROSPERO, nearly double the number during 2013/14. The 5,000th record was added in November 2014. As the content grows the register provides an increasingly valuable resource for identifying on-going reviews to help avoid unplanned duplication.

- 42 critically appraised economic evaluations and
- 1,410 bibliographic records to NHS EED

1,377 records of in-progress and published health technology assessments to the HTA database, bringing the total number of records in the database to 14,843

PROSPERO – A resource like no other

PROSPERO, the NIHR’s international Prospective Register of Systematic Reviews, contains registration details of ongoing systematic reviews.

PROSPERO, managed by the CRD, is web-based, free to search and open for free registration to anyone undertaking a systematic review with a health-related outcome.

Launched in February 2011, the register now contains more than 6,500 records of reviews being undertaken in 83 different countries and territories around the world.

This year 1,796 new registrations were added to PROSPERO, nearly double the number during 2013/14. The 5,000th record was added in November 2014. As the content grows the register provides an increasingly valuable resource for identifying on-going reviews to help avoid unplanned duplication.
INDEPENDENT ADVICE FOR POLICY MAKERS

The NIHR provides the independent research that informs health policy decisions in England.

Technology Assessment Reviews
Each year we commission Technology Assessment Reviews (TARs) to help inform NICE guidance.

NICE guidance contains recommendations based on the best evidence and the NHS is legally obliged to fund and resource treatments that it recommends.

In 2014/15, 49 NICE TARs were produced comprising:
- 36 Single Technology Appraisals (STAs)
- 8 Multiple Technology Appraisals (MTAs)
- 4 Diagnostic Assessments Reports; and
- 1 Highly Specialised Technology Evaluation

Reviews have included assessments on educational interventions to improve quality of life in people with chronic inflammatory skin diseases and a diagnostic assessment which suggested that the test for heart attacks could detect twice as many heart attacks in women than current standard tests.

As well as producing TARs for NICE, we also produce TARs for other policy customers including the National Screening Committee, the Chief Medical Officer, and NHS England. During this year, nine have been produced, including a synthesis of evidence for NHS England to review urgent and emergency models of care for people in mental health crisis.
AT THE HEART OF EMERGENCIES

Around 700,000 people are admitted to emergency departments with acute coronary syndrome each year, usually with symptoms of chest pain. Early diagnosis can ensure quick and effective treatment.

A method of diagnosing whether a heart attack has occurred is to measure the level of the protein called troponin in the blood. This is because troponin is often released into the blood when the heart is damaged due to a heart attack.

An NIHR Technology Assessment Review (TAR) diagnostic assessment looked at two tests for the early rule-out or diagnosis of a heart attack in people with acute chest pain, finding that both these tests are of higher sensitivity than conventional biomarkers and so allow for earlier detection of changes in troponin levels.

The results have informed NICE’s decision to approve the tests and provide a cost-effective approach to the early rule-out of a heart attack.
Our research community is the largest networked body of experts and their teams in the world. The diverse groups of people working together to improve the health and wealth of the nation through research are known as the NIHR Faculty.
Faculty Members deliver high quality research and sustain the health research system for the future.

They comprise:

- **NIHR Senior Investigators** – the most eminent leaders of research, selected by national competition from amongst NIHR Investigators
- **NIHR Investigators** – active researchers, including research leaders and team members, who are funded or supported through the NIHR’s research programmes or infrastructure
- **Trainees** – the next generation of research leaders that currently hold NIHR career training awards. These range from Masters Studentships through to Professorships, and trainees holding Doctoral awards in many parts of the NIHR research infrastructure
- **Associates** – people who support the delivery of research on the ground, ethically and safely, on time and to target
MEET A SENIOR INVESTIGATOR

NIHR Senior Investigators (SIs) are the NIHR’s pre-eminent researchers. They are selected by a panel of international experts, chaired by Professor Melanie Davies, through an annual competition open to all NIHR Investigators.

There are currently 200 SIs selected through eight competitions, plus 23 emeritus Senior Investigators.

Gary Frost, Professor of Nutrition and Dietetics at Imperial College London, is an NIHR advocate for Dietetics and chairs one of the NIHR Doctoral Research Fellowship panels.

He is involved in running the mentorship for health research training fellows and has published over 250 research articles in peer-reviewed journals with more than 35,000 citations to published works including NICE Guidelines.

Professor Frost has an international reputation for his work with dietary carbohydrates particularly dietary fibre, and in partnership with colleagues at the University of Glasgow, has conducted the first in man studies of a novel food ingredient aimed at delivering short chain fatty acids into the colon to suppress appetite. Work is continuing on translating this novel food ingredient into food products where it could have a wide public health impact.
NIHR Research Trainees
The NIHR supports the training of future health and social care researchers through a range of national career development programmes as well as through training in the NIHR infrastructure which has a remit to build research capacity.

Developing research careers – from Masters to Professorships
The NIHR fosters research careers through a large range of training and development awards. Approximately 2,000 trainees benefit each year from these awards.

The awards are offered at a variety of academic levels to suit different work arrangements, types of profession and career paths. They include both personal awards and those hosted and managed by academic institutions. NIHR training awards are both prestigious – with well-defined career paths for various clinical and non-clinical professions, and generous – including university fees, full salary, bespoke training opportunities and research costs.

In 2014/15 the NIHR:
• Managed 1,813 active research trainees across 24 training schemes
• Appointed five additional NIHR Research Professors, taking the total to 23
• Provided additional educational training to 639 trainees through organising and supporting nine meetings and workshops
• Awarded six Fellowship awards supporting the NIHR themed call in Primary Care

National Research Training Programmes and Schemes:
• Fellowships Programme
• Research Professorships
• Clinical Trials Fellowships
• Knowledge Mobilisation Research Fellowships
• Integrated Academic Training (IAT) Programme
• Integrated Clinical Academic (ICA) Programme
• Research Methods Programme
The NIHR Transitional Research Fellowship gave me an opportunity to design and lead my own clinical trial, get directly involved with patients and it trained me to become a ‘link’ between the laboratory and the clinical world. Despite the steep learning curve, the fellowship has already given me a much better understanding of the challenges patients and clinicians are facing and I enjoy working in this new environment and implementing my new-found knowledge in future research designs.

Katrin Jaedicke
Transitional Research Fellowship award holder

Research Fellowships
NIHR Fellowships support outstanding individuals to become the health research leaders of the future. The four different levels of the Programme, Doctoral, Post-Doctoral, Career Development and Senior Researcher, provide a comprehensive health research career pathway.

In 2014/15 the NIHR awarded 58 Fellowships:

- 34 Doctoral
- 11 Post-Doctoral
- 10 Career Development

There were also three successful awardees for the Transitional Research Fellowship Scheme.

Research Professorships
NIHR Research Professorship awards are for outstanding research leaders in the early part of their careers with the purpose of strengthening leadership in the translation of research to develop new and effective treatment and care. Five new NIHR Research Professors were appointed in 2014, taking the total to 23 since the programme launched in 2011.

Professor Cathy Creswell
University of Reading – NIHR Research Professor appointed in 2014

Treatments for childhood anxiety disorders: Improving patient access and clinical effectiveness
Professor Creswell’s research aims to increase understanding of barriers to accessing evidence-based treatments, develop efficient methods of treatment delivery, and improve understanding of psychological mechanisms that maintain difficulties among those children who do not benefit from currently available treatments. The ultimate aims of this work are to improve access to evidence-based treatments for childhood anxiety disorders and improve treatment outcomes.

“It is an enormous privilege to be an NIHR Research Professor. At the simplest level the support provided allows me to dedicate my time to clinical research and develop my team, however this scheme brings with it many more benefits. One clear example is being part of a cohort of leaders in translational health research who, despite their wide ranging skills, experiences and interests, grapple with many similar issues when it comes to pushing forward research that will bring benefits to NHS patients. The provision of a forum to come together as a group, to share experiences and learn from each other as well as learning from NIHR Senior Investigators who are brought in to share their own experiences has been enormously helpful.”
Clinical Trials Fellowships
The NIHR Clinical Trials Fellowships provide training opportunities for existing NIHR trainees within the setting of an NIHR-supported Clinical Trials Units (CTUs), exposing the trainee to all aspects and stages of trials.

In 2014/15, 15 NIHR-supported CTUs participated in the programme and five applicants were awarded funding.

Knowledge Mobilisation Research Fellowships
Knowledge Mobilisation Research Fellowships support individuals to facilitate the timely and effective communication of health care research in ways that increase its likely impact, whilst simultaneously assessing the techniques that they choose to employ. Supporting the career development of researchers in this area should lead to improvements in the uptake, application and influence of NIHR funded research and other applied health research within the NHS.

This programme is in its third year and awarded three Fellowships in 2014/15 – taking the total to 13.

Integrated Academic Training (IAT) Programme for doctors and dentists
The Integrated Academic Training (IAT) Programme provides a research career pathway for doctors and dentists from pre-doctoral research training to more senior positions.

In 2014/15, 247 medical and 25 dental ACF posts were allocated nationally. 116 medical and 18 dental Clinical Lectureship posts were allocated, 10 In-Practice Fellowships were awarded to fully qualified GPs and six Clinician Scientist awards were made.

Since the start of this scheme in 2001, 12 Clinician Scientist award holders have gained a university Chair position and three have NIHR professorial posts.

Dr Kyla Thomas
NIHR Clinical Lectureship
Dr Thomas started a NIHR Clinical Lectureship post at South Gloucestershire Local Authority and the University of Bristol in March 2014. Dr Thomas is a previous awardee, she gained an NIHR ACF in 2008 and in December 2013 completed an NIHR Doctoral Research Fellowship in pharmacoepidemiology at the University of Bristol.

“Although it is challenging to combine academic study with clinical practice I enjoy the variety that comes with my current post. I find it intellectually stimulating and I enjoy the challenge of doing research that actually can make a difference to people’s lives.

“The dual role allows me to be rigorous in my service public health practice and ensures that I do clinically relevant research. The NIHR awards have been absolutely essential in providing me with the opportunity to combine clinical training with the pursuit of academic endeavours. Without the financial support provided by the NIHR awards it is highly unlikely that I would have been able to pursue my research interests.”

I have had a wonderful experience during my award and feel very privileged to have had this wonderful opportunity. I only hope that my reports have reflected how much I have grown as a both a clinician and a researcher on the ‘coal face’ as I like to refer to it in Lancashire!

Jane Martindale
Clinical Lectureship, Physiotherapist
**Integrated Clinical Academic (ICA) Programme**

The brand new Integrated Clinical Academic (ICA) Programme for non-medical healthcare professionals launched in October 2014. The Programme, which is funded by Health Education England (HEE) and managed by the NIHR, provides a range of opportunities to undertake fully funded clinical research, research training and professional development whilst maintaining clinical practice and salary.

The ICA Programme replaces the previous Clinical Academic Training (CAT) and Healthcare Science Research Fellowships Programmes. It is now open to all statutorily registered non-medical healthcare professionals, supporting them to develop careers that combine clinical research and research leadership with continued clinical practice and clinical development.

There are five levels to the award: Internships, which are managed directly by Health Education England; Masters in Clinical Research Studentships; Clinical Doctoral Research Fellowships; Clinical Lectureships and Senior Clinical Lectureships. Together, these comprise a comprehensive career pathway for aspiring non-medical clinical academic leaders.

This year we also began the re-tendering process for both the ICA Masters in Clinical Research Studentships and the ICA Mentorship and Outreach Programme which supports CAT, HCS and ICA award holders who are developing clinical academic careers.

The fifth and final round of the CAT Programme was completed in November 2014. Shortlisting and interviews led to 19 awards: 15 Clinical Doctoral Research Fellowships and four Clinical Lectureships. Pharmacists were eligible to apply to the Clinical Doctoral Research Fellowship Scheme as a pilot in this round and we received nine applications from pharmacists, of which one was successful.

The fifth and final round of the Healthcare Science Research Fellowship Programme was completed in December 2014. Following the review of 19 eligible applications across the three personal awards within the programme, shortlisting and interviews led to seven awards: five Doctoral Research Fellowships and two Senior Clinical Lectureships.

**Cathy Geeson**

**HEE/NIHR Clinical Doctoral Research Fellow**

“I was awarded my clinical doctoral research fellowship in 2014, following the eligibility change to include pharmacists at this level. The aim of my research is to develop a prediction tool to assist hospital pharmacists target patients who are at risk of medication-related harm. My intention is to improve patient care, whilst using NHS resources more efficiently.

“I applied firstly because I had a research question that I felt passionate about answering. As a practising clinician I was acutely aware of the increasing demands on services, and keen to use an evidence-based approach to prioritise care. Second was an awareness of the importance of developing the research culture within the NHS, therefore a desire to develop my clinical, academic and leadership skills.”
The fellowship was a tremendous opportunity which has transformed my career. I am now a reader in the department, have secured a NIHR Clinical Doctoral Fellowship (CDF) and am well on my way to establishing myself as leading academic which I don’t think would have happened without the award!

CDF Cardiologist

Research Methods Programme
The NIHR Research Methods Programme comprises four schemes and is designed to provide training and support for individuals to become specialist methodologists in areas relevant to the NIHR, targeting skilled individuals with a non-health background into applied health research.

The two Masters Studentship schemes in Medical Statistics and Health Economics continue to run with 16 studentships per year being offered by the successful institutions. The fifth round of the Research Methods Fellowships and Internships awarded funding to 14 applicants. These awards started by March 2015 and will run for two years.

The Research Methods scheme was expanded in 2015 in order to address the current shortage of systematic reviewers by supporting individuals from any discipline, thereby expanding the potential pool.

Engaging with trainees
240 trainees attended the 2014 Trainees Annual Meeting, chaired by Professor Jim Neilson, the then NIHR Dean for Faculty Trainees. The theme was ‘Make it clear’; chosen to support INVOLVE’s ‘Make it clear’ campaign which was launched in May 2014.

The NIHR launched @NIHR_trainees in February 2015. The twitter account attracted over 1,000 followers in its first week and in its first month, its tweets earned 95,700 impressions.

I would like to sincerely thank the NIHR for the Fellowship. It has been an incredible experience to develop my training, research skills and output and be mentored by leaders in the area. It has put me in an excellent position to develop future research plans so thank you.

Dr Laura Jobson
Post-Doctoral Fellowship, Psychologist
The NIHR’s Biomedical Research Centres and Units, Collaborations for Leadership in Applied Health Research and Care, Patient Safety Translational Research Centres and the School for Primary Care Research are at the heart of delivering research capacity in the NHS infrastructure.

Each organisation has a named ‘Training Lead’. The training leads come together as the ‘NIHR Infrastructure Training Forum’ which is chaired by Professor David Jones of Newcastle University. The ambition of the Training Forum is that individuals receiving training in the NIHR infrastructure should be prepared for a longer term research career, and should come out with more than just an academic qualification.

This year we supported over 3,100 trainees in the NIHR infrastructure. Of those, 24 per cent were either fully or partially funded by NIHR. Those who were fully funded received both salary/stipend and PhD fees, those partly funded received partial support towards their PhD fees and/or salary/stipend. The remainder were supported by NIHR-funded supervisors or through use of NIHR facilities.

The year saw the fifth annual Infrastructure Doctoral Training Camp where 70 individuals from across the infrastructure gained a taster of what they will experience at the next step in their careers.

We also hosted a national meeting for 150 aspiring researchers and delivered the first and second rounds of a doctoral training exchange. During the first round of the scheme, four applicants were awarded funds to spend time training in specific areas; 11 applicants have come forward in the second round and this process continued into the new financial year.
**Simone Ciufolini** was undertaking a PhD at the NIHR Mental Health BRC at South London and the Maudsley NHS Trust when he applied for the Infrastructure Doctoral Training Exchange (IDTE).

“My supervisor and I were talking about establishing collaborations to learn new techniques for analysing my data that weren’t available locally. Professor Edward Bullmore’s group in the Cambridge BRC is world-leading in the relevant field, so I approached him with an idea and he was enthusiastic. The IDTE started the idea for the exchange, and it really catalysed the process of getting it set up.

“After some preparation, I moved to Cambridge for three months where I did the bulk of the work with a lot of support from Kirsty Whittaker. Going to a different lab and working with people from different backgrounds was an entirely new and refreshing experience for me. I knew the theoretical background of graph analysis but it was a steep learning curve to apply it to my own data but highly rewarding in the end.

“In terms of my PhD, it’s given me the opportunity to consider data from a different perspective. We are now looking at brain connectivity on network basis, a global basis, which has revealed new insights and has complemented my original analysis. Learning this technique has really opened up future avenues that might not have been available to me otherwise.”

Once he has completed his PhD, Simone will apply for a clinical lectureship to pursue his research and clinical work side-by-side.

**Vinod Hegade** was working as a trainee gastroenterology specialist registrar in Leeds before he applied to Newcastle NIHR BRC to undertake a PhD Fellowship on cholestatic pruritus (itching) in liver disease, specifically in primary biliary cirrhosis.

“The plan for my PhD included metabonomic and microbiomic investigations, which were relatively straight-forward, but I wanted to make the extra effort to learn and interpret a genome-wide association study (GWAS). This expertise wasn’t available locally in Newcastle, but notice of the IDTE came around the time that I was considering how to undertake the GWAS. The Cambridge BRC was the place to go to collaborate and learn; they had both the data and the expertise.

“They’ve been very patient with me and explained a lot of basic information as we’ve gone along. This is a very complex process of analysing the phenotype linked with the genotype.

We are still at the stage of interrogating and improving the quality of the phenotype dataset, whilst work goes on to genotype a further 600 patients. Once this has been done, nearly 5000 patients’ data will be in the GWAS study.

“This opportunity has been a great chance to collaborate with other centres and to learn something new. The IDTE is only a small pot of money, but sometimes that is all you need.”

After his PhD, Vinod hopes to complete his speciality training and become a consultant hepatologist.
Since its set-up in 2012, the ECMC Junior Investigator Network Group (JING) has grown into a thriving community of 200 clinical and non-clinical early career researchers.

Their third annual residential course in January 2015 was attended by 65 junior investigators and supported by 39 experienced researchers in the ECMC network who are international leaders in their fields. The programme, developed by junior investigators for junior investigators, spans a number of topics for developing early phase and translational studies in, for example, trial design, use of appropriate biomarkers, pathology and imaging, as well as more interactive sessions on developing their own study ideas and engaging patients in research.

To further support rising clinical research stars, 10 junior investigators will attend a prestigious Clinical Cancer Research course in 2015 and three will become trainee members on the Lymphoma, Prostate and Gynaecological Cancers Clinical Studies Groups.
MENTORING MEANS BUSINESS

We take career development seriously and our trainees benefit from a comprehensive and personalised programme of support.

The Academy of Medical Sciences (AMS) runs a one-to-one mentoring scheme on behalf of the NIHR for our Clinician Scientists and Clinical Lecturers with dedicated staff matching clinical academic trainees with an Academy Fellow. This scheme is a central element of the career development programme and has this year paired three NIHR Clinician Scientists and 40 Clinical Lecturers with Academy Fellows.

As part of its commitment to ensure that the pool of mentors with an applied health research background is widened, in March 2015 we invited current NIHR Senior Investigators to join the scheme as mentors.

43 Senior Investigators accepted the invitation and were welcomed to the mentors pool and training has commenced.

The AMS delivered two workshops – one in July, one in November 2014 – and regular half-day mentoring skills workshops were offered to mentors and mentees to introduce them to the key concepts of mentoring, so that they can get the most out of the relationship.

On 17 July 2014, the AMS also hosted a career development event with talks from post-doctoral researchers on their careers in industry and on working between academia and industry. The event enabled trainees to talk to representatives from the companies and to Academy Fellows.

"My expectations were exceeded. I didn’t expect to be able to network with so many people and get such valuable advice on the next steps of my career."

Attendee at Careers in Industry event in July 2014
In March 2015 the NIHR successfully concluded a three-year Leadership and Development Programme, run by Ashridge which, during its term, supported 85 individuals from across the research community.

In 2014/15:

- 24 leaders took part in the programme
- 18 trainee leaders are beginning to make a significant contribution in their field
- Five strategic collaborations involving 10 senior NIHR leaders were undertaken
- Three R&D managers groups worked with 64 Trusts and 128 R&D directors and managers to support the shift to a more enabling and facilitating function

The Leadership Programme

The Leadership Programme is for the most senior research leaders of the NIHR, and individuals on course to reach these positions. These include directors of the NIHR’s Network, major research centres, units, facilities and research programmes, and NIHR Research Professors. During 2014/15, the NIHR Leadership Programme incorporated workshops, action learning sessions, 1:1 work with individual coaches, 360 degree feedback, elective workshops and biannual NIHR Leaders’ Forums to engage leaders in addressing questions of strategic importance to health research.

Leaders’ feedback from the 2014/15 cohort shows how much value they gain from the programme and how much of their leadership achievement they attribute to the programme.

Within the Leaders’ Programme, the NIHR Research Professors have formed their own group which to date has included the NIHR Professors appointed in between 2011 and 2014. The programme provided a wide-ranging choice of leadership development processes as this has proved to be a valuable way of supporting the NIHR Research Professors’ development whilst holding this prestigious personal award.

For me the main strength ... is the structured and guided networking which is much more effective than this would be if we simply met up ourselves.

NIHR Research Professor
Trainee Leaders
The Trainee Leaders’ Programme is for individuals who are making the transition to becoming independent researchers, making a significant contribution in their field, and who are taking on their first significant leadership and management roles. In 2014/15, the already high interest in the programme doubled compared to earlier cohorts delivering a step change in leadership capability for Trainees that is necessary for career progression.

Strategic Collaborations
The NIHR Strategic Collaborations Programme supports individuals and teams by creating a shared awareness of the leadership capability required to progress and manage programmes and projects of strategic significance for the NIHR. The first collaborations to be supported by the programme include:

- Supporting the NIHR and NHS England to find a model of collaborative working
- Supporting developments in the strategic collaboration between the Bristol Eye Hospital and Moorfields Ophthalmology BRC
- Responding to the PM’s Challenge on Dementia

Across all streams, personal development opportunities were a key motivation for taking part in the programme. Prospects for networking, exchanging ideas and experiences were also seen as important.

A 2015 Rand Evaluation found that the strength of the NIHR Leadership Programme is that it relates directly to the strategic challenges experienced by health researchers and is relevant to their day-to-day roles. In particular, interviewees from the R&D in Trusts Stream commented how the programme focused on the roles of an R&D manager and director and the way these relationships are critical to R&D functions in the NHS.

NHS R&D Managers
The NHS R&D Managers’ Programme fosters pro-active leadership by R&D managers as key members of the NIHR Leaders’ community with a vital role in supporting and enabling research in the NHS. In 2014/15 additional funding helped extend the activities to:

- Recruit an additional cohort of Trusts into the programme
- Support local R&D-led ‘culture change’ based on Academic Health Science Network and the new NIHR Research Network footprint
- Deepen and broaden the development of the NHS R&D leadership community

It [the Leadership Programme] has been very useful in several ways – the one to one coaching and the action learning sets have given an opportunity to work through particular issues.

Research Professor
HELPING NIHR WORK TOGETHER

Launched in 2013, the NIHR Hub has become a vital electronic platform that enables our researchers and staff to work together.

Built on Google’s Apps technology and located virtually in a ‘cloud’, in line with Government’s wider IT policy, the Hub enables up to 10,000 users to share and collaborate on all types of content in real time in a secure and safe environment.

By the end of March 2015 there were 8,638 users, an increase of 2,990 from the earliest records in August 2014, and users had created almost one million documents.
Faculty World
The NIHR published another issue of Faculty World, its e-magazine, during 2014/15. Each issue focuses on a particular theme. Published in September 2015, it featured the nursing profession, illustrating its importance to the NIHR.

New media competition
The new media competition encourages NIHR researchers to create short films to inform and enthuse audiences about their research. The productions are independently judged by visitors to Cafe Scientifique.

This year the overall winner was Malcolm Burnett with *Improving Balance through Dance* which shows research into how improvements in the movement of Parkinson’s disease sufferers can occur after following special dance classes.

All the films can be viewed on the NIHR YouTube channel.
The NIHR Research Design Service (RDS) provides expert advice and support for researchers developing funding applications, helping researchers design high quality studies using the most appropriate approach to answer the research question.

This specialist service means that applications for funding are more likely to be approved and reduces the time, costs and effort for applicants, programme managers and awards panels alike.

In 2014/15 the RDS:

- Advised researchers on 2,821 new projects
- Supported 1,590 funding applications
- Supported 195 shortlisted outlines
- Supported 347 applications that successfully secured funding
On the road
This year RDS also hosted a series of roadshows for the Programme Grants for Applied Research (PGfAR) and Programme Development Grants (PDG) funding streams. More than 180 people registered to attend the events, held in four locations across the country, to discover more about these prestigious funding awards.

I was really pleased to get the opportunity to provide open forums for people to learn about what makes a good Programme Grant and why some applications don’t work. The success of the roadshows suggest that this approach is valuable to applicants and should be continued.

Professor Paul Little
Programme Director, NIHR PGfAR

Involving patients and the public
Involving patients and the public in research is a fundamental component of the advice the RDS provide to research teams. With experts across the country, the RDS is well placed to add value to this component of research applications.

Research teams requesting advice from the RDS are encouraged to consider patient and public involvement (PPI) at all stages of research and to budget for PPI in research funding applications. However, it is recognised that until research has been funded, researchers may find it difficult to pay for PPI activities.

The RDS ‘Public Involvement Funds’ are available to researchers to help facilitate public involvement in the development of research ideas and research grant applications.

This year a PPI Handbook has also been produced. This is a key resource helping research teams plan, manage and carry out PPI activities providing information on creating links with patients and the public at the earliest stages of defining a research question, right through to dissemination.

Many thanks to the RDS for all their help, encouragement and clarity of thought with this application... Invaluable feedback about the proposal was given by the pre-submission panel which included some reviewers who are members of the public. The study structure and design was changed and clarified as a result of this feedback.

RfPB Applicant, Diane Sellers
Speech and Language Therapist
I’ve been involved with RDS for at least three years and have found the sessions enjoyable, informative, interesting and stimulating. Even though research bids have to include an element of PPI I have felt that my contribution was appreciated. It is good that we PPI representatives are seen as critical friends with a different point of view.

Jan G Rhodes
Service User

I genuinely don’t think we would have got as far as we have without the RDS.

Sue Young RD
Specialist Dietitian, Nutrition and Dietetics
Cambridgeshire Community Services

Without the RDS I would not have realised the value of my experience and input into health research. The RDS and their links with the wider NHS and Social Care community have given me access to a depth and breadth of research I would otherwise not have known about.

Kate Massey
Service User

Following attendance at a Service User Training Day:
Not knowing what to expect, I was quite hesitant to meet the PPI group at first, but they were wonderful and very supportive. I got so much out of the two hour session!

Joanne Outtrim
Senior Research Nurse
Cambridge University Hospitals NHS Foundation Trust
Development of the Medicines Optimisation Assessment Tool (MOAT)

Whilst the RDS provides support to researchers who go on to submit a funding application, there may be occasions where it is identified that an idea requires further development before an application is submitted. We assisted Cathy Geeson with her Fellowship application.

Cathy is Deputy Chief Pharmacist at a district general hospital and in the course of her work, identified a clinical need for hospital pharmacists to prioritise the patients they attend. Having searched the literature and being unable to locate any evidence-based triage tools for this purpose, Cathy sought to create such a tool herself as the basis of an NIHR Clinical Doctoral Fellowship. Although Cathy had had limited previous research experience, the RDS were able to guide Cathy through the application process, establish that her idea was within remit and support her choice of potential supervisors.

The RDS provided suggestions on literature searching, participant recruitment, general applicability of the sample and also the need to recruit from a second site. With the breadth of expertise and connections to the wider regional PPI networks, the RDS were able to provide focus and multi-faceted feedback on People, Place and Project.

After attending an RDS Bid Development Workshop, Cathy was given the opportunity to discuss her project with RDS advisers and utilise our connections with the Norwich Clinical Trials Unit. Cathy subsequently implemented the changes to her application and incorporated the suggestions received from members of the public and service users into her Plain English Summary. Finally, RDS advisers, together with her proposed supervisors, provided Cathy with a mock interview and she was subsequently successful in her application for funding.

“I’m delighted to receive the Fellowship...I’m grateful to the NIHR for the opportunity and also incredibly grateful for the support and guidance that I received from the Research Design Service (RDS) throughout the application process. This was invaluable in supporting the development of the application and I cannot commend the RDS more highly.

Cathy Geeson
Deputy Chief Pharmacist, Luton and Dunstable Hospital
# NIHR funding for 2014/15

<table>
<thead>
<tr>
<th>Area</th>
<th>Spend (£m) 2014/15</th>
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<tbody>
<tr>
<td><strong>RESEARCH PROGRAMMES</strong></td>
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<tr>
<td>Health Technology Assessment</td>
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<tr>
<td>Health Services Delivery &amp; Research (previously HSR &amp; SDO)</td>
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<tr>
<td>Programme Grants for Applied Research</td>
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<tr>
<td>Research for Patient Benefit</td>
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<tr>
<td>Invention for Innovation</td>
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<tr>
<td>Public Health Research</td>
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<tr>
<td>Systematic Reviews (Cochrane, CRD and TARs)</td>
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<td>Horizon Scanning</td>
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<tr>
<td>Schools: Primary Care, Public Health and Social Care Research</td>
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<td>INVOLVE</td>
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<td>Health Innovation Challenge Fund</td>
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<tr>
<td>Health Protection Units (funded by NIHR from 1 April 2010)</td>
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<tr>
<td>Other, including legacy programmes and management not attributed to specific programmes</td>
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<td><strong>RESEARCH PROGRAMMES TOTAL</strong></td>
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### INFRASTRUCTURE

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<tbody>
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<tr>
<td>Clinical Research Network</td>
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<td>Biomedical Research Centres</td>
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<td>Biomedical Research Units</td>
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<td>Collaborations for Leadership in Applied Health Research and Care</td>
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<td>Excess Treatment Costs</td>
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<td>Research Design Service</td>
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<td>Translational Research Collaborations</td>
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<td>Health Technology Co-operatives</td>
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<td>Diagnostic Evidence Co-operatives</td>
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<td>Health Informatics Collaboration</td>
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<td>MRC/NIHR National Phenome Centre</td>
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<td>Other (including clinical academics)</td>
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<td><strong>INFRASTRUCTURE TOTAL</strong></td>
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### FACULTY TRAINEES

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<td>Integrated Academic Training (including Academic Clinical Fellowships, Lectureships and Clinician Scientist Awards)</td>
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<td>Fellowships (including legacy training awards)</td>
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<td>Senior Investigators</td>
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<th>OTHER SPEND</th>
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<tbody>
<tr>
<td>NIHR contribution to Genomics England</td>
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<tr>
<td>TOTAL NIHR SPEND</td>
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The following glossary provides definitions of terms used in this report and is colour coded to show where different components of the NIHR fit in relation to the four main strands of its work. These are:

- **Research**: commissioning and funding research
- **Infrastructure**: providing the facilities and people for a thriving research environment
- **Faculty**: supporting the individuals carrying out and supporting research
- **Systems**: promoting faster, easier clinical research through unified, streamlined and simple systems for managing research and its outputs and improving patient participation in research.

### Alphabetical list of key terms and acronyms:

**Allied Health Professionals (AHPs)** – various health professions including dentists, occupational therapists, physiotherapists, chiropodists and podiatrists, paramedics, dieticians and others.

**Biomedical Research Centres (BRCs)** – eleven BRCs conduct and support translational research to transform scientific breakthroughs into new treatments for patients, driving progress on innovation and translational research in biomedicine into NHS practice. The Centres, based within the most outstanding NHS and university partnerships in the country, are leaders in translating fundamental biomedical research into clinical research that benefits patients. They are early adopters of new insights in technologies, techniques and treatments for improving health. The NIHR BRCs provide a key component of the NHS contribution to the nation’s international competitiveness by building on the best research leaders and their teams and enabling their host institutions to achieve or further develop critical mass in a priority research area. Like BRCs, BRUs also make a major contribution to economic growth through collaborative research with industry.

**Biomedical Research Units (BRUs)** – twenty BRUs undertake translational clinical research in priority areas of high disease burden and clinical need, driving innovation in the prevention, diagnosis and treatment of ill-health and translating advances in medical research into benefits for patients. The BRUs provide a key component of the NHS contribution to the nation’s international competitiveness by building on the best research leaders and their teams and enabling their host institutions to achieve or further develop critical mass in a priority research area. Like BRCs, BRUs also make a major contribution to economic growth through collaborative research with industry.

**Blood and Transport Research Units** – are research partnerships between universities and NHS Blood & Transplant (NHSBT). Three new BTRUs will commence operation in October 2015 and will be multidisciplinary centres of excellence supporting the needs of NHSBT for research to improve the supply of blood, blood products, stem cells and tissues, and organs for transplantation.

**Central Commissioning Facility (CCF)** – manages and administers research programmes and the clinical research infrastructure in the NHS funded by the NIHR and the Department of Health that investigate a range of healthcare matters and assist in how research-based knowledge is applied across all healthcare sectors. Its principal function is to operate an online application facility and peer-review process to commission health research, underpinned by patient and public involvement.

**Centre for Surgical Reconstruction and Microbiology (CSRM)** – the CSRM brings both military and civilian trauma surgeons and scientists together to share advanced clinical practice in the battlefield and innovation in medical research to benefit all trauma patients in the NHS at an early stage of injury. The Centre is a partnership between the NIHR, the Ministry of Defence, University Hospitals Birmingham and the University of Birmingham.

**Challenge Awards** – an Invention for Innovation (i4i) award which aims to bridge the gap between the innovation and development of new medical technology, and its adoption into clinical pathways.

**Clinical Academic Training (CAT) Programme for Nurses, Midwives and Allied Health Professions** – a research training and career development programme, in partnership with Health Education England.

**Clinical Practice Research Datalink (CPRD)** – in partnership with the Medicines and Healthcare products Regulatory Agency, CPRD provides a secure and safe access point to patient electronic health records, collected routinely by the NHS, to support research.
**Clinical Research Facilities for Experimental Medicine (CRFs)** – provide purpose-built environments for patient-centred research where clinical researchers are able to make use of cutting-edge clinical facilities, technologies and expertise and have access to patients. They support collaborations between basic and clinical scientists, which help to ensure that advances in research feed through into improvements in healthcare.

**Clinical Research Network (CRN)** – the Network supports the set-up and timely delivery of commercial and non-commercial clinical trials and other approved studies in the NHS in England. The support includes advice on study feasibility, streamlined NHS permissions and effective patient recruitment.

**Clinical Research Network Coordinating Centre (CRNCC)** – manages the activities undertaken by the Clinical Research Network.

**Clinical Trials Fellowships** – a research training and career development programme open to current NIHR trainees, to give further training within the setting of a Clinical Trials Unit.

**Clinical Trials Toolkit (CT Toolkit)** – a website resource on governance, the CT Toolkit helps with regulatory requirements and good practice in clinical trials.

**Collaborations for Leadership in Applied Health Research and Care (CLAHRCs)** – bring together a collaboration of the local providers of NHS services and NHS commissioners, universities, other relevant local organisations and the relevant Academic Health Science Network. CLAHRCs conduct applied health research across the NHS, and translate research findings into improved outcomes for patients. The 13 NIHR CLAHRCs primarily focus on research targeted at chronic disease and public health interventions.

**Co-ordinated System for gaining NHS Permission (CSP)** – involves a single study-wide review to consider compliance issues, allowing local reviews to focus on whether individual sites can deliver a study.

**Clinical Record Interactive Search (CRIS)** – enables researchers to safely and securely review real life situations using information from the Trust’s clinical records. This means it is easier to see patterns and trends, for example, what treatments work for some and don’t work for others.

**CTU Support Funding** – NIHR funding to offer UKCRC registered Clinical Trials Units additional financial stability and flexibility, and to enable them to increase their capacity to support NIHR research funding applications and active projects.

**Database of Abstracts of Reviews of Effects (DARE)** – run by the Centre for Reviews and Dissemination at the University of York, DARE contains quality assessed systematic reviews that evaluate the effects of health and social care interventions and the delivery and organisation of health services. To help decision makers, reviews of key relevance to the NHS have a critical commentary, summarising the overall reliability of the findings.

**Dementia Clinical Record Interactive Search (D-CRIS)** – a world-leading resource that will enable large patient datasets to be pooled so that dementia research can be conducted at scale, providing researchers with access to one million patient records and enabling them to identify trends in the data and investigate why treatments work for some patients and are not as effective for others.

**Dementias and Neurodegenerative Diseases Research Network (DeNDRoN)** – is part of the NIHR’s Clinical Research Network (CRN). It supports the development, set up and delivery of clinical research in the NHS in dementias, Huntington’s disease, motor neurone disease, Parkinson’s disease, and other neurodegenerative diseases. By promoting high quality clinical research it increases the understanding of the causes of these conditions, and improves the prevention, detection, care and treatment for people suffering from them.

**Dementia Translational Research Collaboration (Dementia TRC)** – aims to pull discoveries from basic science into real benefits for patients. The collaboration comprises four new NIHR Dementia Biomedical Research Units as well as eleven NIHR Biomedical Research Centres with dementia-related research themes.

**Devices for Dignity (D4D) HTC** – one of the NIHR Healthcare Technology Cooperatives (HTC) that develops new healthcare products to empower people with long-term debilitating conditions that affect their dignity and independence.

**Diagnostic Evidence Co-operatives (DECs)** – Four DECs bring together a wide range of experts and specialists from across the NHS and industry to catalyse the generation of evidence on in-vitro diagnostic medical devices, improve the way diseases are diagnosed, help patients access the most appropriate treatments more quickly and help the NHS make the best use of its resources.

**Efficacy and Mechanism Evaluation (EME) Programme** – supports ‘science driven’ studies with an expectation of substantial health gain. It is jointly funded by the NIHR and MRC and aims to support excellent clinical science with an ultimate view to improving health or patient care. It funds investigations into the efficacy and broader impact of healthcare treatments, and tests and evaluates new treatments including therapeutics, psychological interventions, public health, diagnostics and medical devices, and disease prevention.

**ENRICH (Enabling Research in Care Homes)** – improves the consistency of support for research outside the NHS. ENRICH organises the coming together of care home staff, residents and researchers to facilitate the delivery of research to improve the quality of life, treatments and care of people with dementia and other diseases affecting older people.

**ENTERIC (the Bowel Function Healthcare Technology Co-operative)** – is one of two pilot HTCs set up in 2008 to provide a new national resource to address unmet clinical need in the diagnosis and treatment of disorders of the bowel through the co-operative development and implementation of new non-pharmaceutical treatments and technologies.

**Experimental Cancer Medicine Centres (ECMCs)** – funded in partnership with Cancer Research UK, the centres focus on speeding up the process of cancer drug development and the search for cancer biomarkers to diagnose cancer, predict the aggressiveness of the disease, or show whether a drug will be effective in a specific patient and at what dose.
Faculty – the NIHR Faculty brings together and supports the growing NIHR community of health research professionals, including clinical and support staff from all relevant professional backgrounds. The NIHR Faculty has four categories of membership: Senior Investigators, Investigators, Associates and Trainees. The NIHR Faculty also provides a range of research training and career development programmes and individual schemes to provide support for the academic training paths of all health care professionals and other key disciplines involved in health and social care research.

Fellowships Programme – a career development programme that supports outstanding individuals to become the health research leaders of the future by buying out their salary costs, meeting their training and development costs and by contributing to the research costs needed to complete an identified research project.

Health Protection Research Units (HPRU) – 13 research partnerships between universities and Public Health England (PHE) which act as centres of excellence in multidisciplinary health protection research in England.

Health Services and Delivery Research (HS&DR) Programme – funds research to produce evidence on the quality, accessibility and organisation of health services. This includes evaluations of how the NHS might improve delivery of services. It embraces a range of approaches and methods. Many studies focus on what works – the models of care which are most cost-effective – whilst others explore how decisions are made and services are delivered.

Health Technology Assessment (HTA) database – a database run by the Centre for Reviews and Dissemination at the University of York, which contains bibliographic records of on-going and completed health technology assessments from organisations around the world.

Health Technology Assessment (HTA) Programme – funds research to ensure that healthcare professionals, NHS managers, the public and patients have the best and latest information on the costs, effectiveness and impact of developments in health technology. The HTA Programme is the largest of the NIHR research programmes. Research is commissioned through two main workstreams: commissioned and researcher-led. This research serves a variety of key stakeholders including: decision-makers in local government, policy-makers (including NICE), researchers, NHS health professionals, other NIHR stakeholders, and the general public.

Healthcare Scientist Programme (HSP) – a research training and career development programme for healthcare scientists based in the NHS, in partnership with Health Education England.

Healthcare Technology Cooperatives (HTCs) – eight HTCs develop concepts, demonstrate proof of principle and devise research protocols for new medical devices, healthcare technologies or technology dependent interventions for underserved patient groups.

Horizon Scanning Research and Intelligence Centre (HSRIC) – appraises new technological developments to provide the Department of Health and policymakers with information on their implications to the NHS both in clinical and economic terms. The centre’s appraisals include new medicines, medical devices, diagnostic tests, surgical interventions, rehabilitation measures, and new health promotion approaches.

Integrated Academic Training (IAT) Programme – a research training and career development programme for doctors and dentists.

Invention for Innovation Programme (i4i) – supports and advances the development of innovative medical technologies and techniques that could have a potential impact if applied in a healthcare setting. i4i funds collaborative research and development between partners from industry, NHS organisations and universities or other higher education institutions.

INVOLVE – INVOLVE supports public involvement in NHS, public health and social care research. Public involvement in research is research being carried out ‘with’ or ‘by’ members of the public rather than ‘to’, ‘about’ or ‘for’ them. INVOLVE leads on public involvement across the NIHR to ensure it is an essential part of the process by which research is identified, prioritised, commissioned, designed, conducted and disseminated. It works with others to share expertise, develop resources, build evidence and influence policy.

Knowledge Mobilisation Research Fellowships – a research training and career development programme designed for developing future Knowledge Mobilisation Research leaders.

Leadership Support and Development Programme – provides support and development for leaders across the NIHR and R&D Managers in the NHS at different career stages. It is aimed at senior professionals in health who have taken on important leadership roles with a view to make a significant contribution to the health and wealth of the nation through research. The focus of the programme is on developing leadership with a purpose – leadership that results in improved health and patient care.

MRC-NIHR National Phenome Centre – the National Centre, opened in June 2013, is a collaboration between Imperial College London, King’s College London, and analytical technology companies the Waters Corporation and Bruker Biospin. Funded by the MRC and the NIHR, the centre will enable researchers to better understand how the environment interacts with genes to cause disease and to develop new ways to diagnose and treat diseases, including with treatments tailored for individual patients.

Methodology Research Programme (MRP) – In partnership with the MRC, the MRP funds research into methods development to underpin the biomedical and health-related sciences, with methodological outputs that are applicable beyond a specific case study, and ‘Methods in research’ for developing methods and their implementation in research standards with the aim of improving quality and consistency in practice.
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NHS Economic Evaluation Database (NHS EED) – a database run by the Centre for Reviews and Dissemination at the University of York, which focuses primarily on the economic evaluation of health and social care interventions and help decision makers interpret an increasingly complex and technical literature. Studies of key relevance to the NHS have a critical commentary, summarising the overall reliability and generalisability of the study, and presenting any practical implications for the NHS.

NIHR BioResource – is a panel of thousands of volunteers, both with and without health problems, who are willing to be approached to participate in research studies including to develop new treatments for a range of diseases, and to investigate the links between genes, the environment, health and disease. It supports early translational research (experimental medicine) studies into a number of conditions.

NIHR BioResource for Rare Diseases – has been established to identify genetic causes of rare diseases, improve rates of diagnosis and to enable studies to develop and validate treatments; thus improving care for those with rare diseases and their families.

NIHR Dissemination Centre – will explain the context and impact of emerging research in health and care, helping to translate research findings into accessible information and produce a range of types of evidence review on key topics in health. Using a range of platforms, it will make it easier for people to get to the evidence they need in the form that is most helpful to them. It will make the most of existing clinical, patient and research networks, and key contacts to get information to the right people at the right time.

NIHR National Biosample Centre – provides high throughput and high quality biosample processing, storage and retrieval services to support National Institute for Health Research-supported research, and research funded by DH partners, such as the MRC, charities and industry. The Centre has the capacity to store up to 20 million samples and is a significant national health research resource and was launched.

NIHR Dashboard – an internal system that collects and displays high-level information from the different parts of the NIHR. The information includes NIHR funding, which is categorised by the Health Research Classification System, and performance indicators. The performance indicators are designed to monitor the NIHR research administration process, thus helping identify efficiencies and increase effectiveness.

NIHR Evaluation Trials Studies Coordinating Centre (NETSCC) – manages evaluation research programmes and a range of other activities, such as the NIHR Journals Library, for the NIHR.

NIHR Health Informatics Collaboration (NIHR HIC) – brings together five of the country’s leading NHS Trusts with large NIHR Biomedical Research Centres to make NHS clinical data more readily available to researchers, industry and the NHS community. It focuses on five scientific themes – viral hepatology, acute coronary syndrome, ovarian cancer, renal transplantation and critical care.

NIHR Hub – a multifunctional collaboration tool that enables researchers and staff work together securely across the NIHR on both research projects and the administration of research. It provides corporate email, video conferencing, user directory and tools to create and collaborate on the production of documents and materials such as research protocols and appropriate data sets.

NIHR Office for Clinical Research Infrastructure (NOCRI) – facilitates both collaboration between elements of the NIHR research infrastructure and industry’s engagement with the NHS clinical research infrastructure by providing expert advice to life sciences research partners including pharmaceutical, biotechnology, contract research organisations and device and diagnostic companies.

NIHR Researchfish – an external system used by the NIHR to collect information on the research activities that are undertaken by its award holders. On an annual basis, NIHR-funded researchers and trainees are asked to submit data about their outputs, outcomes and impacts. The Researchfish system is used by over 80 research organisations and funders, which makes it possible for researchers to provide information to multiple funders in one place, thereby reducing their administrative burden.

Open Data Platform (ODP) – connects all of the NIHR Clinical Research Network’s performance and monitoring data. It is designed in line with information governance guidelines and includes access controls to commercially sensitive data.

Patient Public Involvement (PPI) – involving members of the public in NIHR’s work. The purpose is to improve the quality and relevance of the research that the NIHR commissions and other NIHR activities.

Patient Safety Translational Research Centres (PSTRCs) – two PSTRCs conduct and support translational research to investigate ways to improve the patient safety and safety of NHS services.

Priority Setting Partnerships (PSP) – The James Lind Alliance (JLA) Priority Setting Partnerships (PSPs) identify and prioritise treatment uncertainties which they agree are the most important for research. They bring patients, carers and clinicians together in these partnerships to ensure that researchers, and those who fund health research, are aware of what matters to both patients and clinicians.

Product Development Award – an Invention for Innovation (i4i) award that supports projects developing any innovative medical technology including medical devices, active implantable devices and in vitro diagnostic devices. i4i will also support projects which utilise and develop techniques or technologies from other industry sectors that could have a potential impact if applied in a healthcare setting.
Programme Development Grants (PDGs) – nested within the Programme Grant for Applied Research (PGfAR) programme is the PDG scheme. This initiative offers investigators the opportunity to undertake preparatory research that will position them to submit a competitive PGfAR application.

Programme Grants for Applied Research (PGfAR) – prestigious awards for up to five years, directed towards leading researchers who can demonstrate an impressive track-record of achievement in applied health research. Each programme funds a series of related projects, which form a coherent theme in an area of priority or need for the NHS.

PROSPERO – an international database of prospectively registered systematic reviews in health and social care managed by the Centre for Reviews and Dissemination at the University of York. Key features from the review protocol are recorded and maintained as a permanent record. PROSPERO aims to provide a comprehensive listing of systematic reviews registered at inception to help avoid unplanned duplication and enable comparison of reported review findings with what was planned in the protocol.

Public Health Research (PHR) Programme – the PHR Programme evaluates public health interventions, providing new knowledge on the benefits, costs, acceptability and wider impacts of non-NHS interventions intended to improve the health of the public and reduce inequalities in health.

Rare Diseases Translational Research Collaborations – provide world-class NHS research infrastructure to support discoveries and translational research on rare diseases. At its core, this TRC is formed from our Biomedical Research Centres (BRCs), Biomedical Research Units (BRUs) and Clinical Research Facilities (CRFs), all with world-leading research expertise into rare diseases, facilities and capacity.

Randomised Controlled Trials (RCTs) – a trial in which investigators randomly allocate eligible participants into two or more groups, for example, intervention and control, to receive or not to receive one or more interventions that are being compared. The results are assessed by comparing outcomes in the intervention and control groups.

Reference & Terminology Service (RTS) – facilitates research information systems to communicate with each other consistently and effectively by acting as a single repository for all research reference data, which is capable of “talking” with any operational system.

Research Capability Funding (RCF) – provides funding to research-active NHS organisations to help support research activity. Funding is allocated in proportion to the total amount of other NIHR income received by that organisation, and on the number of NIHR Senior Investigators associated with the organisation. Organisations whose NIHR income is insufficient to trigger an RCF allocation may still receive an allocation based on their recruitment of patients to non-commercial clinical studies conducted through the NIHR Clinical Research Network (CRN). Funding is also allocated to the NIHR for the Local Clinical Research Network, via the NHS organisations that host each local Network.

Research Passport Scheme – supports HR arrangements to simplify the process of issuing or recognising Honorary Research Contracts and Letters of Access to make it easier and faster to begin agreed research studies.

Research Support Services (RSS) framework – a set of tools and guidelines that enable providers and in particular their research managers to take a consistent, streamlined and risk-proportionate approach to considering their participation in research.

Research Design Service (RDS) – the RDS provides support for health and social care researchers to develop and design high quality patient-focused research proposals for submission to the NIHR and other national peer-reviewed competitions. The RDS offers high quality and responsive specialist advice on all aspects of an application. RDS advisers across England offer a unique breadth of experience and a proven track record in improving research applications. They can also signpost to other sources of help such as for costing applications or exploiting intellectual property. Advice is confidential and free of charge.

Research for Patient Benefit (RfPB) Programme – a response-mode programme for investigator-led research projects that address issues of importance to the NHS. Applications are assessed by Regional Committees to ensure that research proposals will increase the effectiveness of NHS services and will benefit patients.

Research Methods Programme – designed to support the development of individuals with expertise in research methods including medical statistics, health economics, clinical trial design, operational research, and modelling.

Research Professorships – prestigious awards given under the NIHR Faculty.

Research Programmes – the NIHR has a comprehensive range of research programmes in both commissioned and response mode. They offer a focused source of funding for researchers with the aim of improving health and care by providing evidence to inform clinical professionals, NHS managers, patients and the public, and where appropriate policy makers.

Research Schools – the NIHR supports three national Research Schools that bring together top academics and practitioners to increase the evidence base for effective practice. The schools conduct research to increase the volume and quality of reliable and relevant evidence and create an environment where first-class applied research can thrive. The three schools are:

• School for Primary Care Research (SPCR)
• School for Public Health Research (SPHR)
• School for Social Care Research (SPCR)

School for Primary Care Research (SPCR) – the SPCR was the first research school to be established within the NIHR. The school comprises the leading academic centres for primary care research in England and their focus is on research to improve everyday practice in primary care and to support clinical trials and studies in primary care and at the interface with secondary care. The school also holds a training and capacity development grant and has awarded more than 50 individual awards since 2010.
School for Public Health Research (SPHR) – the SPHR undertakes research into public health with an emphasis on what works practically, can be applied across the country, and better meets the needs of policy makers, practitioners and the public to enable future challenges to be met and opportunities realised.

School for Social Care Research (SSCR) – the SSCR carries out primary research and provides a focus for applied research in social care within the NIHR to increase the evidence-base for adult social care practice. In funding the school, NIHR recognises the significant contribution that social care makes to the nation’s health.

Systematic Reviews (SR) Programme – Systematic Reviews identify, evaluate, combine and summarise the findings of all relevant individual studies to provide decision-makers with the best possible information about the effects of tests, treatments and other interventions used in health and social care. The NIHR supports various groups responsible for undertaking and facilitating the production of systematic reviews.

Trainees Coordinating Centre (TCC) – makes training awards to researchers whose work focuses on people and patient-based applied health research. The NIHR funds research training in order to build a leading NHS Research Faculty, develop research careers, research leaders and collaborators.

Technology Assessment Reviews (TARs) – part of the Systematic Review Programme, TARs are commissioned by the HTA Programme on behalf of NICE and other policy-makers to support evidence-informed policy and practice by independently assessing the existing evidence base on the benefits, harms and costs of particular health technologies. TAR team reports are an integral part of NICE’s Technology Assessment and Diagnostic Appraisal programmes. TAR teams also write reports for other policy customers, including the Policy Research Programme and the National Screening Committee.

Translational Research Partnerships (TRPs) – bring together world-class investigators in leading academic and NHS centres to support collaboration with the life sciences industry in early and exploratory development of new drugs and other interventions. The NIHR Biomedical Research Centres and Units form the bedrock of these partnerships.

UK Clinical Trials Gateway (UKCTG) – a website and mobile app that provides patients with easy to understand information about research studies that may be relevant to them.

UK Cochrane Centre (UKCC) and Cochrane Review Groups (CRGs) – support the preparation, maintenance and accessibility of systematic reviews of the effects of healthcare interventions. The reviews are produced by twenty NIHR-funded Cochrane Review Groups. The UKCC is part of the international Cochrane Collaboration, an international, independent not-for-profit organisation, dedicated to making up-to-date, accurate information about the effects of healthcare readily available throughout the world, which is particularly important and valued in the rapidly changing healthcare environment.
Non NIHR

Academy of Medical Sciences (AMS) – promotes advances in medical science and campaigns to ensure these are translated into healthcare benefits for society.

Alzheimer’s Research UK – a leading research charity which specialises in finding the causes, treatments and cures for dementia.

Alzheimer’s Society – an organisation that works to improve the quality of life of people affected by dementia and their families.

Association of the British Pharmaceutical Industry (ABPI) – represents innovative research-based biopharmaceutical companies, large, medium and small, leading an exciting new era of biosciences in the UK.

Association of Medical Research Charities (AMRC) – the national membership organisation of leading medical and health research charities.

BioIndustry Association (BIA) – lifescience industry organisation.

British Medical Journal – medical journal magazine.

Care Quality Commission (CQC) – an independent regulatory body that has responsibility for all health and social care services in England.

Cancer Research UK (CRUK) – a registered charity.

Farr Institute of Health Informatics Research – supports the collective work of four Centres of Excellence in e-health informatics research across the UK. Funded by a consortium of ten UK funding agencies, the centres in London, Manchester, Swansea and Dundee optimise the use of health records in research and address the UK’s capacity-building requirements to support a sustainable health informatics research base. The centres also provide facilities for communication to address key issues in health informatics research including governance, computer science infrastructure, public engagement, and training and education.

Health Education England (HEE) – part of the NHS that will deliver a better health and healthcare workforce for England with responsibilities for the education, training and personal development of every member of staff.

Health Research Authority (HRA) – established in December 2011 to protect and promote the interests of patients and the public in health research. It enables patients to benefit from participating in research by simplifying processes for ethical research, whilst protecting them from unethical research.

Involvement 4 Access – partnering with patients to improve research engagement in the NHS.

James Lind Alliance (JLA) – an organisation that identifies and prioritises treatment uncertainties which they agree are the most important for research.

Medical Research Council (MRC) – a public funded organisation dedicated to improving human health through research.

Medicines and Healthcare products Regulatory Agency (MHRA) – government body responsible for regulating all medicines and medical devices in the UK by ensuring they work and are acceptably safe.

NHS Confederation’s Commission – a joint initiative with the NHS Confederation, Age UK and the Local Government Association (LGA), to help improve dignity in care for older people in hospitals and care homes.

National Institute for Health and Care Excellence (NICE) – government body that provides national guidance and advice to improve health and social care.

Office for Strategic Co-ordination of Health Research (OSCHR) – jointly set up as a Government Office in January 2007 by the Department of Health and the Department for Business, Innovation and Skills. Its mission is to facilitate more efficient translation of health research into health and economic benefits in the UK through better coordination of health research and more coherent funding arrangements to support translation.

Royal College of General Practitioners (RCGP) – professional membership body for family doctors in the UK.

Strategy for UK Life Sciences – government strategy aimed at enabling the UK to capitalise on its strengths such as its world-class science and clinical research.

UK Trade & Investment (UKTI) – works with UK-based businesses to ensure their success in international markets, and encourage the best overseas companies to look to the UK as their global partner of choice.

Wellcome Trust – a global charitable foundation dedicated to achieving improvements in human and animal health. The Wellcome Trust supports biomedical research and the medical humanities as well as public engagement, education and the application of research to improve health.

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