



A Shared Vision for UK Health Research

March 2010

A SHARED VISION FOR UK HEALTH RESEARCH

Vision Statement

The public funders of health research are committed to working together to improve the competitiveness of UK health research, speed up the translation of basic science to patient benefit and create an environment attractive to the life sciences industry.

The OSCHR Partners' vision is:

- To maintain the UK's position as **one of the global leaders in health research** through sustained investment and the **coordination of strategies** across public funders.
- To create a clear and seamless funding landscape that **facilitates and accelerates the translation of new discoveries for patient and economic benefit**.
- To create and maintain a **world-class infrastructure** that underpins research in the university sector and harnesses the unique potential of the NHS.
- To maintain the UK's strong international position by developing a **strong skills base** with the capacity to meet the health research challenges of the 21st century.
- To enhance the conditions that make the **NHS an internationally recognised centre of research** and to **unlock the research potential of large electronic patient record databases** for the benefit of biomedical science, patient safety and public health.
- To create a **strong culture of partnership**, encouraging cooperation between research funders in the public, charity and commercial sectors, and facilitating collaboration between academics, industry and the NHS.
- To create a **vibrant research community in public health** where partners are fully engaged and where a new cohort of young investigators emerges to address major health problems at a population level.

Purpose of this document

This document describes the OSCHR Partners' vision for a UK health research and development (R&D) strategy. It summarises the aims of public funding and describes the new UK health R&D landscape.

Introduction

The UK has a long history as a world leader in health R&D. The UK's strengths span the entire health R&D landscape from basic discovery research to clinical interventions for patients, across prevention, screening, diagnosis and treatments, and from the NHS and academia to industry. Patients and the public benefit not only from products and programmes that protect and improve health, but also from the contribution that health research makes to the wider economy.¹

UK health R&D is operating in an increasingly challenging environment. All sectors are facing economic pressures to save money

and increasing competition from other countries. The challenges facing the UK were summarised in Sir David Cooksey's 2006 publication *A Review of UK Health Research Funding*. To meet these challenges the public funders of research are working together to ensure that UK health R&D becomes more productive, more efficient and more innovative in order to maintain its world-leading position. Overseen by the OSCHR Board, the OSCHR Partners² are engaging in an unprecedented level of joint planning and delivery activities to build the health research environment for the 21st century.

Box 1 – Public Funders of Health Research in the UK

Public funding for health R&D is channelled through a number of public funders of research across the UK:

- The health departments in England (through the NIHR), Scotland (through the CSO), Wales (through the NISCHR) and Northern Ireland (through the Health and Social Care R&D Office);
- The Department for Business, Innovation & Skills (BIS), via the MRC and other Research Councils, including the Biotechnology and Biological Sciences Research Council (BBSRC), the Engineering and Physical Sciences Research Council (EPSRC) and the Economic and Social Research Council (ESRC); the TSB and the Higher Education Funding Council, England (HEFCE);
- Other government departments, Higher Education Funding Councils, and Regional Development Agencies.

¹ E.g. *Medical Research: What's it worth? Estimating the economic benefits from medical research in the UK*, November 2008

² The OSCHR Partners are the Medical Research Council (MRC), the National Institute for Health Research (NIHR) (England), the Chief Scientist Office (CSO) (Scotland), the National Institute for Social Care and Health Research (NISCHR) (Wales), and the Health and Social Care R&D Office (Northern Ireland). The Technology Strategy Board (TSB) became an OSCHR Partner in January 2010.

BUILDING ON A STRONG ACADEMIC BASE

Vision Statement

To maintain and improve the UK's position as one of the global leaders in health research through sustained investment and the coordination of strategies across public funders.

The UK has a long tradition of funding basic biomedical research and claims many important firsts in the discovery and development of healthcare innovations. This strong academic base is fundamental to the success of UK health R&D. Knowledge developed through basic research drives the development of products and interventions needed to treat patients and promote general health and well-being. The UK's universities and institutes also produce the highly trained researchers, process engineers, healthcare providers, business development experts and other professionals necessary to meet the needs of patients and to provide high-quality staff for healthcare industries.

To maintain this global position, the UK aims to expand basic, translational and applied clinical research, and to accelerate the translation of discoveries into interventions for patient and public benefit. The vision is to maintain the UK as one of the top three nations for academic research and to create an environment in which scientists understand how their research can be progressed to the clinic and clinicians are routinely involved in scientific research. To achieve this, publicly funded health research is now more actively

managed to ensure that innovations move into practice. Investment is focused on:

- coordinated funding programmes that manage the translation of research into patient and commercial benefits;
- strengthening the clinical research infrastructure and capacity across the translational landscape;
- equipping scientists with the skills they need to translate basic research discoveries into benefits for patients and the public;
- strengthening the science base to build capacity in areas where there are bottlenecks in translation;
- enhancing innovation through multidisciplinary research and collaborations with industry to achieve translation of research into clinical practice;
- providing support for early development and experimental medicine programmes;
- strengthening the research uses of the NHS databases across the UK; and
- increasing capacity for public health research and evaluation of public health interventions.

This vision requires sustained investment and, in recent years, the public sector has made a strong commitment to expanding and developing health R&D and promoting investment. The 2007 Comprehensive Spending Review settlement will see the MRC budget grow to £707 million p.a. and ensure ring-fenced funding for the NIHR, growing to £992 million p.a. by 2010-11. The devolved Partners have also successfully achieved budget uplifts for the period through the systems operating in each country. For Wales, the health and social care research budget has seen funding increases

of £9.4 million over the last two years with a further significant increase anticipated for 2010-11. This means that public sector funding for health research across the UK will increase to nearly £1.8 billion for the OSCHR Partners, ensuring continued support for basic science research while allowing for unprecedented growth in translational activity and NHS clinical trials. See **Box 2** for further details.

Box 2 – The UK Investing in Excellence

Collectively, the public sector, industry and health research charities invest over £10 billion per year in UK health R&D. Industry is the largest contributor, accounting for around 66% of the total investment, with the public sector and charities contributing around 25% and 9% respectively. The UK is home to two of the world's top ten pharmaceutical companies and other research-based multinationals. The UK biotechnology sector is the largest in

Europe and funds about 13% of UK clinical research – globally it is second only to the USA. Over 100 charities fund health R&D in the UK, the largest being the Wellcome Trust, Cancer Research UK and the British Heart Foundation.

A thriving research community generates 13.7% of world citations, second only to the USA, and 13% of papers with the highest impact. UK scientists receive around 10% of internationally recognised scientific prizes every year. Nearly 20% of the world's top medicines were discovered and developed in the UK.

MOVING FROM DISCOVERY TO PATIENT BENEFIT

Vision Statement

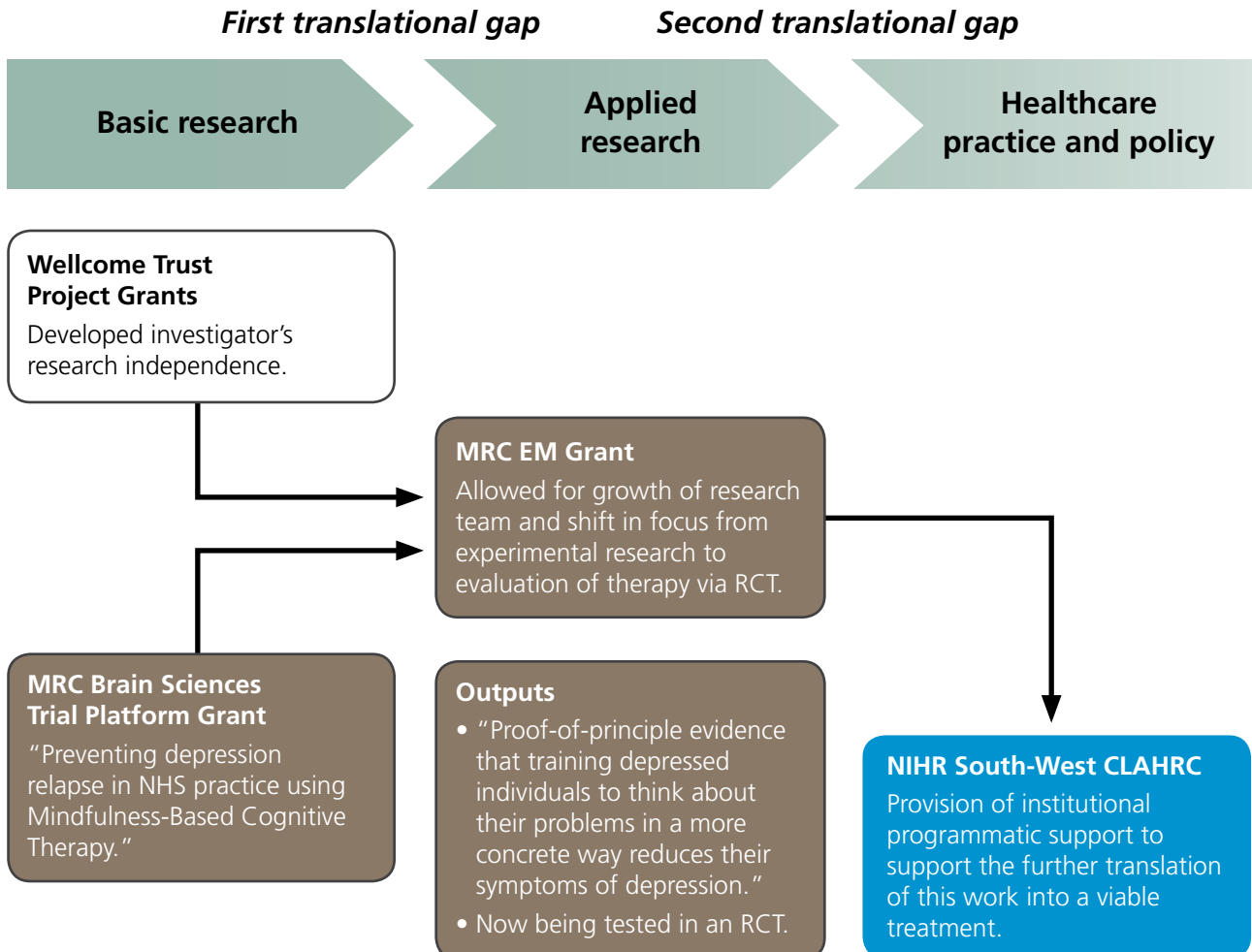
To create a clear and seamless funding landscape that facilitates and accelerates the translation of new discoveries for patient and economic benefit.

The translation of discoveries into interventions that deliver benefits for patients and the public requires the involvement of many different disciplines and organisations across the public, industry and charity health R&D sectors. The UK vision is to cultivate a collaborative R&D environment that facilitates the progression of healthcare interventions from concept to delivery and through all of the appropriate regulatory phases, including clinical trials. To facilitate this, the OSCHR Partners are creating a funding landscape that supports and actively manages development and innovation. Programmes and systems have been designed to identify the latest advances arising from basic science or clinical care, develop their potential into promising products or interventions, and evaluate their effectiveness, value for money and broader impact for commercialisation and clinical use. Coordination and decision-making arrangements are in place to ensure smooth 'pull-through' of ideas between funders and across funding programmes. See **Case Studies 1 and 2**. Many programmes have been, and continue to be, developed with input from the industries associated with pharmaceuticals, diagnostics and medical devices.

The OSCHR Partners are creating an environment where highly skilled and motivated academics, often working in collaboration with colleagues in the healthcare industries, can, with the help of public funding, develop novel interventions to the point of patient benefit. Opportunities will exist to develop the potential of not only small molecules and biologicals for pharmaceutical intervention but also novel diagnostics, medical devices, behavioural interventions and novel uses of IT for patient benefit. These are areas of research activity which previously have not been significantly resourced by public sector funders.

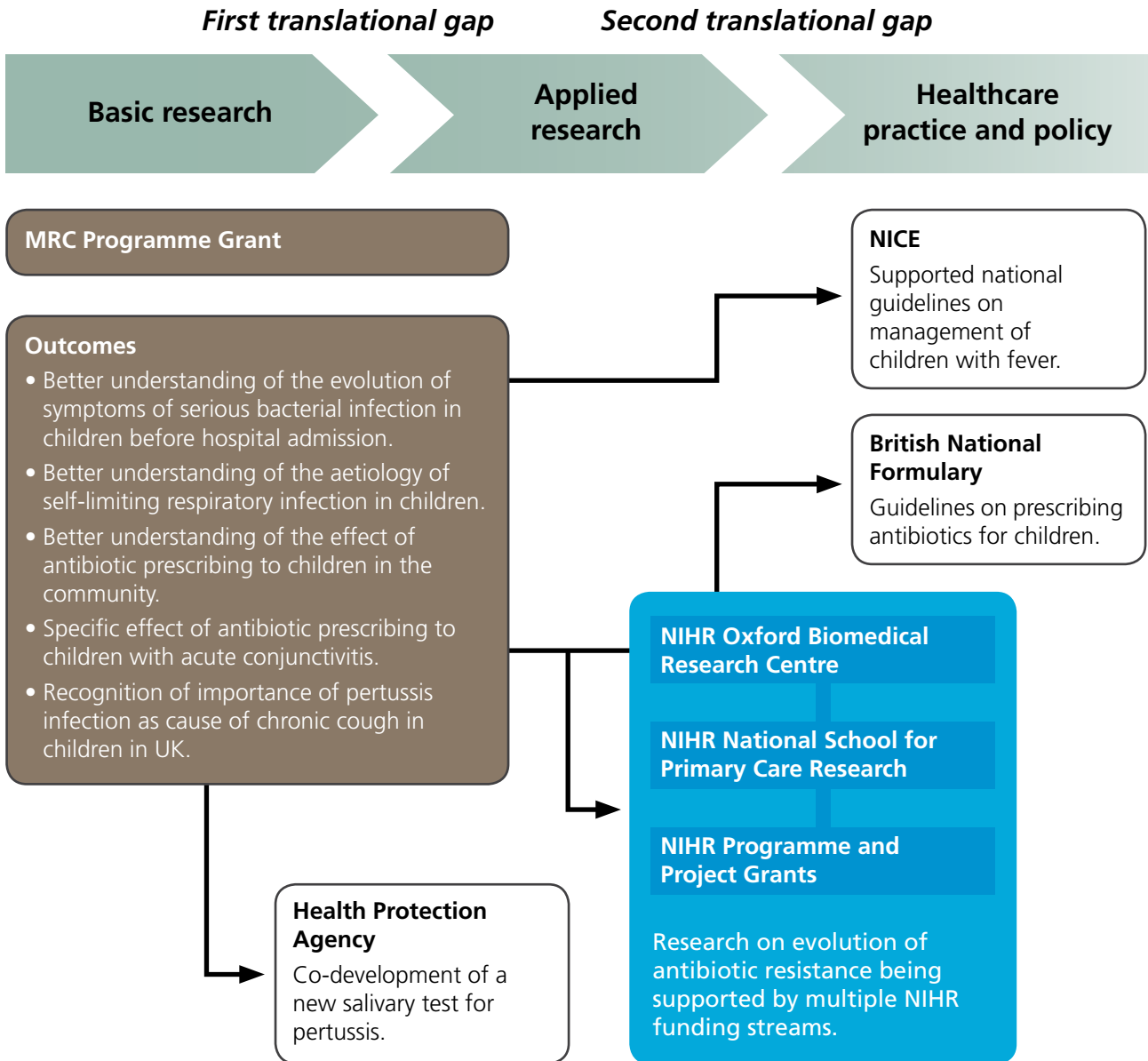
Case study 1

Professor Edward Watkins (University of Exeter): Cognitive therapy for depression



Case study 2

Professor David Mant (University of Oxford): Childhood infections



WORLD-CLASS RESEARCH AND DEVELOPMENT INFRASTRUCTURE AND CAPACITY

Vision Statement

To create and maintain a world-class infrastructure that underpins research in the university sector and harnesses the unique potential of the NHS.

To improve competitiveness, the OSCHR Partners are expanding and improving the UK's health research infrastructure with dedicated world-class facilities and cutting-edge technology in the NHS, in academia and at the boundary between the two. The translation of novel ideas will benefit from new infrastructure designed to create the optimal environment for each stage of development. Thus, new investment in capacity for early stage development in the university sector will interface with Biomedical Research Centres and Units at the interface with the NHS in England, and with similar, supported entities in the devolved nations, to provide an optimal environment for translational research. Further evaluation of interventions in an NHS setting will be underpinned by a series of interlinked clinical trials networks created across the UK. These provide the capacity and expertise to rapidly recruit and randomise patients into phase II and III trials and conduct phase IV trials. Other components of infrastructure such as UK Biobank, the largest and most advanced genomic epidemiology resource in the world, and the development of infrastructure to support research using electronic patient

records within the NHS, under strict confidentiality and governance arrangements, will provide the UK with unique advantages in the areas of translational health research, epidemiology and health outcomes research.

This coordinated development of infrastructure is complemented by the development of the TSB national Knowledge Transfer Networks (KTNs) in areas such as bioscience, bioprocessing and health technologies, set up and funded by the public sector, industry and academia. The KTNs bring together people from businesses, universities, research, finance and technology organisations to stimulate innovation through knowledge transfer. These and other initiatives are creating a step-change improvement in UK translational health research and development.

BUILDING A HIGHLY-SKILLED WORKFORCE ACROSS THE ENTIRE TRANSLATIONAL HEALTH R&D LANDSCAPE

Vision Statement

To maintain and improve the UK's strong international position by developing a strong skills base with the capacity to meet the health research challenges of the 21st century.

The OSCHR Partners are developing a coordinated approach to 'human capital' development. This approach will cover the full spectrum of recruitment, training, retention and personal development to support the diversity of research career pathways. The OSCHR Partners' vision is to grow:

- the number of people with the skills to undertake basic, translational, clinical and public health research;
- the number of people with the interdisciplinary skills in science, manufacturing and business that are needed to translate research discoveries into products or interventions for patient benefit or commercialisation;
- the number of scientists who have experience in both industry and academia by facilitating migration of academics into industry, even for relatively short periods of time, and by making academic appointments for those who have experience in aspects of translational medicine in a commercial environment;
- a cadre of research managers operating to consistent professional standards and supported by national information systems, and data managers trained to support secure handling of large research data sets derived from patient information.

For decades, UK scientists, doctors, nurses and other clinicians, academics and engineers have led the world in revolutionising medicine and healthcare. Access to skills and knowledge is a critical factor in maintaining the flourishing R&D base needed for global competitiveness and for attracting industry R&D investment. Successful planning and delivery against this agenda requires effective partnership between the public funders of health R&D, the research charities, industry, the universities and other organisations involved in training and employing health researchers. A range of targeted training initiatives, with the aim of developing skills in translational health research, are being put in place. The Research Councils actively encourage cross-council interdisciplinary research and there are many examples where a cross-disciplinary approach to education and training is being taken.

This comprehensive approach will yield benefits not only for global healthcare companies but also for contract research organisations, small and medium-sized biotechnology companies, academia, the NHS and ultimately patients and the public.

THE NHS – A UNIQUE COMPETITIVE ADVANTAGE FOR THE UK

Vision Statement

To enhance the conditions that make the NHS an internationally recognised centre of research and to unlock the research potential of large electronic patient record databases for the benefit of biomedical science, patient safety and public health.

The NHS provides a unique competitive advantage for the UK in the health research endeavour. Throughout the UK, patient care takes place within one linked system, providing a gateway to the largest single group of patients in the world, and caring for those patients from cradle to grave. Since its foundation, research has been a part of the NHS, enabling improvements in the current and future health of the population. Increasingly, innovation in health research, clinical practice and service design is seen as key to improving the quality of healthcare, and the NHS plays a big role in making this happen. The health departments in England, Scotland, Wales and Northern Ireland are working with each other and with other public, industry and charity funders to enhance the conditions that make the NHS an internationally recognised centre of research excellence. Implementation of radical new R&D strategies for the NHS across the UK has seen significant new investment in workforce, funding opportunities and infrastructure support for translational and clinical research, including in the NHS.

The 2009 Health Bill for England proposes the creation of a legal duty on providers and commissioners of NHS services to have regard to the new NHS Constitution. Through

the Constitution, the NHS will do all it can to ensure that patients, from every part of England, are made aware of research that is of particular relevance to them. The NHS is therefore putting in place procedures to ensure that patients are notified of opportunities to join in relevant ethically approved research, and will be free to choose whether they wish to do so.

The potential for research using large electronic patient record databases is a major opportunity for UK biomedical science, patient safety and public health. The NHS's array of patient information held electronically, under provisions that maintain patient confidentiality, provides invaluable opportunities to reveal untapped knowledge. Linked electronic patient data, as used by the NHS, can be harnessed to monitor patterns of disease, help discover more about the effectiveness and safety of medicines and other interventions, and help researchers to identify possible recruits to clinical trials. This will become a unique resource for the biomedical research community. With proper safeguards to ensure patient confidentiality, and rigorous information governance, researchers from the public, charity and industry sectors can make best use of the

NHS's unrivalled databases to develop safer and better medicines and so contribute to improved patient management, patient safety and public health. In the longer term, the linkage of other non-health data could also prove highly beneficial. To deliver this exciting vision, all the major funders from the government and charity sectors are working with the UK health departments. See **Box 3**.

Uptake of the results of innovation is key to a vibrant research culture and there is a renewed commitment to ensure that clinically- and cost-effective innovation in medicines and medical technologies is adopted rapidly to support better forward planning and develop ways to measure uptake.³

Box 3 – A strategy for UK leadership in research using electronic patient records and other health databases

Vision

The UK is an international centre of excellence for health research and the vision is that, with the advent of the ethical use of electronic patient records and other databases for the benefit of patient safety and public health, this world-leading position can be consolidated.

Strategy Statement

In recent years the UK has been at the forefront of work that utilises large data sets for the benefit of improving public health and society more generally. The research councils and other funders, such as the Wellcome Trust, have invested considerably in research, infrastructure and methodological development.

Initiatives led by the health department/directorates in England, Scotland and Wales will soon provide infrastructure that will enable access by researchers to a range of federated NHS data sources in a service that ensures that information is treated and handled in a safe and secure way to protect the rights and confidentiality of patients and also meets researchers' needs effectively. Over time, additional non-NHS datasets may be added onto the emerging research services, thus creating a powerful "UK Health Research Informatics Platform" and unique selling point for UK health research.

In partnership, the major UK funders have signed up to a Strategic Framework for Health Informatics in Support of Research. The Framework is designed to realise the research opportunities offered by infrastructure to link electronic health data for research purposes. A Strategic Coordination Group of funders working with industry has been established to oversee the implementation of this Framework.

³ *High Quality Care for All*, NHS Next Stage Review Final Report – http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_085825

CONTRIBUTING TO NATIONAL WEALTH

Vision Statement

To create a strong culture of partnership encouraging cooperation between research funders in the public, charity and commercial sectors, and facilitating collaboration between academics, industry and the NHS.

Through the coordination of multiple funding streams, greater emphasis on partnership, new funding directed towards translational research and an increasing focus on areas that underpin the commercial development process, publicly funded health research will play an increasingly important role in the knowledge economy.

The healthcare industry in the UK is the largest and most developed in Europe. Globally, it is second only to the USA. The UK is home to two of the world's top ten pharmaceutical companies, and a number of other multinational pharmaceutical companies have R&D, manufacturing and regulatory affairs facilities located in the UK.⁴ There are more than 50 UK and non-UK companies developing biopharmaceutical products in the UK, most with products in preclinical or clinical trials, and there are estimated to be in excess of 2,000 companies engaged in medical device manufacture.⁵ This industry sector employs over 145,000 people.⁶ The vision is for the UK to maintain its position as a global leader in health R&D innovation and a magnet for healthcare

businesses, where translation occurs rapidly, effectively and sustainably to create wealth and enhance quality of life.

During the last decade a closer working relationship on R&D strategy has grown between the public sector in the UK and the healthcare industries. This has manifested itself through joint initiatives and bodies such as the Pharmaceutical Industry Competitiveness Task Force, the UK Clinical Research Collaboration, the Ministerial Industry Strategy Group, the Ministerial Medical Technology Strategy Group and now the Office for Life Sciences. Coupled with this is research charity/industry engagement and representation at all levels of strategy and decision-making within the public funding bodies and OSCHR.

The OSCHR Partners are committed to health R&D expenditure that translates health research not only into health benefits but also economic benefits. New funding on translational research will increasingly be focused on areas that underpin the commercial development process. For

4 www.abpi.org.uk

5 www.bioindustry.org, www.abhi.org.uk/

6 www.abpi.org.uk, www.bioindustry.org, www.abhi.org.uk/

example, the Developmental Pathway Funding Scheme makes use of the extensive capabilities developed for clinical research within the Biomedical Research Centres and Units in the NHS. This will allow early exploratory development to occur more successfully in an academic setting, and also support the development of novel devices and diagnostics. Much greater emphasis is being placed on working in partnership between academic institutions and industry. An environment where risks and benefits are shared between academic and industry partners will be encouraged. New national agencies such as the TSB will support and manage a range of programmes to drive technology-enabled innovation for the benefit of UK business.

The key to success is the coordination of multiple funding streams that support the various components necessary for research activity in this translational space. To do this, UK funders are committed to build, in partnership with industry, a series of Capability Clusters in translational medicine across major therapeutic areas. This will be done as part of a single UK Framework for Industry/Academic/NHS Collaboration in the Life Sciences. This process will rapidly develop the UK to the point at which it functions as a single “super cluster”. See **Box 4**.

Box 4 – Developing Capability Clusters

A series of biomedical Capability Clusters will be created across the UK. The main focus of these clusters will be on early clinical development. This is an area of urgent need for pharma, biotech and the devices industry where proof of mechanism and proof of concept studies are required in settings associated with infrastructure and accessible patient cohorts.

The clusters will bring together a small number of outstanding centres which will work together to deliver exploratory development programmes in each of a number of therapeutic areas, tailored to the therapeutic indications deemed most important by industry. These clusters

will build on areas of UK strength and will become a focus for **Collaboration**, **Coordination** and **Communication**.

To ensure the UK-wide coordination needed to deliver this vision, government funding agencies and the major charities involved agree to work within a single UK Framework for Industry/Academic/NHS Collaboration in the Life Sciences. This will ensure that funding initiatives providing support for programmes in, for example, experimental medicine or cohort development will fit within this UK Framework.

Oversight of this programme rests with a Capability Cluster Delivery & Oversight Group that reports to the OSCHR Board, and which is made up from industry and the public sector.

PUBLIC HEALTH RESEARCH

Vision Statement

To create a vibrant research community in public health where partners are properly engaged and where a new cohort of young investigators emerges to address major health problems at a population level.

An exciting opportunity exists for “translational public health research” to move ideas into practical public health interventions, and a real need for more large-scale evaluation of public health interventions. In order to make swift and tangible progress in this complex area, OSCHR Partners are developing coordinated strategic approaches to public health research in key areas.

Some of the biggest health challenges facing the UK today are associated with a set of behavioural and environmental risk factors, including smoking, poor diet and lack of physical activity, and these contribute to large burdens of illness in the UK. These factors now sit alongside the range of infectious disease exposures that have historically dominated the public health research agenda. The potential for health gain through public health research is enormous.

Public health research is fundamentally different from other aspects of health-related research. In particular:

- it is often a multi-disciplinary, multi-sector, multi-agency activity;
- it takes place in a variety of settings, with much activity occurring outside the NHS; and
- it requires the active involvement of other sectors and government departments that control or regulate education, transport, planning and social care.

The development of a vibrant research community in public health will require that these organisations are properly engaged and that a new cohort of young investigators emerges which is interested in addressing health problems at a population level.

METHODOLOGIES TO TAKE NEW MEDICINES TO THE PATIENT QUICKLY AND SAFELY

Vision Statement

To establish the UK as a focus for excellence in developing novel methodologies for clinical and translational research to speed up drug development and ultimately improve patient safety.

The UK is engaged in discussions with clinical trialists, industry, regulators and the NHS about the evolution of the classical clinical trial paradigm in ways that would improve patient access to drugs and ultimately improve patient safety.

The Cooksey Report highlighted the need to reconsider the approach to clinical development of new drugs to reduce the time taken for new innovative medicines to reach patients. Although constrained by the existing European drug licensing regulations, it is still possible within this framework to consider approaches for improving drug development. Already progress has been made in the UK by reducing the bureaucracy associated with research governance and ethics and by improving recruitment times through the trials networks. Consideration is now being given to a more risk-based regulatory structure for trials that will reduce cost and increase speed of recruitment at no cost to patient safety. The availability of new approaches to tracking large numbers of patients and documenting both outcomes and adverse events using electronic patient records provides the opportunity to develop novel methodology for trials in both the pre-registration and

post-registration period. The shared vision is to establish the UK as a focus for excellence in developing novel methodologies for clinical and translational research to speed up drug development (improving patient access to drugs) while maintaining the highest level of patient safety monitoring (and ultimately improving patient safety).

The UK is now engaged in discussions about the evolution of the classical clinical trial paradigm in ways that would improve patient access to drugs and ultimately improve patient safety. The involvement of clinical trialists, industry, regulators and the NHS in these discussions may provide important new ways to change the approach to late-stage clinical trials.



The OSCHR Partners are the Medical Research Council (MRC), the National Institute for Health Research (NIHR) (England), the Chief Scientist Office (CSO) (Scotland), the National Institute for Social Care and Health Research (NISCHR) (Wales), and the Health and Social Care R&D Office (Northern Ireland).