

TOWARDS NEXT GENERATION HEALTHCARE PROGRAMME

programme remit

Towards Next-Generation Healthcare supports a multidisciplinary approach to improve the health of UK citizens at all stages of their lives, recognising the challenges and opportunities arising from an ageing population and the influence of genetics, lifestyle and the environment on disease and treatment. The programme focuses on working in partnership to accelerate the transition from basic research to clinical products and practices.

programme strategy

- To work with key partners to ensure a seamless transition from basic research through proof of concept to initial trials
- To work with partners in industry, charities and government e.g. National Institute for Health Research [NIHR] and the Office for the Strategic Coordination of Health Research [OSCHR], with an emphasis on:
 - Excellent research to support the development of novel medical technologies, sensors and information systems

- Partnerships with business, government and charities to maximise pull-through of underpinning research into products and clinical practice
- The delivery of better health and wellbeing through dynamic information and intervention
- Increase the volume of high-quality collaborative research and pull-through to clinical products and practice, through the establishment of partnerships with public and private funders to include:
 - A partnership with the Wellcome Trust that aims to support world-class centres of excellence in medical engineering that integrate expertise in the public and private sectors, and across disciplines, so that innovations arising in academia are harnessed effectively by the healthcare industry and aided through the process of regulation, commercialisation and distribution for patient benefit
 - The support of Cancer Imaging Centres and Programmes with Cancer Research UK [CR-UK] that draw upon the UK's strong engineering and physical sciences base and CR-UK's knowledge of cancer biology, clinical need and imaging development.

Research, economic and societal impact

It is widely acknowledged that the UK healthcare model of simply treating disease is unsustainable both economically and socially. Life expectancy at birth has increased by almost 30 years in the last century and it is predicted that around 40% of the UK population will be aged 50 and over by 2051. There are clear economic and social benefits for the UK associated with the contribution that engineering and physical sciences can make to healthcare research. For example increased prevention, earlier diagnosis and better treatment which would impact on life expectancy, quality of life and healthcare costs. This needs to be placed in the context of a clear business need and model, driven by patient benefits and ethical considerations.



International links

Science Bridges supported 3 grants worth a total of £3.25m between Nottingham/India, Bradford/China and Manchester/USA in the areas of biotechnology, pharmaceuticals and clinical diagnostics.

In partnership with the Canadian Institute for Health Research, the programme has supported a pair of N+N workshops, for Canadian and UK researchers in the field of assistive technology for people with dementia. The aim of these workshops was to identify the barriers to implementing assistive technology for people with dementia in their own homes, and then to establish research collaborations which address these problems.



Public engagement

There are several examples of research EPSRC has supported in healthcare where substantial community engagement has been an essential part of the research process.

The Strategic Promotion of Ageing Research Capacity (SPARC), funded through EPSRC's Engineering Programmes and BBSRC, showcased the latest research findings from design, engineering and biology to all stakeholders in older people's issues taking into account the issues raised by practitioners and by older people about the realities of ageing.

The Towards Next Generation Healthcare programme has recently funded a £1.75M consortium grant, Knowledge Transfer for Extending Quality of Life: Putting Ageing and Disability research into practise (KT-EQUAL) aims to take forward, and further develop, the work of the EPSRC funded Extending Quality of Life (EQUAL) and SPARC programmes. Partnerships for knowledge transfer will be extended through close working with commissioners of health, social care and other public services, suppliers, technologists, designers and manufacturers, users and user advocacy groups.

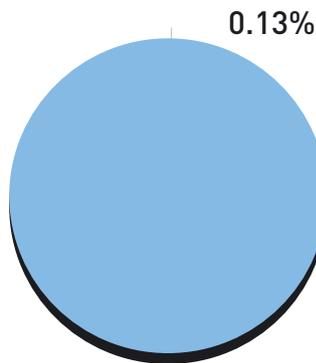


Major facilities and infrastructure

The community does not currently request access to any major EPSRC facilities.

Programme % of total EPSRC budget

The data generated to compile this portfolio review does not currently include any information on the New Dynamics of Ageing initiatives, the Health Technologies Cooperatives or the CR-UK and Wellcome Trust Partnership activities. Please see the Further information section.



Inter-relation with other EPSRC programmes

Programmes	Level of interaction
Maths	✓
Physical Sciences	✓
ICT	✓✓
M3E	✓✓✓
PES	✓
Cross-Disciplinary Interfaces	✓✓
Energy	
Digital Economy	✓✓
Nanoscience	✓✓
Cross Council	✓✓✓

Greatest user collaboration

Department of Health

This contribution is through one research grant, Match-Plus, at Brunel University. The data does not currently include any activities with CR-UK or the Wellcome Trust – please see below under Further Information for more details.

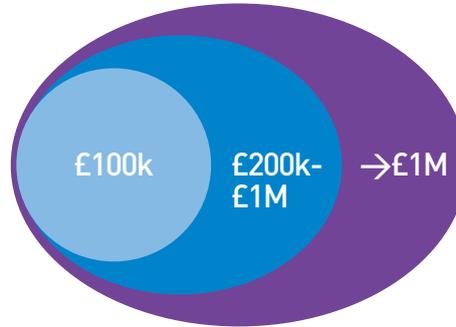


Leading centres based on EPSRC funding

- Brunel University, MATCH-Plus
- Newcastle University e.g. Centre for the Ageing Brain and Vitality
- Sheffield Hallam University, KT-EQUAL
- University College London e.g. The Crucible Centre
- University of Edinburgh, Cognitive Ageing and Cognitive Epidemiology

Research capability

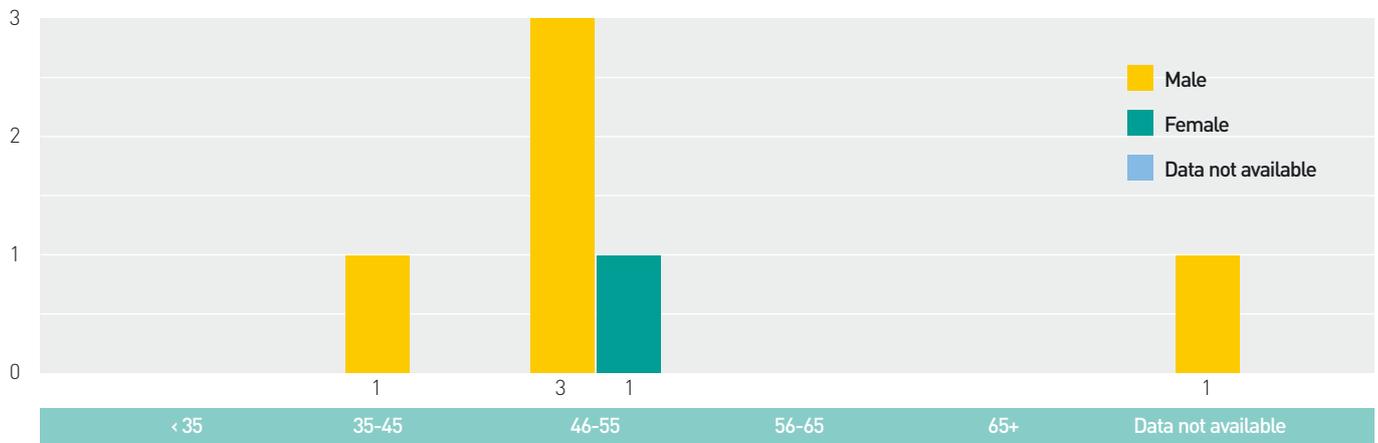
Universities within sub theme by EPSRC funding



Fellowships

There are no Fellowships funded through the Towards Next Generation Healthcare Programme. There are Fellowships relevant to healthcare which are included in other Programme/Sub Programme Reviews e.g. Medical Engineering, Digital Economy, Cross Disciplinary Interfaces Programme.

Demographics



Based on principal and co-investigators



Swot analysis

Strengths

- Strategic partnerships with CR-UK and the Wellcome Trust draw on translation knowledge and experience
- EPSRC/CR-UK Partnership has resulted in major funding for cancer imaging centres
- Cross council programmes: New Dynamics of Ageing and Life Long Health and Wellbeing that strengthen multidisciplinary and collaborative research into ageing
- Programme builds on UK research strengths in medical devices, wound care, diagnostics and orthopaedics.

Weaknesses

- Very crowded and un-coordinated landscape for translation in the area
- High costs for uptake and implementation of new technologies
- Lack of a model to engage with small industrial players, where there is a high proportion of SME's
- Changes to funding of clinical research posts has resulted in a shortage of these researchers
- Shortage of professionals with IT skills in the Healthcare area
- Lack of a health ICT career path, learning environment, undergraduate training
- Need connected ecosystems for innovation to play out in (currently all fragmented and each lives or dies in a small pocket area or pilot)
- Limited partnerships with pharmaceutical healthcare companies through this programme
- Lack of linkage between Pharma/Medicines and Healthcare Technologies Sectors.

Opportunities

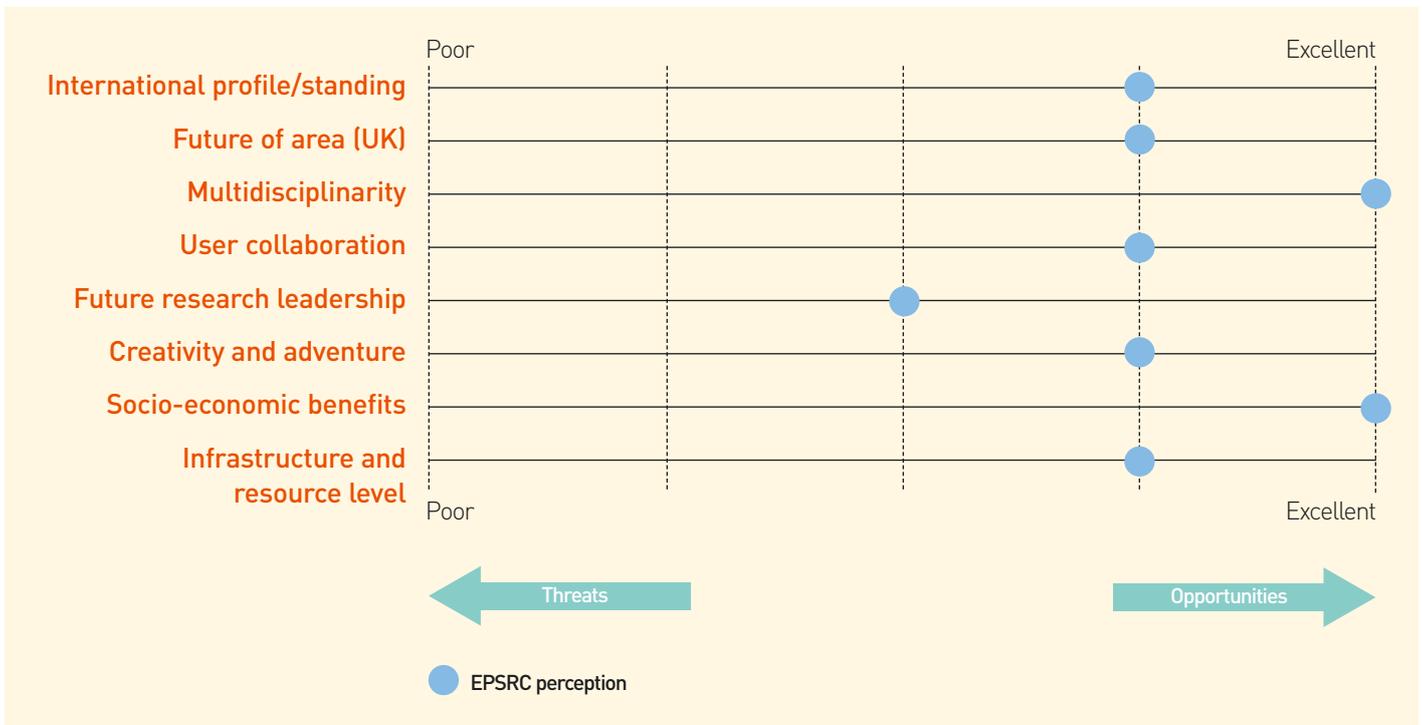
- Changing Demographics. The proportion of people aged over 65 is likely to increase from 7.3% to 9.4% of the population by 2020. The skills of Engineers and Physical Scientists are key to the ageing research agenda
- Working with the Technology Strategy Board and the Knowledge Transfer Networks, including through Knowledge Transfer Partnerships
- Changing the emphasis from treatment of the late onset of disease to earlier diagnosis, increased prevention and better treatment presents research challenges for engineers, physical scientists and clinicians
- Coordination of research activities within Towards Next Generation Healthcare and bridging the gap between discovery/design to pre-clinical development
- Large global market
- Government priority
- Working across a broader spectrum of physical scientists, mathematicians and engineers
- Possibility of working more broadly with the Technology Strategy Board.

Threats

- Rising costs of new technologies
- Adverse public perceptions of new technology
- Knowledge generated from the research base is not taken up by healthcare providers
- Reduced funding from the charity sector
- Development hurdles to products and services
- Strong dependency on "golden triangle" – Oxford/Cambridge/London.

Perceptions

Our perception of the current position of UK healthcare research



Summary

- In the UK, there is a high international standard of healthcare research particularly in the areas of medical devices; wound care; diagnostics and orthopaedics. Large Strategic Partnerships and significant investment in the areas of cancer imaging and medical engineering, will have a positive impact on the UK's international profile
- This research area has a bright future, with plenty of novel and adventurous research. The drivers and trends for healthcare research offer real challenges for engineers and physical scientists and the topic is attractive for new researchers
- Multidisciplinary research into ageing is a key strength of the programme
- The programme has a high level of user collaboration through the two strategic partnerships with charities and through work with the Technology Strategy Board and the Department of Health. It also leads the EPSRC contribution to the cross-council programmes in the area
- There is a rising generation of future research leaders in the Medical Engineering area, particularly in imaging and ageing research. As the programme has not yet supported early career researchers there is only a small data set available
- Submissions in response to the CR-UK and Wellcome Trust calls were commended by international panels for their innovative and creative approaches
- The regulatory and ethical framework may form a barrier to transformative research
- Research in this area is addressing topics of value to both UK society and the UK economy and therefore has real potential to increase the global competitiveness of the UK
- The programme has leveraged significant funding through the two major Strategic Partnerships.

Further information

The data generated to compile this portfolio review does not currently include any information on the New Dynamics of Ageing initiatives, Health Technologies Cooperatives, CR-UK or Wellcome Trust Partnership activities. Some information on these programmes follows:

Cancer Research UK

EPSRC and CR-UK, together with MRC and the National Institute for Health Research (NIHR) have awarded around £50m to establish four large cancer imaging centres – Imperial College London, The Institute of Cancer Research, a joint centre between King's College London and University College London, and the University of Oxford. They will serve as focal points of world-class research using a variety of imaging techniques, such as magnetic resonance imaging (MRI) and Positron Emission Tomography (PET).

The Wellcome Trust

The Wellcome Trust and EPSRC have formed a strategic partnership and will invest up to £45 million to support world-class centres of excellence in Medical Engineering within the UK. The outcomes from this partnership will be announced Summer 2009. The funded centres of excellence will integrate physical sciences, engineering, mathematical or computational sciences with clinical or biomedical research aimed at delivering innovative solutions for healthcare. The initiative was designed as a capacity building exercise to provide an environment for the integration of the various contributory disciplines, and encourage both exploratory research and the translation of that research into specific product developments of benefit to healthcare.

New Dynamics of Ageing

The Towards Next Generation Healthcare programme is contributing to a seven year multidisciplinary research programme concerned with improving the quality of life of older people. The £20m programme involves ESRC, EPSRC, BBSRC, MRC and AHRC and aims to develop practical policy and implementation guidance and novel scientific, technological and design responses to help older people enjoy better quality lives as they age.

Assisted Living Innovation Platform

The Technology Strategy Board, the Department of Health, EPSRC and ESRC will be funding a number of activities around technology and new business models for assisted living. This initiative will enable industry, academia and health care professionals to collaborate in order to significantly advance the technology needed to enable people who suffer from chronic long term conditions to live independently. The outcomes of a call on 'A Smart Care Distributed Environment' are expected in Spring 2009.

Healthcare Technology Co-operatives

Together with the Technology Strategy Board, EPSRC has cofunded two NIHR pilots of Healthcare Technology Co-operatives (HTCs), which support the development of collaborations between clinicians, academics, patients/users and industry in clinical areas which have not attracted significant research funding in the past, but which are associated with high levels of patient morbidity.

Questions for discussion

- What are the new and emerging research areas in healthcare?
- To what extent should future EPSRC support for healthcare be embedded within the Research Base Programmes at EPSRC?
- How should EPSRC facilitate the exploitation of its healthcare research?

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