



Department
of Health &
Social Care

Research and development work relating to assistive technology

2019–20

December 2020

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2019–20

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the Chronically Sick and Disabled Persons Act 1970



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Introduction

About this report

Section 22 of the Chronically Sick and Disabled Persons Act 1970 requires a report to be placed before Parliament each year on progress made in Government-funded research relating to equipment that might increase the range of activities and independence or well-being of disabled people, known as assistive technology.

Working with stakeholders, in 2001 the Foundation for Assistive Technology developed the following definition for assistive technology:

Assistive technology is any product or service designed to enable independence for disabled and older people.

This broad definition means that a wide range of products and services are eligible for inclusion in this report. As technology advances, the breadth of work covered is constantly expanding. The research covers not only specific products, but also systems, combinations of technologies, and interfaces to mainstream technology such as the internet. Research focused on the wider neighbourhood is also eligible for inclusion in this report; this might include clinical and public health researchers working with engineering, housing, architecture and urban-planning experts to make improvements for disabled or older people. In addition to addressing issues associated with physical health, developments in various types of assistive technology can help people with mental health difficulties live more independent lives; these can often involve online and behavioural approaches rather than devices. Developments with a focus on mental health are also eligible for inclusion in this report.

For the purpose of this report, products and systems are further classified as assistive technology if their adoption and use is under some measure of control by the disabled or older end-user and there is a level of meaningful interaction by the end-user with the product or system. This therefore excludes telemedicine services such as videoconferencing between a general practitioner and a hospital consultant, and the use of equipment in the hospital and GP surgery, as these technologies are primarily used by, and operated under the control of, healthcare professionals. Neither does the report feature research on implanted technologies over which the user has no control or interaction, such as hip replacements.

This report aims to reflect research relating to a wide range of impairments and conditions, and to cover research on service provision and patterns of use as well as development and evaluation of technologies. It highlights developments in priority setting and funding for assistive technology research and innovation and some particular areas of research activity. The Annex provides a listing of Government-funded assistive technology research and development projects current in 2019–20.

Glossary of organisation acronyms

AHRC	Arts and Humanities Research Council
CSO	Chief Scientist Office of the Scottish Government Health and Social Care directorates
DfT	Department for Transport
EC	European Commission
EPSRC	Engineering and Physical Sciences Research Council
ESRC	Economic and Social Research Council
HCRW	Health and Care Research Wales
HEE	Health Education England
HSC PHA	Health and Social Care Northern Ireland R&D Division Public Health Agency
JLA	James Lind Alliance
MHCLG	Ministry of Housing, Communities and Local Government
MRC	Medical Research Council
NIHR	National Institute for Health Research
STFC	Science and Technology Facilities Council
UKRI	UK Research and Innovation

Developments in priority setting and funding

This section highlights developments in priority setting and funding for assistive technology research and innovation. It provides a few examples of Government funding related to assistive technology and any current or planned funding rounds or calls, or the development of research networks that will shape the direction of new assistive technology research and any other planned work as a result of funding.

JLA Priority Setting Partnerships

The James Lind Alliance (JLA) is a non-profit-making initiative that brings patients, carers and clinicians together in Priority Setting Partnerships (PSPs) to identify and prioritise the top 10 unanswered questions or evidence uncertainties in a particular health condition or setting. The aim of this is to ensure that researchers and research funders are aware of the issues that matter most to patients and clinicians. The National Institute for Health Research (NIHR) funds the infrastructure of the JLA.

Almost 100 PSPs have now been completed. During 2019–20, research priorities were agreed in a range of health conditions and settings including detecting cancer early, heart surgery, revision knee replacement, degenerative cervical myelopathy, nutritional screening and malnutrition, and foot health.

The Stroke and the Occupational Therapy PSPs that were ongoing during 2019–20 are two PSPs in particular that may identify research priorities related to assistive technologies.

Current National Institute for Health Research calls

The NIHR has a number of commissioned calls advertised that may attract applications evaluating assistive technology. In addition, the NIHR Health Technology Assessment programme is currently exploring further specific opportunities to commission research evaluating the effectiveness and cost-effectiveness of assistive technologies that enhance the safety and quality of life of older and/or disabled people. Advertised researcher-led open calls may also attract applications related to assistive technology.

Department for Education

The Department for Education (DfE) published its Education Technology (EdTech) strategy in April 2019 on realising the potential of technology in education, which was supported by £10 million of funding. As a result, the DfE launched a series of EdTech challenges to encourage changes to the use of technology throughout the education system in England. Challenge No 6, *identify the best technology that is proven to help level the playing field for learners with special educational needs and disabilities*, focused on assistive technologies. As part of challenge No 6, the DfE is currently working with an assistive technology advisory group to help steer activity to support the challenge. A rapid literature review that started in February 2020 was conducted to explore *the use and impact of assistive technology on students with special educational needs and disabilities (SEND)*. An 'assistive technology test-bed' programme was announced that would build on the rapid literature review and continue to develop the evidence base.

UKRI Industrial Strategy Challenge Fund (ISCF)

The UKRI, via the ESRC, is currently inviting outline proposals for research grants for Healthy Ageing Catalyst Awards. These awards are part of a Healthy Ageing Challenge portfolio of activities, and are offered in collaboration with the US National Academy of Medicine (NAM) Healthy Longevity Global Grand Challenge, to catalyse transformative innovation and inform policies and priorities to advance healthy ageing and longevity globally.

Catalyst Awards will provide approximately 20 grants per year until 2023 for academics based at UK research organisations to explore new, innovative ideas that have the potential to transform the physical, mental or social well-being of people across the world as they age. Several important areas have been highlighted on which applications will need to focus, including:

- sustaining physical activity
- maintaining health at work
- designing age-friendly homes
- creating healthy, active places
- supporting social connections
- living well with cognitive impairment
- managing common complaints of ageing

Ministry for Housing, Communities and Local Government

The Ministry for Housing, Communities and Local Government (MHCLG) is currently scoping possible future projects that relate to assistive technologies. Specific areas of interest include work focused on building safety, mobility around the dwelling and means of escape. Through consultation, which closes in December 2020, the MHCLG is seeking views on strategies to raise accessibility standards in new homes for older and disabled people. The consultation focuses on how the existing accessible and adaptable standards for homes and wheelchair users are utilised and will consider whether or not adaptations should be made to these.

Research current in 2019–20

This report details a wide breadth of research activity, supported by a variety of funders and host institutions. This section describes just some of the studies that seek to explore the particular challenges and potential solutions affecting the independence of elderly and disabled people.

Assistive Technology in Health and Social Care settings

The social care sector encompasses a wide spectrum of care settings and individual needs. Therefore, the research priorities for this sector and the utility of each individual assistive technology may vary across care settings and population groups. Two awards have been funded by Health and Care Research Wales (HCRW) and awarded to researchers at Bangor University to conduct scoping exercises for assistive technologies for use in social care settings. The first award aims to identify current (and possible future) technologies that could be implemented within one or more social care setting, with the support of the Research, Innovation and Improvement Hub (RIIH) for North Wales. The second, awarded to the same research team, will enable the researchers to conduct a Delphi study to ascertain the research priorities for further investigation of the applicability of assistive technologies to social care settings in Wales.

In addition to overarching scoping exercises, HCRW has funded a number of projects assessing the effectiveness of specific technologies. For example, a team of researchers at Cardiff University have begun a longitudinal study to evaluate whether ‘smart speaker’ technologies, such as the Amazon Echo device, can improve individual well-being and independence measurements in social care settings. The fellowship award will explore this question across two groups that represent a significant proportion of individuals interacting with the social care setting: those living with learning disabilities who reside in supported accommodation and older adults living in sheltered accommodation.

Pressures in the health and social care sectors are driving attempts to produce similar or improved services in a more resource-efficient manner. Researchers at ‘Shower in a Can Limited’ have been awarded funding by Innovate UK to undertake a feasibility study examining the utility of their lead product, ‘Shower in a Can’. ‘Shower in a Can’ is a water-and-detergent-based foam that aims to replicate the cleaning of a standard shower but without the need for rinsing or towelling. The product was initially aimed at the youth sport market but has grown in popularity in broader recreational markets. The study will examine whether the product can provide the required antiviral and antibacterial properties necessary to be used in place of usual care. If proven successful, the product has the possibility not only to significantly reduce the cost and time resources of current assisted-bathing practises, but also to return a level of dignity and privacy to those social care residents who are able to use the product unassisted.

Falls among the older adult population are estimated to cost the NHS in excess of £630 million per year. A number of individual studies have been conducted to assess the effectiveness of shock-absorbing flooring in health and social care settings, but to date no systematic review of the evidence has been undertaken. The NIHR has funded a team of researchers based at the University of Portsmouth to review the existing literature. The study should provide an overview of findings to date in relation to whether shock-absorbing flooring can reduce injuries from falls, injuries among staff when moving equipment across shock-absorbing flooring, and the chances of falls occurring.

Mobility and physical activity: young people and children

Mobility impairments are one of most common causes of disability, and those affected can be supported by using mobility aids, such as wheelchairs, to move independently. Mobility aids have the long-lasting benefit of improving physical and mental health, thereby helping the user to participate more in everyday life. A number of projects included in this report focus on improving access to mobility aids and exploring the benefits for users. In addition, some of the research explores innovative ways that assistive technologies can be used to help those with mobility restrictions become more active.

With a finite amount of resources, evidence of the utility and quality of mobility aids is highly important for guiding NHS resource allocation decisions. Researchers at Bangor University have been conducting two studies relating to the role of mobility aids and their impact on the user's quality of life. The MobQoL project will develop a questionnaire to capture the perspectives of people with mobility impairments on how mobility influences their overall quality of life. The results will help to inform clinicians and NHS decision-makers about the extent to which various mobility aids benefit those patients with a form of mobility impairment. The researchers will then develop a MobQoL outcome measure with a preference-based scoring system to help the NHS provide the best possible care for people with mobility impairments and to inform resource allocation considerations.

For some children with mobility limitations, powered or electric mobility aids may be the only way they can move around independently. Currently, there is no national guidance to help NHS commissioners and clinicians determine the most appropriate age at which to provide patients with a powered mobility aid. The EMPoWER study, funded by the NIHR Health Technology Assessment programme, will develop an economic model to estimate whether the extra benefits of supplying powered mobility at a very early age, rather than waiting for the child to turn 5 years old, outweigh the additional costs. The team will synthesise evidence on costs and benefits of powered mobility aids for children before developing a predictive economic model to estimate whether additional benefits can be achieved by providing such aids to children aged under 5 years.

Several projects included in this year's report focus on assessing the effectiveness of assistive technologies with digital components. With funding from the EPSRC Grand Challenge, a research team at University College London's Interaction Centre (UCLIC) have created the GETAMoveOn network and work programme. GETAMoveOn was established to support community groups, including older people, to move more independently with the help of digital technologies. The research includes an assessment of the mobility of wheelchair users by developing a mobility tracker that combines smartphone navigation and wheelchair kinematics. Through the HEE/NIHR Integrated Clinical Academic Programme, the DoMore study aims to develop a digital intervention for mobile phones or computers to help support young people who have long-term disabilities and are unable to walk to spend less time sitting or lying down. Spending less time being sedentary will help improve health and prevent an increased risk of illnesses such as obesity and type 2 diabetes. The team have used an innovative data collection method of crowdsourcing to engage key stakeholders in intervention development.

Many illnesses can have a debilitating effect on mobility and physical activity levels and these are a focus of research in this year's report. Researchers at the University of Bristol have developed an internet-based treatment, FITNET, that therapists can use to deliver specialist one-to-one home treatments across the UK to children with chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME) and their families via an internet platform (Skype). This study is making use of another digital technology, the ActiveME app, designed to help patients keep track

of their activity levels. Using the app, children will be asked to record their daily activities to help the therapist provide advice and support on how to increase their activity safely over time.

Assistive technology and mental health

In addition to technologies that support physical health, developments in various types of assistive technology can help people with mental health difficulties live more independent lives. These interventions often involve online and behavioural approaches rather than devices. Several projects included in this year's report focus on supporting people with mental health difficulties.

Research supported through the NIHR is exploring whether delivering psychological therapy through virtual reality technology has the potential to contribute to the scalability and personalisation of mental ill-health treatments. A key component of the research includes the development of the IMPROVE platform (Mental health therapy Provision, Research & Outcomes via Virtual Environments). Developed by Emteq, the platform will include (i) a prototype of a low-cost mobile sensor-enabled headset to measure emotional responses in virtual reality, (ii) a secure software platform for deploying virtual reality environments and associated back-end visualisation dashboard and (iii) software development kits to enable the use of a range of sensors (facial expression tracking, eye tracking and physiological sensing) with existing virtual reality mental health apps to allow therapy to be personalised.

Other research included in this report focuses on virtual-reality-supported therapy for people with mental health issues. Researchers at King's College London are investigating the use of a virtual reality environment in which participants will be able to experience and practise everyday activities. The therapy has been designed to reduce the negative symptoms of schizophrenia (which typically include and indicate a loss or reduction of a normal function, for example reduced motivation and affect display) and to improve the recovery prospect of people with the condition. In this NIHR-supported project, researchers will test the feasibility and acceptability of the therapy when compared with treatment as usual.

Other examples include research focused on improving mental health outcomes in children. Researchers at University College London are conducting a feasibility study and pilot trial of a modified video-feedback intervention for children and foster carers to improve mental health outcomes in children with reactive attachment disorder. This NIHR-supported research comprises three interlinked phases. The research team aim to first adapt and manualise the intervention and then train professionals to deliver it to a case series of foster carers and children. They will then conduct a scoping study of key implementation parameters including engagement of local authorities' recruitment and consenting strategies and the utility and acceptability of a screening system for reactive attachment disorder. Finally, the project will include a pilot randomised controlled trial of the intervention, assessing key outcome parameters and treatment acceptability and monitoring usual care.

Researchers at the University of Sheffield are conducting research that focuses on specific phobias in children and will compare the clinical and cost-effectiveness of one-session treatment (OST) with multisession CBT. OST, an alternative to usual CBT, is currently used successfully with adults but has not yet been tested for use with children. In this NIHR-funded project, the research team will explore whether this combination of treatment techniques, including graduated exposure therapy, participant modelling, reinforcement, psycho-education, cognitive challenges and skills training, consolidated into a single 3-hour session, is clinically effective and cost-effective.

Annex. Listing of assistive technology research and development projects 2019–20

Note: When compiling the data for the 2019–20 report, each funding organisation was provided with a definition of assistive technologies and a set of inclusion and exclusion criteria building on work previously undertaken by the Foundation for Assistive Technology (Appendix). Each funding organisation that contributed to the report was responsible for the identification and submission of projects to be included. The report was co-ordinated and produced by the NIHR.

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Disability and Community: Dis/engagement, dis/enfranchisement, dis/parity and dissent – aka The D4D project</p> <p>Bath Spa University</p> <p>https://gtr.ukri.org/projects?ref=AH%2FN004108%2F2</p>	<p>This project is exploring the ways in which disabled people are connected to and disconnected from surrounding communities and how they might re-situate themselves in and re-shape the communities around them. The project aims to improve service provision and quality of life for people with disabilities but also to support service providers, policy-makers, and manufacturers and providers of technology.</p>	<p>AHRC</p> <p>Mar 16 – Mar 20</p> <p>£1,296,406</p>
<p>Pain management and patient Education for Physical Activity in Intermittent clauDication (PrEPAID): feasibility randomised controlled trial</p> <p>Glasgow Caledonian University</p>	<p>The research team has shown that transcutaneous electrical nerve stimulation (TENS) can help to reduce pain and increase walking distance in patients with peripheral arterial disease (PAD). They have also shown in previous research that educating patients about their condition and helping them to set goals has the potential to increase physical activity and quality of life. This study will examine the feasibility of designing a definitive trial that investigates whether or not TENS can improve the physical activity of patient(s) with PAD.</p>	<p>CSO</p> <p>Aug 17 – Oct 19</p> <p>£244,085</p>

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<p>AppITree: personalised digital reminding to support memory impairment after brain injury</p> <p>University of Glasgow</p>	<p>AppITree prompts reminder setting, supports reminder entry to improve accuracy and delivers users with prompts at the appropriate times. In this study the researchers will first examine the features of AppITree that suit participants with different needs based on cognitive ability. Then a pilot randomised controlled trial will be conducted to provide crucial information to inform a future larger-scale efficacy trial of AppITree as an intervention to support memory in people with acquired brain injury.</p>	<p>CSO</p> <p>Jan 19 – Dec 20</p>
<p>Experiences of advanced driver assistance systems amongst older drivers</p> <p>www.gov.uk/government/publications/perceptions-and-experiences-of-driver-assistance-features-amongst-older-drivers</p>	<p>Advanced driver assistance systems (ADAS) are technologies designed to increase the ease and safety of driving. Examples include blind-spot detection systems and rear-view cameras. The review assesses the potential role of ADAS in maintaining and enhancing the mobility of and meeting the transport needs of older people in the UK over the next 5–10 years.</p>	<p>DfT</p> <p>Sep 18 – Aug 19</p> <p>£45,000</p>
<p>Knowledge by Design Inc</p>	<p>A rapid review of the literature on assistive technology in education to understand the use and impact of assistive technology on students with special educational needs and disabilities (SEND).</p>	<p>DfE</p> <p>Feb 20 – summer 20</p>
<p>Sensorimotor learning for control of prosthetic limbs</p> <p>Newcastle University</p> <p>https://gtr.ukri.org/projects?ref=EP%2FR004242%2F1</p>	<p>The research team seeks to employ in vivo experiments, exploratory studies involving able-bodied volunteers and pre-clinical work with people with limb loss. The insight gained from these studies will inform the design of novel algorithms to enable seamless control of prosthetic hands. The programme will culminate in a unifying theory for learning to control prosthetic hands that will be tested in an NHS-approved pre-clinical trial.</p>	<p>EPSRC</p> <p>Feb 18 – Jan 23</p> <p>£1,028,682</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Physiologically inspired simulation of sensorineural hearing loss</p> <p>Cardiff University</p> <p>https://gtr.ukri.org/projects?ref=EP%2FR010722%2F1</p>	<p>This project will construct sounds that simulate the auditory experience associated with different types of hearing impairment and demonstrate that it can reproduce the patterns of problems experienced by hearing-impaired listeners.</p>	<p>EPSRC</p> <p>Mar 18 – Mar 21</p> <p>£298,015</p>
<p>Shape sensing textile for orthotics – SmartSensOtics</p> <p>University of Sussex</p> <p>https://gtr.ukri.org/projects?ref=EP%2FR013837%2F1</p>	<p>This research team aims to develop a smart, portable and stretchable textile sleeve with integrated sensors connected to a smartphone to realise an entirely new versatile and wearable body-shape imaging technique. The digital limb models can then be used for the computer-aided fabrication of customised orthotics without the need for significant infrastructure.</p>	<p>EPSRC</p> <p>Feb 18 – Jan 21</p> <p>£744,204</p>
<p>Fit-for-purpose, affordable body-powered prostheses</p> <p>University of Salford</p> <p>https://gtr.ukri.org/projects?ref=EP%2FR013985%2F1</p>	<p>This project will bring together an experienced team from across the UK, Uganda and Jordan to create a new body-powered prosthesis that is optimised for adoption by prosthetic services in lower- and middle-income countries and acceptable to users in these countries. This will include establishing methods of fabrication, fitting and evaluation of the prosthesis that are appropriate to lower- and middle-income countries.</p>	<p>EPSRC</p> <p>Feb 18 – Jan 21</p> <p>£1,412,730</p>
<p>A step change in LMIC prosthetics provision through computer aided design, actimetry and database technologies</p> <p>University of Southampton</p> <p>https://gtr.ukri.org/projects?ref=EP%2FR014213%2F1</p>	<p>Alongside a team of expert clinicians, academics and policy makers in Cambodia, this research team aims to conduct two data-technology research studies to develop tools to improve prosthetic and orthotic service access, train clinicians and improve efficiency of service funding use.</p>	<p>EPSRC</p> <p>Feb 18 – Jan 21</p> <p>£909,511</p>

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Project title, contact and URL	Summary	Organisation, duration and funding
<p>Low cost through knee prostheses. TaKeuP Imperial College London https://gtr.ukri.org/projects?ref=EP%2FR014248%2F1</p>	<p>This research team seeks to develop a low-cost through-knee prosthesis, the initial concept for which has been developed by the applicants through prior work with partners in Cambodia. This will be developed further to create a pathway to support the translation of future technology projects and the development of a route to harness the technology development for those in lower- and middle-income countries for the benefit of healthcare in the UK.</p>	<p>EPSRC Feb 18 – Jan 21 £888,571</p>
<p>Acoustic signal processing and scene analysis for socially assistive robots Imperial College London https://gtr.ukri.org/projects?ref=EP%2FP001017%2F1</p>	<p>The aim of this research is to provide robots and machines with the ability to understand and adapt to the surrounding acoustic environment. Equipping machines with an understanding of the acoustic environment allows a robot to engage in verbal interactions with humans and to potentially provide physical aid, which could facilitate low-cost assistance for people who provide unpaid care as well as for patients who cannot rely on relatives.</p>	<p>EPSRC Jan 17 – Dec 19 £330,105</p>
<p>CONSULT: Collaborative Mobile Decision Support for Managing Multiple Morbidities King's College London https://gtr.ukri.org/projects?ref=EP%2FP010105%2F1</p>	<p>The research will combine wireless 'wellness' sensors with intelligent software running on mobile devices to support patient decision-making, and, thus, actively engage patients in managing their healthcare. The technology will be evaluated across multiple dimensions in a proof-of-concept study, engaging stroke patients, their carers and medical professionals.</p>	<p>EPSRC Mar 17 – Feb 20 £1,381,440</p>
<p>Cross-model interactive tools for inclusive learning University of Bristol https://gtr.ukri.org/projects?ref=EP%2FN00616X%2F1</p>	<p>The aim of this fellowship is to research and develop interactive learning tools to make mixed classrooms more inclusive of visually impaired students.</p>	<p>EPSRC Mar 16 – Feb 21 £716,108</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Empowering next generation implantable neural interfaces</p> <p>Imperial College London</p> <p>https://gtr.ukri.org/projects?ref=EP%2FM020975%2F1</p>	<p>This fellowship is focused on next-generation neural interfaces that can be used with assistive technologies such as prostheses or mobility aids.</p>	<p>EPSRC</p> <p>Aug 15 – Jul 20</p> <p>£1,016,560</p>
<p>EPSRC-NIHR HTC partnership award plus funds: technology network-plus on devices for surgery and rehabilitation</p> <p>Imperial College London</p> <p>https://gtr.ukri.org/projects?ref=EP%2FN027132%2F1</p>	<p>The aim of the project and proposed network is to establish a forum for surgical innovation with seamless integrations of engineering research, clinical translation and industrial development. The network will cover three research areas that have similar challenges for research but need to be examined in different clinical contexts: sensing for improved perioperative care, smart surgical devices, and assistive devices and robots to facilitate rehabilitation in community or home care settings.</p>	<p>EPSRC</p> <p>Sep 16 – Sep 19</p> <p>£507,552</p>
<p>GetAMoveOn: transforming health through enabling mobility</p> <p>University College London Interaction Centre</p> <p>https://ucl.ac.uk/research/health-and-well-being/gamo</p>	<p>In this project, the researchers aim to use movement to improve health through developing innovative technology. A range of workshops, pilot projects and other research activities will be delivered, focusing on three specific community groups: school children, office workers and older people. Research has included assessing and improving the mobility of wheelchair users by developing a mobility tracker that combines smartphone navigation with wheelchair kinematics.</p>	<p>EPSRC</p> <p>Jun 16 – May 20</p> <p>£923,685</p>
<p>Hub for device personalisation in the treatment of congenital diseases</p> <p>University College London</p> <p>https://gtr.ukri.org/projects?ref=EP%2FN02124X%2F1</p>	<p>This project will drive the development of bespoke devices and tailored therapies for children and young adults born with physical defects. Engineering methods and computer virtual reality will be used to study the shape of the patient defects and design new devices that can be easily tailored to individual needs.</p>	<p>EPSRC</p> <p>Apr 16 – Mar 21</p> <p>£1,002,830</p>

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<p>Inclusive Digital Content for People with Aphasia (INCA)</p> <p>City, University of London</p> <p>https://gtr.ukri.org/projects?ref=EP%2FP025587%2F1</p>	<p>The aim of this project is to investigate, co-design and trial digital content tools for people with aphasia. The research will explore a blended approach to digital content, intertwining the digital and physical worlds, and will have an emphasis on co-creation with users.</p>	<p>EPSRC</p> <p>Jul 17 – Jun 20</p> <p>£496,294</p>
<p>Osteoarthritis Technology NetworkPlus (OATech+): a multidisciplinary approach to the prevention and treatment of osteoarthritis</p> <p>Cardiff University</p> <p>https://gtr.ukri.org/projects?ref=EP%2FN027264%2F1</p>	<p>A network of academics, clinicians and industry representatives is looking to provide high-level evidence of the efficacy and safety of medical devices relating to musculoskeletal disorders and osteoarthritis through clinical studies and with a high degree of user involvement. The studies will involve biology, engineering and biomechanics. The aim is to identify the challenges to technology development, which will help to ensure that future studies are conducted with the latest scientific advances incorporated.</p>	<p>EPSRC</p> <p>Oct 16 – Sep 20</p> <p>£968,486</p>
<p>A robot training buddy for adults with autism spectrum disorder (ASD)</p> <p>University of Glasgow</p> <p>https://gtr.ukri.org/projects?ref=EP%2FN035305%2F1</p> <p>Heriot-Watt University; University of Glasgow</p> <p>https://gtr.ukri.org/projects?ref=EP%2FN034546%2F1</p>	<p>The project will develop a socially competent robot training buddy that will help adults with ASD to better deal with social signals in work-related scenarios.</p>	<p>EPSRC</p> <p>Jan 17 – Jun 20</p> <p>£355,563</p> <p>Nov 16 – Dec 20</p> <p>£711,763</p>
<p>SCAMPI: Self-Care Advice, Monitoring, Planning and Intervention</p> <p>City University of London</p> <p>https://gtr.ukri.org/projects?ref=EP%2FP010024%2F1</p>	<p>The consortium will develop a new form of computerised toolkit that will allow someone living in their own home with a chronic condition, together with their relatives, carers and healthcare professionals, to self-manage both their care of the condition and life with it. People will interact with the new toolkit through a new form of intelligent visual care plan, called VIZ-CARE.</p>	<p>EPSRC</p> <p>Mar 17 – Feb 20</p> <p>£1,006,000</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>EPSRC Centre for Doctoral Training in Prosthetics & Orthotics</p> <p>University of Salford</p> <p>https://gtr.ukri.org/projects?ref=EP%2FS02249X%2F1</p>	<p>The EPSRC Centre for Doctoral Training in Prosthetics and Orthotics has been established. This will address the national, and global, shortage of suitably skilled engineers and scientists to become future innovators in P&O technologies. The Centre will support a minimum of 58 doctoral students, whose studies will enable them to become leaders of the future.</p>	<p>EPSRC</p> <p>Apr 19 – Sep 27</p> <p>£5,526,315</p>
<p>FREEHAB: accessible, comfortable and adaptable wearable rehabilitation and assist devices</p> <p>University of Bristol</p> <p>https://gtr.ukri.org/projects?ref=EP%2FS026096%2F1</p>	<p>The FREEHAB Healthcare Impact Partnership will develop soft wearable rehabilitative devices to assist in the rehabilitation around age-related musculoskeletal and neurological conditions.</p>	<p>EPSRC</p> <p>Nov 19 – Oct 22</p> <p>£1,181,154</p>
<p>Personalised approach to restoration of arm function in people with high-level tetraplegia</p> <p>Keele University</p> <p>https://gtr.ukri.org/projects?ref=EP%2FR035091%2F1</p>	<p>This project aims to develop efficient methods for personalising assistive technology to restore arm function in people with high-level spinal cord injury. Using a combination of electrical stimulation and mobile arm supports, the project will use computational models specific to the individual's functional limitations to produce patient-specific interventions.</p>	<p>EPSRC</p> <p>Nov 18 – Oct 21</p> <p>£386,807</p>
<p>Using artificial intelligence to share control of a powered-wheelchair between a wheelchair user and an intelligent sensor system</p> <p>University of Portsmouth</p> <p>https://gtr.ukri.org/projects?ref=EP%2FS005927%2F1</p>	<p>Research will focus on the novel use of sensors and inventing new shared control systems and artificial intelligence (AI) to have a significant and positive impact on the lives of both current and potential powered-wheelchair users.</p>	<p>EPSRC</p> <p>Dec 18 – Apr 22</p> <p>£465,562</p>

Annex. Listing of assistive technology research and development projects 2019–20

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Towards a multisensory hearing aid: engineering synthetic audiovisual and audiotactile signals to aid hearing in noisy backgrounds</p> <p>Imperial College London</p> <p>https://gtr.ukri.org/projects?ref=EP%2FR032602%2F1</p>	<p>The aim of this fellowship is to develop a radically different technology for assisting people with hearing impairments to understand speech in noisy environments, namely through simplified visual and tactile signals that are engineered from a speech signal and that can be presented congruently to the sound.</p>	<p>EPSRC</p> <p>Jan 19 – Dec 23</p> <p>£1,029,424</p>
<p>COG-MHEAR: Towards cognitively-inspired 5G-IoT enabled, multi-modal hearing aids</p> <p>Edinburgh Napier University</p> <p>https://gtr.ukri.org/projects?ref=EP%2FT021063%2F1</p>	<p>The proposed technologies will use a transformative approach that draws on the cognitive principles of normal hearing. The study will create ‘multi-modal’ aids that not only amplify sounds but contextually use simultaneously collected information from a range of sensors (embedded in the hearing aid itself) to improve speech intelligibility.</p>	<p>EPSRC</p> <p>Jun 20 – May 24</p> <p>£3,259,000</p>
<p>Environment and Listener Optimised Speech Processing for Hearing Enhancement in Real Situations (ELO-SPHERES)</p> <p>University College London</p> <p>https://gtr.ukri.org/projects?ref=EP%2FS03580X%2F1</p> <p>Imperial College London</p> <p>https://gtr.ukri.org/projects?ref=EP%2FS035842%2F1</p>	<p>The aim of the research is to have a better understanding of the problems that hearing-impaired listeners experience in noisy, multiple-talker conversations, particularly with regard to (1) their abilities to attend to and recognise speech coming from different directions while listening through binaural aids, and (2) their use of audio-visual cues. Virtual reality simulations of complex listening environments and audio-visual tests will be developed to assess listeners’ abilities and will investigate how the abilities of hearing-impaired listeners vary with their degree of impairment and the complexity of the environment.</p>	<p>EPSRC</p> <p>Oct 19 – Sep 22</p> <p>£554,976</p> <p>£587,008</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Challenges to revolutionise hearing device processing</p> <p>Cardiff University https://gtr.ukri.org/projects?ref=EP%2FS031324%2F1</p> <p>University of Sheffield https://gtr.ukri.org/projects?ref=EP%2FS031448%2F1</p> <p>University of Nottingham https://gtr.ukri.org/projects?ref=EP%2FS031308%2F1</p> <p>University of Salford https://gtr.ukri.org/projects?ref=EP%2FS031324%2F1</p>	<p>Improving how hearing devices deal with speech in noise, for example hearing announcements at a railway station, has the potential to improve many aspects of health and well-being for an ageing population. Making the devices more effective should increase the uptake and use of hearing aids. These four individual studies will run a series of signal processing competitions (challenges) which will deal with increasingly difficult scenarios of hearing speech in noise. The data and tools will form a test-bed to allow other researchers to develop their own algorithms for hearing aid processing in different listening scenarios, which will improve algorithms for hearing aid processing.</p>	<p>EPSRC</p> <p>Nov 19 – Sep 24 £287,990</p> <p>Jan 20 – Dec 24 £371,114</p> <p>Nov 19 – Oct 24 £251,509</p> <p>Nov 19 – Oct 24 £287,990</p>
<p>PRIDE – Promoting Independence in Dementia</p> <p>University of Nottingham www.institutemh.org.uk/research/projects-and-studies/current-studies/protect/246-the-pride-study</p>	<p>This study aims to identify how social and lifestyle changes may help to reduce the risk of developing dementia and disability to better understand the social consequences of dementia and to develop and evaluate an effective social intervention to support the independence and quality of life for people living with early-stage dementia and their carers.</p>	<p>ESRC/NIHR</p> <p>Mar 15 – Feb 20 £2,931,365</p>
<p>Sustainable care: connecting people and systems</p> <p>University of Sheffield http://circle.group.shf.ac.uk/sustainable-care/</p>	<p>This programme concentrates on the care needs of adults living at home with chronic health problems or disabilities and seeks sustainable solutions to the UK's contemporary 'crisis of care'. This includes assessing the potential of emerging technologies to enhance care system sustainability, developing case studies of emerging home care models and exploring how care technologies can be integrated to support working carers, ensuring well-being outcomes across caring networks.</p>	<p>ESRC</p> <p>Oct 17 – Mar 21 £2,055,243</p>

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Project title, contact and URL	Summary	Organisation, duration and funding
<p>Sustainable Care Innovation Fellowship: accelerating implementation and uptake of new technologies to support ageing in place</p> <p>University of Sheffield</p> <p>http://circle.group.shef.ac.uk/sustainable-care/</p>	<p>This research project will involve collaborating with industry partners to help them address challenges in the implementation and uptake of new technologies to support sustainable arrangements for ageing in places capable of delivering well-being outcomes for older people.</p>	<p>ESRC</p> <p>Jan 18 – Jan 21</p> <p>£248,697</p>
<p>A Delphi study to seek consensus regarding research priorities in social care technologies</p> <p>Bangor University</p>	<p>The aim of this research is to seek consensus on future research priorities relating to assistive technologies and social care using a Delphi technique.</p>	<p>HCRW</p> <p>Jan 19 – Dec 19</p> <p>£60,000</p>
<p>Mobility and quality of life: improving methods of economic evaluation of assistive technology for adults and children with impaired mobility</p> <p>Bangor University</p> <p>http://cheme.bangor.ac.uk/mobqol</p>	<p>The project will use qualitative and quantitative research methods to develop a new preference-based instrument to measure the quality of life of people who use wheelchairs and mobility aids.</p>	<p>HCRW</p> <p>Sep 16 – Aug 19</p> <p>£302,810</p>
<p>A longitudinal investigation of new ‘smart speaker’ personal assistants to improve independence and wellbeing in social care settings</p> <p>Cardiff University</p> <p>www.healthandcareresearch.gov.wales/our-funded-projects/</p>	<p>Can new ‘smart speaker’ technologies, such as the Amazon Echo, improve well-being, independence and safety in social care? This fellowship will investigate this question for people with learning disabilities living in supported accommodation and older adults living in sheltered accommodation.</p>	<p>HCRW</p> <p>Jan 20 – Feb 24</p> <p>£331,479</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Digital technology and social care: scoping project</p> <p>Bangor University</p> <p>http://dcdc.bangor.ac.uk/staff/a-orrell.php.en</p>	<p>The aim of this project is to undertake a scoping exercise of current and future technologies that may be implemented in social care settings through the support of the Research, Innovation and Improvement Hub (RIIH) for North Wales.</p>	<p>HCRW</p> <p>Feb 20 – Apr 20</p> <p>£9887</p>
<p>Aergo: responsive postural support system</p> <p>Aergo Ltd</p> <p>https://gtr.ukri.org/projects?ref=105128</p>	<p>The aim of this project is to create an adaptable postural support system by building on a network of patent-pending air cells. The remote-controlled system provides adjustable pressure-relief for a range of physical conditions and is the first device of its kind to grow with the user through its expandable frame. The solution is aiming to empower users to control their own care.</p>	<p>Innovate UK</p> <p>Mar 19 – Feb 20</p> <p>£49,899</p>
<p>AI (artificial intelligence) based healthcare system for elderly people – iChair</p> <p>Innovative Technology and Science Ltd</p> <p>https://gtr.ukri.org/projects?ref=104312</p>	<p>The aim of this research is to develop a telemedicine smart wheelchair that allows patients and caregivers to access patient data in real time. Using patient data collected from sensors attached to the wheelchair, AI algorithms will analyse the data to diagnose any associated conditions. The iChair project aims to develop and demonstrate a cost-effective wheelchair connectivity and remote monitoring technology that significantly increases user independence (mobility) and freedom (quality of living) while providing caregivers with peace of mind and convenience.</p>	<p>Innovate UK</p> <p>Nov 18 – Oct 20</p> <p>£344,543</p>
<p>Automated data manipulation for streamlined biomechanically optimised manufacture of orthoses</p> <p>Project Andiamo Ltd</p> <p>https://gtr.ukri.org/projects?ref=103538</p>	<p>This project aims to address the current limitations of orthotics services by taking design and manufacture outside the acute setting and changing the current orthosis manufacturing process.</p>	<p>Innovate UK</p> <p>Sep 17 – Sep 19</p> <p>£390,095</p>

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Project title, contact and URL	Summary	Organisation, duration and funding
<p>Newton Fund – A-PATH: affordable preventative and assistive technology for healthcare</p> <p>Innovative Technology and Science Ltd</p> <p>https://gtr.ukri.org/projects?ref=103708</p>	<p>Based on the research output of a collaboration between UK and Indian organisations, this project aims to develop affordable wearable bio-sensing and human motion monitoring suits and passive and active exoskeletons to assist essential human motions.</p>	<p>Innovate UK</p> <p>Aug 17 – Jul 19</p> <p>£345,606</p>
<p>Newton Fund – YOUBAN: robotic solutions to assist the elderly in daily mobility activities and using robot companionship to offset loneliness and isolation</p> <p>Motion Robotics Ltd</p> <p>https://gtr.ukri.org/projects?ref=102871</p>	<p>The aim of this project is to develop intelligent mobility assistance that can maximise the functional capabilities of elderly people. This will be done by creating three different robots: one to address loneliness by providing companionship and a pet-type presence, another that will be a mobility device for shopping and child-carrying and that is motorised for maximum ease and safety, and a small four-wheel scooter with extra-intelligent driving security.</p>	<p>Innovate UK</p> <p>Mar 17 – Jul 19</p> <p>£667,185</p>
<p>Non-invasive telemetric sensing for lower leg amputee surface skin management</p> <p>Bio-Flex Yarns Ltd</p> <p>https://gtr.ukri.org/projects?ref=103947</p>	<p>To address the issue of skin complications that lower limb amputees experience when wearing a prosthesis, the project team will work to develop a limb monitoring system to alert for skin complications using technologies in passive thermal regulation, non-invasive monitoring of physiological parameters and an internet of things-based data analysis. The individual amputee will have personal information on their prosthesis, direct involvement in care and a transformed daily living experience.</p>	<p>Innovate UK</p> <p>Feb 18 – Mar 20</p> <p>£506,680</p>
<p>Quick fitting of prosthetic sockets for above knee amputees (QuickFit)</p> <p>LussTech Ltd</p> <p>https://gtr.ukri.org/projects?ref=133657</p>	<p>This project aims to change the current subjective approach of developing prosthetic socket into a science-based prosthetic socket provision technique so that a good-fit socket can be designed and fabricated within one day. It aims to develop a new application of the revolutionary QTSS sensors in healthcare and, using new biomechanical analytical models, the vision is to create a new procedure for prosthetic socket design.</p>	<p>Innovate UK</p> <p>Oct 18 – Sep 20</p> <p>£972,982</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Smart Open Community Integrated Assisted Living ('SOCIAL')</p> <p>Cartographix Ltd</p> <p>https://gtr.ukri.org/projects?ref=133836</p>	<p>This project aims to create a solution that will provide the UK's elderly population a means of improved independence and community engagement through a solution that combines big data analytics and smartphone sensors. It hopes to provide benefits such as improved affordability, extended functionality and potential to achieve wider health benefits.</p>	<p>Innovate UK</p> <p>May 19 – Feb 20</p> <p>£35,829</p>
<p>TaCT – Tracking and Communication Technology</p> <p>Entotem Ltd</p> <p>https://gtr.ukri.org/projects?ref=105253</p>	<p>The aim of this 12-month project is to enable personal communications and monitoring for vulnerable and older people using low-power radio tags and precise location information.</p>	<p>Innovate UK</p> <p>Jun 19 – May 20</p> <p>£185,191</p>
<p>Shower in a Can as an efficient alternative to traditional bed baths in health and social care</p> <p>Shower in a Can Limited</p> <p>https://gtr.ukri.org/projects?ref=62902</p>	<p>'Shower in a Can' is an innovative water- and detergent-based foam that is applied to the hands and body, does not require rinsing or towelling and has antibacterial properties. It was initially designed for use in the youth sport market and has grown in popularity in the camping, festival, outdoor sports and recreational markets as an effective alternative to handwashing and showering. This study will undertake testing to ensure that Shower in a Can's foaming soap formula is sufficiently antiviral, and that the antibacterial properties are also sufficient for the health and social care environment.</p>	<p>Innovate UK</p> <p>Jun 20 – Nov 20</p> <p>£49,910</p>
<p>Sensory system abnormalities in childhood dystonia/dystonic cerebral palsy – are sensory networks modulated by deep brain stimulation?</p> <p>King's College London</p> <p>https://gtr.ukri.org/projects?ref=MR%2F006868%2F1</p>	<p>This study's aim is to compare changes in sensorimotor cortex EEG activity in relation to a sensory or sensorimotor task in children with different types of dystonia and to investigate whether or not such changes are related to deep brain stimulation outcome.</p>	<p>MRC</p> <p>Nov 16 – Aug 20</p> <p>£408,778</p>

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Project title, contact and URL	Summary	Organisation, duration and funding
<p>Brain machine interfaces based on subcortical LFP signals for neuroprosthetic control and neurofeedback therapy</p> <p>University of Oxford</p> <p>https://gtr.ukri.org/projects?ref=MR%2FP012272%2F1</p>	<p>This work will establish the foundations for novel brain-machine interfaces based on signals recorded from deep brain regions that contain rich information related to movement intention and have been proven to be stable over time. The new framework will be used to control a prosthetic hand with graded gripping force, to provide neurofeedback training to reduce symptoms in Parkinson’s disease, and to study the role of basal ganglia in the control and learning of movements.</p>	<p>MRC</p> <p>Aug 17 – Aug 20</p> <p>£506,448</p>
<p>Auditory learning and development</p> <p>University of Nottingham</p> <p>https://gtr.ukri.org/projects?ref=MC_UU_00010%2F3</p>	<p>Findings from this research team highlight the need for an individualised approach to training and rehabilitation. They also provide converging evidence that auditory perceptual abilities in younger and older populations depend on cognitive factors such as attention, working memory and general IQ. Aspects of cognition, and in particular attention, appear to be more important than bottom-up channel sharpening to improve perception through training. These findings inform work to appropriately tailor training programmes to improve speech perception in children with auditory and language-learning disorders, but also in older hearing-impaired individuals and cochlear-implant users.</p>	<p>MRC</p> <p>May 16 – Mar 22</p> <p>£882,450</p>
<p>Temporally patterned closed-loop stimulation for therapy of brain disorders</p> <p>University of Oxford</p> <p>https://gtr.ukri.org/projects?ref=MC_UU_12024%2F1</p>	<p>This team will record the rhythmic brain activity and use its features to decide when and how to stimulate in a way that will further increase normal movements and decrease side effects. They will use the strength of rhythmic activity to decide when to turn the stimulation on and off. Second, they will time a pulse of electricity on a specific part of the rhythm to improve movements as efficiently as possible.</p>	<p>MRC</p> <p>Mar 15 – Mar 20</p> <p>£2,292,000</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Auditory scene analysis (ASA) in acoustic and electric hearing</p> <p>University of Cambridge</p> <p>https://gtr.ukri.org/projects?ref=MC_UU_00005%2F3</p>	<p>This research team will use a combination of behavioural and electrophysiological techniques to (1) study the neural basis of ASA in normal-hearing listeners, (2) investigate its modulation by cognitive processes such as attention and language processing, (3) investigate why it is impaired in cochlear implant (CI) patients and (4) develop methods of improving auditory scene analysis and other aspects of hearing by CI users.</p>	<p>MRC</p> <p>Jun 17 – Mar 22</p> <p>£321,000</p>
<p>Adaptive processing of spoken language</p> <p>University of Cambridge</p> <p>https://gtr.ukri.org/projects?ref=MC_UU_00005%2F5</p>	<p>The aim of this project is to use behavioural experiments and multimodal functional imaging to understand the brain mechanisms that allow healthy adult listeners to adjust to and learn from encounters with different forms of challenging spoken language. A better understanding of these mechanisms will help us understand the listening abilities of language users and to understand and remediate disorders of spoken language following sensory impairment, brain injury or developmental disorders.</p>	<p>MRC</p> <p>Jun 17 – Mar 22</p> <p>£305,000</p>
<p>Multi-modal cue integration for auditory spatial location by normal-hearing and hearing-impaired listeners</p> <p>University of Nottingham</p> <p>https://gtr.ukri.org/projects?ref=MR%2FS002898%2F1</p>	<p>This programme will use cutting-edge auditory experiments to answer two key questions. First, how does the auditory system join the multiple cues to location in complex, dynamic, multi-sound, audio-visual listening situations? Second, how does hearing impairment and aided listening affect this? Insights gained in this programme may help us to understand better how spatial hearing works in real, everyday listening, and will help inform how future hearing aids might be designed to improve spatial hearing.</p>	<p>MRC</p> <p>Apr 18 – Mar 22</p> <p>£1,456,854</p>

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Project title, contact and URL	Summary	Organisation, duration and funding
<p>Understanding and alleviating hearing disability: the contribution of natural behaviours</p> <p>University of Nottingham</p> <p>https://gtr.ukri.org/projects?ref=MR%2FS003576%2F1</p>	<p>For hearing aids to be more helpful, they must adapt to the moment-to-moment changes in situation which are part of people's everyday life, and the clinical prescribing of hearing aids needs to take more account of each patient's individual lifestyle and activity patterns. This research will provide new knowledge and insights that can form the basis of future improved hearing-aid technology and prescribing.</p>	<p>MRC</p> <p>Mar 18 – Mar 22</p> <p>£2,883,896</p>
<p>A patient-centred device to improve hearing aid satisfaction</p> <p>https://gtr.ukri.org/projects?ref=studentship-1916490</p>	<p>This studentship is focused on patient-centred hearing-aid satisfaction and will investigate audio quality degradation in a broadcast audio chain, from signal capture (microphone) and processing (poor enunciation and noise reduction, among others) for presentation to a listener sitting in a televisual environment (video not essential). Each degradation is expected to produce a 'fingerprint' and the project will aim to develop software tools that will identify or classify the fingerprints. The software would predict the perceived audio quality as well as the reason for/processing stage that caused the loss.</p>	<p>MRC</p> <p>Jan 18 – Mar 22</p>
<p>RATULS: robot assisted training for the upper limb after stroke</p> <p>Newcastle University</p> <p>https://research.ncl.ac.uk/ratuls/</p>	<p>The aim of the research is to evaluate the impact of robot-assisted training on arm function after stroke.</p>	<p>NIHR</p> <p>Jan 14 – Dec 19</p> <p>£3,094,000</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Individually randomised controlled multi-centre trial to determine the clinical and cost effectiveness of a home-based exercise intervention for older people with frailty as extended rehabilitation following acute illness or injury, including embedded process evaluation</p> <p>Bradford Teaching Hospitals NHS Foundation Trust</p> <p>www.journalslibrary.nihr.ac.uk/programmes/hta/154307/#/</p>	<p>Frail older people who are admitted to hospital for acute illness are often more frail when they are discharged, which can mean that they are no longer able to perform daily tasks at home or live independently, and may need to move into a care home. The HOPE programme offers older people with frailty a 12-week physiotherapist-delivered exercise programme at home, involving five home visits and seven telephone sessions, as well as a complementary manual.</p>	<p>NIHR</p> <p>Mar 17 – Aug 22</p> <p>£2,288,865</p>
<p>Investigating the effectiveness and cost effectiveness of using FITNET to treat paediatric CFS/ME in the UK</p> <p>University of Bristol</p> <p>www.bristol.ac.uk/ccah/research/childdevelopmentdisability/chronic-fatigue/fitnet-nhs/</p>	<p>FITNET is an internet-based treatment for children with chronic fatigue syndrome or ME. It provides cognitive-behavioural therapy through interactive sessions that children receive at home. Children are also required to complete homework relating to the sessions. Children and their parents are supported by cognitive-behavioural therapists.</p>	<p>NIHR</p> <p>May 16 – Apr 22</p> <p>£1,026,403</p>
<p>Managing Adolescent first episode Psychosis: a feasibility Study (MAPS)</p> <p>Greater Manchester West Mental Health NHS Foundation Trust</p> <p>www.psychosisresearch.com/portfolio-item/maps/</p>	<p>The aim of MAPS is to investigate which treatment is best for young people experiencing a first episode of psychosis. The three options are psychological therapy alone (involving cognitive-behavioural therapy and family intervention), antipsychotic medication alone and the two treatments combined. The results will help the researchers decide if a full trial is warranted.</p>	<p>NIHR</p> <p>Mar 17 – Jun 19</p> <p>£601,481</p>

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Project title, contact and URL	Summary	Organisation, duration and funding
<p>A randomised controlled trial to evaluate the outcomes and mechanisms of a novel digital reasoning intervention for persecutory delusions</p> <p>King's College London</p> <p>www.journalslibrary.nihr.ac.uk/programmes/eme/154821/#/</p>	<p>The aim of the project is to provide therapy to people experiencing paranoia using SlowMo, which helps users to reduce the pace of their thoughts, thereby helping to minimise upsetting or distressing thoughts. The therapy comprises face-to-face sessions supplemented by an interactive website, which provides games and advice, and a mobile phone app.</p>	<p>NIHR</p> <p>Feb 17 – Feb 20</p> <p>£1,339,649</p>
<p>A feasibility study and pilot trial of a modified video-feedback intervention for children and foster carers to improve mental health outcomes of children with reactive attachment disorder</p> <p>University College London</p> <p>www.journalslibrary.nihr.ac.uk/programmes/hta/1511801/#/</p>	<p>VIPP-Foster-Care is a video feedback intervention to support the carers of those children in foster care who show signs of developing reactive attachment disorder.</p>	<p>NIHR</p> <p>Mar 17 – Jan 20</p> <p>£484,959</p>
<p>Investigating SOcial Competence and Isolation in children with Autism taking part in LEGO-based therapy clubs In School Environments (I-SOCIALISE)</p> <p>Leeds and York Partnership NHS Foundation Trust</p>	<p>The aim of the project is to use LEGO-based therapy to equip children with autism spectrum disorder with the necessary social skills for day-to-day life. This is done by using LEGO to make social interactions interesting to the children. The researchers want to find out if using LEGO therapy in schools would affect the social competence of children with autism spectrum disorder, as well as reducing their social isolation.</p>	<p>NIHR</p> <p>Jan 17 – Dec 20</p> <p>£971,711</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>A non-inferiority randomised controlled trial comparing the clinical and cost-effectiveness of one session treatment (OST) with multi-session cognitive behavioural therapy (CBT) in children with specific phobias</p> <p>Leeds and York Partnership NHS Foundation Trust</p> <p>www.sheffield.ac.uk/scharr/sections/dts/ctru/aspect</p>	<p>One-session therapy, an alternative to usual cognitive-behavioural therapy, is currently used successfully with adults but has not yet been tested for use with children. The researchers plan to compare one-session therapy with multi-session cognitive-behavioural therapy for the treatment of specific phobias in children, which can severely affect quality of life.</p>	<p>NIHR</p> <p>Jul 16 – Mar 21</p> <p>£1,557,052</p>
<p>A pragmatic randomised controlled trial of sensory integration therapy versus usual care for sensory processing difficulties in autism spectrum disorder (ASD) in children: impact on behavioural difficulties, skills and socialisation (SenITA)</p> <p>Cardiff University</p> <p>www.cardiff.ac.uk/centre-for-trials-research/research/studies-and-trials/view/senita</p>	<p>It is common for children with ASD to experience difficulty processing sensory information (sight, touch, sound, smell and taste). These problems can affect a child's ability to socialise and integrate into everyday life, as well as their behaviour. To address this, the researchers aim to find out whether or not delivered sensory integration using occupational therapists improves outcomes compared with usual care.</p>	<p>NIHR</p> <p>Jan 17 – Dec 20</p> <p>£1,193,553</p>
<p>Improving the Wellbeing of people with Opioid Treated CHronic pain; I-WOTCH</p> <p>University of Warwick</p> <p>https://warwick.ac.uk/fac/med/research/ctu/trials/iwotch/</p>	<p>This research seeks to test the effect of the I-WOTCH intervention, supportive self-management and information/advice about coming off opioid drugs (the I-WOTCH intervention), on how well people can get on with normal activities (e.g. work, family and social life), and on opioid use, compared with usual care.</p>	<p>NIHR</p> <p>Sep 16 – Nov 20</p> <p>£1,575,854</p>

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Project title, contact and URL	Summary	Organisation, duration and funding
<p>PROvision of braces for Patients with knee OsteoArthritis (PROP OA): a randomised controlled trial</p> <p>North Staffordshire Clinical Commissioning Group</p> <p>www.journalslibrary.nihr.ac.uk/programmes/hta/1616003/#/</p>	<p>This project aims to show whether or not wearing a knee brace provides more relief for people with painful osteoarthritis of the knee than just usual primary care (education, advice and exercise), and whether or not this is good value for money for the NHS.</p>	<p>NIHR</p> <p>Sep 18 – Nov 22</p> <p>£1,622,564</p>
<p>Cost-effectiveness of earlier provision of powered mobility interventions for children with mobility limitations: evidence synthesis and economic model</p> <p>Bangor University</p> <p>www.journalslibrary.nihr.ac.uk/programmes/hta/177001/#/</p>	<p>This cluster randomised controlled trial, cost-effectiveness analysis and process evaluation will assess provision of powered mobility interventions for children with mobility limitations.</p>	<p>NIHR</p> <p>Apr 18 – Jun 19</p> <p>£251,448</p>
<p>The Project About Loneliness and Social networks (PALS) study</p> <p>University of Southampton</p> <p>www.journalslibrary.nihr.ac.uk/programmes/phr/160841/#/</p>	<p>This research will evaluate the acceptability, effectiveness and cost-effectiveness of implementing the GENIE intervention to reduce loneliness and unwanted social isolation of adults in a community setting.</p>	<p>NIHR</p> <p>Mar 18 – Aug 21</p> <p>£976,212</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Immersive virtual reality to transform the lives of patients with psychosis</p> <p>Oxford Health NHS Foundation Trust</p> <p>www.psych.ox.ac.uk/research/oxford-cognitive-approaches-to-psychosis-o-cap/projects/</p>	<p>Virtual reality therapy involves wearing a headset and interacting with computer-generated people. Uniquely, the virtual reality therapy in this study will use a virtual coach to guide the user through their thoughts, feelings and responses in social situations. People with psychosis and NHS staff will work together to develop the virtual reality therapy to ensure the best user experience. A further consultation process will produce a guide to using virtual reality in NHS psychosis services.</p>	<p>NIHR</p> <p>Jun 18 – May 21</p> <p>£3,957,119</p>
<p>Virtual reality prosthetics training system</p> <p>Sheffield Teaching Hospitals NHS Foundation Trust</p>	<p>Building on a ‘virtual reality’ pilot study, this research will focus on building a virtual reality system to improve the current NHS training for patients to use a myoelectric prosthetic arm. Digital gaming methods will be used to make the training engaging. Therapists will be shown how to set up and use the system in clinics. Patients will also be able to take the system home to practise. The aim of the training is to make it easier for the user to learn to have greater control of the arm, which will save time by reducing the number of clinic visits and costs while making the training system more effective for future users.</p>	<p>NIHR</p> <p>Oct 17 – Mar 20</p> <p>£445,339</p>
<p>Enhancing the quality of psychological interventions delivered by telephone (EQUITY)</p> <p>Greater Manchester Mental Health NHS Foundation Trust</p>	<p>This project will focus on improving the way in which psychological interventions are delivered over the telephone so that people can be sure to get the care they need. Improving Access to Psychological Therapies (IAPT) data will be explored to understand which groups of people have the greatest difficulties with telephone-delivered treatments. Patients and professionals will be consulted, and the knowledge gained from these approaches will be used to develop an intervention to help services improve the quality of telephone treatments.</p>	<p>NIHR</p> <p>Apr 18 – Oct 23</p> <p>£2,524,745</p>

Annex. Listing of assistive technology research and development projects 2019–20

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Feasibility of conducting a multi-centre randomised controlled trial to assess the effectiveness and cost-effectiveness of digital hearing aids in patients with tinnitus and hearing loss</p> <p>Nottingham University Hospitals NHS Trust</p> <p>www.nctu.ac.uk/studies/completed-studies/completed-studies.aspx</p>	<p>This study, involving five audiology departments, will seek if it is feasible to undertake a larger randomised controlled trial to assess whether or not digital hearing aids are effective with participants with tinnitus and hearing loss.</p>	<p>NIHR</p> <p>Apr 18 – Apr 20</p> <p>£249,884</p>
<p>The feasibility of using BioFeedback to reduce Pain in people with Knee Osteoarthritis (BEPKO)</p> <p>Salford Royal NHS Foundation Trust</p>	<p>Using a technique known as electromyography, patients with knee osteoarthritis can see this muscle activity on easy-to-understand computer software. Patients can then be given specific exercises and instructions (using appropriate imagery) on how to contract the muscles differently to reduce pressure on their knee joints. This study will refine the four components of the intervention by working closely with patients with knee osteoarthritis to understand their views on how it can be improved. This will allow the new treatment to be optimised.</p>	<p>NIHR</p> <p>Apr 18 – Oct 19</p> <p>£161,445</p>
<p>Patient acceptability of a novel prosthetic device: a randomised feasibility study in older patients with vascular-related amputations and multimorbidities</p> <p>Hull and East Yorkshire Hospitals NHS Trust</p>	<p>This study aims to test whether or not it is possible to conduct a large randomised controlled trial comparing a standard foot–ankle prosthesis with a new version in older patients with vascular-related amputations and multimorbidities.</p>	<p>NIHR</p> <p>Apr 18 – Mar 20</p> <p>£248,894</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Feasibility of a randomised controlled trial to examine the effectiveness of auditory-cognitive training to improve hearing aid users' speech perception outcomes, compared with hearing aids alone</p> <p>Nottingham University Hospitals NHS Trust</p>	<p>This research builds on previous work that has shown that computer games designed to help people practise listening to speech can improve the cognition and listening abilities of people with hearing loss and hearing-aid users. These games, termed auditory training, could help patients better understand speech in noise, thereby improving communication, which can in turn improve quality of life. This feasibility study will explore whether or not a large trial could work to understand the benefits of these games for patients.</p>	<p>NIHR</p> <p>Apr 18 – Feb 21</p> <p>£249,414</p>
<p>Mobilising knowledge to improve assistive technology commissioning, service provision and sustained implementation</p> <p>University of Hertfordshire</p>	<p>The aim of this project is to produce guidance that helps professionals consider what they need to know to develop an assistive technology service to improve the experiences of people using it and improve the delivery of care.</p>	<p>NIHR</p> <p>May 18 – Apr 21</p>
<p>Can smartphone and teleconferencing technology be used to deliver an effective home exercise intervention to prevent falls amongst community dwelling older people? A feasibility randomised controlled trial</p> <p>University of Manchester</p>	<p>This study will explore whether or not the use of smartphone and teleconferencing technology can help to deliver effective one-to-one and group home exercise to prevent falls in older people.</p>	<p>NIHR</p> <p>Jan 16 – Jul 20</p> <p>£300,929</p>

Annex. Listing of assistive technology research and development projects 2019–20

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Autism Spectrum Social Stories In Schools Trial 2 (ASSIST2): a randomised controlled trial and economic evaluation of a Social Stories intervention to address the social and emotional health of children with ASD in primary schools</p> <p>Leeds and York Partnership NHS Foundation Trust</p> <p>www.journalslibrary.nihr.ac.uk/programmes/hta/1611191/#/</p>	<p>This pragmatic cluster randomised controlled trial aims to examine the effectiveness and cost-effectiveness of Social Stories for children with autism spectrum disorder and challenging daily behaviour. This design was drawn from the successful Health Technology Assessment feasibility study (ASSIST).</p>	<p>NIHR</p> <p>Jun 18 – Nov 21</p> <p>£1,081,529</p>
<p>A pilot randomised controlled trial of one to one befriending by volunteers, compared to usual care, in reducing symptoms of depression in people with intellectual disability</p> <p>University College London</p> <p>www.journalslibrary.nihr.ac.uk/programmes/phr/1612257/#/</p>	<p>This team will carry out a pilot randomised controlled trial of one-to-one befriending by volunteers for people with intellectual disability, compared with usual care and a booklet of community resources.</p>	<p>NIHR</p> <p>Jul 18 – Jun 20</p> <p>£357,767.74</p>
<p>Development and feasibility of a behavioural intervention to improve the beneficial use of hearing technology for adults with hearing loss</p> <p>University of Nottingham</p>	<p>This project will identify how individuals' behaviours are linked to their use of hearing technologies and will use this knowledge to develop an online tool to improve the use of hearing technologies.</p>	<p>NIHR</p> <p>Oct 18 – Jun 23</p> <p>£593,402</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>The SAFEST Review: The Shock-Absorbing Flooring Effectiveness SysTematic Review including older adults and staff in care settings</p> <p>University of Portsmouth</p>	<p>This project will aim to summarise what is known about shock-absorbing flooring in hospitals and care homes with regard to reducing injuries from falls. The review will highlight evidence that will support carers of older people. The findings will also be relevant to the design and infrastructure in hospitals and care homes.</p>	<p>NIHR</p> <p>Feb 19 – Jul 20</p> <p>£126,914</p>
<p>Virtual reality supported therapy for the negative symptoms of psychosis</p> <p>King's College London</p>	<p>This research aims to fill this gap by introducing a therapy designed to reduce negative symptoms and improve the recovery prospect of people with schizophrenia. The proposed therapy will be a virtual reality environment where participants will be able to experience and practice everyday life activities, such as talking to a stranger and cooking a meal.</p>	<p>NIHR</p> <p>Mar 19 – Feb 21</p> <p>£184,757</p>
<p>Unspoken Voices: what are the perspectives of people who use alternative and augmentative communication (AAC) on the impact and effectiveness of AAC equipment?</p> <p>Gloucestershire Health and Care NHS Foundation Trust and Sheffield Hallam University</p>	<p>The study aims to develop a greater understanding about why people do or do not use communication aids and how they view success with using them.</p>	<p>NIHR</p> <p>Apr 19 – Oct 19</p>

Annex. Listing of assistive technology research and development projects 2019–20

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Evaluating ‘Enhancing Pragmatic LAnguage skills for Young children with Social communication impairment’ (E-PLAYS): a feasibility study</p> <p>North East London NHS Foundation Trust</p> <p>https://www.york.ac.uk/healthsciences/research/trials/ytutrialstandstudies/yt-u-active/trials/e-plays/</p>	<p>Children with social communication impairments struggle to communicate appropriately in social contexts. This can have profound effects on their social development, mental health and education and is strongly associated with bullying, isolation and exclusion from school. The study has already developed a novel approach of Enhancing Pragmatic Language skills for Young children with Social communication disorder (E-PLAYS) using a fun computer game. The study team will look into the feasibility of running a large trial to find out whether E-PLAYS could be delivered effectively by NHS speech and language therapists working with school teaching assistants instead of being delivered (as in the pilot study) by university-trained research assistants.</p>	<p>NIHR</p> <p>Nov 17 – Jul 19</p> <p>£252,738</p>
<p>Improving Mental health therapy Provision, Research & Outcomes via Virtual Environments (IMPROVE)</p> <p>Emteq Limited</p> <p>https://fundingawards.nihr.ac.uk/award/NIHR201283</p>	<p>Delivering psychological therapy through virtual reality technology has the potential to help meet the needs of scalability and personalisation in treating mental ill-health. Emteq is developing the IMPROVE platform (Mental health therapy Provision, Research & Outcomes via Virtual Environments). The platform will include (1) a prototype of a low-cost mobile sensor-enabled virtual reality headset to measure emotional responses in virtual reality, (2) a secure software platform for deploying virtual reality environments and associated back-end visualisation dashboard and (3) software development kits to enable the use of a range of sensors (facial expression tracking, eye tracking and physiological sensing) with existing virtual reality mental health apps to enable the personalisation of therapy.</p>	<p>NIHR</p> <p>Mar 20 – Feb 21</p> <p>£147,242</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Evaluation of Point OutWords, a motor skills intervention to promote language development in non-verbal children with autism: a feasibility study</p> <p>Cambridgeshire and Peterborough NHS Foundation Trust</p> <p>http://PointOutWords.online/</p>	<p>In a user-centred design process partnered with autistic clients and their therapists, this team has developed Point OutWords, an iPad app-based communication training system. This feasibility project will evaluate the ability to recruit and to retain families in sufficient numbers, families' ability to accept and to use Point OutWords as recommended, and the practicality for families and utility in controlled-trial outcome measurement of several tests that could be used to measure improvements produced by Point OutWords.</p>	<p>NIHR</p> <p>Jul 18 – Jan 20</p> <p>£250,000</p>
<p>A feasibility study to investigate the effects of a functional standing frame programme in people with severe sub-acute stroke on function, quality of life and neuromuscular impairment; and a systematic review on non-pharmacological interventions for orthostatic hypotension</p> <p>University of Plymouth</p>	<p>People with severe stroke experience significant muscle weakness, which means that they spend much of their time in bed or sitting. Currently, physiotherapy for people with severe stroke concentrates on practising tasks, such as transfers into/out of a chair, that are important for independence and achieving discharge home. Standing up early after a stroke may help strengthen muscles, reduce orthostatic hypotension and prevent muscles becoming stiff and weaker. This study aims to assess whether it is possible for people with severe stroke to use a standing frame to practise functional movements such as standing and moving between sitting and standing. The feasibility study will find out if it is possible and practical to use a functional standing frame programme with people with severe stroke in the subacute hospital setting.</p>	<p>NIHR</p> <p>Apr 16 – Aug 19</p> <p>£269,711</p>
<p>Exploring language, behaviour and wellbeing outcomes of a user co-designed digital vocabulary intervention for child language disorder</p> <p>City, University of London</p>	<p>This project will work directly with children who struggle with language and aspects of behaviour, together with their parents and expert professionals, to jointly develop and test a vocabulary intervention designed to be used on tablets.</p>	<p>HEE/NIHR</p> <p>Jun 19 – May 23</p> <p>£376,578</p>

Annex. Listing of assistive technology research and development projects 2019–20

Project title, contact and URL	Summary	Organisation, duration and funding
<p>An assistive powered wheelchair: stage 1 - evaluating users' driving characteristics. A non-interventional study</p> <p>EDUCAT</p> <p>www.educat2seas.eu</p>	<p>Many powered-wheelchair users find driving safely and confidently a challenge and the user becomes hesitant to use their powered wheelchair. This study is the first stage in a three-stage multi-centre European research project 'Empowerment of Disabled people through the User Coproduction of Assistive Technology' (EDUCAT). The aim of the study is to assist the powered-wheelchair user to drive more safely and confidently, thus enhancing their independence and quality of life. Because this is an extensive study, the current proposal covers only stage 1, which is to find out whether it is possible to monitor the user's well-being and the effect of medication on their driving.</p>	<p>EC</p> <p>Jan 18 – Jul 19</p> <p>Part of a €1,886,246.76 EU grant development fund</p>
<p>Developing an intervention to reduce sedentary behaviour in non-ambulant young people with long-term disabilities</p> <p>Birmingham Community Healthcare NHS Foundation Trust</p>	<p>The aim of this study is to help young people with long-term disabilities who are unable to walk to spend less time being sedentary. This will be achieved by developing a digital intervention (software) for mobile phones or computers.</p>	<p>HEE/NIHR</p> <p>Jun 19 – May 22</p> <p>£349,512</p>
<p>Development and piloting of a prehabilitation behavioural change and physical activity intervention for fibromyalgia syndrome (FMS)</p>	<p>Fibromyalgia syndrome is a chronic pain condition that has a major impact on quality of life. Guidelines emphasise the importance of physical activity in managing it; however, those with the condition find engaging in exercise extremely challenging. Prehabilitation is defined as the process of enhancing the functional capacity of the individual to enable him or her to withstand a future stressful event. This study aims to develop a prehabilitation behavioural change intervention that will give patients the psychological and physical capability to engage in physical activity.</p>	<p>HSC PHA</p> <p>Jan 2018 – Jul 2019</p> <p>£38,826</p>

Project title, contact and URL	Summary	Organisation, duration and funding
<p>Developing and testing the InspireD reminiscence app as a stand-alone support for people living with dementia and their families</p> <p>Ulster University</p> <p>www.ulster.ac.uk/news/2020/march/changing-the-lives-of-people-living-with-dementia-with-new-memory-supporting-app</p>	<p>The InspireD app was developed as part of a wider Dementia eHealth and Data Analytics Programme in Northern Ireland. This study will further develop the app so that it can be used as a standalone support on an ongoing basis by people living with dementia, their families and carers. The app is designed to store photographs, music and film clips, which can then be used to prompt conversations about past experiences and important life events.</p>	<p>HSC PHA/ The Atlantic Philanthropies</p> <p>Oct 19 – Mar 20</p> <p>£75,883.00</p>
<p>The Tactile Universe: accessible astrophysics for vision impaired school children</p> <p>University of Portsmouth</p>	<p>The Tactile Universe is an award-winning public engagement project at the Institute of Cosmology and Gravitation, University of Portsmouth. The project aims to make astrophysics research accessible to people with vision impairments, with a particular focus on children aged 9–14 years.</p>	<p>STFC</p> <p>Apr 18 – Jun 19</p> <p>£44,468</p>

Appendix

Assistive technology

‘Assistive technology is any product or service designed to enable independence for disabled and older people’

The setting is any public setting where the user is interacting with the technology and the user has a disability or is older.

Inclusion criteria

- Technology or services that enable independence in people with disabilities or elderly people.
- All settings except clinical.
- Devices to support hygiene (e.g. drying devices, ‘carer dryer’, shower chair).
- Self-management or devices to allow for social cohesion for older people or people with disabilities.
- Population-based/major infrastructure where the technology or service is for disabilities/older people (e.g. tactile pavement surfaces).
- Technology/services that benefit people who are caring for people with disabilities/older people *[thereby giving indirect benefits to the person, e.g. delaying a move to a care home]*.

Exclusion criteria

- Clinical settings.
- Self-management of a chronic condition (e.g. diabetes).
- Assistive technology where the practitioner is using the technology (e.g. healthcare).
- Population-based/major infrastructure (such as street design, housing, transport) where the technology or service is not primarily for people with disabilities or older people *[even though they may benefit – scope too large]*.
- A medical device dwelling inside or under the skin that has been surgically inserted.

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Examples of assistive technology

- apps
- assistive technology
- balance technology
- bathing adaptation
- brain stimulation
- communication aid
- communication therapy
- computer game
- computer therapy
- computerised CBT
- digital reasoning
- electrical stimulation
- electronic magnifiers
- environmental assessment
- exercise programme
- gaming environment
- hearing aid
- heel cast
- humanoid robot
- internet-based treatment
- iPad
- LEGO-based therapy
- mandibular devices
- mobile sensor
- neck collar
- night positioning equipment
- one-session therapy
- orthosis
- ostomy pouch
- rehabilitation device
- robot assisted training
- self-management programme
- sensor integration therapy
- shared decision making
- shower chair
- SMS
- socio-technical solutions
- standing frame
- step highlights
- support mattress
- symbol communication aid
- telehealth
- urinary catheter
- video feedback
- virtual reality environment