

# Action on **stroke** research priorities

A report on opportunities and collaboration for research and innovation in stroke care

10 November 2021

**Stroke**  
Association



# Introduction

The event 'Action on stroke research priorities' hosted by the Stroke Association and KTN brought together industry, academia, clinicians, funding and supporting organisations with expertise in stroke research, innovation and care to share their knowledge and develop new collaborations and partnerships. The event focused on progressing research in areas of unmet need identified by the **Stroke Priority Setting Partnership (PSP)**.

This report summarises key messages and themes in the talks and workshops during the one-day virtual event.

# The devastating impacts of stroke in the UK

Juliet Bouverie OBE, CEO of the Stroke Association opened by presenting the devastating scale and impacts of stroke in the UK.



**100,000** new stroke diagnoses each year.  
**1.3 million** stroke survivors in the UK.<sup>1</sup>



**Two thirds of stroke survivors** live with mental and physical health challenges.<sup>2</sup>



**85% of carers** don't get the support and information they need to help them.<sup>3</sup>



**Around half of all stroke survivors** had therapy appointments cancelled or postponed due to the Covid-19 pandemic.<sup>4</sup>

Professor Jesse Dawson at the University of Glasgow provided an overview of stroke research and care in Scotland. He highlighted nation specific challenges, such as managing patients in remote and rural populations and UK-wide challenges such as workforce capacity and a lack of investment in services.

### **Challenges related to stroke research and care in Scotland**

The percentage of patients receiving vital care according to inpatient stroke standards is lower than target on all measures. For example figures from December 2020 show that 75% of stroke patients receive a swallow screen where the target is 100%, and 70% receive stroke unit care where the target is 90%<sup>5</sup>. Jesse Dawson echoed concerns raised by Juliet Bouverie around lack of post-stroke follow up and rehabilitation services exacerbated by the Covid-19 pandemic.

There is a need to increase commercial stroke research trials as just three are currently in progress, while there are concerns around sourcing funding for new projects in coming years.

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“Stroke care has never had a higher priority from a policy perspective with improvements in delivery of stroke services across the stroke pathway being in the NHS England Long Term Plan. Our Demand Signalling work and finding of the Stroke PSP complement each other to prioritise and direct investment in research that can generate the evidence necessary for the most impactful improvements for our stroke survivors.”

**Dr Deb Lowe, NCD for Stroke Medicine**

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### **Developments related to stroke research and care in Scotland**

Broadly across NHS organisations a higher percentage of patients with transient ischaemic attack were referred for specialist assessment within 1 day in 2020 compared to 2019<sup>5</sup>. This reflects positively on changes to remote triage rather than face-to-face as a result of the Covid-19 pandemic.

**The Scottish Stroke Improvement Programme 2020** outlines a plan for thrombectomy services and a pilot service in Tayside has launched.

Participant recruitment to research significantly reduced in 2020-2021 as a result of participant to enrolment being halted, however there are signs of quick recovery. Patient, carer and public involvement in research initiatives have also seen progress in recent years.

Dr Deb Lowe, National Clinical Director (NCD) for Stroke Medicine discussed recent developments in stroke care policy in England. She highlighted the importance of evidence-based decision-making in commissioning of services while the Covid-19 pandemic has demonstrated that the NHS can innovate and adapt at pace. Reshma Sultan at NHS England and Improvement described the synergy between NHS Demand Signalling activity to define research priorities to deliver the NHS Long Term Plan, and outcomes of the Stroke PSP. This shows that clinicians, researchers, funders and decision-makers must work together for progress in these areas.

# Priorities in stroke research to address unmet needs

The Stroke PSP follows the James Lind Alliance (JLA) process that brings together people affected by stroke and health and social care professionals to establish priorities for research. The process identified areas of evidence uncertainty across the stroke care pathway where research is needed to inform improvements in care.

While the Stroke PSP establishes priorities for research investment, Dr Rubina Ahmed, Director of Research and Policy at the Stroke Association presented that just 1.2% of public and charity spend is in stroke<sup>6</sup>. This stark figure demonstrates the need for stroke research funding.

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“I am one of the 1.3 million stroke survivors in the UK and now with a clear steer for the future of research, I urge funders, academics, industry, clinicians and stroke survivors like myself to take this agenda forward.”

**Professor Ade Adebajo, a stroke survivor involved in the Stroke PSP**

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# Collaborating with industry innovators

A range of industry stakeholders presented their areas of innovation and appealed for collaborators to take them further.

## Utilising artificial intelligence (AI) technologies

Brainomix has developed clinically available AI for accelerated imaging assessment in acute stroke (e-Stroke). Next they're looking to further develop use of biomarkers, algorithms and connectivity across networks for acute and follow-up imaging.

Cognetivity has developed an Integrated Cognitive Assessment (ICA) using AI for early diagnosis and monitoring of neurodegeneration. The technology is currently undergoing phase II validation study as well as pilot adoption trials in the NHS.



Photograph © Brainomix

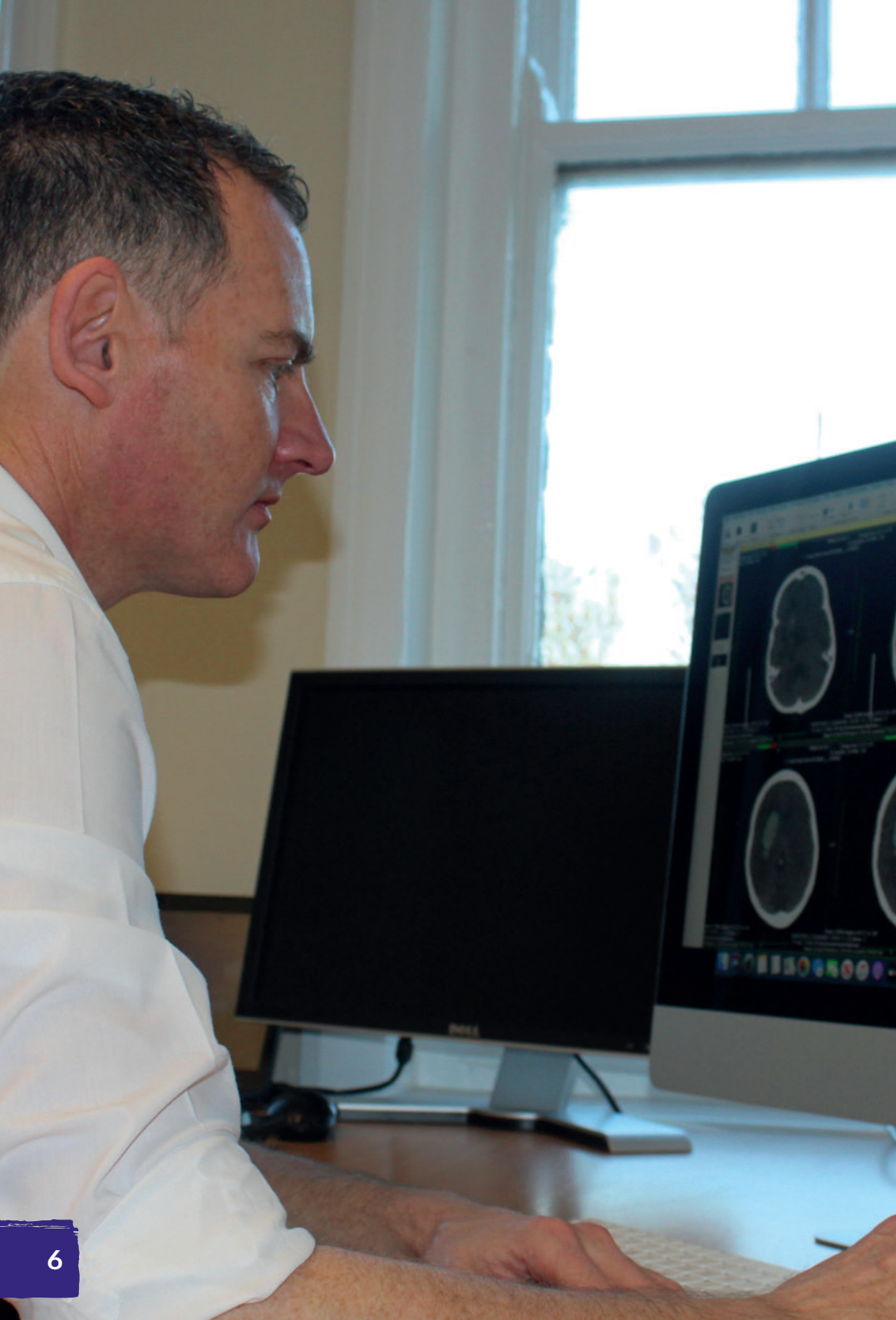
## Digital tools to increase patient access to support

Neurofenix has developed an at home therapy device (Neuroball) and digital platform for upper limb rehabilitation. They're looking to expand tele-therapy functionality in the platform, for example developing its social element, and for collaborators to achieve their goal of increasing access to therapy for stroke survivors at home.

Helicon Health has developed a platform for stroke prevention including to detect those at risk, and provide tools to reduce risk. They're looking for collaborators to scale use of the technology.



Photograph © Neurofenix



## Medicine to improve outcomes after stroke

Athersys has developed MultiStem® Cell Therapy to target multiple tissue mechanisms including immunomodulation and inflammation. They presented results of the phase II MASTERS trial indicating beneficial outcomes on some measures, with the phase III MASTERS-2 trial ongoing. They are looking collaborators to continue to innovate including new formulation and storage solutions to support administration in clinical settings.

Roche UK gave an overview of their developments in early diagnosis and management of atrial fibrillation (AF), a common risk factor for stroke. They have innovations in biomarker development for detection of AF and bleeding risk, and self-management of anti-coagulation treatment.

Cerenovus, part of Johnson & Johnson has a core focus on developing medical devices for neurovascular care such as clot extraction and aspiration for ischaemia, and coils for haemorrhage. They're focusing on building awareness of and advocacy for industry partnerships with stroke centres to support patient pathway efficiencies and network expansion, as well as broadening their educational initiatives for healthcare professionals to improve patient outcomes.

# Navigating the **funding** landscape

Speakers from organisations that fund research and innovation and supporting networks emphasised the variety of opportunities in the UK, and what they could offer researchers and industry. Key messages emerged around understanding and aligning with expertise and strategic goals of funders, and approaching organisations for advice.

**Dr Philippa Hemmings** at the Engineering and Physical Sciences Research Council presented on the organisation's support for basic and applied research through to translational development focused by the **Healthcare Technologies Theme**. She identified a number of grand challenges relevant to stroke. She emphasised that funding for projects is both strategic and researcher-led, and there's funding for research career development activities. Philippa demonstrated how the broadly defined portfolio encourages multi-disciplinary, collaborative research across the stroke care pathway giving examples of projects funded in various modes.

**Dr Catriona Crombie** at **LifeArc** gave an overview of the charity's focus on translational research with a variety of funding modes suited to collaborative partners. She also presented on the organisation's translational advice service and laboratories in Stevenage and Edinburgh dedicated to translational science.

**Dr Helen Compton** at National Institute for Health Research (NIHR) gave an overview of the organisation's offer to the life science industry throughout the clinical pathway, including **funding opportunities**, facilitates, patient samples and **research design service**. She urged potential applicants to understand the remit of the organisation's 10 research programmes that fund multi-disciplinary health and social care research, and to contact programme teams for specialist advice on the programmes and applications. She also highlighted the NIHR James Lind Alliance PSP rolling call that funds research to address priority areas identified through the process.

**Dr Ian McKay** at Innovate UK emphasised their lead in realising the Government's industrial strategy and R&D expenditure targets by supporting businesses. He presented the Cell and Gene Therapy and Digital Catapults Networks, and the EDGE infrastructure, a free service tailored to business needs in supporting innovation in stroke care. He also focused on improving and broadening diversity and inclusion in research and innovation as a key priority.



# Tapping into supporting networks

Professor Mehdi Tavakoli at **KTN** introduced their missions to support innovations to deliver economic growth by bringing together businesses, entrepreneurs, academics, clinicians, charities and funders to develop products, processes and services. He covered the **Health** areas of focus; Med Tech, Digital Health and Care, and Medicines, and emphasised the growing need to break down silos to innovate care for people living with multi-morbidity. He explained how KTN promotes collaboration opportunities including helping companies to engage and collaborate with academics, clinicians and charities to address unmet clinical needs, access funding, and accelerate translational research towards product developments and faster routes to market for patients benefits.

Hannah Oatley at the **Oxford Academic Health Science Network** presented on the **Innovation Exchange**, part of the Accelerated Access Collaborative, taking a co-ordinated approach to identifying and supporting adoption of selected innovations. The network focuses on supporting innovators in real-world validation to meet local needs and support of national projects, commonly in the roll-out of innovation proven with local success. Recent work includes development of the Thromectomy Innovation and Transformation network to implement Brainomix e-Stroke across six acute stroke Trusts in the Thames Valley Region.

Professor Wendy Tindale at the NIHR Devices for Dignity MedTech Co-operative (**MIC**) emphasised the benefits research expertise embedded in the NHS in driving research to address unmet needs, and connecting clinical services to the wider research infrastructure. Their support for collaborations tracks from identification of unmet needs to dissemination and commercialisation of healthcare technologies with the mission of delivering innovation for people to live well for longer.



Photograph © University of Strathclyde



Dr Andrew Kerr at the University of Strathclyde highlighted the University's track record of partnering with industry in research. He also gave an overview of facilities at the Co-creation Centre for Rehabilitation where research aims to improve self-management in the home and community for people with a range of rehabilitation needs as a global challenge across stroke and other conditions.

Dr Lynn Morrice at the **British Heart Foundation Data Science Centre** gave an overview of the organisation's aim to support the cardiovascular research community in harnessing the power of health data. They do this by developing research capability and approaches in data science, promoting transparent and publicly acceptable use of health data and shared learning through collaboration. The organisation works according to thematic areas and cross-cutting work programmes. Lynn highlighted the data-enabled clinical trials theme and a stroke-focused cohort under the enhancing cohorts theme as particularly relevant to stroke research.



Photograph © University of Strathclyde



## **Workshops** - Action on stroke research priorities

Workshops aimed to collate insights and initiate new stakeholder contacts for collaborations to take action and address research uncertainties. Led by research experts and facilitators, the workshops focused on Stroke PSP priorities across the stroke care pathway. Professor Mehdi Tavakoli introduced workshops emphasising the importance of support for new collaboration and partnership opportunities to address many unmet clinical needs in stroke.

The Stroke Association and KTN endeavour to support potential collaborative projects identified during the workshops and would be pleased to hear from any organisations who can support us to address challenges described in this report.

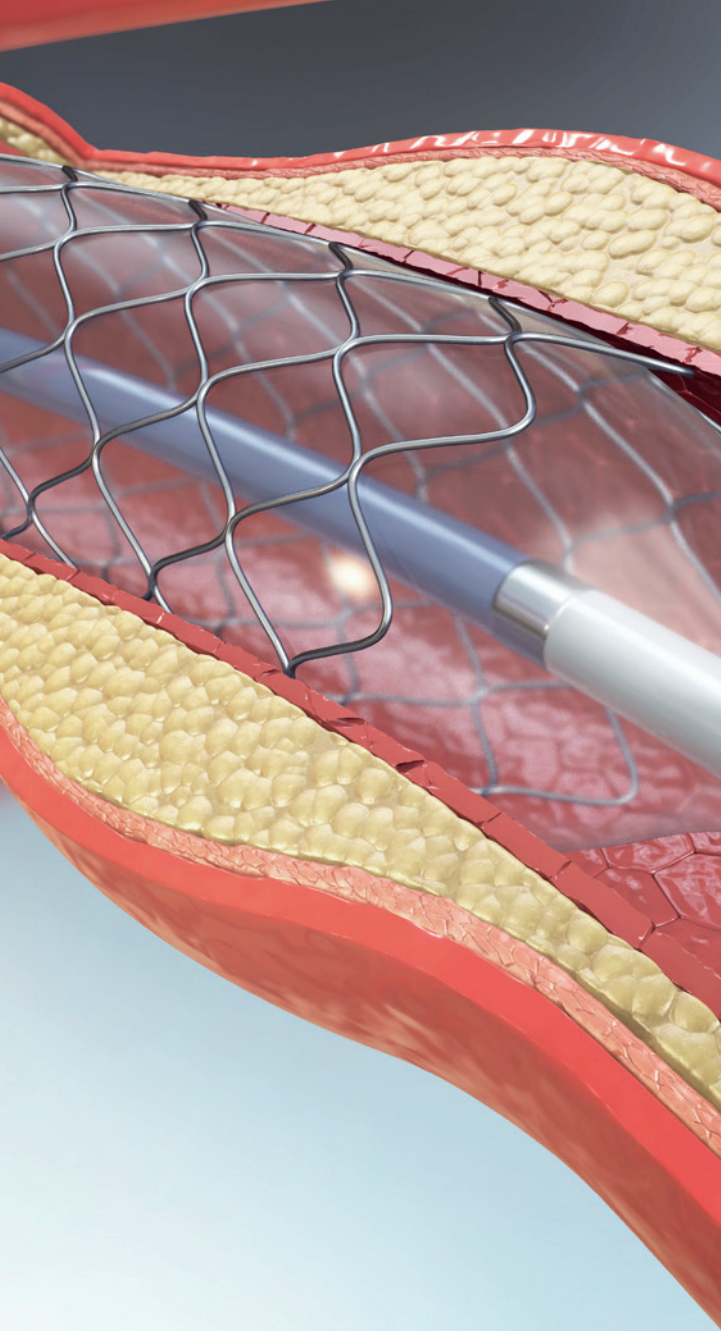


## Pre-hospital care and diagnosis of stroke

Dr Graham McClelland at the University of Newcastle gave an overview of opportunities and research in the field of pre-hospital stroke care covering diagnostics, treatment and pathways. He emphasised the importance of this stage of stroke care, saying: "Most strokes happen outside of hospital and this is an emergency situation where rapid accurate diagnosis and access to specialist stroke care is crucial in order to give patients access to time-limited treatments."

Discussion centred on the need for collaborative groups seeking funding to:

- Develop pre-hospital and acute biomarkers for stroke sub-types, including the use of blood and imaging to determine rapid transfer to correct treatment centres as well as appropriate treatments themselves. Alongside these developments, research is needed to understand the impact of novel diagnostics on stroke pathways and service capacity, including the workforce.
- Validate and implement risks scores, including research into models for screening programmes and public health initiatives to improve stroke prevention. As well as for stroke prevention, there is a general need to increase public and healthcare professional awareness and education on stroke in the pre-hospital setting including symptoms awareness and clinical guidelines.
- Synthesise research in the field allowing stakeholders to easily and quickly access knowledge on current developments.

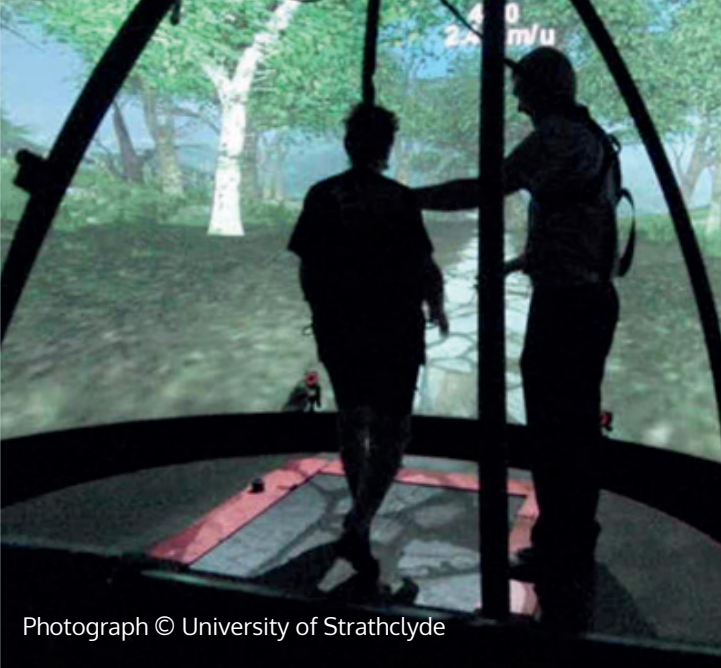


## New acute treatments for stroke

Professor Hugh Markus at the University of Cambridge gave an overview of research in the field, saying: "whilst we've made good progress in treatment of ischaemic stroke, there is far less for intracerebral haemorrhage and currently no drug treatments are shown to improve recovery from neurological deficits due to stroke or for prevention of post-stroke cognitive decline and dementia. These are areas of great need."

Discussion centred on the need for collaborative groups seeking funding to:

- Investigate the potential of and develop strategies for ultra-early minimally invasive surgery for the removal of haemorrhage blood. This would involve understanding the target patient population and mechanisms.
- Generate robust mechanistic and translational evidence in the broad area of targeting immunomodulation and inflammation. This includes exploring the large potential in repurposing of drugs proven effective for other conditions, but would need engagement of industry.
- Explore reperfused tissues in ischaemic stroke as a new target for neuroprotective agents that could potentially enhance benefit of existing treatments thrombectomy/thrombolysis.
- Develop integrated imaging and mechanistic studies to understand if tailored anti-thrombotics or vasodilators for small vessel strokes be beneficial where there are no effective therapies for this type of stroke.
- Investigate personalisation of secondary prevention treatment for stroke sub-populations such as those with small vessel disease and the presences of micro-bleeds using imaging biomarkers.



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Photograph © Neurofenix



Photograph © Neurofenix



## Technology for stroke rehabilitation

Professor Jane Burrige at the University of Southampton gave an overview of research in the field focusing on its relevance to assessment and diagnosis, assisting activities of daily living and promoting recovery. She emphasised that “currently there are a vast number of devices, some that can be bought off-the-shelf but there is a real lack of evidence for effectiveness.”

Discussion centred on the need for collaborative groups seeking funding to:

- Develop large, accessible data platforms to collate evidence in multi-centred trials and longitudinal cohorts, and new methodologies to utilise this data to understand patient recovery across a range of impairments and interventions in sub-populations of stroke patients.
- Set up a networking and collaboration space for stakeholders to establish shared principles in evidence for use of technologies and speed up development and regulatory assessment for commercialisation. This includes increased investment in implementation science, and research on feasibility and acceptability.
- Develop platforms to collate and share information and evidence on all available technologies that is also accessible to patients.
- Develop technologies that are simple at the point of use but address the multiple components to neuro-rehabilitation including the environment and multi-morbidity.
- Further investigate use of wearables for assessment and diagnosis of post-stroke impairments, including identification of sub-populations who are likely to benefit.



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"This event and the workshops as a part of it has helped to strengthen ties across the UK stroke community. It is by facilitating the sharing of knowledge and collaborations between those working both pre-clinically and clinically, and with diverse expertise from academic, industry and clinical roles that research and innovation can most quickly and effectively make a difference to the lives of stroke patients."

**Workshop participant Professor Johannes Boltze,  
University of Warwick.**

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"I found the event very informative and benefited from all the presentations by speakers. At Arterius we are in the process of developing a mechanical thrombectomy device and the workshops gave me the opportunity to identify and better understand unmet clinical needs in stroke and network with potential collaborators in academic and clinical research and industry."

**Workshop participant Dr Kadem Al-Lamee, CEO at Arterius Ltd**

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# Next steps in collaboration for action on research priorities

The insights and project proposals generated in workshops will be taken forward by the Stroke Association, KTN and stakeholder participants. Multi-disciplinary and cross-sector collaboration will lead to addressing evidence uncertainties identified by the Stroke PSP.

Funders and supporting organisations have identified existing funding and collaboration opportunities relevant to stroke research. However, the Stroke Association and KTN hope to see funding increased and further opportunities available to support research and innovation in stroke care.

## Resources and contacts

### Stroke Association

Research Strategy <https://www.stroke.org.uk/research/our-research-strategy>

Funding schemes <https://www.stroke.org.uk/research/our-funding-schemes>

If you are interested in working on or supporting research to address Stroke PSP priority areas, please contact [research@stroke.org.uk](mailto:research@stroke.org.uk)

### KTN

KTN releases latest information about current funding opportunities through its website and monthly Health Newsletter (sign up via website). Members of the KTN Health Team are happy to give advice on most appropriate competitions and review applications prior to submission.

Health funding map <https://ktn-uk.org/programme/health-funding-map/>

Neurotechnology landscape <https://ktn-uk.org/programme/neurotechnology-landscape/>

### UKRI EPSR

The Funding Landscape <https://epsrc.ukri.org/research/ourportfolio/themes/healthcaretechnologies/strategy/toolkit/landscape/>

Research remit query form [www.ukri.org/publications/epsrc-research-remit-query-form/](http://www.ukri.org/publications/epsrc-research-remit-query-form/)

## References

1. Stroke Association. Stroke Statistics. [www.stroke.org.uk/what-is-stroke/stroke-statistics](http://www.stroke.org.uk/what-is-stroke/stroke-statistics) [Accessed 25/10/2021]
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3. Stroke Association. Lived experience of stroke, Chapter 3 – Caring for a stroke survivor. 2019.
4. Stroke Association. Stroke recoveries at risk. September 2020.
5. Scottish Stroke Care Audit data. [www.strokeaudit.scot.nhs.uk/index.html](http://www.strokeaudit.scot.nhs.uk/index.html)
6. UK Clinical Research Collaboration. UK Health Research Analysis 2018. ISBN 978-0-903730-29-7 <https://hrcsonline.net/reports/analysis-reports/uk-health-research-analysis-2018/>

**When stroke strikes, part of your brain shuts down.**  
And so does a part of you. Life changes instantly and recovery is tough. But the brain can adapt. Our specialist support, research and campaigning are only possible with the courage and determination of the stroke community. With more donations and support from you, we can rebuild even more lives.

Donate or find out more at [stroke.org.uk](https://stroke.org.uk)

KTN exists to connect innovators with new partners and new opportunities beyond their existing thinking – accelerating ambitious ideas into real-world solutions. Our diverse connections span business, government, funders, research and the third sector. With 200 staff across the UK, deep technical sector expertise, and over 43,000 organisations in the network, KTN drives opportunities for societal and economic change through convening communities of innovation. KTN works in partnership with Innovate UK and UKRI to support UK innovation.

Rebuilding lives after stroke

