The Academy of Medical Sciences

Opportunities for quantum sensing technologies in health and care pathways

Wednesday 7 May 2025

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Academy of Medical Sciences workshop on Wednesday 7 May 2025

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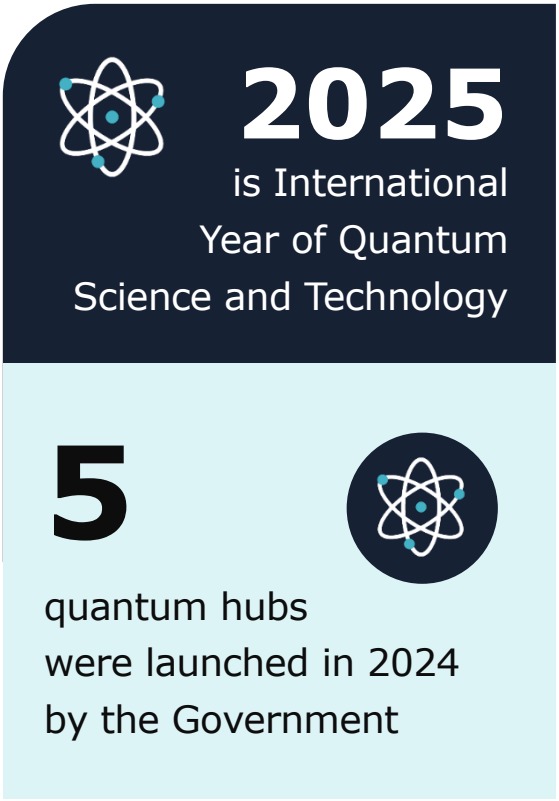
Executive summary

Background

2025 is International Year of Quantum Science and Technology, designated by the UN. Quantum technologies such as quantum computing, quantum sensing, quantum imaging and quantum cryptography all have the potential to improve healthcare.

The National Quantum Strategy,[1] published in March 2023, set out the UK Government's ambition that: by 2030, every NHS Trust will benefit from quantum sensing-enabled solutions, helping those with chronic illness live healthier, longer lives through early diagnosis and treatment (National Quantum Strategy Mission 3).[2]

In 2024, the Government launched five new quantum hubs,[3] including a healthcare-focused hub Q-BIOMED, and QuSIT, focused on sensing, imaging and timing with relevant healthcare applications of quantum sensing and applications of quantum computing for modelling. These hubs will support the development of innovations that can transform health and care pathways in the future.



On 7 May 2025, the Academy of Medical Sciences hosted a workshop titled 'Opportunities for quantum sensing technologies in health and care pathways'. The workshop brought together many sectors with an interest in the application of quantum sensing technologies to healthcare, including clinicians, patients, developers of quantum technology, government, regulators, funders, and academic researchers. All participants on the day are listed in Annex 1.

The workshop and its outputs have informed the development of a roadmap on quantum sensing technologies, commissioned by the Office for Quantum at the Department for Science, Innovation and Technology in support of the National Quantum Strategy[4].

[1] Department for Science Innovation and Technology (2023). *National Quantum Strategy*. https://assets.publishing.service.gov.uk/media/6411a602e90e0776996a4ade/national_quantum_strategy.pdf
[2] Department for Science Innovation and Technology (2023). *National Quantum Strategy Missions*. https://www.gov.uk/government/publications/national-quantum-strategy/national-quantum-strategy-missions
[3] UK Government (2024). *Over £100 million boost to quantum hubs to develop life-saving blood tests and resilient security systems*. https://www.gov.uk/government/news/over-100-million-boost-to-quantum-hubs-to-develop-life-saving-blood-tests-and-resilient-security-systems
[4] Department for Science Innovation and Technology (2023). *National Quantum Strategy*. https://assets.publishing.service.gov.uk/media/6411a602e90e0776996a4ade/national_quantum_strategy.pdf

Workshop aims

- Understand the capabilities of quantum sensing technologies in a healthcare context.
- Identify the needs and challenges faced by health and care pathways that could be addressed through the application of quantum sensing technologies.
- Look to the next 5–10 years, and identify which quantum sensing technologies could address these needs and challenges.
- Consider the benefits to patients, clinicians and the NHS that would be made possible by adopting quantum sensing technologies in health and care pathways.
- Discuss guiding principles for the development and application of new quantum sensing technologies to the health and care context, and how this can be supported by effective interaction between clinicians, patients and quantum technology developers.

Workshop themes

The workshop consisted of scene setting talks, followed by a series of breakout sessions. Presentations from external speakers covered the capabilities of quantum sensing technologies in a healthcare setting to deliver improvements in disease detection and diagnosis for patients.

Participants discussed the opportunities that quantum sensing could present for health and care systems in facilitating improved treatment options and understanding of conditions that could not previously be diagnosed, particularly in underserved areas, and in addressing health inequalities. In addition, opportunities for the development of non-invasive or less-invasive alternatives to current diagnostic tests, and the potential to move care into different settings such as non-specialist centres or into the community were key discussion points within the day.

Participants noted that although quantum sensing technologies show great promise, they are not the solution to all health care challenges. However, their potential may be further enhanced by their convergence and alignment with other technological advances such as artificial intelligence. Reflections also centred around the hope that new quantum sensing technologies may lead to reduced workload for NHS staff and improved efficiencies in the delivery of care.

Principles

The workshop brought a focus to cardiovascular and neurological diseases as these had been identified as areas where quantum sensing technologies could be particularly impactful or have earlier application. However, the event also aimed to identify wider areas of application and general principles for the development of quantum sensing technology in all areas of healthcare. The following were generated from discussions at the workshop as a guide for those seeking to develop or support the development of quantum sensing technologies in a healthcare context. These principles are also of value more broadly and are widely applicable to the development of other emerging technologies.

1. **Developers should work hand in hand with clinicians and patients as end users of quantum sensing technologies**
   Developers should be aware of the problems that end users face, and use this to drive development, rather than prioritising according to what is technologically possible alone. Quantum sensing technologies must be carefully targeted to challenges that they are well suited to address, and through their application, deliver transformative improvements in patient care. End user engagement should be incorporated from the beginning, and continue through co-development. Organisations such as the Academy can have a role in broadening and strengthening the connectivity between technology developers, clinicians and patients.

   - **Development of quantum sensing technologies that are non-invasive or less-invasive should be a goal.** This was particularly identified within our workshop by both clinician and patient voices, as something that would have a significant positive impact on the patient experience.

2. **Public engagement should be undertaken alongside technology development**
   This should form part of a responsible innovation approach to help reduce the barriers to technology adoption, through increasing public understanding and awareness of quantum sensing.

3. **Innovations should be developed with early and proactive consideration of regulatory requirements, healthcare system integration and health economic impact**
   In particular, evidence generation requirements for regulatory submission should be factored in from the start of the technology development process. Regulators and funders should also ensure that pathways contain relevant expertise on quantum sensing technologies in order to support their assessment.

4. **Collaboration opportunities with large companies and across other sectors should be considered to enable scale up of technologies**
   Collaborations can provide support in the data generation required for regulatory approval through increased capacity for testing, and provide capabilities, funding and established commercialisation channels. They can also help drive the development of cost-efficient technologies, with the potential to manufacture cheaply and at scale.

5. **Training and upskilling of healthcare staff must be done in parallel to innovation ambitions for quantum sensing technologies**
   This would support smoother adoption of new technologies through staff being equipped with the knowledge needed for their application. Clinician time for research, including testing of new technologies, must also be protected to enable this.

Future work

In addition to the principles outlined above, the workshop generated significant interest among innovators, patients and clinicians. This enthusiasm presents a valuable opportunity to build on this network and support the further development of quantum sensing technologies in health and care settings.

Workshop summary: scene setting talks

The first part of the day consisted of scene setting talks, including time for Q&A. Workshop participants had varying degrees of knowledge and understanding of quantum sensing technologies, and how these might be applied in a health and care context. The purpose of the scene setting talks was to provide this context ahead of the breakout discussions later in the day. A summary of these talks is provided below. The full workshop agenda can be found in Annex 2.

Overview of quantum technologies: what does quantum mean and why should we care about it in health?

Professor Matthew Brookes OBE, Professor of Physics at the University of Nottingham & Chairman at Cerca Magnetics

In the first scene setting talk, Professor Matthew Brookes gave an overview of what quantum sensing technology can do, and how it can be used to benefit patients. His talk illustrated that quantum principles are already applied in common healthcare technologies, for example in MRI machines, but that a new wave of technology is now under development, thanks to advances in understanding of the theory behind fundamental quantum effects including coherence, superposition and entanglement. This new knowledge can be applied to the development of technologies to achieve capabilities that were not previously possible.

Professor Brookes highlighted that quantum sensing technologies are nearer term in developmental readiness than technologies such as quantum computing. These technologies enable increased sensitivity and precision over conventional methods, which can lead to faster, more accurate diagnosis, and increased information about a patient's condition. This could result in different and/or faster treatment decisions being made, with better outcomes for the patient.

To illustrate some of the potential benefits of quantum sensing technologies, Professor Brookes focused on the case study of brain imaging by magnetoencephalography (MEG). The recent advances have enabled the development of sensors which are a fraction of the size of the systems used currently, allowing them to be mounted on a wearable helmet. The new technology provides increased sensitivity and spatial resolution with lower purchase and running costs. It is adaptable to patients with any head size or shape, and this has unlocked the potential to perform brain imaging on a wider range of patients, including children. In addition, it can record high fidelity data on patients as they move freely, allowing fundamentally new imaging protocols (measuring brain function as people undertake natural tasks, for example, walking). The system could generate new insights into diseases including epilepsy, multiple sclerosis, dementia, concussion, autism and several mental health conditions such as schizophrenia and major depressive disorder.

Discussions in the workshop built on the concepts outlined in Professor Brookes' talk. Near term direct clinical applications (for example, in epilepsy) were identified. Moreover, the wider applications of quantum sensing technologies to healthcare via research were discussed. Greater sensitivity/resolution and new methods of analysis can drive the generation of data to better understand disease, with the potential for other applications, such as imaging of drug interactions,

showing promise for wider application of this technology. New data may in turn identify further new applications for quantum sensing technology.

Clinician perspective

Dr George Harston, Chief Medical and Innovation Officer at Brainomix & Consultant Physician in Stroke and General Medicine at Oxford University Hospitals NHS Foundation Trust

In the second scene setting talk, Dr George Harston outlined the challenges faced within the care pathway of stroke patients. This example aimed to encourage participants to think of challenges within other health and care pathway settings that quantum sensing technologies may have the potential to address.

Stroke is the leading cause of disability, and the fourth largest cause of death in the UK. The overall cost to the economy, NHS, social care and informal care combined is set to rise to £91bn by 2035. In the context of stroke patients, time is critical, as the likelihood of a favourable outcome depends on how quickly the patient is diagnosed and treated.

There are challenges to acting quickly, including public awareness of symptoms, and the ability to diagnose and make treatment decisions rapidly. Quickly identifying the type of stroke that a patient is experiencing is critical to deciding the treatment that should be administered, and the hospital they should be sent to, for example, district general hospitals versus teaching hospitals. Here Dr Harston identified a specific challenge – the imaging technology required is too large for an ambulance, meaning that critical time is lost whilst transporting a patient to a hospital, before imaging can be undertaken. Quantum technology could enable the development of smaller imaging equipment for use in an ambulance to overcome this problem. The ability to predict and prevent a second stroke is also a challenge – here it is again necessary to identify the cause of the stroke in the first instance.

Finally, quantum sensing innovations could enable the measurement of brain function, to supplement the structural data currently being used to support and direct rehabilitation programmes.

Lived experience perspective

Reshma Punjabi, Lived Experience Expert

The third scene setting talk was given by Reshma Punjabi, who outlined her experiences of supporting loved ones through health and care pathways. Reshma reflected that it has been a great honour to look after members of her family when they have needed care, but that her wish in these situations was that she had been able to help more. In this context, Reshma talked particularly about the challenges felt by patients and their families when diagnoses are not clear, and how profoundly and emotionally difficult it can be to see a loved one suffering more because it is not easy to identify the correct treatment options.

Reshma also discussed her desire for patients to receive an accurate diagnosis as early as possible, so they can access appropriate treatment quickly and have every opportunity to avoid developing

complications. Reshma spoke positively about the potential for quantum sensing technologies to provide quicker, more accurate diagnoses to patients. In concluding her talk, Reshma highlighted the importance of engaging patients in the development of technologies, as patients are best placed to communicate what does and does not work for them in the real-world situation of using the technology.

Opportunities & challenges for quantum sensing technologies in health & care pathways

Over the course of the day, participants discussed the opportunities and challenges for the development of quantum sensing technologies in health and care pathways. These discussions are summarised below. Full details of the questions which framed the discussions can be found in the agenda in Annex 2.

Improving disease diagnosis

Participants highlighted the opportunity for the increased sensitivity and precision of quantum sensing technologies to improve current approaches and outcomes for patients through better diagnostic power. Workshop participants felt that there is a clear opportunity to identify the health and care pathways which this proposition most closely aligns to, and to match the problems identified with the technology capabilities that are emerging through advancing quantum sensing.

Discussions at the workshop covered many applications of relevance to neurological conditions, cardiovascular disease and oncology, as well as touching on other opportunities in contexts such as within early response settings, where improved diagnostics could enable preventative action. The opportunity to generate quantitative data where previously it was only possible to measure qualitatively was also raised.

It was also recognised that in addition to the benefits it brings, increased imaging sensitivity may also bring the risk of increased false positives. It may also lead to the detection of incidental issues which we don’t have the knowledge to diagnose or understand, or are of no consequence to a patient, but the detection of which may cause undue anxiety and worry. However, new data which does not yet lead to a diagnosis offers the potential for increasing the knowledge base, and for future innovation.

Targeting underserved communities and areas and expanding health challenges

It was highlighted that the health system has changed a great deal in the last 50 years, and the burden of disease has shifted towards conditions like dementia. Neurodegeneration, as well as underserved areas such as women’s health, elderly care, foetal medicine and mental health were areas which participants felt should be considered by technology developers as areas of high unmet need when identifying targets for new quantum sensing technology development. Importantly, it was noted that although quantum sensing technologies show great promise, they are not the solution to all healthcare challenges.

Discussions raised the question of whether more support could be given to facilitating conversations around identifying unmet needs, and making this information more widely available, in order to drive the development of technologies to meet these challenges. The role of NHS Biomedical Research Centres in facilitating this for quantum sensing technologies was considered. Participants also discussed whether enough focus is given to mapping out care pathways to better identify roadblocks, and the need for a systems approach to generate further data in the area.

Reducing health system pressures

Beyond the immediate benefit to patients, participants highlighted that the application of quantum sensing technologies could also lead to reduced workload for staff, and help to give the NHS greater headspace to focus on other challenges. For example, if imaging with increased resolution resulted in a reduced requirement for manual analysis, demands on staff time could be reduced, and expert time protected for areas where this is most required. Time savings might also be made through shorter turnaround times on diagnostic tests.

Further to this, participants discussed the use of quantum sensing technologies to move care from a specialist hospital setting to non-specialist centres in the community or in the home, meaning that patients could access services more easily, whilst reducing the demand on hospitals. Another consideration was the possibility of developing more sensitive tests that could be used in the home by patients, which could reduce the need for entry into the care pathway if patients could access results themselves.

Addressing health inequalities

Participants also considered the potential for quantum sensing technologies to help address health inequalities by providing more efficient testing and stratification of care, making better use of limited resources for example in low- and middle-income countries.

Convergence of medical technologies

Another area raised was around the opportunity for convergence of medical technologies. Participants discussed the potential for quantum sensing technologies to support in the application of other medical technologies, as well as the power of combining quantum and AI to look at data acquisition. A future consideration could also include the use of quantum computing to make the most of quantum sensing data.

Principles to consider when developing quantum sensing technologies

One key discussion of the day focused on principles for the development and application of useful quantum sensing technologies. These conversations, along with themes from the rest of the day, were used to develop the set of principles. Participants felt the principles would be a valuable guide for those seeking to develop or support the development of quantum sensing technologies in a healthcare context.

These principles are also of value more broadly and are widely applicable to the development of other emerging technologies where similar considerations are required.

Engagement with the end users

End user adoption was seen as a particular challenge of the pathway for a new technology. A core theme within discussions was that of the need to engage closely with end users in the development of quantum sensing technologies for healthcare.

Participants noted that many of the technology examples discussed during the workshop had been driven by conversations between clinicians and developers, highlighting the importance of encouraging and enabling these conversations. Engagement with clinicians at the start of the technology development process was described as a requirement to understand unmet need, and crucial to the long-term survival of a company. It was felt that engagement should then continue and be built into the development process as it progresses. Participants also acknowledged the differences between clinical engagement at the level of a small number of very interested clinicians who are bought into the technology, compared with interest at the level of whole healthcare companies, the NHS and departments of health across the four UK nations DHSC. The importance of feedback from early adopters of technology was also highlighted.

Engagement with patients as end users was noted as highly important to ensure that the technology is developed in a way that is appropriate for those who will experience it. Alongside this, participants raised public engagement as key to develop buy-in for new technology. Participants also highlighted the value of organisations such as the Academy in convening dialogue between clinicians and patients as end users, and those developing technologies, and the potential for this to also broaden and expand the user base that can be engaged with.

Regulation

The hurdles that may be felt during the process of achieving regulatory approval were felt to be no worse for quantum sensing technologies than they are for any other health technology. It was felt that existing regulatory pathways which are appropriate for the regulation of quantum sensing technologies exist already without the need for further legislative change. One option that was discussed was the potential for quantum sensing technology adoption to be accelerated by using similar medical devices already marketed in the UK as a point of comparison for regulatory approval. This was suggested to be similar to the 510(k) predicate devices approach used by FDA, whereby a new medical device is compared with one that is already legally marketed, to show that it is substantially equivalent in terms of safety and effectiveness.[5]

[5] Food and Drug Administration (2024). *Premarket Notification 510(k).* https://www.fda.gov/medical-devices/premarket-submissions-selecting-and-preparing-correct-submission/premarket-notification-510k

There was universal agreement that regulation must be considered by developers at the beginning of a technology development pathway, to give a plausible route to market. It was also noted that there can be challenges around NHS capacity for uptake of new innovations.

When bringing new technologies to the NHS, international health systems were considered as opportunities and comparisons to support technology development, and could help provide feedback in a commercialisation and regulatory setting.

Drivers for adoption

Participants raised the point that for a technology to replace current best practice, the improvement it brings should be transformational. In the context of quantum sensing technologies, workshop participants considered an example of transformational change to be the ability to diagnose using a saliva swab, for something which currently requires a blood test. Such a change may not be complex, but it would be less invasive for patients, could reduce workload for nurses and laboratory staff, and may enable patients to carry out tests in a home setting.

In contrast, a change which is not transformational in a healthcare setting is one which does not bring benefits to the patient despite an improvement in technology. For example, if a clinician has use of quantum-enabled higher resolution imaging, but the treatment decisions that can be made based on the information in the image are no different from what could be done using a lower resolution image, this does not currently bring any benefit to the patient or the health system.

For quantum sensing technology to be a viable option for end users to consider adopting, a marked improvement over the current best practice is required. Participants suggested that an improvement of an order of magnitude would ideally be required.

Another parameter discussed was cost, which is a key driver to adoption of a new technology within the NHS. Demonstrating a clear value-add and return on investment is vital. In addition, participants felt it was important that developers keep in mind as a goal the ability to make technologies miniaturisable, portable and scalable. Smaller, more mobile technology opens up the possibility of deploying it within a home or community setting.

Participants also discussed that, as with all new technologies, the various gatekeepers in the innovation pathway (such as funders and regulators), need to have the necessary expertise to make appropriate decisions relating to that technology. Without this, there is a risk that the technology is inappropriately blocked – denying a potential benefit to patients and the health system – or indeed inappropriately supported, bringing inappropriate risk to patients and the health system.

Ecosystem development

Development of quantum sensing technologies is occurring in universities, small spinout companies and SMEs, in comparison to many other medical technologies which are developed in large company settings. The vibrant SMEs in the UK need to be supported to grow, alongside partnerships with large companies, which could be utilised particularly when considering testing and scale up.

Discussions also noted that the drive for the development of technologies that could be applied in a health and care setting may come from the need for quantum sensors in other sectors. Quantum sensing technology for healthcare could benefit from this in terms of data generation and driving affordability. It was also highlighted that there are lessons to be learned from the pandemic on what works in terms of large-scale diagnostics. Participants additionally raised the issue of supply chain resilience as a requirement for quantum sensing technologies to become established.

Skills and workforce

The UK quantum skills taskforce report,[6] published on 13 May 2025, highlighted many important points around the need to further develop the nation's strengths in quantum by attracting quantum specialists, as well as offering training pathways into the quantum sector from non-expert engineers and technicians; supporting new talent through PhD studentships and fellowships, and building the knowledge foundations of the next generation through the STEM curriculum, and continuing to monitor skills needs as the sector develops. Our workshop also raised some specific skills and workforce considerations for the development and adoption of quantum sensing technologies by the healthcare system.

Participants raised the need for training for healthcare practitioners to enable them to operate and apply new quantum sensing technologies successfully. Discussions at the workshop explored how this may be possible through NHS training programmes. It was also highlighted that the term 'quantum' can often feel off-putting to quantum non-experts, as quantum physics is seen as difficult to understand. Participants were clear that the knowledge requirements are not around how the technology works, but rather what it does, and how it can be applied to improving patient care and outcomes.

Quantum sensing technologies may offer the opportunity to move care into different settings, such as non-specialist centres or into the community. Consideration should be given to the impacts of this for workload on different parts of the system. For example, if a treatment could be delivered in a GP surgery rather than a specialist hospital setting, consideration would be needed of whether GP staff have the capacity and relevant expertise to deliver this. Clinicians also need protected time to engage with research on new technologies, which in turn generates the data required to enable their approval. The importance of clinical research, its impact on the health system, and how to sustain the health research ecosystem was reviewed in the Academy's report on future-proofing UK health research,[7] and 2025 update report.[8]

Another aspect of discussions covered the skills that are required to bring a technology to market. It was observed that much of the quantum sensing technology development currently happening is taking place in settings such as academia or small spin out companies. Academics do not automatically have the skills required to pitch to investors, navigate the regulatory environment and overall bring a product to market. Support such as business skills accelerator programmes and consultancy expertise from UK funders were discussed as potential ways to address this skills gap.

Conclusion and next steps

The workshop enabled key groups across the sector to come together to discuss the opportunities for quantum sensing technology and address some of the challenges currently faced within health and care pathways. This report and the principles developed are supporting the next steps of the UK Government's National Quantum Strategy,[9] in particular Mission 3 – every NHS Trust will benefit from

[6] Department for Science Innovation and Technology (2025). *UK Quantum Skills Taskforce report*. https://www.gov.uk/government/publications/uk-quantum-skills-taskforce-report/uk-quantum-skills-taskforce-report

[7] Academy of Medical Sciences (2023). *Future-proofing UK Health Research: a people-centred, coordinated approach*. https://acmedsci.ac.uk/file-download/23875189

[8] Academy of Medical Sciences (2025). *Future-proofing UK Health Research: a people-centred, coordinated approach 2025 update report*. https://acmedsci.ac.uk/file-download/44696367

[9] Department for Science Innovation and Technology (2023). *National Quantum Strategy*. https://assets.publishing.service.gov.uk/media/6411a602e90e0776996a4ade/national_quantum_strategy.pdf

quantum sensing-enabled solutions, helping those with chronic illness live healthier, longer lives through early diagnosis and treatment.[10]

The workshop generated interest amongst innovators, patients and clinicians, outside of those who were able to attend the event, demonstrating an appetite for the development and application quantum sensing technology to healthcare. This presents a valuable opportunity to build on this network and support the further development of quantum sensing technologies in health and care settings.

[10] Department for Science Innovation and Technology (2023). *National Quantum Strategy Missions*. https://www.gov.uk/government/publications/national-quantum-strategy/national-quantum-strategy-missions

Annex 1: List of workshop participants

- **Ben Hurdis**, Consultant, Resonance
- **Dawn Chan**, Portfolio Manager Quantum Technologies Theme, Engineering and Physical Sciences Research Council
- **Dr Adam Callan-Sidat**, Senior UK Research Hub Manager, QBIOMED / UCL
- **Dr Chloe Park**, Science Strategy Lead, Department of Health and Social Care
- **Dr George Harston**, Consultant physician in stroke and general medicine / Chief Medical and Innovation Officer, Oxford University Hospitals / Brainomix
- **Dr Paul Colville-Nash**, Data Science Programme Manager, Medical Research Council
- **Dr Rupesh Srivastava**, Ecosystem Growth Director, Resonance
- **Gemma Warren**, Data and AI Policy Manager, Health Research Authority
- **Laura Cole**, AI and Digital in Health Lead, Regulatory Innovation Office (DSIT)
- **Liqun Yang**, Knowledge Transfer Manager – Enabling Technologies, Innovate UK Business Connect
- **Nishan Sunthares**, Executive Director, Diagnostics, Association of British HealthTech Industries
- **Professor Alastair Denniston (workshop co-chair)**, Professor of Regulatory Science and Innovation, University of Birmingham
- **Professor Chris Phillips**, Head of optoelectronics section / Clinical Board Member, Imperial College London / Digistain
- **Professor Dave Delpy (workshop co-chair)**, Emeritus Professor of Medical Photonics, University College London (workshop co-chair)
- **Professor Matthew Brookes**, Professor of Physics / Chairman, University of Nottingham / Cerca Magnetics
- **Professor Neil Sebire**, Consultant and Professor of Paediatric and Developmental Pathology, Q-BIOMED / GOSH
- **Professor Sir Nilesh Samani**, Professor of Cardiology / Honorary Consultant Cardiologist, University of Leicester / Cardiac Centre, Glenfield Hospital, Leicester
- **Professor Sir Peter Knight**, Professor of Quantum Optics, Imperial College London
- **Reshma Punjabi**, PPI contributor
- **Rosemarie Pardington**, CEO / Advisory Board Member, Epilepsy Research Institute / Cerca Magnetics
- **Rosie Britton**, Innovation Policy Manager, Department of Health and Social Care
- **Rosie Harston**, workshop observer
- **Tom Scott**, Quantum Policy Lead at the Office for Quantum, Department for Science, Innovation and Technology

Academy Staff

- Angel Yiangou, Senior Policy Manager
- Eliza Kehoe, FORUM Policy Officer
- Rachel Bonnington, Public Engagement Officer
- Dr Giulia Cuccato, Head of UK Policy
- Dr Hannah Chance, Policy Officer
- Kate Drew, Policy Manager
- Razina Kazi, Policy Intern

Annex 2: Workshop agenda

Time	Item
09.00 – 09.30	**Registration and refreshments**
09.30 – 09.45	**Welcome and introduction** *Chairs: Professor David Delpy CBE FRS FREng FMedSci and Professor Alastair Denniston*
09.45 – 10.30	**Overview of quantum technologies: What does quantum mean, and why should we care about it in health?** ***Talk from Professor Matthew Brookes OBE, Professor of Physics at the University of Nottingham & Chairman at Cerca Magnetics*** • *Matthew's talk will provide an overview of what quantum sensing technology does and how it can be used to benefit patients.* ***Q&A session to follow*** *Chair: Professor Alastair Denniston*
10.30 – 11.30	**Insights into health and care pathways** ***Clinician perspective: Dr George Harston Chief Medical and Innovation Officer at Brainomix & Consultant Physician in Stroke and General Medicine at Oxford University Hospitals NHS Foundation Trust.*** • *George's talk will outline a care pathway and some of the challenges where new technologies could help.* ***Lived experience perspective: in conversation with Reshma Punjabi*** • *Reshma's session will outline her experiences taking a loved one through a care pathway.* ***Q&A session to follow*** *Chair: Professor Alastair Denniston*
11.30 – 11.45	**Break**
11.45 – 13.00	**Breakout session 1: Exploring care pathway challenges** ***Key question:*** • *What are the challenges faced within current care pathways? E.g. long time to diagnose, invasive treatment methods, unable to detect subtypes of disease, need for treatment at only a few specialist centres.* ***Feedback on discussions and plenary session***

	Chair: Professor Alastair Denniston
13.00 – 14.00	**Lunch**
14.00 – 15.00	**Breakout session 2: Identifying opportunities for quantum sensing technology application** ***Key questions:*** • *Where could quantum sensing technologies address some of the challenges outlined?* • *In particular, where would this result in an improved patient treatment/care? E.g. if early disease diagnosis is achievable through application of quantum sensing technology, where is it currently possible to act upon that information and better treat patients?* ***Feedback on discussions and plenary session*** *Chair: Professor David Delpy CBE FRS FREng FMedSci*
15.00 – 16.00	**Breakout session 3: Principles for the development and application of useful quantum sensing technologies** ***Key questions:*** • *How disruptive might the application of quantum technologies be to health and care pathways and the patient experience?* • *How can technologies best address challenges in health and care pathways?* • *What should developers consider when developing new quantum sensing technologies?* ***Feedback on discussions and plenary session*** *Chair: Professor David Delpy CBE FRS FREng FMedSci*
16.00 – 16.15	**Co-chair closing remarks** *Chair: Professor David Delpy CBE FRS FREng FMedSci*
16.15 – 17.00	**Networking**

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