

NATIONAL INSTITUTE FOR HEALTH RESEARCH – NHS ENGLAND AND NHS IMPROVEMENT DESIGNATED  
ACADEMIC HEALTH SCIENCE CENTRE

2020/21 ANNUAL REPORT

**Note:** Please note this form should be completed in font no smaller than 10-point Arial.

**1. ACADEMIC HEALTH SCIENCE CENTRE DETAILS**

**Name of the National Institute for Health Research (NIHR) – NHS England and NHS Improvement Academic Health Science Centre (AHSC):**

Oxford Academic Health Partners (OAHP) chaired by Professor Sir John Bell GBE

**Contact details of the AHSC lead to whom any queries and feedback on this Annual Report will be referred:**

**Name:** Dr Sara Ward

**Job Title:** Chief Operating Officer

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**2. OVERVIEW OF ACTIVITIES**

**Please provide a brief overview of what the AHSC designation has helped deliver and achieve for the 2020/21 financial year, addressing the following points:**

- **2a: please summarise your key deliverables and achievements against the short, medium and long-term objectives as detailed in your full stage application (see table below).**
- **2b: an overview of any significant developments or issues associated with the leadership, strategy and governance arrangements which might impact on the delivery of the aims and objectives of your AHSC.**

**Please also attach 3 case studies which highlight notable impact, these should be no more than a single page of A4 each. In 2020/21 we are particularly interested in case studies that highlight the impact that the AHSC has had in one or more of the following areas:**

- Contribution to national response to Covid-19 and its resultant impact.
- The adoption and spread of research and innovation, including the adoption of practices informed by national COVID-19 research trials.
- Improving Equality, Diversity and Inclusion culture across their organisations; and
- Reducing health inequalities

**Please demonstrate how AHSC designation has been central to delivery in these case studies**

**2a: Summary of progress against objectives**

Please state whether short term objectives are on track, or behind, and give a short summary of progress (up to 300 words per objective). Comments are optional for objectives that are on track

If progress has been made towards any medium or long term objectives please provide an update here (optional - up to 300 words per objective).

OAHP Objectives	
Short term objectives	AHSC Progress
<p>Deliver a Joint Working Agreement (JWA) for the Partnership.</p> <p><b>Broadly on track, some delays due to COVID constraints</b></p>	<p>OAHP has an important role in facilitating and aligning processes across two NHS Trusts and two Universities. All four recognise the purpose and joint interest in entering a legally binding JWA to formalise and extend collaboration for the benefit of patients, students and the community generally.</p> <p>A Memorandum of Understanding between members was established during the previous AHSC designation to 2020. A formal agreement between Oxford University Hospitals (OUH) and Oxford Health (OH), established in 2011, will inform a Joint Working Agreement to include all four organisations and recognise the Oxford AHSN.</p> <p>Oxford AHSN has been closely involved with the Oxford AHSC since 2014 and was formally included in the governance structures at the start of the new academic year in September 2020 to reflect the close and embedded work specified in the particulars for re-designation. The AHSC Director is a voting member of the Oxford AHSN Board.</p> <p>A JWA is a priority for OAHP requiring a series of steps to implementation. Rather than adopting a top-down approach, we will review the terms and conditions for all existing liaison committees and processes for the management of collaborative activities such as research, data flow, training etc. We will ensure these are visibly similar and complementary. Once in place, tangible activities and working groups will underpin the final JWA.</p> <p>In the first instance, the MoU will be updated, and this is on track for completion in 2021.</p>
<p>Support development, delivery and coordination of strategic plans across the Partners.</p> <p><b>On track with some areas ahead of target</b></p>	<p>OAHP Board, met monthly during 2020-21 ensuring agile governance during the pandemic. Virtual meetings were fundamentally valuable, enabling full participation; additional specialist colleagues attended relevant discussions. Monthly meetings continue into 2021-22.</p> <p>Director and COO attended Boards of Partners in spring 2020 to hear plans and identify topics to benefit from OAHP support. Progress is tracked through regular written reports tailored to the individual Executives and Boards. The network has been strengthened through meetings and briefings between the OAHP team, senior leaders in research infrastructure and programmes (JRO, ARC, UK SPINE) and PIs.</p> <p>Strategies for <a href="#">OUH</a>, <a href="#">OH</a> and Oxford Brookes University (<a href="#">OBU</a>) were published and shared with Partners. OAHP receives feedback on priorities and progress through its Board members. Oxford University's (OU) strategy is due for review in 2023. AHSN will update and deliver its business plan in summer 2021. Engagement with AHSN's R &amp; D Group (supported by OAHP Core Team) highlighted areas for further development and delivery of a range of collaborations including AI, workforce and research. University Partners work closely with <a href="#">Oxford-Cambridge Arc</a> chaired by Oxford Brookes' VC.</p> <p>OAHP supports both NIHR BRC Steering Groups; particularly valuable during the development and integration of PQQs for renewal. OAHP is represented on several other collaborative governance groups. As OAHP has actively communicated its aims widely during the year, more invitations to participate in project steering groups (REF, True Colours, Remote by Default) have been received with OAHP taking an active role. OAHP has funded pilot projects for capacity and capability building in health and social care research (OBU), and supported the Immunology</p>

	<p>Network working across OU and OUH and from 2021, OBU. (Funding payments of up to £16,000 have been made) support for the latter will allow development within the local life sciences and health ecosystem.</p>
<p>Create an integrated Oxford Research Office, across all OAH partners to promote operational collaboration.</p> <p><b>On track, some delays due to COVID constraints</b></p>	<p>The Joint Research and Development Committee (JRDC) is responsible for the oversight and evolution of the Oxford Joint Research Office and related joint research infrastructure. This objective was on the agenda for the first JRDC meeting after designation in September 2020.</p> <p>The Joint Research Office (JRO) co-led by colleagues in OUH and OU extended its reach to OH and OBU through bi-monthly meetings across OUH, OU and OH including OAH COO.</p> <p>Studyline, and Sitrine a subsidiary system for use by contributing sites to trials, continues to be developed and updated and will be used across the integrated research office in due course. A high-level dashboard produced for sharing locally and scheduled for launch in March 2020 was understandably delayed. Over 1400 projects were paused during the pandemic. This work on the dashboard will be reinvigorated in 2021-2022.</p> <p>Working remotely has had a range of impacts on team working. Strengthening connections and providing induction for new colleagues has been challenging, however, the JRO awayday in July 2020 (normally for a limited number depending on venues and costs) was attended by over 100 researchers and staff.</p> <p>Since then, work on this objective has moved at pace culminating in a decision to focus on the requirements for a JRO at a second virtual away day in July 2021. We plan to complete the work required next year with a view to launching an Oxford JRO at the beginning of the academic year 2022-23. It remains a very high priority for the Board and all five partners.</p>
<p>Establish a national network of AHSCs and AHSNs to support the AAC in demand signalling and horizon scanning for innovations and transformative technologies.</p> <p><b>On track</b></p>	<p>The network of AHSCs has worked very effectively during the pandemic. Meetings of Directors and Chief Officers have been extended to include regular updates with colleagues from NIHR, DHSC and AAC. Separate meetings among the Chief Officers are more frequent enabling focus on specific aims and collaborative improvement projects nationally. For example, Oxford and Newcastle AHSCs are leading work to explore and support joint research office best practice. This is progressing well and may lead to a joint publication once complete. Oxford AHSN partners are also keen to learn from this work in local developments of JROs, for example in Reading.</p> <p>OAH participated fully in NIHR logic model workshops during the year and joint feedback from AHSCs to policymakers in Feb and March 2021.</p> <p>OAH's links to the AHSN Network are a particular strength. Prof Gary Ford is now Chair of the national network and provides regular updates to the OAH Board on a range of items including AAC work.</p> <p>In October 2020, the OAH COO participated in a series of workshops led by Health Innovation Manchester to establish a pipeline and portfolio approach for project and innovation management across AHSNs nationally. The "Discover, Develop, deploy" approach is now implemented within the regional Oxford AHSN's Strategic and Industry Partnerships (SIP) team and the COO joined the SIP oversight group in November 2020.</p> <p>The Partners are working with, for example Novo Nordisk to address the challenge of diabetes and chronic disease; will build on investments in Big Data including collaborations with Novartis, J&amp;J, Sensyne Health and Bayer; are partnering with MSD, J&amp;J and GE Healthcare; with Imperial and LSHTM create a £67m Vaccines Manufacturing Innovation Centre at</p>

	<p>Harwell to accelerate early-stage clinical development and provide emergency response capability for the UK Government. These activities support the objectives of the Accelerated Access Collaborative</p>
<b>Medium term objectives</b>	
<p>Establish new early-stage clinical research facilities including cell &amp; gene therapy operating at GMP, GLP and GCP standards</p> <p><b>On track</b></p>	<p>OAHP oversees and supports two CRFs renewals to complement both BRC renewal bids in Cognitive Health/Brain Health (OH) Experimental Medicine (OUH). At the start of the year, plans were already in place for the development of new facilities.</p> <p>In June 2021, OUH and OU announced an agreement and grant funding for development of three facilities: Clinical Biomanufacturing (CBF), Clinical Research (CRF) and a new photon counting CT scanner, the first of its kind, as part of the Acute Vascular Imaging Centre (AVIC). The first two are located at the Churchill Hospital and AVIC is well-established in the JRH adjacent to the emergency department demonstrating local strengths of co-location and positive impact on research and patient care.</p> <p>Primarily for research initially, but in the longer term these facilities will have significant impact on clinical care for the benefit of patients.</p> <p>The existing CRF at the Warneford Hospital site played a critical national role throughout the COVID pandemic by supporting several vaccine trials.</p> <p>OAHP expects to engage substantively through John Bell in development and delivery of <a href="#">Life Sciences Strategy</a> . In addition, OAHP will engage with the Life Sciences Group of the Oxford Cambridge Arc, building on previous contacts between the AHSC and the Arc. The team is working across the Arc to craft a vision for Life Sciences. This will include projects that expand the region's capacity for innovation, improved training provision across life sciences and clinical areas. The overall vision is to help create a region wide vision for jobs creation led by innovation.</p> <p>OUH and OU jointly provide GCP training, Good Research Practice and other relevant training, made freely available to staff throughout both organisations and are currently discussing the potential for expansion of delivery and attendance to include OH and OBU.</p>
<p>Develop joint working and strategic planning with local authorities, residents, and patient groups to coordinate new capital and infrastructure plans across the OAHP Campus.</p> <p><b>Broadly on track, some delays due to COVID constraints</b></p>	<p>OAHP has adopted a networking approach to initiate involvement of local authorities, and patient groups. Early exploratory discussions with the Oxford Local Enterprise Partnership (OxLEP) and Oxford City Council noted touchpoints for capital investment (OU), training nurses and allied health professionals etc (OBU), social sciences relevance (OU, OBU) on people and place. COVID restrictions in early 2021 limited progress and constrained the capacity to map mutual interests. We will progress this in 2021-22.</p> <p>OAHP will support early-stage companies locally and promote growth. OAHP has the UK's leading rate and portfolio of spin out companies (~20/year).</p> <p>With respect to patients, carers and patient groups, OAHP has contributed to scoping work with the Working Together group, convened on behalf of the region by the AHSN Community Involvement and Workforce Innovation team. We have also considered the additional requirements to achieve diversity and opportunities - communicating purpose for any new groups established. OAHP will promote and support the NIHR plan (shared with ARCs) to establish a purposeful network of PPI leads and is keen to assess the needs locally for PPIE leadership and researcher training in the second year of designation and as social distancing restrictions relax.</p>

<p>Develop the workforce in transformative technologies through education and training, in areas including big data, genomics, bioinformatics and advanced therapeutics.</p> <p><b>On track</b></p>	<p>OAHP has adopted an emergent approach to change and developed tactics that work well in aligning NHS and academic teams and processes. This objective is closely linked with the next item. These will be tackled together using a similar approach as described for the JWA (see short term objective above above).</p> <p>We are in the process of capturing clear stories of knowledge mobilisation and will generate a series of case studies illustrating engagement with industry and the local ecosystem to be published in 2021/2022</p> <p>A series of change and improvement initiatives, overseen by the OAHP Board, will support delivery. The following examples are progressing well.</p> <p><i>Implementation and monitoring for clinical data</i> - streamlining Information Governance, informatics and flow. This work builds on the significant collaborations between OUH and OU and importantly linking in with national 'big data' initiatives. The Board supports the view that all areas of research and the developing workforce can only be improved and enhanced by the closer linkage of primary and secondary data. OAHP has world-class research across primary care. Target for completion - December 2021 in support of the BRC Renewals.</p> <p><i>True Colours development and scale up</i> - this symptom monitoring system, developed by the OU department of Psychiatry, is currently deployed in clinical service for a range of disorders. It needs updating and enhancement to deliver its potential to provide bespoke/personalised PROMs to clinical care teams through patient empowerment. Scoping is underway for consideration in autumn 2021 and OAHP is actively engaged in this work.</p> <p><i>Engagement across OAHP, Oxford AHSN and The Hill</i> to catalyse innovation programmes with and for OAHP member organisations and the wider ecosystem. Evening mixer sessions running virtually have facilitated broad discussion on several topics among clinicians, academics, local authorities and entrepreneurs.</p>
<p>Create a Centre for Healthcare Implementation &amp; Change to train the workforce in approaches to implementation and adoption of innovation in the health system supporting local, regional and national programmes</p> <p><b>On Track</b></p>	<p>The OAHP set up a working group in May 2020 to focus on the development of clinical academic career pathways for Nurses, Midwives and AHPs (NMAHPs). The Group is led by Professor Paul Carding, Director of the Oxford Institute for Nursing, Midwifery and Allied Health Professions Research (OxINMAHR) at Oxford Brookes University. Stage 1 was complete (and reported to the Board in April 2021) and aligned all the partners to core strategic principles and priorities. Stage 2 is being implemented by a combination of approaches including systemic NMAHP research infrastructure re-design (OUH) and BRC theme development (OU/OBU) and BRC funded CPD/Research capacity building (OUH/OH and OBU). We are also developing a pan-Oxford bid for NIHR funding to develop a PGDip and Masters' Award aligned to the NIHR Clinical Researcher credentialing programme.</p> <p>The approach strongly aligns with both BRCs' strategy to support research careers for nurses, midwives and the Allied Health Professions.</p>
<p>Extend partnerships with the Oxford AHSN, NIHR ARC, BOB ICS and the AHSN network providing academic support to evaluate innovations e.g., AAC rapid uptake products and facilitate adoption and spread.</p> <p><b>On track</b></p>	<p>As mentioned in previous sections, OAHP has played an active part in the development of the AHSCs' network and has the benefit of partnering with Oxford AHSN whose CEO is also Chair of the AHSN national network.</p> <p>OAHP attends and provides direct support in convening and servicing the regular meetings of the Oxford AHSN Research and Development Oversight Group. This group has a broad reach regionally and includes all NHS Trusts and HEI organisations in addition to the NIHR OxTV ARC and the NIHR CRN covering South Midlands and Thames Valley. It provides opportunities to connect across several areas and the recent meeting highlighted the great potential in the development of AI in clinical areas</p>

	<p>(e.g., at the University of Buckingham) and the potential for a cross-AHSN workshop on this topic.</p> <p>The CEOs of Oxford Health, Oxford University Hospitals NHS Foundation Trusts and the Oxford AHSN sit on the Buckinghamshire Oxfordshire and Berkshire West (BOB) Integrated Care System (ICS) Senior Leaders Group – the Executive Board of the ICS.</p> <p>Exploratory discussions with BOB ICS Chair, SRO and deputy to develop understanding and ways of working together are productive. Reciprocal board arrangements and regional presentations are regularly shared.</p>
<b>Long term objectives</b>	
<p>Support development of the OAHP estate, including a new clinical-academic campus dedicated to neuroscience and mental health, combining translational research with high quality clinical care.</p> <p><b>On track</b></p>	<p>The placement of the OAHP across the 'Headington Campus' is a major strength for all those working here.</p> <p>Long term objectives were an important part of the early planning discussions with Organisational Executive Groups described in the short-term list above. Details of the proposed redevelopment of the Warneford Hospital site were presented to <a href="#">Oxfordshire Clinical Commissioning Group</a> in November 2020.</p> <p>Work to re-purpose the John Warin Ward at the Churchill site into a state-of-the-art clinical research facility was completed recently, supported by a grant for infrastructure from the OUH (see medium term objectives on CRFs) and funding from DHSC.</p> <p>The advantages of the proximity between the Partners are self-evident and the estates' development will only enhance these advantages</p>
<p>Expand capacity in target discovery for new drugs, building on public-private partnerships, and development of gene/nucleic acid therapies including manufacturing capacity.</p> <p><b>On track to start in 2021-22</b></p>	<p>Progress against this objective will flow from the related goal to establish new early-stage clinical research facilities including cell &amp; gene therapy operating at GMP, GLP and GCP standards.</p> <p>Oxford Experimental Medicine Clinical Research Facility (EMCRF) provides resource for early phase, experimental research across the Medical Sciences Division. The formation of the Oxford EMCRF reflects the success and impact of translational research at Oxford NIHR BRC and involves close collaboration between the OU and OUH. It is core to the clinical translational strategy of the Biomedical Research Centre. The facility will provide service to all specialities in the BRC Themes and facilitate cross-theme collaboration. All the while ensuring the identification of treatments to deliver meaningful benefits to patients. The facility is based at the Churchill Hospital, part of the OUH.</p> <p>The team is already actively engaged with this objective.</p>
<p>Develop the OAHP's campus as an international centre for multi-disciplinary and cross-sector research, attracting major pharma and medtech companies to invest in Oxford to support the development of technologies and therapeutics to address national and international priorities.</p> <p><b>On track to start in 2021-22</b></p>	<p>Preliminary discussions for the longer term were initiated at the May OAHP Board. Relevant conversations and are regularly on the agenda at subsidiary groups across the partnership. Operational objectives for members of the OAHP core team have been set to ensure a sustainable platform for OAHP well into the future and beyond the NIHR designation to 2025.</p> <p>Together with other AHSCs nationally, OAHP will contribute to workshops and conversations with members of the Association of Academic Health Centres International (AAHCI) to developing stronger linkages with North American and leading international institutions to facilitate learning around common challenges and seek new opportunities.</p>

**2b: Overview of any significant developments or issues associated with the leadership, strategy and governance arrangements which might impact on the delivery of the aims and objectives of your AHSC.**

Leadership and governance arrangements are a strength for OAHP. The Board brings all five partners together at the highest level. Participation from Directors for both BRCs, the Oxford and Thames Valley ARC and connections with Primary Care have provided breadth of engagement and understanding. Connection with the Oxford AHSN has been enhanced, building on the CEO Professor Gary Ford's input during the application process. As already mentioned, the Board nem. con. appointed the AHSN as the fifth formal partner of the OAHP with effect from 1 September 2020.

OAHP Director, Professor Keith Channon, also leads Research and Development for the OUH Trust. He retains clinical commitments and brings expertise from several significant leadership roles in academia. The rapid engagement of Dr Sara Ward as interim COO in May 2020 brought extensive experience of the local ecosystem and infrastructure and added capacity for implementation. Her appointment was made permanent in December 2020 following a Board level interview.

Dr Nick Broughton joined Oxford Health in June 2020 following the retirement of Stuart Bell. His passion for research and partnership working and commitment and expertise to improvement has already proved valuable. In addition, he directed the regional coronavirus vaccination taskforce.

Dr Karl Marlowe was recruited as Chief Medical Officer from 1 April 2021 and joins Dr Meghana Pandit, OUH's Chief Medical Officer as two key individuals in the development of the R & D agenda in support of improved patient care and in the delivery of approaches to COVID.

NIHR and NHSEI would like to promote the work of the AHSCs by sharing your case studies on our website and other communication channels. Please indicate if you are not happy for NIHR and NHSEI to use your case studies in external communications (**YES/NO**)

The completed AHSC Annual Report 2020/21 must be submitted via email, to the NIHR CCF Infrastructure mailbox: [ccf-infrastructure-team@nihr.ac.uk](mailto:ccf-infrastructure-team@nihr.ac.uk) copying the senior programme manager Julie Bieles ([julie.bieles@nihr.ac.uk](mailto:julie.bieles@nihr.ac.uk)) by 1pm on **Monday 26 July 2021**.

The Annual Report aims to capture progress against the stated objectives, specific themes and work programmes as set out in your application, for the Department of Health and Social Care to be able to understand the overall progress of the AHSCs. However, please note that we will not be providing feedback on the AHSC Annual Reports.

The AHSC lead is required to sign off (electronically) the Annual Report and case studies to confirm that the information provided in the Narrative report is accurate since this is required by the Department of Health and Social Care. NIHR CCF will send the relevant documents (Docu-sign) to AHSC lead after receiving the Annual Report and case studies.

The key NIHR CCF contact for the NIHR 2020/2021 Annual Report, to whom all queries should be addressed (copying in [ccf-infrastructure-team@nihr.ac.uk](mailto:ccf-infrastructure-team@nihr.ac.uk)) is:

Julie Bieles

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## Case Study 1: Pandemic preparedness: responding rapidly and effectively to COVID-19

### Summary

Working together members of the Oxford Academic Health Partners (OAHP) contributed significantly and rapidly to the COVID-19 Pandemic delivering two major randomized control trials, a vaccine and a range of Urgent Public Health research programmes at the same time as the NHS responding to the unprecedented impact on all aspects of healthcare.

### The Challenge

**To minimise the short and long term impact of COVID 19 on the UK health and social care system and worldwide.** The first known case of SARS CoV-2 infection was identified in Wuhan, China in December 2019. The disease spread worldwide, leading to a global pandemic. At the time of writing the annual report (July 2021) England recorded over 5m cases and over 128k deaths. The speed and range of response required expertise and collaborative strengths to be co-ordinated and co-located. This played into the strengths of all Partners.

### What we did

The complexity and detail cannot be listed in a summary document. The following demonstrate the response from OAHP partners and members.

[https://www.ox.ac.uk/sites/files/oxford/Oxford\\_2020\\_Annual\\_Review.pdf](https://www.ox.ac.uk/sites/files/oxford/Oxford_2020_Annual_Review.pdf)

<https://issuu.com/ouhtrust/docs/covid-19-stories>

<https://www.brookes.ac.uk/about-brookes/news/covid-19--investigating-the-team-working-experiences-of--front-line-nhs-staff/>

[RECOVERY trial](#), the largest RCT for COVID-19 therapies for seriously ill patients, set up in under two weeks. RECOVERY successfully identified dexamethasone as a cheap and effective treatment reducing mortality rates by a third in patients requiring ventilation has now recruited over 40k patients at 184 sites globally. This showed that low-cost dexamethasone reduces death by up to one third in hospitalised patients with severe respiratory complications of COVID-19. Sir Peter Horby and Sir Martin Landry led this trial. ([https://www.recoverytrial.net/files/recovery\\_dexamethasone\\_statement\\_160620\\_v2final.pdf](https://www.recoverytrial.net/files/recovery_dexamethasone_statement_160620_v2final.pdf))

[PRINCIPLE trial](#) to identify treatments for use in the community for patients recovering at home also the largest of its kind, has recruited over 5000 participants and remains open to individuals who have been vaccinated.

In January 2020, the Oxford Vaccine Group and the Jenner Institute hit the ground running. Working with AstraZeneca to develop and test the vaccine ChAdOx1 this was delivered in [record time](#). The first AstraZeneca coronavirus vaccine was delivered on 4 January 2021 to with patients at OUH the very first to get the life-saving jab. At the time of writing more than 82 vaccine doses have been given in the UK and more than 3.73B worldwide.

Clinical Research Facility and Joint Research Office contributions were critical to vaccine trials. COVID task force, including OAHP Director Professor Channon, met every week during the peak of the first and second waves to manage resources. The CEO of Oxford Health directed the regional coronavirus vaccination taskforce.

The Oxford, Wessex and Kent Surrey Sussex AHSNs worked together to support local systems to implement virtual wards at speed as part of a national 'Covid oximetry @home' initiative supported by NHS England/Improvement. In February 2021 75% of acute trusts reported having access to a COVID virtual ward. More [here](#).

### Value and potential Implications for OAHP (AHSC)

The unique ability of centres of expertise in research, health and care and their associated critical mass and to respond through innovation and development has been clearly demonstrated during the pandemic and all five partners are determined to maintain this momentum and response going forward across not only COVID and its longer-term impact but across all areas of our activities.

The significance of retaining this capability must not be underestimated.

*"Our partnership with AstraZeneca will be a major force in the struggle against pandemics for many years to come" Prof Sir John Bell, Chair OAHP Board*

*"The COVID-19 pandemic has shown us that spectacular advances are possible through an alliance of science, the public sector and industry – creating digital disease control tools, diagnostic tests, and life-saving treatments and vaccines at unprecedented speed. But it should not take a pandemic to make this happen. This level of innovation and multi-sectoral collaboration must be applied, day in and day out, to prevent another catastrophe like COVID-19." Prof Sir Peter Horby, Inaugural Director, Oxford Pandemic Sciences Centre*



## Case Study 2: Establishing the Oxford Brain Health Centre

### **Summary**

The Oxford Brain Health Centre (BHC) is a pioneering psychiatry-led joint clinical research service launched in 2020 through the Oxford Health NIHR BRC. It provides NHS patients with existing memory problems access to high-quality assessments not routinely available in clinical practice, including Magnetic Resonance Imaging (MRI) rather than CT. The project, reaching three ways across the OAHP partnership (OU, OUH and OH) bringing together clinics with screening and research capabilities, was nearing completion in spring 2020. Thanks to the BHC's dual clinical and research function, and the remarkable efforts of its staff, the Centre was able to continue its essential public health research without interruption during the second COVID lockdown. Given how hard services for people living with dementia have been hit by COVID-19, this is a real achievement and a lifeline for patients who continue to be able to access the Centre for assessment at this time.

### **The Challenge**

To provide a high-quality memory clinic to rapidly diagnose patients of all ages utilising optimal brain imaging and offering research opportunities to all participants.

The inequity in management of patients referred from primary care was well understood. Younger patients and those of particular clinical interest were seen and received an MRI scan at the acute Trust - OUH. Over 70s – ie 70% of patients referred - received a less informative CT scan and were assessed by psychiatric services. **Implementation of the solution required a complicated set of collaborations involving collaboration across teams from the University of Oxford and both Oxford University Hospitals and Oxford Health NHS Foundation Trusts and the aim was to bring UK NHS memory services into 21st century by embedding research in clinical practice.**

### **What we did**

In 2016 an MRI scanner was established at the Warneford – the first research grade capability on hand for mental health outside an acute hospital. The OH BRC encouraged and enabled development of the facility and the project brought together memory clinics including a diverse range of clinicians with ICT and governance linkages reaching three ways. The Brain Health Centre brought clinics in line with current NICE guidelines – an improvement of 30 years in some respects. All patients receive an MRI, a comprehensive cognitive assessment and other tests. They are invited to participate in research, to agree to data sharing, opt out, consenting agreeing to share. Since its opening in August 2020, 130 patients have been seen at the Centre and impressively 97% of those who attended agreed to take part in research, whether by joining the research database or completing additional assessments during their visit. This massively exceeded the 10% participation goal set by the Prime Minister in his 2020 dementia challenge. The Centre has achieved high levels of patient feedback which has been overwhelmingly positive, with attendees remarking on how staff made them feel at ease, that the experience was 'much better than expected' and saying that their appointment was 'really helpful and good for self-confidence'.

### **Why do we need Brain Health Centres?**

- Services **were not set up to deliver disease modifying therapies**
- Dementia prevention and brain health **requires better assessments and better access to research**
- Cannot wait until disease modifying treatments are widely available to change services

The Brain Health Centre offers significant and important research advantages. A translational interface to the real world and opportunities for leadership development for clinicians and an equitable approach, to early and more accurate diagnoses and better understanding and empowerment for patients through research participation. A research study on Translating MRI research in clinical practice for dementia concluded that the BHC MRI protocol was well tolerated and provided good quality data both for research and clinical purposes. Future work will include additional healthy controls scans to enrich age range of interest, integration of quantitative measures in clinical reports, evaluation of clinical impact. Patient feedback was collected positively high with good comments on interactions with clinical staff.

### **Value and potential Implications for OAHP (AHSC)**

The 'triangle' of connections between OH patients, OU facilities/staff and OUH Radiology was fundamentally important to ensure the best service for patients. Further work will include pilot evaluation, sustainability, recruitment to trials and in the medium-term continuing research, e.g. on quantitative radiology reports and the scalability of the approach with expanded assessments and interventions. In the longer term, the aim is to expand beyond Oxfordshire and to expand beyond memory clinics.

**Progress to date demonstrates the feasibility of an integrated clinical-research service for patients with memory problems in the UK health service, with extremely high research uptake and positive feedback from clinicians and patients.**

## **Case Study 3: Harnessing AI, digital and medical technologies to speed up stroke care and reduce costs**

### **History**

Brainomix was founded more than decade ago by leading University of Oxford (OU) stroke academics, including the current CEO Dr. Michalis Papadakis, and Prof Alastair Buchan, who developed the ASPECTS scoring method for stroke patients. Since spinning out from OU in 2010, Brainomix have developed award-winning, AI-powered imaging biomarkers and software solutions, assisting physicians across the world to make better life-saving decisions. Its flagship technology, e-Stroke, is now used in more than 250 hospitals across 30 countries, having processed more than 500,000 patient scans.

### **The Challenge**

Mechanical thrombectomy (MT) is the most effective evidence-based treatment for acute ischaemic stroke caused by large vessel occlusion and could transform outcome for the 10% acute stroke admissions who could benefit. However only 1 in 5 eligible patients currently receive this time-sensitive treatment. Increasing this figure is a priority highlighted in the NHS Long Term Plan. One of the barriers is lack of neuroradiology imaging expertise at smaller stroke units where most patients first arrive leading to delays in diagnosis and referral. Fast identification of large vessel occlusion and reliable quantification of the extent of ischaemic injury is crucial to the robust delivery of a mechanical thrombectomy service, so that the patients can be referred to a specialist centre within the critical time window to receive the treatment. COVID-19 posed additional challenges, with Emergency Departments busy with suspected virus patients, and physicians redeployed across the hospital, creating the need for more remote decision making. **The Covid-19 pandemic has highlighted the need for more support for rapid, efficient, clinically effective remote working.**

### **What we did**

An innovative AI-enabled decision support tool ([e-Stroke Suite - Brainomix](#)) helps clinicians quickly and accurately decide the type and severity of stroke, and the most appropriate treatment. Initially introduced before the pandemic, it has enabled new ways of working in a world disrupted by Covid-19 eg if one hospital is overburdened another can help out by interpreting brain scans without delay. Previously, these scans had to be reviewed by a specialist in limited locations. **Now they can be interpreted by a non-specialist, shared securely and seen within a few minutes of being processed – anywhere, any time – and advice given immediately.**

**Brainomix worked with the Oxford AHSN, one of the five OAHP Partners**, establishing a Thrombectomy Innovation & Transformation (TITAN) quality improvement team to support the introduction and real world evaluation of the AI tool into the hyperacute stroke pathway in the Thames Valley to improve the quality of stroke care by enabling a robust thrombectomy referral pathway. Initially introduced at the Royal Berkshire Hospital, Reading, it was extended to all five primary stroke centres (Aylesbury, High Wycombe, Milton Keynes, Northampton and Swindon) and the regional tertiary neuroscience centre in Oxford in summer 2020, making the [Thames Valley the country's first AI-enabled regional stroke network](#).

### **Impacts and delivery**

Implementation has led to substantial reductions in Door in Door Out times – a key metric of stroke system performance for delivering MT, DIDO reduced from 140 to 79 minutes at RBH (**Dr K Nagaratnam**) following adoption of Brainomix. The regional deployment of the software, enabling an integrated care model for thrombectomy referrals, demonstrates its scalability. By integrating seamlessly into the existing stroke treatment pathway, and by operating automatically, the technology can provide powerful results for stroke clinicians without interrupting the normal flow. Impact on the system is speedier decision-making and more rapid treatment of stroke patients leading to reductions in death and disability. Secondary benefits include enhanced productivity and establishing a virtual network supporting remote working and social distancing. The software can be deployed virtually or installed at a hospital with a server. The main potential constraints relate to IT and data governance. We have worked with national and regional authorities to address these concerns and issue standardised reports for each hospital. <https://vimeo.com/561831060> demonstrates the impact and benefits for patients.

### **Value and potential Implications for OAHP (AHSC)**

The Oxford AHSN is leading wider expansion across the NHS England South East region and evaluating the impact of the **Brainomix AI-enabled software on clinical outcomes, stroke care pathways, workforce productivity and healthcare professionals' views of the system.**