

# The Oxford Brain Health Centre: embedding dementia research in clinical practice

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## What is the Oxford Brain Health Centre?

This poster presents an overview of the **Oxford Brain Health Centre (BHC)** – an innovative **joint clinical-research service** that aims to bring UK NHS memory services into the 21<sup>st</sup> century by **addressing gaps between clinical practice and research** advances into dementia.

Despite **major advances** in our understanding of the brain and tools available to neuroscience research in the last 30 years, the **assessments used** in many UK memory clinics have **changed relatively little**.

Patients attending **neurology-led** memory clinics are also offered **significantly more sophisticated assessments** than those referred to **psychiatry-led** clinics (~65% patients).

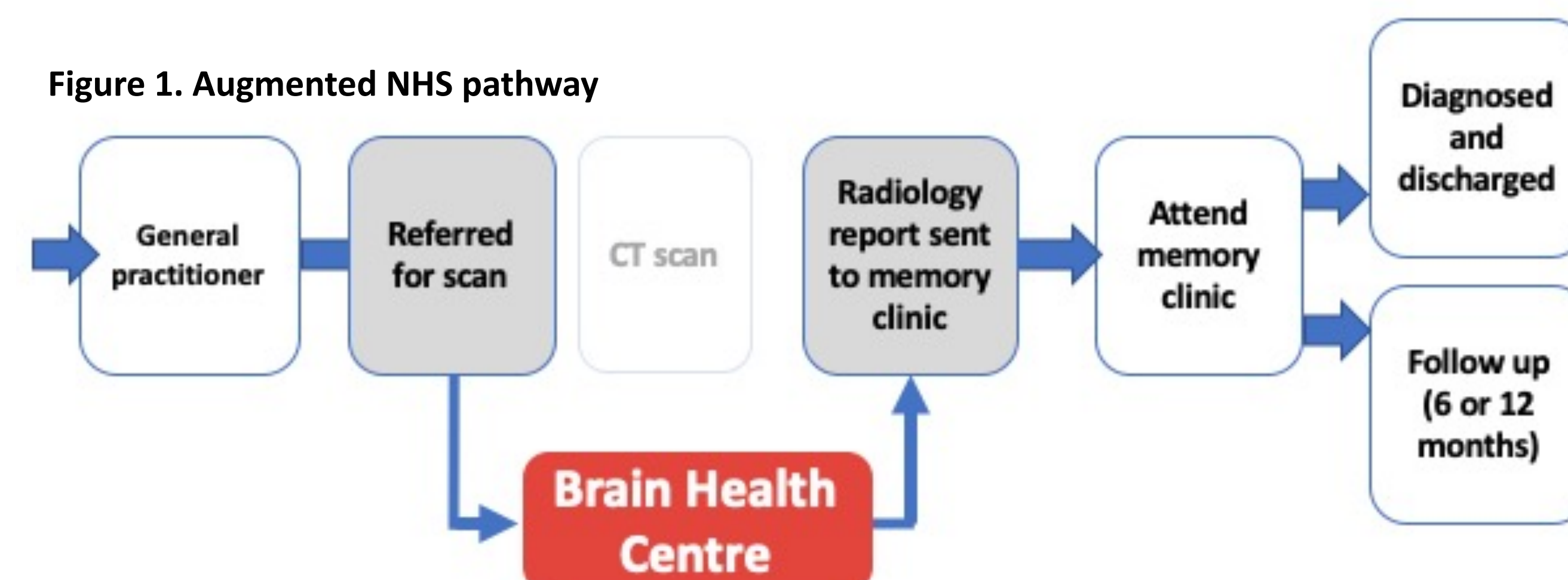
By **integrating research into the clinical service**, the Oxford BHC aims to address these gaps and inequalities.

The Oxford BHC **augments current psychiatry-led memory services** in Oxfordshire by:

Providing access to high quality assessments

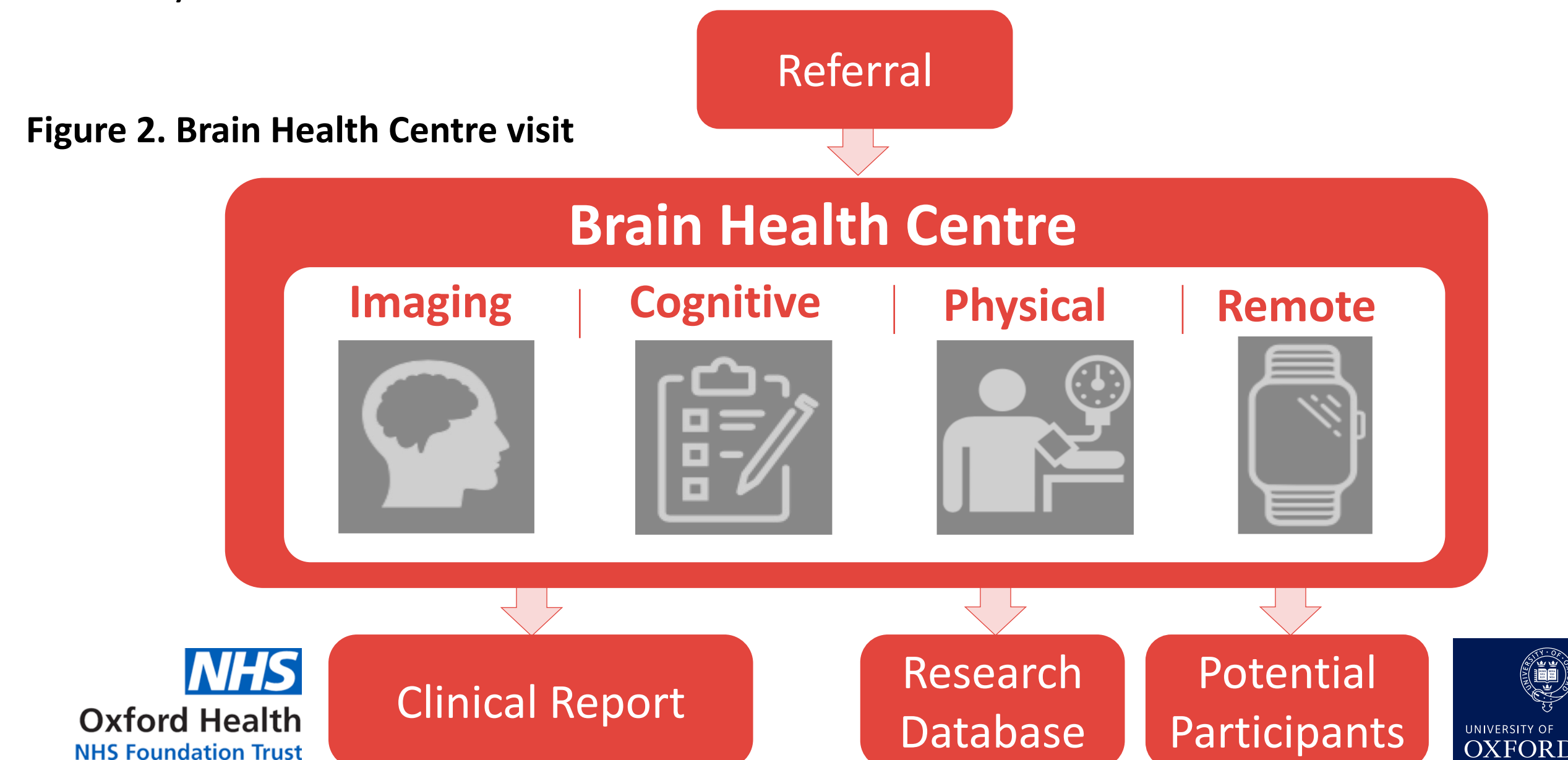
Improving access to research opportunities

in turn enabling the development of better diagnostic tools and treatments (Figure 1).



Oxford BHC will be the **first psychiatry-led service of its kind in the UK** and is at the forefront of a **UK-wide network of Brain Health Clinics** that aims to prepare the UK health system for the future of dementia diagnosis and treatment (Ritchie et al., 2017).

A **pilot service** funded by the National Institute for Health Research (NIHR) will start in July 2020 to demonstrate feasibility and refine procedures, before expanding to other memory clinics later in 2020.



## Access to high-quality assessments

Patients attending the BHC for NHS assessments will receive **high-quality assessments** not routinely available in clinical practice, e.g. **replacing CT with MRI scans** and providing additional cognitive testing (see Figure 2).

Enhanced information will be fed into clinical records (see Figure 2), improving the quality of information available for diagnosis. **Clinicians will be empowered** to make **more confident and accurate timely diagnoses**, as well as earlier diagnoses – essential for intervention with future disease-modifying treatments.

### MRI at the Oxford BHC

Standard CT scans can rule out reversible causes of dementia, but **MRI is more sensitive to atrophy patterns and vascular pathology** necessary for subtyping and earlier diagnosis.

**BHC clinical MRI protocol (~15 mins):**

T1 Atrophy	3D DWI Stroke
FLAIR WMHs	SWI Microbleeds

We predict the additional information provided by the MRI scan will **increase the accuracy and confidence of diagnoses**.

### BHC radiology reports

Current radiology reports received by memory clinics are typically **brief, purely qualitative**, and can have **inconsistent content** and use highly **specialist language**.

A key ambition of the BHC is to **enhance radiology reports**:

#### Standardised radiology reports

Developed standardised BHC report template, incorporating visual rating scales, to ensure clinicians receive the same quality information for each patient

#### Quantitative radiology reports

Currently developing automated, quantitative report, including graphs of individual patient brain metrics against normative population (based on the UK Biobank ~40,000 scans)

## Involvement of public contributors

The BHC actively involves public contributors with lived experience at all stages of the development and evolution of the service:

- To **ensure we serve the needs** and interest of patients and their relatives
- To **improve the quality** of the clinical service we provide and research we conduct

#### Who are the public contributors:

An **advisory group** of people living with dementia, carers and members of the local community.

#### What have they done:

- Developed BHC public involvement objectives
- Reviewed documentation, patient journey etc.
- Feedback on grant and fellowship applications
- Mock patient clinic visits

## Response to COVID-19

The BHC launch in July (originally planned for April 2020) will support reopening of NHS services. Some adaptations have been necessary, e.g. one-way systems, staff bubbles. Where possible, **research assessments will be done remotely**, e.g. questionnaires. We are currently conducting surveys of patient & clinician views on services resuming:

**Patient survey:** Preliminary results suggest **~2/3<sup>rd</sup> of patients would prefer to wait for a face-to-face visit** than have a remote visit.

**Clinician survey:** Initial responses suggest **comfortable with remote consultation/diagnosis**, but less so with remote cognitive assessment.

## Access to research opportunities

The Oxford BHC brings **cutting-edge dementia research into NHS services** to increase opportunities for patients and relatives to take part in research.

This will **empower patients** to participate in research, and facilitate development of novel diagnostic tools, treatments and prevention strategies.

Crucially, the BHC will provide a **translational interface**, enabling new advances in diagnosis and treatment to be **rapidly implemented in clinical practice** to provide better care for patients.

### Research as part of routine care

All patients attending the BHC for their NHS assessments can consent to:

- Use of clinical data** Storage of **clinical test results** and relevant information from **medical records** (e.g. diagnosis) for research purposes.
- Research recontact** Patient and accompanying relative can **agree to hear about future research opportunities**.
- Additional tests** Optional extra **MRI sequences** (ASL, DTI, resting state), **computerized cognitive testing**, **saliva sample** for patient, and **questionnaires** for patient and accompanying relative.

### BHC Research Database

- Research Data** **Deidentified research data** will be made **openly available** to the scientific community through the **BHC Research Database**, encouraging collaborative and transparent research (see Figure 2).
- Research Recontact** **Registry of participants** for future research held separately to research data (see Figure 2). Participants can be **recruited based on characteristics** stored in the BHC Research Database (e.g. cognitive scores), providing **run-in data for trials**.

### Ongoing research projects

A number of research projects embedded in the BHC are currently ongoing, including:

- Qualitative clinician interviews** Exploring clinicians expectations and experiences of the BHC
- Quantitative radiology report** Development of clinically relevant measures and harmonization methods
- Online cognitive assessments** To facilitate remote follow-up for MCI in particular, for whom follow up is vital but currently beyond the feasibility of NHS services
- Health economic evaluation** Cost-effectiveness evaluation to demonstrate whether BHC provides value for money and improves efficiency and accuracy of diagnosis

## Conclusions

To **prepare the UK health system for the future of dementia treatment and ultimately prevention**, the Oxford BHC provides a model for a specialist service that can be adopted throughout the NHS, providing:

- High-quality assessments**, to facilitate accurate, earlier diagnosis
- A **translational interface**, enabling new advances to be rapidly implemented in clinical practice

In future, the BHC will have an **increasing focus** on improving **early diagnosis and management** of prodromal dementia and mild cognitive impairment (MCI).