

BRUNEL PARTNERS INNOVATION STRATEGIC VISION 2020



Brunel
University
London



The Hillingdon Hospitals
NHS Foundation Trust



Central and
North West London
NHS Foundation Trust

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INTRODUCTION

Health and wellbeing is a fundamental human need and in the UK, the NHS has been delivering quality health and care services to meet this need for over 70 years. During this time, great innovations in service delivery have been successfully implemented such as the first heart and lung transplant carried out by the Royal Brompton and Harefield Hospital in 1983, the completion of the 100,000 genomes project and many others.

New techniques and technologies continue to be developed and the future of healthcare provision is changing as organisations adopt and deploy these ideas to improve patient care. North West London has been at the centre of many health and care innovations and our rich heritage provides a strong foundation on which we now build.

At Brunel Partners Academic Centre for Health Sciences (BPACHS), we bring together the knowledge and experience of Brunel University London' academics together with our NHS partners at The Hillingdon Hospitals NHS Foundation Trust (THHFT) and Central North West London NHS Foundation Trust (CNWL). We share an ambition to radically transform physical and mental health and social care provision and seek to use our history and expertise in innovation to deliver this.

OUR DEFINITION OF INNOVATION

We use the definition of innovation developed by Innovation, Health and Wealth¹, a review published by Government in 2012. The definition is "An idea, service or product, new to the NHS or applied in a way that is new to the NHS, which significantly improves the quality of health and care wherever it is applied"

This includes service model, workforce and business model innovation as much as it refers to digital solutions.

OUR INNOVATION HERITAGE - CASE STUDY

Computed Tomography (CT) imaging was developed by Sir Godfrey Hounsfield (with Allan Cormack) during his time working at EMI laboratories in Hayes, Middlesex.

Hounsfield developed his idea of taking X ray readings at all angles surrounding an object to create an image of it in slices.

He built four prototype scanners which were developed into more sophisticated brain and whole-body scanners introduced into clinical practice in the early 1970s.

¹ https://webarchive.nationalarchives.gov.uk/20130107013731/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_131299

WHY INNOVATE?

The challenges facing healthcare are well documented and we do not intend to repeat these here. It is clear that as life expectancy rises, so too does demand. NHS funding, whilst growing in real terms and generous in comparison to settlements for other public services, has left the NHS facing difficult choices.

We believe the development and adoption of innovation plays a key role in solving these challenges. Digital services can provide faster virtual access to those less able to travel leading to virtual outpatient clinics being developed. Breath tests are being developed to help diagnose multiple types of cancer, reducing the need for invasive diagnostics. 3D printing can produce personalized implants, tailored to the unique needs of the individual. We are seeing a wealth of ideas come through research and academia and become available for clinical practice over the short term. The latest developments in areas such as data analytics, machine learning, genomics, robotics, virtual reality and precision medicine present an exciting yet potentially confusing challenge to us.

- **Co-production:** How do we engage with those impacted by any potential change to secure their input, ideas and feedback into the innovation and adoption lifecycle?
- **Opportunity:** How do we grow a pipeline of brilliant ideas and ambition? How do we identify which innovations in our pipeline will bring the highest value to our partners?
- **Delivery:** How do we flexibly adopt and scale up the ideas that work across our system, whilst continuing the day to day provision of health and care services? How do we support a culture of adoption?

We know we need to do things differently and radically transform the way services are delivered. To achieve this innovation must become core business. This document describes our Innovation Strategy and how you can join our mission to put Hillingdon on the world stage as a leading provider of integrated health and social care.

1. EXECUTIVE SUMMARY

Change is a constant in health and care, with new improvements and innovations being created, tested adapted, and rolled out on a daily basis. Whilst this can be a daunting prospect for those working in an industry with scarce resources, it also presents an opportunity for our system. If we can spot high potential innovation, work with teams to deliver the most value from the innovations, we can improve patient care, generate income and increase skills in a cost-effective way.

The alternative do-nothing scenario places us as late majority or laggards to use Rogers' Diffusion of Innovations Theory terminology. A recipient of innovation developed elsewhere, and facing solutions designed for others health and care systems. This leaves our patients with less opportunity to benefit from newly developed techniques and it risks high workforce attrition as professionals leave to enhance their skills, experience and career prospects in other systems. This is an unacceptable prospect for our community.

This co-developed strategy articulates three main ambitions which are mutually reinforcing:

- 1. We adopt high value innovations into our health and care delivery system, underpinned by academic rigour and an understanding of community need**
- 2. We provide an integrated care test bed where ideas can be developed, adapted and scaled, using a holistic system review**
- 3. We help teams successfully plan for the future of health and care delivery**

Resources to invest in adoption and innovation are limited and whilst additional funding would drive a faster pace, we recognise the immediate pressures on funding make this a less likely prospect. This strategy seeks to create a self-sustaining model of generating funds that can be used to pump prime adoption.

FOCUS AREAS

We will focus our activity on areas of clinical and community need and where our ecosystem of resources can deliver best impact. One key area of focus will be on prehabilitation and rehabilitation reflecting the desire to deliver care closer to home and recognising the strengths of Brunel University London in the education and research activity of therapists.

Other health and academic partnerships are adopting similar approaches and have been successful in embedding a culture of innovation adoption in their organisations, creating strategic partnerships with market leading companies, diversifying their income streams and leading the way in demonstrating new

approaches and techniques. Our approach will be to focus on the opportunities that play to our strengths, the integrated health and care delivery system that already exists in Hillingdon and the research and training expertise that sits alongside this.

We offer an integrated health system that can test the holistic impact of an intervention in a way that a single institution cannot and the demographics of our neighbourhoods are a perfect microcosm of much of the UK, making our system an attractive demonstrator site for testing, scale up and spread.

By embracing the opportunity innovation creation and adoption can bring, we seek to add value to all partner organisations and enhance delivery of each partners own business strategy.

2. APPROACH AND DESIGN PRINCIPLES

To inform the development of this strategy, we spoke to key stakeholders from across the partnership, individual member organisations and external stakeholders working in our system.

The internal conversations involved executive and non-executive level participants who were asked for their views on innovation and what success would look like from the strategy.

These conversations were diverse and involved:

- **Third sector support organisations**
- **Individual patients**
- **Small and medium sized innovators**
- **Multi nationals working in health tech**
- **Policy officials**

Alongside these conversations, a rapid desktop review of current innovation policy and good practice innovation strategies from health and other sectors was completed. This review is not exhaustive though informed this first Strategy.

DESIGN PRINCIPLES

From the conversations and the literature review, the following design principles were identified, that should underpin the strategy and ensure it remains aligned to the values of the Hillingdon system.

THINK BIG

The strategy will outline an ambitious plan for Innovation that describes a direction of travel that will take three to five years to fully realise.

START SMALL

As we will be building and embedding new ways of working within Brunel Partners we will start small with the projects to test how the system responds. This allows an opportunity to learn and adapt our approach based on experience gathered.

EMPOWERING

Innovation need to be enabled by but not centrally held or governed by one department or area. We are all responsible for innovation and the strategy must empower individuals and teams on their innovation pathway.

COLLABORATIVE

External collaboration brings the biggest value-generating innovations to organisations. We can’t innovate through only looking internally. This includes patients, service users, other providers, the voluntary sector and industry partners.

FOCUSED

Resource is limited across the partnership and prioritisation decisions will need to be taken to make best use of these. We do not intend to duplicate existing support offers available nationally or regionally. We will focus our attention on providing the support that complements and builds upon existing support available.

LEARN QUICKLY

Where progress has been made, we will learn from the experience and build this knowledge back into the strategy. This means both capitalizing on success and adjusting or stopping work that isn’t delivering the value we need. We will do this transparently so all partners benefit from the knowledge gained.

SCALE FAST

Where work has a proven impact, we will act quickly to support a fast scale up, led by partner appetite to participate. Where possible and appropriate, we aim to support successful projects with national scale up including linking work into national schemes and supportive communications activity.

3. OUR STRENGTHS

BPACHS is a collaboration between Brunel University London and two NHS partners, The Hillingdon Hospitals NHS Foundation Trust and Central North West London NHS Foundation Trust. The partnership is committed to translating health and care research and discovery into practice by convening a talented group of researchers, clinicians and system leaders to share, prioritise and deliver innovation across the system.

Each component of the partnership brings a unique set of skills and expertise into the innovation strategy and whilst we will work with individual organisations to progress the work, we anticipate leveraging both economies of scale and the breadth covered by the integrated care system to maximise our impact.

BRUNEL UNIVERSITY LONDON

A University of 12,746 students whose approach is to combine academic rigour with the practical, entrepreneurial and imaginative approach pioneered by Isambard Kingdom Brunel. Within the University, the College of Health and Life Sciences has a reputation for producing world leading research. Its departments focus on the following areas:



Dept of Clinical Sciences	Dept of Life Sciences
<ul style="list-style-type: none">• Occupational Therapy and community nursing• Physiotherapy and Physician Associate• Social Work• Health Economics and Public Health	<ul style="list-style-type: none">• Sports, Health and Exercise Science• Biomedical sciences• Psychology including cognitive neuroscience• Environmental sciences

Outside the College of Health and Life Sciences, other colleges specialize in Engineering, Design and Physical Sciences and Business, Arts and Social Sciences.

THE HILLINGDON HOSPITALS NHS FOUNDATION TRUST

The Trust provides clinical services to over half a million patients a year, including over 97,000 Emergency Department attendances. As an NHS Foundation Trust, the Trust has a 25-strong Council of Governors and over 6,300 public members. It employs over 3,500 staff making it one of Hillingdon’s largest employers.



Hillingdon Hospital is an acute and specialist services provider in North West London, close to Heathrow Airport for which we are the nearest hospital for those receiving emergency treatment. Providing the majority of services from the Trust, Hillingdon Hospital is the only acute hospital in Hillingdon with a busy Accident and Emergency, inpatients, day surgery, and outpatient clinics.

Mount Vernon Hospital has a modern Diagnostic and Treatment Centre and existing Princess Christian Unit. These house four state-of-the-art operating theatres for elective surgery. There are also outpatient services and Minor Injuries Unit.

CENTRAL AND NORTH WEST LONDON NHS FOUNDATION TRUST

CNWL is a large and diverse organisation, providing health care services for people with a wide range of physical and mental health needs.



It employs approximately 7,000 permanent staff to provide more than 300 different health services across 150 sites and in many other community settings. Services include:

- **Community Health:** Core services include community nurses and health visitors. Specialist services also include podiatry, speech and language therapy, school nursing, and health promotion.
- **Mental Health:** We provide a wide range of mental health services across Milton Keynes and the London boroughs of Brent, Harrow, Hillingdon, Kensington and Chelsea, and Westminster.
- **Sexual health and HIV:** We offer free and confidential sexual health services in London and Surrey
- **Offender care:** We provide primary care, substance misuse and mental health services at male and female prisons and young offender institutions in London, Milton Keynes and south-east England. Our specialist community forensic services provide intensive case management to those in the community who have offended and those at risk of offending, and also provide assessment, liaison and diversion to the courts, police stations and probation teams.
- **Addictions and substance misuse:** We provide high quality community and inpatient addiction treatment options, including treatment for dependence on alcohol and a range of drugs (heroin, cocaine, stimulants, cannabis, benzodiazepines, 'Club Drugs' etc).
- **Learning disabilities:** We offer services to people with learning disabilities and mental health needs who require specialist assessment and treatment, including a specialist CAMHS learning disabilities inpatient unit.
- **Eating disorders:** Inpatient and outpatient treatment is available for patients with a range of eating problems.

Our catchment area covers a range of vibrant and diverse communities, with over 100 first languages spoken, containing areas of great affluence as well as areas of much deprivation.

THE WIDER INNOVATION AND ADOPTION ECOSYSTEM

The partnership sits within a broader eco system that offers expertise and resources that support the delivery of our ambitions.

IMPERIAL COLLEGE HEALTH PARTNERS

Our local Academic Health Science Network (AHSN) provide a range of services to support transformation, change and innovation. From business intelligence through to horizon scanning and change management support, members of ICHP can access these support services at no extra cost. As part of a national network of AHSNs, ICHP also provide a route to national scale up programmes including the Accelerated Access Collaborative. Accessing the expertise and network of the ICHP will benefit the delivery of this strategy and can provide individual projects with a better chance of success.

DISCOVER NOW

Discover-NOW, a unique partnership led by Imperial College Health Partners (ICHP), is one of seven Health Data Research Hubs established nationally. Through safe and secure curation of patient information, Discover-NOW will provide leading clinicians, researchers and scientists with access to de-identified linked patient information at scale in near to real time. This will enable them to look prospectively to identify new patterns in disease thus helping us to better manage many conditions and, in some cases, prevent them happening in the first place.

Starting with Type 2 Diabetes, Discover-NOW will also use real world data to improve understanding of many long-term conditions. This first work is in partnership with AstraZeneca, one of the hub's largest contributors, and will focus on finding new solutions to help people struggling to manage their Type 2 Diabetes.

Discover-NOW has the potential to benefit millions of people, however, we will only realise these benefits if we have the support and trust of our communities and wider population. We are therefore proud to be supporting one of the most progressive public engagement programmes to build trust and confidence in how health information is used.

H4ALL

H4All CIO is a Charitable Incorporated Organisation (CIO) made up of five prominent third sector charities: Age UK Hillingdon Harrow & Brent, DASH, Hillingdon Carers, Harlington Hospice and Hillingdon Mind. H4All deliver a wide range of Wellbeing and Social Prescription services in the London boroughs of Hillingdon, Hounslow and Harrow. They are also one of the Social Prescribing Regional Learning Coordinators for NHS England.

In addition to their social prescribing and wellbeing teams, their High Intensity User (HIU) programme supports a small number of people who have higher than normal usage of local urgent care services. The HIU officers aim to support these people through providing social solutions to non-medical problems, health coaching, emotional support and to help create a support network.

With the aim of reducing unnecessary attendances and admittance's, the team work collaboratively with professionals central to the patients care including; multi-speciality clinical teams, GPs, London Ambulance Service, London Borough of Hillingdon Adult Social Care, Community Mental Health Teams, IAPT services, Metropolitan police and broader third sector providers.

THE CONFEDERATION, HILLINGDON

The Confederation, Hillingdon is made up of 43 GP practices in the London Borough of Hillingdon. Established as CIC, the combined list size of registered patients is over 300,000. They are a core partner in the Hillingdon Accountable Care Partnership.

OUR JOINT STRENGTHS OFFER AN ATTRACTIVE SOLUTION TO INNOVATORS

HIGHLY SKILLED WORKFORCE

Our workforce is highly skilled in many relevant areas ranging from academic and research excellence in both clinical and non-clinical areas (e.g. clinical education, health economics, data analysis, computer science, engineering and design), clinical and non-clinical teams working in a typical District General Hospital to world leading clinicians in specialist areas of mental health provision. They can provide a holistic assessment of how an innovation could impact upon integrated care delivery.

DEMOGRAPHICS

The Hillingdon population has relatively few outlier metrics within local authority health profiles compared with other London boroughs and can be viewed as having a health profile halfway between the London average and the England average. This is because the characteristics shown in individual neighbourhoods tend to balance out at an aggregate level. Having such a diverse set of neighbourhoods, each with their own unique characteristics and challenges provides a fertile test bed for solutions.

When innovators are testing the impact of their ideas, having a population and context that is relevant to many different health economies as opposed to areas with extreme performance (positive or negative) could prove an attractive draw to innovators focused on scaling up the spread of their work.

DATA

Access to health data is a valuable asset to those needing to prove the value of their ideas. The partner organisations contribute to the whole system integrated care data set as well as capture data within their own organisations. Whilst Brunel Partners recognize the value of this data, there is also a need to ensure privacy and security rules are respected and adhered to at all times.

OUR INNOVATION HERITAGE - CASE STUDY

The Evolvable walking aid is a modular range of parts which can be assembled to form a walking stick, crutches, a walking frame, or variations of these aids. It saves user from having to buy a whole new walking aid when their mobility condition changes.

It was designed by Brunel University London alumni Cara O’Sullivan. Cara gained an interest in inclusive design through an internship at the medical engineering charity MERU, during her Industrial Design and Technology degree at Brunel.

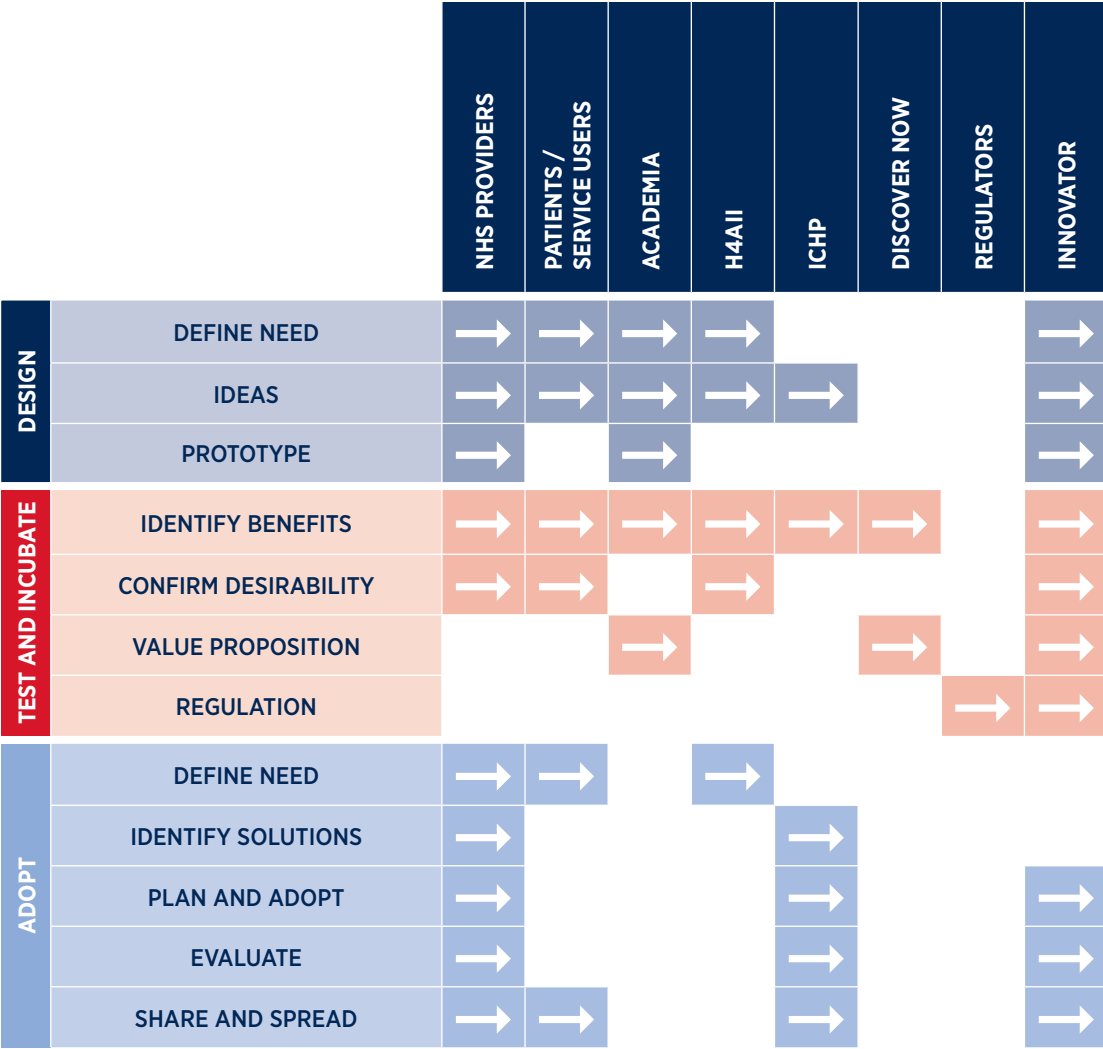
PATIENT OR SERVICE USER ENGAGEMENT

Each part of Brunel Partners works with patient and / or community voice as part of their current organisation strategy e.g. Brunel Older People’s reference group. This connectivity ensures user engagement can be an integrated part of the innovation pathway.

AN INTEGRATED CARE SYSTEM

In our current system, an individual with a health condition could easily find themselves moving between primary care, community care, mental health and secondary care services depending upon their own needs and preferences. Through Brunel Partners collaborating on this innovation strategy, we aim to address fragmentation in the delivery of innovations, provide easier opportunity for good ideas to scale and enable better, more coordinated care.

Looking across the innovation and adoption pathway, the strengths of each partner contributes to various stages. Whilst partners may choose to take part in all stages for individual projects, the diagram below shows examples of the leading partners at each stage. This will change dependent upon the specific requirements of each project, however the value in the partnership is derived from the benefits of an integrated approach and offer across the pathway.



4. OUR WEAKNESS

As this is the first innovation strategy for Brunel Partners, it should be anticipated that not all connections and processes currently exist at a pan organisation level to respond to innovation opportunities quickly and robustly. The current weaknesses have been identified at the Partnership level rather than within individual organisations.

LITTLE SLACK IN THE HEALTH SYSTEM

In common with many areas of the NHS, there are few spare resources available to pump prime innovation projects. This applies to both financial and human capital. Given resources are constrained, any innovation opportunity will need to be carefully evaluated and strong innovation opportunities may well be turned down because of resourcing constraints.

PUBLIC TRUST AND CONFIDENCE

Though there is a great deal of public support for improving the delivery of health and care services through using proven innovation, there is still a concern over how personal data is used. National bodies such as NHS Digital are working to build trust and confidence and citizen engagement work through the HDR data hubs is also providing information and support to help individuals make informed decisions over consent.

FOCUS ON ACADEMIC RESEARCH VS COMMERCIAL RESEARCH

Looking at University constraints, academics may be drawn to research opportunities that lead to publication and generate research funding. This could dampen the appetite to become more involved in commercial research which could be more attractive to innovators.

NO SYSTEMATIC PRIORITIZATION IN PLACE ACROSS THE PARTNERS

This is the first innovation strategy for Brunel Partners and as such, no prioritization processes are in place to review and evaluate innovation opportunities from the partnership perspective as opposed to individual organisation perspectives.

PACE OF DECISION MAKING ACROSS PARTNERS

A key strength lies in the integrated offer we can provide to innovators, but there is no precedent for mobilizing quickly across the organisations to respond to innovation opportunities. How quickly would it take to review if a project needed ethics approval, access to data or access to researchers? Would this meet innovator expectations?

OUTCOME BASED DATA

Integrated data sets are available through the Whole System Integrated Care Record and Brunel Partners has secured a multi-year license to access the data for specific research projects. We need to assess how this data set captures the set of outcome metrics required by innovators (frequency of data, historic data available, measures themselves).

INNOVATION CULTURE

At this stage, we have identified pockets of innovation across partner organisations which have demonstrated energy, ambition and resilience to delivering innovative work. That said, we also see variation where this is not standard practice in all areas. Initial conversations have indicated a variety of factors driving this:

- Awareness of innovations being developed and used elsewhere in the UK and abroad
- Awareness of the support available to those seeking to innovate their practice
- Confusion between quality improvement and innovation
- Resource constraints
- Perception of board level support for innovation

5. OPPORTUNITIES

Health innovation, and in particular digital health technology, is a growing business for the UK and globally. The World Health Organisation published in 2018 a report on global healthcare expenditure which indicated that health spending accounts for 10% of global gross domestic product¹. The UK in 2017, health spending totalled £197.4billion or 9.6% of GDP and Table 1 shows healthcare expenditure growth in real and current prices.

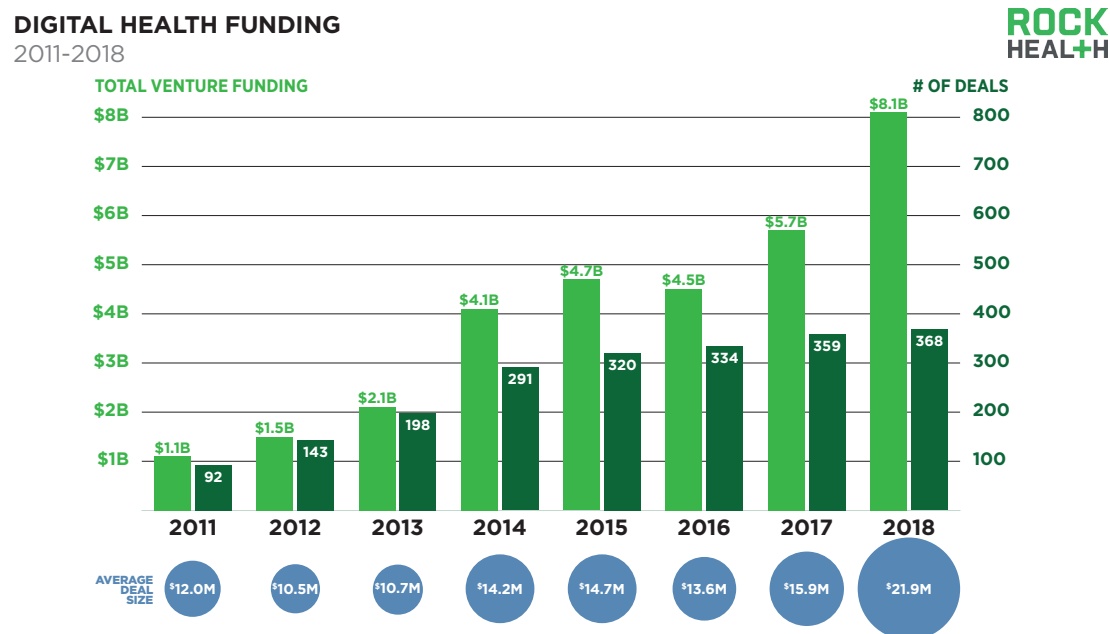
Table 1 UK Healthcare expenditure

		2013	2014	2015	2016	2017
Current Prices	Expenditure (£ billions)	172.0	179.9	183.6	191.0	197.4
	Growth rates (%) ¹		4.6%	2.1%	4.0%	3.3%
2017 Prices	Expenditure per person (£ per person)	2,683	2,786	2,821	2,910	2,989
	Expenditure (£ billions)	183.3	188.5	191.6	195.2	197.4
	Growth rates (%) ¹		2.9%	1.7%	1.9%	1.1%
	Expenditure per person (£ per person)	2,859	2,918	2,943	2,974	2,989
	Expenditure as % of GDP	9.8%	9.8%	9.7%	9.7%	9.6%

Source: Office for National Statistics - UK Health Accounts

With such a large and growing market for health and care services, investment into innovative technologies has also been growing with the US one of the largest investors in digital health technology.

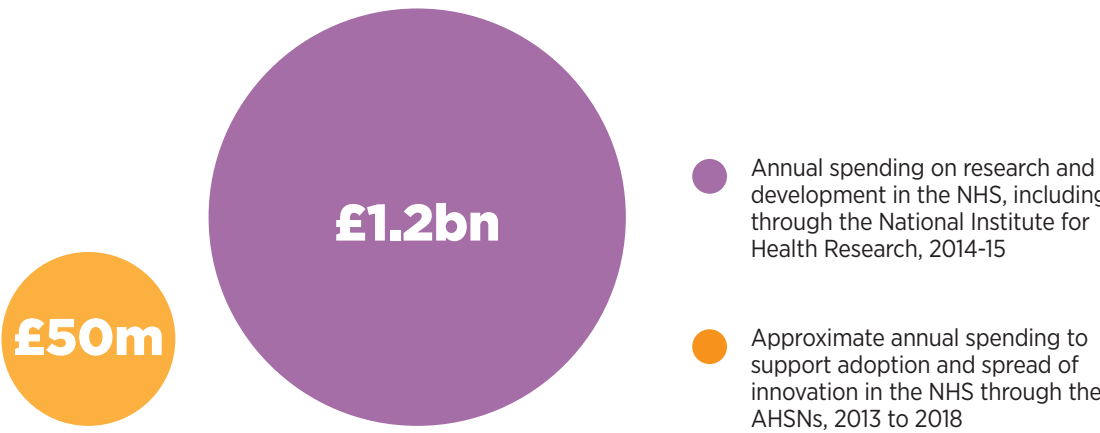
Figure 1 US Venture Funding in digital health



Here in the UK, the health tech sector is now the largest employer in the broader Life Sciences sector, employing 127,400 people in 3,860 companies, with a combined turnover of £24bn. The industry has enjoyed growth of around 5% in recent years according to ABHIⁱⁱ

And annual funding of research and development is also sizeable with over £1billion invested in 2014/15. The focus on adoption of innovation and concepts driven from the research is considerably smaller.

Figure 2 Funding on R&D and adoption in UK



There remains a challenge in UK health innovation that the development of ideas and solutions is not translating into adoption into the NHS. This has been described as the “Valley of Death”, the gap between investment capital ending and revenues flowing. This creates two opportunities for BPACHS.

SUPPORTING INNOVATORS WITH TESTING AND ADOPTION

INNOVATORS ARE LOOKING FOR THE FOLLOWING:

- Critical advice and guidance:** Innovators want stronger relationships with the NHS, Social care and Patient groups to better understand how the health and care system works and what problems they are looking to solve
- Professional expertise:** For innovators seeking national roll out in the NHS, innovators will need to meet regulatory and evidence standards that demonstrate their idea is effective and creates value. An example of this is the NICE digital healthcare evidence standards that ask for innovations to demonstrate credibility with UK health and social care professionals.
- Data:** To develop a compelling business case, innovators need to demonstrate the quality, safety and economic impact of their idea. Therefore, access to well structured, accurate data in a manner that is fully compliant with ethics and information governance regulations is sought after.

- **Market access:** Innovators are looking for access to potential customers of their solutions. Health and care systems have strong social networks and therefore having good reference sites that demonstrate the innovation in practice are helpful.

By working with innovators more closely, the health and care system can share and receive knowledge, shape and adapt solutions prior to adoption, accelerate access to patients and generate additional income on top of savings created through adoption of proven innovation..

One example of an NHS Trusts partnering with Industry and Academia is Zilico.

ZILICO

Zilico was founded in 2006 following a successful collaboration between the University of Sheffield and Sheffield Teaching Hospitals NHS Foundation Trust, UK, to develop a more accurate means of diagnosis for cervical intraepithelial neoplasia (CIN). The company has developed its patented Electrical Impedance Spectroscopy (EIS) into a platform technology for cancer diagnosis and is expanding its product development into other clinical areas.

SUPPORTING OUR HEALTH AND CARE SYSTEM TO ADOPT INNOVATION

There has been much written on the topic of non-adoption of innovations by health and care systems. Barriers such as supply led innovation, resource constraints and a complex procurement regime focussed on short term savings have often been quoted.

The Accelerated Access Review published in 2016 argued that the NHS needs to be ready to respond to transformational technologies and recommended 18 actions across national and local levels. At BPACHS, we have a role to play in supporting increased adoption across the system which utilises national and regional support and that recognises the statutory accountability of individual organisations.

- **Enhancing co-development between innovators and health and care professionals:** To match problems with appropriate solutions, there needs to be support to clearly define problems and identify potential solutions. Within an integrated care system where changes to pathways will have ramifications on various bodies, BPACHS can help identify and de-risk implementation.
- **Changing the perception that innovation is a luxury and not a must do:** Innovation should be promoted across the partnership as a mainstream activity and incentives for adoption such as enhanced recognition or financial gain share at departmental or team level to return rewards for those working on adoption projects should be considered.
- **Support in identifying high value opportunities:** Given time and resource constraints, selecting which solutions will generate the biggest reward by looking across the integrated care system.

- **Utilising the expertise of academia into the adoption and evaluation of innovation:** Creating stronger links between researchers and delivery groups will make it easier to translate research into practice and to adopt rapid evaluation techniques.
- **Identifying practical support (including but not limited to funding) to help minimise barriers for adoption:** Identifying opportunities to secure additional resources that could be used by adopters of innovation such as national support schemes and national innovation infrastructure (such as the accelerated access collaborative). Additionally, there will be innovation funding available that the system could bid for.
- **Identifying the medium to longer term future scenarios:** Much of the innovation discussion focuses on the immediate adoption of known innovations and the support for innovations currently being developed. However, several factors in health and care delivery have a much longer lead in time e.g., workforce training and capital builds. We need to identify future scenarios that build on innovation and technology to feed into relevant discussions in such areas.

For individual organisations, when considering the adoption of technologies, the non-adoption, abandonment, scale-up, spread, and sustainability (NASSS) framework developed by Greenhalgh et al in 2017⁹ provides a helpful guide to those in this area.

“Health tech entrepreneurs are not short of great ideas in the UK and in fact there is a lot of support for innovation from government funding to incubators like Health Foundry. Where we are lagging behind other countries is having clear routes to adopting innovations,”

Sinead Mac Manus in an FT article published in 2018

6. THREATS

Other health and care systems have developed similar innovation focussed units in the English health system who already have a track record of delivering innovation projects that benefit the NHS. Examples include

CW INNOVATION (CHARITY AND NHS TRUST)

<https://www.cwplus.org.uk/our-work/cw-innovation/>

“CW Innovation, led jointly by CW+ and Chelsea and Westminster Hospital NHS Foundation Trust, identifies and delivers new high-impact innovation initiatives and improvements that support the goal of delivering operational excellence, and exceptional patient care and experience in a world-class clinical environment. Together, we look for new and innovative solutions to address the most fundamental challenges healthcare organisations face today.”

GOSH DRIVE

Drive is both an overarching organisational and governance structure and a physical unit which will bring together key experts working with data and digital technologies within the Trust, the wider NHS, academia and industry. It has an ambitious vision to improve outcomes and experiences for children by harnessing innovative technologies and rapidly embedding them in hospital practice and then in the wider NHS.

QUEEN MARY INNOVATION HUB (ACADEMIA AND NHS TRUST)

<https://www.qmbioenterprises.com/tenants/barts-and-the-london/>

Bart's and the London School of Medicine and Dentistry is a world-class research institution with expertise in the challenging diseases of the modern world. The medical school has invested heavily in biological service units, genomics, proteomics, advanced imaging, flow cytometry and cell sorting together with the technical expertise to manage these facilities. Researchers in the Innovation Centre will have access to these facilities subject to capacity. There is also a supply of talented and highly qualified technical staff, both from the NHS and graduates of Queen Mary University of London.

CITY LABS (SCIENCE AND TECHNOLOGY PARK AND NHS TRUST)

<https://mspl.co.uk/campuses/citylabs/>

Citylabs brings together and accelerates collaboration between the NHS, scientific and academic communities and industry on the largest clinical academic campus in Europe and in the heart of Manchester's Innovation District.

Whilst these alternative collaborations could be seen as competitors, it is our view that they prove the value in collaborating on innovation. BPACHS believes we have a unique offer that is complementary to the London innovation eco system. The

BPACHS offer builds on these collaborations by incorporating academic excellence and an integrated healthcare delivery system which can demonstrate a full system impact of an innovation, not easily viewable from inside one lone organisation.

An example of this could be offering a whole system innovation review for an innovation clinically proven effective in a specialist setting to demonstrate what impact this has on primary and community care services.

In addition to potential competitors, the strategy will need to stay cognisant of the changing policy environment, including but not limited to the Accelerated Access Collaborative (AAC). The AAC brings industry, government and the NHS together to remove barriers to uptake of innovations, so that NHS patients have faster access to innovations that can transform care.

In June 2019, the AAC published its six key deliverables for 2019/20, aligned to the priority areas of focus for the board. They are as follows:

- **Launch of a portal signposting funding, advisory support, and evidentiary requirements to innovators.**
- **Bespoke support of categories of early stage products.**
- **Launch of a single horizon-scanning platform across all partners.**
- **Pilot expanded real-world testing within NHS, leveraging private capital.**
- **Significant spread of AAC rapid uptake products, Innovation and Technology Payment products, and AHSN national programmes.**
- **Implementation of the funding mandate for devices, diagnostics and digital products.**

These deliverables will have an impact upon the work of BPACHS and we have linked our strategic ambitions to the direction of travel shown by the AAC. We will watch closely to ensure our work builds upon national initiatives.

7. STRATEGIC AMBITIONS

Bringing together the assessment of the internal and external positions, our ambitious vision for BPACHS is to be the leading centre of integrated care innovation in England, with a particular interest in prehabilitation and rehabilitation. We plan to deliver this through meeting three strategic ambitions across a three-year period.

1. We adopt high value innovations into our health and care delivery system, underpinned by academic rigour and an understanding of community need
2. We provide an integrated care test bed where ideas can be developed, adapted and scaled, using a holistic system review
3. We help teams successfully plan for the future of health and care delivery

The ambitions individually and collectively will add value to the partnership and to participating organisations.

ADOPTING HIGH VALUE INNOVATIONS

We seek to supplement existing innovation adoption processes currently deployed by individual organisations in the partnership, working across five stages of adoption:

- Defining need
- Identifying solutions
- Building tests and value propositions
- Testing and evaluation
- Share and spread

We will use existing best practice from within partner organisations and elsewhere to develop a modular BPACHS Adoption Framework based on these five stages to use for innovations that have been proven as safe and effective. A key element of the framework will be the creation of prioritisation criteria that can be applied to adoption opportunities to help collectively determine how to create maximum value from our scarce resources.

The framework will also describe how partners can draw upon expertise and resources from the eco system to support the implementation of innovation and provide clarity to frontline teams wishing to adopt market ready solutions.

HOW THIS AMBITION WILL BE APPROACHED IN YEAR ONE

- Each organisation will identify an Innovation Adoption SRO who can help develop and refine the adoption pathway through testing it on one adoption project internally or across the system
- Funding opportunities that relate to system identified priorities will be pursued and progress shared through the SRO network. The funding bids are expected

to make use of partner skills and expertise as part of the bid where this is appropriate.

- BPACHS will work to enhance existing infrastructure for adoption through signposting SROs to additional support available in the eco-system e.g. ICHP for horizon scanning or through supporting the building of additional infrastructure e.g. establishing relevant oversight groups to advise on prioritisation of projects
- Evaluation reports will be shared across the SROs to expedite scale and spread, or lessons learned.

SUCCESS WILL BE MEASURED BY:

- The adoption of an umbrella adoption pathway that individual organisations can utilise which includes approaches to prioritisation adopted by BPACHS leadership group
- The number of introductions made to the system
- The number of funding bids for innovation adoption support submitted in 2020/21
- The number of innovation adoption projects started across the system in 2020/21
- The publication of quarterly innovation updates
- Attendance levels and feedback at quarterly innovation seminars
- Over time, we expect to track return on investment for the projects and prove the value add delivered by the portfolio of innovation adoption projects.

INTEGRATED CARE TEST BED

We will build a health innovation eco-system that offers an integrated supply chain of commissioners, providers and academics that provides an attractive place for innovators to test their ideas in practice. We will focus on late stage innovation requiring real world evidence to prove its efficacy before it can scale nationally.

We believe our maturing integrated care system provides an opportunity to test ideas across an eco-system rather than within a single organisation. By offering this service, we intend to build stronger links between industry and the health and care system and bring in an income stream for the system which can be used to pump prime the adoption of proven innovations. We believe we have a particular strength in the area of prehabilitation and rehabilitation. Linking our academic expertise in therapist and social care training and research in this area with a leading model of social prescribing and community and primary care working together, Hillingdon is well placed to become a leading centre of knowledge on translating best practice in prehabilitation and rehabilitation into practice.

Innovators have told us that for this service to be attractive to them they require an agile offer which provides value for money. To run this effectively we will need an infrastructure that includes:

- a governance structure that describes how the partners across BPACHS will

work together and with industry in commercial arrangements for the duration of the test (e.g. non-disclosure agreements, contract monitoring);

- a clear and accessible route into partners individual decision-making processes to codify resources and commitment for individual projects;
- a data set that provides relevant outcome metrics for both UK and international markets

We intend to bid for national test bed programmes such as NHS England test beds or the next evolution of this, developed by the AAC.

HOW THIS AMBITION WILL BE APPROACHED IN YEAR ONE

- Developing a clear Brunel offer to innovators that describes how design and testing of innovations could be supported through the partnership
- Identifying if there are gaps in the current offer that need addressing and identifying appropriate partners or creating internally

SUCCESS WILL BE MEASURED BY:

- Progress towards building an infrastructure that best positions BPACHS as a destination test bed
- A pilot project between an innovator and our test bed infrastructure

PLANNING FOR THE FUTURE OF HEALTH AND CARE DELIVERY

We will support the strategic planning functions within all partner organisations to ensure that medium to long term plans are aware of and built on likely innovations that will transform service delivery in the future. The immediate focus will be on supporting the planning work for the capital rebuild of The Hillingdon Hospitals NHS Foundation Trust and supporting the inclusion of future delivery models and technology support into the strategic outline case.

In the 2020/21, this work stream will expand to include other organisations in the partnership and will focus on developing a future focussed planning mindset through activities such as:

- Simulation modelling events on future technology trends e.g. what if AI was routinely used as the first triage for all imaging diagnostics, what if it was the exception rather than the norm for outpatient appointments to be face to face, what if everyone had to work until they were 75?

HOW THIS AMBITION WILL BE APPROACHED IN YEAR ONE

- Supporting the development of the Strategic Outline Case for the new build for THHT
- Hosting engagement events that enable innovative ideas to reach the relevant workforce

SUCCESS WILL BE MEASURED BY:

- Inclusion of innovation within the Strategic Outline Case for THHT
- Two future focussed events held that bring together academic experts and system decision makers that evaluate well

GOVERNANCE AND OVERSIGHT

Under each of these ambitions, a more detailed delivery plan describes how BPACHS will achieve these goals. The delivery plan is designed as a hybrid. There will be elements that should apply to all individual partner organisations to create most value for the system and other elements are modular, allowing individual organisations to best select what suits their specific needs.

Progress will be tracked through the BPACHS Leadership group who meet monthly. Organisational representatives on the Leadership Board are asked to cascade relevant information within their organisations to complement other communication strategies.

8. FINANCIAL PLAN

A Chief Innovation Officer (CINO) has been appointed for BPACHS who leads on the development and delivery of the Innovation Strategy. This resource will be leading the work described in the detailed delivery plans for each ambition.

The CINO will also utilise existing resources and support from across partner organisations where individual organisations agree.

Outside the support of resources within the partner organisations, there is no material financial budget available for pump priming the work. As such, the strategy requires additional funds to be generated in order to fund additional activity such as incentives for adopting innovation and project resource.

ADDITIONAL FUNDS WILL BE GENERATED THROUGH TWO ROUTES:

- **Applying for innovation grants for specific high value adoptions such as various health foundations and Innovate UK**
- **Providing goods and services to industry partners e.g. the services of the Integrated Test Bed for innovators willing to pay for a test environment**

Generating this funding will require the support of each partner organisation through participating and contributing to funding bids and supplying time to ensure the delivery of any successful project work. Any funding secured will be reinvested into the partnership to cover the direct costs of supplying services or to support investment into the testing infrastructure.

9. CONCLUSIONS

Change in health and care services is nothing new; innovation has been affecting the delivery of services since the NHS was first created over 70 years ago. What is changing is the pace of innovation and how health and care systems are responding to this.

The Do-nothing scenario is no longer credible and places any system selecting this at the laggards end of the innovation adoption curve, with less effective delivery systems and an unattractive workplace for a highly skilled and mobile workforce. Our choice as a partnership is where we focus our energy and resources and how we work collaboratively to generate enhanced results.

The strategy describes three focus areas where demonstrable value can be realised through working collaboratively and with intent. Sharing our success stories, working together to critically assess new opportunities and supporting our teams to plan for the future will reap dividends that place our health and care system at the forefront of a revolution in life sciences.

By investing time and focus into the delivery of an Innovation strategy, the partnership will generate benefits for the workforce, patients and the local community and will create a more sustainable health and life sciences system in Hillingdon.

- i. Xu K, Soucat A & Kutzin J et al. **Public Spending on Health: A Closer Look at Global Trends**. Geneva: World Health Organisation; 2018 (WHO/HIS/HGF/HFWorkingPaper/18.3).
- ii. <https://www.abhi.org.uk/>
- iii. <https://www.nice.org.uk/about/what-we-do/our-programmes/evidence-standards-framework-for-digital-health-technologies>
- iv. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/565072/AAR_final.pdf
- v. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5688245/>

