

*The***AHSN***Network*

**Innovation exchanges:
delivering economic
growth through
The AHSN Network**



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Innovation Exchanges: the AHSN framework for driving Economic Growth in the UK life sciences economy

A central premise underpinning the AHSN Network is the value that it brings to both the NHS and the life sciences sector.

AHSNs were born of The Innovation Health and Wealth Report (2011) and the recognition of the importance of mobilising innovative capacity within the NHS in order to drive growth. The value that the NHS offers in terms of economic growth spans many industry sectors, and it can be seen at all stages of The Innovation Pathway from invention through to adoption and post-adoption evaluation in practice.

A central role of the AHSN Network is the mobilisation of assets within the NHS to drive the UK economy. The following support can be provided to companies by the AHSN Network:

- Understanding the needs of the NHS and navigation of the market; thereby de-risking investments
- Accessing innovations requiring development and commercialisation support
- Accessing technical expertise to create an evidence base for efficacy, and positioning products or services within the health and care market
- Post-adoption evaluation in practice (real-world evaluation) for assessment of long-term safety and efficacy
- Accessing the NHS as a market to drive adoption and spread

During Q1 and Q2 of 2018/19, 1173 companies have received support (for 1524 innovations) from the AHSN Network. This includes support spanning initial signposting through to long-term strategic partnerships. 86 of these companies have created long-term strategic partnerships with the NHS through the AHSN Network, and 205 have been supported by more than one AHSN. The Office for Life Sciences investment has facilitated a coherent infrastructure of significant scale, enabling companies to access the NHS. The value of this support in terms of jobs created, jobs safeguarded, and investment leveraged, is becoming clear.

The NHS and social care represent complex landscapes, and they can be daunting markets. However, through the Innovation Exchange funded by the Office for Life Sciences, the AHSNs broker the relationships and introductions necessary to support innovators and companies. The positive outcomes for the care system, in terms of early access to transformative technology and services, are well documented. The case studies that follow capture some of the many examples of benefit accruing to the companies that have been supported by the AHSN Network.

The services available to companies through the AHSN Network, the visibility of the interactions, the developing evidence base, and the national profile of the innovations being supported, are all part of the Innovation Exchange offer, both locally and nationally. Economic growth is the output and as an AHSN Network we are proud of the ever-greater impact that we are demonstrating.

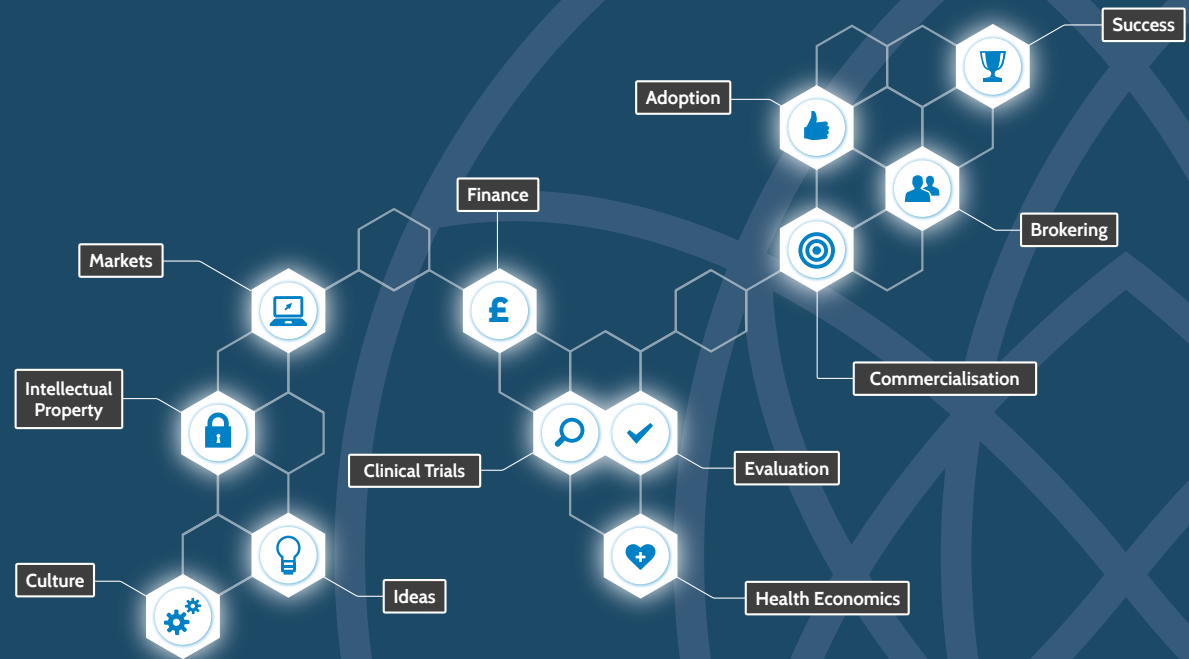
We would welcome any feedback you have and we are keen to engage with NHS innovators and companies who are working in this space. Please contact your local AHSN for more details.

Innovation Exchanges

Innovation Exchanges are an AHSN-coordinated approach to identify, select and support the adoption of innovations which have the potential to stimulate our economy and transform the lives of patients. The Exchanges have four structured elements:

- **Needs Articulation:** AHSNs work with NHS colleagues from across the system including clinical, managerial, and commissioning, to identify unmet needs, or challenges that could benefit from innovative change
- **Innovator Support and Signposting:** AHSNs work with innovators to identify innovations which could address the unmet needs and challenges faced by the NHS
- **Real-World Validation:** Some innovations can be ‘tested’ in real world settings which can provide the necessary validation and evidence to support a more rapid uptake
- **Spread and Adoption of Supported Innovations:** AHSNs support the scaled adoption of innovations identified in the Accelerated Access Collaborative and the Innovation and Technology Payment, as well as others identified by the AHSN Network

The AHSN Network will offer a framework of support to innovators via their Innovation Pathway initiative, which offers bespoke assistance at every stage of the innovation lifecycle.



How Innovation Exchanges will work

<p>1. Needs articulation Patients, clinical, managerial voices drawn in to help define needs. Needs will reflect the market opportunity as well as the efficiency expectations of the NHS.</p>
<p>2. Innovator support and sign posting A range of support for Innovators - SMEs, clinical entrepreneurs, digital, medtech, biotech.</p>
<p>3. Real world validation Pathway testing of clinically validated innovations - to enable workflow, training and system planning to be tested. Economic and impact reviews will be shared across the AHSNs.</p>
<p>4. Adoption and spread Some products will be adopted in regionally supported activity, others in nationally led programmes.</p>

Innovation Exchanges are a resource which will help drive the spread and adoption of innovations, to ensure that the latest technologies reach patients quicker and at a lower cost to the NHS, than before. By utilising the skills and knowledge of the AHSN Network, the Innovation Exchanges will provide a central point of reference for innovators and healthcare professionals.

The success of Innovation Exchanges will be evidenced by the accelerated adoption of innovations into the NHS. There are three main routes for this:

- Regional Adoption - Potentially Scaling to National
- Regional Adoption - Scaling to an AHSN National programme
- The Accelerated Access Collaborative

The AHSN Network is committed to developing the Innovation Exchanges to assist with economic growth in the most challenging of times, whilst improving the lives of patients.

IEG4: Supporting Health Assessment Completion

Supporting the spread and adoption of specialised software for the streamlined completion of Continuing Healthcare Assessments.

IEG4, a software SME based in Cheshire, have developed a digital solution, CHC2DST, for managing the process of undertaking a Continuing Healthcare Assessment. The software assists Clinical Commissioning Groups (CCGs) and local authorities to achieve the NHS England target of completing 80% of assessments within 28 days; a target which reports a significant shortfall nationally. Such assessments are administered by the CCG and local authority for those citizens who require additional care support, either due to ill health, old age or disability. The assessment quantifies how much funded support the patient is eligible for and the most appropriate method of care.

The system is procured and administered by the CCG who manages the process for Continuing Healthcare Assessments, and it provides access for all registered stakeholders who need to submit information to assist with a robust assessment. CHC2DST was implemented across Cheshire and Wirral CCGs in September 2017, and an initial evaluation has shown the 80% target is now being achieved within the 28-day target.

The Yorkshire and Humber AHSN facilitated an event allowing IEG4 to make crucial contacts within CCGs and they developed a cost benefit model to highlight the cost savings that could be realised by implementing the software. IEG4 have a number of potential opportunities and are predicting a significant increase in turnover due to the rollout of the software with AHSN assistance.



£88,000
in SBRI funding



Kromek: Low Dose Molecular Breast Imaging

Kromek Ltd are a leading developer of radiation detectors for the nuclear, medical and security industries. After introductions via the AHSN for the North East and North Cumbria they have diversified and adapted technology from their traditional sectors into breast screening.

The sensitivity of conventional breast screening technology (mammography) in women with dense breast tissue is as little as 50%. Molecular breast imaging (MBI) which is injection with a radioactive tracer followed by an image of the breast has far better sensitivity. However, at present, the required radiation dose is much higher than in mammography.

Kromek proposes to develop imaging technology with a radiation dose equivalent to mammography, with a view to incorporating low dose MBI into the screening pathway for patients with dense breasts. The AHSN NENC brokered a partnership between Kromek and The Newcastle upon Tyne Hospitals NHS Foundation Trust who led the clinical work and ensured a patient-centred focus.

The AHSN NENC helped Kromek complete a successful application to support a £1.4 million Innovate UK grant for the study, which includes technology development and installation within a hospital. The Innovate UK grant is an exemplar of how collaborative working between industry and the NHS can benefit both parties.



£1.4 million
Innovate UK grant



Damibu: Digital Healthcare in Practice

The 'CATCH - Common Approach to Children's Health' app is a health information service for parents of children under five, and since its implementation it has reduced demand on emergency departments in Eastern Cheshire.

CATCH first launched in the Northwest of England in Cheshire East, where 47% of users are opting for self-care over a possible A&E visit and 64% of users are opting for self-care over a possible GP visit.

Statistics show reductions in A&E winter attendances coded as "Guidance Verbal & Written" and "No Further Action" for under 5-year-olds: 2015/16 saw 688; 2016/2017 saw 526 (reduction of 23%) and 2016/17 saw 473 (further reduction of 10%).

The CATCH app's survey confirmed that CATCH is having a significant impact, with 47% of questionnaire respondents specifying that they had chosen self-care, rather than attending A&E with their child, since downloading the app. CATCH has since been commissioned by Cheshire & Merseyside Women and Children's Vanguard and has been adopted by 7 CCG's in the STP footprint.

The National Museums Liverpool's 'My House of Memories' digital reminiscence app has been developed for people living with dementia and by 31st May 2018, there were 24,520 downloads of the app.

Damibu has attracted £323,500 in funding awards from a variety of organisations, and was awarded an NHS Innovation Accelerator Fellowship. The company's success has secured six jobs and two new roles.

Damibu CEO, Dave Burrows, said: ***"I can sincerely say that we would not be in the very positive situation we are now if it wasn't for the dedicated staff at the Innovation Agency. I would encourage any SME wishing to engage with the NHS to engage with the AHSN."***



£323,500
in funding awards



6 jobs secured
and 2 created



Health Call Solutions Limited: Digitalhealth Solutions

Health Call Solutions Limited is a collaboration between six major NHS Foundation Trusts in the North East of England, developing a suite of digital products across a variety of clinical areas. The products are at differing stages, from prototype through to on the market.

The Health Call board includes IT Directors, Chief Information Officers and Heads of Innovation; all six NHS Foundation Trusts involved in the collaboration are represented at board level. The aim of Health Call is to design, develop and roll out digital health services at speed, and at low cost, using a standardised common approach, with the result that deployment can be done at scale with AHSN assistance.

The unique aspect of a Health Call project is the time spent understanding and interpreting how a clinician works and what their needs are. By spending time with them, a pathway can be designed that delivers the information they need, when they need it. This is not an 'add on' product to current systems but a change of practice; working in this way means that a bespoke product can be delivered.

The AHSN for the North East and North Cumbria assisted Health Call with brokering, market assessment and advice, as well as securing a £150,000 investment to support international normalised ratio (INR) testing via a competitive tender.



£150,000
investment



Pragmatic: Lean Innovation

An improved laboratory pallet has been designed by Quality Hospital Solutions Limited in conjunction with Gateshead Health NHS Foundation Trust, with intellectual property assistance and funding support provided by the AHSN for the North East and North Cumbria. The pallet aims to improve the handling of pathology samples and improve the efficiency of the analysis process.

Pragmatic, a UK based company with a development and manufacturing site in Sedgefield, is one of the development and manufacturing partners involved in the project, providing a unique electronics solution that forms part of the pallet. The company is growing rapidly and transitioning from a small technology start-up to a medium-sized business incorporating R&D and manufacturing activities.

In support of their continued growth, they are increasing headcount to support at least fifteen new highly-skilled technical jobs over the next year. They also plan to further expand their manufacturing and engineering capabilities by investing in a larger premises close to NETPark in Sedgefield. As a result, the pallet project is positively contributing to economic growth in the region, defining an important early project for Pragmatic, allowing them to positively grow as a company, drive further business, and open global opportunities within the healthcare sector.



Microbiosensor Ltd: TripleCheck

The TripleCheck is designed to identify potentially fatal infections in dialysis patients. The device is aimed at patients with kidney failure who are being treated using peritoneal dialysis (PD) therapy and it acts as an early warning system for peritoneal infection.

PD is the lowest cost and least lifestyle compromising form of renal dialysis; however, less than 10% of patients on renal replacement therapy are on PD. Recurrent infections are a major cause of failure, and patients are required to identify possible symptoms of infection themselves. Symptoms are not specific or detectable until an infection has become well-established and this can lead to a delay in time to diagnosis and treatment.

The device aims to overcome this by plugging into existing PD waste fluid tubing, detecting bacteria and flagging an emerging infection before symptoms present, via a colour change in a readout window.

Microbiosensor Ltd completed a pilot clinical investigation of the device at the Manchester University NHS Foundation Trust (MFT) renal centre, following a £50,000 award from the Health Innovation Manchester's 'Energise Innovation Fund.'

The support and advice from Health Innovation Manchester throughout the pilot clinical trial helped Microbiosensor de-risk its technology and improve its understanding of clinical trial management at a major NHS trust.

The project has strengthened the design of a larger study to assess the device and has helped the company secure a £1.4 million investment to support them through its final product development.

Gordon Barker, CEO of Microbiosensor Ltd, said: ***"The funding from Health Innovation Manchester helped Microbiosensor Ltd improve its understanding of clinical trial management at an NHS trust and strengthen the design of a subsequent study. It has made a significant contribution to Microbiosensor Ltd's efforts to bring its medical device technology to market."***



£1.4 million
investment

Beringar: Smart Monitoring for NHS Estates

Beringar are an all-in-one smart building sensor company based in Scotland with under 10 employees. Beringar has developed ground-breaking new technology that provides a comprehensive digital picture of how NHS buildings are being utilised. The system detects both human activity and equipment (location and movement). It also monitors eight different environmental factors to support better human-building interaction.

Beringar were challenged by a senior NHS leader working in community health partnerships to come up with a solution for understanding how NHS buildings were being used. They realised that no existing products really delivered the solution they were being asked for, so they worked with CENSIS (Centre for Sensor and Imaging Systems) to develop a prototype device that provided the answers. The solution directly responds to a number of NHS efficiency and productivity objectives and testing has found that NHS buildings are utilised only 50% of the time.

Demonstrator projects within the NHS have been completed, a patent application was filed in April 2018, and the product has already been shipped to international customers with interest from a further 20 countries.



GripAble™: Developing a go-to-market strategy

GripAble™ are developing gamified mobile technologies for therapy and assessment. Common equipment used for hand and arm therapy, such as thera-putty or stress balls, have not been successfully digitised, providing no motivation to patients.

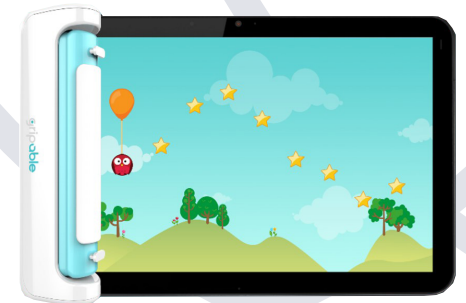
The company's first product, GripAble™, is a digital handgrip that wirelessly connects to a mobile app, allowing patients to play fun therapy games. It has been designed to be highly portable and patient-personalised.

GripAble™ began whilst working with patients at Imperial College Healthcare NHS Trust. Imperial College Health Partners (ICHP) has worked with GripAble™ since 2016 conducting a key UK-NHS market research study, which allowed GripAble™ to spin out of ICHP in 2017, when they were selected for the Dubai 100 healthcare accelerator. This first investment round and an Innovate UK Award resulted in a £600,000 investment. Pre-orders from early-adopter hospitals and distributors have been secured in the UK, Middle East and Far East, with significant interest from others globally.

GripAble™ are now in the process of raising a £1 million investment round, and have also secured a £1 million i4i grant. With a growing global market for accessible rehabilitative and muscle strength assessment products, the opportunity that GripAble™ presents is significant.

GripAble™ is developing its hardware and software to be market ready in early 2019.

Paul Rinne, CEO of GripAble™ said: ***“Working with ICHP gave us our first opportunity to build the case for transferring our ideas and technology out of academia and into the real clinical world. We learnt a lot working with the ICHP team and still use these skills and market research framework as we develop our global business case further.”***



Plessey: imPulse, Assisting in the Identification of Atrial Fibrillation (AF)

Plessey, a Plymouth and Swindon based SME operating in the field of compound semiconductors, developed a low cost, easy to use, lead-one ECG device known as imPulse™, to assist Primary and Secondary care staff in the automatic identification of atrial fibrillation (AF).

imPulse™ is a portable, handheld device that detects ECG signals by placement of the thumbs on sensors embedded in the unit, allowing a lead-one rhythm trace to be taken with no need for any skin preparation.

Having developed an early Prototype, Plessey approached the West of England AHSN in 2013 for market access advice to help build an internal business case for the development of imPulse™. At this stage technical feasibility was still being assessed.

Through support from the West of England AHSN, Plessey successfully applied to the 2013 SBRI Healthcare cardiovascular call, leading to Plessey receiving over £1 million in funding, helping the product to go from prototype

to production in less than 12 months.

Since then, the West of England AHSN, along with the South West AHSN have assisted Plessey with evaluation and clinical trial opportunities, and also supported early adoption and spread of imPulse™.

Plessey have received;

- support for the regional evaluation of imPulse™ in collaboration with the Bristol Heart Institute
- introductions to local NHS organisations and teams
- help towards national adoption of imPulse™, to support their listing on G-cloud, leading to the availability of imPulse™ on the Innovation and Technology Tariff (ITT).

Support received from the West of England AHSN helped the imPulse™ team to build an internal business case for the development and commercialisation of the product. This helped to;

- secure internal funding and confidence from senior leadership
- support the development of the product
- support four jobs in the development team at Plessey
- support general jobs and regional economic growth in Pencoed, Wales.

George Ostaszewski, IC Design Manager, for Plessey, said: ***“The AHSNs have provided invaluable support in facilitating the early evaluation of imPulse™ and instigating a clinical trial which is being currently run in Exeter. They continue to provide contacts and guidance in the positioning, promotion and marketing of imPulse™. The product development would have struggled without this support.”***

www.weahsn.net/video/plessey-semiconductors/



Cambridge Respiratory Innovations Ltd (CRiL): N-Tidal Monitor

Cambridge Respiratory Innovations Ltd (CRiL) is a Cambridge based company that has developed a handheld device to measure the level of carbon dioxide in the breath.

The N-Tidal Monitor enables patients with chronic respiratory conditions, such as chronic obstructive pulmonary disease (COPD) and asthma, to directly monitor their lung performance at home and take appropriate measures to avoid distressing exacerbations and potential hospitalisation.

The aim of the company is to have the product available to be prescribed by the NHS and globally, as a connected technology for carers, family members and clinicians.

Since 2013, CRiL has received support and advice from Eastern AHSN with:

- commercialisation of the product
- introductions to clinical experts for product testing in real world settings
- clinical trials
- regulatory approval
- NHS procurement.

As a result of this support, the company has leveraged additional funding of over £2.4 million, including several Innovate UK grants, National Institute for Health Research (NIHR) funding, and has achieved success with receiving support from SBRI Healthcare.

Further work will establish the effectiveness of the product in preventing COPD and asthma exacerbations. An initial study by an independent health economist concluded the NHS could save £67 million in COPD and £21 million in asthma exacerbations each year.

Professor Anoop Chauhan, Director of Research and Innovation, Portsmouth NHS Trust, said: ***“Our study has already collected more than 15,000 breathing records with N-Tidal and, while our analysis is not yet complete, the technology clearly differentiates between healthy people and those with a respiratory condition, as well as the state of the condition.”***



U-Drain: Simplifying Disposal of Waste Dialysis

U-Drain, a Cheshire based company, was created by George McCarthy and Ged Murphy after George’s experience of dealing with the daily routine of emptying and cleaning heavy night drainage bags whilst recuperating from colon cancer.

The pair developed a hygienic system to simplify the cleaning process for night drainage patients, including those on Automated Peritoneal Dialysis (APD) who need to dispose of around 12-15 litres of waste dialysis solution produced overnight.

The U-Drain consists of a wall socket positioned near the bed or APD machine, which patients connect to their urostomy pouch or APD drain line at night, allowing waste to flow away into the household waste system during the night.

Health Innovation Manchester funded a pilot study of U-Drain in peritoneal dialysis with Salford Royal NHS Trust, and they have supported the company with advice through their STEP INto Healthcare programme. 100% of patients and staff would recommend the system and the Salford Royal team advocate U-Drain as part of the procurement process.

Additionally, 100% of staff said their role was easier using the system, which resulted in less mess and fluid exposure in disposal, and a time saving in their role ranging from five and 20 minutes per visit. The use of U-Drain also produced significant savings in the volume of non-recyclable waste as a result of waste bags. At a preliminary review in June 2017, 3,700 waste bags had been saved from use and landfill, which equates to approximately 650kg of plastic.

Ged Murphy, U-Drain, commented: ***“STEP INto Healthcare allowed us to get the very best professional advice from health and care leaders in Greater Manchester. SMEs have limited opportunities to present their offer to NHS heads of procurement, and so being able to meet specialists and learn about the opportunities and obstacles was invaluable.”***



Horiba Microsemi CRP: Rapid Blood Analyser

A new point of care blood testing device, developed by Horiba Medical, has been introduced into frontline NHS services. The unique automated haematology analyser, evaluated at three paediatric emergency departments, enables faster diagnosis of common paediatric conditions, including fever, limpness and abdominal pain. In one emergency paediatric department, an earlier decision could have been made in 87% of cases, saving an average of 109 minutes per case.

The analyser detects markers of infection and inflammation within four minutes of a pinprick test, enabling patient treatment, or referral, to happen immediately. This development has improved patient flow and reduced waiting time through more rapid assessment, and it has reduced unnecessary antibiotic prescribing in three-quarters of cases. This has resulted in improved patient care, time savings and reduced cost to the NHS.

The study, supported by Oxford AHSN, found that the automated analyser delivered lab quality results approximately three hours faster than traditional lab tests. Independent economic analysis identified potential combined net annual savings of more than £60,000 across the three NHS trusts, largely through more efficient use of clinicians' time.

One trust has already invested in the analysers and is using them to streamline existing diagnostic pathways in the community for frail elderly patients, and at least one other is going through the procurement process.

Shelagh Wojtowicz, Staff Nurse, Marlow Community Hub, said: ***“Patients see it as an advantage. Before the analyser was installed, we sent our samples away via two collection slots. Of course, this meant that patients were not able to access their results until one to two days later, whereas now, we can perform a combined full blood count (FBC) and C-Reactive Protein (CRP), see a result within four minutes and take the relevant course of action almost immediately. It also means that patient samples don't get lost.”***



	Stoke Mandeville Hospital	Wexham Park Hospital	John Radcliffe Hospital
Annual cost of POCT device (rental model)	£12,811	£12,811	£12,811
Annual savings from eliminating waits for lab tests	£22,713	£18,511	£60,345
Net annual savings	£9,902	£5,700	£47,534

HeartFlow Inc: The HeartFlow FFRCT Analysis

The HeartFlow FFRCT Analysis is the first non-invasive diagnostic tool that aids clinicians in determining, vessel by vessel, both the extent of an artery's narrowing and the impact this has on blood flow to the heart. It has been developed by HeartFlow Inc, who employ over 300 people and have UK headquarters in Hampshire.

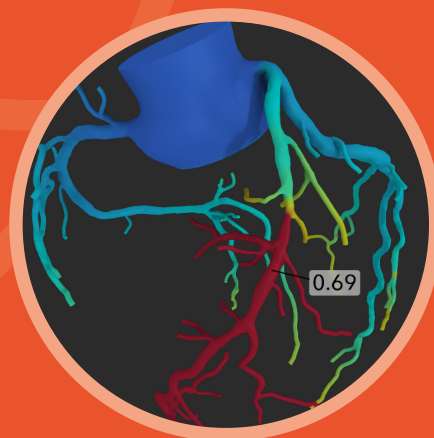
By non-invasively identifying which patients do and do not need intervention, clinicians can reduce unnecessary invasive testing, reduce healthcare system costs, and improve patient quality of life. In 2017, NICE declared that using HeartFlow FFRCT could lead to cost savings of £214 per patient. By adopting this technology, the NHS in England may save a minimum of £9.1 million by 2022 through avoiding invasive investigation and treatment.

The solution has the capacity to transform the way coronary artery disease is diagnosed and treated.

HeartFlow is one of four successful Innovation and Technology Payment (ITP) innovations. With the support of WMAHSN, Russells Hall became one of the first hospitals to make HeartFlow available to patients. Other hospital trusts in the region are in advanced discussions with HeartFlow and likely to start using it later in 2018.

With the increasing interest from hospital trusts and funding from NHS England through the ITP programme, HeartFlow has begun to expand their UK presence, building out a commercial team including local experts in CCTA technology, information governance, economics, and commercial development. HeartFlow plans to continue to expand the team and presence in England to meet growing demand.

Ben Forrest, Director, Health Economics, HeartFlow, said: ***“We appreciate the opportunity to partner with the West Midlands AHSN in improving care for patients with suspected coronary artery disease. The team’s understanding of regional and national processes as well as their working relationships with key clinical and commissioning stakeholders have been invaluable.”***



Roche Diagnostics Ltd: Better Diagnosis for Pre-eclampsia

Pre-eclampsia (PE) is a multi-system hypertensive disorder of pregnancy and it complicates 3-5% of all pregnancies. The disease is a major cause of maternal and foetal morbidity worldwide, impacting pregnant women and their families and placing significant economic and capacity burdens on maternity systems. Clinical teams have a high degree of suspicion for PE and a low threshold to admit pregnant women with suspected PE. However, only a small proportion go on to develop PE.

NICE guidelines DG23 detail the impact of and approach to testing for PE in pregnant women. Roche Diagnostics Limited based in West Sussex has developed the Elecsys® immunoassay, an sFlt-1:PIGF ratio test, which can successfully rule out pregnant women who do not have, and have a low chance of developing, PE in the next seven days (>99% accuracy) and four weeks (>97% accuracy). This prevents not only their initial admission for the suspicion of PE, but also allows an appropriate regimen of planned care to be delivered.

The Oxford AHSN is supporting the roll-out and adoption of the new Elecsys® test as a patient safety initiative supporting “Better Births”, in partner hospitals across the Thames Valley.

Introduction of the test has significant benefits to both the patient through increased patient safety, and the hospital through reductions in patients admitted and preterm deliveries.

Roche Diagnostics has supported several national and international clinical trials to generate the clinical evidence to support the efficacy of the sFlt-1:PIGF test, and employs staff in clinical, sales and marketing and manufacturing roles to support the introduction and growth of the test.

Mr Chris Hudson, Director Healthcare Development and Strategic Services, Roche Diagnostics, said: ***“Despite receiving NICE guidance recommendation in May 2016, the uptake of the sFlt/PIGF pre-eclampsia ratio test has been slow. Working in partnership with the Oxford AHSN meant the right stakeholders were brought together with a clear plan developed to accelerate the adoption of this innovation. The AHSN was committed from day one to lead on this project with a dedicated point of contact managing communication across all stakeholders. This collaboration has resulted in patients successfully getting access to this innovation in their region.”***

My mHealth Limited: Supporting Healthcare Innovation

Spotting a gap in the provision of NHS respiratory rehabilitation services, respiratory consultant Simon Bourne established a spin-out company My mHealth Limited. The company was set up to support patients in managing their own health using expert advice and support, and as well as support clinical organisations in addressing the conditions primarily responsible for non-elective admissions to the NHS.

My mHealth have developed a suite of digital self-management platforms for patients with long-term conditions including chronic obstructive pulmonary disease (COPD), asthma, diabetes and heart disease.

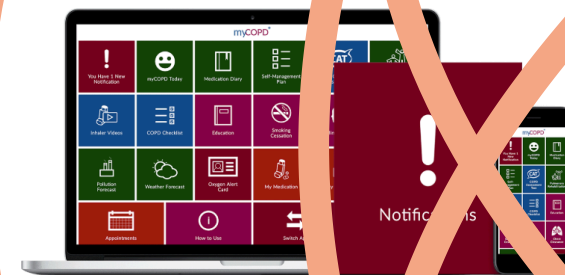
With patients using myCOPD, a self-management education course, 98% of inhaler errors (present in over 70% of patients) are corrected, recovery from COPD exacerbations is doubled, and the rate of COPD patients readmitted compared to usual care is substantially reduced, delivering significant efficiency savings and improving health outcomes.

The Wessex AHSN engaged with My mHealth clinicians during its early stages and provided a package of support, with access to data and innovation pathways, to encourage product and company growth.

Two rounds of seed funding totalling £42,000 were awarded by Wessex AHSN and supported My mHealth through a successful bid application for Small Business Research Initiative (SBRI) Healthcare funding. My mHealth was successfully awarded over £1 million from the COPD competition in autumn 2013 to establish one of the first randomised controlled trials for a healthcare app.

The Wessex AHSN also provided opportunities for My mHealth to present and promote their innovative products to NHS staff and managers and facilitated workshops for the My mHealth team to present myCOPD implementation solutions to regional commissioners.

During this time, the company has grown from a micro-start up to an organisation with over thirty staff, with an expanded suite of products and partners interested in export deals. My mHealth has been adopted by 73 Clinical Commissioning Groups (CCGs), covering over 60% of the UK population, with agreements underway to spread to New Zealand and the United States.



Kaido Group Ltd: Workplace Wellbeing Programme

Kaido Group Ltd. is a digital health start-up from Birmingham. Kaido Wellbeing is their Workplace Wellness programme that helps employers foster happier and healthier employees. Kaido Wellbeing supports the prevention agenda by empowering individuals to better look after their physical, mental and social wellbeing using digital technology. The product is currently used by ten NHS trusts and a number of other public and private sector organisations including Muller UK and Ireland.

The West Midlands Academic Health Science Network (WMAHSN) have been instrumental in the development of Kaido as a business, initially providing access to important early stage funding through introductions to Creative England, EIT Health and also their own SME Innovation Fund. The WMAHSN have then continued to open doors for Kaido, helping to secure the first paying contract with University Hospitals Birmingham. This is a relationship that has since developed further than just the purchase of services, to a more collaborative arrangement.

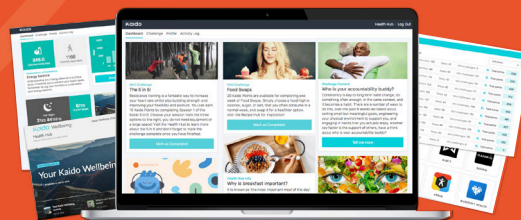
Results from the most recent 'Kaido Challenge' show that 76.5% of members increased their physical

activity, with 39.8% losing weight and 52.3% making better informed nutrition decisions. The introduction of a Mental Health Cycle delivered in partnership with the charity Mind and using the mindfulness app Headspace has had a profound impact upon not just engagement but also perceived levels of stress and motivation in the workplace.

Kaido have so far:

- raised £100,000 investment
- created three full-time and four part-time jobs
- generated £96,000 revenue.

"It is fair to say without the WMAHSN, Kaido would not have made it. The signposting, guidance and introductions made by members of the WMAHSN team have saved us a lot of time and ensured all conversations are relevant to Kaido. The WMAHSN have also helped Kaido to develop a trusted, recognisable brand that is hugely important in the healthcare market." Rich Westman, CEO and Founder of Kaido



DrDoctor: Transforming the Way Hospitals and Patients Communicate

DrDoctor is a digital health company transforming the way hospitals and patients communicate, by using pragmatic, common-sense technology to tackle the financial strain on the NHS - one hospital at a time. The platform improves appointment scheduling and increases clinic efficiency by reducing no-shows and filling empty slots.

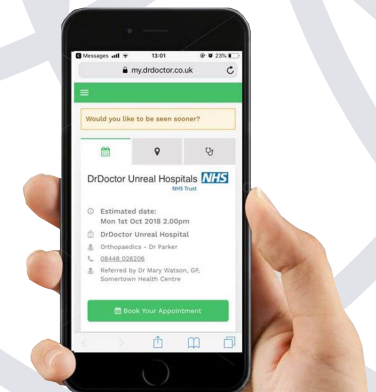
The support of the AHSNs has been instrumental to accessing NHS decision-makers and securing NHS contracts. Building upon the support of the DigitalHealth.London Accelerator in 2016/17, DrDoctor then joined the NHS Innovation Accelerator (NIA) to expand their national reach. The AHSNs have helped DrDoctor to grow from four to 14 NHS contracts, delivering efficiency savings to the NHS of between £15-20 million per annum.

Building upon the core scheduling platform, DrDoctor is now working with the East Midlands AHSN to deliver a funded demonstrator of 'Needs based outpatient scheduling' (intelligent outpatients) at Nottingham University Hospitals, which is expected to reduce follow up demand in gastroenterology clinics by 30%. The AHSNs also worked

with DrDoctor to develop their value proposition for the Innovation Technology Payment (ITP) and are facilitating additional sites and new evaluations of benefit.

DrDoctor co-founder Tom Whicher, said: ***"Support from the AHSNs has been invaluable in expanding our network and amplifying and helping to share the impact of our product. We have more than doubled in size and I have no doubt that without their support our journey would have been slower and more difficult."***

The model of outpatients has not changed for more than a hundred years. DrDoctor takes the latest in mobile and digital technology to finally shift that model to support patients in their journey through hospital, and help hospitals deliver care in more innovative and efficient ways.



POCKiT diagnostics: Fplus1

Rapid Stroke Analysis

Innovate UK funding will accelerate the development of a handheld device that diagnoses the subtype of brain stroke suffered in a fraction of the time normally taken - hastening the correct treatment and slashing the human, social and financial costs of strokes.

A collaboration of academia, medical and businesses led by Cambridge-based SME POCKiT diagnostics has received a £706,000 grant from Innovate UK, the UK's Innovation agency as part of a collaborative research and development programme. The research project aims to develop a hand-held device that medical first responders can use to make ultra-fast diagnoses of stroke type, leading to rapid treatment and a significant reduction in the physical and mental impact of strokes.

Brain strokes are the third leading cause of death and the primary cause of physical disability and dementia worldwide. They affect 100,000 people a year in the UK alone, with two-thirds of sufferers leaving hospital with severe disability. This problem is set to rise as the population ages - with a 44% increase in stroke cases forecast by 2035.

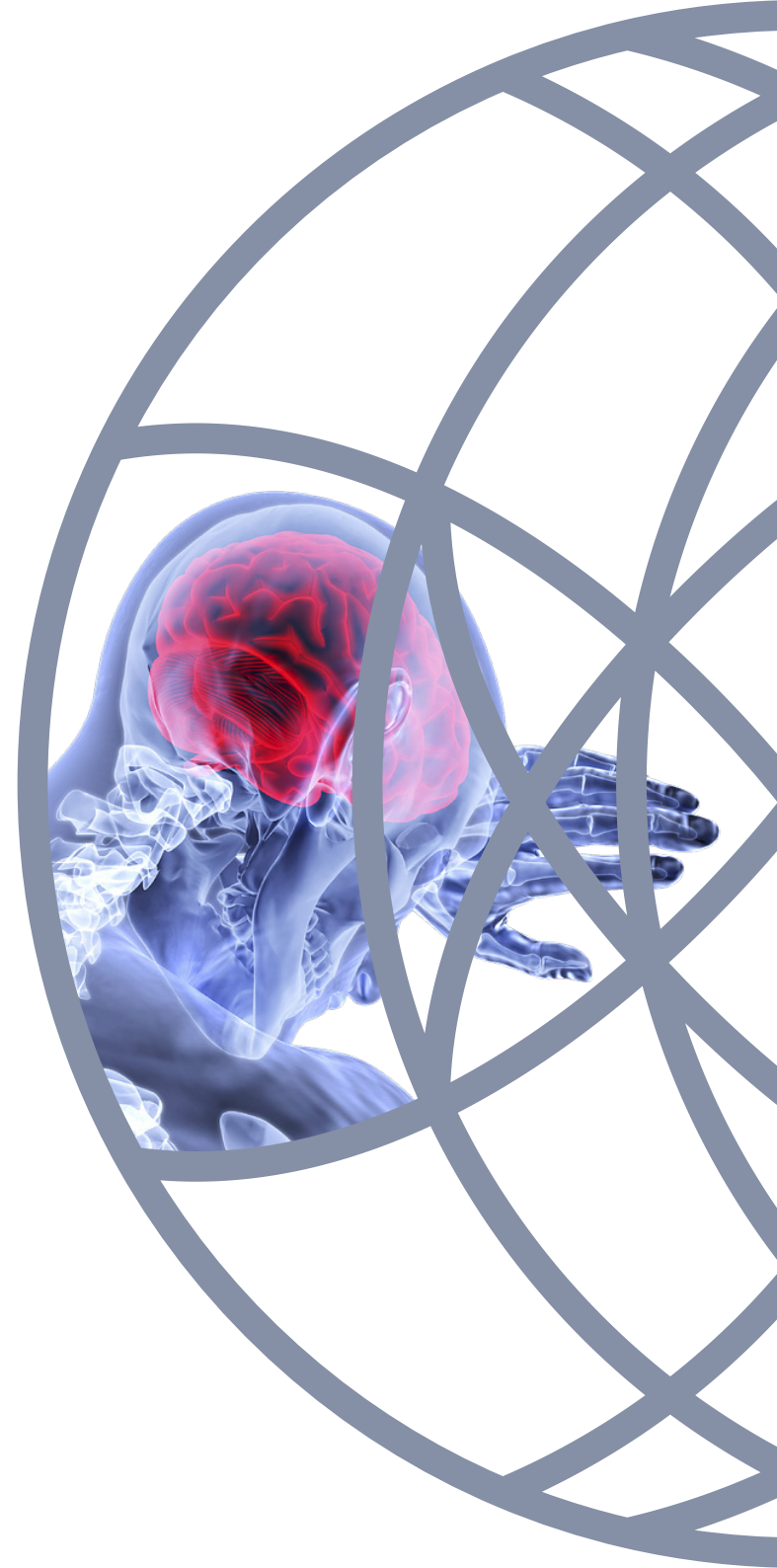
In a stroke, the brain is damaged by restricted blood flow to the brain, causing brain cells to die off. There are two main types of stroke - ischemic stroke (IS) and intracerebral haemorrhage (ICH). While they have similar symptoms, the treatment for each is completely different, with the wrong type of treatment often proving fatal. While the importance of correct diagnoses in stroke cases is undoubted, time is another critical factor. If the correct treatment is administered fast enough then the patient may recover with little or no damage to the brain.

Unfortunately, treatment is often delayed while patients are transported to hospital and undergo CT brain scans - the current method of stroke type diagnoses.

POCKiT diagnostics' Fplus1 is a revolutionary device that detects biomarkers in a patient's blood test that are highly specific for each type of stroke. The blood tests can be carried out by ambulance personnel/ first responders and the appropriate treatment can be determined, and the test results can be delivered immediately upon arriving at the hospital, slashing the average treatment time.

POCKiT diagnostics focusses upon brain stroke subtype diagnosis by identification of an innovative panel of biomarkers and assay development. The company's recent successes include being accepted into the Accelerate programme at Cambridge Judge Business School and, more recently, being a finalist in this year's Santander Entrepreneurship Awards. Its success is rooted in effective partnerships with Capillary Film Technology Ltd, Oxford AHSN/Oxford University Hospitals NHS Foundation Trust, Absolute Antibody Ltd, Newcastle University, The Newcastle upon Tyne Hospitals NHS Foundation Trust and NIHR Newcastle Medtech and In vitro diagnostics Co-operatives (MICs).

Gonzalo Ladreda, CEO of POCKiT diagnostics, explained: ***"We could not be happier to have received this grant, which will allow us to carry on the development of what we believe to be a live changing device - one that could save the suffering of millions each year. We thank Innovate UK for its support."***



Medopad: Mobile, real time health solutions

Medopad was founded in 2011, helping hospitals and patients to track long-term conditions. In particular, they focus on mobile health solutions that connect patients and healthcare professionals in real-time, including patient self-care apps and remote patient monitoring.

Medopad have been supported by a variety of AHSNs in recent years, most significantly by the DigitalHealth.London Accelerator. London programme in 2016/17 and by a partnership with Imperial College Health Partners (IChP) in spring 2018. The collaboration will enable IChP's partner organisations to work with Medopad on existing innovations, helping to improve diagnosis, enhance patient treatment and empower both clinicians and patients.

Medopad have also entered into a number of other strategic partnerships with leading healthcare, technology and academic institutions including Royal Free NHS Hospital, Guy's and St Thomas' NHS Hospital, Barts Health, China Resources, HP, Lenovo, Johns Hopkins University, and Peking University. These formed part of £100 million of deals announced during the Prime Minister's trade mission to China. In addition, Medopad and Tencent signed a partnership to work together on developing next

generation medical AI. Dan Vahdat, CEO of Medopad, commented: *"Medopad is at a very exciting moment in its history as we begin to massively scale our operation. Part of our strategy is to partner with leading organisations, like IChP, to help us deliver market leading new technologies based on latest medical and clinical research that are scientifically validated. Our aim is to work with academia, hospitals, pharma and the biggest technology companies in the world to improve the lives of patients globally."*

In September 2018, Medopad announced that it had acquired Silicon Valley data firm Sherbit for an undisclosed sum, as part of its US expansion. Sherbit's CEO and team will now focus upon bringing Medopad's technology into US teaching hospitals.



MIRA Rehab: Turning Physiotherapy into Video Games

MIRA Rehab is a small enterprise based in London. They have a software platform that turns physical and cognitive exercises into video games, making therapy easier to follow. As a result, patients are having fun playing video games, whilst at the same time actually being rehabilitated.

MIRA took part in the 2017/18 the DigitalHealth.London Accelerator programme to further expand the application of the technology across a wide range of clinical specialities, and in a bid to scale within the NHS.

Before starting the Accelerator, MIRA had already been introduced in some local and international institutions where it had been utilised to rehabilitate patients in paediatrics, post-surgery and in stroke. By joining the Accelerator, MIRA hoped to further develop its understanding of the healthcare landscape in the UK, refine its offering to the NHS by working with clinicians and academics that could be accessed through the London AHSNs' and delineate a strategy to grow the business whilst helping people.

The programme provided tailored support including strategy meetings with its NHS Navigators, 'Meet the Expert' events, and a complement

of workshops to help understand and tackle challenges such as procurement, evidence-gathering, and regulation.

MIRA provides an innovative solution loved by clinicians and patients alike, with tangible benefits to patient experience and compliance to therapy, with the aim of reducing morbidity and NHS burden.

Currently, MIRA employs four people and five Consultants, and it has secured contracts with three NHS clients worth £100,000, as well as starting discussions with several other institutions. The company is currently preparing for the next stage of their product development, for which it may source funding.

MIRA's Co-Founder, Cosmin Mihaiu stated: *"The DigitalHealth.London Accelerator programme has provided instrumental help in growing our presence and market reach in London and the UK. The team are proactive in supporting SMEs like ours to learn more about the NHS, evidence generation, but also identifying NHS staff who champion the use of digital technology to improve service delivery and patient care."*

Perfect Ward: Improving Healthcare Quality Audits

Perfect Ward provides a simple, smart inspection mobile app to improve quality checks and audits across healthcare, such as in hospital wards, care homes, theatres and ambulance stations.

Perfect Ward have received support from AHSNs through the 2016/17 DigitalHealth.London Accelerator programme. Before starting the Accelerator, Perfect Ward was working with two NHS organisations and was looking to refine and scale its product across the NHS. The programme provided tailored support including strategy meetings with its NHS Navigator, 'Meet the Expert' events, and a complement of workshops to help understand and tackle challenges such as procurement, evidence-gathering, and regulation. Perfect Ward also took opportunities created through the Accelerator, such as presenting to decision makers and influencers at the London Nursing Leaders' Forum and Clinical Senate. A series of quality workshops were organised jointly between Perfect Ward, DigitalHealth.London Accelerator and Kent, Surrey and Sussex (KSS) AHSN to bring together senior nursing staff across ten NHS trusts, along with arranging mentoring from a mentor who is a Chief Nurse. This helped to facilitate the adoption of Perfect Ward in six NHS trusts.

The adoption of the Perfect Ward technology is associated with estimated efficiency savings to the NHS of at least £1 million per annum.

The expansion of Perfect Ward led to the creation of 6 additional jobs. The quality improvements that Perfect Ward Trusts have been able to demonstrate have also been recognised in several London Trust Care Quality Commission Reports.

In addition, as some of the leading nurses from London trusts have moved away from the capital, they have adopted Perfect Ward in their new trust and this has helped support further expansion for the company in the form of at least three additional non-London contracts. The support from KSS AHSN, specifically the joint workshop, led to new contracts with a number of trusts.

The success of Perfect Ward over the last few years, whilst it has been receiving AHSN support, has resulted in PwC making an investment in the company, which will support its future development in the UK and internationally. Announcing the investment, Quentin Cole, Government and Healthcare leader, PwC said: ***"We are delighted to support the Perfect Ward business in taking their product out more widely to the health and social care sector in the UK as well as internationally, where we know the appetite for digital solutions that ensure greater quality and efficiency is enormous."***



QbTech: Transforming ADHD Care in the East Midlands Using QbTest

QbTest is an innovative computer test for more effective diagnosis of attention deficit hyperactivity disorder (ADHD).

QbTest is the only CE marked European Medicines Agency (EMA) and Food and Drug Administration (FDA) cleared intervention that simultaneously measures attention, impulsivity and motor activity.

East Midlands Academic Health Science Network (EMAHSN) gave critical support to Qbtech Ltd, by providing funding of £89,079 and leading the implementation of QbTest across seven demonstrator sites in three trusts. The AHSN utilised their evaluation and health analytics resources to assess the different approaches to using the technology, as well as supporting the development of robust business cases to ensure sustainability and spread.

The evaluation demonstrated that the trusts saw:

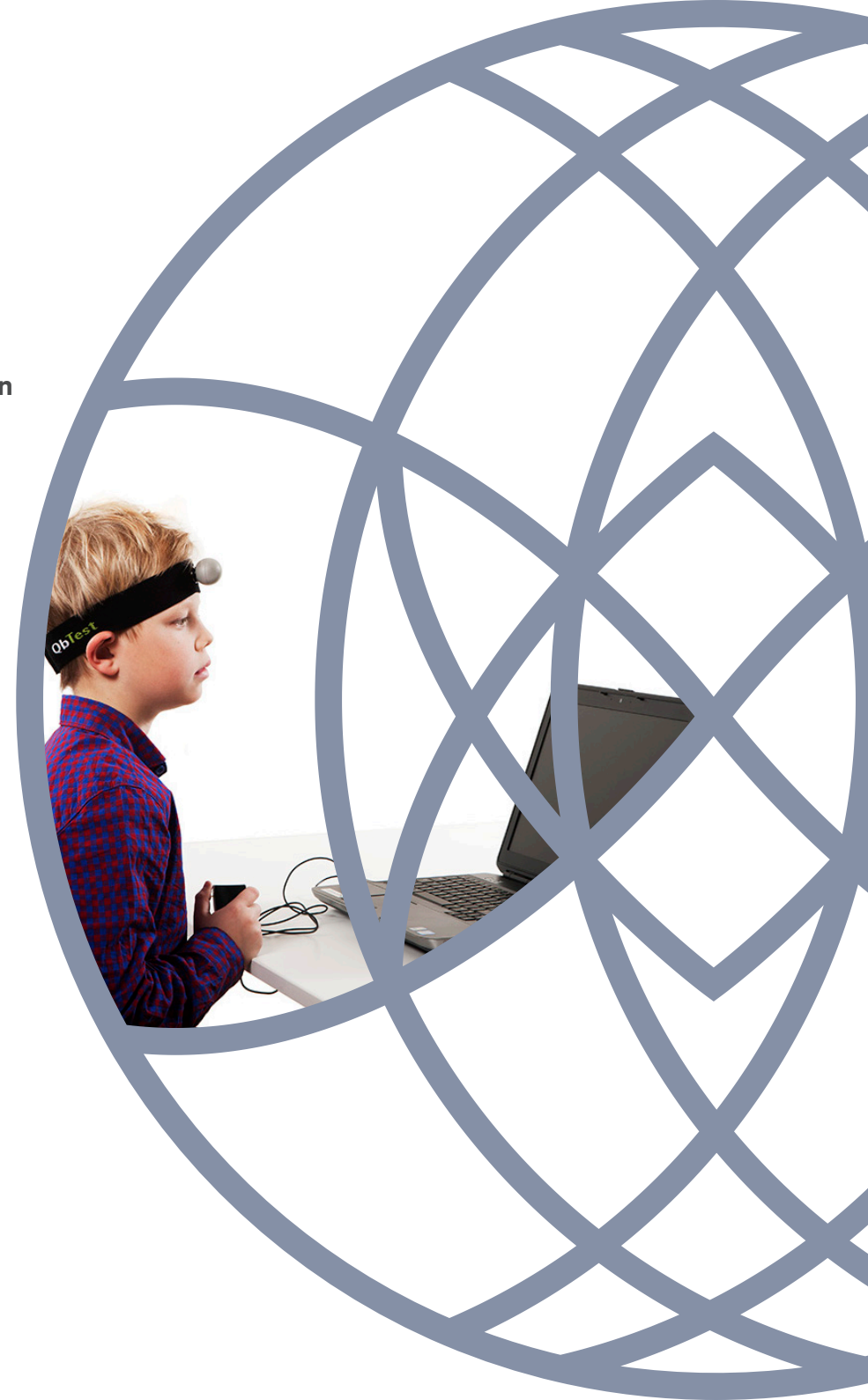
- A reduction in costs of 33%, providing a net NHS saving of £84,000 per clinic per year
- Time from first visit to diagnosis reduced by 153 days
- Clinical time reduced by 20% over a one year period
- 94% of clinicians reported greater understanding of patients symptoms

- 85% of patients and family members reported that QbTest Reports helped them to better understand their symptoms.

Based upon these results, Qbtech Ltd has been awarded contracts to the value of £120,000 by the three trusts and is working with a further 40 which could generate additional revenue. In addition, health systems abroad and regulatory bodies have utilised the independent evaluation to support rapid adoption of QbTest in their health systems.

There is commitment by the trusts to fund beyond 2018 and the EMAHSN plans to support and collaborate with Qbtech Ltd until 2020. The innovation has been shortlisted for the Innovation in Mental Health HSJ Award.

Tony Doyle, Managing Director, Qbtech said: ***“The support of the EMAHSN and the skilled clinicians who have been fundamental to this project have allowed us to demonstrate the impact and value of QbTest, both for patients and the NHS. We are delighted that our technology will continue to be used across these sites. We believe that the independent evaluation from the EMAHSN showing cost savings and reduced waits for diagnosis will compel many other trusts, CCGs and health systems abroad to adopt QbTest to benefit their patients.”***



SeeData Limited: Developing the Life QI Platform

Life QI is an online platform that was originally developed as part of the South West Patient Safety Collaborative, in partnership with the South West AHSN and SeeData Limited, to assist frontline health and social care staff in running quality improvement (QI) projects.

Following the success in the South West region, the platform has since been further developed and enhanced, in partnership with the AHSN Network, and spread across the country's 15 AHSNs and across 28 countries internationally. Currently in England, there are 1,400 organisations registered on the system, 13,915 people using it, and over 7,165 quality improvement projects taking place.

- Six jobs have been created since the platform was created in 2015,
- Over 40 contracts have been won as a result of the scaling up of the platform.

Projects range from small scale local improvements to regional and even national improvements such as the Maternity and Neonatal Safety Collaborative. The nature and impact of the projects run on Life QI is wide ranging. Positive impacts have been demonstrated in areas such as reducing medication errors, reducing violence on psychiatric wards, reducing waiting times, and improving joy at work.

It is also being used to demonstrate and facilitate the spread of improvements such as the National Early Warning Score (NEWS) and the Emergency Department (ED) safety checklist. A key benefit of the platform is that it can track whether training and support is resulting in genuine improvement activity, without having to ask busy teams for reports and information.

Rob Bethune, Consultant and Clinical Advisor to South West AHSN said: ***“The LIFE QI system has been designed, developed and built by a partnership of frontline clinicians, managers and data analysts who are passionate about improving quality and safety across health and social care. LIFE was created to help healthcare professionals to run their quality improvement projects, share their work, and learn from the work of other teams. Improvement teams using LIFE have welcomed the tool and the support it gives them to carry out their QI projects.”***



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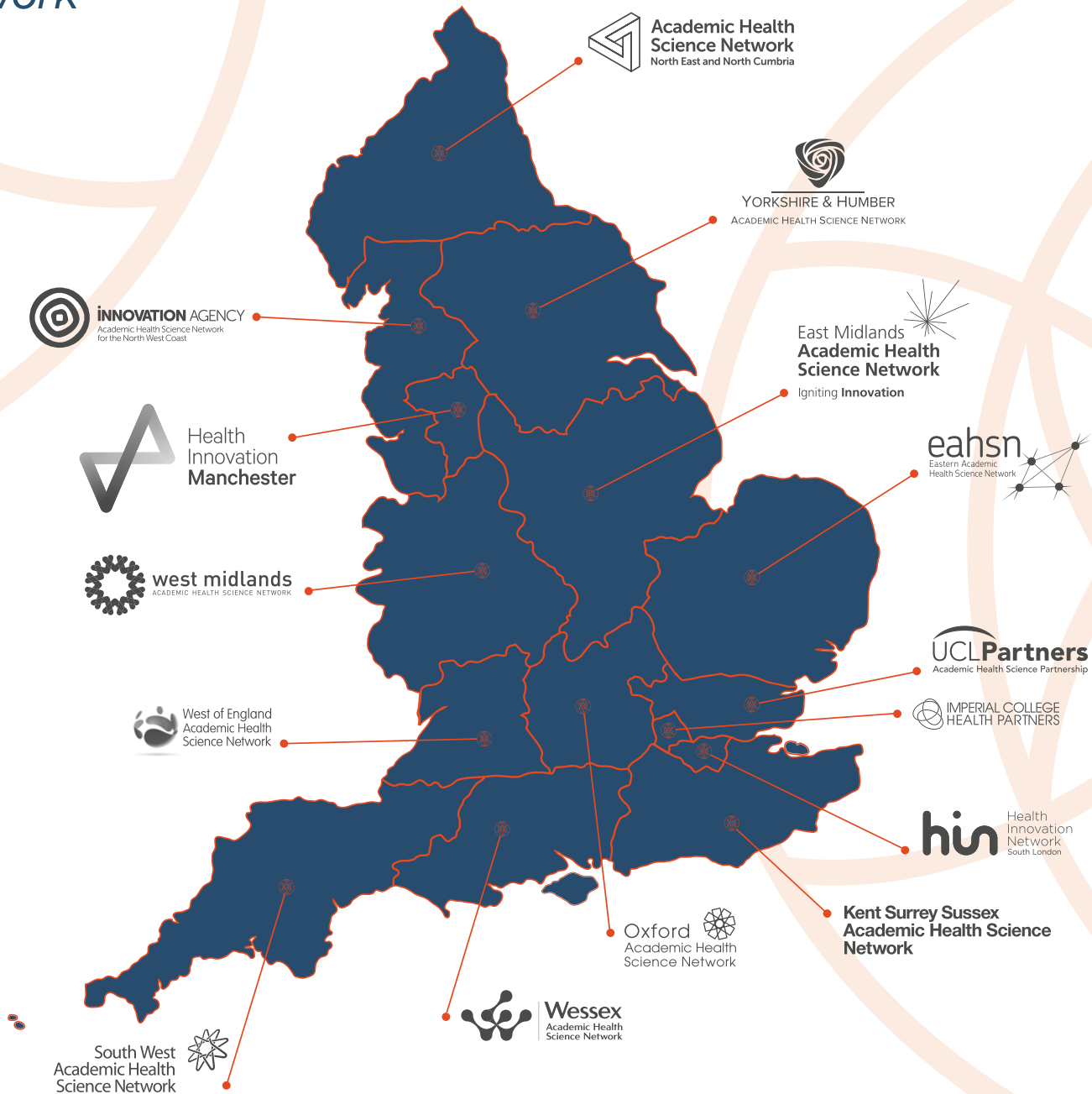
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