NIHR | National Institute for Health and Care Research

NHS

Innovations showcase event

17 June 2022 | London Stock Exchange

Accelerating the translation of innovation into the NHS, social care and the wider market for increased patient benefit

SBRI HEALTHCARE

ACCELERATED ACCESS COLLABORATIVE

NIHR | National Institute for Health and Care Research

NHS

Agenda of the day

09:30	Registration
10:00	Welcome & Introduction
10:05	Hear from Department of Health and Social Care
10:15	Hear from NHS England and NHS Improvement
10:25	The Innovations Programmes
10:35	Showcase session 1- Portfolio insights Zone
11:10	Coffee break & Networking
11:40	Showcase session 2- Portfolio insights Zone
12:25	Showcase session 3- Successful Exits Zone
12:55	Closure & acknowledgements
13:00	Networking
13:30	Close

SBRI HEALTHCARE

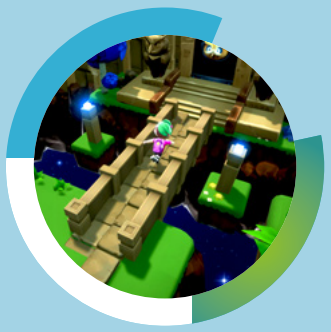
ACCELERATED ACCESS COLLABORATIVE

NIHR i4i programme

The National Institute for Health and Care Research (NIHR) Invention for innovation (i4i) Programme invests in disruptive early-stage medtech technologies to accelerate the translation of innovation into the NHS and the wider market for increased patient benefit. It supports collaborative projects that involve SMEs, universities and the NHS, with strong management teams and a clear commercial pathway towards adoption. The aim is to de-risk technologies to make them attractive to follow-on funders and private investors.

SBRI Healthcare programme

The Small Business Research Initiative (SBRI) Healthcare is an NHS England & NHS Improvement (NHSEI) initiative, supported by the Academic Health Science Network (AHSNs), that provides investment to innovative companies to develop solutions that meet the needs of the NHS. The programme supports early stage projects through a phase-gated mechanism, enabling testing for business feasibility, prototype development and the generation of early clinical evidence as well as more mature products by supporting real world implementation studies.



Artificial Intelligence in Health and Care Award

The Artificial Intelligence in Health and Care Award **(AI Award)** is part of the NHS AI Lab, making £140 million available over four years to accelerate the testing and evaluation of artificial intelligence technologies which meet the aims set out in the NHS Long Term Plan. Four 'phases' of the Award are available to support AI solutions from initial feasibility to evaluation within NHS and social care settings.

The NIHR manages the application process and delivers the early phases of the AI Award working in partnership with the Accelerated Access Collaborative and NHS AI Lab.

NHS Cancer Programme Innovation open calls

The Innovation open calls are an initiative powered by the NHS Cancer Programme, and supported by the Small Business Research Initiative (SBRI) Healthcare Programme and the NHS England and NHS Improvement Accelerated Access Collaborative (AAC). Their aim is to identify market ready innovations that can support the NHS Long Term Plan ambition for early detection and diagnosis of cancer.

INNOVATIONS PORTFOLIO IMPACT

5800+
applications assessed

600+
contracts/ products supported

£335m+
invested

£1bn+
Funding leveraged

7m+
participants
involved through sales and trials

3.5 jobs created /safeguarded
on average per project

3 IPOS, £215m+ raised

4 acquisitions

1800+
collaborations created

218 products
that plan CE mark or are on the market

PORTFOLIO INSIGHTS ZONE

Cloud artificial intelligence for endoscopy. Our products support doctors to detect and diagnose early stages of disease.

Funding received by:
AI in Health and Care Award

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CLINICAL PROBLEM

Endoscopy is used to detect, diagnose and treat digestive disease such as colon and oesophageal cancer. However, around ¼ early signs are missed and there is a 3 fold variation in cancer care. In the UK, there are over 42,000 new cases of colorectal cancer (CRC) and 16,000 deaths per year, making it the 2nd leading cause of cancer deaths. The number of CRC related deaths is predicted to increase by 51% over the next 15 years, with increased prevalence in young people. Detecting bowel cancer using colonoscopy can be challenging, as up to 25% of polyps are missed. Oesophageal cancer has a 5-year survival rate of less than 20% and it is one of the six less survivable cancers. Studies have shown that up to 25% of early cancers in the oesophagus are missed during endoscopy procedures.

MARKET TRACTION

- CE Marked. Being used in hospitals in the UK, Germany and Spain
- Adopted by the Welsh NHS national endoscopy programme
- Healthcare economics modelling showing it dominates the standard of care
- Available in the UK through Duomed (formally GIUK) distributors

PROPOSED SOLUTION

CADDIE: A cloud based AI system for supporting clinicians to detect and characterise colorectal polyps in real-time during colonoscopy procedures. Additionally it supports AI caecum confirmation and AI bowel preparation scoring. Better early detection leads to reduced cancer incidence (1% increase in polyp detection leads to a 3% decrease in cancer risk). Optical diagnosis supported by AI polyp characterisation means patients receive results immediately and histopathology may be replaced.

CADU supports doctors in upper gi procedures. It analyses regions visually consistent with Barrett's oesophagus and provides information to aid the user to identify the tissue as dysplastic or non-dysplastic. Lesions arising in Barrett's are often very subtle and can be overlooked by endoscopists. Our AI system enhances endoscopists' decision making and can reduce the time it takes to inspect the oesophagus, proving to be time and cost effective. Odin's unique cloud deployment means our technology can be cost effectively adopted by all hospitals large and small, making it accessible to all patients. It can be installed into all of endoscopy rooms and customise usage to suit demand allowing for per procedure cost effectiveness.

GRIPABLE

Mobile physiotherapy enabling self-directed rehabilitation, social interaction, and remote performance monitoring

Funding received by:
NIHR i4i

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CLINICAL PROBLEM

Physical disability due to musculoskeletal and neurological disorders affects millions of people in the UK, resulting in poor quality of life and dependency. Professional physical therapy is fundamental to rehabilitation, but is resource-intensive, meaning the amount patients receive is often suboptimal. Technological surrogates, e.g. robotics or virtual reality, have been proposed as a way of supplementing exercises, but are not widely used, because of barriers, such as cost or complexity. One of the most significant shortcomings of technologies is that they lack the "human dimension" of conventional physiotherapy. Human interaction is critical for physical therapy by accommodating individual needs, and offering personalised feedback, encouragement and psychosocial support – which machines notably lack.

MARKET TRACTION

- Raised $11M in Series A funding, April 2022
- Partnered with medical equipment distributor Medline to accelerate its expansion into North America
- Currently used by more than 350 healthcare and rehabilitation locations worldwide, and >5000 patients, including international centres of excellence e.g. Cereneo, Switzerland; John Hopkins University, USA
- Clinical trial evidence for effectiveness to increase rehabilitation intensity in broad population of stroke patients, without requiring increased professional input
- Further ongoing multi-centre clinical trials for a range of clinical applications
- Advisory Board includes Presidents of British Association of Chartered Physiotherapists in Neurology, and International Federation of Societies for Hand Therapy

PROPOSED SOLUTION

Focusing on arm disability, we invented a portable rehabilitation system, Gripable, that encourages patients to exercise their weak arm or hand, without requiring professional supervision. The system has been shown to be usable by over 90% of stroke patients, using their weak arm, which is significantly greater than other similar-priced technologies for arm rehabilitation. Furthermore, in a recent trial of stroke inpatients, the device resulted in increased duration of arm exercises 2-fold, and exercise repetition counts 8-fold, compared to standard care, without requiring additional professional supervision.

The trial was based in a relatively unselected cohort, including those with severe arm disability and co-existing cognitive impairment, indicating that the innovation can be scaled widely. The system has multiple features that recreate features of 'gold standard' therapy, including: using sensored-object interaction which is important for restoring patients' function e.g. to grip, or use tools; immediate tactile feedback using inbuilt vibration; performance monitoring; and the option to perform exercises interactively with other patients, therapists or relatives, located remotely. The latter functionality was funded by a NIHR grant, and has allowed Gripable to create the world's first "Online Social Physiotherapy Network'' enabling remote physical interactions during exercises.

Evidence-based, accessible and non-stigmatising digital therapeutic intervention to tackle childhood anxiety generating real-time data

Funding received by:
NIHR i4i, SBRI Healthcare

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CLINICAL PROBLEM

Half of all mental disorders start by the age of 14, yet up to 70% of children & young people (CYP) don't get access to timely, appropriate support. The demand for support has increased by 50% in the last 10 years leaving services under tremendous pressure such that they have no choice but to prioritise high need, higher risk cases. This means the majority of young people and families are left to wait or not receive support at the time of need which may encourage longer-term problems. 1 in 6 CYP are likely to have a mental health problem. Anxiety, and other mood disorders, are by far the commonest problem affecting CYP. Globally, there are around 300 million children needing support for anxiety, of which 1 million are in the UK alone. Australia and the United States have similarly high prevalence rates too. The United States is also the biggest spender in health care spending at least $225 billion on mental illness each year. Furthermore, President Biden is laying out a vision and strategy for mental health support– in and out of health care settings with children's mental health as a key area of focus providing BFB Labs a footing to plan its expansion - giving BFB Labs the perfect footing for expansion in the future.

PROPOSED SOLUTION

Lumi Nova: Tales of Courage is a therapeutic digital intervention that provides instant access to therapeutic 'best practice' in the form of exposure therapy (NICE recommended treatment for anxiety disorders) to enable children aged 7-12 to self-manage their fears and worries. Lumi Nova is unique because it:

1. Provides instant access to therapeutic best practice without needing constant clinical oversight - remotely and safely
2. Supports children as young as 7 years of age where there aren't much support options
3. Provides real-time progress & outcomes data for professionals/practitioners
4. More cost effective than community services based support and face to face support
5. Combines ethical gaming with therapeutic best practice to deliver support in an engaging, non-stigmatising and flexible way

MARKET TRACTION

- Currently used by NHS organisations and voluntary sector frontline providers (rolled out across 16 regions in the UK)
- CE marked, regulated by the UK's Medicines & Healthcare Products Regulatory Agency as a safe-to-use medical device (Class 1a - low risk)
- Therapeutic Goods Australia (TGA) clearance received
- NHS DTAC assessment complete, DSP Toolkit published
- Partnerships with University of Reading, MindTech, Greater Manchester Mental Health Trust, Norfolk and Suffolk Foundation Trust, University of Manchester, BAFTA

Supporting the UK's biggest workforce, our 7 Million Family Carers

Funding received by:
SBRI Healthcare

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CLINICAL PROBLEM

NHS waiting lists and backlogs have grown significantly due to the pandemic. Social care teams too are under immense strain. The pressure is felt the most in home care - we've seen a 93% increase in demand across home care services, and a 38% reduction in capacity. The net result is over 100,000 shortage of home care resources to meet our statutory need. We are failing.

Local Authorities are shouting out for options to reduce this impact and fill the care gap.

They have funding for additional home care, a £1.5BN levelling up fund, as well as a £60M care innovation fund to call down on to respond. What they're missing is the workforce that can fill the gap.

PROPOSED SOLUTION

To respond to the care crisis, we need a new approach. An approach that puts social care first, and family carers at the heart of the response. At Bridgit Care we have developed a platform and set of supporting services to do three things:

1. **Double family carer support** – Providing a digital first family carer approach to regions to double the number of family carers receiving active support within the region, and improving unpaid care, and carer lives.

2. **Reduce system demand through "Carer Centred" Tech Enabled Care (TEC) adoption** – Using our experience of developing TEC we now act as the voice of Carers within the TEC space, helping NHS & councils to implement technology with places carers at the centre of the pathway design, and alleviate demands.

3. **Resolve the home care crisis** – We enable family carers to take paid employment to look after friends or relatives, fully supported by our care team wrapper and systems. A new home care model to close the care gap.

MARKET TRACTION

- Successful completion of SBRI Healthcare to develop family carer support platform / brand / charity network. 33,000 carers engaged through the project
- Follow up paid trials in progress in both Social Care and NHS settings
- Pipeline of over 20 organisations (ICS, Social Care, NHS Acute, Community)
- Microsoft Partner and strong links with Social Care leadership
- Serco operational partnership / joint projects for UK market entry
- Solution maps into £60 million social care innovation fund launching in May 2022 for Local Authorities to call down on

A novel digital, medical, musical device providing improved Airway Clearance Treatment compliance for chronic respiratory diseases.

Funding received by:
NIHR i4i

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CLINICAL PROBLEM

Globally, 100k people have Cystic Fibrosis (CF), 251 million Chronic Obstructive Pulmonary Disease (COPD). The WHO reports 339 million have asthma. 500K people in the US have bronchiectasis. The prevalence of asthma in the UK is 5.4 million with 1.1 million being children. COPD figures in the UK are estimated to be 835K. Airway Clearance Treatments (ACT) releases sticky, thick mucus from the lungs. Patients are recommended to attempt ACT twice a day. It is a laborious process and clinicians report significant non-compliance in children and adults (up to 50%). Adherence to regular ACT protocols reduces exacerbations and hospitalisations. Motivating children to adhere to ACT is particularly difficult, impacting on the relationships with, and responsibilities of parents/carers. The US/Canada is the largest market for ACT (93.8%). The global ACT systems market size was £376 million in 2018, expected to grow to £507 million by 2026.

MARKET TRACTION

- Supported by the Cystic Fibrosis Trust, Imperial College London, University College London, the Royal Manchester Children's Hospital, 'Innovate Edge' and have connections with local AHSNs
- Access to Cystic Fibrosis Trust's Clinical Trials Accelerator Platform
- Filed and protected a number of international patents. The device patent is currently being examined by the UKIPO
- Tutti Toot predict for CF alone, the Trumpet could save the NHS £15million pa

PROPOSED SOLUTION

The 'Tutti Toot Trumpet' is a novel digital, medical, musical device providing improved Airway Clearance Treatment (ACT) compliance, real-time Positive Expiratory Pressure (PEP) measurement for patients with CF, COPD, Asthma and other respiratory conditions. Tutti Toot Ltd aim to address the noncompliance of current ACT & Peak Flow devices by a) providing connectivity to patients, parents and clinicians with output results, b) providing immediate feedback on ACT, musical performance and adherence, c) offering the ability to connect to a community of other users d) offering the opportunity to link ACT to the learning and performance of music and e) gamifying the TTT (similar to 'Guitar Hero'), using different platforms for different groups of patients. The Tutti Toot Trumpet addresses poor ACT technique by having a set of 'traffic lights' which indicate when the patient is blowing their optimum therapeutic pressure. User testing with children who have cystic fibrosis, said the Trumpet was fun to use, effective in clearing mucus from their lungs and improved lung function tests during their in-clinic review. Breath data sets analysed by University College London indicated the Trumpet produced breaths in keeping with the gold standard oscillating ACT devices.

LapAR® is a laparoscopic training platform designed to democratise access to high fidelity laparoscopic surgical training.

Funding received by:
SBRI Healthcare

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CLINICAL PROBLEM

Surgical training is predominantly conducted at the patient bedside with most of the early learning curve for surgeons still acquired on live patients. The shift towards simulated based competency benchmarking and early learning in the safe, simulated environment has not substituted the antiquated approach previously mentioned due to pre-existing simulation technologies being too expensive, difficult to access and of inadequate quality to replace traditional learning methodologies. There are over 1,200 laparoscopic surgeons entering surgical training in the UK each year and over 10,000 in the USA. Worldwide over 10 million laparoscopic procedures are performed annually. The global surgical training market has a CAGR of over 17% and is already valued at over $400 million.

MARKET TRACTION

- Adopted by 8 deaneries for deanery-wide surgical training
- Adopted by 2 multinational medical technology companies for their national training programmes in the UK (Olympus, Johnson and Johnson)
- Used to perform over 6,000 simulated surgical procedures since June 2020
- Early evidence to show a 41% reduction in time to operate as a result of improved skill and confidence
- Health economics studies suggest the technology will result in a £115million per year cost saving to the NHS through operative efficiencies
- Exported to 4 continents

PROPOSED SOLUTION

The LapAR® represents an opportunity to shift the paradigm in delivery of surgical training. The platform utilises patented 'headset free' augmented reality technology that combines synthetic soft tissues with an immersive digital environment. The natural haptics (feel) provided by this technology provide the most realistic simulated surgical training on the market. The novel approach to augmented reality allows the simulator to be used with off the shelf laptops, ensuring it can be used remotely and at significant scale. As the manufacturer of the system, Inovus Medical has used its vertically integrated business model to bring this paradigm shifting technology to market at a fraction of the price of pre-existing simulation platforms. As a result, the LapAR® is more affordable, more accessible and provides a more realistic training experience than competitive products.

These advantages have led to a rapid adoption of the technology across the UK since its launch in 2020, having been adopted across multiple deaneries and by multiple specialties. Research has already shown that the LapAR® leads to a 41% reduction in time to operate and a 60% improvement in instrument handling efficiency during laparoscopic surgery.

pinpoint

AI-driven blood test which optimises NHS urgent cancer referral pathways

Funding received by:
NHS Cancer Programme

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CLINICAL PROBLEM

GPs in England currently refer over 7,500 symptomatic patients daily to the NHS urgent cancer referral pathway, the "two week wait" (2WW). From 1mil. patients per year at its inception in 2010, 2WW referrals have now grown to over 2.8mil. a year and are continuing to rise, but only 7% of all these referrals are ultimately diagnosed with cancer. 93% do not have cancer but undergo expensive, time consuming and stressful diagnostic tests, affecting patient lives and using funds that could be used elsewhere.

The COVID-19 pandemic only exacerbated the situation by causing patient delays at every step for cancer diagnostics and treatment. The greater the backlogs, the further we get from a system capable of meeting the Government's ambition of 75% of all cancers being identified early by 2028. The need for innovation is clear.

MARKET TRACTION

- CE Marking under IVDD and UKCA compliance
- Private investment: £1.3m
- Additional support received from LEP, Innovate UK & MRC: £2m
- SBRI Healthcare contract through NHS England: over £1.7m to accelerate development across 5 Cancer Alliance territories
- Key partnership with West Yorkshire & Harrogate Cancer Alliance for large-scale service evaluation and clinical deployment by end of 2022 supported by the SBRI Healthcare contract

PROPOSED SOLUTION

The PinPoint Test is an affordable, AI-based blood test designed to optimise NHS urgent cancer referral pathways. Developed using machine learning to analyse data from hundreds of thousands of patients, collected over a decade, the Test is able to produce a single number: the chance that a patient has cancer. Deployed at scale, we believe the PinPoint Test can deliver faster diagnosis for cancer, reduced backlogs, improved patient welfare and significant cost savings to the NHS. The Test gives clinicians a decision support tool with which to more effectively triage and prioritise symptomatic patients on the 2WW. By flagging patients at either end of the scale, the PinPoint Test will allow those at highest risk to be fast-tracked for investigation in Secondary Care, and those at minimal risk to be safely ruled out. PinPoint is fully integrated within existing NHS systems and uses standard equipment found in labs up and down the country. As a software platform, no new physical infrastructure is required, meaning the test is both affordable and highly transferable for a swift roll out across the NHS. COVID-19 brought into sharp focus the need for new solutions to acute problems. PinPoint's machine learning technology offers the opportunity to reimagine the way we approach suspected cases of cancer and prioritise those at greatest risk. It has the potential to transform the patient experience, reduce systemic overloading and allow clinicians to focus their time on the patients that need them most.

The value of the UK market is at least £70million per annum for this version of the test. The potential global market for symptomatic patients being investigated for cancer is in similar proportions with EU and US markets at over £1bn, and ASEAN markets at over £2bn.

UNIVERSITY OF OXFORD

Improving mental health for millions by automating delivery of the best psychological therapy in virtual reality.

Funding received by:
NIHR i4i

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CLINICAL PROBLEM

Access to effective psychological therapies has been hampered by a shortage of clinicians. The problem is especially acute for people with severe mental health difficulties, such as psychosis. Patients are keen to try psychological interventions, but seldom receive them. gameChange tackles the intense anxiety about being outside that keeps many patients diagnosed with psychosis housebound. Worldwide there are approximately 24 million patients diagnosed with schizophrenia. gameChange is appropriate for about a third of this patient population. But it is also likely to be highly appropriate in other mental health conditions where agoraphobic avoidance is common.

PROPOSED SOLUTION

gameChange is a landmark new psychological treatment for people with psychosis. It is unique because in gameChange, therapy is automated: a virtual coach guides the patient though the program. It takes just three hours in VR to work through gameChange. But it produces life-changing results for patients with very severe agoraphobia. The results of the clinical trial with 346 patients diagnosed with psychosis were published in the Lancet Psychiatry in April 2022. Designed in collaboration with people with lived experience, in gameChange users practise being in simulations of everyday situations: a café, shop, pub, street, doctor's surgery, and a bus. They can choose what they work on and when. It's an engaging, active therapy. In a safe place patients learn by doing, developing the confidence to take on real-world challenges. People across the age and gender spectrum really enjoy the gameChange experience. They find it easy to use, and they are often amazed at the progress it has helped them to make. We believe VR will be an important part of the future of mental healthcare. With gameChange we're ready to make it happen.

MARKET TRACTION

- gameChange is licensed to Oxford VR, a University of Oxford spin-out company
- gameChange has a UKCA/CE mark approval. It has also been selected for a NICE Medical Technology Guidance
- Further studies of gameChange, including in different patient populations, are occurring in the US and UK
- gameChange is an exemplar of automated VR therapy. Further automated therapies are in development

Ufonia is increasing clinical capacity through AI driven voice automation of routine clinical appointments

Funding received by:
AI in Health and Care award, SBRI Healthcare

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CLINICAL PROBLEM

The demand on the healthcare system is rising with an ever increasing mismatch between capacity of the workforce and the health needs of our population. Automation will play a key part of the solution to capacity concerns. There are 1.9 billion low complexity routine clinical appointments across OECD countries and 480 million of these are automatable by Ufonia.

PROPOSED SOLUTION

Ufonia is transforming healthcare delivery through automation of high volume, low complexity care pathways. We have developed Dora, an AI driven automated clinical assistant. Dora is able to conduct routine clinical conversations just as a clinician would. For example, Dora is conducting follow up after cataract surgery - the most common operation in the world, with around 60,000 cataract procedures performed every day globally.

MARKET TRACTION

- CE marked now UKCA marked
- Best in class FHIR integration
- Initial study presented at conferences internationally and won best poster award at UKISCRS and ACSRS (Washington DC)
- Rolling out across 13 NHS Trusts in the UK including funding from two NHS regional teams
- NIHR AI Trial shortly to be peer review published
- Now engaging with international healthcare providers in Europe and the USA
- Partnered with the Centre for Sustainable Healthcare and working on triple bottom line to meet Net Zero targets

braininhand
personal technology for independent living

Simple digital tools and practical human support for self-management and increased independence

Funding received by:
SBRI Healthcare

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CLINICAL PROBLEM

Autism affects 700,000-1,3million people (1--2%) in the UK (NHSDigital,2020). These people experience severe health inequalities:

- life expectancy of ~45 (Hirvikoski et al 2015); 9Xmore likely to die by suicide;
- higher prevalence of comorbid mental/physical health conditions - 40% have anxiety disorders (Zoboski et al 2017)
- lowest rate of employment of all disabled people, ~22% in work (ONS, 2020).

Autism diagnosis wait-time is ~9months (NHS, 2020), falling between service/care gaps is common (National Autistic Society 2019) with many people ineligible for support from disability services, unable to access health or social care services unless a physical or mental health comorbidity is present. Failing to support autistic people costs UK taxpayers £32billion/year- more than heart disease, cancer and stroke combined. 33% of the costs are due to lost employment for the autistic person and/or carers (Buescher et al 2014).

MARKET TRACTION

- 50 local authority contracts (average contract value £22k)
- 4 CCG contracts
- Recipients of a Phase 1, 2 and 3 SBRI grants and fellow of the NHS Innovation Accelerator programme
- £2.8m raised in equity
- Market testing underway in Canada

PROPOSED SOLUTION

In the area of autism support and mental health services more generally, the potential of digital tools has not been realised. In the aftermath of the pandemic, services are overwhelmed with demand and chronically short staffed. Alternative ways of accessing and delivering support are urgently needed. Brain in Hand (BIH) turns traditional support for autistic people and people with anxiety-based mental health difficulities on its head. Combining digital tools and human support, it is user led, available when needed and accessible 24/7/365. BIH helps the user to develop the skills to cope with stressful situations and establish routines to live more independently and improve quality of life. This, in turn, leads to increased participation in education, employment and community life, which reduces reliance on or use of statutory services, thereby generating savings and efficiencies for health and social care services. Designed not only to operate at scale (supporting thousands of people) it can be incorporated safely (compliant with DTAC) in a clinical pathway or as a part of a population health management strategy with minimal burden on existing staff. Mindful of addressing inequalities, the system is accessible via any smart phone and requires minimal data usage. All support is offered remotely and according to the user's preferences.

Vital sign monitoring system for newborn resuscitation with AI powered feedback and training platform

Funding received by:
NIHR i4i

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CLINICAL PROBLEM

One in ten babies need resuscitation or assistance with their breathing at birth. This adds up to 77,000 babies in the UK, and nearly one million across Europe and the USA per year. The correct management of the resuscitation, guided by heart rate and other parameters, is essential to achieve the best outcomes, but current monitoring technologies do not work well for the specific needs of newborn babies. This can lead to mismanagement of the resuscitation process and adverse consequences for babies and their families, including cerebral palsy and lengthened stays in intensive care. The global foetal and neonatal care market is expected to be worth $11.86 Bn this year ($0.3 Bn UK), with increases driven in part by rising prematurity and a greater focus on earlier interventions reducing short and long term healthcare costs. Around 25% of the market value is spent on monitoring.

MARKET TRACTION

- CE approval for SurePulse VS Cap (1st product)
- FDA 510(k) clearance for SurePulse VS Cap (1st product)
- Raised £3.75m investment
- Secured over £2m in collaborative grants with university partner (University of Nottingham)
- Technology trials completed on over 500 babies within NHS

PROPOSED SOLUTION

The SurePulse VS Patch brings a step change in newborn resuscitation and improves newborn outcomes. Our game-changing solution overcomes the shortcomings of current approaches including:

1. **Single multi-parameter sensor system** - allows rapid deployment measuring HR, SpO2 and temperature. All-in-one system designed specifically for newborn care.
2. Respiratory Function Monitoring input, video recording and inspired oxygen, allowing development of autonomous systems and artificial intelligence.
3. **Wireless** - provides flexibility especially during caesarean sections and supports early bonding by facilitating delivery room cuddles/kangaroo care.
4. Our patented reflectance mode photoplethysmography (PPG) allows rapid dual HR acquisition using optical and electrical methods with integrated ECG.
5. **Patented non-adhesive application** - minimises attachment/detachment and skin injury; maintains constant electrode separation. All sensors are integrated into the patch avoiding wasted time fixing multiple devices.
6. Continuous skin surface temperature trend so teams can adapt their thermoregulatory measures based on real-time information.
7. Standardised, integrated and aligned multi-parameter data for audit, training and research. The data flows are aligned with current industry standards and cybersecurity to seamlessly link with electronic patient records and storage.

SUCCESSFUL EXIT ZONE

BRAINOMIX
#AIEnabled Precision

Brainomix's AI imaging platform supports the selection of the right patient for the right life-saving treatment

Funding received by:
AI in Health and Care award

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CLINICAL PROBLEM

Brainomix is improving with its AI imaging platform the uptake of existing treatments and the success of clinical trials in stroke, lung cancer and lung fibrosis. Annually, 100,000 people in the UK and 15 million globally suffer a stroke. Early treatment and getting patients to the right hospital saves lives. Stroke care delivery is inconsistent with barriers including the lack of expertise to diagnose, treat and transfer patients. Lung cancer affects annually 48,000 patients in the UK and 1.8 million worldwide. There are 245 new non-small cell lung cancer (NSCLC) trials initiated each year with current methods to measure tumour growth can be insensitive to treatment response. Lung fibrosis is challenging to accurately diagnose resulting in 85% of patients remain untreated although eligible with imaging being a key barrier. It affects 320,000 patients worldwide, with 80,000 new cases annually in the US and Europe. The global therapy market for idiopathic pulmonary fibrosis, the most common type of lung fibrosis, is expected to reach $4.5Bn by 2025.

PROPOSED SOLUTION

e-Stroke is a CE-marked artificial intelligence software to interpret acute stroke brain scans, and helps doctors make with confidence the right diagnoses about treatment and decide for specialist transfer of patients. It also provides a platform for doctors to share information between hospitals in real-time avoiding the delays. e-Cancer is an exemplar for solid tumour clinical trials and can lead to faster and lower cost timelines to approval of new treatments. e-Cancer can generate up to 50% reduction of patients needed in a trial. It measures tumour size using volume on CT scans to identify treatment response 100% more accurately rather than the current 2D standard that can be insensitive to disease response. e-Cancer will guide treatment decisions provide earlier and more confident demonstration of disease progression or response to therapy, allowing patients to transition to second- or third-line treatment earlier with associated improved outcomes. e-ILD for lung fibrosis standardises the interpretation of High-Resolution CT (HRCT) scans by quantitatively measuring the extent of fibrosis, reducing the inherent variability of manual interpretation. This will enable diagnosis and treatment to start 12 months earlier from a greater clinician confidence in defining disease progression on imaging at an earlier stage.

MARKET TRACTION

- £16M Series B raised in December 2021
- CE-marking for all e-Stroke modules and FDA for some of e-Stroke modules
- Over 300 sites install-base worldwide
- Over 70 NHS hospital installations with many through the NHSX AI award
- More than 800,000 patients scanned with e-Stroke, guiding their treatment decisions
- Commercial partnership with Stryker in EMEA for e-Stroke
- Co-development of e-Cancer with Boehringer Ingelheim

Q-POC™ is a rapid, simple to use, portable, sample to answer multiplex DNA/RNA device

Funding received by:
NIHR i4i

Contact
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CLINICAL PROBLEM

We are expecting high levels of Flu and RSV this winter. These diseases present with similar symptoms and tests are needed to provide clear differential diagnosis to enable rapid triage and stratified treatment strategies. QuantuMDx has recently launched a multiplex test for Flu, RSV and SARSCoV-2. Other diseases such as STi infections present at the same time, so it is imperative to differentiate between them quickly. QuantuMDx is developing a rapid test to do this. Antimicrobial Resistance (AMR) will need us to not only determine what the infectious agent is, but also determine if there are any drug resistance mutations in the virus, fungi or bacteria, such that patients can be initiated on the right therapy, first time and in a single clinic visit. The ability to determine the disease and suggest what drug to use will propel Q-POC™ to being one of the most important diagnostic devices to combat AMR rapidly and accurately.

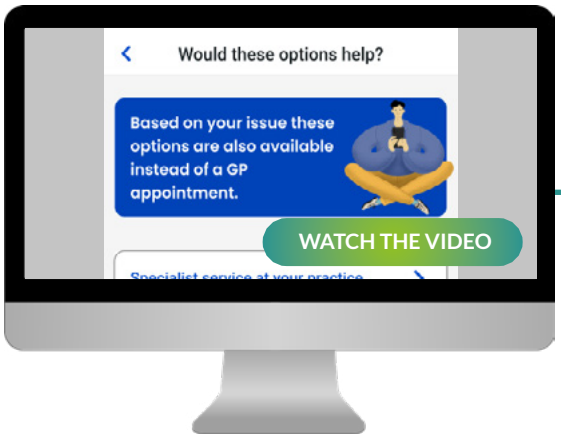
PROPOSED SOLUTION

Q-POC™ is a rapid, simple to use, portable, sample to answer multiplex DNA/RNA device that can run many different tests. It has been designed for use in a range of real-world settings, such as hospitals, clinics, pharmacies, dentistry, workplaces and in the field, providing accurate molecular diagnostic results at the Point of Need. The device is both battery and mains operated and can easily be transported to the patient in a back-pack. It performs complex molecular analyses in approximately 30 minutes or less, yet is so simple to use that even non-professionals can operate it. Over this next nine months, further functionality will be added to the device to include both real-time PCR (6plex) plus a 225 spot microarray for high multiplexing applications such as syndromic panels or drug resistance mutation panels. It is the molecular diagnostic device of the future!

MARKET TRACTION

- CE-IVD marked SARS-CoV-2 assay
- CE-IVD marked Q-POC instrument
- CTDA approval for Q-POC SARS-CoV-2 Assay
- CE-IVD mark for Respiratory panel May 26th, 2022, followed by CTDA & FDA
- Europe-wide distribution partnerships
- Europe-wide customers
- Global partnerships for assay development, clinical evaluation and manufacturing optimisation

iPLATO transforms access to health services and prevention through intelligent care navigation and personalised patient engagement



Funding received by:
SBRI Healthcare

Contact
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Website: www.myGP.com
and www.iplato.com

CLINICAL PROBLEM

Access to primary care services, screening and other preventative interventions were significant challenges to the NHS already before the pandemic and today the pressures are not abating. iPLATO offers a solution that improves prevention, streamlines pathways, transforms the patient experience and drives efficiency. Online Consultation in NHS England primary care (on framework) is worth around £20 million per year. By integrating patient pathways across primary care including PCNs and pharmacy and into community and secondary care setting we expect to fivefold the opportunity in England to £100m. Streamlining access to healthcare at a national scale will not only transform the patient experience and reduce the backlog of potentially life-saving screening and primary care services, it will also save billions of pounds in healthcare costs.

PROPOSED SOLUTION

myGP allows:
Personalised patient engagement:

- 95% increase in referrals to National Diabetes Prevention Programme
- 6.3% increased uptake of cervical cancer screening
- 6% increase in flu vaccination using chat bots
- 5.6% increase in bowel cancer screening rates
- 79% response rate to request for rapid testing

Triage and Care Navigation to reduce unnecessary GP appointments by 26%
myGP triage ensures that patients are seen by the right clinician at the right time through the most appropriate method. myGP triage frees up GP practice resources by providing an automated journey to address administrational queries and eliminate unnecessary appointments.

'Hybrid access' by combining data collection with direct digital booking. Other triage systems position triage in front of appointment booking. In these rigid systems, triage is perceived as a barrier to access while a hybrid model with access to booking is more acceptable to the patient user and avoids triage work for the practice as well.

Does not seek to replace the clinician but to help them. Some 'AI based' triage systems aim to replace clinicians. preGP systematically seeks to identify unnecessary consultations and shift patients to better care alternatives.

Adaptability. Our experience from working with 29 million patients and 3,000 GP practices help us understand variations in care provision better than most. Triage services often struggle to 'connect' with the existing system while our solution adapts to fit variations in services between different clinicians, GP practices and CCGs/ICSs.

MARKET TRACTION

- Personalised engagement reaching 15m people: Cancer screening, diabetes prevention, mental health and vaccination
- Digital First Online Consultation Video Consultation (DFOCVC) framework
- 45 CCGs have commissioned the iPLATO Platform
- NHS Digital Assured App with 2.5m patient users
- NHS Login Approved
- iPLATO recently merged with Huma Therapeutics who has raised $250m

NIHR | National Institute for Health and Care Research

NHS

The Innovations team

The Programme Management Office for NIHR i4i, AI Award, SBRI Healthcare and NHS Cancer Programme is hosted by the Innovations Team at LGC Group. The team is composed of qualified scientists with approximately 90% attaining Master or PhD level and 20% holding an MBA. Scientific backgrounds include pharmaceuticals, chemistry, biochemistry, genetics, molecular biology, in vitro diagnostics and medical devices. They are supported by a specialised IP and Commercial team with 60+ years of experience in tech transfer.

SBRI HEALTHCARE

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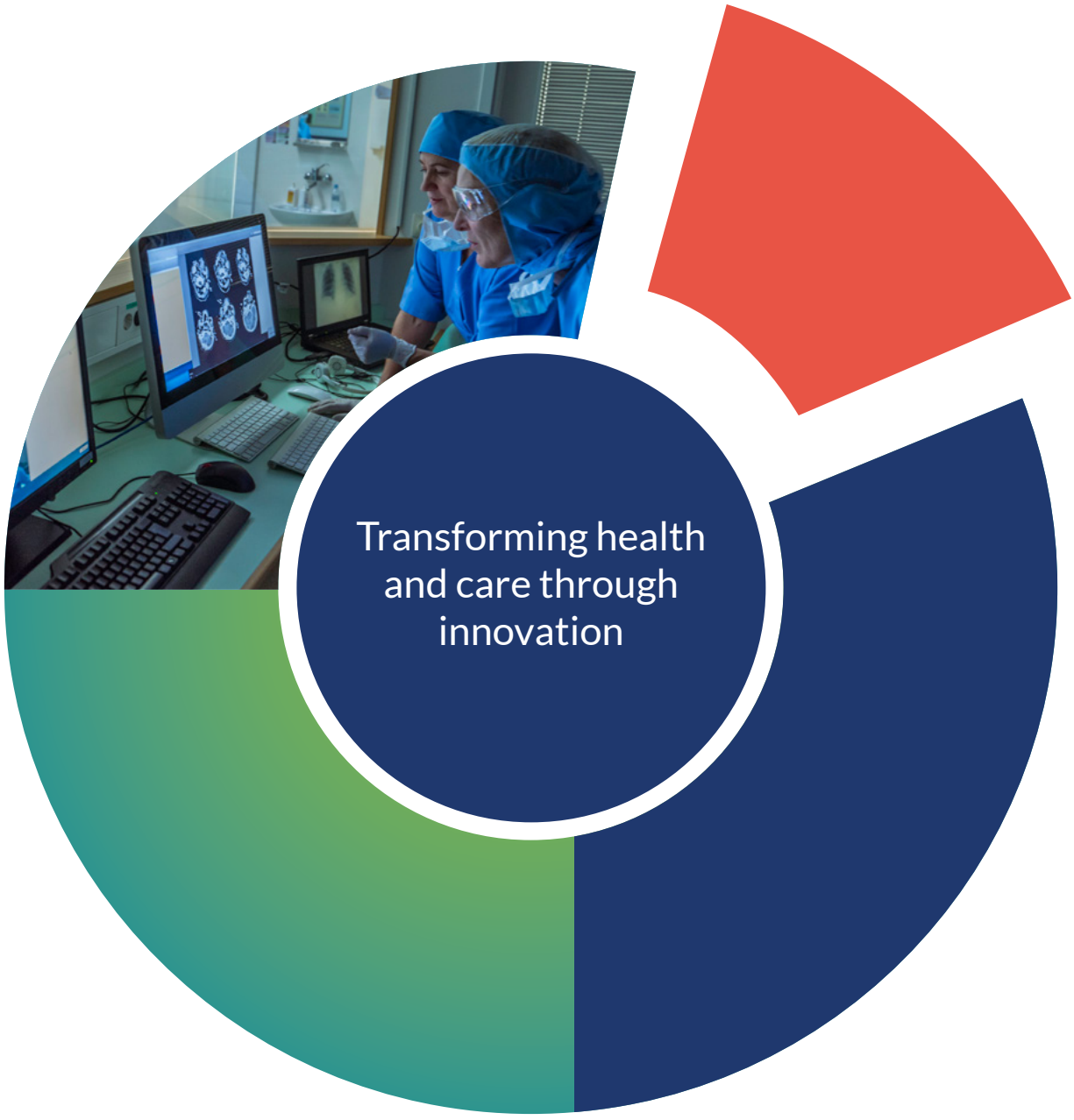
NIHR | National Institute for Health and Care Research

NHS



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