INTRODUCING THE NHS INNOVATION ACCELERATOR
High impact, evidence-based healthcare solutions for patient, population and NHS staff benefit.
Foreword from
Professor Stephen Powis

Innovation is absolutely critical to healthcare; particularly in the way that we deliver services in the NHS, and our aim and ambition to improve the lives of citizens in England. The award-winning NHS Innovation Accelerator (NIA) is one of our key initiatives in driving forward that innovation, as highlighted in the NHS Long Term Plan, published in January 2019.

It is incredibly challenging to take a great idea for an innovation or service improvement through to a tangible product or sustainable model that can be delivered and deployed in order to benefit patients and NHS staff. The NIA focuses on supporting the individuals who have these innovative solutions - providing them with the infrastructure, connections and shared learning needed to enable implementation at scale and pace.

Each of the evidence-based innovations on the NIA and the individuals (‘Fellows’) who represent them, have been selected through a rigorous, multi-stage assessment process - involving the expertise of patients, clinicians, commercial and improvement leads, AHSN Network and NHS England partners. Through their commitment to spreading the world’s best tried and tested innovations across the NHS, Fellows are helping to transform the health and care of England’s population. Equally, they are supporting the system to understand the barriers and enablers to innovation spread, by sharing their real-world insights and experiences.

Through the partnership between NHS England and the Academic Health Science Networks (AHSNs), the NIA is making an incredible impact on the NHS and the people it serves. As of February 2019, over 1,700 NHS sites are now using NIA innovations, with more than £79 million external funding raised, 287 jobs created, and 74 awards won.

Not only are we seeing the benefits for NHS patients and staff, the work of our Fellows is increasingly spreading across the globe, with 21 innovations now deployed internationally. This is a true testament to the essential work of the NIA and its Fellows, and the strength of its national partnership.

Professor Stephen Powis
Chair of the NHS Innovation Accelerator Programme Board
National Medical Director, NHS England
‘Supporting faster take-up of high impact, evidence-based innovations for patient and NHS benefit’

The NHS Innovation Accelerator (NIA), is an award-winning national accelerator which supports committed individuals (‘Fellows’) to scale high impact, evidence-based innovations across the NHS and wider healthcare system.

The NIA is an NHS England initiative delivered in partnership with England’s 15 Academic Health Science Networks (AHSNs), and hosted at UCLPartners. Launched in 2015 to support delivery of the Five Year Forward View, the NIA is highlighted in the NHS Long Term Plan, published in January 2019.

Why is the NHS Innovation Accelerator important?

Solution identification: Go-to place for the NHS to find nationally endorsed solutions for critical challenges and top priorities for NHS staff and patients.

Supporting national spread: NIA innovations are already being used in the NHS or elsewhere, have a robust evidence base, and have been rigorously selected.

Real-world knowledge sharing: Capturing insight, learning and expertise on how to spread new solutions across the NHS in England.

Unlocking barriers nationally: Using real-world examples to highlight barriers to innovation spread and inform national policy change.

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“We’ve seen the results - very impressive scale that I don’t think would be possible without a programme like this...”

Tara Donnelly, interim Chief Digital Officer, NHS England

Selecting Fellows and innovations

As part of its annual international Call, the NIA invites applications from exceptional individuals representing innovations which address a clear need or challenge faced by the NHS. To be appointed as an NIA Fellow, applicants need to demonstrate a set of values and passion for spreading their innovation to benefit more people across the country, and a willingness to openly share their learnings and experiences for others to benefit.

Fellows come from a range of backgrounds, including clinical, industry and academia. The current cohort includes a consultant obstetrician, a speech and language therapist, a former management consultant, an engineer, a pharmacist, a former police officer, and a social worker.

The multi-stage selection process is robust and competitive. It involves the expertise of over 100 patients, clinicians, commercial experts, clinical governance leads, improvement directors, etc. from a wide range of organisations, including NHS England, AHSNs, the National Institute for Health and Care Excellence (NICE), the Association of Medical Research Charities (AMRC), and The Health Foundation.
The selection process

1. Application screening and assessment
   All applications are reviewed by at least seven assessors across a range of perspectives. These are scored on the basis of the individual, the innovation, and the scaling strategy.

2. NICE Review
   Applications short-listed by an expert panel for interview, are informally reviewed by NICE.

3. Interview
   Interview panels comprise a range of expertise, as highlighted previously. The panel recommends whether an applicant should be invited to join the NIA.

4. Selection
   Recommendations are presented to a final decision-making group comprising the NIA Programme Board, chaired by Professor Stephen Powis, NHS England’s National Medical Director.

5. Due diligence
   Successful applicants are offered a conditional place on the NIA, subject to a due diligence process, which includes regulatory compliance and information governance.

“It’s so important that as new technologies develop, and new ideas come to fruition, the NHS draws these in to make it better for patients, and an easier place to work. So much of this is about culture change within the NHS. The NHS Innovation Accelerator is critical to making that happen.”

Rt Hon Matt Hancock MP, Secretary of State for Health and Social Care

“...puts the patient voice at the centre of all that it does.”

Trevor Fernandes, Patient Representative
Bespoke support for Fellows

Fellows are supported by a learning programme to help them take their innovations to a larger number of patients at greater pace. This learning element has been co-designed with patient networks, Fellows and AHSN partners around an agreed set of principles to ensure it:

- Is agile and adaptive
- Builds from existing national and international infrastructure (rather than reinventing the wheel)
- Is collaborative
- Enables Fellows to test hypotheses around diffusing innovations within the NHS

“...an excellent vehicle for showing the NHS what can be done.”
Professor Mike Hurley, Fellow

Sharing learning and insight across the NHS

The NIA provides real-time practical insights on spread to inform national strategy. The collective Fellows continue to develop a body of learning as to the enablers and barriers to achieving innovation uptake. The NIA is committed to sharing these learnings with the system, which can be accessed as follows:

INSIGHTS: Sign up to the NIA’s quarterly newsletter, featuring real-world case studies, blogs, articles and podcasts from NHS adopter sites, patients, Fellows and Mentors

Annual research: Download the 2018 research report, Understanding how and why the NHS adopts innovation, from the NIA website

Patient case studies: The ‘My Story’ series highlights the life-changing impact and benefits of NIA innovations from those with lived experience

Events: Follow the NIA on social media to find out which events we’ll be presenting at in 2019/20. To invite the NIA to present or share learning at your event, email nia@uclpartners.com

NHSAccelerator.com: Visit the NIA website for the latest content and insights, including events and opportunities for innovators

“The NHS Innovation Accelerator focuses not just on the innovation, but also on the innovator. It opens doors, supports networking, and helps in overcoming challenges in adopting innovation.”
Professor Asma Khalil, Fellow

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EARLY INTERVENTION AND DIAGNOSTICS
Dip.io - Digital Urinalysis

Dip.io is a smartphone-based urinalysis device. Built around the existing urine dipstick, a test kit and smartphone application, Dip.io enables home urine testing with no quality compromise.

Summary
Healthy.io is the category creator for smartphone urinalysis, offering the only CE and FDA approved home urine test equivalent to lab-based devices. Its pioneering technology is shifting clinical grade urinalysis from the lab to the home. Built around existing semi-quantitative and qualitative urinalysis dipsticks, Dip.io complements established clinical efforts by empowering patients to test themselves at home with no quality compromise, and securely share results with a clinician.

Challenge
Smartphone urinalysis impacts a range of clinical pathways:

- Prevention: Fully integrated solution to provide albumin:creatinine (ACR) screening for people with diabetes or hypertension, to increase adherence to NICE CG182 and diabetes care process beyond the current level of 50%
- Patient safety: Dip.io enables pregnant women to reliably and conveniently test their urine at home to identify early pre-eclampsia, gestational diabetes and other complications
- Long-term conditions: Dip.io empowers patients to self-manage their health to save outpatient appointments, reduce workforce pressure, waiting lists and admissions

Impact

- CE approved, FDA cleared, GDPR compliant, ISO 13485 certified
- 99.5% usability success across demographics
- Commercial success in UK, EU, Israel, making smartphone powered urinalysis a clinical reality for pregnant women, women with UTI and people with diabetes, hypertension and other long-term conditions
- Fully integrated albumin screening proven cost-effective in an NHS setting
- Successfully shifting UTI management to community pharmacy

“New and innovative way for patients and clinicians alike, offering speedy tests for patients... with results available for clinicians in a quick and responsive way.”

Tracey Meyer, Programme Director, Modality Partnership

FELLOW
Katherine Ward

Key words: • Computer Vision • Digital • Home Care • Self-Management • Urinalysis
“Broadening BRCA-testing across the entire population, beyond the current clinical-criteria or family-history based approach, heralds a new paradigm to prevent many more breast and ovarian cancers, saving many lives.”

Athena Lamnisos, CEO, The Eve Appeal

Model of care for testing populations to identify individuals at higher risk of breast and ovarian cancers because they carry the BRCA1/2 genes.

Summary
Testing for breast cancer gene mutations (BRCA) is currently only offered to women based on clinical criteria or family history of cancer. This approach misses over half at-risk BRCA carriers. These limitations can be overcome by offering BRCA-testing to everyone (irrespective of family history).

Population Genetic Testing offers unselected testing for BRCA mutations with an initial focus on a high-risk Ashkenazi Jewish population, where one in 40 individuals carry specific faults in BRCA1/BRCA2 genes (five-times more frequently than the general population). Carrying out BRCA-testing on this population (proven to identify over 50% additional BRCA-carriers), and identifying those at risk, can enable early detection and prevention of breast and ovarian cancers.

Challenge
Ovarian cancer remains a lethal disease with most women presenting at late stages when the cancer has spread well beyond the ovaries. Despite significant investment in new drugs and therapies, there have been only marginal improvements in survival over the last 30 years. Triple negative breast cancer common in BRCA1 carriers also has a poor prognosis. 30% ovarian cancers and 10% breast cancers in the Jewish population are caused by BRCA genes. These can be prevented if we identify individuals at risk and offer them options for screening and prevention.

Impact
- Population-testing approach reduces breast and ovarian cancer incidence, leading to 33 days gain in life expectancy
- Reduction in treatment costs leading to discounted cost savings of £3.7million for the NHS

An RCT evaluating the concept of Population-based BRCA-mutation testing by comparing it to the traditional family history strategy in 1,034 Ashkenazi Jewish men and women:
- Identified over 50% additional carriers
- Found overall 71% acceptability and 88% uptake of BRCA testing with high satisfaction rates of ~95%

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Key words: • BRCA-testing • Breast Cancer • Model Of Care • Ovarian Cancer
**PrecisionPoint™ Transperineal Access System**

**Urology device that provides systematic and targeted transperineal prostate biopsies under local anaesthetic, transforming the prostate cancer pathway and improving the patient experience.**

**Summary**
The PrecisionPoint™ Transperineal Access System facilitates transperineal biopsies under local anaesthetic rather than general anaesthetic, thereby transforming the standard of care for prostate biopsy practice in the NHS and streamlining the pathway for all. It enables transperineal biopsies to be carried out in outpatients by an Advanced Nurse Practitioners (ANP), avoiding the need for general anaesthetic lists and reducing waiting times; delivering safer and more effective prostate biopsies in a timely fashion optimising cancer diagnostic resources.

**Challenge**
Patients with suspected prostate cancer need prostate biopsies to evaluate their cancer risk.

The standard of care for prostate biopsy practice is outpatient transrectal biopsy (needle inserted via the rectum) under local anaesthetic. Transrectal (TRUS) biopsies risk missed-diagnosis, infection and sepsis. Data from Public Health England indicates that 5% of TRUS biopsies develop urinary infection and that prostate biopsy related sepsis accounts for 10% of hospital admissions for sepsis nationally. Transperineal biopsies (needle inserted through the perineal skin) provide more effective sampling and can virtually eliminate biopsy-related sepsis. However, they are impractical as a primary outpatient procedure because they require complex equipment and a general anaesthetic.

The challenge is to abolish transrectal biopsies across the NHS, to provide a better safer transperineal biopsy under local anaesthetic in outpatients in a timely fashion and free up general anaesthetic lists for other procedures.

**Impact**
Guy’s and St Thomas’ Hospital NHS FT stopped all transrectal biopsies in September 2017 and carried out 678 transperineal biopsies up to September 2018 - 60% of these under local anaesthetic.

**Outcomes include:**
- The need for general anaesthesia for transperineal prostate biopsies reduced by 70%, with only 11% requiring intravenous sedation so that general anaesthetic lists can be used for other procedures
- 395 patients (58%) had local anaesthetic transperineal (TP) biopsies, and of these, 168 (42%) were treated in the outpatients, improving the timed prostate cancer pathway and reducing breaches
- Proven post-operative urine infection was identified in only two patients (0.3%)
- Biopsy related income has increased because of a preferential tariff for TP biopsies compared to TRUS biopsies

**Key words:** • Local Anaesthetic • Outpatients • Prostate Biopsy • Prostate Cancer • Urology Device

“Rick has provided outstanding clinical leadership to transform the South East London diagnostic prostate pathway. His vision, expertise and energy has supported the roll out of transperineal biopsies under local anaesthetic at all three South East London acute trusts. We have made fantastic progress to date and our ambition is to complete roll out across South East London by March 29th 2019 - TREXIT day!”

Dr Kate Haire, Clinical Director, South East London Cancer Alliance

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“Two-week rule referrals place an enormous burden on Dermatology services across the UK. However, typically fewer than 10% of such referrals turn out to have a significant skin cancer. Teledermatology offers the potential to greatly improve the current referral pathway and ensure that patients with skin cancer receive care, in both a quick and efficient manner.”

Niall Wilson, Skin Analytics
Medical Director and consultant Dermatologist, Broadgreen Hospital

Skin Analytics uses AI algorithms that can take a dermoscopic image of a skin lesion helping to identify skin cancer.

Summary
By enabling dermatologist-quality screening in Primary Care within current appointment times and without the need for expensive equipment, Skin Analytics’ solution supports:

1. More accurate identification of melanoma, leading to potentially better health outcomes and reduced treatment cost
2. Less onward referrals to secondary care, reducing strain on specialist clinics and lowering the cost of finding melanoma

GP practices are provided with a dermoscope and image capture device. This can be used during a consultation to capture an image of any pigmented lesions a GP would select for referral. An artificial intelligence (AI) algorithm identifies: suspected melanoma, common types of nonmelanoma skin cancer, benign (noncancerous) lesions.

Challenge
Some areas of the UK have 0.64 dermatologists per 100,000 population, compared to the Royal College of Physicians recommendation of 1.6.

Skin Analytics’ solution can therefore relieve pressure on a specialism which in 2014 required more than 13 million GP appointments*.

Anecdotal evidence provided by Skin Analytics’ dermatologist partners suggests that over 90% of two-week referrals they receive are in the wrong patient pathway. By providing an accurate way to stratify referrals by suspect melanoma and suspect nonmelanoma skin cancers, GPs are empowered to refer through the appropriate channel, thereby reducing the demand on two-week wait referrals.


Impact

• Based on the 2015 NICE Melanoma Evidence review, GPs operate with a sensitivity and specificity of 60% and 72% respectively when assessing melanoma. Using dermoscopy, where trained, this increases to 75% and 78%. Skin Analytics’ solution operates at >95% sensitivity and >70% specificity (comparing well to dermatologists at 88% and 90%)

• Reduced onward referrals by around 50% where trialled. An NHS study conducted in Bristol in 2011, found that reducing the onward referral around this level can save £43,000 per 100,000 population

Key words: • Melanoma • Nonmelanoma Skin Cancer • Primary Care • Screening

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App empowering people to monitor their skin for early signs of skin cancer.

Summary
SkinVision’s CE certified app empowers individuals to monitor their skin lesions for the early signs of skin cancer. The user takes a picture of their skin spots and within 30 seconds they receive a risk indication (low-medium-high). In the case of a high-risk rating, the user will receive advice from SkinVision’s team, including dermatologists, within 48 hours on next steps to take.

The accuracy of this service has been tested in clinical studies. The overall sensitivity of the algorithm in recognising skin cancer (melanoma, BCC, SCC and pre-malignant stages) is 95%. These percentages are in line with experienced dermatologists.

Challenge
Incidence of skin cancer is increasing rapidly. In 2015 it was estimated that 159,000 people were diagnosed with some form of the disease, with 3,604 related deaths (Cancer Research UK).

Early detection is key, as skin cancer is easier and less expensive to treat, and its prognosis is more favourable when diagnosed early. But most patients don’t know what to look for, resulting in unnecessary consultations and further pressure on a system under strain from a shortage of dermatologists. This leads to both overtreatment and undertreatment, with unnecessary costs being tied up in the skin cancer pathway.

Impact
- 1.2 million users globally, including 180,000 from the UK
- Estimated to have already saved the NHS £2.5 million in 2018 by identifying 240 skin cancers including 63 melanomas
- Increased productivity and efficiency in the skin cancer care pathway by reducing unnecessary visits
- On a mission to save 250,000 lives globally in the next decade
- 1,500 skin checks performed per day

Key words: • AI • App • Dermatology • Self Management • Skin Cancer

“[I believe that SkinVision is a lifesaver! This app enables people all over the world to take their skin seriously. That strengthens me in my work.”
Vera Heyndendael MD, PhD, Certified Senior Dermatologist, The Netherlands

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MENTAL HEALTH
ChatHealth is a safe, secure messaging service that puts young people and parents directly in touch with healthcare professionals. Developed by Leicestershire Partnership NHS Trust, it supports greater efficiencies by enabling individual nurses to provide services to many more people.

**Summary**
ChatHealth helps to safeguard vulnerable teenagers and millennial parents. It uses technology that they are familiar with to enable them to securely contact a healthcare professional, supporting timely, confidential access to help.

ChatHealth is co-designed by clinicians and service users. Its messaging helplines make holistic help universally accessible, simply by promoting a single centrally-staffed service throughout an area.

Service users do not need to wait for a clinician to visit and the service is completely anonymous, meaning it reaches out to often seldom heard groups.

**Challenge**
Teenagers are increasingly high risk. When ChatHealth launched in 2013, the number of reported young suicides were the highest they’d been in ten years with depression and self-harming doubling. Meanwhile one in five mothers suffer from perinatal mental health issues.*

Traditional ways of accessing healthcare can be stigmatised and are inconsistently available across areas. 11% of clinical posts in mental healthcare are vacant so there aren’t nearly enough qualified staff to go around.

Evidence shows that young people sometimes feel more comfortable and confident relaying sensitive issues via mobile technology rather than a face-to-face discussion with a healthcare professional whilst busy parents especially value its convenience.

*www.time-to-change.org.uk/category/blog/perinatal-mental-illness

**Impact**
- Available to nearly two million young people in England
- Available to parents of nearly 80,000 newborn babies a year
- Increased service reach/access - delivering 100 additional contacts every month
- Overcomes the stigma of face-to-face discussion of sensitive issues
- Reaches more underserved groups - 1 in 5 male users compared to 1 in 10 in face-to-face clinics

**FELLOW**
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**Key words:** • Helpline • Messaging • Perinatal • Safeguarding • Young People

“It allows us to express ourselves in ways we couldn’t express to our friends - to know it’s confidential makes me open-up.”
Service user
“Without FREED I am not sure I would be here today. Getting early intervention was such a positive thing to happen to me when I was in a really dark place, and it gave me lots of hope for the future.”
Service User

The FREED model of care provides a rapid early response intervention for young people aged 16 to 25 years with short (three years or less) eating disorder duration.

Summary
FREED is a multi-award winning early intervention model for eating disorders. FREED overcomes barriers to early treatment and recovery. Components include rapid screening and assessment protocols, treatment adaptations that specifically attend to the needs of young people and their families, and an implementation toolkit. It was designed to be suitable for use by any evidence-based adult or all-ages eating disorder service.

Challenge
A 2015 report estimated the UK prevalence of eating disorders at 600,000 - 725,000 people, with up to £4.6 billion associated NHS treatment costs. Eating disorders carry high levels of disability, and mortality is amongst the highest for mental health disorders. Outcomes are best when treatment is provided within about three years of onset, but delays in treatment-seeking and long waits for treatment reduce scope for effective early intervention. FREED addresses this critical gap.

Impact
Compared to treatment-as-usual, FREED:
• Reduces waiting times by 30-40%
• Reduces the need for day-patient or inpatient care by 35%
• Improves treatment outcomes (70% of FREED patients with symptom scores below clinical cut-points by 12 months versus 50% on average in published studies)
• Improves weight gain in anorexia nervosa (59% of FREED patients at a healthy weight within 12 months versus 17% of matched audit controls)
• Savings of £26,119 - £183,111 over three years (depending on the local context and economic method)

FELLOW
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Key words: • Care Model • Early Intervention • Pathway • Service Model • Treatment

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Mush is a free app and is the friendliest place for new mums. It enables mums to instantly become part of their local mum community, to seek advice, arrange meet-ups and to make friends for life.

Summary
Mush was created by two mums, Sarah and Katie, who bonded over the challenges of having two children under two, and who wanted an easy and fun way to find local mum friends.

Mush gives all parents the opportunity to find their network of support, based on the age of their children, how close they are, or shared interests. As well as building an online community, the app encourages users to meet in real life, with thousands of meet-ups arranged on the app every week.

Challenge
1 in 4 women suffer poor mental health during pregnancy and beyond. Medical support is stretched, and health visitors and midwives can only provide so many visits. In 2018, the NHS pledged further funding for specialist mental health services for new mums, however many are still suffering alone.

Mush directly addresses mental health challenges that many parents experience during and after pregnancy by providing vital access to a community who understands. 43% of mums say that having a peer support network helped them recover from mental ill health. Mush connects mums together 24/7 to feel supported, connected and happy.

Impact
• 1.8 million friendships formed through Mush
• 20,000 daily active users
• Included in the UK government strategy on loneliness
• Endorsed by the Institute of Health Visiting and Royal College of Midwives

“I can’t stress how good Mush was for me - it really helped with my anxiety. It’s totally transformed my life.”
Abbie, Mum and Mush user

FELLOW
Saskia Roddick

Key words: • App • Maternal Mental Health • New Parents • Social Network
Multi-agency, integrated crisis intervention teams supporting high frequency/high risk service users.

**Summary**
Serenity Integrated Mentoring (SIM) teams integrate high quality mental health care and specialist police officers to help reduce the level of risk, impact and behavioural intensity displayed by a small number of mental health service users who are struggling with unhealthy crisis behaviours. Together they co-produce crisis response plans that are safer and more realistic. This also gradually reduces avoidable demand on frontline crisis care teams.

**Challenge**
Around 28,000 people a year experience a mental health crisis that requires a blue light response. Around 3,300 of these people have more than one emergency response. Crisis response costs for each repeating patient averages around £28,000 a year. By improving the support that we provide to these repeating patients, the better we understand what causes this problem, the higher the standard of care they receive, and the more we can prevent avoidable demands on already stretched services.

**Impact**
- SIM can reduce crisis demand by up to 100% through co-production of crisis plans with the patient themselves
- Service users feel better supported and are diverted towards meaningful lives with lower risks
- SIM improves the consistency in crisis response across all 999 services
- SIM can reduce police demand, ambulance deployments, A&E attendances, Mental Health Act Assessments and Mental Health bed occupancy
- Average demand saving per patient on the programme is around £30,000
- Selected as an AHSN Network national programme 2018-2020

**Key words:**
- Crisis Care
- Emotionally Unstable Personality Disorder
- Frequent Fliers
- High Intensity Users
- Section 136
S12 Solutions is an app and website, which connects Approved Mental Health Professionals (AMHPs) with section 12 (s.12) approved doctors, enabling quicker and easier Mental Health Act (MHA) assessment set-up, and claim form creation and submission.

Summary
S12 Solutions connects AMHPs with available, local s.12 doctors via an app and website, helping to reduce assessment delays caused by the current paper-based assessment set-up process.

- Service users are assessed sooner by the best available assessing team, minimising distress and risk
- AMHPs have more time to prepare for assessment
- Doctors get fairer access to and more control over their s.12 work
- Police spend less time waiting with service users in Section 136 scenarios, reducing the risk of unlawful detention

Challenge
The current paper-based MHA assessment set-up method routinely delays assessments because there is no easy way for AMHPs to identify available, local doctors. The Association of Directors of Adult Social Services (ADASS) reported in 2018 that difficulty finding doctors was the second most common cause of delay.

Assessment delays can leave service users waiting for care, often in distress or at risk, while also detrimentally impacting the emergency services and places of safety, including A&E departments.

Impact
S12 Solutions was piloted and then commissioned in Cumbria and South West London. The platform currently supports 206 users (as of February 2019). Pilots demonstrated:

- Increased doctor networks and evidence that new doctors were being invited to assessments
- Assessments happening sooner than expected
- Improved ability to arrange assessments that were best fit for the service user
- More assessments completed by the team that received the referral
- A reduction in the number of assessments requiring two doctors, where clinically appropriate

“...difficulty finding doctors was the second most common cause of delay. Assessment delays can leave service users waiting for care, often in distress or at risk, while also detrimentally impacting the emergency services and places of safety, including A&E departments.

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“We have often found it extremely difficult to find s.12 doctors in an expedient manner when we have had a high volume of referrals. Doctor availability has improved significantly since the app was launched, which has led to a reduction in delays to assessments.”

Dominic Marley, Lead AMHP for the London Boroughs of Richmond and Wandsworth, Team Manager, Wandsworth Borough Council

Key words: AMHPs • App • Mental Health Act Assessment • s.12 Doctors
“Simple and fun are two words that describe the platform. This will revolutionise how we, as med students and health professionals, learn to perform under pressure before entering a clinical environment with patients benefitting. Using the platform has made me more confident in my practice.”
Sarah Humphries, Final Year Med Student

Digital tool providing mental health support and training services to health professionals and patients at scale.

Summary
Virti is a virtual and augmented reality platform that transports users into realistic environments and uses computer vision to assess how they respond to stress to reduce anxiety and improve performance. The system is both patient and physician-facing. It is currently being used to:

1. Scale mental health training; including Maudsley and South-West London’s simulation training of staff within the trust and to any professional industry requiring mental health support training
2. Scale simulation training to reduce anxiety and improve performance for students and health professionals
3. Scale delivery of cognitive behavioural therapy (CBT) to patients suffering with anxiety and phobias

Challenge
There is no cost-effective way to scale in-person coaching to improve human performance and this is a huge problem for patients and professionals.
Students and health professionals experience heightened levels of stress and anxiety*, and report experiencing negative thoughts and emotions. These levels of stress can manifest in a number of ways causing an associated increase in stress-related mental health issues, reduced student satisfaction, and lower levels of academic performance. It is difficult engaging with learners, and in particular medical students and NHS employees, and supporting them around stressful periods such as exams and interviews.
It can be difficult to scale mental health and support services that traditionally rely on one-to-one support. Even educating support staff themselves around delivery of quality mental health training is limited by scale.

* (Bewick, Koutsopoulou, Miles, Slaa & Barkham, 2010; Regehr, Glancy & Pitts, 2013)

Impact
- 20% improvement in information retention over alternatives (learning retention rates can be as high as 75%, vs. just 10% for reading or a lecture, 20% video and 40% in-person)
- 35% increased engagement in training/therapy
- 40% reduction in time spent in training/therapy sessions
- 52% reduction in skill-fade and 77% improvement in confidence
- New revenue streams created for institutions by licensing content
- Used in UK and US healthcare institutions
- SBRI grant recipient

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Key words: • CBT • Healthcare Professionals • Simulation • Students • Training
PRIMARY CARE AND URGENT CARE
“Often, [parents’] anxieties stem from not knowing what else to do when their child is ill. The CATCH app offers guidance and reassurance for parents to provide care for their children at home, without visiting the hospital.”

Dr Kilroy, Lead Clinician for Emergency Medicine, Macclesfield Hospital

Addressing the inappropriate use of NHS services when self-care would be more appropriate, the CATCH app gives parents information when they need and want it, via smartphone or tablet.

Summary
CATCH (Common Approach To Children’s Health) gives parents appropriate and understandable information when they need and want it, in a timely and measured way, via smartphone or tablet. Support and clinical knowledge is aggregated from an area’s GPs and public health department, building a region-specific, tailored, trusted resource that parents can re-use, giving them the confidence to look after their children at home. CATCH curates this local health information and articles from trusted sources, such as NHS Choices.

Challenge
CATCH addresses the inappropriate use of NHS services, when self-care would be more appropriate.

Impact
- 33% reduction in under five-year-old’s Guidance-Only A&E attendances reported by Eastern Cheshire CCG in winter 2017/2018 compared to 2015/16
- 47% of users deciding self-care over an A&E visit*
- 64% of users deciding self-care over a GP visit*
- 91% of users would recommend CATCH to a friend or relative*

*Based on 284 responses from user satisfaction survey conducted by Eastern Cheshire CCG

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Key words: • App • Digital Health Service • Early Intervention • Prevention • Primary Care
Secure app that lets you order NHS prescriptions and get medication delivered to your door.

Summary
Echo’s mission is to simplify pharmacy, making it easier for people to get, take and manage their medicine.

Echo’s app enables patients and carers to order repeat prescriptions and have medicine delivered, for free. Echo’s technology then converts GP advice into smart reminders that nudge users towards better compliance. In-app content provides important clinical information, plus the ability to chat with Echo’s pharmacy team, promoting concordance and patient understanding.

Challenge
If people don’t take their medicine properly, you get waste - notably, the cost of drugs and clinician time. More importantly, non-adherence leads to poorer outcomes, which have a significant impact on long-term patient health and NHS costs.

We spend over £17 billion a year on medicine in England, yet NICE estimates that between a third and half of medicines prescribed for long-term conditions are not taken as directed.

Supporting better medicines adherence therefore represents one of the greatest opportunities for improved outcomes and efficiencies within the NHS.

Impact
- Third largest dispenser of medicines in England, supporting 40,000 patients across all CCG areas
- Over 75% of Echo users are adherent to their medication*
- Over 85% engagement with Echo’s adherence-supporting features, including dosage reminders and supply prompts*
- 91% patient ratification rating

*Based on a review of 8,481 patients over 12 months using the Echo mobile application

“Getting my medication has never been so convenient. I never run out and it’s just one less thing I have to worry about.”
Ross, 20, Camberley

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Key words: • App • Medicines Adherence • Pharmacy • Prescriptions
“Working with Lantum to enable our GP coverage and rota management for primary care extended hours and emergency department streaming has provided us with timely and rapid access to competent and flexible GPs, transparency of rota gaps, and introductions to new GPs from across the region who otherwise would not have known about these new service launches.”
Sue Turner, Salford Primary Care Together

Lantum is a total workforce platform for healthcare staffing with the aim to save the NHS £1 billion annually on agency spend.

Summary
Lantum is a total workforce platform, designed by doctors and rota managers. Lantum enables healthcare providers to identify and fill their shift gaps using its AI-powered rota tool, and to save time by automating payroll, timesheets, invoicing, pensions and compliance.

Lantum provides clinicians with an all-in-one mobile app to find work locally and to manage their admin. Lantum has achieved 97% bank fill rate through its fast next-day payment model and is present in 95% of CCGs in England.

Challenge
Lantum is tackling one of England’s biggest problems head-on. £3.5 billion is wasted annually on recruitment agencies, and the way people are allocated into shifts is broken.

Rather than tackling a small piece of the problem, Lantum is improving the root cause with a better rostering platform that reduces the need to use costly agencies in the first place. Tools have also been developed for clinicians, which enable them to better manage their shift work and match the demand patterns.

Impact
• £10 million savings for the NHS - providers manage their existing workforce and build new relationships to fill shift gaps
• Offers the largest network of GPs in the UK - 17,500 GPs signed up across 5,300 GP practices, covering 25.9 million patients
• Support to meet CQC requirements - rota managers improve governance processes by creating cloud-based profiles for staff
• On average, organisations who partner with Lantum:
  › achieve a 97% fill rate
  › fill three-month rotas in three to six days
  › reduce agency spend
  › save time by automating processes

FELLOW
Melissa Morris

Key words: • Digital App • Rota Software • Shift Matching • Staff Banks • Workforce
ORCHA is the world’s leading health app evaluation and advisor organisation, helping NHS organisations to successfully integrate safe and effective health apps into services.

**Summary**
ORCHA has transformed the way in which health apps are reviewed. Its unique approach meets the scale of the market, pace of development and breadth of test requirements. Continuously scanning the market, it spots the apps that will make the biggest impact. It’s reviewed almost 4,000 apps to date and has built the world’s biggest health app comparison site. ORCHA works with CCGs and NHS Trusts to develop local health app libraries and prescription services which fit with systems and strategies.

**Challenge**
Although there are over 325,000 health apps available today, there are no regulations on app stores. This leaves health professionals and the public with limited guidance on which apps could make a significant improvement to health and which are dangerous. More than 90% of health professionals think apps could help their patients but don’t know which ones to trust. So app usage and contribution within the NHS remains untapped.

**Impact**
- Over 15% of NHS organisations now use the ORCHA platform to find and recommend the best health apps for patients
- Thousands of professionals, who support more than 20 million residents, have signed up to the ORCHA prescription service
- The ORCHA platform achieves a 61% activation rate - the highest activation score on the market
- Every month more than 5,000 UK residents access the ORCHA app library
- NHS Digital has selected ORCHA to be an Approved Assessor for the National Health App Library

*The role of apps is absolutely essential to creating a good digital health environment. With their breadth and depth of knowledge, ORCHA has helped us to develop a good ecosystem of safe and secure apps we could never have achieved on our own. We have partnered with ORCHA as they understand the app landscape and the needs of the UK health system.*

Rachel Dunscombe, Head of Digital, Salford Royal NHS Foundation Trust, Global Digital Exemplar

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**Key words:** • Digital • Health Apps • mHealth • Primary Care • Self-Care
“This is a great service. I didn’t know that I could get this test done at my pharmacy.”

Service User

Severe Sore Throat Test-And-Treat

A walk-in service at community pharmacies where patients receive screening and point of care testing, with the aim of reducing GP appointments and inappropriate antibiotic prescribing.

Summary

Severe Sore Throat Test-And-Treat is a walk-in service at community pharmacies where patients can receive screening and point of care testing for group A streptococci, which causes bacterial infections in the throat. If tested positive, patients can receive antibiotics from a pharmacist without the need to visit the GP.

Patients using the service reported a highly positive experience, noting the convenience of having a local walk-in screening service compared to taking time off work to attend a GP consultation.

Challenge

Each year around 1.2 million people visit the GP with a sore throat, and studies show that 62% of these visits result in the prescribing of antibiotics. A service feasibility study has shown that less than 10% of people who present with a sore throat actually have a group A streptococci bacterial infection. In response to concerns of unnecessary GP visits for sore throats and the unnecessary prescribing of antibiotics for viral infections, the Severe Sore Throat Test-And-Treat service was developed.

Impact

• By providing an alternative pathway for patients, the service could remove the need for 800,000 GP consultations if rolled out nationally, equating to £34 million each year
• The pathway can help to reduce unnecessary antibiotic prescribing by ensuring that only those with a confirmed infection receive antibiotics
• By providing effective and accessible care for patients, away from general practice, the new pathway could help to change public behaviour, reducing demand in Primary Care in the future

Key words:
- Early Intervention
- Medicines Management
- Pathway
- Point of Care Testing
- Primary Care

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A web portal and smartphone application displaying urgent care whole system capacity and flow in real-time.

Summary
The Single Health Resilience Early Warning Database - or SHREWD - helps clinical, operational and executive teams to understand capacity and demand across whole systems in real-time. This speeds up provider understanding of pressure and enables a quick response, thereby improving the flow of patients across all pathways, including acute, mental health, community and social care.

SHREWD’s platform can be accessed via both smartphone and web browser. It replaces the need for lengthy whole system conference calls to establish the position and improves situational awareness of available capacity and where pressure exists across multi-disciplinary teams. This prompts a more co-ordinated response to pressure and improves how quickly and effectively the health economy responds to pressure. It also highlights real-time under-utilisation, helping services to maximise the use of all available capacity across the system to meet demand. SHREWD helps providers reduce delays across the urgent care pathway, supporting a better experience for patients and staff.

Challenge
SHREWD addresses the poor access to, and visibility of, real-time information across all providers involved across the urgent care pathway. Occupancy levels across acute and emergency services are frequently above 90%, causing a queue in entry points of urgent care. It is common practice for health economies to run a daily whole system teleconference to understand system pressure and demand. By visualising constraints as they become apparent, SHREWD empowers providers to manage more effectively, with services able to prioritise resourcing around the busiest sites, improving flow and reducing the need for daily calls, manual Operational Pressures Escalation Levels (OPEL) reporting, and helping to ensure patients are moved to the right place at the right time.

Impact
• Currently deployed across 18% of England’s NHS
• Reduces the number of whole system teleconferences required to manage systems during winter. A Kent University rapid review of SHREWD showed conference call times reduced from 60 minutes to 15 minutes on average
• Currently the only market provider proven to use real-time data feeds for all providers across health and social care

“Implementing SHREWD has led to an improvement in patient care. Operational managers can accurately identify which parts of the system are under pressure and take action early to improve the situation. It also means that system on-call managers make decisions based on hard data, rather than relying on subjective opinions.”

David Strivens, NHS Commissioning Manager, NHS Southampton City Council CCG

Key words: • IT Platform • Whole System Capacity

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“WaitLess can direct people with not so serious conditions to alternative sites where they can be treated faster, which in turn will help to reduce the pressure on our A&E departments. This is the first app of its kind in the UK - other apps use waiting time information, but this is the first to combine with travel times, which as we know can be unpredictable.”

Dr John Ribchester, Clinical Lead and Chair, Encompass MCP

**WaitLess**

An app showing the quickest place to access care for minor emergencies.

**Summary**

WaitLess is an app for patients. It combines real-time waiting time information, routing and traffic and travel information to show patients the fastest place to be treated by a clinician for urgent minor conditions.

WaitLess reduces minor attendances in A&E when waiting times are high, by empowering patients to choose alternative venues of care where they can access faster treatment. This takes pressure away from busy A&Es and improves the utilisation of minor injury units, spreading demand across the system.

**Challenge**

The NHS Five Year Forward View (FYFV) states: “Between 1.5 and 3 million people come to A&E each year who could have their needs addressed by other parts of the system. They turn to A&E because it seems like their best and only option.”

Next Steps on the NHS FYFV identifies that minor injury units and urgent care centres could be better utilised by patients. These are equipped to treat a range of urgent conditions, but are under-utilised as many patients do not realise these facilities exist or that they can access them for urgent treatment.

**Impact**

- WaitLess has been proven to reduce minor A&E attendances by up to 11% through a study undertaken by Encompass MCP which was ratified by the University of Greenwich and the Behavioural Insights Team
- A tool developed by Yorkshire & Humber AHSN links activity to tariff, demonstrating a saving of, on average, £160K per CCG area following the introduction of the WaitLess tool in an area
- Impacts are felt as soon as the app is launched across a region

**FELLOW**

Alistair Martin

**Key words:** • Minor Emergencies • Patient-Facing App • Real-Time Tool • Urgent Care • Waiting Times
SAFETY, QUALITY AND EFFICIENCY WITHIN HOSPITALS
Track, manage and automate patient care journeys.

Summary
DrDoctor is an online and text-based service that allows patients to confirm, cancel, and change bookings digitally. For hospitals, this means they can maximise and manage patient volume to best fit their capacity. The technology can target long waiting lists and automatically book patients into empty slots in clinics. In addition, it provides digital assessments before and after appointments, saving time for both patients and caregivers.

DrDoctor helps hospitals to deliver patient-facing digital solutions, so they can work in radically different ways. We do this by transforming the way hospitals and patients communicate, using technology to drive a fundamental shift in the quality and cost of delivering healthcare. We bring patient correspondence into the 21st century, to automate processes, collect outcomes, measure value and drive down costs. Our platform improves appointment scheduling, increasing clinic efficiency by reducing no-shows and filling empty slots, and is currently deployed across major hospitals around the UK.

Challenge
DrDoctor helps the NHS deliver digital transformation. We do this by automating the scheduling process, managing clinical risk and enabling patients to take greater control over their care.

Impact
- High coverage: seven million outpatient appointments a year at ten Trusts
- Financial benefits: £2.2 million average per year per Trust
- On the Information and Technology Payment (ITP) for 2018/19
- ‘Do Not Attend’ (DNA) rates down by 25-30%
- Clinic utilisation up by 5-10%
- Booking administration time down by 20-30%
- Postage expenditure down by 40-50%

Key words:
- Appointment Management
- IT Platform
- Patient Communication
- Patient Engagement
- Secondary Care
ERAS+

Pathway reducing post-operative pulmonary complication (PPC) risk by preparing patients for and recovery from major surgery.

Summary
ERAS+ puts patients at the centre of their own care, as they prepare to undergo surgery. The pathway provides advice and structure for training on exercise, nutrition, lifestyle and oral healthcare information to help patients play a more active role in preventing PPC, with a focus on the six weeks prior to and the six weeks after surgery.

ERAS+ provides bespoke educational tools, including information videos and the multi-disciplinary led ‘Surgery School’, where healthcare professionals provide groups of patients with enhanced preparation for major surgery.

Challenge
Each year, more than 200,000 major elective surgical procedures are performed in England and Wales, which carry a post-operative pulmonary complication (PPC) risk of up to 30%. This can lead to increased length of stay and reduced life expectancy. ERAS+ works to reduce the PPC risk by better equipping patients and families in their preparation for and recovery from major surgery.

Impact
- Successfully reduced PPC by over 50% where implemented
- Reduced post-operative hospital length of stay by three days where implemented
- Delivered £200,000 in annual savings where implemented
- Currently working with national Macmillan team to support implementation

“I was given two to three weeks’ advanced notice of the surgery to remove the cancer and what helped me most was the support I received through the ERAS+ programme. I felt empowered. I was part of the team preparing me for my surgery, not just a person this was all happening to. The programme let me take charge of my own care and feel that I was able to influence the outcome of my treatment.”
Sarah Lowe, Patient

FELLOW
John Moore

Key words: • Educational Tools • Enhanced Recovery • Pathway • PPC • Surgery
Home monitoring of hypertension in pregnancy (HaMpton)

New care pathway involving the use of an app for monitoring high blood pressure at home, empowering expectant mothers to be involved in their own care.

Summary
HaMpton is a new care pathway developed at St George’s Hospital, London. This pathway involves the use of an innovative smartphone app for monitoring high blood pressure at home. The app alerts women if they need to attend the hospital, and it also links with a hospital computer system where the data can be monitored by clinicians in real time. HaMpton empowers women to be involved in their own care, reduces the number of hospital visits, and has achieved excellent patient and staff satisfaction.

Challenge
High blood pressure disorders complicate 10% of pregnancies, and pre-eclampsia affects between 2% and 8%. Pre-eclampsia can be life-threatening for both mother and baby. Standard care pathways for women who have high blood pressure in pregnancy require frequent hospital visits. This has significant cost implications, both to the NHS and to patients, and can cause anxiety to pregnant women.

Impact
- 53% reduction in number of appointments for hypertension monitoring, and amount of time per appointment
- £300 average cost saving per patient per week according to basic health economic study
- £50 million potential annual cost saving if scaled up across the UK

Key words: • App • IT Platform • Monitoring • Pathway • Secondary Care

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RespiraSense

Continuous and motion-tolerant respiratory rate monitor which helps to identify deteriorating patients up to 12 hours earlier than the standard of care.

Summary
Respiratory rate is proven to be the earliest and most sensitive indicator of patient deterioration - more so than heart rate or systolic blood pressure. The standard of care for measuring respiratory rate remains the manual counting of breaths per minute. This is shown to be biased and prone to error, thereby contributing to 31% of acute care deaths resulting from poor clinical monitoring.

RespiraSense is the world’s only continuous, motion-tolerant respiratory rate monitor, supporting medical teams to quickly identify deteriorating patients.

Challenge
Identifying the deteriorating patient as early as possible is a significant challenge that faces NHS hospitals. Deteriorating patients experience serious adverse events such as sepsis shock and respiratory compromise. This puts pressure on intensive care units (ICUs) and bed capacity.

The need to identify the deteriorating patient is essential to ensure timely patient discharge and to improve patient flow from A&E to the in-patient setting.

Respiratory rate - a powerful component of National Early Warning Score 2 (NEWS2) - is poorly monitored, yet it is the earliest sign of patient deterioration.

Impact
- Improves patient flow by reducing rate of preventable escalations of care and supporting timelier patient discharge
- Supports improvements in quality of care and patient safety
- Releases capacity and improves healthcare economics to realise a 70% return on hospitals’ investment
- Over £115 million potential net savings in pneumonia and sepsis pathways, from 5% reduction in preventable escalations of care

“RespiraSense provides a unique way of continuously monitoring respiratory rate, offering a safe and motion-tolerant solution that will identify deteriorating patients earlier, improve patient safety, and reduce the burden of emergency care on the NHS, as well as releasing clinical staff for time to care.”
Professor Anoop Chauhan, Portsmouth Hospital NHS Trust

FELLOW
Myles Murray

Key words: • Deteriorating Patient • Digital • Early Intervention • Monitoring • NEWS2 • Pneumonia • Sepsis

mylespmd-solutions.com
www.pmd-solutions.com
@PMD_Respiratory #MakingEveryBreathCount
SELF-CARE AND EDUCATION
Intelligent hydration aid which combats dehydration in community-based and acute settings by monitoring the frequency of drinking and providing instant visual and verbal reminders to drink.

Summary
Droplet is a smart hydration reminder, designed to combat dehydration in community-based and acute environments. Droplet cups and tumblers have detachable electronic reminder bases. A series of spoken messages and flashing lights in the base remind the person to drink, and the timing of the reminders can be adjusted to suit the individual’s needs.

Droplet has been developed in consultation with over 100 healthcare professionals and older people. Pilots in care homes and hospitals has shown to increase fluid intakes by over 500ml per day.

Challenge
There are almost four million* vulnerable people currently living in the community, often alone, who are at serious risk of dehydration. Dehydration results in emergency hospital admissions, poor clinical outcomes and extended stays in hospital, and emergency readmissions following discharge. Existing strategies to promote better hydration only really exist within a clinical environment. However, maintaining adequate hydration remains a challenge. The most effective intervention is through personal prompting, but in busy hospital wards this is often impossible to do effectively and at home there is no current alternative.


Impact
• Currently used in nine hospitals (January 2019)
• At Musgrove Park Hospital, Droplet users drank on average 63% more than those without
• At Polebrook Nursing Home, average fluid intake rose by 69% and by the end of the pilot 61% were drinking their EFSA (European Food Safety Authority) recommended daily intake

Where Droplet is currently used in hospitals and care homes, the following benefits have been consistently observed:
• Patients/residents drink more per day
• Illnesses and symptoms relating to dehydration reduced
• Decreased number of patients at risk of dehydration
• Improved wellbeing
• Reduction in prescriptions for IVs and antibiotics to treat UTIs and similar infections

“Droplet supports the crucial element of hydration for healthcare professionals to monitor, manage and improve patients’ fluid intake. This is why at Musgrove Park we are introducing Droplet in every ward.”
Phil Shelley, Former National Chair of the Hospital Caterers Association

Key words: • Acute Care • Community-Based Care • Dehydration • Hydration Aid

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"I think EpSMon is a brilliant, friendly and nicely-designed app. It is a positive tool and I feel empowered in the way it encourages me to be active in self-monitoring. It asks direct questions which really help me consider how well I am looking after myself in order to avoid risks of seizures. It reminds you to do a three-monthly check-up and to make appointments with your doctor or neurologist when you don’t want to face up to how your epilepsy is affecting you.”
EpSMon User

Free epilepsy risk management and prevention tool, enabling patients to self-monitor via a digital app.

Summary
EpSMon is a digital version of a SUDEP (Sudden Unexpected Death in Epilepsy) and Seizure Safety Checklist, developed and available for professionals who register with SUDEP Action for annual updates from a UK-wide development group of experts.

EpSMon can be used as a self-management tool by providing risk assessments to patients and encouraging early intervention for people with rising risk. EpSMon informs of changes to risk factors by patients monitoring their seizures and well-being, and encourages seeking medical help if required.

Challenge
Over 600,000 people in the UK live with epilepsy, yet 21 of these die every week. People with epilepsy have a 24 times higher risk of sudden death than the general population, although 42% of these deaths are considered potentially avoidable if patients are informed of risks and supported to make changes.

A preventative tool such as EpSMon can have a significant impact on the personal and financial costs of epilepsy through reduction in deaths and decrease in A&E appointments.

Impact
• EpSMon can help reduce the £1.5 billion in costs associated with epilepsy within the UK every year
• Adopted as a solution via a training package for emergency services and promoted by Royal College of GPs e-learning
• HSJ Awards ‘Patient Safety’ category finalist, BMJ Awards ‘Highly Commended’
• Evaluated as part of a 2017 NIHR Cochrane Review of epilepsy technologies

Key words: • App • Epilepsy • Patient Safety • Risk Reduction • Self-Management
ESCAPE-pain is a programme that helps older people with knee and/or hip pain understand their problems and how they can manage it themselves.

**Summary**
ESCAPE-pain helps older people learn to self-manage knee and hip pain by giving them information and advice about the problem and allowing them to experience the benefits attained from simple exercises. It alters participant’s health beliefs and behaviours, and they learn to control their symptoms and improve their quality of life.

The programme is safe, effective, cost-effective and the benefits can be sustained for up to 30 months.

ESCAPE-pain is being implemented across the UK in hospital and community/leisure settings.

**Challenge**
In the UK, knee and hip pain - often labelled osteoarthritis - impairs physical and mental health and wellbeing of 8.5 million people, and is the third largest health and social care expenditure. The National Institute of Health and Care Excellence (NICE) evidence-based guidelines show that increasing physical activity has wide physical and psychosocial benefits. Most people do not receive this advice - most receive unpopular, potentially harmful medication, and only 2% undergo joint replacement, so most people endure years of unnecessary pain and disability.

**Impact**
- ESCAPE-pain delivers NICE recommendations
- The programme is more clinically and cost-effective compared with usual care, reducing pain, improving physical and mental wellbeing, and is popular with participants
- For every 1,000 people who go through the programme, about £1.5 million healthcare savings can be realised. Consequently, ESCAPE-pain is endorsed by many professionals and national bodies
- As of January 2019, ESCAPE-pain is delivered in 120 centres across the UK and over 8,000 people have benefited, saving over £12 million
- Selected as an AHSN Network national programme 2018-2020

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**FELLOW**
Michael Hurley

**Key words:** • Hospital Settings • Community Settings

“...I came off the painkillers and am still off them...”
“...I feel much better in myself, physically and mentally...”
“...for the first time in years I can get into the bath...”
“...I walked along the beach with my grandchildren...”

ESCAPE-pain programme participants

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Joint Pain Advice (JPA) is a service which delivers core NICE advice via a range of professionals to teach people how to self-manage long-term joint pain.

**Summary**
Joint Pain Advice (JPA) is a safe and cost-effective alternative to GP consultations. The service involves a series of face-to-face consultations, delivered by an ‘Advisor’ who works collaboratively with people with hip and/or knee osteoarthritis and/or back pain, focusing on supporting self-management.

People attend up to four 30-minute 1:1 consultations over six months. They work closely with an Advisor to identify unhealthy lifestyles and barriers to change, and develop agreed goals and action plans. Simple outcomes (pain, function, physical activity level) are measured at each consultation.

A wide range of professionals (allied health professionals, health trainers/advisors, social prescribers, outreach workers, community pharmacists, occupational health staff, care home staff) can be trained to deliver JPA, so that it supplements their roles rather than creating an additional role. It is delivered in a range of settings (primary care, community settings, people’s homes, workplaces), increasing accessibility and reach.

**Challenge**
In the UK, long-term disabling knee and hip pain (often labelled osteoarthritis, OA), and back pain affects over ten million people - around one fifth of the population. It impacts adversely on all aspects of a person’s personal, social and working lives, and results in enormous health and social care expenditure, including over two million GP consultations, prescription medication, and approximately 150,000 knee/hip replacements.

Despite its prevalence, joint pain is managed poorly. Management guidelines recommend exercise and maintaining healthy body weight as cost-effective ways to improve pain, mobility, physical and mental wellbeing. GPs acknowledge that they manage joint pain poorly because they receive little training in promoting and supporting lifestyle changes, and these cannot be conveyed in a 12-minute consultation. Consequently, few people receive NICE advice, regard their management as ineffective, and have to live many years in unnecessary pain.

**Impact**
- A social return on investment of £2-£4 for every £1, equating to a benefit of £212 per patient

In a study of over 500 participants, which introduced JPA using physiotherapists as Advisors in six GP practices in Lewisham, South London, outcomes showed:
- An approximate 20% reduction in pain
- Increased number of days physically active from two to five days per week
- Decrease in participants’ weight
- Decrease in GP consultations

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FELLOW

Michael Hurley

**Key words:** • Community Setting • Joint Pain • Primary Care • Self-Management • Workplace
Digital behaviour change platform for people with type 2 diabetes providing goal-focused education, personalised resources and support to implement a lower carbohydrate lifestyle.

Summary
The Low Carb Program is available on iOS, Android and web. The platform comprises:

- Education: members participate in a core 12-week structured therapeutic nutrition and wellness program, personalised to disease type and profile
- Community peer support with over 390,000 members
- Behaviour change mentoring, goal identification and setting
- Library of personalised resources, including culturally-specific meal plans, food swaps and recipe ideas
- Data insights and AI-led feedback to support sustainable behaviour change

Challenge
Type 2 diabetes is prevalent, costly and a potentially progressive disease with serious health consequences, including blindness, amputation, stroke, dementia and premature death. In community settings, type 2 diabetes is rarely reversed, and typically patients only spend three hours per year with their healthcare professional.

Impact*
- 71% platform retention at one-year
- 40% of people on medication eliminate at least one treatment from their regime
- 60% of people on insulin eliminate or reduce it from their regime

For people with type 2 diabetes who complete the programme, outcomes include:

- 7.4kg weight loss
- 13mmol/mol HbA1c reduction
- 39% place HbA1c under type 2 diabetes threshold, with 26% placing type 2 diabetes in remission

*One-year outcomes published as part of a three-year study on a randomly selected cohort of 1,000 people who joined the Low Carb Program: https://diabetes.jmir.org/2018/3/e12/

Researchers agree that type 2 diabetes may be effectively treated with a carbohydrate-reduced diet, which could improve management and potentially lead to remission. Digital interventions can support retention of continued education, which is the fundamental challenge to ensure sustainable behaviour change in patients with type 2 diabetes and prediabetes in a low-cost, scalable manner.

“My HbA1c has gone down from 53 (7.0%) to 37 mmol/mol (5.5%) and I’ve lost about 19kg in total. I am in type 2 remission and have never been fitter. If it wasn’t for the Low Carb Program and the support I received, I wouldn’t be where I am today.”

Peter Palmer, Patient

Key words: • App • Education • Remission • Type 2 Diabetes

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www.lowcarbprogram.com/nhs
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SELF-CARE AND EDUCATION

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Physiotherapy effectiveness is dependent on patient engagement with the prescribed programme. MIRA offers a validated and physiotherapy goal-mapped menu of exergames that the physiotherapist can choose from, to individualise a protocol suitable for every patient. The system also quantifies the progress so patients can see their improvement which motivates alongside the gamification principles used to create each goal mapped exergame.”

Bibhas Roy, Consultant Orthopaedic Surgeon, Manchester University NHS FT

MIRA’s software turns physical and cognitive exercises into video games, making physiotherapy fun and convenient for patients recovering from surgery or injury.

**Summary**

MIRA is a medical device that uses motion tracking sensors to gamify physical therapy. MIRA enables therapists to create personalised, tailored exercise programmes, which can be ‘played’ by patients in clinic or at home. Its features include real-time remote monitoring to allow therapists to evaluate home activity and adherence to prescribed ‘exergames’ - exercises incorporated into video games.

MIRA has been successfully used in orthopaedic and neurological therapy for both children and adults, as well as in falls prevention and active ageing programmes for the elderly.

**Challenge**

**Adherence to home physiotherapy**

Physiotherapy can be a long and difficult process for people in need of rehabilitation. Treatment plans can be cumbersome, and a slow recovery can be disempowering. Patients generally receive a paper hand-out with exercise instructions to follow at home. The percentage of patients not complying with their home physiotherapy can be as high as 70%, and physiotherapists have no way of knowing if their patients are following the prescribed treatment.

**Falls prevention**

1 in 3 people aged 65 and older, and 1 in 2 people aged 80 and older, fall each year. Prevention is achievable through consistent exercises known to help balance and improve mobility.

**Impact**

- Currently used in over 90 organisations (as of January 2019)
- Reduces recovery time by increasing motivation for adherence to treatment
- Prevents further injury or surgery, thereby reducing costs associated with further hospitalisations and treatment
- Significantly improves balance, pain and fear of falling in older adults
- £1,202 per patient per year net average saving associated with the use of exergames for falls prevention
- Estimated £84,000 annual net savings for a CCG comprising 70 sites

**FELLOW**

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**Key words:** • Physiotherapy • Recovery • Rehabilitation
Low-cost, online self-management platform for people with diabetes.

**Summary**
My Diabetes My Way (MDMW) comprises educational resources, online health record data access, personalised data-driven advice, communication tools for healthcare professional contact, and links to social media and peer support. MDMW currently has over 32,000 registered users. Running across NHS Scotland since 2008, MDMW education sites have recently been launched commercially in Somerset and North West London.

**Challenge**
Diabetes is a growing health problem affecting 9% of the global population. Diabetes spending will consume around 17% of the NHS budget by 2025. People with diabetes only spend a few hours per year with healthcare professionals. The rest of the time they self-manage. Electronic patient education, empowerment, feedback, motivation and flexible access to healthcare staff can reduce costly long-term complications, clinic visits, hospitalisations and death, allowing people to live longer and healthier lives with reduced care costs.

**Impact**
- 90% of users felt MDMW helped them to manage their diabetes better*
- Improvements in long-term blood glucose sustained out to three years (based on large case control study)
- Over 6:1 return on investment (ROI) based on analysis of outcome data from long-term user in NHS Scotland
- Available for CCGs to commission via Diabetes Transformation Funding

*Based on evaluation survey of 1,098 users

“I am much more in control of my condition, but importantly, I now understand the goals that I should be achieving and am able to have a constructive discussion with my consultant. This patient access through My Diabetes My Way is an outstanding achievement in the care, education and involvement of people with diabetes.”

**Patient**

FELLOW
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**Key words:** Diabetes • Digital App • IT Platform
Remote, digital programme supporting structured education and behaviour change for people with type 2 diabetes. Combines one-to-one support from a registered dietitian, with evidence-based online educational materials, and use of the Oviva app.

**Summary**
Oviva Diabetes Support is a fully remote, QISMET-accredited programme of structured education and behaviour change for people with type 2 diabetes. The programme provides participants with weekly one-to-one coaching from a specialist dietitian over ten to 12 weeks, to support behaviour change and develop sustainable self-management strategies.

Dietitian coaching is supported by engaging evidence-based structured education materials for self-study, and participants can use the Oviva app to self-monitor progress against goals, maintain a food diary and communicate securely with their dietitian.

**Challenge**
Diabetes costs the NHS over £10 billion per year, of which 80% is spent on treating complications which could be prevented through good diabetes management.

**Impact**
- Average uptake of 75%, with 85% of participants completing the programme
- Clinically meaningful improvements in diabetes treatment targets, as demonstrated by outcome data (including average 13mmol/mol reduction in HbA1c and 6kg body weight loss at six months programme completion)
- 96% of participants ‘extremely likely’ or ‘likely’ to recommend Oviva Diabetes Support to friends or family
- Estimated NHS savings of £1,000 per participant based on reduced medication need and service utilisation
- Available for CCGs to commission via Diabetes Transformation Funding

Structured education and guided behaviour change are crucial to help people self-care and reduce risk factors. However, the National Diabetes Audit and research indicates that uptake of traditional group-based, face-to-face structured education programmes is poor, and the impact on clinical outcomes and complication rates limited.

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**Patient**
“Using the app and the feedback allowed me to make changes to my eating habits. I felt in charge of these changes and the coaching allowed me to set reasonable goals and achieve them. I have no hesitation in recommending Oviva - it worked for me!”

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**FELLOW**
**OLIVIA HIND**

**Key words:** • Behaviour Change • Digital • Early Intervention • Prevention • Structured Education

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SUPPORTING NEW MODELS OF CARE

Key words:
• Behaviour Change
• Digital
• Early Intervention
• Prevention
• Structured Education
Partnership working with Docobo has helped Crawley CCG, and Horsham and Mid Sussex CCG develop and enhance the functionality of integrated data sets in the ArtemusICS for targeted patient care. Recent addition of end of life and mental health modules has huge potential to provide the intelligence for not only collaborative care but also effective and efficient care across the provider structures.”

Bharti Mistry, Crawley CCG

Population Health Management solution. From an integrated care system (ICS) population to a GP list, understand your costs of care at an individual patient level; identify critical gaps in care and patient risk; and track intervention return on investment.

Summary
Docobo’s ArtemusICS Population Health intelligence solution uses risk and analysis tools to generate insight at population and patient level to drive measurable improvement and enhanced patient outcomes. ArtemusICS collates data from GP, acute, community, social, mental, ambulance and remote care settings, to enable Commissioners and Providers to assess the needs of local populations, identify cohorts, and highlight gaps in care. Healthcare Professionals can view trends, prioritise care delivery, and monitor the impact of intervention and prevention initiatives. It supports community and multidisciplinary teams to identify and keep patients out of hospital, stopping preventable A&E admissions and in-patient stays through earlier detection and intervention.

Challenge
Intelligence about the prevalence of disease, population needs and utilisation/cost of public services across a population is vital to delivering a truly integrated and holistic service, reducing inequalities and optimising care. True integrated care for each patient requires an integrated view of each patient. There is a need to provide targeted, cost-effective interventions and real-time tracking of intervention outcomes to focus clinical resources on specified cohorts of patients.

Impact
• Identify specific patient cohorts (risk, conditions, end of life, frailty, social isolation)
• Identify integrated care needs of cohorts and individual patients
• Identify gaps in care
• Understand Mental Health inequalities
• Measure efficacy and return on investment (ROI) of interventions
• Understand predicted and actual costs

FELLOW
Adrian Flowerday

Key words: • ACS/STP Enabler • IT Platform • Outcomes • Population Health • Quality Improvement
Electronic urgent care plan which puts the patient at the heart of their own care.

**Summary**
Coordinate My Care (CMC) has been developed to give people an opportunity to create an urgent care plan where they can express their wishes and preferences for how and where they are treated and cared for. This care plan can be shared electronically with all the healthcare providers working around the patient, ensuring they are referring to one ‘single version of the truth’ without the need for repetition or any misinterpretation of the patient’s situation or needs.

**Challenge**
A GP surgery is only open for 30% of a patient’s week, so 70% of the time patients are treated and advised by other healthcare professionals who do not know them. This can lead to a lack of continuity and coordination of care, particularly out of hours, and can mean that urgent care delivery feels fragmented and impersonal to patients, and their families and carers.

CMC empowers the multidisciplinary team around the patient to work more effectively together 24/7 and deliver patients the care they want. CMC reduces unnecessary hospital admissions and thus relieves A&E crises.

**Impact**
- More than 63,000 care plans created to date across London
- 75% of CMC patients have died in their preferred place
- 19% of patients with a CMC plan die in hospital, compared to 47% nationally
- CMC is saving the NHS around £2,100 per patient, equating to an annual saving of over £16.8 million in London
- myCMC - the CMC patient portal enables patients to initiate an urgent care plan
- NHS 111, out-of-hours GPs and the London Ambulance Service are increasingly viewing care plans
- CMC is interoperable with EMIS and VISION GP IT systems

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“CMC has been a paradigm shift for our staff and has changed the way we treat patients for the better.”
David Whitmore, London Ambulance Service

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**Key words:** • Advance Care Plan • Coordinated Care • Digital • Patient-Centric • Urgent Care
If you want a low risk, quick-win project which will have an enormous impact on your Continuing Healthcare capabilities, I would encourage you to digitise your CHC assessment process.

Simon Meers, Senior CHC Commissioning Manager, NHS Dorset CCG

IEG4’s CHC2DST is a software innovation improving quality and productivity in Continuing Healthcare (CHC) teams by eliminating paper assessments and automating the workflow and communication to accelerate eligibility decisions.

Summary
Continuing Healthcare assessments can result in NHS-funded packages of care being provided to adults to meet both health and social care needs. Clinical Commissioning Groups are responsible for the process. CCG staff work with multiple stakeholders to determine patient eligibility based on a process set out in a well-established national framework.

CHC2DST is a cloud-based software solution accessible by different stakeholders involved in the delivery and management of the CHC assessment process. It increases data transparency and speeds up decisions about eligibility whilst reducing administration effort and time wasted on non-value adding activity.

Challenge
The CHC assessment process is often manually intensive. The process requires activities to be co-ordinated across multiple organisations which can lead to delays in decision-making, causing considerable distress to patients and families. CHC case numbers continue to rise and the service will need digital transformation to cope. NHS England has created a strategic improvement programme for CHC which is underpinned by digitisation.

Impact
- Improved quality and performance as reported by frontline staff in a qualitative analysis
- +£75M overall cost benefits from digitising the CHC assessment and workflow process (according to SBRI economic analysis).
- Improved delivery of 28-day standard from 62% to 82% - helping CCGs to achieve standards required by the NHS England Quality Premium*
- 30% improvement in clinical assessment resource utilisation - assessors regularly complete four Decision Support Toolkits (DST) per week*
- 18% reduction of admin staff costs (initial savings after three months)*

*Based on an in-service evaluation after three months’ implementation across the five Cheshire and Wirral CCGs

FELLOWS

Charles MacKinnon

Key words: • Checklist • Continuing Healthcare (CHC) • Digital • DST Assessment • Workflow/Automation
Outcomes Based Healthcare’s analytics platform enables measurement of population health outcomes and Healthy Lifespan (‘Healthspan’) in near real-time, to support system transformation and person-centred care.

Summary
OBH’s Outcomes Platform enables commissioners and providers to segment populations, identify baselines for their selected outcomes, set improvement trajectories, and monitor outcomes specific to their local populations on an on-going monthly basis.

Using a data-driven implementation of the Bridges to Health segmentation model, complemented by an extensive Outcomes Library, the Platform provides continuous visibility of health outcomes across populations. By enabling commissioners to pay providers based on improvements in patient outcomes and healthy lifespan, health systems are incentivised to combine new and existing care activities to keep patients well.

Challenge
OBH has developed a population health analytics platform that measures ‘true’ health outcomes that most matter to people and entire populations, in near real-time. OBH supports commissioners, providers, and health and care systems to organise care around these priorities, measuring the resulting health outcomes.

Impact
• Outcomes sets and prevention measures covering: healthy population, single conditions, multi-morbidity, frailty, end of life and whole population
• 3 million people in England benefitting from OBH outcomes measurement as of December 2018
• Recent whole population implementations agreed in North East England, Hertfordshire, South West England covering Clinical Commissioning Groups (CCGs), Local Authorities (LAs), System Transformation Partnerships (STPs), Integrated Care Systems (ICSS), and Primary Care Networks
• Commissioners now able to reimburse providers for adverse outcomes which have been avoided
• OBH supporting Guy’s & St Thomas’ Charity major project with Kings College London to research and prevent progression towards development of multiple long-term conditions

“I have worked with OBH for a number of years now on projects spanning commissioning and new models of care. I have always been impressed with their ability to engage Primary Care and CCG colleagues in complex discussions about outcomes and value, as well as their robust, evidence-based approach.”

Dr Jonty Heaversedge, Chair of Southwark CCG, Medical Director for Primary Care and Digital Transformation, NHS England (London)

Key words:
• Healthspan • IT Platform • Outcomes Measurement
• Population Health Management • Population Segmentation
NHS Innovator Accelerator Alumni

Launched in November 2018, the NHS Innovation Accelerator (NIA) Alumni is for ‘graduating’ Fellows who have received up to three years’ of support from the NIA. Alumni can access a range of benefits and their insight and learning continues to be shared via the NIA and AHSN partners.

For more information about the NIA Alumni, visit www.nhsaccelerator.com/alumni

Andrea Haworth
Sapientia

Anna Moore
iThrive

Anne Bruinvels
OWise

Ben Underwood
Brush DJ

Bernadette Porter
NeuroResponse

Dharmesh Kapoor
Episcissors-60

Francis White
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Lloyd Humphreys
Patients Know Best

Maryanne Mariyasevam
Non-Injectable Arterial Connector / WireSafe

Matt Jameson Evans
HealthUnlocked

Neil Guha
Scared Liver Project

Paul Volkaerts
Nervecentre

Penny Newman
Health Coaching

Peter Young
PneuX

Piers Kotting
Join Dementia Research

Simon Bourne
myCOPD

Sophie Bostock
Sleepio
With thanks to our Mentors...

Fellows benefit from bespoke support from Mentors. This expert, high-profile group represents a broad skills base. Their support is predominantly in the form of advice, guidance and networking. Our pool of Mentors is regularly expanded to support the experiences and identified needs of the Fellows.

For more information visit www.nhsaccelerator.com/mentors

Adrian Downing  Professor Lord Ajay Kakkar  Andreas Haimboeck-Tichy  Professor Ara Darzi  Celia Ingham Clark  Professor Donal O’Donoghue  Ed Jones

Gary Gallen  Professor Joanne Hackett  Professor Sir John Burn  Lucy Heady  Manish Miglani  Noel Gordon  Pam Garside

Dr Robert Winter  Dr Sam Barrett  Samantha Jones  Professor Sudesh Kumar  Dr Thomas Lee  Dr Tom Weaver  Professor Tony Young
NHS Innovation Accelerator: A partnership initiative

**NHS England**

NHS England’s primary aim is to improve health outcomes for people in England. NHS England sets the direction and priorities for the NHS, allocates funding to England’s GP-led clinical commissioning groups, and directly commissions primary care, specialised services and healthcare services for offenders.

**Academic Health Science Networks (AHSNs)**

The AHSNs facilitate change across whole health and social care economies, improving health, driving down the cost of care, and stimulating economic growth. They do this through connecting academics, NHS, researchers and industry to accelerate the process of innovation and facilitate the adoption and spread of innovative ideas and technologies across large populations.

All 15 of England’s AHSNs are formal partners in the NHS Innovation Accelerator (NIA) and provide a contribution towards the cost of the bursaries offered to each of the Fellows.

- **Eastern AHSN**: www.eahsn.org
- **East Midlands AHSN**: www.emahsn.org.uk
- **Health Innovation Manchester**: www.healthinnovationmanchester.com
- **Health Innovation Network**: www.healthinnovationnetwork.com
- **Imperial College Health Partners**: www.imperialcollegehealthpartners.com
- **Innovation Agency (AHSN for the North West Coast)**: www.innovationagencynwc.nhs.uk
- **Kent, Surrey, Sussex AHSN**: www.kssahsn.net
- **North East and North Cumbria AHSN**: www.ahsn-nenc.org.uk
- **Oxford AHSN**: www.oxfordahsn.org
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- **Wessex AHSN**: www.wessexahsn.org.uk
- **West Midlands AHSN**: www.wmahsn.org
- **West of England AHSN**: www.weahsn.net
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**UCLPartners**

The NIA is hosted by UCLPartners, an academic health science partnership working in parts of London, Hertfordshire, Bedfordshire and Essex. UCLPartners helps spread healthcare innovation and best practice, and works in partnership to translate cutting-edge scientific research into demonstrable health benefits for the population.