Results of Competition: NHS Test Beds: Testing Innovations to Address Health and Care

Challenges - Full Stage

Competition Code: 1802\_CRD\_HLS\_NHSTB

### Total available funding is £7,432,049

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Care City	Care City: Transforming how we find, treat and manage long-term conditions	£878,510	£878,510
BIG HEALTH LTD		£0	£0
Healthy.io		£38,000	£26,600
ICNH LTD		£35,000	£24,500
INNERSTRENGTH HEALTH LIMITED		£35,802	£25,061

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LIVA HEALTHCARE UK LIMITED	£40,000	£28,000
METABOLIC HEALTHCARE LTD	£40,086	£28,060
OUR MOBILE HEALTH LIMITED	£26,000	£18,200
SOLCOM LIMITED	£22,875	£16,012
THE NUFFIELD TRUST FOR RESEARCH AND POLICY STUDIES IN HEALTH SERVICES	£313,423	£313,423
UCL PARTNERS LIMITED	£39,000	£39,000

\_"\*\*Long term conditions\*\* are now a central task of the NHS'\_Five Year Forward View

\*\*\_Lack of staff\_\*\* \_is "the biggest priority that we have now... in the NHS"\_ Jeremy Hunt

We propose to tackle these challenges together. Some in East London can expect thirty years of poor health, compared with just twelve elsewhere. Our mission is improving outcomes and experiences for older adults with long-term conditions, while reducing costs, across the 2 million people of East London.

The diagnostics, smartphone applications and management tools in our proposal are already making dramatic contributions to people with long-term conditions. They are Test Bed-ready, and are already being used by senior clinicians and savvy patients.

However, there are a range of barriers to their wider use. We think of this in terms of varying types of \*\*\_digital exclusion\_\*\* faced by:

- \* Patients
- \* Staff
- \* Organisations and systems

We will look at the power of junior members of the workforce to overcome those barriers, in partnership with patients:

Expert carers -- domiciliary carers using digital diagnostics and data to spot deterioration and better manage medication, using:

- \* Whzan Telehealth digital measurement of vital signs
- \* Healthy.io digital urine analysis
- \* Echo digital pharmacy

Digital prescribers -- Healthcare assistants in primary care prescribing digital applications -- and supporting people to benefit from them - to

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prevent deterioration of long-term conditions, using:

- \* Our Mobile Health the platform for digital prescribing, integrated into EMIS
- \* Sleepio proven digital medicine for sleeplessness
- \* Liva a digital platform connecting patients and health professionals to drive behaviour change

Administrator patient supporters within acute care - administrators using digital pathway tools to support patients to change their lives, using:

- \* DrDoctor digital appointment and pathway management
- \* Tickerfit digital programmes of education and exercise for heart failure

Through innovations within these three roles, we will seek to:

- \* Improve patients' confidence, health outcomes and ability to self-manage
- \* Increase skills and work force productivity
- \* Remodel areas of the workforce and service pathways across East London
- \* Scale these models, backed by training, investment and dedicated adoption partnerships

Care City is an innovation centre for healthy ageing, based in Barking. We will lead the delivery of this programme, with our eight innovators and supported by the following partners:

- \* Nuffield Trust evaluation
- \* Innovation Unit service design
- \* Good Things Foundation digital exclusion and co-design
- \* UCLPartners system change

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Nottingham University Hospitals NHS Trust	Capacity, Confidence, Care - Using Artificial Intelligence and Machine Learning to support Breast Screening	£863,387	£863,387
ADVANCED SKILLS INITIATIVE LIMITED		£359,268	£251,488
East Midlands Academic Health Sciences Network		£0	£0
GE HEALTHCARE LIMITED		£105,483	£0

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KHEIRON MEDICAL TECHNOLOGIES LTD	£424,927	£297,449
MATRIX INSIGHT LIMITED	£107,600	£75,320

The diagnosis of cancer and other diseases often uses imaging tests (CT, MRI, x-ray, ultrasound) as part of the pathway of investigation. In the NHS, the number of imaging tests which need to be performed, outstrips the ability of the healthcare services to provide and/or interpret these tests. This can lead to delays in diagnosis and delays to subsequent treatment.

Artificial Intelligence (AI) could be part of the solution. It involves using complex computer-based tools to look at data. In the context of healthcare this data can either be the pictures obtained when a patient has an imaging test, or information about how those tests are arranged and how services are run at a wider administrative and operational level. Using AI tools to understand this data has enormous potential, and could allow us to improve the care that patients receive, reducing delays.

Although some of these tools have been approved by international regulators, they are often developed using small sets of data. Many of these tools have not yet been tested at the scale often encountered in the NHS. In addition, the use of them needs a clear set of rules for the NHS, to ensure that they are used correctly and patients can be certain their healthcare data is secure.

Within the East Midlands, for the last five years, eight hospital Trusts have been working closely together to create and use a shared imaging test system. This is called the EMRAD consortium and is an NHS group, working directly with commercial software suppliers. EMRAD has already developed ways of sharing, being responsible for patient data, and testing new tools. These processes have themselves been confirmed as working well, as part of an independent audit.

We will use these existing models and strong governance arrangements of the consortium and the specific expertise of our partners, to test an AI tool developed specifically for breast cancer screening. This will help radiologists and breast units deliver a more accurate, faster breast screening service, reducing unnecessary recalls and biopsies, saving the NHS significant costs, and cutting anxiety for patients too. We will also test the use of AI tools to streamline operational aspects of the service, making sure clinics and screenings are scheduled in the best way.

By the time we have completed the project, we aim to have developed new models for the safe, trusted use of AI across the NHS.

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Chelsea and Westminster NHS Foundation Trust	Developing a Schedule for Unscheduled Care	£930,692	£930,692
BEHAVIOURAL INSIGHTS LTD		£65,835	£39,501
ICNH LTD		£146,879	£102,815
IMPERIAL COLLEGE HEALTH PARTNERS LIMITED		£180,436	£180,436
MEDOPAD LTD		£90,651	£54,391

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PATIENTS KNOW BEST LIMITED	£26,357	£18,450	
TRANSFORMING SYSTEMS LIMITED	£120,000	£60,000	

The NHS is a complex system, we have expert staff across all elements of our services, but it can be confusing for patients to know where best to go. Our offering to patients is old fashioned, we have only two streams; unscheduled and scheduled; life isn't quite like that, sometimes you need something in between.

As an NHS organisation working with innovation partners we want to develop a way of patients interacting via technology to receive; manage and give information. This will support them to make decisions about their care and in particular self determined access to services. At a pathway of care level we will be focusing on patients with low risk chest pain; Heart Failure and urgent maternity pathways. We want to allow the patient to have more control of their own care bringing together emergency waiting time information; self care pathways; their own clinical information and upcoming appointments in to one single application on a smart device.

We want to ensure that patients can communicate easily with the Trust when they want to; when they need and when they have to, we will proved patients a portal to do this in a simple way. We are in a place where access at suitable times is required by our patients. Digitally enabled access will allow 24/7 access to information and deliver the ability for patients to add required information to their care record at a time of day that suits them.

This will transform the way we deliver the Emergency and urgent care pathways for particular groups of patients to start with but can be scaled across many pathways and services allowing same day access in a planned way to urgent care. This in turn will reduce the pressure on A&E and reduce the number of outpatient attendances required or wasted due to patients not attending.

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Royal stoke university hospital	Listening to the messages from heart failure	£616,016	£616,016
HEALTH2WORKS LIMITED		£184,263	£128,984
Midlands Partnership NHS Foundation Trust		£95,815	£95,815
SIGNUM-HEALTH LTD		£290,669	£203,468
SIMPLE SHARED HEALTHCARE LIMITED		£92,360	£64,652

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Stoke-on-Trent CCG	£8,000	£80

Heart failure (HF) is a long term condition. It results in progressive, worsening health and frequent and prolonged periods in hospital. Digital solutions to monitoring patients often involve additional equipment in patient's homes to 'listen' to their bodies - their pulse, their blood pressure etc. Our project at its centre listens to patients themselves.

We use patient responses to texts (as simple as 'Do you feel better, the same or worse to how you felt when you last texted?') and their assessment of their symptoms and circumstances - from a chart graded like a traffic light system - to determine their risks of being hospitalised again. We will use their own phones with an interactive texting service called 'Flo'

This is not an emergency service, will use a care co-ordinator to monitor patient's responses and identify people who are gradually getting worse and offer help earlier - as patients often wait 30 days from feeling worse to ending up in hospital.

Equally the problems making people worse may be due to their circumstances e.g. their finances, loneliness etc. Our care co-ordinator will use a web based tool - i Navigation - to identify local organisations that can help and then refer patients directly to them - 'prescribing' a social enterprise to help.

We have also increased the amount, type and responsiveness of medical help outside of A+E for patients feeling worse - understanding that patients often have multiple problems other than HF alone.

We will also help patients to understand their condition better.

Often patients are informed of their condition through a one off talk or a pamphlet or a large booklet - education not tailored to their need. We will 'prescribe' multi-media material specific to patient's needs need to create a personalised web library through a programme called Recap Health. This can be accessed by patients at a time of convenience or need, on their own computers.

Our project aims to listen to patients and respond pro-actively to patient's who are getting worse. We offer them more individualised choice of help in the form of 'prescribing' HF education packages, appropriate social enterprises who can help, or alternative choices of care outside the A+E. We hope that this will mean that HF patients spend more time at home, in their communities and with their friends rather than in the A+E

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or in hospital.		

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Greater Manchester Strategic Clinical Networks	GM Diabetes My Way	£151,345	£151,345
BILLAWAY HEALTH LIMITED		£0	£0
CHANGING HEALTH LIMITED		£63,095	£44,166
MYCOGNITION LIMITED		£50,000	£35,000
MYWAY DIGITAL HEALTH LIMITED		£440,249	£308,174

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OVIVA UK LIMITED	£115,602	£80,921
THE SMART CARE DOC COMPANY LIMITED	£90,022	£63,015
The University of Manchester	£292,950	£292,950

Approximately 150,000 people in Greater Manchester have type 2 diabetes. The GM Diabetes MyWay project is a collaborative led by the Greater Manchester & Eastern Cheshire Strategic Clinical Networks (SCN) and aims to support these people. It would do this by providing a one-stop digital platform (MyDiabetesMyWay web site) designed to help people self-manage their condition more effectively and to provide education on how to do this. Currently, there is little access to education other than through traditional classroom based sessions, which can be difficult for many to access. So we aim to develop an innovative and accessible system which will utilise new technology to provide much more flexible access to a wider range of people. It would give patients:

- \* 250+ digital educational resources (text, video, interactive content).
- \* Diabetes self-management support with tailored advice based on personal needs.
- \* Access to personal medical records.
- \* Personalised care planning, goal-setting tools and service directories.
- \* Glucose monitoring display allowing the upload and sharing of blood sugar data with clinicians.

Overall, the system would be designed to improve both the outcomes and experience of people with type 2 diabetes, and it will provide them with a single care record which is shared with their clinician(s), thus giving increased access to and control over their own data. It will enable patients to share decision making and care planning, if desired, with clinicians, family or carers.

The system will allow clinicians to access patient recorded information, with patients' permission, provide them support for clinical decision making, care planning and self-management advice. As well as the one-stop platform, this project will offer a range of other supporting services and materials. In particular, it will combine online interactive support with education, nutrition/dietary advice, reducing depression/anxiety and remote (video) consultations with clinical staff. Also included will be the opportunity to access coaching and dietician advice from health care professionals to ensure tailored individual care. Many people with diabetes do not currently access healthcare support to be able to manage their condition, so this project will aim to engage with hard-to-reach people and investigate the potential to financially incentivise people with diabetes to attend care services.

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North East Hampshire and Farnham CCG	Supported Self-Management for People with Type 2 Diabetes in Primary Care	£236,225	£236,225
OUR PATH LTD		£142,870	£100,009
SILVERCLOUD HEALTH UK LIMITED		£88,561	£61,993
University of Surrey		£146,264	£146,264

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Type 2 diabetes (T2DM) affects a large number of people in England. Locally there are 10,000 people living with T2DM in North East Hampshire and Farnham. Blood glucose management is central to reducing the short and long term complications of diabetes, such as damage to the heart and eyes. We know that following a healthy diet and lifestyle (being active, a healthy weight, not smoking) is the best way to manage blood glucose levels but these lifestyle changes are hard to achieve and to stick at. This is partly due to psychological issues which are more common amongst people with long term conditions, like diabetes.

Existing services for people with diabetes are also not set up in a way that fully supports people to make lifestyle and behaviour changes. These services are under increasing demand to cope with higher numbers of people with T2D. An effective service would offer ongoing, proactive support for behaviour change (before there are problems), tailored to the needs of the individual and which address both their physical and psychological health.

Our overall aim is to set up and evaluate a package of online programmes to promote healthy eating, weight management and physical activity, in a patient-centred and cost-effective way, and reduce the psychological distress that is very common amongst people living with type 2 diabetes.

After 6 months of our proposed intervention (see below) we aim to show improvements in health: improved long term blood glucose management, reduced weight or body mass index (weight for height), improved blood fats and blood pressure and improved emotional well-being.

This project brings together 2 industrial partners and 1 not-for-profit organisation to recruit 2,000 people with T2DM. During routine care appointments in their local GP practices eligible patients will be offered a package of additional digital tools to support them in making and maintaining healthy lifestyle changes:

\\*OurPath, a 3-month online coaching programme to support weight loss and physical activity

\\*Silvercloud (Space from Diabetes programme)

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\*Commit to Change, an online goal setting programme to support users to set and achieve their own health goals, e.g. weight loss, alcohol reduction, smoking cessation.
The content of each patient's package will be personalised according to their identified needs and it is anticipated that many patients will be signposted from one tool to another as their goals and needs change.

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South West London Health and Care Partnership	South London Diabetes Test Bed	£305,480	£305,480
CITIZEN COMMUNICATIONS LIMITED		£79,432	£55,602
Health Innovation Network (South London AHSN, hosted by Guy's & St Thomas' NHS FT)		£24,000	£0
HEALUM LTD		£142,759	£99,931
OVIVA UK LIMITED		£100,941	£70,659

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Clinicians and managers are working together across South London to develop innovative ways of managing a growing number of people with diabetes. With a population of over 3 million, there are 159,819 people identified as having either Type 1 or Type 2 diabetes and managing the growing impact is a major clinical challenge.

For most people with diabetes, their condition can be managed at their GP practice and they do not need regular hospital visits. Those people with diabetes tell us that if they were given the opportunity and the knowledge, they could manage their condition better. Our GPs and practice nurses feel that they could better support their patients if they had access to the most up to date results and reports on their condition and the ability to share these with their patients. We want to use some of the digital tools that are already available and on the market and use them is a way that maximises their impact to help both our patients and our clinicians to resolve these issues.

Using digital solutions we can put the patient in control of their own health in a way that fits with the busy lifestyles of the 21st century. We want conversations between clinicians and patients to be truly collaborative, so patients develop a care plan in which they set their own health goals and are provided with the tools and techniques to manage their condition. Using Cloud computing we can share this information digitally so all those involved have the most up to date information at their fingertips. Through patient focused care planning we will see more people achieving the goals they set themselves, an improvement in their health and a reduced reliance on health care professionals.

Patients will receive their test results and information about their condition through a fun, animated video using a 'facebook' style approach via an app on their phone or website. The video is key to engaging patients, putting their condition into a real life context beyond that of doctors and hospitals.

The package is completed with access to virtual tailored support and education, links to local networks and established groups.

With a history of success in delivering change by working together, South London are confident that we have the knowledge and experience to deliver a new way of working that will empower patients and make whole scale population change in diabetes.

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