



Managing long-term conditions – remote monitoring

Competition for development contracts
April 2009

NHS
East of England

SBRI Government challenges.
Ideas from business.
Innovative solutions.

SBRI is a programme that brings innovative solutions to specific public sector needs, by engaging a broad range of companies in competitions for ideas that result in short-term development contracts.

Joint funders:

Technology Strategy Board
Driving Innovation



Summary

An SBRI competition is being launched in the East of England to find ways to help manage the growing numbers of people with long-term health conditions. It is looking to industry to bring new technologies to support the achievement of regional health priorities and increase the possibility of adoption in the NHS. This competition is open to all companies, including those not currently engaged in the health sector.

Increasingly, more people are living with long-term health conditions and quite apart from the personal issues this creates; it poses a significant challenge to the local health service. We are therefore looking to fund the development of ideas that could help alleviate this problem.

Have you got a technology or product idea that could help? Your business may use technology that has previously had nothing to do with the healthcare sector, but could cross over into this area and help us to care effectively for people with long-term conditions.

We would like ideas that can be shown to make a difference to the care of patients with long-term conditions. The areas that proposals should focus on are:

- Remote monitoring of patients combined with decision support to enable better care from home
- Innovative solutions to data and systems management with relation to patient care.

The new SBRI is led by the Technology Strategy Board and is a cross-government programme for the procurement of technology development projects including the demonstration and evaluation of new technologies. The NHS East of England and the East of England Development Agency, together with the European Regional Development Fund and the Technology Strategy Board are jointly funding this regional pilot SBRI competition.

All applications need to demonstrate that they will be contributing to carbon reduction. This could be through reduction in energy, travel, waste, water or building design. Innovations which reduce system inefficiency are very much welcomed.

Developments will be 100% funded and suppliers for each project will be selected by an open competition process and retain the intellectual property generated from the project, with certain rights of use retained by the NHS. The competition is run in two phases. Several projects, of up to 6 months and £100k, will be funded in Phase 1 feasibility. Successful projects will then be funded for Phase 2, up to 2 years and £750k in prototype development. Businesses will retain the intellectual property generated from the project, with certain rights of use retained by the NHS.

Background and challenge

Long-term conditions are those conditions that cannot, at present, be cured, but can be controlled by medication and other therapies. More and more people are living with long-term conditions such as diabetes, coronary heart disease, high blood pressure, chronic obstructive pulmonary disease, neurological conditions, mental health problems, and other conditions which impact significantly on their quality of life and that of their carer or family. Poorly managed patients and conditions can result in a high number of inpatient stays at hospital, extra complications and early death, and have an adverse effect on the individual's health and well-being. Technology is seen as providing a means for the health and care services to help address this challenge.

The World Health Organisation has identified that because of the demographic and lifestyle changes that are taking place, chronic conditions will be the leading cause of disability by 2020. Consequently the biggest healthcare challenge facing all developed countries is that of delivering care to older people and those with chronic conditions, and in supporting the more vulnerable members of society. Another consequence of the demographic change is that the number of care professionals will decrease so there will be increasing demand for care yet less resource to deliver it. To accommodate these changes any 21st century health and social care service will have to make greater use of technology; deliver care closer to, and sometimes in, the home; and make increasing use of people's capacity to care for themselves whilst offering them appropriate support.



Human and financial cost

About 15.4 million people in England live with a long-term condition. This is equivalent to around one in three of the total population - limiting the employment chances and incomes of a significant number of working age adults. The probability of living with a long-term condition increases with age: 17% of those aged under 40 say they have a long-term condition, rising to 60% of those aged 65. Due to the ageing population, it is estimated that the number of people in England with a long-term condition will rise by 23% over the next 25 years.

The Department of Health's best estimate is that the treatment and care of those with long-term conditions accounts for 69% of the total health and social care spending in England, or almost £7 in every £10 spent.

Patients with long-term conditions are very intensive users of the most expensive healthcare services: 5% of the patients, the majority of whom have one or more long-term condition account for 49% of all inpatient hospital bed days; long-term conditions account for 31% of the population, but use 52% of all GP appointments and 65% of all outpatient appointments. It is estimated that the treatment and care of those with these long-term conditions accounts for 69% of the primary and acute care budget in England.

Social care expenditure is especially focused on those patients with long-term conditions. By 2022 the number of disabled older people with informal care (in households) will rise by 39% to 2.4 million. The number of people in residential care homes will increase by 40% to 280,000. The number of people in nursing homes will increase by 42% to 170,000. Public expenditure on long-term care will rise by 94% to £15.9 billion. Total long-term care expenditure is forecast to rise by 103% to £26.4 billion. This is equivalent to a rise from 1.4% to 1.8% of GDP.

It is estimated that 85% of deaths in the UK are from chronic diseases. Within this, 36% of all deaths are from cardiovascular disease and 7% from chronic respiratory disease. The cost to the UK economy arising from premature deaths due to heart disease¹, stroke and diabetes is estimated to be £16 billion over the next 10 years.



Effective healthcare

Health and social care is most effective when it is centred on the person or family being cared for. Continuity of care between GPs, hospitals and social services can prevent unplanned re-admissions to hospital. Numerous initiatives have been launched to promote more patient-centred care, including integrated care pathways; patient and public involvement forums; and telephone help-lines to specialist nurses. It is vital to involve patients in the care process. Patients may not adhere to treatments they do not understand, or see as relevant or appropriate to their circumstances, and they may not tell their care professionals about this. This problem is particularly acute among older patients; for example it is estimated that three quarters of prescriptions to over 75s are not taken as prescribed.

Increasing preventative healthcare, for example by healthy eating, taking physical exercise, giving up smoking and reducing harmful levels of alcohol consumption, reduces the prevalence of long-term conditions. A combination of not smoking, being physically active, moderate alcohol intake and 5 servings of fruit and vegetables in those aged 45 to 79 could help people to live 14 years longer (Khaw et al, 2008). The most successful management of long-term conditions is usually based around the needs of the individual and their family and ensures that interventions are appropriate, well-timed and focused on supported self care.

'Our Health Our Care Our Say' states that all people with a long-term condition should be offered a personal health plan by 2010. Whilst the National Service Framework for Diabetes recommends that all patients should have a care plan to manage their condition, less than 50% of people have an agreed care plan (HCC 2006). Across all conditions, a recent study showed that only 50% of patients eligible were receiving the best treatment for their condition (Harrison et al, 2006). Increasingly, people with long-term conditions say that the health service needs to be more responsive to their needs, supporting them to manage their own condition, providing good access to services and working with their priorities. This represents a significant challenge to the NHS.

Current developments

A number of independent companies have already developed disease management services, including computer-guided telephone consultations with patients. However, the evidence for the cost-effectiveness of disease management remains limited². Mobile phones are being used to improve nurse-patient communication and monitor health outcomes in chronic disease. Innovative applications of mobile technology are expected to increase over time in community management of cancer, heart disease, asthma and diabetes. Here we have focused on mobile phone technology and its contribution to healthcare.

A telemonitoring project in three long-term conditions – chronic heart failure, type 2 diabetes and essential

¹ Department of Health website: www.dh.gov.uk ² King's Fund, www.kingsfund.org.uk

hypertension – resulted in changes to medication and health advice. The results suggest that 4 weeks is sufficient time in which to recognize the need to intervene clinically and that 12 weeks is enough time to make some progress towards a target.

A systematic review of the clinical effectiveness of interventions using information and communication technologies for managing and controlling chronic diseases did not show an improvement in clinical outcomes, although no adverse effects were identified. However, when these technologies were used in the detection and follow-up of cardiovascular diseases they provided better clinical outcomes, mortality reduction and lower health services utilization. Systems used for improving education and social support were also shown to be effective. At present the evidence about the clinical benefits of these technologies for managing chronic disease is limited.

An evaluation of home telehealth for patients with chronic obstructive pulmonary disease (COPD) and/or congestive heart failure (CHF) showed that, overall, the addition of telehealth to COPD/CHF patient care was not a significant predictor of health and well-being, either positively or negatively. In regard to patient perceptions of home telecare, they were satisfied with the technology and the way in which the care was delivered using it.

The devices that are available do not always link to each other, creating confusion for patients, carers and healthcare professionals. Healthcare staff need to be able to use a range of different devices to support their patients, and this can be off-putting. Devices need to be simple and foolproof.

Programmes and policy

Increasingly, the NHS is trying to move services to more local and convenient locations for patients, to enable them to live more independently and keep them out of hospital. Moving the information with the patients and across agencies is a crucial factor in ensuring that services function well in this way. The national 'Connecting for Health' programme will address this in time, but there is room for simple solutions to support care closer to home. However, where systems do exist there have been problems with interoperability which have prevented them becoming more widespread. Where there are initiatives in place which enable better data-capture, these are not always supported by the decision-support systems which would enable the health service to make best use of the data.

Currently the health service is focusing on improving the screening of the population to more effectively identify people with long-term conditions and those at risk. This is in order to put in place preventative strategies and enable more proactive management of conditions through personal health plans which anticipate individual needs. Personal Health Budgets, whereby patients will be allocated costs (and maybe cash) relating to their care and will be able to purchase their own care, are to be piloted over the next few

years. The Expert Patient Programme which trains patients to manage their own conditions will be extended to more people, along with better access to cardiac and pulmonary rehabilitation and other education programmes.

NHS East of England is committed to 11 Pledges. *Pledge 7 – we will improve the lives of those with long-term conditions* guides the long-term conditions agenda.

NHS East of England is working to 'add life to years, not just years to life', and will increase supported self care through provision of information, education and appropriate support to enable individuals and their carers to live full lives and improve their overall health and well-being.

Long-term conditions policy has focused on: **self-management, disease management, and case management**, alongside a number of related initiatives.

Case management – personalised care packages are tailored to the complex needs of those who are at greatest risk of hospital admission and require intensive health and social care support (often led by a community matron or a case manager). This approach has drawn on work in the United States (e.g. Evercare) where private healthcare providers have pioneered case management in order to keep people with long-term conditions out of hospital and keep costs down. Evidence has shown that intensive, ongoing, personalised case management can improve quality of life and health outcomes.

Disease management – this involves regular monitoring of how well patients are sticking to their treatment, and supports patients to manage their conditions better themselves. Good disease management involves identifying needs early and responding promptly with the right care and support. Personalised care planning actively supports this approach.

Self-management – this provides help for people with long-term conditions, who are well enough to lead full and active lives, to manage their own conditions, with support from health professionals (this includes patient education supported by the Expert Patient Programme). Self care is a well proven and highly effective means of improving long-term condition care³.

Other key aspects of long-term condition policy include:

Multidisciplinary teams – people with long-term conditions, in particular those with a range of complex needs, often require care or support from a range of different professionals and agencies. Bringing these together into multidisciplinary teams is therefore critical as it underpins a co-ordinated, seamless approach to delivery of care and support, avoiding fragmentation, confusion and duplication of effort.

Self-directed care – individual budgets and direct payments can improve people's lives, giving them more choice and control over services. They can also give people more purchasing power by bringing different sources of funding and support together in one place. There are currently individual budget pilots in 13 local authorities.

³Department of Health

Key policy documents

National Service Frameworks: treatment of diabetes, coronary heart disease and mental health in 2000; and long-term conditions in 2004.

The **2004 NHS Improvement Plan** acknowledged long-term conditions as a key NHS priority and (in cooperation with the Treasury) a public service agreement for **long-term condition** patients was set.

The **Long-term Conditions Model** published in January 2005 provides a framework to help local health and social care communities improve the care of people with **long-term conditions**.

The **Quality and Outcome Framework** of the new GP contract is designed to provide financial incentives for doctors to identify, monitor and treat patients

with many common long-term conditions (e.g. diabetes) more effectively.

The **Welfare Reform Green Paper – Pathways to Work: Helping people into employment** – sets out a strategy for enabling people with health conditions to move into and remain in work. Pathways to Work, launched in April 2003, marked the beginning of a new shared strategy between the Department of Health and the Department for Work and Pensions.

The **White Paper – Our health, our care, our say: a new direction for community services** – published in January 2006 focuses very strongly on the role of self care support for people with longer term needs. It includes commitments to provide integrated care plans for those with a long-term condition by 2010.

The **National Patients' Prospectus** launched on NHS Choices in November 2008 as 'Your health, your way - a guide to long-term conditions and self care'. The national offer is a generic product (applicable to all conditions), and covers the four pillars of existing Department of Health policy on support for self care (information, tools, skills and support networks) together with healthy lifestyle choices. 'Your health, your way' will provide people with long-term conditions with the information they need about the choices, which should be available to them locally, to enable them to self care in partnership with health and social care professionals. This is about providing information to people on choices they can consider in order to fully take part in discussions about their care.

A 2005 MORI survey (for the Department of Health) found that 82% of long-term condition patients said they already play an active role in their care but they wanted to do more to care for themselves. More than 90% were interested in being more active self carers. More than 75% said that if they had guidance/support from a professional or peer they would feel far more confident about taking care of their own health. More than 50% who had seen a care professional in the previous six months said that they had not often been encouraged to care for themselves.

Carbon output

The NHS in England has a current carbon output of 19m tons each year; we estimate that the East of England contributes approximately 2m tons a year. Healthcare related travel contributes 18% to the carbon output of the NHS and this could be dramatically reduced by solutions that allow remote care.

Reducing the carbon output of healthcare will reduce costs in the NHS by saving energy, reducing taxation relating to carbon taxation or carbon accounts as part of the Climate Change Act, and reducing the costs of system inefficiency and waste disposal. We anticipate that the innovations developed through this SBRI programme will aim to reduce

carbon output for the treatments they affect by 10%, when fully adopted, by a combination of both direct and indirect factors such as: reduced travel (distance, frequency, and mode), duration of stay as an inpatient, and the carbon-efficient manufacture of devices.

Scope

There may be solutions already available which could be adapted to be more useable in the NHS in patients' homes. Devices which link to each other, for example, or which have one mode of operation whilst covering a range of uses, could help adoption. There is also a need to increase mobility of services and better integrate information so that risks are alerted and decision-support systems can analyse data and help decision-making regarding interventions in a clinical and cost effective manner. At the same time, these solutions need to be acceptable to both patients and clinicians if they are to work effectively. Solutions could include a sensor, with facility for any new technology or device to be readily incorporated; pre-processing (if necessary) at, or close to the patient; communications data capture and analysis tools; diagnostic software

(with the ability to plug in new algorithms readily); and a clinical team alerting system (offering flexibility in terms of protocols and alerting mechanism).

This initiative for small businesses complements the wider ranging activities of the Assisted Living Innovation Platform, which is in turn working alongside the Department of Health 'Whole System Demonstrator' programme. Small businesses wishing to apply under the SBRI programme may wish to consider taking forward the priorities identified by the Assisted Living Innovation Platform, and its technology roadmap. They may also wish to get involved in the Assisted Living Innovation Platform Knowledge Transfer programme. See the Technology Strategy Board website for further information: www.innovateuk.org/ourstrategy/innovationplatforms/assistedliving.ashx

Applications submitted for this SBRI competition, which align with the Assisted Living Innovation Platform, may be referred to the Technology Strategy Board so that any opportunities for potential wider national benefit might be explored. This will, however, not exclude projects from funding in this competition. Rather, it is intended to assist applicants by connecting them to potential complementary opportunities.

All applications will be expected to demonstrate their impact on carbon reduction and sustainable development. Innovations will need to support models of care that contribute to lowering carbon output from healthcare. This reduction may be achieved through reduced travel (by patients and or healthcare professionals), reduced intensity of treatment, reduced hospitalisation, or reduced use of medical devices.

Application process

This competition is part of the Technology Strategy Board's SBRI programme which aims to bring novel solutions to Government departments' issues by engaging with innovative companies that would not be reached in other ways:

- It enables Government departments and public sector agencies to procure new technologies faster and with managed risk
- It provides vital funding for a critical stage of technology development through demonstration and trial – especially for early-stage companies.

The Technology Strategy Board brokers the open and transparent competition which will result in direct contracts between successful companies and NHS East of England.

The SBRI scheme is particularly suited to small and medium-sized businesses, as the contracts are of relatively small value and operate on short timescales for Government departments. It is an opportunity for new companies to engage a public sector customer pre-procurement. The intellectual property rights are retained by the company, with certain rights of use retained by NHS East of England.

Phase 1 is intended to show the technical feasibility of the proposed concept, and the development contracts in this phase will be for a maximum of 6 months and £100,000 per project. Phase 2 contracts are intended to develop and evaluate prototypes or demonstration units from the more promising technologies in Phase 1, and it is anticipated that funding will be £250k-£750k. At this stage contracts will be let for Phase 1 only. Phase 2 is dependent upon successful completion of Phase 1 and will go to the most successful Phase 1 contracts. However, suppliers should state their goals and outline plan for Phase 2 as an explicit part of the path to full commercial implementation in their Phase 1 proposal.

The application process is run through Health Enterprise East, the NHS Innovation Hub for the East of England. All applications should be made using the application forms which can be downloaded from www.hee.org.uk.

Please email your forms to: enquiries@nhsinnovationeast.org.uk by 12 noon on 30 June 2009 and return a signed paper copy of the application form by 5pm on 3 July 2009 to the following address:

Health Enterprise East, CTBI, Papworth Hospital, Papworth Everard, Cambridge CB23 3RE.

Companies will be expected to mobilise rapidly to start the project and payments will be made quarterly in advance against the agreed budget. It is important that projects run concurrently in order to make a fair assessment and move rapidly on to Phase 2 with those chosen.

Key dates

| | |
|---------------------------|----------------|
| Competition launch | 22 April 2009 |
| Deadline for applications | 30 June 2009 |
| Assessment | July 2009 |
| Feedback provided by | August 2009 |
| Contracts awarded | September 2009 |

More information

For more information on this competition, visit:

www.hee.org.uk.

For any enquiries, e-mail:

enquiries@nhsinnovationseast.org.uk

For more information about the SBRI programme, visit:

www.innovateuk.org/sbri

For more information about the
Technology Strategy Board, visit:

www.innovateuk.org

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The Technology Strategy Board is a business-led executive non-departmental public body, established by the government. Its role is to promote and support research into, and development and exploitation of, technology and innovation for the benefit of UK business, in order to increase economic growth and improve quality of life.