



Patient safety – improving health outcomes

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 which aims to use new technologies to improve patient care and eradicate errors - with a focus on patient safety. Could technology provide the answer and ensure best practice is applied every time?

Have you got a technology or product idea that could help? Your business may not be currently working in the healthcare sector but your technology could cross over into the sector and be applied to solve some of the problems.

Specifically, the competition is looking for improvement in these areas:

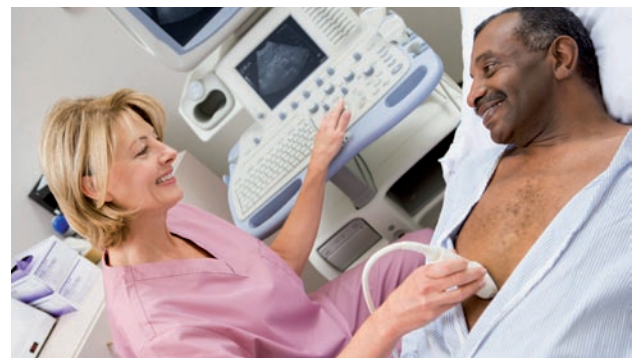
- Better patient monitoring, accurate transfer and interpretation of data to determine correct treatment
- 'Designing-in' best practice
- Elimination of calculation errors in medication.

We would like competition ideas that eliminate errors in patient care and demonstrate ways in which monitoring and assessment of patients could ensure higher quality and more effective care. Improvement in these areas would help support the achievement of regional health priorities and increase the possibility of adoption in the NHS.

The new SBRI programme is led by the Technology Strategy Board and is a cross-government programme for innovative solutions, which includes demonstrating and evaluating the new technologies that are developed. 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 welcomed.

Developments will be 100% funded and suppliers for each project are selected in this open competition process. 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

Whilst the human cost is unacceptable, the financial cost of error is also significant. In 1999, the Institute of Medicine in the USA published the report “To err is human: building a safer healthcare system”, in which it estimated that the cost of medical error was up to US\$29 billion per year in hospitals nationwide. In its review of patient safety, the UK’s National Audit Office found that NHS trusts had evaluated the cost of patient safety incidents at levels from £88,000 to £400,000 per year. It also identified the cost of specific patient safety incidents. The NAO reported that a fractured neck of femur due to a fall in hospital costs £10,000, and that adequate patient information or clinical details on diagnostic requests costs approximately £1 million per year.

The rate of adverse events in hospitals in the UK, New Zealand and Canada is estimated to be around 10% of inpatients (World Alliance for Patient Safety 2005 Forward Programme). In total, there were 727,736 incidents reported nationally in 2007, of which the most common are patient accidents, treatment procedures, medication errors and access, and issues around admission, transfer and discharge from hospital. Most incidents (over 500,000) occur in acute and general hospitals, with over 100,000 taking place in mental health services. Incidents most likely to result in severe harm are those occurring in the ambulance service, general practice and community services. Those most likely to result in death are in mental health services, ambulance services and general practice.

The National Patient Safety Agency records patient safety incidents across the country. The main areas which adversely affect patient care are:

- Communication, consent and confidentiality
- Aggressive behaviour
- Clinical assessment
- Documentation
- Infrastructure
- Access, admission, transfer discharge
- Patient accident
- Medication error
- Treatment procedure.

East of England profile

In the East of England, the Patient Safety Clinical Programme Board has examined local incidents and identified the following areas as priorities for action:

- Effective recognition and management of the acute deteriorating patient in hospital and mental health services
- Handovers/handoffs
- Medication errors, reconciliation and medicine management (especially opiates and optimum management of anticoagulation)
- Venous thromboembolism (VTE) prevention
- Accidents – slips, trips and falls
- Suicide prevention and harm reduction
- Reduction of patient aggression on acute mental health wards (allowing other patients to feel safe on acute wards)
- Prevention of ‘Never Events’
- Implementation of WHO surgical checklist
- Whole system implementation including leadership and organisational ownership, clinical engagement.



Cause and evidence

Whilst much of the evidence for effective care is available to the NHS, it often depends on effective and frequent monitoring of patients and analysis of data whether in hospital or the community. Systems are not always in place to enable this to happen effectively to ensure early warning to both the clinician and patient of possible deterioration and to take immediate action. This is particularly true for patients in an acute hospital setting as well as in the field of anticoagulation – to enable clotting mechanisms to be kept within therapeutic ranges.

Medication error often occurs as a result of calculation errors, especially for newborns and children. The way that drugs are presented can cause problems in identifying the correct medication. Side effects are not always identified and patients are not screened out from medication regimes. NHS agencies do not always follow up patients across organisational boundaries to ensure that the right medication is being correctly administered. There are errors recorded in the administration of opiates, anticoagulants, insulin and sedatives.

Sometimes, the solution to possible error is not always acceptable to patients and/or clinicians. In the case of VTE for example, the colour of support stockings is often cited as the reason that patients do not wear them. The experience of the NHS is that clinicians have to be involved in any new development if it is to be effectively adopted.

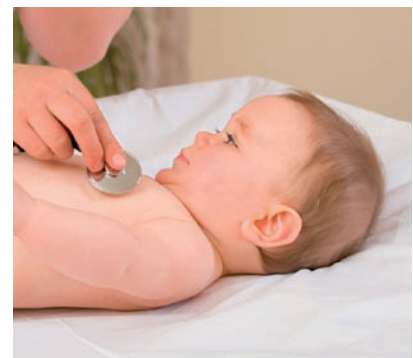
Connecting for Health, the NHS IT system, will be able to help to standardise practice in a number of areas which should help to prevent errors. For example, electronic prescribing could alert doctors to instances where certain combinations of drugs are harmful.

The implementation of National Institute for Clinical Excellence (NICE) guidance for VTE prevention and the acute deteriorating patient is improving practice.

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

Solutions are needed that will enable patients to be frequently monitored and data to be interpreted easily so that treatment can be determined and errors reduced. Any solution needs to be acceptable to the patient and easy to use by patients, carers and clinicians to ensure that it is adopted into healthcare practice. Non-invasive or minimally invasive devices could help to solve some of the current problems. There may also be solutions which can improve drug administration.

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 placed 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

References

- NICE Clinical Guidelines, Recognition of and response to acute illness in adults in hospital: July 2007
- Safer Care for the Acutely Ill Patient: NPSA
- NICE Clinical Guidelines, The assessment and prevention of falls in older people, 2004
- NPSA, Slips, Trips and Falls in Hospital, Feb 2007
- NICE, Guidance for primary care and for residential care institutions on the promotion of good mental health in older people, 2008
- NPSA 2007, Safety in Doses, 2007
- Medication Changes, IHI, **www.ihl.org/IHI/Topics/PatientSafety/MedicationSystems/Changes/**
- DH, National Suicide Prevention Strategy for England, 2002
- NICE Clinical Guidelines, Self-harm: The short-term physical and psychological management and secondary prevention of self-harm in primary and secondary care, 2004
- NICE Clinical Guidelines, Violence: The short-term management of disturbed/violent behaviour in in-patient psychiatric settings and emergency departments, 2005
- NPSA, With Safety in Mind (Mental Health), July 2006
- BMA, Safe Handover Safe Patient
- NICE/NPSA, Clinical and cost-effectiveness of interventions in medicines reconciliation at the point of admission: consultation, 2007
- Safety first: a report for clinicians, patients and healthcare managers. (Department of Health, 15 December 2006)
- Never events (NPSA) 2009
- WHO surgical checklist (NPSA) 2009

Technology Strategy Board

North Star House
North Star Avenue
Swindon
SN2 1UE
Tel: 01793 442700
Email: enquiries@tsb.gov.uk
www.innovateuk.org

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.