



Addressing functional needs in the elderly

SBRI Healthcare NHS England competition for development contracts

June 2015

Summary

A new national Small Business Research Initiative (SBRI) Healthcare competition is being launched by NHS England in partnership with the Academic Health Science Networks (AHSN's) to find innovative new products and services. The projects will be selected primarily on their potential value to the health service and on the improved outcomes delivered for patients.

The competition is open to single companies or organisations from the private, public and third sectors, including charities. The competition will run in two phases:

- Phase 1 is intended to show the technical feasibility of the proposed concept. The development contracts placed will be for a maximum of 6 months and up to £100,000 (inc. VAT) per project
- Phase 2 contracts are intended to develop and evaluate prototypes or demonstration units from the more promising technologies in Phase 1. Only those projects that have completed Phase 1 successfully will be eligible for Phase 2.

Developments will be 100% funded and suppliers for each project will be selected by an open competition process and retain the intellectual property rights (IPR) generated from the project, with certain rights of use retained by the NHS.

The competition opens on 15th June 2015. The deadline for applications is 1200hrs on 11th August 2015.

Background

Multi-morbidity – defined as suffering two or more chronic conditions – affects patients of all ages but prevalence increases markedly with age, being present in most people aged 65 years and older¹.

The type of chronic conditions included in studies of multi-morbidity varies, making it difficult to find consistent reports of prevalence in the UK, but it is widely recognised that the number of patients with multi-morbidity is increasing – particularly as the population ages - and that those patients are likely to have complex needs for healthcare². Some of the most prevalent chronic diseases in the over 65's include:

- Cardiovascular disease - including angina, heart attack, stroke, heart murmur and arrhythmia
- Musculoskeletal - including osteoarthritis, rheumatism and osteoporosis
- Respiratory diseases - including chronic lung disease, asthma
- Diabetes
- Cancer

Multi-morbidity has a particularly significant impact on the workload for both primary and secondary care, with estimates of between 32-78% of all consultations in general practice taken up by those patients² depending on the classification of chronic diseases included in the definition of multi-morbidity.

In addition to the burden on primary care, multi-morbidity has wider implications in terms of association with high mortality, reduced functional status for the patient and increased use of both in-patient and

¹ Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study - Barnett *et al*, **Lancet** 2012: 380: 37-43

² Epidemiology and impact of multi-morbidity in primary care: a retrospective cohort study – Salisbury *et al*, **British Journal of General Practice** 2011. DOI: 10.3399/bjgp11X548929

ambulatory health care¹. Almost 30% of inpatient days in the UK are used by people with three or more chronic conditions⁷.

The problems commonly identified and experienced by patients with multi-morbidity are numerous, diverse and commonly associated with the single-disease framework, by which modern day healthcare is delivered^{3,4}. This leads to fragmentation of care, confusion and a burden of self-responsibility on an – often increasingly frail – multi-morbid elderly patient.

Frailty is an expression of a clinical condition that implies concern about an elderly person’s vulnerability and outlook; it is associated with both physical and functional decline and has been shown often to overlap with multi-morbidity⁵.

Deterioration to a state of worse frailty is more common than improvement and is strongly associated with adverse outcomes and increased rates of admission to long term care⁵.

There are several definitions of and means to measure frailty, making prevalence unclear, however, it is estimated that between a quarter and half of people older than 85 years are frail and therefore at increased risk of ‘geriatric syndromes’ which are manifested as a variety of health problems^{5,6}.

This competition theme of ‘Multi-morbidities in the frail elderly’ focuses on 3 such problems:

- Falls
- Incontinence
- Decline in functional ability

Management of the rising prevalence of multi-morbidities is a major challenge facing healthcare providers - both now and increasingly in the future – involving addressing not only the diseases themselves, but the wider problems associated with living with multi-morbidities.

Functional difficulty is a major burden of multi-morbidity and is particularly common in older people. This competition seeks to find technologies to help address, and provide solutions for, functional difficulties associated with patients – particularly the (increasingly frail) elderly – suffering multi-morbidities.

Challenges

There are three key challenges commonly associated with functional difficulties in the frail and multi-morbid patient, outlined below, to which technologies should be aligned.

Applications should consider the design of the technology in order that it is inclusive and considers the needs of the frail, multi-morbid elderly patient.

³ Managing patients with multimorbidity in primary care – Wallace et al, **BMJ** 2015; 350:h176 doi:10.1136/bmj.h176

⁴ Multimorbidity: Time for action rather than words - Salisbury, C, **British Journal of General Practice**, February 2013
DOI: 10.3399/bjgp13X661020

⁵ Frailty in Elderly People – Clegg et al, **The Lancet**, 2013, 381, 752-762

1. Detecting frailty and monitoring deterioration

There are many ways of defining, detecting and diagnosing frailty; from questionnaires completed by the individual, to hand grip strength tests. The Comprehensive Geriatric Assessment (CGA) is an internationally established method to assess an elderly person's medical, psychological and functional capability, to allow a plan for treatment and follow-up to be developed⁶. Whilst the CGA is recognised as the gold standard to detect frailty (and many feel it should be used more widely), there is a practical limitation of the time and expertise required from a multi-disciplinary team⁵. Therefore there is a need for those involved in research and clinical care of frailty to have simple, valid, accurate and reliable methods to detect frailty?⁵.

What if we could easily monitor frailty and the deterioration of frailty?

What if GPs could remotely monitor whether or not patients were coping (e.g. through wearables)?

What if data could be available to all stakeholders?

What if we could detect changes in daily living patterns e.g. routines, outings, hygiene, hydration etc?

What if we could detect indicators such as respiratory rate?

What if information on current state of frailty could be available to e.g. carers, emergency staff etc?

2. Activities of daily living

Difficulties performing activities of daily living such as bathing and feeding may be exacerbated and, equally, exacerbate conditions, triggering the need for additional and escalating levels of care. For example, the decline in ability to cope with daily activities is associated with increased frailty, a diminished quality of life, increased service utilisation and higher healthcare costs⁶.

The types of activities of daily living of interest within this challenge include:

- Dressing above and below the waist
- Grooming
- Bathing/showering
- Light housework
- Preparing meals

What if there were technologies available to assist frail, elderly, multi-morbid patients cope with activities of daily living?

What if there were technologies to remind and assist people with essential activities?

What if there technologies to help people remain independent within their home environment?

What if there were technologies to enable people to maintain a healthy fluid balance?

What if there were technologies to ensure good nutrition?

What if there were technologies to help people remain mobile?

What if there were technologies to assist with personal care?

⁶ A randomized trial of a multicomponent home intervention to reduce functional difficulties in older adults – Gitlin et al, *JAGS*, 54: 809-816, 2006

3. Treatment burden

Individuals suffering from a collection of chronic illnesses, which often require greatly differing and incompatible management, are more likely to be receiving concurrent medications. This, so called, polypharmacy, means patients experience consequent difficulties with treatment adherence further impacting the successful management of conditions⁷.

The associated lifestyle changes required to both understand and manage multiple conditions puts a burden on the patient and can exacerbate physical and psychological difficulties and increasing use of healthcare services.

This call seeks technologies and solutions that can assist patients with the burden of treatment, including:

- Adhering to disease management plans and lifestyle changes
- Drug concordance, adherence and compliance - may include innovative delivery devices designed to assist frail multi-morbid elderly in taking medicines correctly as prescribed

What if there were technologies to help frail, elderly multi-morbid patients manage their conditions?

What if there were technologies to help relieve the burden of managing multiple conditions in the elderly?

What if there were technologies to improve treatment compliance and adherence in the multi-morbid elderly?

What if there were technologies to help frail patients understand how best to manage their particular combination of conditions?

What if there were technologies designed inclusively to assist in the delivery of a medication or treatment?

⁷ Chronic diseases: what happens when they come in multiples? – **British Journal of General Practice**, April 2007

Application process

This competition is part of the Small Business Research Initiative (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 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 the NHS and Department of Health.

The competition is designed to show the technical feasibility of the proposed concept, and the development contracts placed will be for a maximum of 6 months and up to £100,000 (incl. VAT) per project.

The application process is managed on behalf of NHS England by the Eastern Academic Health Science Network through its delivery agent Health Enterprise East. All applications should be made using the application forms which can be accessed through the website www.sbrihealthcare.co.uk.

Briefing events for businesses interested in finding out more about the competition will be held on the 18th June and 25th June 2015 in Birmingham and London respectively. Please check the website for confirmation of dates and venues, information on how to register and details of the categories that will be presented at each event.

Please complete your forms using the online application process and submit them by 1200hrs on the 11th August 2015.

Key dates

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| Competition launch | 15 June 2015 |
| Briefing events | 18 & 25 June 2015 |
| Deadline for applications | 11 August 2015 |
| Assessment | September / October 2015 |
| Contracts awarded | November 2015 |
| Feedback provided by | December 2015 |

More information

For more information on this competition, visit:

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For more information about the SBRI programme, visit:

www.innovateuk.org/SBRI