



## Cancer: Screening, Earlier Diagnosis & Faster Diagnosis

SBRI Healthcare NHS England competition for development contracts

July 2017

## 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 (AHSNs) 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 25<sup>th</sup> July 2017. The deadline for applications is 12:00 on 6<sup>th</sup> September 2017.

## Background

### **Cancer - survival and incidence: both increasing**

Cancer survival rates in England are at their highest ever level, with over 7000 more people surviving cancer than three years ago.<sup>1</sup>

However, urgent GP referrals to specialists have increased by over 500,000 since 2014, to over 1.7 million people. Since the early 1990s UK incidence rates of all cancers have increased by 12%. In 2014, 357,000 new cases of cancer were diagnosed across the UK, which is equivalent to 980 new diagnoses every day.<sup>2</sup> By 2035, there are projected to be over 500,000 people diagnosed with cancer in the UK each year<sup>3</sup>, an increase of 40% compared to current levels.

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<sup>1</sup> Next Steps on the NHS Five Year Forward View, 2017 <https://www.england.nhs.uk/publication/next-steps-on-the-nhs-five-year-forward-view/>

<sup>2</sup> Cancer incidence statistics, Cancer Research UK <http://www.cancerresearchuk.org/health-professional/cancer-statistics/incidence/all-cancers-combined> Accessed May 2017

<sup>3</sup> Smittenaar et al. Cancer incidence and mortality projections in the UK until 2035. *British Journal of Cancer* (2016) **115**, 1147–1155

## Waiting Times

National waiting times for cancer referral, diagnosis and treatment are designed to demonstrate the quality of cancer diagnosis, treatment and care that NHS organisations deliver.

There are currently eight national waiting time targets<sup>4</sup> for cancer referral, diagnosis and treatment. Seven of these are being met, however, as shown in the Table below, fewer than 85% of patients are getting treatment within the 62 day target, and this target has not been met since 2013/14. Between April & October 2016, this equates to approximately 13,000 people waiting longer than two months to start treatment following an urgent GP referral.<sup>5</sup>

Table 1 National Standards for waiting times in cancer diagnosis and treatment

Target (maximum number of days)	Required Operational Standard (percentage of patients)	Performance in 2015/16 <sup>6</sup>
14 day target between GP referral to appointment with cancer specialist	93%	94.1%
31 day target between decision to treat and receiving first treatment	96%	97.6%
62 day target between GP referral to receiving first treatment	85%	82.4%

## Diagnostic Bottleneck

With both the 14 day and 31 day targets in Table 1 being met, the failure to meet this 62 day target is primarily due to a bottleneck in diagnostic capacity between being seen by a specialist and a decision being made to treat (Figure 1).

By 2020, this bottleneck will become the focus of a new standard<sup>7</sup>, which aims to give patients a definitive diagnosis of cancer within 28 days of being referred, increasing the pressure on the diagnostic bottleneck.

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<sup>4</sup> Delivering Cancer Waiting Times - A Good Practice Guide, NHS Improvement, 2016  
<https://improvement.nhs.uk/resources/delivering-cancer-waiting-times-good-practice-guide/>

<sup>5</sup> Efforts to improve earlier diagnosis, Cancer Research UK, 2016  
[https://www.cancerresearchuk.org/sites/default/files/dec16\\_early\\_diagnosis\\_briefing.pdf](https://www.cancerresearchuk.org/sites/default/files/dec16_early_diagnosis_briefing.pdf) Accessed May 2017

<sup>6</sup> Waiting Times for Suspected and Diagnosed Cancer Patients - 2015-16 Annual Report – NHS England  
<https://www.england.nhs.uk/statistics/wp-content/uploads/sites/2/2016/06/Cancer-Waiting-Times-Annual-Report-201516-1.pdf>

<sup>7</sup> Next Steps on the NHS Five Year Forward View, 2017 <https://www.england.nhs.uk/publication/next-steps-on-the-nhs-five-year-forward-view/>

# THE CANCER REFERRAL TARGET

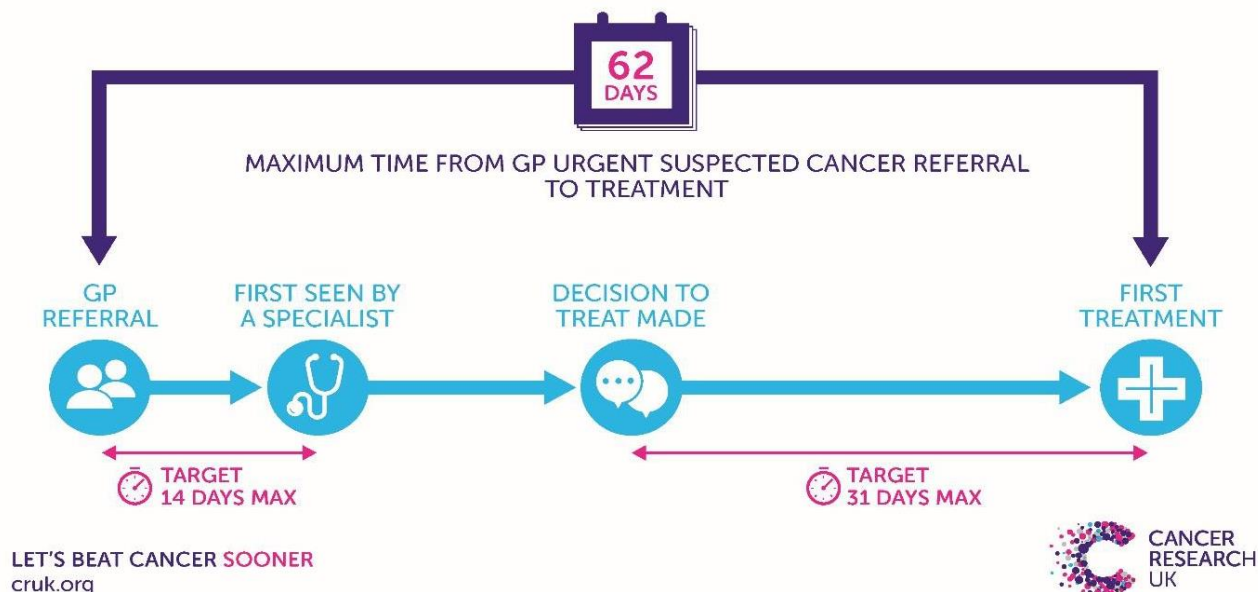


Figure 1 Cancer Referral Targets – Diagnostic Bottleneck<sup>8</sup>

## The Challenge

The National Cancer Transformation Board have published six strategic priorities, including earlier and faster diagnosis, together with increased screening, with the aim of improving both patient care and outcomes<sup>9</sup>.

Screening services are being expanded to detect cancer earlier in asymptomatic patients. However, increased levels of screening, together with the requirement for earlier and faster diagnostics are resulting in increasing pressures on diagnostic capacity.

For example, greater uptake of screening for bowel cancer is expected to put additional pressure on endoscopy services and will contribute to the estimated additional 750,000 endoscopy procedures which will be required by 2020, a 44% increase on current levels.<sup>10</sup> Similarly, demand for imaging services has been growing at nearly 6% per year and the number of CT and MRI examinations is expected to more than double by 2023-24, compared to 2013-14.<sup>11</sup>

<sup>8</sup> Efforts to improve earlier diagnosis, Cancer Research UK, 2016  
[https://www.cancerresearchuk.org/sites/default/files/dec16\\_early\\_diagnosis\\_briefing.pdf](https://www.cancerresearchuk.org/sites/default/files/dec16_early_diagnosis_briefing.pdf) Accessed May 2017

<sup>9</sup> Cancer Strategy Implementation Plan, <https://www.england.nhs.uk/cancer/strategy/> Accessed May 2017

<sup>10</sup> Scoping the Future - An evaluation of endoscopy capacity across the NHS in England, 2015. Cancer Research UK  
[https://www.cancerresearchuk.org/sites/default/files/scoping\\_the\\_future\\_-\\_final.pdf](https://www.cancerresearchuk.org/sites/default/files/scoping_the_future_-_final.pdf) Accessed May 2017

<sup>11</sup> An evaluation of Imaging Capacity across the NHS in England, 2015. Cancer Research UK  
[https://www.cancerresearchuk.org/sites/default/files/horizon\\_scanning\\_-\\_final.pdf](https://www.cancerresearchuk.org/sites/default/files/horizon_scanning_-_final.pdf) Accessed May 2017

Pathology services are also experiencing increasing demands due to a number of factors, including greater incidence of cancer, the increasing complexity of referrals and requests, together with the initiatives to have cancer diagnosed earlier.<sup>12</sup>

Additionally, revised NICE guidelines<sup>13</sup> on suspected cancer are also contributing to increased demands on diagnostic services, as the guidelines state that referral is indicated when the probability of suspected cancer is 3% or more. The aim of this reduced symptom threshold is to achieve earlier diagnosis and therefore better patient outcomes.

## Categories

The theme of the current competition is Cancer and within this topic three sub-themes have been identified:

- Screening,
- Earlier Diagnosis and
- Faster Diagnosis

The call has been developed by identifying cross-cutting themes from the work of national bodies including NHS England, Cancer Research UK and NICE. The focus of these sub-themes has then been validated with input from national stakeholders and clinicians. The sub-themes are outlined in further detail in the sections below.

The importance of screening, earlier and faster diagnosis is also relevant for people who are living with and beyond cancer.

While we have identified three sub themes, this competition has a single-entry point.

Companies applying should be offering truly innovative and game changing solutions and have considered:

- How will you ensure that your technology is affordable to the NHS both immediately and throughout the life of the product? What health economics evidence will the NHS require before the technology can be adopted?
- How will you ensure that the technology will be acceptable to patients (and their families) and to healthcare workers?
- How will the proposed solution impact on the clinical care pathway, how will the care pathway need to be changed to deliver system-wide benefits and how will you achieve that?

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<sup>12</sup> Testing times to come? An evaluation of pathology capacity across the UK, 2016. Cancer Research UK [http://www.cancerresearchuk.org/sites/default/files/testing\\_times\\_to\\_come\\_nov\\_16\\_cruk.pdf](http://www.cancerresearchuk.org/sites/default/files/testing_times_to_come_nov_16_cruk.pdf) Accessed May 2017

<sup>13</sup> Suspected cancer: recognition and referral, NICE guideline NG12, 2015 <https://www.nice.org.uk/guidance/ng12>

## Category 1: Screening

Detecting cancer in its earliest stages means treatment has a greater chance of success, so increasing the chances of survival. Screening programmes, within targeted populations, can be an effective method of identifying those at risk of cancer at its earliest stages.

Screening services are being expanded with the aim of detecting cancer earlier, at a time when there are often no clinical symptoms, particularly for those people with higher a risk of cancer.

In the UK, there are currently national screening programmes in place for breast, bowel and cervical cancer. Screening programmes detect approximately 5% of all cancers, 10% of bowel cancers and 30% of breast cancer . In the UK, breast cancer screening saves approximately 1300 lives per year.<sup>14</sup>

A new bowel cancer screening programme - faecal immunochemical testing (FIT) – is being introduced in 2018 for more than 4 million people and aims to increase the uptake of bowel cancer screening by 10%<sup>15</sup>. In pilot studies with FIT there was an increase in participation from 57 per cent to 65.5 per cent screening uptake for men of all ages.<sup>16</sup>

However, the uptake of screening varies across geographies, demographic groups and socio-economic status. Cervical screening rates have been declining, particularly among the under 50s, and especially in women aged 25-29.<sup>17</sup> A recent survey of women eligible for cervical screening in Britain indicated that 28% of those not attending were not even aware that a screening programme was in place. Younger women and those from ethnic minority backgrounds were more likely to be unaware of screening programmes, while older women were more likely to have decided not to be screened.<sup>18</sup>

The cervical screening programme is, however, being changed, by increasing the number of women being tested for Human Papilloma Virus (HPV), which causes 99.7% of cervical cancers. This helps to identify those women that may require more frequent monitoring from those that may not need to attend so regularly.<sup>19</sup>

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<sup>14</sup> Achieving world-class cancer outcomes: a strategy for England 2015-2020, 2015

[https://www.cancerresearchuk.org/sites/default/files/achieving\\_world-class\\_cancer\\_outcomes\\_-\\_a\\_strategy\\_for\\_england\\_2015-2020.pdf](https://www.cancerresearchuk.org/sites/default/files/achieving_world-class_cancer_outcomes_-_a_strategy_for_england_2015-2020.pdf)

<sup>15</sup> Achieving world-class cancer outcomes: a strategy for England 2015-2020 – One Year On, 2016

<https://www.england.nhs.uk/wp-content/uploads/2016/10/cancer-one-year-on.pdf> Accessed June 2017

<sup>16</sup> Major increase in bowel cancer screening uptake shown with new screening test, Cancer Research UK 2015

[http://www.cancerresearchuk.org/about-us/cancer-news/press-release/2015-03-27-major-increase-in-bowel-cancer-screening-uptake-shown-with-new-screening-test-0?\\_ga=2.19232568.1638500759.1496761027-1088244533.1494433509](http://www.cancerresearchuk.org/about-us/cancer-news/press-release/2015-03-27-major-increase-in-bowel-cancer-screening-uptake-shown-with-new-screening-test-0?_ga=2.19232568.1638500759.1496761027-1088244533.1494433509) Accessed June 2017

<sup>17</sup> Cervical Screening Programme, England, Statistics for 2014-15,

<http://content.digital.nhs.uk/searchcatalogue?productid=19239> Accessed June 2017

<sup>18</sup> Marlow et al. (2017) Understanding the heterogeneity of cervical cancer screening non-participants: Data from a national sample of British women. *European Journal of Cancer* Vol 80, p30-38

<sup>19</sup> Achieving world-class cancer outcomes: a strategy for England 2015-2020 – One Year On, 2016

<https://www.england.nhs.uk/wp-content/uploads/2016/10/cancer-one-year-on.pdf> Accessed June 2017

The following “WHAT IF” statements are examples of scenarios that have the potential to widen the range of cancers that can be screened for, or boost the uptake of screening in targeted populations. The statements are intended as examples only.

## What if technology could facilitate better screening methods and improve the uptake of screening in targeted populations?

What if we could more effectively target the populations that may benefit from screening ?

What if we could improve the uptake of cancer screening in targeted populations ?

What if we could improve cancer screening technologies ?

What if we could target the cancer survivor population more effectively?

What if we could initiate targeted screening by analysing family history and genetic predisposition to cancer?

What if we could identify patients at higher risk of cancer (e.g. bowel, breast or lung cancer)?

What if remote screening services were more widely available (e.g. self sampling methods)?

What if screening methods were less invasive or more “patient friendly”?

What if there were screening tests for a wider range of cancers?

What if there were a greater ability to determine cancer risk?

## Category 2: Earlier Cancer Diagnosis

Diagnosing cancer early improves the chances of successful treatment and the best chance of survival, yet nearly half of cancers in England are diagnosed at an advanced stage.

In 2012-13, while nearly 60% of all cancers were diagnosed following referral by a GP to a specialist, a fifth were only diagnosed after presenting as an emergency, and more than three quarters of these emergency admissions were late stage presentations (Stage III or IV).<sup>20</sup>

To help overcome the delays in diagnosis currently encountered by patients with 'vague' symptoms, who have typically experienced numerous repeat referrals by GPs to specialists, six pilot multidisciplinary diagnostic centres (MDC) have been established and there will be ten MDCs across England by March 2018.

The MDCs are being established for patients with 'non-specific but concerning' symptoms, including those with rarer cancers, who need access to appropriate tests to improve early diagnosis.

Access to diagnostic tools which could detect a variety of cancers, including pancreatic, ovarian and lung cancer, would better equip clinicians to diagnose earlier and allow potential treatment to start sooner. Additionally, if patients were more aware of potential symptoms, they may seek medical attention earlier.

The following "WHAT IFs" are examples of scenarios that have the potential to widen the range of diagnostic tests available or better inform patients. They are intended as examples only.

### What if we could diagnose patients with vague or non-specific symptoms of cancer earlier and more effectively ?

What if patients with vague symptoms were better informed ?

What if there were better diagnostic technologies or wider access to existing technologies?

What if patients had a better understanding of possible symptoms?

What if patients with vague symptoms sought and could access help earlier?

What if existing technologies could be adapted for earlier diagnosis?

What if there were DNA, or other biomarker, based diagnostic tests for lung, bowel and prostate cancer?

What if there were wider access to imaging or diagnostic technologies in primary care or the community?

What if lung, oesophageal ovarian or pancreatic cancers could be detected earlier?

<sup>20</sup> Cancer diagnosis and treatment statistics, Cancer Research UK, <http://www.cancerresearchuk.org/health-professional/cancer-statistics/diagnosis-and-treatment#heading-Zero> Accessed May 2017

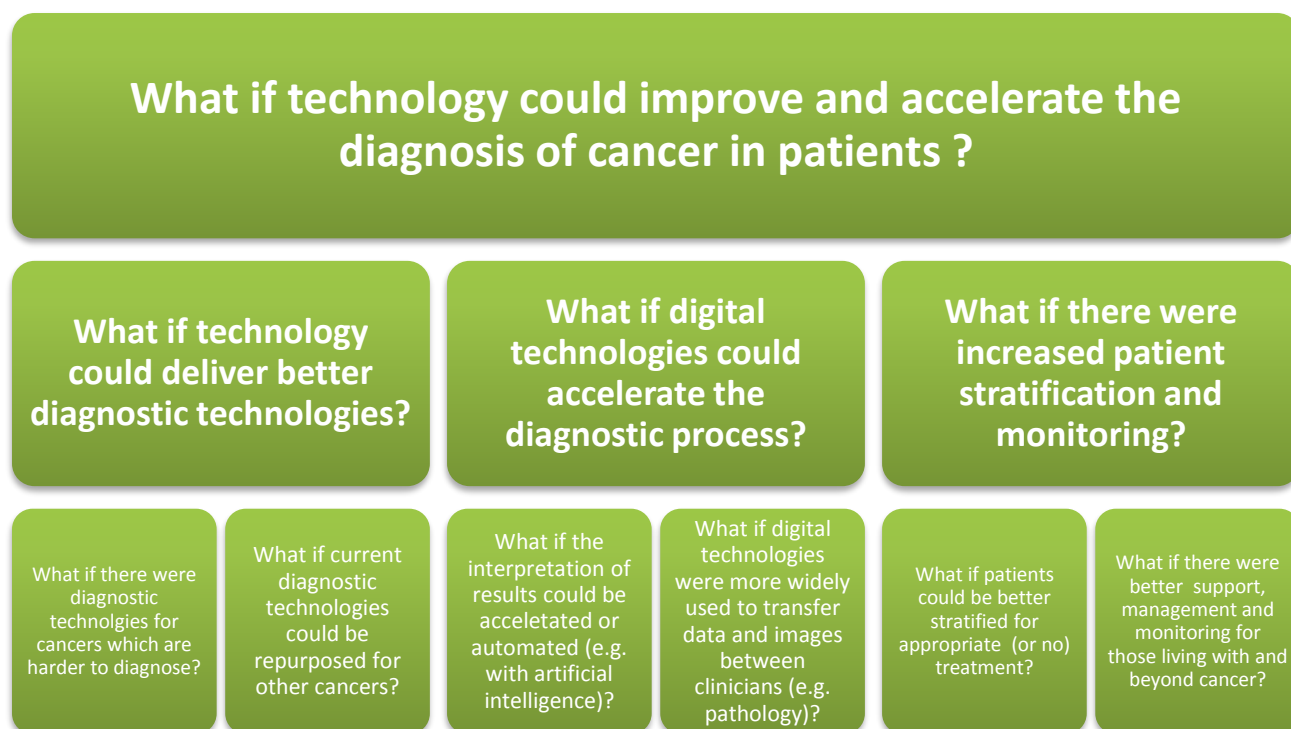


### Category 3: Faster Cancer Diagnosis

Achieving faster diagnosis between referral by a GP and a decision to treat, so allowing treatment to start within the 62 day national standard, requires improved diagnostic capacity. The new standard<sup>21</sup>, aiming to give patients a definitive diagnosis of cancer within 28 days of referral by 2020, is likely to exacerbate the diagnostic bottleneck.

Innovative diagnostic solutions, modifications to the ways diagnostic information is exchanged and new methods for speeding up the interpretation of results have been identified as possible ways of facilitating quicker diagnosis, potentially easing the bottleneck and so improving the chances of survival.

The following “WHAT IFs” are examples of scenarios that have the potential to ease the diagnostic bottleneck. They are intended as examples only and are in no way prescriptive or limiting. Applicants should think as broadly as possible.



#### 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.

<sup>21</sup> Next Steps on the NHS Five Year Forward View, 2017 <https://www.england.nhs.uk/publication/next-steps-on-the-nhs-five-year-forward-view/>

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 portal which can be accessed through the website [www.sbrihealthcare.co.uk](http://www.sbrihealthcare.co.uk).

Briefing events for businesses interested in finding out more about these competitions will be held on the 25<sup>th</sup> July in London, 26<sup>th</sup> July in Nottingham & Leeds and 27<sup>th</sup> July in Manchester. Please check the [SBRI Healthcare Website](#) for confirmation of dates and venues, information on how to register and details of the challenges that will be presented at each event.

Please complete your application using the online portal and submit all relevant forms by 12:00 on 6th Sept 2017.

#### Key dates

Competition launch	25 <sup>th</sup> July 2017
Briefing events	25 <sup>th</sup> July 2017 - London
	26 <sup>th</sup> July 2017 - Nottingham
	26 <sup>th</sup> July 2017 - Leeds
	27 <sup>th</sup> July 2017 - Manchester
Deadline for applications	Noon 6 <sup>th</sup> September 2017
Assessment	September-November 2017
Contracts awarded	End of November 2017
Feedback provided by	December 2017

**Other briefing events may be held, so please check our website for updates**

#### More information

For more information on this competition, visit:

[www.sbrihealthcare.co.uk](http://www.sbrihealthcare.co.uk)

For any enquiries e-mail:

[sbrienquiries@hee.co.uk](mailto:sbrienquiries@hee.co.uk)

For more information about the SBRI programme, visit:

<https://www.gov.uk/government/collections/sbri-the-small-business-research-initiative>

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