Using Cancer Decision Support Tools to support the early diagnosis of cancer

Executive Summary

***A**ccelerate, **C**oordinate, **E**valuate (**ACE**) Programme*

An early diagnosis of cancer initiative supported by:
NHS England, Cancer Research UK and Macmillan Cancer Support

ACE Cancer Decision Support Tools Cluster

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About the ACE Programme

The Accelerate, Coordinate, Evaluate (ACE) Programme is an early diagnosis of cancer initiative focused on testing innovations that either identify individuals at high risk of cancer earlier or streamline diagnostic pathways. It was set-up to accelerate the pace of change in this area by adding to the knowledge base and is delivered with support from: NHS England, Cancer Research UK and Macmillan Cancer Support; with support on evaluation provided by the Department of Health's Policy Research Units (PRUs).

The first phase of the programme consisted of 60 projects split into various topic-based clusters to facilitate evidence generation and learning. The second phase (pilots live from January 2017) comprises five projects exploring Multidisciplinary Diagnostic Centre (MDC) based pathways. The learning from ACE is intended to provide ideas and evidence to those seeking to improve local cancer services. The evaluations and findings are produced independently, and are therefore, not necessarily endorsed by the three supporting organisations.

Executive Summary

This report covers learning from the **ACE Cancer Decision Support Tools Cluster**. This encompassed a series of 3 projects, which sought to understand the use of Cancer Decision Support (CDS) Tools in General Practice. The findings presented here examine the impact, role and utility of these tools for GPs in improving their ability to help to diagnose cancer earlier.

Context

Achieving earlier diagnosis of cancer as a means to improving survival, reducing mortality and improving quality of life is a key challenge identified in Achieving World Class Cancer Outcomes: A strategy for England 2015 – 2020 [1].

Enhancing the ability of GPs to identify those who need a rapid onward referral could play an important role in helping to achieve earlier diagnosis of cancer more consistently. This is a complex task considering the list of symptoms that could suggest a cancer; specifically thinking about the challenge of differentiating concerning vague symptoms from more common (non-cancer) complaints. An investigation of CDS Tools is therefore being carried out with the aim of gaining an understanding of what role they could play in supporting GPs to diagnose cancer earlier.

Cancer Decision Support Tools

CDS Tools are computer based programmes integrated into a GP's usual patient management system. They operate using a range of rigorously researched and developed algorithms that take into account a variety of information about an individual; from age and postcode through to tumour site specific cancer symptoms – resulting in a risk score being generated. It is this score that the GP is able to refer to in helping them to make any decisions around the patient, wherever they might find it to be helpful. There are three main functions of existing CDS Tools:

- **Prompt/alert boxes:** Based on the patient's read-coded details and symptoms recorded in the GP's IT system, a prompt is activated to alert the GP to the potential risk of cancer if the risk score is above a defined threshold.
- **Symptom checker:** If a GP suspects cancer, additional patient symptoms can be entered into the symptom checker template and a risk score will be produced based on relevant read-coded and demographic data. This can be utilised by a GP either following a prompt or by the GP's own choice prior to a prompt. These risk scores can act as a second opinion to support the GP's decision making.
- **Risk Stratification:** Databases held in General Practice containing patient information can be used to produce a collection of risk scores, determining which individuals are at high risk of cancer. These patients can then be contacted and brought in for further investigation where appropriate.

ACE CDS Tool Projects

ACE Projects used the QCancer risk algorithm[2], in most cases integrated within the EMIS IT system.

The main objectives covered by the three ACE projects were:

- To assess what influence CDS Tools have on GPs' decision making around the patient
- To understand how effectively CDS Tools identify individuals who are at high risk of cancer
- To investigate the impact on earlier diagnosis of cancer through linking up with patient outcome and staging data
- To understand how best to spread and improve the uptake and consistent use of CDS Tools in General Practice.

Key Findings

As a support tool, CDS Tools present evidence of being useful to GPs.

The tool was able to help GPs when formulating clinical decisions and also in reinforcing the decisions they had already made. Comments from GPs strongly underline this view; in a survey of GPs involved with project 2, 60% stated that they had used the tool to help in their decision making regarding the onward referral of a patient.

CDS Tools can heighten a GP's awareness of cancer.

CDS Tools worked effectively to bring cancer to the front of GPs' minds during consultations, where they have a variety of potential options to consider. Project 1 displayed that in 82% of cases where the tool had directly influenced the management of a given patient, the GP stated that it had helped them to consider a cancer diagnosis as well as particular, specific investigations. 34% of GPs in project 2 specifically stated that the CDS Tool raised their awareness of a potential cancer diagnosis.

CDS Tools could help with decision making around complex patients.

The support of a CDS Tool in consultations where a patient is presenting with vague but concerning symptoms, and/or has underlying conditions, shows signs of being a key benefit. Project 2 results showed that in 41% of cases where the CDS Tool was used, the patient had at least one underlying condition. CDS Tools may have potential benefit in helping to separate out cancer risk from other possible diagnoses. Additionally, excluding breast cancer diagnoses, this project also reported a number of cancer diagnoses for cancers that are likely to have presented with more vague symptoms, with the CDS Tool attributing a high risk score (above 4.6%) in the majority of these cases.

More research should be done around this, as due to the limited data collected around this in these projects a solid conclusion cannot be drawn. In the second wave of ACE projects, at least one Multidisciplinary Diagnostic Centre will be using a CDS Tool to aid their decision making around complex patients, which will deliver further evidence.

Knowledge of the QCancer risk score can help to legitimise a GP's referral.

A high risk score can help the GP to feel confident in making a fast track referral; with many GPs pointing out that the risk score helped to reinforce their gut feeling. Equally, a low risk score can be shared with the patient in order to reassure them that their risk of cancer is low and that an onward referral is not necessary at that time. This continues to demonstrate a use for CDS Tools as a support to GPs, allowing them to retain their own clinical judgment in decision making.

The association between QCancer risk score and resulting cancer diagnosis is unclear.

Although it was hoped that data from the projects could look into any association between the calculated risk score and resulting cancer diagnoses, this proved to be particularly challenging. Across the projects only limited data linking QCancer risk scores with cancer diagnoses became available for analysis, and no data linking QCancer risk scores with cancer stage. The challenge of this was known at the outset, and the logistics of this would be worth considering for anybody hoping to complete research in this area.

Increased training and promotion of CDS Tools had a positive impact on GP uptake.

Where GPs were well informed on how the CDS Tool they were using worked and what it should help them to do, they were more able and willing to implement it successfully. A survey carried out in parallel with Project 2 demonstrated a clear increase in both uptake and understanding of the CDS Tool, in line with an increased amount of training being reported throughout the year that the project was active.

No observed negative impact on patient experience, following proactive risk stratification.

CDS Tools offer a new dimension to patient consultations; hoping to enhance a GP's ability to diagnose patients effectively – hopefully giving the patient the best experience possible. Project 3, where the intervention provided a new route by which GPs might contact a patient, reported 90% of patients stating that their GP made them feel at ease and that the reason for their appointment was clear.

There is consistency between findings presented by ACE projects and previous literature.

The Unified Theory of Acceptance and Use of Technology model [3] (covered in the introduction of this report) highlights that facilitators to implementation of tools such as these, include factors such as 'trusting the knowledge base', 'reducing threat to decision making' and 'retaining patient relationships' as particularly important. This aligns well with findings from ACE projects, in that GPs were more frequently using a CDS Tool post patient consultation, with a likely reason being so as not to threaten patient relationships. Additionally, a CDS Tool was being used in a supportive capacity, thus it was not threatening or replacing the GP's clinical experience in the decision making process.

Recommendations

- **The use of CDS Tools should be seen as a support to clinical judgment and a way to heighten GP awareness of cancer symptoms.**
- **The utility of CDS Tools with more complex patients, where the GP might ordinarily find it challenging to make a clear referral decision, should be indicated as a main use of the tool for GPs.**
- **Clarity regarding the design and remit of the CDS Tool being used should be focused on as part of the training.**
- **Concerns from GPs around the functionality of CDS Tools should be considered when they are updated. Particularly focusing on making its features as intuitive to use and understand as possible.**
- **CDS Tool effectiveness should be tested with a more defined cohort of patients with vague symptoms and diagnosis and outcomes should be available for analysis.**
- **The effectiveness of CDS Tools at identifying high risk patients across different age groups should be further explored.**

Video Interview

A short video interview was conducted with Dr Tania Anastasiadis, project lead for the Tower Hamlets CDS Tool project. The video details the successes and challenges of the project as seen by Tania, as well as advice she would give to people looking to implement CDS Tools: http://bit.ly/2IqscLW