

Key messages from the evaluation of the ACE Programme



Accelerate Coordinate Evaluate
The ACE Programme

Working collaboratively to support innovation across cancer pathways

Headlines

- ACE has a unique offering within the cancer innovation landscape. It provides independent evaluation, connects policy makers with those delivering front-line services and can work credibly along the patient pathway for all cancers as policy priorities dictate.
- ACE research results in a body of evidence which helps to drive service innovation and change. Notably, the ...
 - **‘Wave 1’ cohort** of 60 research projects added to the evidence base for:
 - known innovations in the priority areas of: lung and colorectal cancer pathways, and uptake of bowel screening;
 - emerging innovations for vague symptomsⁱ pathways and proactive approaches to individuals at high risk of lung cancer.
 - **‘Wave 2’ cohort** of five pilot projects provided proof of concept evidence for a novel rapid diagnostic pathway for patients with non-specific but concerning symptoms. This is being implemented nationally as part of NHS England’s cancer strategy.
- The two different wave approaches combine to create an ACE service innovation cycle. One produces a ‘seed bed’ of ideas and the other a series of pathfinder projects. Together they create a virtuous circle of innovation that facilitates broad adoption.
- Expertise is accessed by delivering the waves through partnerships. With organisations such as NHS England, Macmillan Cancer Support and Queen Mary, University of London. These collaborations are formed flexibly to maximise relevance and impact.
- The design of the Programme is effective in catalysing change. Underpinned by a Theory of Change that combines top-down ‘push’ approaches (e.g. system levers such as national policy) with bottom-up ‘pull’ approaches (e.g. learning in real-world contexts; collaboration amongst peer networks) to stimulate pathway improvements.

Overview of the ACE Programme

About the ACE Programme

A first of its kind for cancer, the Programme's brief is to Accelerate, Coordinate and Evaluate a range of innovative approaches being taken across the UK to improve cancer pathways. The aim is to build a body of evidence that supports healthcare commissioners and providers select the most impactful approaches.

History of the Programme

The ACE Programme was conceived in 2014 following benchmarking research that showed cancer survival in the UK was lower than in other comparable countries.ⁱⁱ The need for a programme of service evaluation was articulated in a workshop of cancer leaders, including then national clinical director for cancer, who were exploring system barriers to earlier diagnosis of cancer. They identified a lack of published evidence on the impact of service innovations in real-world contexts as an important inhibitor. ACE was formed to meet this need.

Delivered in partnership

Waves 1 and 2 were delivered in collaboration with: NHS England, Cancer Research UK and Macmillan Cancer Support. Partners provided funding, people and technical expertise to differing levels. The Dept. of Health & Social Care's (DHSC) cancer Policy Research Unit, a consortium of seven academic institutions, supported evaluation of the innovations. All ACE projects were based in the NHS.

Structure of the Programme

ACE is organised as a series of 'waves'. Each wave has its own objectives and cohort of projects.

Wave 1. August 2014 to March 2018. A 60-project portfolio of innovations that either sought to identify individuals at high risk of cancer earlier or to streamline diagnostic pathways. The portfolio was formed from an open-call for expressions of interest within England. Consequently, it was built bottom-up and reflected the priorities of local health professionals.

Wave 2. August 2014 to April 2019. A cohort of five projects recruited to pilot a novel Multidisciplinary Diagnostic Centre (MDC) based pathway for patients with non-specific but concerning symptoms. The research brief was determined up-front to meet policy priorities, with the project cohort formed from an open-call for participants within England.

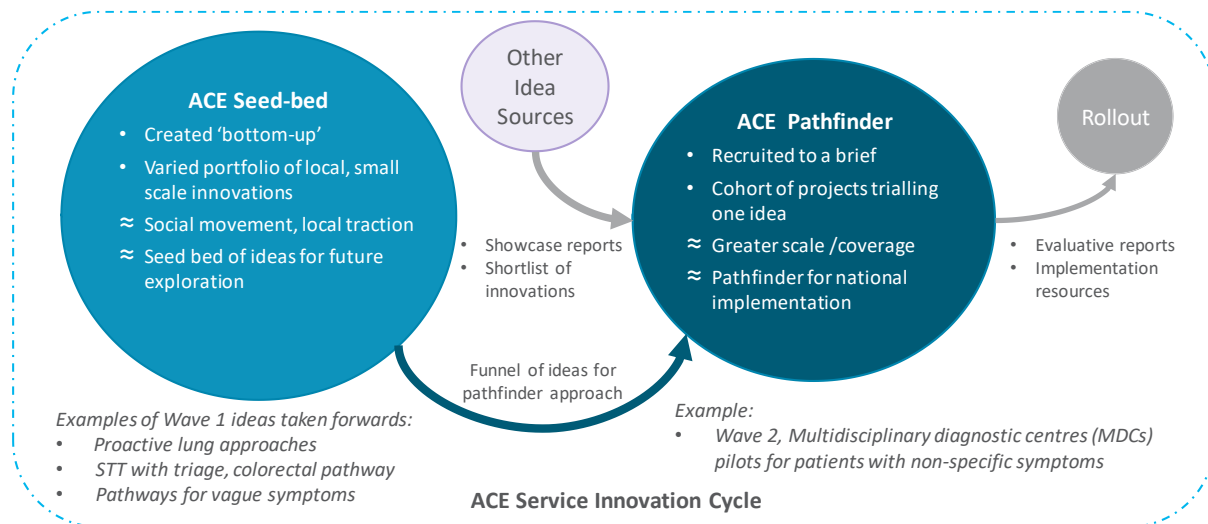
Subsequent waves are in development, including a focus on reducing unwarranted variation in treatments offered to patients diagnosed with lung cancer.



ACE service innovation cycle

The experience from the two different wave structures, where seed-bed ideas can become the pathfinder projects of the future, illustrates how a virtuous circle of innovation can be facilitated and have impact at scale. Depicted in the diagram below.

Encouragingly, the value that the ACE approach offers is being recognised by clinical leaders. ACE Wave 3, for example, was formed following an approach by lung cancer leaders who wanted support to identify and assess innovations that tackle variation.



Key publications

ACE research has been published in various journals, including: British Journal of Cancer; BMJ-Open; BMC Cancer, Lung Cancer; and, Journal of Health Organization and Management. It has also shared results and learning in support of change in policy and practice through 15 formal reports, available from the Cancer Research UK and Macmillan Cancer Support websites.

Purpose of this document

This document summarises what has been achieved in Waves 1 and 2 and the benefits of the ACE approach. This understanding can be used to inform future ACE waves or similar initiatives. It presents key messages and findings from the ACE Programme Evaluation report, which is available on request (internal CRUK audience only).

ACE Theory of Change

The Theory of Change illustrates how evaluating and spreading good practice stimulates service innovation, which improves cancer pathways, which helps achieve the goal of 3 in 4 people surviving cancer by 2034.

The ACE Programme's strategic focus is determined by Cancer Research UK's organisational ambition and its early diagnosis strategy. Specifically:

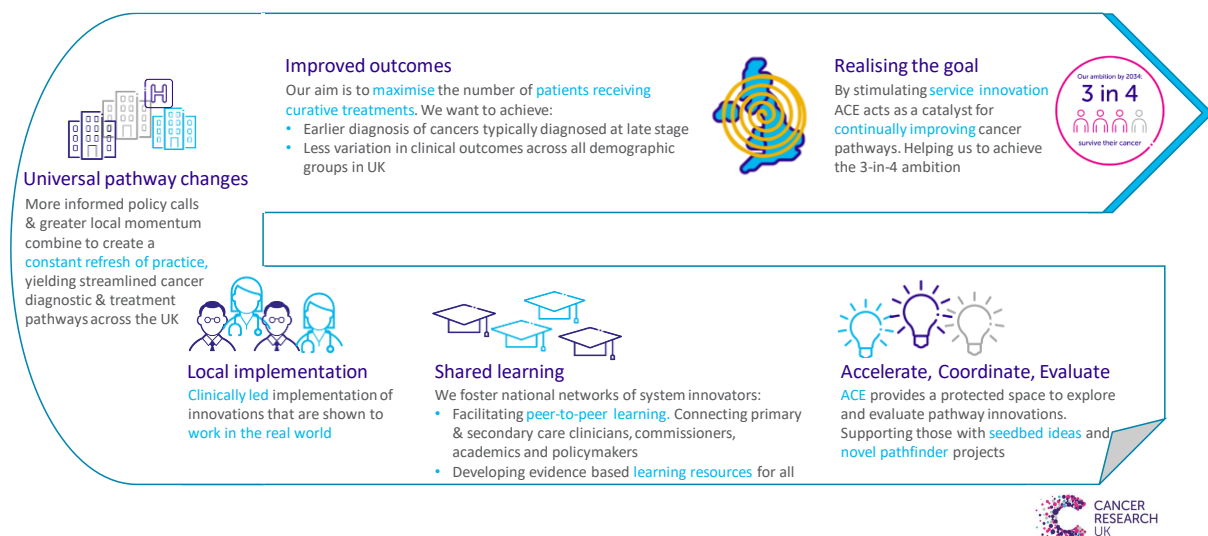
- a shift from late to early diagnosis of cancer at stages I & II
- a decrease in cancer diagnoses via emergency presentations
- an increase in patients receiving curative treatments
- improvements in overall patient experience.

Given its brief to drive service innovation, ACE defines its strategic goal as "An NHS that is continually improving its cancer pathways".

The Theory of Change highlights ACE's role as an influencer or catalyser of change. It shows the logical relationships between programme outputs and strategic outcomes, creating a model of how change will occur. This is then used to support the design and execution of the programme as well as for assessing its impact. It provides a level of assurance that ACE activities will yield improvements.

The simplified model below depicts change as an orderly phased process. In reality there are numerous intermediate conditions and interrelationships, which are both messy and take time to influence. The fuller theory of change, together with the underpinning assumptions and evidence, are presented in the ACE Programme Evaluation.

ACE Theory of Change



Wave 1 – evidence of impact

85% of Wave 1's 60 projects completed successfully. Producing 8 formal reports, enriched by over 100 different implementation materials. Each helping to amplify the value of innovations from straight to test approaches on colorectal cancer pathways to proactive approaches for individuals at high risk of lung cancer to novel diagnostic pathways for patients with vague symptoms.

ACE outputs

Service research projects were organised into topic-based clusters to facilitate learning and evidence generation. Around 60% of projects made use of a small grant to support project delivery.

ACE produced and published a mix of overarching and topic-specific reports and case studies. Listed in Table 1, they show the breadth and topical nature of Wave 1.

Several peer-reviewed papers have also been published (listed in Appendix 1). This indicates the quality and novelty of the service evaluations, which is noteworthy given the real-world project setting. Interventions designed to tackle inequalities were a focus. For example: targeted lung health checks; adjustments for disabled people; timely diagnoses for those "too young to get cancer". Insights from a study of 8 ACE projects show how to improve implementation success.

Peer-to-peer learning was facilitated through over 40 topic specific events, which brought together clinicians, commissioners, academics and recognised field experts.

Feedback on ACE was positive, with projects rating the Programme "Good, Very Good or Excellent" for its ability to *accelerate* (81%), *coordinate* (92%) and *evaluate* (69%) their activities (2015 survey).

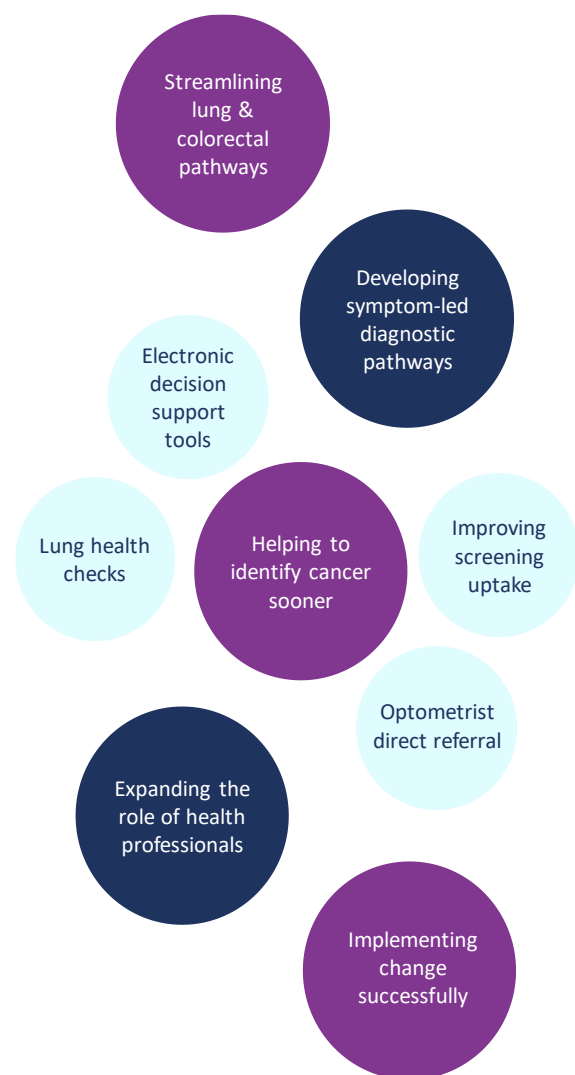


Table 1. ACE published materials, Wave 1

Topic-based reports	Improving diagnostic pathways for patients with suspected lung cancer	Apr 2017
	Improving diagnostic pathways for patients with vague symptoms	Apr 2017
	Using cancer decision support tools to support the early diagnosis of cancer	May 2017
	Improving diagnostic pathways for patients with suspected colorectal cancer	Jun 2017
	Interventions to increase bowel screening uptake	Aug 2017
	Proactive approaches to individuals at high risk of lung cancer	Feb 2018
Over-arching	Realist [qualitative] Evaluation of the [implementation of the] ACE Programme	Jan 2017
	Improving the early diagnosis of cancer. A report from the wave 1 projects	Sep 2017
Case studies	Anticipating the challenges of change within the NHS	May 2017
	A lung health service – Doncaster pharmacy direct referral for chest x-ray	Jun 2017
	Pharmacy training for early diagnosis of cancer. (1 st version Oct 2015)	Jun 2017
	South Tees optical referral project	Jun 2017

Available at: www.cruk.org.uk/ace

Impact and outcomes

The independent evaluation by Durham University found that the ACE Programme construct contributed to the successful implementation of Wave 1 projects. Of particular value was the: local credibility derived from being part of a high-profile national programme; opportunity to learn from others; in-built evaluation.

Most projects sustained beyond the end of the ACE support period. A few used the evidence to evolve their project into a second, bolder initiative. Indeed, two projects successfully applied to form part of the Wave 2 MDC cohort, illustrating the seed-bed nature of the Wave 1 cohort.

The main areas of influence for Wave 1 findings are shown in Table 2.

Interventions for lung and colorectal cancers dominate. Both are in the top four cancers by incidence, with more late stage (III/IV), vs early stage (I/II), diagnoses.

The findings on the pathway and bowel screening interventions added weight to known good practice. By amplifying the benefits and impact of these innovations ACE encourages their spread and take-up amongst the 'early to late majority' adopters.ⁱⁱⁱ

ACE generated evidence in support of the case for change in two new areas: primary care led lung health checks; and, vague symptoms-based (vs tumour specific) urgent referral pathways. Both of which (after subsequent activities) have been incorporated into cancer policy for England.

The dynamic of top-down and bottom-up processes working in union to drive change was apparent.

Top-down. The relationship with NHS England's cancer team has enabled ACE evidence to feed into relevant policy. For example, the timed colorectal and lung cancer diagnostic pathway guidance. Connections from ACE's two supporting charities has increased its influencing reach, e.g., through All-Party Parliamentary Group (APPG) submissions. Its own network building resulted in strong links with tumour specific groups such as the lung and colorectal Clinical Expert Groups. Refer to Table 2 for more detail.

Bottom-up. Activities to foster networks of national innovators have been varied. From awareness building – newsletters, blogs, primary care and cancer conference posters / presentations – to deeper engagement via conference breakout sessions, cancer alliance events, profession-led fora.

Whilst tracking implementation of the various innovations is not feasible, there are signs of an intent to implement. Via statements in published national plans or protocols (see Table 2) and in local improvement plans, e.g., references to ACE innovations in cancer alliance submissions for NHS transformation funds (2017/18, 2018/19) and in applications for single cancer pathway funds in Wales (2019).

Table 2. Influence to impact flow, Wave 1

ACE evidence	Policy references	Advocated change	Potential impact
Colorectal cancer: streamline diagnostic pathway	NHSE: Implementing a timed colorectal cancer diagnostic pathway (2018) Medical Director Clinical Effectiveness: Letter of endorsement (C Ingham-Clark Jul 2017)	NHS trusts – Straight-to-Test approach	Diagnostic interval shortened by 1-2 weeks
Bowel screening: improve invite process	Bowel Cancer Screening Programme (BCSP): Direct engagement led to procedure changes (2017)	BCSP – endorsement by own-GP; standardised kit re-order process for GPs	Screening participation improved. E.g. By c3% for own-GP endorsement
Lung cancer: streamline diagnostic pathway	NHSE: Implementing a timed lung cancer diagnostic pathway (2018) Lung Clinical Expert Group: NOLCP Implementation Guide (2017)	NHS trusts – rapid access to CT approaches	Diagnostic interval shortened, impact varies by approach. E.g. Straight to CT on positive CXR saves c12 days
Lung cancer screening*: identify at risk patients	Lung Cancer Journal: Lung cancer screening – gaining consensus on next steps – proceedings of a closed workshop in the UK, (J Moffat et al, Nov 2018) NHSE: Health checks included as precursor to CT-screening. Ref, not ACE specific, in: NHS Long Term Plan (2019); Lung Screening Protocol (2019)	Primary care – proactive approaches for lung health checks	Screening participation improved in deprived regions leading to detection of lung cancer when it can be resected
Urgent referrals: gap for patients with vague symptoms*	APPG for Cancer: Britain Against Cancer, 2015 Independent Cancer Taskforce: Achieving world-class cancer outcomes: a strategy for England 2015-2020 (Jul 2015); Recommendation 21 NHSE/ CRUK/ Macmillan: Call for ACE Wave 2 pilots (joint letter/email) (2015)	NHSE to pilot with ACE Wave 2, in up to 5 vanguard sites, multidisciplinary diagnostic centres for vague or unclear symptoms; with capability to carry out several tests on same day	Quicker path to cancer diagnosis
* Novel area explored			

Wave 2 – evidence of impact

Diagnosing over 35 different tumour types and achieving an 8% cancer conversion, the Wave 2 Multidisciplinary Diagnostic Centre (MDC) pilots provided proof of concept for a novel rapid diagnostic pathway for patients presenting with non-specific but concerning symptoms.

ACE outputs

A 5-project cohort was formed from an open-call for applicants to pilot a novel diagnostic pathway in England. All projects received grant funding for project set-up from Cancer Research UK and Macmillan Cancer Support, and transformation funding for operational and clinical costs from NHS England.

ACE developed and published 7 evaluative reports and a range of implementation resources; listed in Table 3.

The aim was to maximise learning from projects' experiences, e.g., pathway design; implementation challenges; cancer and non-cancer diagnoses. Sharing materials ahead of peer-review publication has enabled the health system to pick up and act on results 12-months ahead of when it would otherwise have done.

Two peer-reviewed papers have been published (see Appendix 1). The first, illustrates the problem: patients with non-specific symptoms are likely to have longer and more complex diagnostic pathways than those with alarm-symptoms. The second, presents first results from the MDC pilots, indicating an 8% cancer conversion from this patient cohort.

Further papers will follow, for example, on the use of diagnostic tests and the potential for diagnosing rare and less



common cancers. Analyses, interpretation and authorship has been a collaborative effort across the ACE team, MDC clinical leads and DHSC's cancer Policy Research Unit.

ACE convened 8 collaborative events over Wave 2's life cycle. Facilitating learning across ACE pilots and sharing insights with other early adopters of the model and with policy makers. Projects rated these events as "Very or Extremely Useful" for peer networking and providing time and space to think (2019 survey).

Table 3. ACE published materials, Wave 2

Evaluative reports	ACE MDC project approaches to understanding pathway cost	Jul 2019
	Summary of the Qualitative Evaluation	Jun 2019
	Key messages from the evaluation of Multidisciplinary Diagnostic Centres (MDC): a new approach to the diagnosis of cancer - Summary of Findings	Apr 2019
	ACE Programme Delivery Report (for programme funders only)	Apr 2019
	Realist [qualitative] Evaluation: Implementation of the ACE Programme: Wave 2, 2017-18	Oct 2018
	MDC patient experience survey: results	Aug 2018
	Multidisciplinary Diagnostic Centre (MDC) based pathways – Interim Report	May 2018
Case studies	ACE MDC project approaches to understanding pathway cost	Jul 2019
	Distinguishing features of the MDC model	Feb 2019 updated Jun 19
	MDC patient experience headlines & implementation guidance	Jan 2019
	MDC animation	Oct 2019
	An approach to building the local case for MDCs	Oct 2018
	Early implementation learning	Jun 2018
	Emerging MDC models and design principles	Mar 2018 updated Feb 19
	MDC Resource Pack	Sep 2017
	MDC infographic	Sep 2017
	MDC core data items	Sep 2017

Available at: www.cruk.org.uk/ace

Impact and outcomes

All projects completed successfully and form the basis of roll-out in their area. As for Wave 1, the ACE Programme construct was found to contribute to successful implementation. Factors of additional note were funding for resources and flexibility in accommodating changes to local plans (Realist Evaluation, Durham University, 2018). Relevant because time from set-up to 12-months of operation was lengthy; 24-30 months.

The learning and results from the MDC pilots informed the design of NHS England's new Rapid Diagnostic Centre (RDC) model, which is being implemented across England from 2019.

Table 4 illustrates the flow from evidence to national cancer policy to planned change in practice, which hopefully translates into positive impact for patients.

Table 4. Influence to impact flow, Wave 2

ACE evidence	Policy references	Advocated change	Potential impact
Proof of concept for MDC-pathway for patients with non-specific symptoms; includes results for cancer & non-cancer diagnoses	NHSE & NHSI: Rapid Diagnostic Centre. Vision & 19/20 Implementation Specification (Jul 2019) NHSE: Long Term Plan Implementation Framework (Jun 2019). Committed to RDC concept	2019/20. Every Cancer Alliance to have one pathway for patients with non-specific symptoms; in an RDC By 2024. Cancer Alliances to have full non-specific symptoms population coverage	Earlier diagnosis for non-specific symptoms patient cohort Improved diagnosis of hard to detect cancers Improved patient experience of care

Although the RDC is a broader concept, it incorporates a dedicated pathway for patients with non-specific symptoms and adopts several MDC design principles, such as, a multidisciplinary approach, coordinated testing, patient navigator and a diagnosis for symptoms, cancer or otherwise.

ACE has been effective in leveraging top-down policy levers, influencing NHS England's cancer policy through formal and informal engagement and continues to support bottom-up 'pull' processes to support change in-line with MDC learning.

ACE has sought to amplify and raise the visibility of the potential for pathways for patients with non-specific symptoms by sharing results with: all three devolved nations; cancer focussed APPGs (e.g. for Ovarian, Pancreatic and Blood Cancers); special interest groups (e.g. Cancer 52, Myeloma UK, Secondary Breast Cancer, British Society of Gastroenterology, British Thoracic Oncology Group); and through presentations at relevant cancer and health care conferences.

The Wave 2 pathfinder approach has been shown to an effective catalyst for change in cancer diagnostic services.

Ways in which ACE adds value

Catalyst for change

ACE improves cancer outcomes by supporting the actions of others to improve cancer pathways. It does this by: focusing attention onto issues that matter; providing resources to develop the evidence-base; identifying innovations that work. Giving those best placed to make change happen the confidence to act.

Evidence from seed-bed projects serves two purposes. Firstly, it can help tip the balance in favour of specific innovations, encouraging take-up by 'early and late majority' adopters. Secondly, these small-scale projects help identify which new innovations warrant further investigation.

In contrast, evidence from pathfinder projects offers independent proof of concept for new pathways or models of care. It facilitates evidence-based policy making and investments by local health systems. So, although the evidence takes longer to generate, it may provide more impetus for implementation at scale.

Network facilitator

ACE stimulates innovation and change by fostering networks that are valued by participants. Important attributes are: peer-to-peer learning; cross-system engagement; multidisciplinary collaboration. It can uniquely connect across: policy makers, local clinicians and commissioners, field experts and academics. This helps proven innovations gain traction.

Trusted broker

ACE can broker connections across professional and organisational boundaries to unlock progress. It does this by making use of its neutral positioning and Cancer Research UK's credibility and relationships.

This can be within a local health system (i.e. for a specific ACE project) or at a national level where an innovation cannot scale without broader buy-in. For example, connecting bowel screening projects with screening hubs and the national screening programme; connecting lung health check projects with the right senior clinicians, academics and policy makers.

Grounded in the real world

All ACE pathway research is led by clinicians and designed to solve local problems with relevance across the health system. The real-world context of the research provides adopters of an innovation with assurance that it can have impact in their setting. ACE also produces resources that support implementation, from design principles to referral forms, helping innovations to scale more easily.

Flexibility to meet emerging priorities

ACE was originally conceived as an early diagnosis of cancer initiative, but its design means it can respond to new priorities. ACE works along the cancer pathway and can focus on any cancer of interest. Its seed-bed and pathfinder methods offer flexibility of approach. ACE is also further strengthening its impact by developing portfolios of innovations that target specific issues.

Auxiliary information

Appendix 1. ACE peer-reviewed publications

Listed in date order, most recent first.

From Wave 2

Chapman, D. et al., 2020. First results from five Multidisciplinary Diagnostic Centre (MDC) projects for non-specific but concerning symptoms, possibly indicative of cancer. *Br J Cancer* (2020). doi.org/10.1038/s41416-020-0947-y

Pearson C., Poirier V., Fitzgerald K. et al., 2020. Cross-sectional study using primary care and cancer registration data to investigate patients with cancer presenting with non-specific symptoms. *BMJ Open*, 10: e033008.

From Wave 1

Fitzgerald, K. and Biddle, L., 2019. Creating the conditions for change: an NHS perspective. *Journal of Health Organization and Management*, Vol. 34 No. 3, pp. 345-361. doi:10.1108/JHOM-02-2019-0031

Ghimire, B. et al., 2019. Evaluation of a health service adopting proactive approach to reduce high risk of lung cancer: The Liverpool Healthy Lung Programme. *Lung Cancer*, Volume 134, 66 – 71.

Heslop, P. et al, 2019. Implementing reasonable adjustments for disabled people in healthcare services. *Nurs Stand* 34(8): 29-34.

Dommett, R.M. et al., 2019. Achieving a timely diagnosis for teenagers and young adults with cancer: the ACE “too young to get cancer?” study. *BMC Cancer*, 19:616.

Benton, S., Butler, P., Allen, K. et al., 2017. GP participation in increasing uptake in a national bowel cancer screening programme: the PEARL project. *Br J Cancer* 116, 1551–1557.

Fuller E., Fitzgerald K., Hiom S., 2016. Accelerate, Coordinate, Evaluate Programme: a new approach to cancer diagnosis. *Br J Gen Pract*, 66 (645), 176-177. [Editorial]

End Notes:

ⁱ The term vague symptoms evolved into the more precise term non-specific but concerning symptoms

ⁱⁱ Coleman MP, Forman D, Bryant H, et al. Cancer survival in Australia, Canada, Denmark, Norway, Sweden, and the UK, 1995–2007 (the International Cancer Benchmarking Partnership): an analysis of population-based cancer registry data. *Lancet* 2011; 377(9760):127-138

ⁱⁱⁱ Rogers, EM. *Diffusion of innovations*, 5th Ed. Free Press, New York. 2003 [orig: 1962]