Queen Mary
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Cancer Detection and Diagnosis in UK Primary Care

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National Academies of Sciences, Engineering, and Medicine
Achieving Excellence in Cancer Diagnosis: A Workshop
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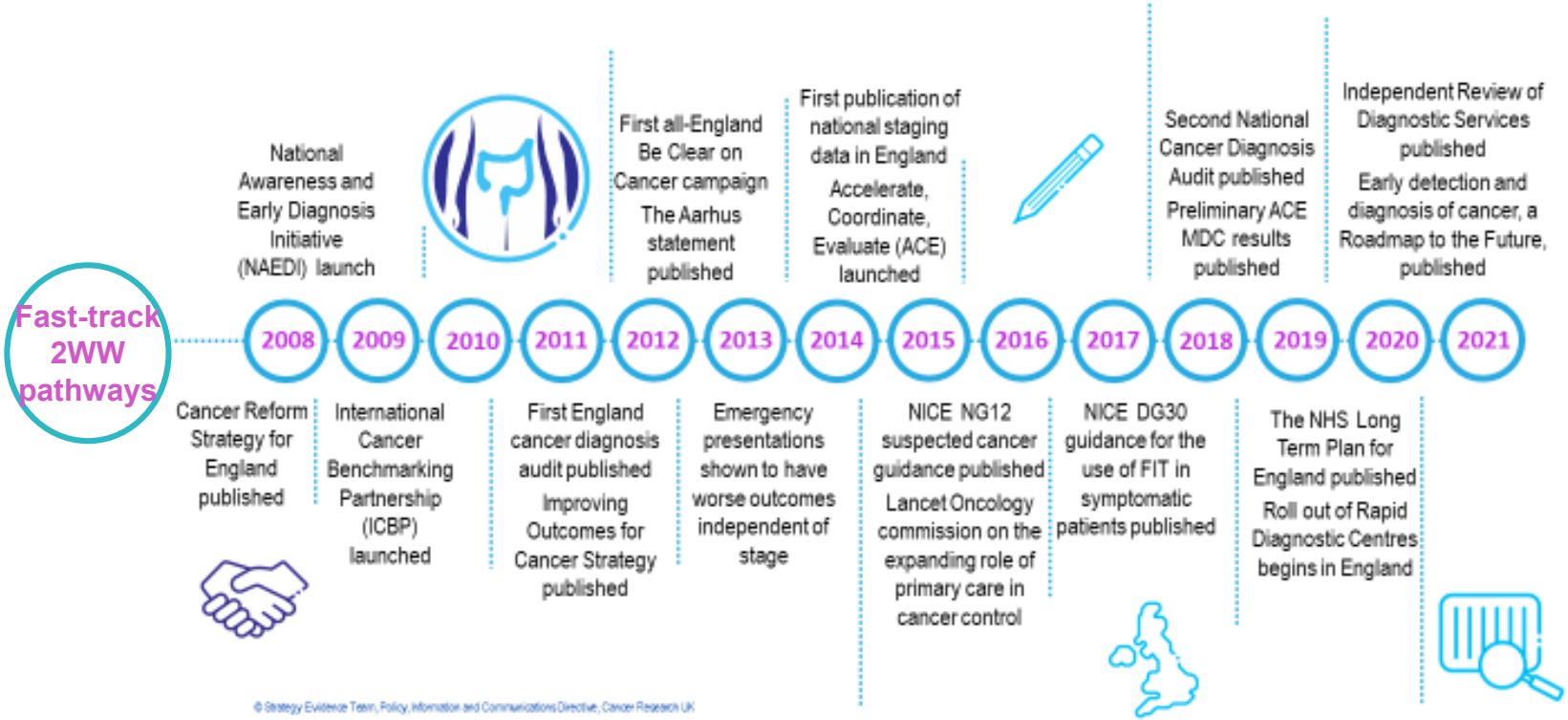
Disclaimer

I have no conflicts to disclose

Wake-up call for the UK

Policy approaches to improve cancer diagnosis



Diagnostic pathways- few via screening programmes

The UK has 3 screening programmes

Bowel cancer screening

Breast cancer screening

Cervical cancer screening

Data from 2017 National Cancer Diagnosis Audit (n=17,042)

Screening	**7%**
Primary care	64%
- fast track (suspected cancer)	52%
- urgent/routine (non-cancer)	12%
Emergency	17%
Private	2%
Other	6%
Not known	4%

Diagnostic pathways- most via primary care

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Associating clinical features with specific cancers

- Many patients present with symptoms
- Most people with symptoms will not have cancer
- Which patients to investigate?

- NHS primary care data from the General Practice Research Database (GPRD/CPRD)
- Cases of new diagnosed cancer
- Case controls matched for gender, practice, year of birth
- Symptom and investigation lists developed
- Patient records examined to identify these before diagnosis
- Positive predictive values (PPVs) for OG cancer in men and women aged over 55 for individual risk markers and for pairs of risk markers in combination

FULL PAPER

BJC

British Journal of Cancer (2013) 108, 25–31 | doi: 10.1038/bjc.2012.551

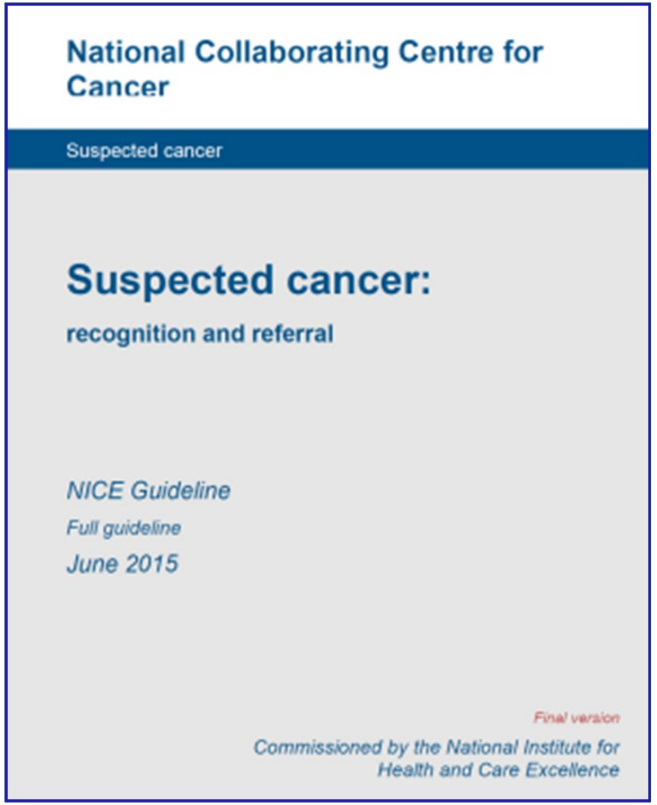
Keywords: oesophago-gastric cancer; primary care; symptoms; diagnosis; positive predictive values

The risk of oesophago-gastric cancer in symptomatic patients in primary care: a large case–control study using electronic records

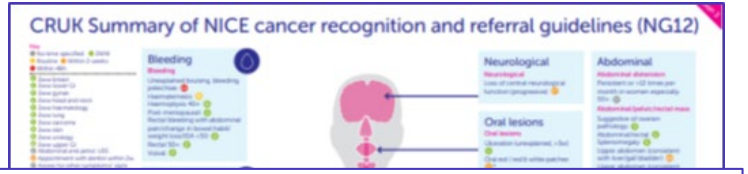
Low haemoglobin	Raised platelets	Constipation	Chest pain	Abdominal pain	Nausea or vomiting	Dyspepsia	Epigastric pain	Reflux	Loss of weight	Dysphagia	
0.2 (0.2–109)	0.5 (0.4–0.5)	0.2 (0.2–0.2)	0.2 (0.2–0.2)	0.3 (0.2–0.3)	0.6 (0.5–0.7)	0.7 (0.6–0.7)	0.9 (0.8–1.0)	0.6 (0.6–0.7)	0.9 (0.7–1.0)	4.8 (4.3–5.9)	PPV as a single symptom
	0.6 (0.6–0.7)	0.4 (0.4–0.5)	0.3 (0.3–0.4)	0.5 (0.4–0.6)	0.9 (0.7–1.1)	1.0 (0.8–1.3)	1.6 (1.1–2.2)	0.9 (0.7–1.2)	1.0 (0.8–1.3)	4.6 (3.4–6.6)	Low haemoglobin
		0.9 (0.6–1.4)	0.8 (0.6–1.2)	0.8 (0.6–1.1)	1.4 (1.0–2.1)	1.4 (0.9–2.2)	1.9 (1.0–3.8)	1.6 (0.9–2.9)	1.8 (1.1–3.0)	6.1 (3.2–13.2)	Raised platelets
			0.4 (0.3–0.5)	0.4 (0.3–0.5)	0.6 (0.4–0.7)	0.8 (0.6–1.1)	1.4 (0.8–2.3)	0.7 (0.5–1.1)	1.1 (0.8–1.7)	4.2 (2.7–7.2)	Constipation
				0.3 (0.3–0.4)	0.6 (0.4–0.8)	0.7 (0.5–0.9)	0.9 (0.6–1.4)	0.6 (0.5–0.9)	1.1 (0.7–1.8)	5.8 (3.5–10.8)	Chest pain
					0.7 (0.5–0.9)	1.0 (0.7–1.3)	0.9 (0.7–1.2)	0.6 (0.5–0.9)	1.4 (0.9–2.2)	6.5 (3.5–13.5)	Abdominal pain
					1.0 (0.8–1.2)	1.3 (0.9–1.8)	1.3 (0.9–2.0)	2.3 (1.5–3.5)	2.8 (1.7–4.8)	7.3 (4.4–13.9)	Nausea or vomiting
						1.2 (1.0–1.5)	1.4 (1.0–2.0)	0.9 (0.7–1.2)	2.1 (1.3–3.5)	9.8 (5.7–20.2)	Dyspepsia
								1.5 (1.0–2.4)	4.2 (1.8–11.0)	9.3 –	Epigastric pain
									3.1 (1.5–6.7)	5.0 (3.3–8.4)	Reflux
										9.2 (4.4–22.7)	Loss of weight
										5.5 (4.2–7.9)	Dysphagia

2015 UK clinical guidance

- Recommendations developed using **'risk threshold**‘: if risk of symptoms being caused by cancer is above a certain level then action (investigation or referral) is warranted
- **3% PPV threshold value** used to underpin the recommendations for suspected cancer pathway referrals and urgent direct access investigations
- Certain exceptions to a 3% PPV threshold e.g. children and young people



UK clinical guidance- complex…



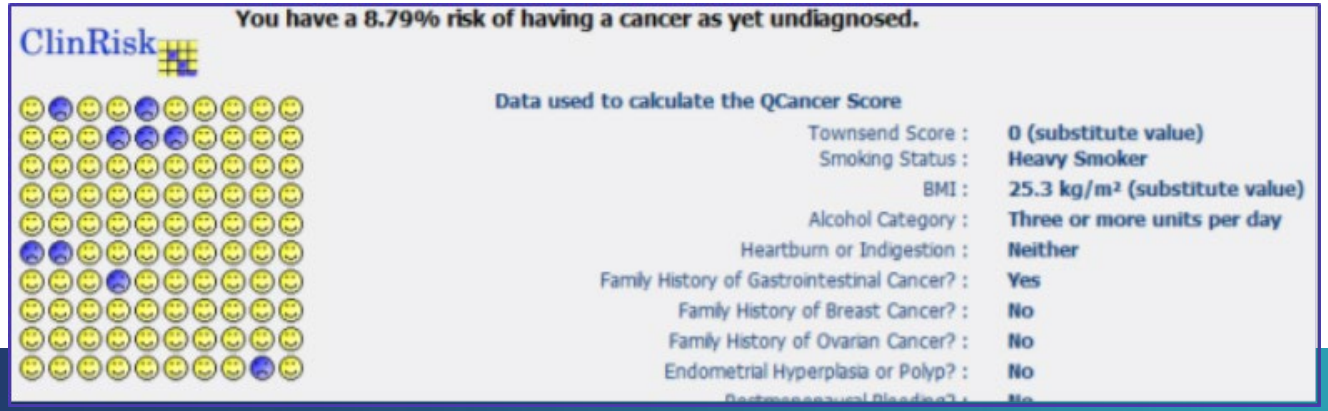
Respiratory symptoms

		2 week wait	Within 2 weeks
Respiratory	Chest infection (persistent or recurrent) 40+		CXR
	Chest pain (unexplained) 40+ ever smoked/asbestos exposed		CXR
	Chest pain (unexplained) with cough/fatigue/SOB/weight loss/appetite loss 40+		CXR
	Cough (unexplained) 40+ ever smoked/asbestos exposed		CXR
	Cough (unexplained) with chest pain/fatigue/SOB/weight loss/appetite loss 40+		CXR
	Hoarseness (unexplained and persistent) 45+	Head + Neck	
	Chest signs consistent with cancer/pleural disease 40+		CXR
	Finger clubbing 40+		CXR
	Haemoptysis 40+	Lung	
Shortness of breath	Ever smoked/asbestos exposed 40+		CXR
	With cough/fatigue/chest pain/weight loss/appetite loss 40+		CXR
	With unexplained lymphadenopathy	Haematology	
	With unexplained splenomegaly	Haematology	

Developing cancer risk prediction tools

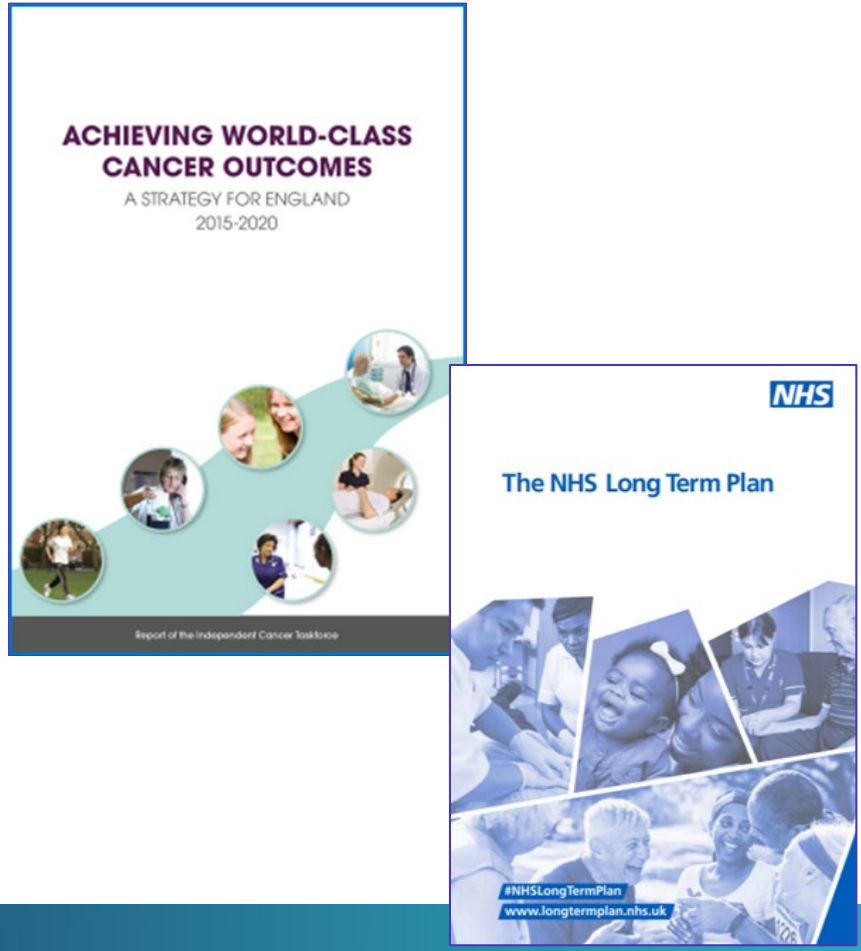
- Many patients present with symptoms
- Most people with symptoms will not have cancer
- Which patients to investigate?

- Primary care data from other databases e.g. QResearch
- Data linkage- deaths, deprivation, cancer, hospitals (HES)
- Algorithms predict individual level of risk of cancers based on multiple risk factors and multiple symptoms
- Interactive calculators, embedded in clinical system



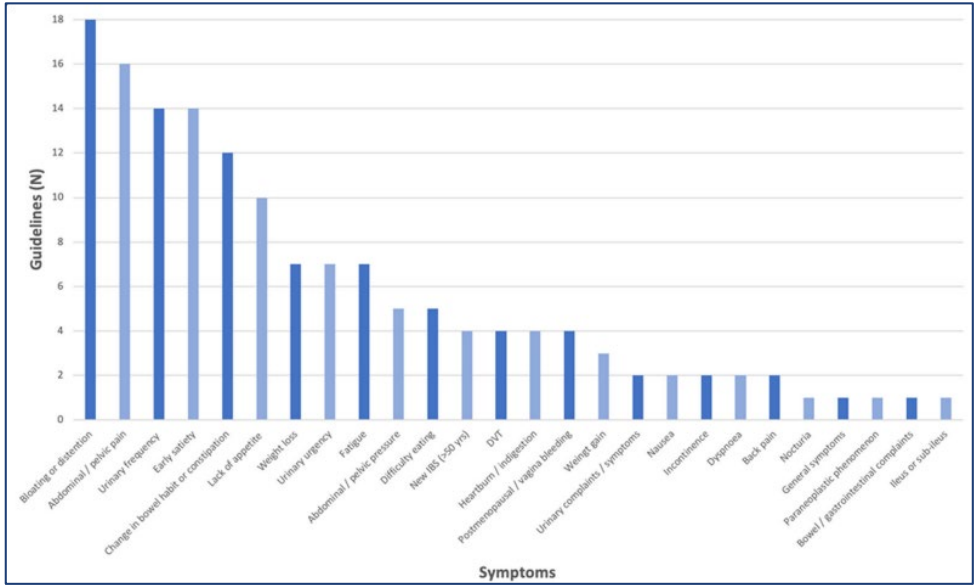
Access to diagnostic tests

- Few biomarker or imaging tests currently available in routine UK primary care
- Increasing access to both
- **‘Low-risk but not no-risk’ patients**
- Multi Disciplinary Clinics
- Community Diagnostic Hubs



Example: detecting symptomatic ovarian cancer

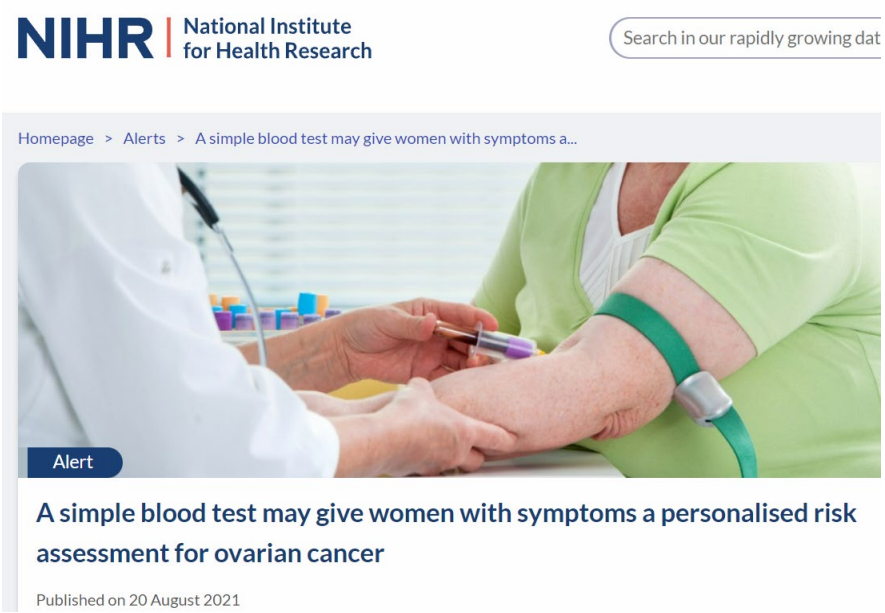
- CA125 is widely used as a test for ovarian cancer in women presenting with relevant symptoms, both in the UK and internationally
- CA125 has been extensively evaluated in the specialist care setting and in screening studies but little was known about its diagnostic performance in primary care, where most patients with ovarian cancer first present



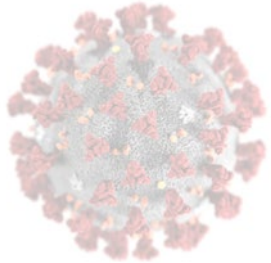
Symptoms included in 18 guidelines from 11 countries

Example: detecting symptomatic ovarian cancer

- Evaluated diagnostic performance of CA125 in 50,780 women undergoing testing in English general practice
- Of women with CA125 levels above the current abnormal cut-off, 10% were diagnosed with ovarian cancer and a further 12.3% with another form of cancer
- Cancer was more common in women with abnormal CA125 levels if they were >50 years of age
- Developed models to estimate the probability of ovarian cancer and all cancer based on a woman's age and CA125 level



Optimising management of suspected cancer in Primary Care



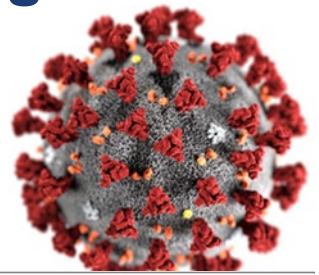
Pre-pandemic….

- NICE 2015 was becoming ‘normal practice’
- 2WW referral numbers were rising at about 10% a year
- The detection rate rose from 42.3% to 53.5% over the same time

Outcome measures

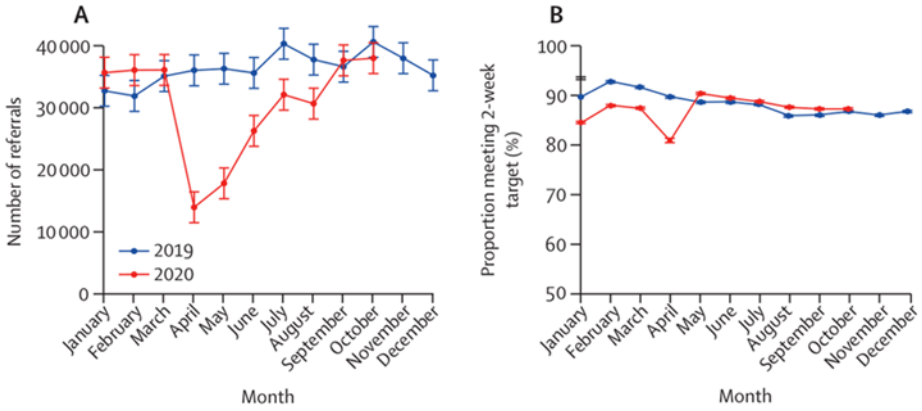
- Emergency admission presentations: falling slowly- between 2006 and 2017, from 25% to 19%
- Stage I or II at diagnosis improved quite slowly to 54.8%
- Both 1 and 5 year survival continued to improve

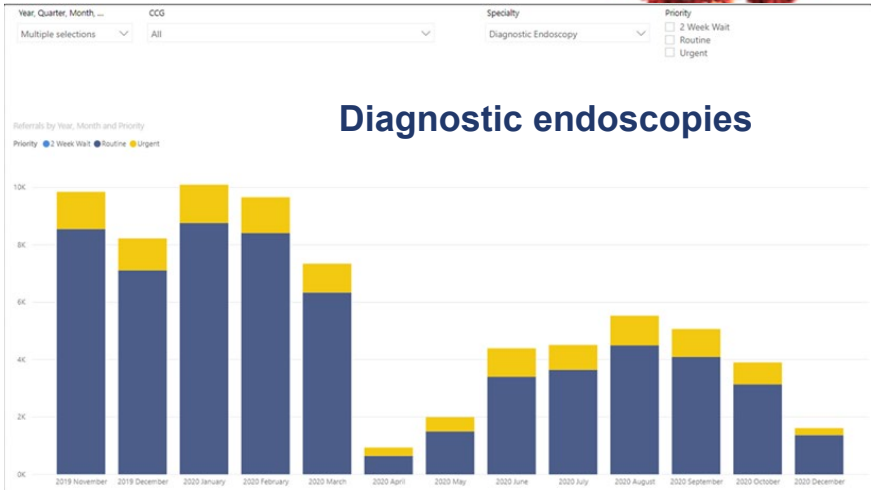
How has pandemic impacted referrals & cancer diagnosis?



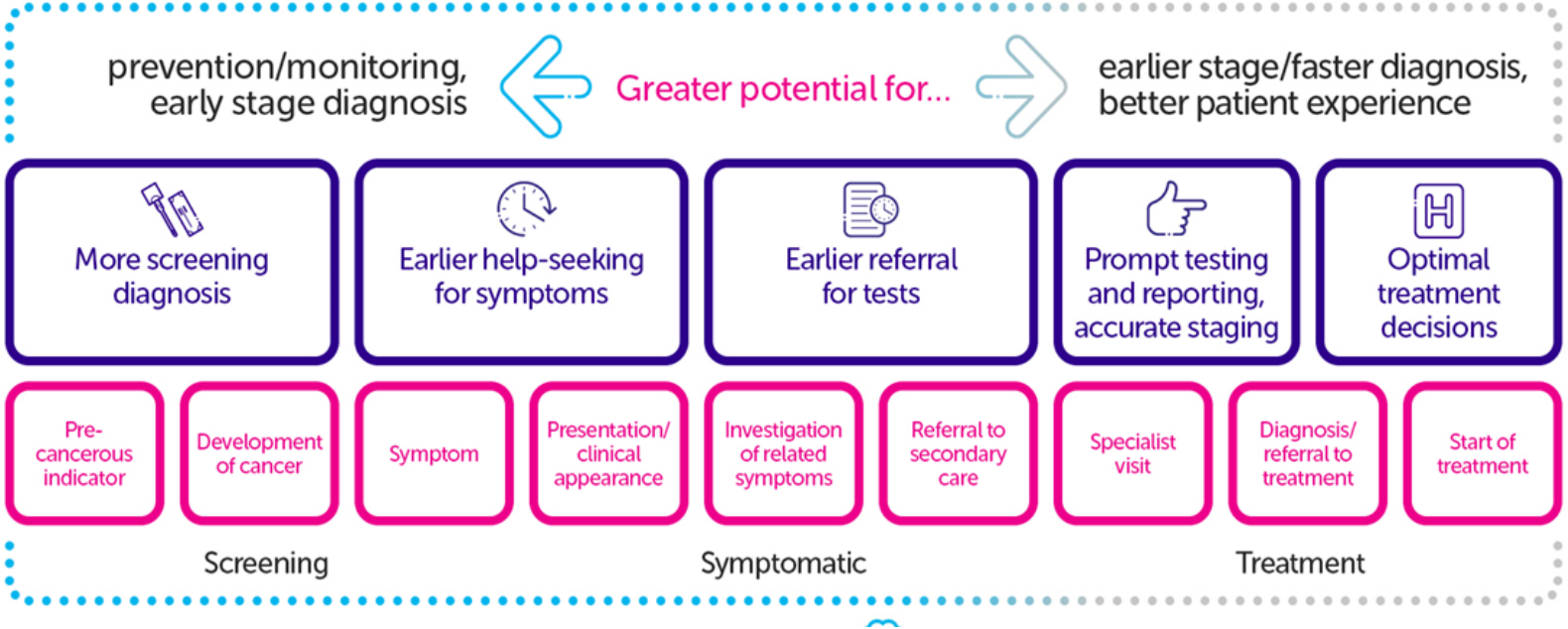
Impact of the COVID-19 pandemic on the detection and management of colorectal cancer in England: a population-based study

Eva I A Morris, Raphael Goldacre, Enti Spata, Marion Mafham, Paul I Finan, Jon Shelton, Mike Richards, Katie Spencer, Jonathan Emberson.





Acting across the diagnostic pathway in the UK



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Thank you

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