Trends in urgent referrals for suspected colorectal cancer: an increase in quantity, but not in quality

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ABSTRACT

INTRODUCTION An understanding of the volume of incoming referrals to a colorectal cancer (CRC) service is essential for adequate delivery of service. We hypothesised that the number of 2-week-wait (2WW) referrals has increased over recent years, with a concomitant increase in demand for endoscopic and imaging investigations.

METHODS A retrospective review of all referrals from primary care with suspected malignancy to Barking, Havering and Redbridge NHS Trust (BHRNHST, London, UK) from 2009 to 2014 was undertaken. Annual numbers of CRC diagnoses, colonoscopies and CT scans among these patients were reviewed. Linear regression models were used to determine the significance of observed trends.

RESULTS Annual number of 2WW referrals for all cancers increased steadily from 14,031 to 19,983 during the study period ($p<0.01$). Referrals for suspected CRC increased from 1,706 to 2,874 ($p=0.02$). Number of colonoscopies and CT scans carried out in 2WW patients also increased significantly. Proportion of patients referred as a 2WW diagnosed with CRC decreased from 7.9% in 2009 to 4.7% in 2014 ($p=0.02$).

DISCUSSION Number of referrals for suspected cancer from primary care to BHRNHST is increasing steadily, which has implications for service provision. Prevalence of cancer diagnoses from these referrals is decreasing.

CONCLUSIONS There has been a sustained and substantial increase in the number of urgent referrals for suspected CRC at BHRNHST over recent years, without an increase in the number of resulting cancer diagnoses.

KEYWORDS

Colorectal cancer – 2-week-wait – Cancer guidelines – Referral – Service provision

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Colorectal cancer (CRC) is the third most common cancer in men and women. It is the second most common cause of cancer-related death in the UK, and accounted for 41,581 new diagnoses and 16,187 deaths in 2011.¹ The *NHS Cancer Plan* was published by the UK Department of Health in 2000 (updated in 2014)² and outlined the standards for investigation and treatment of cancer. A central component of this strategy, enshrined as a fundamental right of patients in the National Health Service (NHS) constitution, is timely assessment of patients referred from primary care with symptoms suspicious for malignancy.³ Patients with suspected CRC must be seen by a hospital specialist <2 weeks of referral, and treatment must be initiated <62 days of referral for those with a confirmed diagnosis of cancer.

In 2015, the National Institute for Health and Clinical Excellence (NICE) produced guidance on updating the criteria for referral on a 2-week-wait (2WW) pathway for suspected malignancy.⁴ Guidance contained several changes relevant to suspected cancer of the lower gastrointestinal tract (LGIT). These changes included advice on: referral of patients aged >40 years with weight loss and abdominal pain on a LGIT 2WW pathway; reduction of the age threshold

from 60 years to 50 years in patients with unexplained rectal bleeding. The stated aim of these changes was to increase the number of urgent referrals for suspected LGIT malignancy by ≤28,800 per year, which will have implications for service provision in secondary care.^{5,6}

We hypothesised that the number of 2WW referrals for suspected CRC to Barking, Havering and Redbridge NHS Trust (BHRNHST, London, UK) had increased in the years preceding the changes in NICE guidelines without a concomitant increase in the number of resulting CRC diagnoses. We also wished to assess the ability of BHRNHST to meet nationally accepted standards for the initial assessment and investigation of these patients.

Methods

Design and setting of the study

We undertook a retrospective analysis of all 2WW referrals for suspected cancer to a single centre from April 2009 to April 2015. BHRNHST consists of two hospital sites and provides for a catchment of ~750,000 people, who are served by seven colorectal surgeons providing regular outpatient

clinics and operating lists. At BHRNHST, patients meeting criteria for 2WW referral in primary care are seen by a consultant or registrar in the outpatient department, at which time further investigations can be arranged.

Data collection

Data were collected prospectively by administrative staff in the Cancer Referrals Office at BHRNHST and recorded in a dedicated database. Annual numbers of 2WW referrals for all cancers, and for suspected LGIT malignancy specifically, were recorded. For patients referred with suspected LGIT malignancy, we also reviewed data on the number of resulting CRC diagnoses, the time to first outpatient appointment, and the time to treatment initiation in those diagnosed with cancer.

To assess the ability of BHRNHST to achieve the 2WW target for suspected cancers, we compared actual numbers of 2WW referrals with the in-built capacity in outpatient clinics and the need for additional locum-led *ad hoc* clinics of the previous tax year. To assess demand for common investigations arising from LGIT 2WW referrals, we reviewed the number of colonoscopies and computed tomography (CT) scans undertaken over the previous 2 tax years (since introduction of separate dedicated electronic databases).

Data analyses

Tax years (April–March) were used to report annual figures. Simple linear regression models were used to determine the significance of observed trends. $p < 0.05$ (two-tailed) was considered significant.

Results

During the study period, the number of all 2WW referrals to BHRNHST increased steadily from 14,051 in 2009 to 19,983 in 2014 ($p=0.007$) (Fig 1A). 2WW referrals for suspected CRC also increased, from 1,707 in 2009 to 2,874 in 2014 ($p=0.02$), representing an increase of 68% (Fig 1B). Patients referred with suspected CRC accounted for 12–15% of all 2WW referrals, with no significant change over the study period. Annual number of CRC diagnoses resulting from 2WW referrals also remained similar throughout the study period: 129 in 2010 to 145 in 2009 ($p=0.56$) (Fig 1C). Proportion of patients referred to a 2WW after being diagnosed with CRC declined from 7.9% in 2009 to 4.7% in 2014 ($p=0.02$) (Fig 1D).

Our next objective was to assess the capacity within BHRNHST to meet current levels of demand resulting from the 2WW referral pathway. Proportion of patients seen < 2

Figure 1 Trends in 2-week-wait (2WW) referrals for suspected malignancy at Barking, Havering and Redbridge NHS Trust (London, UK), 2009–2014. **A:** Number of referrals for all suspected malignancies. **B:** Number of referrals for suspected colorectal cancer. **C:** Number of colorectal cancer diagnoses among patients referred as a 2WW. **D:** Proportion of patients referred as a 2WW diagnosed with colorectal cancer. p -values are derived from linear regression models for trend.

weeks of referral from primary care decreased year-on-year during the study period for all 2WW referrals (99.7% in 2009 to 89.8% in 2014, $p=0.007$) (Fig 2). A similar decrease was noted when LGIT 2WW referrals were analysed in isolation (99.9% in 2009 to 92.6% in 2014, $p=0.02$). In 2014, the median time from referral to the first clinic appointment for LGIT 2WW patients was 11 (interquartile range (IQR), 8–14) days. Proportion of patients diagnosed with CRC who breached the 62-day target for treatment was 20.1% in 2014 and 40.3% in 2012, with no significant overall trend ($p=0.54$). In 2014, the median time to treatment in patients with confirmed CRC was 58 (IQR, 49–62) days.

Currently, BHRNHST provides ≤ 232 clinic slots for LGIT 2WW referrals every 28 days. In practice, the actual number is less due to staff leave and, at one of the two hospital sites, on-call commitments. During the most recent tax year, the number of LGIT 2WW referrals exceeded this maximum in seven of the twelve months. Of the 2,874 patients referred during the most recent tax year, 1,062 patients (37%) were seen in extra *ad hoc* clinics (Fig 3), which incurred £71,700 in costs for locum medical staff to BHRNHST.

Finally, we assessed recent trends in demand for common investigations arising from LGIT 2WW referrals. From April 2013 to March 2015, there was a significant increase in the number of colonoscopies arranged per month through the 2WW pathway ($p<0.001$) (Fig 4A). A similar increase in the number of CT scans undertaken was also observed ($p<0.001$) (Fig 4B).

Discussion

The 2WW pathway for suspected malignancy is an important and topical issue in the NHS and beyond. Here, we

Figure 2 Proportion of patients seen within 2 weeks of referral at Barking, Havering and Redbridge NHS Trust (London, UK), 2009–2014

Figure 3 Monthly number of 2-week-wait referrals with suspected colorectal cancer and clinic type at first appointment at Barking, Havering and Redbridge NHS Trust (London, UK), April 2014–March 2015. Dashed line denotes maximum number of allocated 2-week-wait clinic slots per month.

demonstrated that even though the quantity of 2WW referrals for suspected LGIT malignancy from primary care is increasing, the ‘quality’ (ie proportion of resulting cancer diagnoses) appears to be decreasing. Based on our evidence, the trend towards increasing numbers of 2WW referrals does not appear to be confined to suspected LGIT malignancies alone, and has implications for all hospital specialties.

The reasons underlying these trends are beyond the scope of this study, but are likely to be multifactorial. General practitioners (GPs) are being encouraged to refer greater numbers of patients using the 2WW pathway, supported by NICE guidance from 2015 that expands the inclusion criteria for LGIT 2WW referral.⁴ A government announcement in 2015 that GPs who fail to refer patients with cancer in a timely fashion could receive a ‘red flag’ on an online register (an initiative that has met with criticism from the Royal College of General Practitioners) is likely to increase the pressure on primary-care physicians to refer in accordance with 2WW pathways.^{7,8} This problem is compounded further by media attention to high-profile cases such as that of Stephen Sutton, a teenager who was diagnosed with, and who ultimately died from, CRC in 2013 after delays in referral from primary care.⁹

The increasing number of urgent referrals to BHRNHST is placing considerable strain on resources. Most patients are seen within the 2-week timeframe specified in the NHS constitution, but our results demonstrate that the ability of BHRNHST to maintain this standard is under strain. There has been increasing reliance on additional clinics to meet demand, which incurs considerable financial cost. Furthermore, increases in the number of urgent investigations resulting from increased numbers of patients referred through the 2WW pathway places greater demand on endoscopic and imaging services. Notably, a study of LGIT 2WW

referrals to BHRNHST in 2015 found that 24% of patients did not meet the criteria for 2WW referral (Hanson and coworkers, unpublished data), which is in accordance with reports in CRC and other cancer services.¹⁰ Clearly, this problem has a potential impact on resource utilisation within the 2WW pathway, and whether the updated NICE guidance has an impact on these ‘inappropriate’ referrals is not known.

Implementation of a ‘straight to test’ pathway has been shown to reduce waiting times to the diagnosis and treatment in patients with colorectal disease, and appears to be popular among patients.^{11,12} This strategy may reduce the burden on outpatient clinics, but the challenge of providing timely investigation and treatment remain. As such, this approach may not be a panacea for the challenges to

secondary care resulting from the trend towards increased numbers of 2WW referrals.

Our study had four main limitations. First, our study described changes occurring at a single institution. Whether similar trends are representative of those occurring at a national level is unclear, and should be the subject of further study. Second, the influence of screening for bowel cancer (introduced in our catchment in January 2010) was not accounted for. Third, we did not ascertain if the proportion of patients referred with particular symptom complexes, and the stage at presentation among cancer diagnoses, changed during this time. This approach would be an important area for future research, particularly to assess the impact of the new referral guidelines. Finally, due to limitations in data recording at BHRNHST, we obtained reliable data on the number of colonoscopies and CT scans for LGIT 2WW patients for the past 2 years only, which may not be representative of changes throughout the duration of this study. However, the observed increase in requests for both of these investigations was in accordance with the trends in the number of referrals over the same period.

Conclusions

Our results highlight the challenges facing CRC service provision in secondary care. With publication of updated NICE guidance promoting an increase in 2WW referrals, the trends described in the present study will probably continue. Increases in outpatient capacity and provision of endoscopy services are likely to be required to maintain adherence to national targets for investigation and treatment of CRC.

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