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COVID-19 recovery: tackling the 2-week wait colorectal pathway backlog by optimising CT colonography utilisation

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AIM: To review the indications for computed tomography colonography (CTC) performed on patients referred via the 2-week wait colorectal pathway (2WWCP).

MATERIALS AND METHODS: A retrospective study was performed on all patients referred through the 2WWCP between October 2018 and September 2019. The referrals were audited against the National Institute for Health and Care Excellence (NICE) NG12/DG30 guidelines for referral to the 2WWCP, and against the Royal College of Radiologists (RCR) 2017 guidelines for CTC.

RESULTS: Over the study period, there were 1,707 2WWCP referrals, and 362 (21.2%) of these patients underwent CTC. The median age was 66 years, and 55% were female. Forty-six patients did not meet the NICE NG12/DG30 guidelines for referral to the 2WWCP, and a further 268, although meeting the NICE guidelines, did not meet the RCR 2017 guidelines for CTC. In total, only 13% of CTCs performed complied with both guidelines.

CONCLUSION: This audit demonstrated a significant opportunity to reallocate CTC resources in the recovery stage of the COVID-19 pandemic. To improve outcomes for colorectal cancer (CRC) in the UK, establishing a selective straight-to-test CTC 2WWCP should be considered. Documented consent detailing the risks and benefits of CTC versus colonoscopy should take place in order to assist the patient in making an informed choice.

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Introduction

The COVID-19 pandemic has immensely affected the delivery of timely investigations for symptomatic patients

suspected of colorectal cancer (CRC), and the asymptomatic population referred via the bowel screening programmes in the UK. CRC is the third most common cancer in the UK,¹ and the 2-week wait colorectal pathway (2WWCP)

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diagnoses 27–30% of all CRC in England and Wales per annum.² The UK went into lockdown on 23 March 2020, with the National Health Service (NHS) Chief Executive, Sir Simon Stevens, describing COVID-19 as “the greatest challenge the NHS has faced since its creation”.³ On 3 April, the British Association of Gastroenterologists and the Joint Advisory Committee recommended that all endoscopic procedures be stopped, except for emergency and essential cases, and the urgency of 2WWCP referrals assessed on a case-by-case basis.⁴ Over the 3-month emergency phase of the COVID-19 pandemic in the UK, the care of an estimated 10,000 number of CRC patients may have been affected.⁵ To prevent a future crisis of avoidable CRC deaths, cancer pathways must be maintained at a near-normal throughput, with rapid attention to the backlog of patients.^{6,7}

Prior to the COVID-19 pandemic, endoscopy units across the NHS were struggling with long waiting lists, with a 2015 report commissioned by Cancer Research UK concluding that the new National Institute for Health and Care Excellence (NICE) guidelines for referral of suspected cancer were likely to exacerbate demand. This report identified several challenges facing endoscopy services, including a rising demand, with >750,000 additional endoscopy procedures a year forecast to be undertaken by 2020,⁸ and a lack of capacity to respond to this increasing need. Following the report, Bowel Cancer UK stated in May 2017 that a quarter of English hospitals were in breach of standard waiting time target for endoscopy tests to diagnosis diseases of the bowel.^{9,10}

Although colonoscopy remains the reference standard investigation for CRC, the role of CTC in symptomatic patients has been established since the Special Interest Group on Gastrointestinal and Abdominal Radiologists (SIGGAR) trials showed no significant difference between CTC and colonoscopy in detecting cancer and large polyps.¹¹ As part of the COVID-19 recovery plan, this study audited all 2WWCP CTC referrals in King's College Hospital to see if this resource was being utilised efficiently, and if an opportunity existed to relieve some pressure from the endoscopy department.

Materials and methods

The electronic patient records of 1,707 patients referred via the 2WWCP, between October 2018 and September 2019, were reviewed retrospectively, and 362 patients were identified who underwent CTC. Data were collected on demographics, colorectal symptoms, faecal immunochemical test (FIT) results, indication for CTC, concurrent medical conditions, CTC report, and the need for follow-up colonoscopy. Of these 362 patients, the reason for referral to the 2WWCP was audited against the NICE NG12/DG30 guidelines.¹² All patients who met these referral criteria were then further audited against the Royal College of Radiologists (RCR) 2017 guidelines for CTC.¹³ The study was approved by the General Surgical Governance Committee as a clinical effectiveness audit. All patients gave informed consent for data collection and research purposes.

Results

Median age for referral to CTC was 66 years (range 21–103 years), and 55% of patients were female. Ninety-one patients were aged <65 years, 203 were 65–85 years, and 68 were aged >85 years. Of the 362 patients referred for CTC, 73 (20%) went on to have follow-up colonoscopy because of pathology found. A non-diagnostic CTC was reported in 47 of the 362 patients (12.9%) of these 17 (4.7%) were aged <65 years, 16 (4.4%) were 65–85 years, and 14 (3.8%) were >85 years. Of the 47 patients, 43 had suboptimal tests due to poor retention of gas, poor faecal preparation, or poor distension, and four tests were abandoned because of dementia or poor faecal preparation.

The appropriateness of the 362 referrals were audited against the NICE NG12/DG30 for 2WWCP, and RCR 2017 guidelines.^{12,13} Forty-six (13%) referrals did not meet the NG12/DG30 guidelines for the 2WWCP (Fig 1). Of these, 31 referrals were categorised as “change in bowel habit (CIBH) under 60 years without rectal bleeding” and 15 referrals as “unexplained weight loss under 50 years”. In both categories, a FIT was either negative or not performed; therefore, guidelines for referral were not met. In fact, of the 2WWCP referrals that did not meet the NG12 clinical criteria, only 40% had a FIT performed as per DG30.¹² Of those 316 referrals who met the NG12/DG30 criteria, 243 did not meet RCR 2017 guidelines for CTC.¹³ 68 did not have a valid reason for referral to CTC over colonoscopy, and 175 were referred solely on patient preference. Of those 73 patients who met the RCR guidelines, 51 were referred because of incomplete colonoscopy; however, 18 of these patients went on to have a successful colonoscopy post-CTC, and therefore, this procedure was technically possible to complete. Twenty-two were referred as inappropriate for colonoscopy due to pre-existing medical conditions; however, after review of the co-morbidities, seven patients were actually medically fit and therefore appropriate for colonoscopy. In total, 268 referrals did not meet RCR guidelines, with only 13% (48/362) of CTCs performed fitting the referral criteria.

During the study period, there were 177 CRCs diagnosed in total at King's College Hospital, which is a tertiary hospital. Ninety-six (54%) of these were via the 2WWCP, of which 20 were diagnosed by CTC (Table 1).

Discussion

The results of this audit demonstrate a significant opportunity to tackle the COVID-19 backlog by reallocating CTC resources, as only 13% of CTCs performed met both NICE NG12/DG30 and RCR guidelines, creating 314 potential CTC slots per annum. From the present audit, 268 patients should have undergone colonoscopy instead of CTC, and although an appropriate referral appears to increase the burden on endoscopy, reallocating these 314 CTC slots to those colonoscopy patients most likely to have an incomplete or difficult procedure, develop a complication, or require follow-up CTC, will consequently optimise utilisation of the endoscopy service.

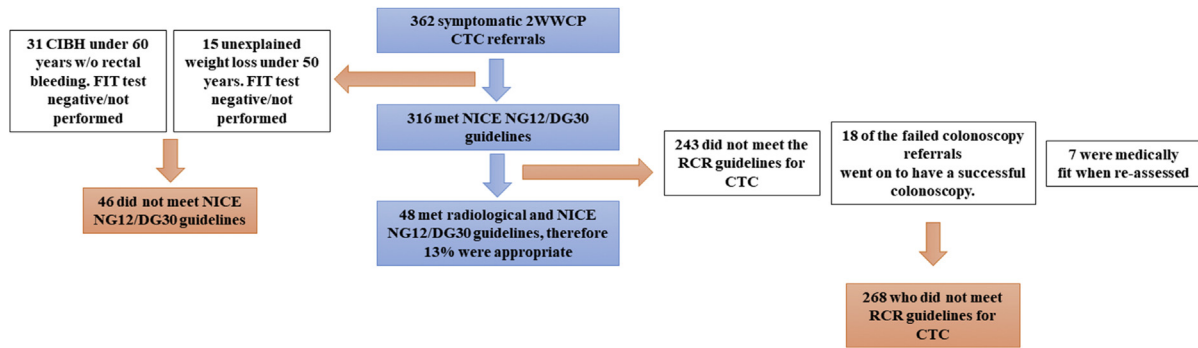


Figure 1 Outcome of symptomatic patients referred for CTC. 2WWCP, 2-week wait cancer pathway; CTC, CT colonoscopy; NICE, National Institute of Health and Care Excellence; CIBH, change in bowel habit; w/o, without; FIT, faecal immunochemical test; RCR, Royal College of Radiologists.

A literature review shows older patients to be the ideal cohort for CTC rather than colonoscopy.^{11,14–18} Compared to colonoscopy, CTC is less invasive, has a better safety profile, and does not require full bowel preparation or sedation, all of which are beneficial to older patients, especially those with co-morbidities.^{11,14} CTC has the potential to diagnose extra-colonic pathology, and also allows for immediate staging if cancer is found, both of which may inform the decision on definitive treatment in older patients, without them ever needing colonoscopy.¹¹ A meta-analysis that focused on older patients undergoing colonoscopy demonstrated an adverse incident rate of 2.6% for patients >65 years, and 3.49% for those >80, with a completion rate of 84% for >65.¹⁵ In contrast, the present study had a CTC completion rate of 95.6% for 65–85 year olds. Other publications have also consistently reported higher gastrointestinal and non-gastrointestinal complication rates, and lower completion rates in >65-year olds undergoing colonoscopy, as compared to younger age groups.^{16–18} Therefore, offering CTC to patients >65 years old should be beneficial in improving the rate of incomplete colonoscopies, as well reducing the colonoscopy complication rate.

In patients >85 years, the expected yield of CTC should be balanced against the patient’s potential to undergo further treatment if CRC is found.¹⁹ A study following patients, aged >85 years, up to 2 years after colonic resection for CRC, found the risk of surgery may neutralise any benefit.²⁰ As the risk of CRC in a symptomatic patient >85 years is at its peak,¹ if performance status, American Society of Anaesthesiologists (ASA) score, and life expectancy is deemed satisfactory for a curative surgical intervention, then these patients should

proceed directly to colonoscopy and biopsy rather than CTC. For those >85 years deemed unfit for surgical resection, a CT abdomen and pelvis with or without contrast medium could be performed if some form of investigation is warranted. When patients >85 years were excluded, the number of appropriate patients referred to CTC in the present study drops to 5.3%, and therefore, 334 potential CTC slots could be made available per annum. In light of this significant opportunity to reallocate CTC resources, the present authors propose the introduction of a straight-to-test (STT) CTC service for 2WWCP patients >65 and <85 years in tertiary hospitals as part of the COVID-19 recovery plan.

The clear benefits of STT cancer pathways have been reported in many studies.^{21–23} The only published data specific to implementing a STT CTC service for symptomatic colorectal patients is from Leicester General Hospital.²¹ This pathway was offered to all patients >60 years with an CIBH and iron-deficiency anaemia (IDA), and in 12 months, 1,792 STT CTC examinations were performed. The CRC detection rate was 4.9%, and polyp detection rate was 13.5%. The investigators concluded that the results were comparable to colonoscopy in terms of diagnostic accuracy, and akin to those of CTC in published multicentre trials.¹¹ They also noted the benefits of reduced time to cancer diagnosis and treatment, and fewer outpatient appointments with increased clinician/patient satisfaction; however, not all patients in the 65–85 year old age group will be appropriate for STT CTC, such as those with a high FIT ($\geq 150 \mu\text{g Hb/g}$ faeces), in whom primary investigation with a colonoscopy would be better than CTC.²⁴ CTC may also be a more suitable primary investigation for patients with abdominal masses and/or weight loss, rather than a colonoscopy and subsequent CT. Further stratification could be made based on gender, as the literature shows that men are six times more likely than women to have a colonoscopy after CTC, because of a higher incidence of polyps.^{11,25,26} The authors’ proposed STT CTC pathway would therefore only be for selected 65–85 year old patients.

In the present study, the low number of patients meeting both guidelines can be attributed to two factors. Firstly, DG30 was published in July 2017 and routine FIT had not been widely adopted by general practitioners (GP) in 2018/

Table 1 Computed tomography colonography (CTC) results.

CTC finding	No. of patients
Diminutive polyps (<5 mm)	36 (10%)
Polyps (>5 mm)	69 (19%)
Colon cancer	20 (6%)
Suspicion of colon cancer	23 (6%)
No polyps or cancer identified	154 (42%)
Probable extra-colonic cancer	7 (2%)
Other extra-colonic pathology	6 (2%)
Non-diagnostic CTC	47 (13%)

19,²⁷ and in fact, in the present study, only 40% of referrals that were not compliant with NG12 criteria had a FIT performed as per DG30. Secondly, despite not being an RCR guideline, “patient choice” is listed as an indication for CTC at King’s College Hospital. In the UK, patient choice holds far more primacy than any guideline, because it is protected by law. *Montgomery vs. Lanarkshire* enshrines the rights of patients to be told all their options and exercise their right to choose.²⁸ *Birch vs. UCL* is a good example of where the failure to discuss all options for investigation, including non-invasive alternatives, led to a successful claim for clinical negligence on the grounds of “failure to take informed consent”.²⁹ These same precedents apply to CTC versus colonoscopy. The present audit shows that 175 (48%) patients choose CTC over colonoscopy, and of those, eight patients were diagnosed with CRC, with 11 having suspicion findings. With informed documented consent on the risks and benefits of both methods, it is anticipated that the number of patients choosing CTC would drop. A review of the RCR guidelines is also recommended to include patient choice in light of the legal precedents established recently.

A limitation of this study is that it does not explore alternative uses for these reallocated CTC slots, such as diagnostic and staging CT for other cancers. A huge resource reallocation could be achieved with two standard CT examinations minimum replacing each CTC slot, and centres aiming to optimise their CT service may consider this a more suitable option. Other limitations include a very small study size and short time period. Furthermore, there is a lack of discussion on cost of CTC versus colonoscopy; however, economic analysis of the SIGGAR data found no difference in cost-effectiveness between the two in detecting colonic lesions.¹¹

In conclusion, urgent policy interventions are necessary to tackle the 2WWCP backlog in order to mitigate the expected impact of the COVID-19 pandemic on patients with CRC cancer within the UK.⁷ The results of this audit demonstrate a significant opportunity to reallocate CTC resources and as the NHS moves forward into the recovery stage of the COVID-19 pandemic, this study may encourage other hospitals to assess utilisation of their CTC service. As part of a multi-faceted approach to improving outcomes in CRC in the UK, establishing a selective STT CTC 2WWCP should also be considered. Documented consent detailing the risks and benefits of CTC versus colonoscopy should take place to assist patients in making an informed choice, and RCR guidelines should be reviewed to reflect the patient’s legal right to choose.

Conflict of interest

The authors declare no conflict of interest.

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