

# Straight to test reduces time to investigation and treatment

R S Wilson<sup>1</sup>, D B Johnston<sup>2</sup>, D McKay<sup>3</sup>, D Mark<sup>3</sup>

## Abstract

Straight to test (STT) is a recognised pathway for improving the waiting time for red flag referrals. Electronic patient care records (ECR) provide clinicians with a greater volume of clinical information allowing virtual triage and STT. We aimed to assess if using ECR and STT can reduce delays in diagnosis and treatment.

A review of 300 colorectal referrals between 2018-2019 was performed. Patients awaiting an appointment were reviewed electronically, by a single colorectal surgeon and re-triaged STT if appropriate. The delay in time from referral to initial review was removed, creating a second group for statistical comparison to demonstrate time saved if the strategy was adopted at the point of original triage.

91.3% (n= 274) were red flag referrals. 94% (n=282) were sent STT. Patients processed via traditional referral and clinic had a median time to scope of 36 days compared with 22.5 days,  $p < 0.001$  if triaged STT via virtual clinic. Median time to management was 59 days for traditional and 35 days for STT,  $p < 0.001$ .

## Introduction

Colorectal cancer remains the fourth most common cancer in the United Kingdom (UK) accounting for 11% of new cancer cases.<sup>1</sup> To improve access to hospital services, and time to diagnosis, target times with a maximum of two weeks wait (2WW) for red flag suspected cancer referrals and two months (62 days) from time of GP referral to cancer treatment, were introduced within the UK.<sup>2</sup> Despite these measures, the growing burden of red flag referrals has placed increasing strain on outpatient services, resulting in significant delays. Northern Ireland currently has one in five people awaiting a first appointment for elective care, highlighting the pressing need for modernisation and change.<sup>3</sup>

Within this climate, straight to test (STT) is being utilised as a means of reducing time to diagnosis by effectively removing the initial clinic review as a cause for delay.<sup>4-7</sup> STT provides additional capacity in outpatients by reducing the number of clinic attendances that each patient requires. However, the STT model has not been universally adopted in all colorectal centres with many existing STT models relying on telephone assessment clinics (TAC) by specialist nurse practitioners, which smaller units are often unable to fund. Such TACs are deemed necessary when determining the suitability of

referred patients for invasive or non-invasive testing such as colonoscopy or CT colonography.<sup>4-7</sup> We present a novel approach to STT, incorporating technological advances, in the form of an electronic patient care record (ECR), allowing for greater assessment of referrals at the point of initial triage without the need for TACs.

## Methods

A retrospective review of 300 colorectal referrals was performed between February 5<sup>th</sup> 2018 and July 22<sup>nd</sup> 2019 by a single consultant. Referral sources included General practitioner (GP) and hospital clinicians via electronic or paper referral format. Time from GP referral to hospital triage, first colorectal clinic, investigation and subsequent follow up or discharge was reviewed. All patients within the study had their initial GP referral triaged by a general surgeon, to a colorectal outpatient clinic. However, due to the waiting time delay for first outpatient assessments, patients on the red flag waiting list were reviewed by a single colorectal surgeon as part of a waiting list initiative. These clinics were provided virtually, and patients managed direct to test.

The patient referral details were verified using an Electronic Care Record (ECR) from which the consultant could access blood results, previous outpatient attendances, radiology reports and current patient medication to supplement and better triage the patient to an appropriate investigation route. Referrals were vetted in accordance with the Northern Ireland Referral Guidance for Suspected Cancer (NICaN) red flag indicators and patients down or upgraded accordingly. Patients were contacted by letter to inform them of the plan and received additional information regarding the investigation requested. Patients were not telephoned as part of this process. Patient investigations were decided based upon the referring complaint, recommendations from NICaN guidelines, patient frailty and renal function. Patients deemed fit for primary endoscopy were sent for colonoscopy +/- OGD. Those unfit for colonoscopy were sent for CT Colonography or CT scan with delayed oral contrast +/- OGD.

<sup>1</sup> Ulster Hospital, Dundonald, South Eastern Health & Social Care Trust

<sup>2</sup> Daisy Hill Hospital, Newry, Southern Health & Social Care Trust

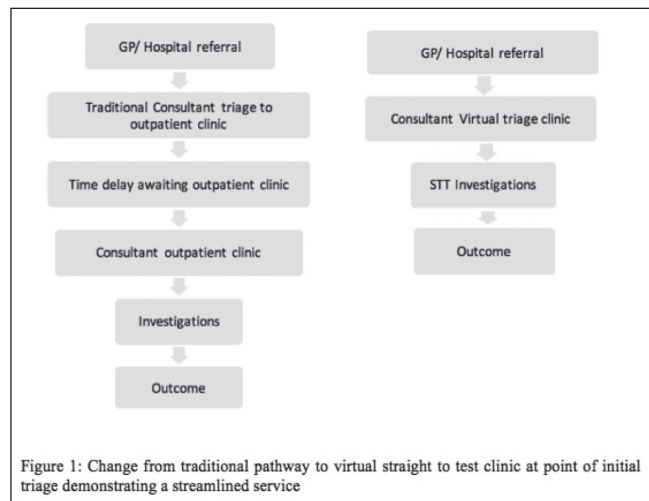
<sup>3</sup> Craigavon area Hospital, Southern Health & Social Care Trust

**Correspondence to:** Miss D B Johnston

**Email:** dotjohnston1611@gmail.com



Reports of any investigation results were then reviewed electronically and a decision regarding follow up was made. A retrospective review of outcomes and results of this patient cohort was then performed with demographics, referral times, referral indications, investigation results and timings, time to diagnosis and treatment recorded. Once data collection was completed the time delay from initial referral to Virtual clinic was removed to create a second group for comparison, that would act as an outcome measure, had virtual clinics and STT been adopted at initial point of triage. (Figure 1)



Data was not normally distributed; therefore, an exact sign test analysis was conducted comparing the groups. Values were considered statistically significant if  $p < 0.05$ . Data was analysed using SPSS version 26 for Windows (SPSS, Inc., Chicago, IL, USA).

## Results

300 colorectal referrals were reviewed between February 5<sup>th</sup> 2018 and July 22<sup>nd</sup> 2019 in a virtual clinic by a single colorectal surgeon. 91.3% ( $n=274$ ) were red flag, 7% ( $n=21$ ) urgent and 1.7% ( $n=5$ ) routine. Eleven referrals were upgraded to red flag (4 routine and 7 urgent) and 12 red flag referrals were downgraded to urgent for failing to meet the red flag criteria for referral. Altered bowel habit, PR bleeding, anaemia, abdominal pain and weight loss made up the majority of indications for initial referral to the service. The median number of days to triage was 1 day (IQR = 2). Median number of days to initial colorectal clinic (virtual clinic in this case) was 13 days (IQR = 41).

The average age was 61.79 years (minimum 16, maximum 88). 135 (45%) were male and 165 (55%) were female. 85% had blood tests performed by the GP that were within three months of the referral. Only seven patients had an eGFR  $<40$  mL/min/1.73m<sup>2</sup>.

94% ( $n=282$ ) were sent direct to test, however five did not attend their scope procedure. 6% ( $n=17$ ) declined their direct to test and were reviewed in clinic.

As expected, the main investigation method for colorectal referrals involved a colonoscopy. However, some patients

had more than one investigation and others were deemed more suitable for cross sectional imaging (Figure 2).

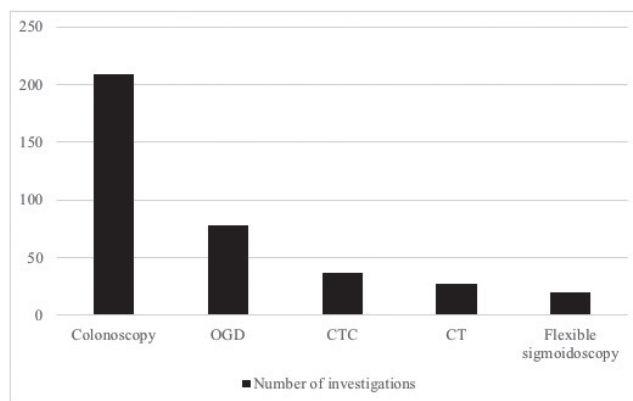


Figure 2: Direct to test investigations

No complications after endoscopic procedures or other investigative modalities were reported.

The median time to vetting of the initial GP referral, by a general surgeon was 1 day, IQR 2 days. Due to waiting list delays, the time from GP referral to first appointment by colorectal surgeon was a median of 13 days, IQR 41 days. Incorporating STT at point of initial triage would enable 100% of all referrals receiving their primary review within the 14-day referral target, with 75% of patients receiving review within two days.

Red flag patients median time to scope was 36 days, IQR 55 days. If triaged straight to test by virtual clinic the median time was 22.5 days, IQR 19.75 days. Exact sign test analysis of these two groups found a statistically significant median decrease in time in the STT group,  $p < 0.001$ .

Benign		Malignant	
Diverticulosis	60	Rectal adenocarcinoma	5
Tubular adenoma	29	Caecal adenocarcinoma	3
Haemorrhoids	24	Rectosigmoid adenocarcinoma	2
Hiatus hernia	9	Sigmoid Adenocarcinoma	2
Gastritis	9	Colonic adenocarcinoma	1
Hyperplastic polyp	8	Gastric adenocarcinoma	1
Colitis	8	Peritoneal carcinomatosis	1
Tubulovillous adenoma	5	Total	15
Constipation	3		
Coeliac	2		
Oesophagitis	1		
Oesophageal ulcer	1		
Barret's	1		
Peptic ulcer	1		
Duodenitis	1		
Irritable bowel syndrome	1		
Leiomyoma	1		
Colonic lipoma	1		
Radiation proctitis	1		
Rectal Ulcer	1		
Total	167		

Table 1: Diagnosis

Diagnosis was identified as date of radiological diagnosis or date of pathology report released from specimens sent at time of endoscopy (Table 1).



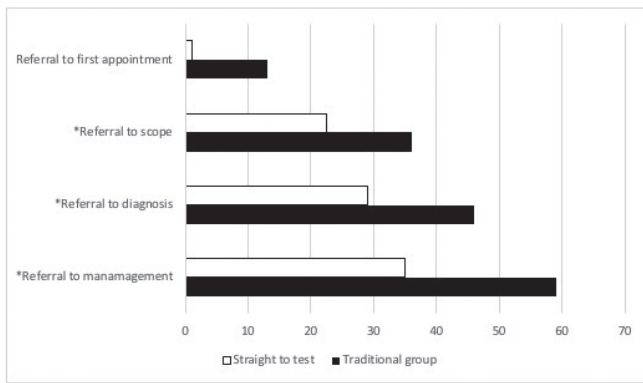


Figure 3: A comparison of times for patients from referral to first appointment, scope, diagnosis and management. \*  $P < 0.0001$

Median time to diagnosis for red flag patients was 46 days (IQR = 53 days). For the virtual clinic group, median 29 days (IQR = 24 days). (Figure 3) Exact sign test analysis of these two groups found a statistically significant median decrease in time in the STT group,  $p < 0.001$ . 19.6% ( $n=59$ ) had normal investigations and were therefore discharged. 16.6% ( $n=50$ ) needed a clinic appointment to guide further investigation.

All patients diagnosed with malignancy went on to multidisciplinary discussion. The remaining patients were informed by letter or face to face appointment, depending on the nature of their initial referral, and the findings of investigations and diagnosis given. Advice, treatment or follow up was determined on a case-by-case basis. For example, those with diverticulosis were given dietary advice, haemorrhoids were banded, those with tubular adenomas were listed for a repeat scope as per British Society of Gastroenterology (BSG) guidelines.

Management was defined as the date when medical therapy was commenced, the date of first intervention e.g. surgery, chemotherapy, banding of haemorrhoids, or when surveillance investigations were planned, or referral on to another specialty. Median time to management for red flag patients was 59 days (IQR = 63.5 days). For the virtual clinic group, median time was 35 days (IQR = 51.5 days). Exact sign test analysis of these 2 groups found a statistically significant median decrease in time in the STT group,  $p < 0.001$ .

Follow up was required for 85 patients after initial investigations. 20% of patients on a traditional referral pathway, with confirmed cancer, received treatment within 62 days of red flag referral. This improved to 53.3% if STT at the point of initial triage was used.

## Discussion

Waiting times for first outpatient appointment are increasing across the UK, with patients in Northern Ireland waiting the longest. Regional reviews have highlighted the need to adopt new technologies, such as patient electronic care records as part of strategic planning, to address the issue.<sup>3,8-9</sup> However, the COVID pandemic is likely to place an even

greater burden on healthcare systems, highlighting the need to rapidly adopt new practices, to improve patient flow from referral to investigation, discharge or treatment.<sup>3, 10-11</sup>

An ECR provides clinicians with greater access to information, enabling virtual clinics to decide on suitability of STT, thus ensuring safe assessment of the patient and triage to the appropriate investigation, without a face to face clinic appointment. Virtual clinics, without direct patient contact, have been an established aspect of many medical disciplines over the last decade with surgical specialties only recently incorporating them into their practice<sup>12</sup>. Utilising this route to diagnostics frees up much needed capacity in outpatients for those that require direct face to face attendance. Moreover, by utilising virtual ECR clinics, at the point in which the initial GP letter is triaged, considerable time is saved for the patient on their red flag pathway. Of the 300 patients treated by a virtual STT route in this study 92.7% ( $n=278$ ) were managed without complication or cancellation highlighting that this route is both safe and acceptable. Moving to an ECR triage model rather than triage to telephone clinic, not only reduces cost but allows units with less resources such as clinical nurse specialists to effectively and safely manage STT without initial review.

The ECR triage and STT model would improve compliance with NHS cancer targets, of 2 weeks from referral to first appointment, to 100%. They would also significantly improve time to investigation, discharge or treatment. Virtual clinics and organising STT investigations, allows for timelier diagnosis of each patient and, if required, multidisciplinary team meeting discussion and treatment for confirmed cancer. Doing so, not only improves patient satisfaction but may also lead to improved outcomes as it correlates with a significantly shorter time to oncological treatments and surgery. Current targets for cancer care in Northern Ireland state that 95% of patients should begin their first treatment for cancer within 62 days from initial referral for suspected cancer and that 98% of patients diagnosed with cancer should receive their first treatment within 31 days of a decision to treat<sup>10</sup>. In our study, we found that 20% of patients with confirmed cancer received treatment within 62 days of red flag referral, this would have improved to 53.3% if STT was initially used. We recognise that, despite this significant improvement in service efficiency, further work is needed to ensure that targets for cancer care are met. The imbalance between waiting list times for endoscopy or cross-sectional imaging can make it difficult to meet a rising demand, with further resource allocation for necessary diagnostic access a requirement for the future.

The STT approach can be limited by the quality of information from the primary care referral. However, utilisation of an ECR in this study has shown it to be robust with only 2.3% of referrals having insufficient information to enable appropriate STT. Incorporating STT at point of triage as a standard referral pathway also allows for further education and communication to GP's, to enhance the quality of referrals further and ensure all appropriate bloods are updated before

referral. With only five patients not attending for requested investigations we have demonstrated STT using an ECR as safe and acceptable to patients within our local population. We recognise that other parts of the UK, with greater migrant populations, may require additional safeguards to ensure the safe dissemination of information to them from clinicians. In some cases, the need for an interpreter may prohibit the use of STT by the method described in this study<sup>6</sup>.

In conclusion, this study has shown significantly improved times to investigation, diagnosis and management when a straight to test approach is utilised. This cost effective and efficient route could help manage the growing service demand in the post COVID-19 environment.

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