



Effect of the Move to Specialty Take on Quality of Care Metrics for the Gastroenterology Service at Tallaght University Hospital



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Introduction

Prior to 31 May 2019, one consultant and team were responsible for the care of all patients admitted medically over each 24-hour period at Tallaght University Hospital (excluding those patients suitable for the Acute Medical Unit between 09.00 and 17.00 on weekdays).

On 31 May 2019, the mode of acute general medical take switched from one of low-frequency and high-intensity, to one of high-frequency and low-intensity. Patients admitted medically over a 24-hour period are now divided across a number of medical teams in accordance, in so far as is practicable, with specialty diagnosis. We term the first period, "General Take", and the second period, "Specialty Take".

Aims

We aimed to quantify the impact that the switch to Specialty Take has had on the length of stay (LOS) of patients admitted by the gastroenterology service participating in acute medical take, on the LOS for general medicine as a whole and to quantify the impact that the switch has had on the time to oesophagogastroduodenoscopy (OGD) for patients referred for admission by the Emergency Department (ED) with upper gastrointestinal bleed (UGIB).

Methods: LOS

We queried our Hospital Inpatient Enquiry (HIPE) database for patients admitted (and subsequently discharged by the gastroenterology service) for the period

01 January 2019 to 30 May 2019 (General Take, n=414) and for the period 31 May 2019 to 30 November 2019 (Specialty Take, n=448). Patients with LOS in excess of 14 days were excluded as their clinical or social situations generally mean that early efficiencies in their stay don't tend to render it significantly shorter.

Hypothesis statement construction was as follows.

The null hypothesis (H_0) was that admission during the Specialty Take period bore no relationship with inpatient length of stay. The alternate hypothesis (H_A) was that admission during the Specialty Take period was correlated with inpatient LOS.

An equation (Eqn 1) was specified to test this hypothesis as described below. It was controlled for age and estimated using ordinary least squares methodology.

$$LOS_i = \alpha_0 + \alpha_1 AGE_i + \alpha_2 SPECTAKE_i + \varepsilon_i$$

Where ε is a random disturbance term that is both independently and identically distributed, i denotes an inpatient episode, α_0 , α_1 and α_2 are scalars, LOS_i denotes length of stay for episode i , AGE_i denotes the patient's age at discharge for episode i , and $SPECTAKE_i$ is a dummy variable which takes the value of 1 for admissions during the Specialty Take period.

Identical analysis was performed for a HIPE query of patients admitted under the entirety of the general medicine service for the General Take (n=2,177) and Specialty Take (n=2,387) periods.

Methods: Time to OGD

Our ED Database was queried for all referrals from 01 January 2017 to 31 December 2019 with diagnoses pertaining to UGIB (n=622). These referrals were cross-referenced with OGDs in our Endoscopy (n=10,184) and Theatre Databases (n=35) to construct an hours until OGD metric. A modified Glasgow Blatchford Score (mGBS) was calculated based on data points for gender, systolic blood pressure, heart rate, haemoglobin and urea. Information on co-morbidities, melaena and syncope was unavailable, and so patients were scored between 0 and 16.

Hypothesis statement construction was as follows.

The null hypothesis (H_0) was that admission during the Specialty Take period was not correlated with hours until OGD. The alternate was that a correlation existed.

An equation (Eqn 2) was specified to test this hypothesis as described below. It was controlled for age, gender and modified Glasgow Blatchford Score and then estimated using ordinary least squares methodology.

$$HRSOGD_i = \alpha_0 + \alpha_1 MGBS_i + \alpha_2 AGE_i + \alpha_3 MALE_i + \alpha_4 SPECTAKE_i + \varepsilon_i$$

Where ε is a random disturbance term that is both independently and identically distributed, i denotes an inpatient episode, α_0 , α_1 , α_2 , α_3 and α_4 are scalars, $MGBS_i$ denotes modified Glasgow Blatchford score for episode i , AGE_i denotes the age of the patient at discharge for episode i , $MALE_i$ is a dummy variable that takes the

value of 1 where the patient pertaining to episode i is male, and $SPECTAKE_i$ is a dummy variable which takes the value of 1 for admissions during the Specialty Take period.

Variable	Coeff (days)	Std Error	Prob	95% Con Interv
α_0	4.43	0.40	0.00	
AGE	0.03	0.01	0.00	0.01, 0.05
SPECTAKE	-0.62	0.25	0.01	-1.11, -0.13
Observations	862			
R2	0.031		Prob (F-Stat)	0.000

Table 1: Estimation output pertaining to Gastro LOS (Eqn 1)

Variable	Coeff (hours)	Std Error	Prob	95% Con Interv
α_0	96.12	16.60	0.00	
MGBS	-2.89	1.00	0.00	-4.9, -0.9
AGE	-0.00	0.20	0.99	-0.4, 0.4
MALE	-1.01	7.44	0.89	-15.7, 13.6
SPECTAKE	-6.95	10.12	0.49	-26.9, 13.0
Observations				
R2	0.033		Prob (F-Stat)	0.046

Table 2: Estimation output pertaining to hours until OGD (Eqn 2)

Results: LOS

The outputs of equation 1 permit rejection of the null hypothesis. An average reduction in stay of, all other things being equal, 0.62 days per episode is evidenced, returning 278 (95% Confidence Intervals: 58.24, 497.3) bed days to the gastro service over the six month analysed period of Specialty Take. Unsurprisingly, a small but positive and statistically significant increase in LOS is demonstrated for advancing age. Similar analysis for the general medical service evidenced a return of 835 (p=0.00, 95% CIs: 367.6, 1,303.3) bed days to the system over the six month period.

Results: Time to OGD

293 patients underwent OGD within two weeks of registration in ED. 247 in the General Take period and 46 in the Specialty Take period. Patients waited an average of 77 hours and a median of 52 hours until OGD. 18% of patients (52) underwent OGD within 24 hours. The median wait to OGD was 52 hours (2.2 days).

The null hypothesis was not rejected. Multiple equation constructions, including exclusion of all OGDs performed by surgeons, failed to demonstrate a significant relationship between Specialty Take and hours until OGD (p=0.49). Similarly, no significant relationship was demonstrated between either gender (p=0.89) or age (p=0.99) and hours until OGD. A statistically significant and negative relationship was demonstrated between the modified GBS and hours until OGD. For every point on the mGBS, average time until OGD decrease by 2.9 hours (p=0.00).

Conclusion

The move to Specialty Take has significantly reduced LOS across both the general medical and the gastroenterology service. Rather than one consultant reviewing between twenty and thirty new patients over the course of an extended morning, or indeed entire day, before his or her team can make substantive efforts to progress the care of admitted patients; teams can instead pick up one, two or three patients each and expedite their care each morning.

One might expect that movement to Specialty Take would see patients admitted medically with UGI haemorrhage passed to a gastroenterology service immediately post-take, thus facilitating ready access to endoscopy lists and a decreased time to OGD. However, our analysis failed to show any significant decrease in same.

Mean hours until OGD in the General Take period and Specialty Take period were 78.3 hours and 69.7 hours respectively (80.5 and 76 when surgical scopes (n=47) were excluded). It may be that endoscopy lists remain saturated. Additionally, delays in assigning beds to patients waiting in ED militate against access to endoscopy. Future work should investigate these barriers.

2015 European Society of Gastrointestinal Endoscopy guidelines recommend early (≤ 24 hours) OGD in UGIB. Just 18% of the studied inpatient population underwent OGD within this timeframe. Given the predictable frequency of UGI bleed presentations, institution of an UGI bleed pathway and provisional reservation of inpatient endoscopy slots might improve the percentage scoped within 24 hours.