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compared with the control period in the previous year at a large hepatobiliary referral centre. The number of admissions for each cause of liver-related complications was also reduced (appendix p 2). This decrease is probably due to the implementation of physical distancing regulations, the psychosocial effects of the COVID-19 outbreak,<sup>2</sup> and recommendations to postpone clinical visits for patients with chronic liver diseases. Liver diseases are a major cause of morbidity and account for 2 million deaths worldwide every year.<sup>3,4</sup> The COVID-19 outbreak has resulted in a reduced number of hospital admissions for this group of patients. Additionally, our results suggest that MELD scores for patients with liver cirrhosis admitted to hospital and the mean duration of hospital stay were higher during the COVID-19 outbreak than the control period. This observation suggests that patients had been admitted only when it was unavoidable and usually with severe disease. Taken together, these factors might have considerable negative impact on the long-term management of patients with liver-related disorders. Hepatologists should be aware, and health-care systems should be modified and prepared to handle the future clinical challenges that might be encountered in this group of patients.

We declare no competing interests.

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- 1 Tapper EB, Asrani SK. The COVID-19 pandemic will have a long-lasting impact on the quality of cirrhosis care. *J Hepatol* 2020; published online April 13. DOI:10.1016/j.jhep.2020.04.005.
- 2 Salje H, Tran Kiem C, Lefrancq N, et al. Estimating the burden of SARS-CoV-2 in France. *Science* 2020; published online May 13. DOI:10.1126/science.abc3517.
- 3 Asrani SK, Devarbhavi H, Eaton J, Kamath PS. Burden of liver diseases in the world. *J Hepatol* 2019; **70**: 151–71.
- 4 Tapper EB, Parikh ND. Mortality due to cirrhosis and liver cancer in the United States, 1999–2016: observational study. *BMJ* 2018; **362**: k2817.

See Online for appendix

## Practice patterns of diagnostic upper gastrointestinal endoscopy during the initial COVID-19 outbreak in England

During the initial outbreak of COVID-19, concerns have been raised regarding SARS-CoV-2 aerosolisation and transmission during invasive procedures such as upper gastrointestinal endoscopy.<sup>1,2</sup> In the UK, this led to the strategic pause in endoscopic services for 6 weeks at the beginning of the COVID-19 crisis for all but emergency and essential procedures nationally, as advised by the British Society of Gastroenterology.<sup>3</sup> The lack of adherence to National Institute for Health and Care Excellence criteria for urgent direct access upper gastrointestinal endoscopy<sup>4</sup> and the continued reduction in diagnostic oesophagogastroduodenoscopy across England might lead to many undiagnosed oesophageal and gastric cancers, with delay in diagnosis and stage migration, substantially affecting long-term survival in these patients.<sup>5</sup> We assessed changes in diagnostic oesophagogastroduodenoscopy by hospital trusts and cancer vanguards (regional cancer partnerships), and estimated the potential number of undiagnosed cancers during a 4-month period from January to April, 2020.

Data from NHS Digital was retrieved for the number of diagnostic oesophagogastroduodenoscopies done by each hospital trust in England between Jan 1, 2020, and April 30, 2020, which was then compared with a historical cohort from these same trusts from Jan 1, 2019, to April 30, 2019. Details of data sources and methods can be found in the appendix (p 2). We calculated the percentage change in diagnostic oesophagogastroduodenoscopies in each hospital

trust associated with the COVID-19 pandemic. Data regarding the number of deaths due to COVID-19 per bed for each hospital trust over the 4-month study period were used to consider the effects of the burden of COVID-19 on the provision of oesophagogastroduodenoscopy by trust. Published data from the national oesophagogastrogastric cancer audit<sup>6</sup> from 2016 to 2018 was used to estimate the number of oesophageal and gastric cancers that might not have been diagnosed during this 4-month study period as a result of changes in the number of diagnostic oesophagogastroduodenoscopies done. Trusts with incomplete data over the study period were excluded and trusts that merged during the study period were treated as merged throughout (appendix p 3).

The number of diagnostic endoscopies done between January, 2020, and April, 2020, in the 122 analysed trusts was around 28% lower than in the same period in 2019 (149 043 vs 208 212). Compared with the same period in 2019, activity was slightly lower in January, 2020 (53 909 vs 54 979; 2.0%), and February, 2020 (49 906 vs 50 572; 1.3%). Activity fell considerably in March, 2020 (37 854 vs 54 520 in March, 2019; 30.6%) and in April, 2020 (5638 vs 49 877 in April, 2019; 88.7%). In April, 2020, activity was more than 90% lower than in April, 2019, in 83 (68%) of 122 trusts and in 12 (63%) of 19 vanguards.

We found no correlation between the number of deaths due to COVID-19 per bed and the percentage change in diagnostic oesophagogastroduodenoscopies during the study period, both at the hospital trust level (Spearman  $R = -0.04$ ;  $p = 0.66$ ) and at the cancer vanguard level ( $-0.24$ ;  $p = 0.33$ ; appendix p 5).

Based on the reductions seen in diagnostic oesophagogastroduodenoscopy, the estimated number of undiagnosed oesophageal and gastric cancers across England

was 750, with a median of 47·3 (IQR 35·7–57·5) across cancer vanguards (appendix p 5). The estimated number of undiagnosed oesophageal and gastric cancers that would have been treated curatively across England was 213, with a median of 11·0 (IQR 6·3–14·4) across cancer vanguards (appendix p 5).

Oesophageal and gastric cancers are particularly aggressive with a poor prognosis, primarily driven by a delayed presentation and advanced stage at diagnosis. The COVID-19 pandemic has led to huge reductions in diagnostic oesophagogastro-duodenoscopies across England; as a result, a proportionally large number of patients with oesophageal and gastric cancer will remain undiagnosed. In England and Wales, approximately 30% of patients with oesophageal and gastric cancers are treated curatively; our data suggest that delays in diagnosis caused by the reduction in oesophagogastroduodenoscopy services will mean increasing numbers of patients presenting with advanced disease, who are less likely to be treated curatively.<sup>5</sup> Furthermore, time from diagnosis to initiation of treatment is often used as a quality metric for efficiency of the cancer treatment pathway.<sup>6</sup> Large increases in waiting lists for oncological and surgical treatment as a result of COVID-19 will substantially affect cancer waiting times, although the true effect of this delay on trust performance is not yet known, in part because oesophagogastro-duodenoscopy screening pathways for oesophageal and gastric cancer in England are being reinstated at varied rates across hospital trusts. The necessary national endoscopy uptake and capacity for optimum diagnostic screening during the COVID-19 recovery compared with baseline is unclear. Regardless, clear oncological and surgical pathway planning is urgently needed so that upper gastrointestinal cancer

services are able to adapt to the surge in new upper gastrointestinal cancer diagnoses that will inevitably be detected. One proposed strategy is the creation of cancer hubs that will provide capacity.<sup>7</sup> However, these hubs must be modelled to account for local patient factors, hospital capacity, and likely endoscopic detection rates.

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- 1 Parasa S, Reddy N, Faigel DO, et al. Global impact of the COVID-19 pandemic on endoscopy: an international survey of 252 centers from 55 countries. *Gastroenterology* 2020; published online June 11. <https://doi.org/10.1053/j.gastro.2020.06.009>.
- 2 Lui RN, Tang RS, Chiu PW. Striving to protect patients and healthcare professionals in endoscopy units during pandemics: from SARS to COVID-19. *Gastroenterology* 2020; published online May 5. <https://doi.org/10.1053/j.gastro.2020.05.002>.
- 3 Penman I, Edwards S, Coleman M, McKinlay A. Endoscopy activity and COVID-19: BSG and JAG guidance. April 3, 2020. <https://www.bsg.org.uk/covid-19-advice/endoscopy-activity-and-covid-19-bsg-and-jag-guidance/> (accessed June 27, 2020).
- 4 National Institute for Health and Care Excellence. Gastrointestinal tract (upper) cancers—recognition and referral. <https://cks.nice.org.uk/gastrointestinal-tract-upper-cancers-recognition-and-referral#scenario> (accessed July 5, 2020).
- 5 Arhi CS, Markar S, Burns EM, et al. Delays in referral from primary care are associated with a worse survival in patients with esophagogastric cancer. *Dis Esophagus* 2019; **32**: 1–11.
- 6 National Oesophago-Gastric Cancer Audit. 2019 annual report. <https://www.nogca.org.uk/reports/2019-annual-report/> (accessed June 27, 2020).
- 7 Swanton C, Scowcroft H. Protecting “Covid protected” cancer hubs. *BMJ* 2020; **369**: m2062.

## Use of Cytosponge as a triaging tool to upper gastrointestinal endoscopy during the COVID-19 pandemic



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During the COVID-19 pandemic, endoscopy services have been severely curtailed—eg, in England, UK, a 30% reduction of diagnostic endoscopies has been reported for the period between January and April, 2020, compared with the same period in 2019, with an estimated 750 oesophagogastric cancers going undiagnosed.<sup>1</sup> A delay in oesophageal cancer diagnosis could adversely affect outcomes, such as has previously been seen with low endoscopy referral rates being linked with poor outcomes from oesophageal cancer.<sup>2</sup>

The Cytosponge is a non-endoscopic diagnostic tool that was developed to detect Barrett’s oesophagus in patients with reflux symptoms. Cytosponge consists of a tethered capsule that is swallowed in a primary or secondary care office setting and collects oesophageal cells, which can be assessed for morphology and immunohistochemical biomarkers of intestinal metaplasia (TFF3) and dysplasia (atypia and p53).<sup>3,4</sup> The safety, acceptability, and diagnostic accuracy of this approach has been assessed in three clinical trials, including the recent BEST3 trial.<sup>5–7</sup> In light of COVID-19 restrictions, we assessed whether Cytosponge could triage patients referred for urgent investigation of alarm oesophageal symptoms.

Between April 8 and May 26, 2020, 123 patients were referred to our department at Cambridge University Hospital (Cambridge, UK) for urgent endoscopy, of whom 14 with dysphagia Mellow score of 3 or more received fast-track endoscopy, while 72 with mild symptoms and no dysphagia were managed via telephone. The remaining 37 patients