

Participants noted it would take time to adjust to MNP being higher than PDR.

Participants were motivated by social comparison, particularly to expert groups. Participants responded negatively to statements ranking their performance nationally, preferring a visual comparison with an aspirational top quartile.

Expected performance is highlighted in blue, as amber elicited a fear response. Underperformance is in red and focussed attention on goals.

The BCI is programmed and emailed monthly from the National Endoscopy Database (NED). Participants noted monthly data may be variable and paid more attention to trends. The BCI was revised to emphasise a 4-month summary and plotted trend.

The BCI has a personalised action plan using targets for behaviours which influence detection, supported by information to improve knowledge. Participants believed that hyoscine butylbromide, withdrawal time, and turning the patient improved detection and were consistent with personal goals. Rectal retroversion is included in the BCI but few participants believed this improves detection.

Participants described positive experiences using nursing staff to prompt behaviours but spoke about complex social barriers to nurse empowerment. To overcome barriers, action plans encourage endoscopists to ask nursing staff to provide specific prompts.

**Conclusions** This process has resulted in an evidence and theory informed BCI (video), which is being tested in the NED Automated Performance Reports Improving Quality Outcomes Trial (APRIQOT) multicentre randomised control trial. NED APRIQOT is funded by the Health Foundation.

#### P19 STRUCTURE-FROM-MOTION ANALYSIS MAY GENERATE AN ACCURATE AUTOMATED BOWEL PREPARATION SCORE

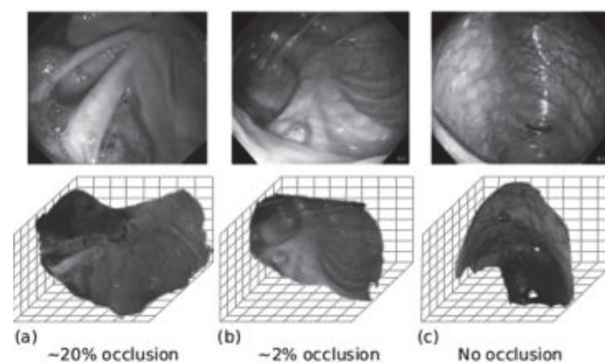
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**Introduction** Structure-from-Motion (SfM) is a computer vision technique which allows us to estimate the 3D structure of a scene from a set of 2D images. Our aim was to use this to automatically identify quality of bowel preparation.

**Methods** We applied SfM to 5 colonoscopy sequences, composed of 150 to 300 consecutive images displaying caecum. We then refined the estimated 3D meshes by smoothing them and eliminating erroneous estimates arising at the edge of the reconstructed surfaces. These erroneous estimates were mainly due to a lack of visual redundancy, motion blur or illumination artefacts such as large specularities.

**Results** Figure 1 shows that SfM allows successful estimation of 3D structure of different caecum sections. Depressed and protruded areas could particularly facilitate visual analysis. Although SfM suffers from a scale ambiguity which prevents 3D measurements, it can provide different quality indicators such as an estimate of the percentage of colonic surface observed during a procedure. Here, we evaluated effectiveness of pre-operative bowel preparation by measuring the ratio of



Abstract P19 Figure 1

obscured or partially obscured area over the 3D surface reconstructed. Figure 1(b) and figure 1(c) correspond to clean bowel preparation with a percentage of obscured mucosa less than 2%. Figure 1(a) illustrates poor bowel preparation as approximately 20% of the observed colon section is obscured. For some images of the corresponding colonoscopy sequence, 35% of colon surface observed was obscured due to poor bowel preparation. Such a quality indicator would contribute to an objective assessment of colonoscopy examination reliability.

**Conclusion** This study demonstrates that 3D vision-based approaches can provide objective quality indicators in colonoscopy. More advanced approaches such as Simultaneous Localisation And Mapping (SLAM) could also be used to estimate both the 3D structure of the observed scene and the endoscope motion. SLAM could provide practitioners with enhanced visualisation in colonoscopy contributing to the development of advanced quality indicators.

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#### P20 IMPROVING BARRETT'S SURVEILLANCE IN A DGH – DEDICATED LISTS ARE FEASIBLE AND WORTHWHILE

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**Introduction** Significant deficiencies in the standard of surveillance endoscopies done for Barrett's oesophagus (BO) were identified in a retrospective audit in our DGH.

It is well recognised that BO progresses through a dysplasia-carcinoma sequence to oesophageal cancer. Studies have shown that up to 7.8% of oesophageal cancers are missed at previous endoscopy.<sup>1</sup> This highlights the importance of performing high quality endoscopies in order to detect changes an early stage when local potentially curative treatment is possible.

This study reviews compliance with BSG Barrett's guidelines<sup>2</sup> before and after introduction of dedicated Barrett's surveillance lists at our DGH.

**Method** Retrospective audit of endoscopies for all patients with BO in 2018 was performed. A new dedicated Barrett's surveillance list was introduced in March 2019 (single endoscopist, 2 experienced nurses, maximum 6 patients per list, timely follow up via virtual clinic for notes and histology