Introduction Current BSG guidelines advise routine endoscopic surveillance for patients with Barrett's oesophagus to enable early detection of oesophageal adenocarcinoma. However, evidence for improved outcomes from surveillance is weak and remains the subject of debate. To address these concerns, BOSS aims to compare the benefits of 2-yearly surveillance endoscopy against endoscopy on an 'at need' basis only. As a large, multicentre trial with 10 year follow-up, this ambitious project faced a number of challenges to recruitment, particularly the acceptability of randomising to a control arm with no routine endoscopy, especially in sites where surveillance had been established.

Methods Multi-centre randomised controlled trial (ISRCTN54190466). Inclusion criteria: patients over 18 with endoscopic and histologically proven Barrett's oesophagus >1 cm. Exclusion criteria: patients unable to consent, unfit for endoscopy, high-grade dysplasia or cancer, or participation in AspECT trial. Target sample size: 3400. Recruitment: patients identified at local centres with new diagnosis, or existing diagnosis of Barrett's and endoscopy within last 2 years. Follow-up will be for 10 years. Intervention arm will receive 2-yearly surveillance endoscopy, control arm will receive endoscopy on an 'at need' basis if symptomatic. Primary outcome: all cause mortality.

Results Recruitment began March 2009, target of 3400 was reached ahead of schedule in October 2011. 3469 consented to be randomised (58.4% of eligible screened patients): 1739 in 2-yearly surveillance, 1730 in 'at need' arm. 127 hospitals were open to recruitment, though 3 withdrew from the study, recruitment was closed in one centre by the trial team, and 11 did not recruit any patients. 3780 screened patients did not enter: 1309 ineligible, 2471 declined. Most common reasons for patients to decline were: preference for surveillance, preference not to have endoscopies and a family history of cancer. As of January 2014, 111 patients were no longer in their originally randomised treatment groups: 55 due to patient/clinician decision, 56 for other reasons. For 107 of those 111 patients, data continues to be collected.

Conclusion The successful recruitment to BOSS strongly supports the acceptability of randomisation to the control arm, and patients' willingness to participate in a long follow-up RCT. The large number of centres and enthusiastic principal investigators have shown continued success, and great promise for BOSS to answer key questions on Barrett's surveillance.

REFERENCE

Fitzgerald RC, *et al*. *Gut* 2014:63:7–42

Disclosure of Interest None Declared.

PTU-168 BARRETT'S OESOPHAGUS SCREENING: INFRARED SPECTROSCOPY FOR CYTOLOGICAL ASSESSMENT

[1]OJ Old*, [1]M Almond, [1]G Lloyd, [2]D Townsend, [2]K Lenau, [2]M Diem, [1]H Barr. *[1]Gloucestershire Hospitals NHS Trust, Gloucester, UK; [2]Northeastern University, Boston, USA*

10.1136/gutjnl-2014-307263.242

Introduction Screening for Barrett's oesophagus could allow early detection, enabling timely diagnosis and intervention for oesophageal adenocarcinoma. Recent studies have shown the acceptability of a swallowed cytology brush ('Cytosponge') for cell collection. If introduced, cytological assessment would pose several challenges. Firstly, oesophageal cytology is performed infrequently, and expertise in this field is correspondingly limited. Secondly, assessment of individual cells is challenging even for experienced cytopathologists, with a degree of interobserver variability. Thirdly, screening would require a great deal of cytopathology resources. Infrared spectroscopy (IR) gives reproducible spectra based on cell biochemistry; applying multivariate statistical analysis and computer modelling can provide robust and rapid discrimination between pathological cell subtypes. We aimed to demonstrate the potential application of IR in analysis of oesophageal cytology.

Methods Endoscopic cytology brushes were used to collect oesophageal cells from patients undergoing endoscopy for Barrett's oesophagus. Cells were fixed in formalin, centrifuged and slides prepared. IR spectra were measured across the entire sample area. Pre-processing steps allowed spectra from individual cells to be reconstituted. Further pre-processing removed confounding effects and enhanced signal-to-noise ratios. Conventional cytology analysis was undertaken to provide a reference for developing a predictive model using IR data. Chemometric analysis was then undertaken using Partial Least Squares Discriminant Analysis (PLS1DA) and cross-validation performed.

Results 23 cytology brush samples were collected from 11 patients. 4 samples contained low cell counts and were excluded from analysis. 5536 cells (2339 normal squamous, 2511 Barrett's oesophagus and 686 dysplastic) were used to create and validate a predictive model. The predictive capability of the model is shown in the table below:

Abstract PTU-168 Table 1

	Normal squamous	Barrett's oesoph.	Dysplasia
Sensitivity	100% 1%	96% 2%	94% 3%
Specificity	99% 1%	99% 1%	98% 1%

Conclusion The high accuracy demonstrated by our predictive model suggests IR is a promising candidate for cytological analysis of oesophageal cells. As an objective, automated system, this technique could prove invaluable for Barrett's screening in future.

REFERENCE

Schubert JM *et al*. *Lab Invest*. 2010;90(7):1068–1077

Disclosure of Interest None Declared.

PTU-169 LONG-LASTING OESOPHAGEAL MUCOSAL PROTCTION WITH ALGINATES: A POTENTIAL FOR TOPICAL MUCOSAL THERAPY IN GASTRO-OESOPHAGEAL REFLUX

[1]P Woodland*, [1]C Lee, [2]P Dettmar, [1]SL Preston, [1]D Sifrim. *[1]Barts and the London School of Medicine and Dentistry, Queen Mary University of London, London; [2]Technostics Limited, Hull, UK*

10.1136/gutjnl-2014-307263.243

Introduction Patients with non-erosive reflux disease (NERD) exhibit impaired oesophageal mucosal barrier integrity in the form of dilated intercellular spaces and low transepithelial electrical resistance (TER). Such refluxate-induced changes to the mucosal integrity may underlie increased sensitivity to perception of reflux events, even on PPI, and could potentially be modified by application of topical solutions.

Sodium alginate solutions are used in treatment of GORD, with proposed mechanisms of action including acid buffering, displacement of the gastric acid pocket, and reduction of reflux events. We have recently described that *in vitro* topical