Introduction The human intestinal tract is a complex microbial ecosystem unique to every individual and contributing sufficient metabolic equivalents to be considered an organ in its own right. Dysbiosis is thought to contribute to the chronic inflammation which is involved in colorectal cancer (CRC) development. We have shown that the premalignant adenoma stage of CRC is underpinned by chronic inflammation and hypothesise that the colonic microbiota is an important driver of neoplastic progression. The aim of the study was to compare bacterial diversity in adenomas and paired adjacent normal colonic tissue.

Methods 72 patients undergoing colonoscopy as part of the national bowel cancer screening programme were recruited. All patients underwent polypectomy for large adenomas (> 1cm). Denaturing gradient gel electrophoresis (DGGE on all subjects) and pyrosequencing (18 subjects) were used to compare the bacterial diversity present between the adenoma and adjacent normal paired tissue samples.

Results 46% of patients showed differences in microbial diversity by DGGE analysis between adenoma and adjacent normal tissue. 21% had only limited differences whilst 79% showed dramatically altered diversity profiles. Phylum-level comparisons across the study cohort, based on sequencing, revealed no statistically significant differences for the Bacteroidetes, Firmicutes and Proteobacteria phyla. When samples were split based on DGGE analysis (i.e. similar or different DGGE profiles between paired polyp and normal mucosa), eight of the possible 10 phyla showed statistically significant differences. Collectively samples with similar profiles between polyp and normal tissue (DGGE 'same' group) had higher levels of Bacteroidetes and lower numbers of Actinobacteria, Firmicutes and Proteobacteria than the DGGE 'different' group. However when genus-level comparisons were assessed the DGGE 'different' sample pairs demonstrated a much greater level of dysbiosis. The levels of normal commensal genera were reduced and there was evidence of large numbers of potentially pathogenic bacteria including *Shigella*, *Enterobacter* and *Fusobacteria* spp.

Conclusion Differences in microbial diversity harboured by a significant number of polyps compared to their immediately adjacent normal mucosa point to an important role for these bacteria in CRC progression. We hypothesise that the disturbed microbial homeostasis in these polyps, in genetically predisposed individuals and taking into account multiple environmental factors, underpins the pathogenesis of colorectal neoplasia. The identification of a "harmful" pro-inflammatory microbiota that is associated with precancerous stages (i.e. adenomas) offers the potential for manipulations of this microbiota with probiotic, prebiotic and indeed antibiotic means.

Disclosure of Interest None Declared.

PWE-013 EVALUATION OF FAECAL ASPIRATE AS A PROXY FOR COLONOSCOPY BIOPSY SAMPLING TO ASSESS MICROBIAL DIVERSITY

doi:10.1136/gutjnl-2013-304907.302

¹E Watt, ¹S Berry, ²F Farquarson, ¹M Glaire, ¹J Thomson, ¹E El-Omar, ²P Louis, ¹G Hold. ¹Division of Applied Medicine; ²Rowett Institute of Nutrition and Health, Aberdeen University, Aberdeen, UK

Introduction The gut microbiota plays a key role in Inflammatory Bowel Disease (IBD) pathogenesis and is also involved in colorectal neoplastic progression. In particular, the "dysbiosis" theory has evolved from work which has shown IBD sufferers to have different microbiologic profiles to normal controls. There is strong evidence to demonstrate that individuals harbour a unique microbiota with faecal and mucosal ecosystems being distinct. This would indicate that faecal samples are not appropriate surrogate markers for mucosal samples and other alternative sampling options should be considered. The aim of the study was to assess the microbial diversity

of paired biopsies and faecal aspirates to determine whether faecal aspirate can be used as a suitable surrogate for colonic biopsies.

Methods Bacterial DNA was extracted from 21 paired mucosal biopsies and faecal aspirates, and subjected to denaturing gradient gel electrophoresis (DGGE) and q-PCR analysis to quantify the relative abundance of the following major bacterial groups: Bacteroidetes, *Ruminococcaceae*, *Lachnospiraceae* and *Enterobacteriaceae*. The relative abundance of bacterial groups was expressed as a percentage of total bacteria.

Results Increased variation was found across the faecal aspirates compared to biopsies with regards to relative abundance of the four bacterial groups analysed by q-PCR (Table 1). This indicates that microbial diversity of faecal aspirates is more variable than mucosal biopsies. When the mean abundance of each bacterial group across the biopsies and across the faecal aspirates was compared using a Paired t-test, there was a significant difference in levels of *Bacteroides* (62.3% vs 44.4%; $p < 0.05$) but not the other bacterial groups. There was no statistical correlation between paired faecal aspirate and biopsy samples when analysed for the four major bacterial groups by linear regression.

Abstract PWE-013 Table 1

	Biopsy		Faecal aspirate	
	Abundance across samples* (%)	Mean +/- SD	Abundance across samples (%)	Mean +/- SD
Bacteroides	40.5 – 116.3	62.3% ± 20.0%	0.4 – 84.5	44.4% ± 25.8%
Clostridium cluster XIVa	11.8 – 63.7	36.7% ± 16.8%	9.2 – 150.4	39.4% ± 37.5%
Clostridium cluster IV	3.5 – 23.4	11.9% ± 5.9%	1.8 – 36.0	11.9% ± 9.6%
Proteobacteria	0.07 – 34.4	5.6% ± 8.4%	< 0.1 – 59.6	4.0% ± 13.1%

* = calculated based on relative abundance as a percentage of total bacteria

Conclusion Substantial microbial diversity differences exist between faecal aspirate and biopsy samples. Faecal aspirates demonstrate considerably more variation than biopsies, and there would appear to be no correlation between paired samples. These results suggest that faecal aspirate is not a suitable microbiological surrogate for mucosal biopsies.

Disclosure of Interest None Declared.

PWE-014 DEVELOPMENT OF AN OPTIMUM TREATMENT REGIMEN FOR TRANSCUTANEOUS POSTERIOR TIBIAL NERVE STIMULATION FOR FAECAL INCONTINENCE

doi:10.1136/gutjnl-2013-304907.303

¹G Thomas, ¹T Dudding, ¹R J Nicholls, ¹C Vaizey. ¹St Mark's Hospital and Academic Institute, London, UK

Introduction Posterior tibial nerve stimulation (PTNS) is an effective treatment for faecal incontinence (FI). A wide range of PTNS regimens have been reported. The aim of this study was to determine an improved PTNS regimen.

Methods Patients were randomised to either daily or twice weekly unilateral transcutaneous PTNS for six weeks. The investigator was blinded to group allocation. Once completed, further patients were recruited. They received daily bilateral transcutaneous PTNS for six weeks. The primary outcome measure was the change in frequency of FI episodes per week. PTNS was self-administered by each patient from home.

Results Thirty patients received either daily or twice weekly PTNS. The daily unilateral PTNS group achieved a reduction in frequency of incontinent episodes of 5(11.3) to 3.5(4.31), $p = 0.025$. Three achieved complete continence. No change was seen in the twice weekly group. Neither group improved deferral time. A further 20 patients received daily bilateral PTNS. They achieved a

reduction in frequency of incontinent episodes of 6 (8.25) to 2 (7.25), $p = 0.029$. Two achieved complete continence. There was an increase in deferral time, 3 (4) to 5 (8) minutes, $p = 0.027$.

Conclusion Daily bilateral transcutaneous PTNS is an effective treatment for FI. It can be easily self-administered from home.

Disclosure of Interest None Declared.

PWE-015 PUDENDAL NERVE STIMULATION FOR FAECAL INCONTINENCE

doi:10.1136/gutjnl-2013-304907.304

¹G Thomas, ¹A George, ¹T Dudding, ¹R J Nicholls, ¹C Vaizey. ¹St Mark's Hospital and Academic Institute, London, UK

Introduction Sacral nerve stimulation (SNS) is an established treatment for faecal incontinence (FI). However, only 50–60% of patients will have a good response to SNS. Further treatment is difficult for those who do not respond to SNS. Pudendal nerve stimulation (PNS) was first reported for FI in 2005. Since then only one small study has further reported its use for FI. We aimed to assess PNS for FI in those who have failed to improve with SNS.

Methods Recruited patients underwent test PNS. Those who experienced a $\geq 50\%$ reduction in frequency of FI episodes underwent permanent PNS. The primary outcome measure was the change in frequency of FI episodes. Further outcome measures were further bowel diary data, St Marks FI Score, Rockwood FI QOL Score, SF-36 QOL Score and anorectal physiological changes.

Results Ten patients underwent test PNS. Five experienced a $\geq 50\%$ improvement in frequency of FI episodes, and underwent permanent stimulation. One withdrew from the study at six months. At median follow up of 24 (3–36) months, the median frequency of FI improved from 5 (18.25) to 2.5 (3) per week; $p = 0.043$. Three maintained a $\geq 50\%$ improvement in soiling. There was a significant improvement in the St Marks FI score, 19 (6) to 16 (4.5); $p = 0.042$. There were no significant changes in the ability to defer defecation or in quality of life measures.

Conclusion PNS may be an effective treatment for FI for those who have failed to improve with SNS

Disclosure of Interest None Declared.

PWE-016 CAN THE RESPONSE TO POSTERIOR TIBIAL NERVE STIMULATION FOR FAECAL INCONTINENCE PREDICT THE RESPONSE TO SACRAL NERVE STIMULATION?

doi:10.1136/gutjnl-2013-304907.305

¹G Thomas, ¹T Dudding, ¹R J Nicholls, ¹C Vaizey. ¹St Mark's Hospital and Academic Institute, London, UK

Introduction Sacral nerve stimulation (SNS) is an established treatment for faecal incontinence (FI). Posterior tibial nerve stimulation (PTNS) is a more recent and increasingly popular treatment for FI. PTNS is cheaper, safer and as effective as SNS in the short term. PTNS can be used as an initial therapy, with SNS reserved for those who have failed to improve. The aim of this study was to see if the response to PTNS can be used to predict the response to SNS.

Methods Prospectively collected data for all patients who had undergone transcutaneous PTNS followed by SNS were analysed. A good clinical response to PTNS and to SNS was defined as a $\geq 50\%$ reduction in frequency of FI episodes per week.

Results Ten patients underwent PTNS followed by SNS for FI. Three patients had a poor response to PTNS. Two of these had a subsequently had a poor response to SNS. Seven patients had a good response to PTNS. Five of these had a good response to SNS.

Conclusion This small study suggests that the response to PTNS may predict the response to SNS. Much larger studies are needed to explore this further.

Disclosure of Interest None Declared.

PWE-017 IS BOWEL SCREENING EFFECTIVE AT IDENTIFYING BOWEL CANCER EARLY?

doi:10.1136/gutjnl-2013-304907.306

¹H Glover, ²N Townsend on behalf of Bowel Screening Wales, ³M Guy on behalf of Cancer Services, ⁴D Bowen. ¹Gastroenterology; ²Bowel Screening UK, Glangwili Hospital; ³Cancer Services, Glangwili Hospital; ⁴Consultant Gastroenterologist, Glangwili Hospital, Carmarthen, UK

Introduction Bowel screening aims to identify bowel cancer early to achieve a lower mortality. We looked at whether patients diagnosed with cancer on a bowel screening list have disease at an earlier Dukes stage and thus better prognosis than those with symptoms.

Methods 176 patients with an endoscopic diagnosis of bowel cancer were identified retrospectively, 63 patients from the Bowel Screening Wales (BSW) list and 137 from all other lists. All patients underwent colonoscopy in Glangwili Hospital between Jan 2009 and Dec 2011. All cases had a histological diagnosis of bowel cancer and subsequent staging using the Dukes classification.

Results Results showed similar M:F ratios of 73:27% (BSW cohort) and 63:37% (symptomatic cohort). The median ages were 66 yrs (BSW) and 67 yrs (symptomatic). The age range for both groups was 60–72 yrs.

The table below compares the no. of patients (%) with each Dukes stage of disease and its statistical significance.

Abstract PWE-017 Table

Dukes Staging	No. of BSW pts (%)	No. of symptomatic pts (%)	P value
A	26 (41%)	33 (24%)	0.019
B	17 (27%)	51 (37%)	0.19
C	16 (26%)	25 (18%)	0.26
D	4 (6%)	28 (21%)	0.01
Total pts	63	137	

A fishers analysis was carried out. Using a P value < 0.05 there was a significant difference in the number of patients presenting at stages A ($p = 0.019$) and D ($p = 0.01$) and no statistical difference at stages B ($p = 0.19$) and C ($p = 0.26$).

In the BSW cohort 4 patients (6.4%) had advance disease and were not fit for surgery compared to 12 patients (8.6%) in the symptomatic cohort. The number of patients cured by polypectomy was 7 (11.1%) in the BSW cohort and 1 (0.7%) in the symptomatic group. 52 patients (82.5%) had bowel resection in the BSW group and 124 (90.5%) in the symptomatic group. The only group with a significant difference statistically was the number of patients treated with polypectomy (p value = 0.0014). The number of patients in each group that were inoperable due to advanced disease or that went on to have bowel resection did not differ statistically with p values of 0.78 and 0.16 respectively.

Data was also collected identifying the number of patients in each group by the site of bowel cancer. The distribution was similar in both groups.

Conclusion Our study demonstrates that more patients are identified with Dukes stage A ($p = 0.019$) disease through the bowel screening programme and that significantly more patients are managed by polypectomy alone ($p = 0.0014$). It also demonstrates that significantly less patients are diagnosed with Dukes stage D ($p = 0.01$) disease through bowel screening. This supports the role of bowel screening and its clinical role in reducing mortality from bowel cancer.

Disclosure of Interest None Declared.