

## **Poster 1:**

### **Early Myelosuppression on Azathioprine and the NUDT15 Variant at CDHB**

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**Introduction:** The nudix hydrolase 15 (NUDT15) R139C mutation has been associated with development of leukopenia within 8 weeks of starting azathioprine amongst Asian populations. At CDHB, most patients with inflammatory bowel disease (IBD) will have thiopurine methyltransferase (TPMT) screening to guide thiopurine dosing, including TPMT levels and genotyping when TPMT activity is low. However, TPMT has a lower mutation rate in Asian populations and poor predictive value despite a high incidence of myelosuppression amongst this group. This clinical audit was to assess whether there might be benefit in introducing NUDT15 screening for IBD patients who identify as Asian at CDHB by comparing incidence of leukopenia and prevalence of TPMT polymorphisms between Asian and NZ European (NZE) patients.

**Methods:** IBD patients were identified through clinic letters and discharge summaries from 2002 to 2018 where the azathioprine/6-mercaptopurine commencement date was documented. Ethnicity and TPMT results were noted and complete blood counts were reviewed for the 8 weeks following drug commencement to determine early leukopenia (white cell count  $<4.0 \times 10^9/L$  as per Canterbury Health Laboratories). The study had local ethics approval.

**Results:** The study population (276) was 76% NZE and 6% Asian. Leukopenia was 1.65 times more likely to occur in Asian than NZE patients. No leukopenia cases in either group had TPMT activity below the normal range or TPMT gene mutations identified. For those who had TPMT genotyping from the whole study population, 20% of Asians tested for a TPMT polymorphism compared to 32% of the NZE population.

**Conclusions:** As Asian IBD patients were more likely to have early leukopenia on thiopurines than the NZE population despite lower prevalence of abnormal TPMT, this suggests presence of NUDT15 variants in this group. Consequently, NUDT15 testing might be beneficial to guide treatment and reduce risk of leukopenia.

#### **References:**

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### **Poster 3:**

#### **Faecal myeloperoxidase is a potential biomarker of disease activity in Inflammatory Bowel Disease (IBD): Results from the New Indicators of Disease Activity in IBD (NIDA-IBD) Cohort**

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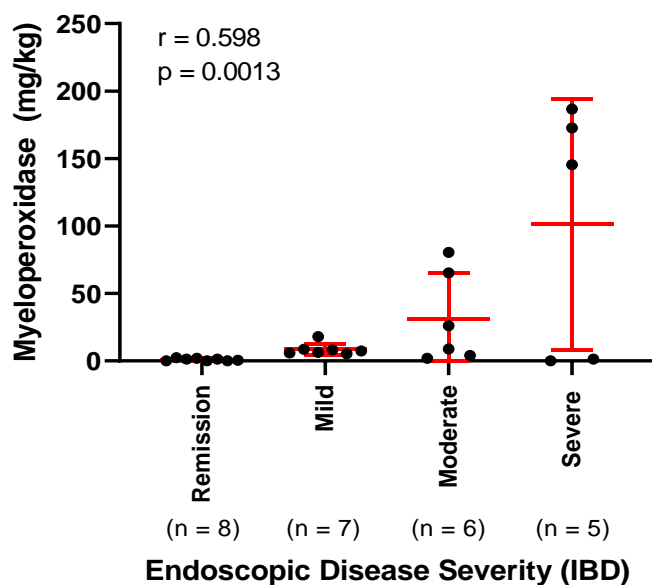
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**Introduction:** Inflammatory bowel disease (IBD) (Crohn's disease (CD) and ulcerative colitis (UC)) is characterised by a relapsing-remitting course. Disease activity is currently best evaluated using colonoscopy, which is invasive and expensive. Biomarkers are needed to improve patient care. Activated neutrophils release calprotectin and myeloperoxidase during inflammation. Faecal calprotectin (FC) is a non-invasive biomarker in IBD, especially UC. We examined the accuracy of faecal myeloperoxidase (fMPO) as a biomarker for inflammatory activity in IBD, and whether it may be superior to FC.

**Methods:** Samples were acquired prospectively from the NIDA-IBD cohort. IBD patients collected stool samples prior to commencing bowel preparation. [fMPO] and [FC] were measured by ELISA. Endoscopic severity was determined using simple endoscopic score for CD (SES-CD) or UC endoscopic index of severity (UCEIS). Association of [fMPO] with clinical and endoscopic markers of disease severity were calculated using the Spearman rank coefficient.

**Results:** We improved extraction of [fMPO] in spiked stool samples to 74-82% recovery, compared with previous extraction recovery rates of 34%. To date, [fMPO] has been measured in 26 IBD patients (median age 45 years, 15 (65%) female, 13 (50%) CD). [fMPO] significantly correlated with endoscopic disease severity ( $r=0.598$   $p=0.0013$ ) (Figure 1). [fMPO] also correlated significantly with [FC] ( $r=0.768$   $p<0.0001$ ).

**Conclusion:** [fMPO] is a promising marker of disease activity in patients with IBD. We intend to measure [fMPO] and fMPO activity for the remainder of the NIDA-IBD cohort, and to examine whether fMPO correlates with treatment outcome in follow-up time points.



**Figure 1:** Endoscopic disease severity of inflammatory bowel disease (IBD) is positively correlated with faecal myeloperoxidase concentration

#### **Poster 4:**

### **Differences in *Faecalibacterium*, *Bilophila*, and genes involved in carbohydrate, hydrogen and lipid metabolism in Irritable Bowel Syndrome.**

**Miss Caterina Carco**<sup>1,2,3</sup>, Dr Wayne Young<sup>1,2,3</sup>, Dr Jane Mullaney<sup>1,2,3</sup>, Dr Paul Maclean<sup>1</sup>, Dr Paul Cotter<sup>5,6</sup>, Dr Karl Fraser<sup>1,2,3</sup>, Prof. Richard B. Gearry<sup>3,4</sup>, Prof. Warren C. McNabb<sup>2,3</sup>, Prof. Nicole C. Roy<sup>1,2,3</sup>

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**Introduction:** Irritable Bowel Syndrome (IBS) is a functional gastrointestinal (GI) disorder featuring chronic abdominal discomfort with changes in GI habit. However, the mechanisms responsible for IBS are poorly understood. Although alterations in the GI microbiome have been implicated in IBS, there is a lack of consensus on what the exact role of the microbiome is, and how changes to it relate to IBS. To improve our understanding of links between the microbiome and IBS, we undertook shotgun metagenomic sequencing of faecal samples from a case-control study.

**Methods:** Faecal samples from 259 individuals (96 controls, 23 constipation-predominant IBS (IBS-C) and 51 diarrhoea-predominant IBS (IBS-D)), were analysed by shotgun sequencing (Illumina NextSeq platform), and taxonomic classifications determined using Metaxa2 and the SILVA 128 database. Sequence reads were identified by alignment against the NCBI NR database using DIAMOND and putative gene functions assigned using the KEGG Orthology database. Mean relative abundance of bacterial taxa and functional genes were compared using permutation ANOVA, and multivariate analyses were performed using partial least squares discriminant analysis.

**Results:** Distinct microbiome taxonomic compositions and functional gene abundances were observed between controls and IBS groups. Taxa discriminating case-controls from IBS included *Faecalibacterium*, *Bilophila* and members of the *Coriobacteriaceae* family.

*Faecalibacterium* is known to utilise a range of carbohydrates, *Bilophila* are sulphite-reducing bacteria and the *Coriobacteriaceae* include taxa involved in lipid homeostasis. Associated with these taxonomic differences, genes involved in carbohydrate, hydrogen and lipid metabolism also differed.

**Conclusion:** Our results show that IBS is associated with an altered faecal microbiome composition and these changes also involve functional differences in carbohydrate, hydrogen and lipid metabolism. The increased prevalence of *Faecalibacterium* in IBS-C suggests that describing bacteria as either “beneficial” or “harmful” requires careful consideration because their appropriateness may depend on the health status of the individual.

## **Poster 5:**

### **Rates of hypophosphataemia following intravenous iron infusion at CCDHB**

**Dr Isabella Chan<sup>1</sup>**, Dr Chris Cederwall<sup>1</sup>

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**Introduction:** Intravenous iron is a commonly prescribed treatment for iron deficiency anaemia particularly in patients with inflammatory bowel disease felt not to tolerate oral iron supplementation. Due to several cases of hypophosphataemia following intravenous iron therapy we attempted to characterise the frequency and severity of hypophosphataemia occurring in medical patients at CCDHB.

**Method:** Over a 12 month period (1st of June 2018 – 30th of June 2019) 344 medical patients were identified as being dispensed iron sucrose, polymaltose or ferric carboxymaltose as inpatients at Wellington hospital. 481 outpatients received intravenous iron at the Kenepuru day ward. Electronic medical records were used to assess phosphate levels prior to and following intravenous iron administration.

**Results:** 339 out of 825 (41.1%) patients had phosphate levels measured prior to intravenous iron therapy. 204 patients out of 825 (24.7%) patients had phosphate levels measured following intravenous iron therapy. 148 out of 825 (17.9%) patients had phosphate levels measured prior and following intravenous iron therapy. 73 patients had levels of hypophosphatemia documented. 45 patients had mild hypophosphatemia (0.6-0.9mmol/L), 22 patients had moderate hypophosphatemia (0.3-0.6mmol/L) and 6 patients had severe hypophosphatemia (<0.3mmol/L). All patients with severe hypophosphatemia received 1000mg ferric carboxymaltose. A total of 632 patients received ferric carboxymaltose. 61 out of 632 (9.7%) patients had hypophosphatemia documented.

**Conclusion:** Treatment of iron deficiency with ferric carboxymaltose can be associated with hypophosphatemia and prescribers should be aware of this potential complication. Consideration should be monitoring before and after iron infusion particularly in gastroenterology patients at an increased risk of hypophosphataemia.

## **Poster 6:**

### **Profound hypophosphatemia following intravenous ferric carboxymaltose due to renal phosphate wasting**

**Dr Isabella Chan<sup>1</sup>**

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**Introduction:** Intravenous iron therapy is a common treatment for patients with iron deficiency anaemia, particularly those with gastrointestinal conditions such as inflammatory bowel disease or coeliac disease.

**Case Presentation:** We present the case of a 48 year male with mildly active colonic Crohn's who was administered intravenous ferric carboxymaltose 1000mg for symptomatic iron deficiency anaemia, ferritin 18 ug/L and Hb 124 g/L. Three days post infusion he was admitted to hospital with a chest infection and flaring Crohn's colitis requiring treatment with infliximab. The patient was found to be hypophosphataemic (0.36mmol/L) and was treated with 60mmol intravenous potassium dihydrogen phosphate and discharged on oral phosphate replacement. The patient was unfortunately re-admitted to hospital day 10 post iron infusion due to persisting severe hypophosphatemia (0.26mmol/L). Low renal phosphate transport of 0.26mmol/L (normal 0.8-1.35mmol/L) confirming renal phosphate wasting. The patient was also vitamin D deficient 33nmol/L. A further 20mmol of intravenous potassium dihydrogen phosphate was given in conjunction. He was discharged the following day on oral calcitriol 0.25mcg every other day for 20 days and colecalciferol 50,000IU/day for 10 days then monthly thereafter. Phosphate values normalized day 16 post iron infusion with the above treatment.

**Conclusions:** Hypophosphatemia following ferric carboxymaltose has previously been described. This is mediated by increased levels of fibroblast growth factor 23 which inhibit proximal renal tubule phosphate transporters increasing renal phosphate losses. This is the likely mechanism in our patient coupled with vitamin D deficiency. Prescribers should be aware of the risk of hypophosphatemia following ferric carboxymaltose therapy. Correcting concurrent vitamin D deficiency and treatment with calcitriol can help improve patients with severe or symptomatic hypophosphatemia.

## **Poster 7:**

### **Adequacy of gastric ulcer follow-up on endoscopy and incidence of malignant gastric ulcers at Waikato Hospital from 2014 – 2019.**

Graeme Dickson, I Ranasinghe, Dr Frank Weilert

**Introduction:** Repeat endoscopy is often performed to confirm ulcer healing and ensure that lesions are benign. The aim of this study was to investigate whether gastric ulcers are appropriately biopsied and followed up and also to determine the rate of ulcer malignancy.

**Method:** Retrospective review of all patients diagnosed with gastric ulcer on endoscopy from 2014 – 2019 at Waikato Hospital. Data regarding age, ethnicity, site, number and size of ulcers were collected. Information regarding *Helicobacter pylori* status, initial biopsy, whether re-scope occurred and incidence of gastric cancer was also collected.

**Results:** There were 358 patients diagnosed with a gastric ulcer on endoscopy. The demographic distribution was NZ European 48%, Maori 35%, Pacific Islander 4%, Asian 4% and other 9%. The indication was bleeding 80%, pain 11%, and other 9%. The common sites of gastric ulceration were the antrum/pylorus 56%, body 33%, and cardia 7%. *H. Pylori* status was positive in 18%, negative in 57%. In the study population 57% of patients had repeat endoscopy although only 51% of these were within 12 weeks. Overall, 153/358 (43%) patients were biopsied during primary endoscopy. Of the remaining 204, 49 (24%) were rescoped with biopsy. The incidence of gastric cancer on biopsy of ulcers was 5%, of which 53% were diagnosed on initial scope and 47% on the subsequent scope. The most common sites of cancer were Antrum/Pylorus 42%, Body 31%, and Cardia 25%

**Conclusion:** Although the majority of malignant ulcers were diagnosed on the index endoscopy, 47% were found at follow-up. An ongoing study is looking at why the follow-up rate was only 24% and whether any malignant ulcers had a delayed diagnosis because of this.

## **Poster 8:**

### **Index gastroscopy findings among ethnic minorities in South Auckland**

**Dr Vijay Dyavadi<sup>1</sup>**, Dr Yanez Peerbacus<sup>1</sup>, Dr Anurag Sekra<sup>1</sup>

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**Introduction:** Outpatient gastroscopy is an important tool for investigating upper gastrointestinal disorders. Reflux oesophagitis is the most common finding among Europeans. We are not aware of any previous publications looking at index gastroscopy findings among ethnic minorities in New Zealand. Hence, we wanted to compare the diagnostic yield and findings among the ethnic groups in South Auckland.

**Methods:** We retrospectively reviewed 1000 consecutive patients undergoing index gastroscopy from January to December 2017 at Middlemore Hospital.

**Results:** The overall diagnostic yield was 27.2% (272/1000) and 49.4% were females. The median age among the 272 patients was 57 years.

The most common indications among those with positive findings were anaemia (21.7%), reflux oesophagitis (20.2%), dyspepsia (17.3%), abdominal pain (16.9%), dysphagia (13.2%) and weight loss (9.6%).

The most common findings overall were reflux oesophagitis and Barrett's oesophagus (50.7%), gastritis (14.3%), gastric ulcer and erosion (8.1%), duodenal ulcer and erosion (7.4%), coeliac disease (4.4%), oesophageal stricture (2.9%).

The main ethnicities consisted of 41% European, 15.3% Indian, 14.8% Pacific Islander, 14.2% Asian, 8.1% Maori and 2.6% Middle-Eastern.

The diagnostic yield for each ethnicity was 33.7% for European, 32% Maori, 25.7% Pacific Islander, 23% Middle-Eastern, 20% Indian and 18.3% Asian.

Reflux oesophagitis and Barrett's oesophagus were the most common findings among European (60%), Maori (50%), Indian (48.4%) and Asian (33.8%). The most common finding for Pacific Islanders was gastritis (34%) followed by Oesophagitis (21.1%).

**Conclusion:** The highest diagnostic yield was among Europeans (33.7%) where reflux oesophagitis and Barrett's oesophagus remain the most common positive findings (60%). Although Maori were likely under-represented, reflux oesophagitis and Barrett's oesophagus (50%) were also the most common findings. Indian and Asian ethnicities had the lowest diagnostic yield at 20% and 18.3% respectively. Interestingly the most common finding among Pacific Islanders was Gastritis (34%).



## **Poster 9:**

### **Plasma Metabolome Perturbations in Individuals with Functional Gastrointestinal Disorders: A Case/Control Study in New Zealand**

**Dr Karl Fraser**<sup>1,2,3</sup>, Dr Wayne Young<sup>1,2,3</sup>, Prof Warren McNabb<sup>2,3</sup>, Prof Richard Gearry<sup>2,4</sup>, Prof Nicole Roy<sup>1,2,3</sup>

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**Funding source:** High-Value Nutrition National Science Challenge, New Zealand.

**Introduction:** Irritable Bowel Syndrome (IBS) is a functional gastrointestinal disorder (FGD) characterised by chronic or recurrent abdominal discomfort mostly associated with changes in gastrointestinal habit in the absence of a detectable organic cause. In a case-control study, we aimed to use metabolomics to identify microbial and host factors in plasma to highlight underlying mechanisms of FGDs.

**Methods:** Individuals with FGDs (cases) or asymptomatic (controls) undergoing colonoscopy were recruited and plasma samples from 246 individuals were used for this study. Global metabolite profiling was performed on plasma samples from 93 healthy controls, 54 with functional constipation (C) or IBS-C, 60 with functional diarrhoea (D) or IBS-D, and a further 39 with diagnosed as IBS-mixed or awaiting diagnosis using liquid chromatography high resolution mass spectrometry analysis. Metabolites differing significantly in concentration between the groups were identified using in-house and online databases while biochemical networks were constructed via Metscape. Ethical approval for this study was obtained from the University of Otago Human Ethics Committee (Health) (Reference H16/094).

**Results:** Plasma metabolomic profiles differed considerably between the IBS phenotypes and those of the control subjects. Significant differences in the concentrations of 28 lipid species ( $p < 0.05$ ) were observed between IBS-C and healthy controls, with elevated concentrations in the plasma of the IBS-C group of 20 phospholipids, and lower concentrations of some triglyceride species compared to the healthy controls. Comparison of IBS-D and healthy controls using biochemical network analysis revealed major perturbations in amino acid metabolism and highlighted key metabolic pathways, including microbial-related pathways, that need more detailed investigation.

**Conclusion:** Perturbations of plasma metabolite concentrations in the IBS subjects described here suggest changes may occur in key pathways related to both host and microbial amino acid and lipid metabolism.

## Poster 10:

### Normalisation of faecal calprotectin within 12 months of diagnosis prevents disease progression in Crohn's disease

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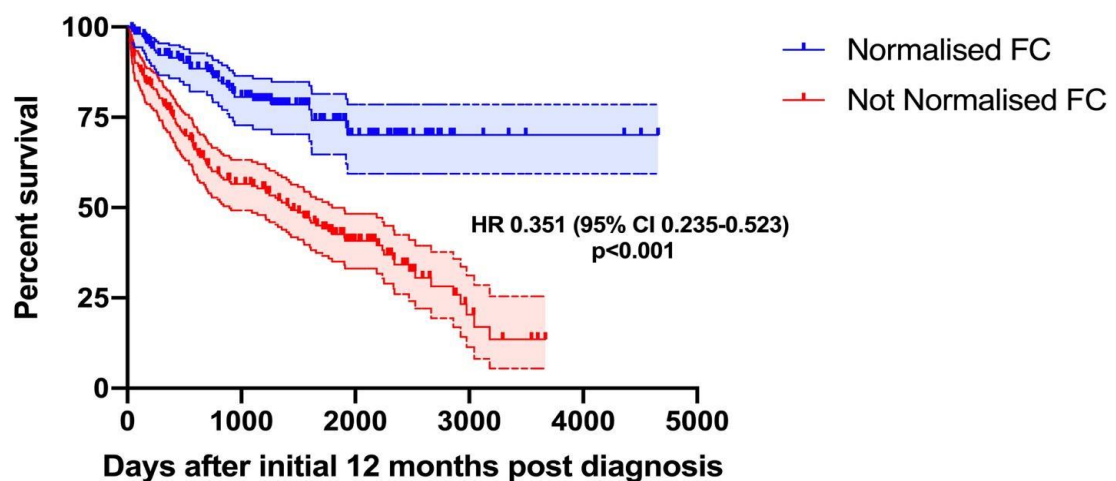
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**Introduction:** A treat-to-target strategy using faecal calprotectin (FC) has been shown to improve rates of mucosal healing in Crohn's disease (CD), although the long term impact of this approach is unknown. The aim of this study was to determine whether normalisation of FC within 12 months of diagnosis reduces the risk of disease progression.

**Methods:** We performed a retrospective cohort study at a single centre. All patients diagnosed between 2005-2016 were identified. Patients with FC >250µg/g at diagnosis, ≥1 FC within the next 12 months, and >12 months follow up were included. Normalisation of FC was defined as <250µg/g. The primary endpoint was a composite of; disease progression, resectional IBD surgery or IBD hospitalisation >12 months after diagnosis. Multivariable Cox-regression analysis was used to determine independent factors associated with the primary outcome.

**Results:** 375 patients were included. 163 (43.5%) normalised their FC and had a significantly lower risk of reaching the primary endpoint (Figure 1).

Figure 1. Primary end-point stratified by normalisation of FC



On multivariate analysis, perianal disease (HR 3.16, p<0.001), B2 phenotype (HR 1.72, p<0.05) and moderate (HR 1.75, p<0.005) or severe (HR 2.02, p<0.05) clinical disease activity at diagnosis were also associated with the primary endpoint, whilst patients who received biologic therapy within 3 months of diagnosis (HR 0.30, p<0.005) were less likely to progress.

**Conclusion:** Normalisation of FC within 12 months of diagnosis is independently associated with a reduced risk of disease progression in Crohn's disease.

## **Poster 11:**

### **Temporal trends in surgical resection rates and biologic prescribing in Crohn's disease: a population-based cohort study**

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**Introduction:** The use of biologic therapy for Crohn's disease (CD) continues to evolve, however the effect of this on the requirement for surgery remains unclear. We assessed changes in biologic prescription and surgery over time in a population-based cohort.

**Methods:** Incident cases of CD diagnosed between 1/1/2000 and 31/12/2017 were identified from the Lothian IBD registry. Demographic, phenotypic, prescribing and surgical data were collected from coding and the electronic record. Primary outcome measures were the time from diagnosis to first CD related surgery (resection, stricturoplasty or stoma formation) and first biologic therapy. Those diagnosed at the time of first surgery were excluded from the primary surgical analysis.

Cumulative probability for surgery and biologic prescription were calculated and compared using the log-rank test, stratified into cohorts by year of diagnosis (2000-2004, 2005-2008, 2009-2013, 2013-2017).

**Results:** 1753 incident cases were identified. 519 (29.6%) patients underwent abdominal surgery during the study period, of whom 337 were included in the primary surgical analysis. Cumulative rates of surgery at 1, 5, and 10 years were 6.7%, 16.3%, and 24.4% respectively. Within 5 years of diagnosis, the risk of first surgery was 20.43%, 18.3%, 14.7% and 13.01% in cohorts 1, 2, 3 and 4 respectively ( $p < 0.001$ ).

603 (34.4%) patients were prescribed biologic therapy. Cumulative rates of prescription at 1, 5 and 10 years were 8.8%, 20.3%, and 29.5%, respectively. Within 5 years of diagnosis, the risk of first biologic prescription was 5.7%, 12.2%, 22.0% and 44.9% in cohorts 1, 2, 3 and 4, respectively ( $p < 0.001$ ).

**Conclusion:** Surgical resection rates for CD have reduced over time. This has been paralleled by a significant increase in the use of biologic agents.

## Poster 12:

### Analysis of UC colectomy rates in pre- and post- biologic era in Lothian, Scotland

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**Introduction:** In the UK the use of anti-TNF maintenance therapy for ulcerative colitis (UC) was not approved until early 2015. Anti-integrin therapy was approved the same year. The aim of this study was to describe the impact that this change in biologic prescribing had on colectomy rates for UC.

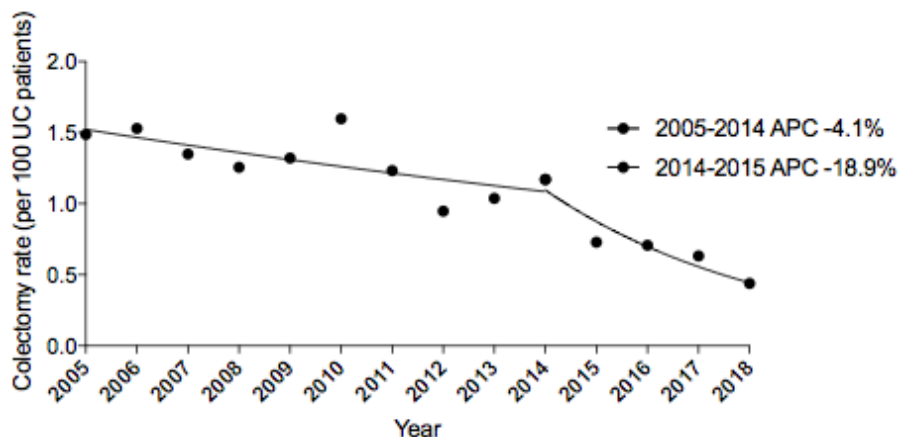
**Methods:** All patients diagnosed with UC who received maintenance biologic therapy and/or underwent colectomy in Lothian, Scotland from 2005 to 2018 were identified. Demographic, clinical and prescribing data were collected from surgical coding and the electronic record.

Prevalence data for the study period was obtained from the Lothian IBD registry. Linear and segmental regression were used to estimate the annual percentage change (APC) and identify temporal trends (statistical joinpoints) in biologic prescription and colectomy rates.

**Results:** 175 patients received maintenance biologic therapy during the study period. The rate of prescription increased from 0.05 per 100 UC patients in 2005 to 1.26 in 2018 ( $p < 0.001$ ).

448 patients underwent colectomy during the study period. Colectomy rates fell from 1.47 per 100 UC patients in 2005 to 0.44 in 2018 ( $p < 0.001$ ). The colectomy rate APC was -4.1% per year from 2005-2014 and -18.9% from 2014-2018 with a joinpoint identified at 2014 ( $p = 0.019$ ). (Figure 1)

Figure 1. Colectomy rates per 100 UC patients from 2005-2018.



**Conclusion:** Colectomy rates for UC have been falling over time. The rate of decline accelerated at a similar time to an increase in maintenance biologic use, following a change in guidance.

## **Poster 13:**

### **Longer symptom duration is an independent predictor of poor PPI response in oesophageal eosinophilia**

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**Introduction:** Eosinophilic oesophagitis (EO) is a chronic immune/antigen-mediated disease, described as a distinct entity in the 1990s. In recent years, it is recognised that some patients presenting with clinical, endoscopic, and histological features of EO can have symptomatic remission on PPI therapy, and are considered to represent a distinct disorder from EO, which lacks this response. Our study aimed to identify predictors of PPI response in those with oesophageal eosinophilia.

**Methods:** At Middlemore Hospital and Auckland hospital, patients who presented with suspected diagnosis of EO between 2010 and 2014 and fulfilling at least 2 of the following criteria were included – dysphagia/food bolus obstruction at presentation; endoscopic features of EO; >15 eosinophils/HPF on histology. All patients received an initial trial of PPI. Those given combined PPI and fluticasone or fluticasone alone as first-line were excluded. Variables that were analysed include age, sex, history of atopy, reflux features (symptoms and/or endoscopic features), duration of symptoms and endoscopic features of EO. Primary outcome was predictor(s) of symptomatic response to PPI.

**Results:** A total of 82 patients met inclusion criteria; 51 (62.2%) demonstrated complete symptomatic response to PPI as first-line therapy and 31 (37.8%) had no or incomplete response. There was no difference in baseline characteristics between the two groups. Majority of the patients were European, young males with average age of 41.44 years. A longer duration of symptoms (>1 year) was associated with poor PPI response (p-value 0.044). 14/17 (82.35%) patients with shorter duration of symptoms showed complete response. None of the other variables significantly predicted response to PPI.

**Conclusion:** Patients who have had dysphagic symptoms for more than 1 year are more likely to fail first line PPI therapy for EO and may benefit from combined therapy with swallowed fluticasone upfront. Further studies are needed to correlate symptomatic response with endoscopic/histological healing.

## **Poster 14:**

### **National Audit of Inflammatory Bowel Disease (IBD) standards of outpatient care: Nurses meet standards more often than doctors.**

**Dr Rob Hackett**<sup>1</sup>, Professor Richard Gearry<sup>2,4</sup>, CNS Christine Ho<sup>3</sup>, Dr Andrew McCombie<sup>4</sup>, CNS Megan Mackay<sup>1</sup>, CNS Karen Murdoch<sup>5</sup>, CNS Kirsten Rosser<sup>2</sup>, CNS Nideen Visessio<sup>6</sup>, Dr Stephen Inns<sup>1,4</sup>

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**Introduction:** High quality IBD patient care is based upon a collaborative multidisciplinary team approach. This study analysed key auditable aspects of IBD patient care, recorded during nurse-led and doctor-led scheduled outpatient clinics, to determine whether there was a difference in the quality of care provided.

**Methods:** A prospective study conducted March 2017 to January 2019 captured key auditable outcomes from 50 consecutive outpatient visits at each of 14 participating DHB sites. Key auditable outcomes were selected by a panel of IBD nurses and physicians, based on previous international audits of IBD care. Outcomes measured were: documentation of weight, smoking status, whether smoking cessation advice was offered, and whether colonoscopic surveillance was arranged.

Pearson's Chi Squared test was used to compare the proportions of doctors and nurses documenting each outcome.

This audit was exempt from ethics review per the HEDC SOP.

**Results:** 710 audit forms were completed. 22 were discarded because the patient saw doctor & nurse together (n=21) or patient did not attend (n=1).

Of the 688 outpatient visits included: 492 were doctor-led (Consultant (393), Registrar (88), Fellow (9), House Surgeon (2)) and 196 nurse-led. 58.7%, of patients were diagnosed with CD, 2.8% Indeterminate colitis and 38.5% UC.

Key Auditable Outcome	N	% of visits		P-value
		Doctor led	Nurse led	
Weight documented	686	77	95	<0.0001*
Smoking status documented	687	64	73.8	0.014*
Smoking cessation advice offered	87	69	86	0.081
Surveillance colonoscopy arranged	379	66.2	79.6	0.009*

\*Statistically significant <0.05

**Conclusion:** Our findings suggest there is a significant difference in documentation of the key auditable outcomes of weight, smoking status and arranging colonoscopic surveillance during scheduled outpatient IBD clinics in favour of nurse-led clinics. When empowered and adequately supported, IBD nurses can deliver equivalent quality of care to doctors in the routine outpatient setting.

## **Poster 15:**

### **Audit of adherence to New Zealand surveillance guidelines after colonoscopy at Counties Manukau DHB.**

**Miss Megan Haines<sup>1</sup>**, Ms Maree Weston<sup>2</sup>

<sup>1</sup>*University Of Auckland, Auckland , New Zealand*, <sup>2</sup>*Counties Manukau District Health Board, Auckland, New Zealand*

**Introduction:** the aim of this study was to assess the current state of adherence to New Zealand surveillance colonoscopy guidelines amongst colonoscopists at Counties Manukau DHB (CMDHB). With increasing demand for this costly resource at CMDHB, it is essential that the DHB is providing a safe and timely colonoscopy service for those who need it and not performing unnecessary procedures on those who don't.

**Methods:** this study received ethics approval from the University of Auckland Human Participants Ethics Committee (UAHPEC). This study was designed as a retrospective audit of records of all colonoscopies performed at Manukau Super Clinic (MSC) over a three month period (1 September-1 December 2018). A total of 557 electronic records were retrieved and each colonoscopy record was then categorised on the basis of indication for colonoscopy. Those indicated for; family history of colorectal cancer (CRC), personal history of CRC and inflammatory bowel disease (IBD) were excluded. The remaining 410 colonoscopy records, along with the corresponding histology reports were reviewed. A surveillance recommendation was then made by strictly following the current New Zealand guidelines. This recommendation was then compared with the actual surveillance recommendation made by the colonoscopist at the time. Comparison of these two recommendations allowed evaluation of adherence to the guidelines.

**Result:** the primary outcome of this audit was the overall rate of adherence to current New Zealand guidelines. This study found an overall adherence rate of 82% (n=336). Of the 18% that were not adherent to guidelines, 11.7% (n=48) recommended surveillance colonoscopy too early and 6.3% (n=26) recommended surveillance colonoscopy too late.

**Conclusions:** this study found an overall adherence rate of 82% which compares favourably to audits completed in other centres around the world. However there is still room for improvement and it is possible that a simple intervention could be effective.

## **Poster 16:**

### **Prospective study of intravenous iron-induced hypophosphataemia**

**Dr Ibrahim Hassan<sup>1</sup>**, Registered nurse Phoebe Wu<sup>1</sup>, Dr David Rowbotham<sup>1</sup>

<sup>1</sup>Auckland City Hospital, ADHB, Auckland, New Zealand

**Introduction:** Intravenous iron infusion has become more readily available with the funding of ferric carboxymaltose (*Ferinject*) for use in both secondary and primary care. *Ferinject* is easier to administer with a shorter duration of infusion and less reported allergic-type side effects compared to other traditional forms of iron infusion such as *Ferrum H* (FH). Medsafe includes hypophosphataemia as a common side effect following iron infusion (occurring in between 1-10% of patients). Despite the Medsafe listing, however, we have noted an under-appreciation from clinicians of the potential for hypophosphataemia, particularly with *Ferinject*. Hence the aim of this study was to prospectively assess the prevalence and severity of hypophosphataemia following iron infusion locally and, thereby, to increase clinician awareness and develop local guidelines around iron infusion therapy to prevent complications of unrecognised and uncorrected hypophosphataemia.

**Methods:** A four month prospective study of patients receiving iron infusion via the Department of Gastroenterology and Hepatology at Auckland City Hospital from 1 June to 30 September 2019. Plasma phosphate concentration is measured immediately prior to the iron infusion (if there is no test result available from the previous 7 days) and repeated within 1-2 weeks after the infusion.

**Results:** At time of abstract submission we have complete data on 13 patients. Seven patients received *Ferinject* and a further 6 patients received FH. Blood phosphate concentration reduced in all patients who underwent *Ferinject* therapy with 57% (N=4) of them showing biochemical hypophosphataemia. Hypophosphataemia was not noted in any patients following FH therapy thus far.

**Conclusions:** These early results suggest that *Ferinject* may be associated with a substantial risk of hypophosphataemia compared to traditional FH therapy. Further data are becoming available, but we suggest that routine monitoring of blood phosphate concentrations post-*Ferinject* infusion is prudent to prevent complications of hypophosphataemia.



## **Poster 17:**

### **Intestinal fatty-acid binding protein in adults with Crohn's disease: A pilot study**

**Ho S. S. C.1,** Wall C.2, Gearry R.2, Keenan J. I3, Day A. S.1

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**Grant:** New Zealand Society of Gastroenterology. ASD research supported by Cure Kids. SSCH supported by Freemason's Paediatric Scholarship.

**Introduction:** Intestinal fatty-acid binding protein (I-FABP) is an intestinal-specific protein with a short-half life that is considered to mainly reflect small intestinal enterocyte damage. It is not yet known, however, if I-FABP is a useful marker in the setting of Crohn's disease (CD). This study evaluated the patterns of urinary I-FABP in adults with CD before and after treatment with exclusive enteral nutrition (EEN).

**Methods:** Adults aged 16 - 40 years diagnosed with active terminal ileal or ileocolonic CD were recruited prospectively in Christchurch, NZ. Subjects were treated for 8 weeks with EEN to induce remission. Urine was collected at baseline (W0) and upon completion of EEN treatment. Clinical disease activity scored using the Harvey Bradshaw index (HBI) and inflammatory markers (C-reactive protein, erythrocyte sedimentation rate (ESR) and faecal calprotectin) were assessed at W0 and W8. I-FABP was assayed using a commercial enzyme-linked immunosorbent assay.

**Results:** Fourteen adults (10 females) of 25 patients recruited active CD provided urine at W0 and W8. All 14 patients (mean age  $\pm$  standard deviation (SD) of  $26.60 \pm 6.98$  years) completed 8 weeks of EEN and had a significant improvement in HBI ( $p < 0.001$ ). Mean  $\pm$  SD urine I-FABP levels standardised for creatinine (I-FABP:Cr) were elevated at W0, reduced after 8 weeks of EEN ( $12.26 \pm 9.59$  vs  $6.07 \pm 11.98$  ng/mmol,  $p = 0.01$ ), and correlated with the W8 HBI (Pearson  $r = 0.56$ , 95% confidence interval 0.023 – 0.84,  $p = 0.04$ ) and ESR levels (Pearson  $r = 0.53$ ,  $p = 0.05$ ). No similar correlation was observed between I-FABP and C-reactive protein or faecal calprotectin.

**Conclusions:** I-FABP with its short half-life and intestinal-specific properties, may be a promising non-invasive urinary biomarker of activity in adults with CD. This finding warrants further investigation using a larger sample size.

## Poster 18:

### The role of combination serological tests in the diagnosis of coeliac disease in children

Dr Shaun Ho<sup>1</sup>, Associate Professor Jacqueline Keenan<sup>2</sup>, Professor Andrew Day<sup>1</sup>

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**Introduction:** Diagnosing coeliac disease (CD) in most NZ centres is based on clinical, serologic and duodenal morphology features. In 2012, the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) introduced a non-biopsy CD diagnosis pathway in relevant children using a combination of coeliac serologic tests (anti-tissue transglutaminase IgA levels (TTG-IgA) and endomysial antibody (EMA) and genetic testing(1). This study aimed to explore the possibility of introducing the ESPGHAN non-biopsy CD diagnosis in one part of NZ.

**Methods:** Children <17 years from the Canterbury and West Coast regions of NZ who had TTG-IgA measured and underwent gastroscopy over 30 months were identified retrospectively. Medical records were reviewed to determine whether patients had biopsy-proven CD following their abnormal TTG-IgA results.

**Results:** One hundred and sixty-nine children with mean age $\pm$ standard deviation (SD) of 9.97 $\pm$ 4.32 years were identified. Of them, 101 children had biopsy-proven CD defined as Marsh classification above 3. The mean $\pm$ SD age for children with CD was 9.93 $\pm$ 4.30 years and 66 were female. TTG-IgA serology had high sensitivity (97.0%) but low specificity (56.0%) in diagnosing CD using the standard laboratory reference. TTG-IgA >10-fold of upper limit of normal (ULN) improved specificity to 98.5% and positive predictive value (PPV) to 96.7%. However, specificity and PPV were 100% if TTG-IgA (>10-fold ULN) was combined with EMA (Table 1). Seventeen of 82 (17.0%) symptomatic children could have been diagnosed with CD using a combination of TTG-IgA (>10-fold ULN) and EMA without intestinal biopsies.

**Conclusions:** A proportion of children with coeliac disease can potentially be diagnosed using the ESPGHAN non-biopsy pathway. However, prospective studies are required to validate this.

**Table 1:** Sensitivity, specificity, positive predictive values and negative predictive values based on coeliac serology results.

	N	Sensitivity, %	Specificity, %	PPV, %	NPV, %
TTG-IgA <sup>#</sup>	169	97.0	55.9	76.6	92.7
TTG-IgA (>10x ULN)	169	28.7	98.5	96.7	48.2
TTG-IgA (>10x ULN) + EMA	135	25.0	100.0	100.0	38.4

<sup>#</sup> Standard laboratory reference

TTG-IgA – anti-tissue transglutaminase IgA; EMA – endomysial antibody; N – sample size; ULN – upper limit of normal; PPV – positive predictive value; NPV – negative predictive value

#### Reference:

1. Husby S, Koletzko S, Korponay-Szabo IR, et al. European Society for Pediatric Gastroenterology, Hepatology, and Nutrition guidelines for the diagnosis of coeliac disease. J Pediatr Gastroenterol Nutr. 2012;54(1):136-60.

## **Poster 19:**

### **The role of faecal calprotectin in the diagnosis of Inflammatory Bowel Disease in children**

**Dr Shaun Ho<sup>1</sup>**, Mr Michael Ross<sup>1</sup>, Associate Professor Jacqueline Keenan<sup>2</sup>, Professor Andrew Day<sup>1</sup>

<sup>1</sup>Department of Paediatrics, University Of Otago, Christchurch, New Zealand, <sup>2</sup>Department of Surgery, University Of Otago, Christchurch, New Zealand

**Introduction:** Faecal calprotectin (FC) is a useful non-invasive screening marker for inflammatory bowel disease (IBD). However, it is not uncommon to have normal endoscopic findings in individuals with mildly elevated (2-3-fold upper limit of normal) FC. This study aimed to evaluate the positive predictive value (PPV) for the diagnosis of IBD using different FC levels (50, 100, 150, 200 and 250ug/g) and to report any false negative cases in a group of children.

**Method:** Children aged <17 years who had FC measured and underwent colonoscopy over 33 months in Christchurch, New Zealand, were identified retrospectively. Medical records were reviewed to determine outcome following their measurement of FC.

**Results:** One hundred and two children were identified, mean age±standard deviation was 12.3±3.5 years and 53 were male. Fifty-eight (57%) of the 102 children were diagnosed with IBD: 49 Crohn's disease (CD), 8 ulcerative colitis, and 1 IBD-unclassified. FC at 50ug/g threshold provided sensitivity of 96.6% with PPV of 72.7% in diagnosing IBD. The best PPV for the diagnosis of IBD was 77.3% at a FC threshold of 200ug/g (Table 1) and the highest PPV (73.3%) in diagnosis CD was at a FC cut-off of 150ug/g. Two children with CD had normal FC; one with duodenal and ileocolonic involvement and the other with oral and perianal involvement.

**Conclusion:** A FC threshold of 200ug/g gave the highest predicted value (77.3%) of diagnosing IBD, suggesting that there is a need for a more sensitive non-invasive marker. Normal FC level does not exclude IBD.

**Table 1:** Sensitivity, specificity, positive predictive values and negative predictive values of faecal calprotectin thresholds in children with IBD.

	N	Sensitivity, %	Specificity, %	PPV, %	NPV, %
FC, 50ug/g <sup>#</sup>	102	96.6	52.3	72.7	92.0
FC, 100 ug/g	102	93.1	59.1	75.0	86.7
FC, 150 ug/g	102	91.4	63.6	76.8	84.8
FC, 200 ug/g	102	87.9	65.9	77.3	80.6
FC, 250 ug/g	102	86.2	65.9	76.9	78.4

<sup>#</sup> Standard laboratory reference

FC – faecal calprotectin; N – sample size; ULN – upper limit of normal; PPV – positive predictive value; NPV – negative predictive value

## **Poster 20:**

### **Adult perceptions of Inflammatory Bowel Disease diagnostic and monitoring tests**

**Dr Shaun Ho**<sup>1</sup>, Associate Professor Jacqueline Keenan<sup>2</sup>, Professor Andrew Day<sup>1</sup>

<sup>1</sup>Department of Paediatrics, University Of Otago, Christchurch, New Zealand, <sup>2</sup>Department of Surgery, University Of Otago, Christchurch, New Zealand

**Introduction:** The standard diagnostic and monitoring pathway for an individual with inflammatory bowel disease (IBD) includes blood tests, stool tests, endoscopy procedures and imaging. Regular repetition of these investigations is increasingly undertaken for objective assessment in monitoring after diagnosis(1). However, there is limited knowledge of patient perspectives of the various tests. This survey aimed to assess adult attitudes to these tests, including their understanding and comfort level with testing. Views relating to potential future testing methods were also explored.

**Methods:** Adults with IBD living in New Zealand were invited to complete an anonymous online survey that was posted online over a 5-week period. The survey was advertised via the social media platforms of Crohn's and Colitis New Zealand. Information collected included experiences of blood tests, stool tests, medical imaging (including ultrasound, computerised tomography or magnetic resonance enterography (MRE)) and colonoscopy. Perspectives about potential future non-invasive tests (saliva, urine or breath) were also sought. Participants rated their experience using visual analogue scales (VAS) with, for example, 0 being most uncomfortable and 100 being most comfortable.

**Results:** One hundred and seventeen adults (95 females, majority aged between 25 and 34 years) completed the survey. Blood tests were the most ordered test, and also rated as the most comfortable (median VAS 100, interquartile range (IQR) 90.0-100.0). Colonoscopy was rated the least comfortable test (median VAS 49.5, IQR 25.0-74.5). Colonoscopy and MRE were among the most explained tests while stool tests were the least explained tests. The most preferred methods of collecting samples for testing (including potential future methods) included saliva, blood and breath.

**Conclusions:** Adults with IBD felt most comfortable having blood tests. Although colonoscopy was the most explained test, it was the least preferred test. Non-invasive methods such as saliva, blood and breath tests were among top preferred disease monitoring methods.

#### **Reference:**

1. Peyrin-Biroulet L, Sandborn W, Sands BE, Reinisch W, Bemelman W, Bryant RV, et al. Selecting Therapeutic Targets in Inflammatory Bowel Disease (STRIDE): Determining Therapeutic Goals for Treat-to-Target. Am J Gastroenterol. 2015;110(9):1324-38.

## **Poster 21:**

### **Analysis of faecal metabolites to understand their role in IBS**

**Miss Shanalee James**<sup>1,2,3,4</sup>, Dr. Karl Fraser<sup>1,2,4</sup>, Dr. Wayne Young<sup>1,2,4</sup>, Prof. Warren McNabb<sup>2,3,4</sup>, Dr. Richard Gearry<sup>4,5</sup>, Miss Phoebe Heenan<sup>4,5</sup>, Prof. Nicole Roy<sup>1,2,4</sup>

<sup>1</sup>Food, Nutrition and Health Team, AgResearch, Palmerston North, New Zealand, <sup>2</sup>The Riddet Institute, Palmerston North, New Zealand, <sup>3</sup>Massey University, Palmerston North, New Zealand, <sup>4</sup>High-Value Nutrition National Science Challenge, Auckland, New Zealand, <sup>5</sup>The University of Otago, Christchurch, New Zealand

**Funding sources:** Ministry of Business, Innovation and Employment through the High-Value Nutrition National Science Challenge New Zealand and The Riddet Institute CoRE

**Introduction:** The interaction between diet, host, the gut microbiota and metabolites arising from this interaction can contribute to either beneficial or detrimental health effects, for example functional gut disorders, and more specifically irritable bowel syndrome (IBS) (subtypes: IBS-constipation, IBS-diarrhoea and IBS-mixed symptoms). The aim of this study was to measure faecal metabolites to better understand biochemical mechanisms in the gut that differentiate healthy controls from IBS individuals, and thus distinguish interconnected pathways relevant to IBS.

**Methods:** Healthy control and IBS participants (337) undergoing colonoscopy were recruited as part of the High-Value Nutrition Healthy Digestion COMFORT (Chrhihsthurhch Chohrt to Ihvestigate Mhechanisms Fhohr Ghut Rhelief and Ihmproved Thransit) cohort. Biological samples and dietary questionnaire information were collected. Untargeted analysis of faecal samples ( $n=259$ ) for lipid, polar, and non-polar metabolites and targeted analysis of bile acids (BAs) was carried out using liquid chromatography-mass spectrometry (LC-MS). Multivariate analysis was performed using partial least squares discriminant analysis (PLSDA; SIMCA 14.1) and univariate analysis performed using analysis of variance (Metaboanalyst 4.0). Ethical approval was obtained from the University of Otago Human Ethics Committee (Health) (Reference H16/094).

**Results:** Univariate analysis of concentrations of 13 individual BAs showed no statistical difference between IBS and healthy controls ( $P>0.05$ ), however multivariate analysis showed groups could be separated by PLSDA. Analysis of faecal samples using XCMS (R statistical package 3.4.3) detected 1154 polar, 1362 semi-polar, and 274 annotated lipid metabolic features per sample (LipidSearch™ 4.1). Pathway annotation tools will now be used to visualise metabolic hubs and distinguish mechanistic pathways linked to IBS.

**Conclusions:** Our data highlighted perturbed BA metabolism in individuals with IBS, likely linked to a range of metabolic pathways. This comprehensive analytical approach reveals consistent differences in metabolism between IBS subtypes and healthy controls.

## **Poster 22:**

### **Endoscopic band ligation for definitive treatment of recurrent GAVE: a nurse endoscopist case study**

**Karen Kempin<sup>1</sup>**, Dr Jason Hill<sup>1</sup>

<sup>1</sup>*Southern DHB, Dunedin, New Zealand*

**Introduction:** Patients with Gastric Antral Vascular Ectasia / Watermelon Stomach (GAVE) often require a series of endoscopic interventions to reduce bleeding complications, on occasion without definitive cure. Applying endoscopic bands may provide an alternative long term or permanent solution.

**Method:** Patient Mrs F (70yo female) had frequent gastroscopies for treatment of GAVE since 2010 that manifested as severe iron deficiency anaemia and fatigue. Gastroscopy appointments involved her travelling for more than an hour each way, her daughter taking time off work to bring her, risks of sedation and risks of therapeutic gastroscopy. Endoscopic band ligation is reported in the literature as being a successful treatment and is a therapeutic technique nurse endoscopists can be trained to competence. Mrs F had three bands applied as an initial treatment and was endoscopically reviewed at six months, where another three bands were applied.

**Results:** At first banding treatment, gastroscopy showed moderate GAVE with bleeding. Six month rescope showed improvement to mild disease with no bleeding. A further request for gastroscopy was received one year later for Fe deficiency anaemia, query recurrence of ectasia. Procedure showed a few gastric erosions and complete resolution of GAVE. Patient is now being investigated through other avenues for ongoing anaemia.

**Conclusion:** Patients who have severe active GAVE with ongoing endoscopic treatment should be considered for endoscopic banding to reduce frequency of gastroscopy and the ongoing risks and costs associated with this. Applying endoscopic bands is a treatment modality that can be taught to nurse endoscopy trainees to competent level.

## **Poster 23:**

### **Laparoscopic-assisted ERCP in patients with altered surgical anatomy: A Case Series at Waikato Hospital.**

**Dr Clarence Kerrison<sup>1</sup>**, Mr B Grunewald<sup>1</sup>, Mr R French<sup>1</sup>, Dr Frank Weilert<sup>1</sup>

<sup>1</sup>*Waikato DHB, Hamilton, New Zealand*

**Introduction:** Patients with a history of Roux-en-Y gastric bypass and other altered surgical anatomy have an inaccessible ampulla to undergo successful Endoscopic Retrograde Cholangiopancreatography (ERCP). Laparoscopic-assisted ERCP (LA-ERCP) allows access into the excluded stomach through an abdominal port site creating a gastrostomy, where a traditional duodenoscope can then be inserted and the ERCP completed. The aim of our study was to review the success rates, complication rates and length of stay of patients who had a LA-ERCP at Waikato Hospital.

**Methods:** Retrospective review of prospective database of patients who underwent a LA-ERCP at Waikato Hospital between 2015 and 2018. Anaesthetic pre-op notes, surgical procedure notes and discharge summaries were used to collect baseline demographics, indications for procedure, length of surgery, complications, procedure outcome and length of stay.

**Results:** Six patients underwent LA-ERCP for recurrent cholangitis (n=1), choledocholithiasis (n=3), gallstone pancreatitis (n=1) and Sphincter of Oddi dysfunction (n=1). All patients achieved successful cannulation and completion sphincterotomy +/- stone extraction (one also had a planned combined cholecystectomy). No intra-operative complications were recorded (n=6), while post-operative complications included one pneumonia, one seroma and one haematoma at the incision site. Average operation time was 218 minutes, with an average ERCP time of 28 minutes. Average length of hospital stay was 3.6 days.

**Conclusion:** LA-ERCP is a feasible and successful alternative to perform ERCP in patients with altered surgical anatomy, with minimal complications and relatively short length of stay.

## **Poster 24:**

### **Rate of metachronous adenoma incidence during colonoscopy surveillance of intermediate-high risk adenoma groups.**

**Dr Clarence Kerrison<sup>1</sup>**, Dr Frank Weilert<sup>1</sup>, Dr Michael Jameson<sup>1</sup>

<sup>1</sup>Waikato DHB, Hamilton, New Zealand

**Introduction:** Patients with intermediate and high risk adenomas are at increased risk of developing colorectal cancer and need colonoscopy surveillance, guided by New Zealand Guidelines Group 2011 (NZGG). The primary aim of this study was to discover metachronous adenoma incidence in the Waikato region following initial intermediate or high risk adenoma resection. This data was then used to audit against NZGG recommended time for colonoscopy surveillance.

**Methods:** A retrospective cohort of patients, found on Provation® by using 'polyp' in colonoscopy indication between August 2015 - August 2016, were included from earliest diagnosis of intermediate-high risk adenoma. All subsequent colonoscopy results, adenoma characteristics, patient demographics, time to recurrence and time to subsequent colonoscopy were collected. Data was analysed through Graphpad Prism 8 statistical programme.

**Results:** 130/318 patients had an intermediate-high risk adenoma. 113/130 had subsequent colonoscopy and 66/113 (57.8%) developed a metachronous adenoma, with cumulative incidence at 1 and 3 years (95% confidence interval (CI)) of 9% (3.7-14.4%), 37.5% (28.0-47.1%), respectively. 27/113 (23.6%) patients developed another intermediate or high risk adenoma. Index right sided adenomas had higher metachronous rates to left side with relative risk of 1.5 (1.1 to 2.1 95% CI, p-value <0.05). Time to next colonoscopy was delayed by <12 and ≥12 months in 26% and 17% of patients, respectively. On average, 2.7 colonoscopies were performed per patient.

**Conclusion:** Over half of patients with intermediate-high risk adenomas had metachronous lesions and over one fifth had another intermediate-high risk adenoma on surveillance colonoscopy. Right sided index lesions had significantly higher rates of metachronous adenomas. Delays in surveillance intervals indicate further resource is required to meet the recommended guidelines.



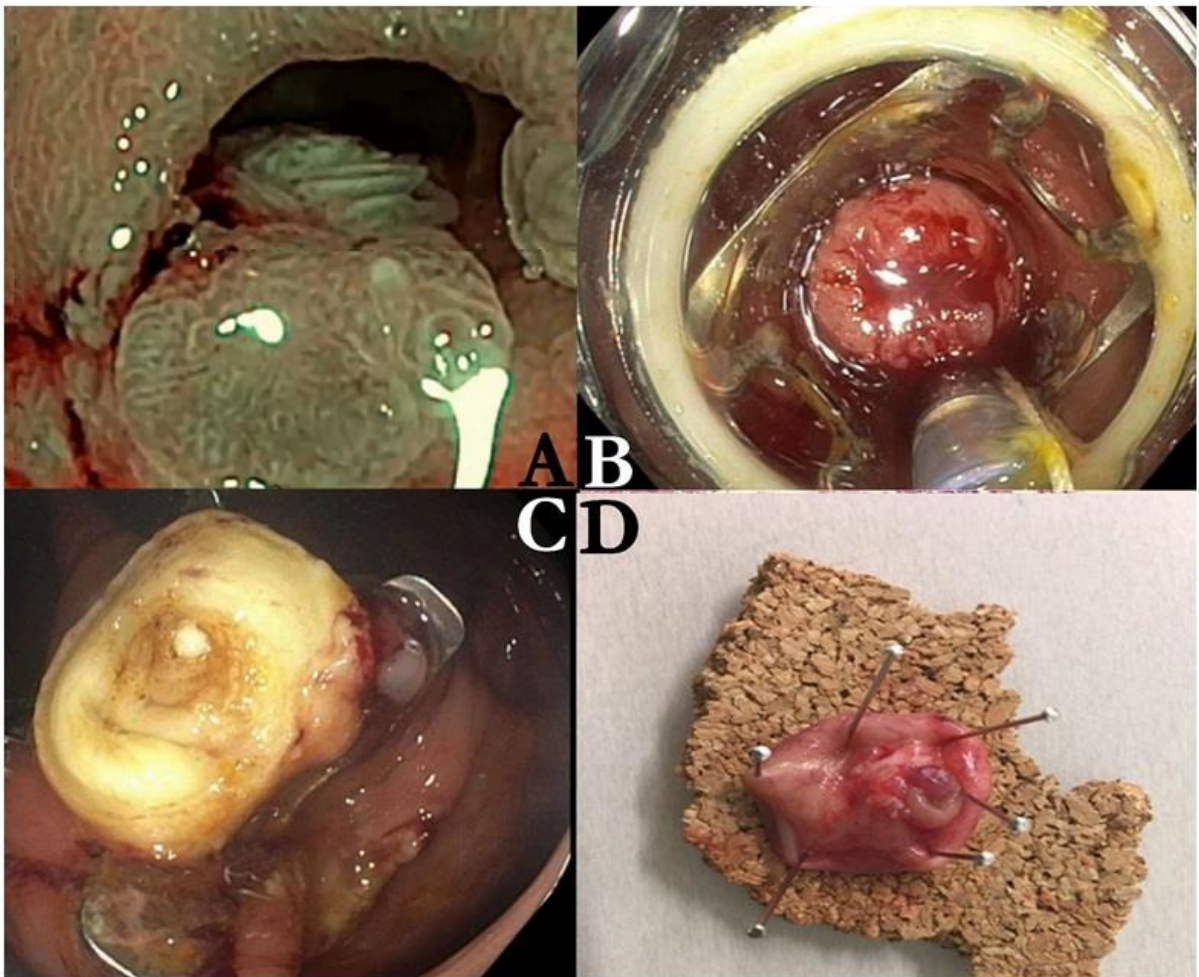
## **Poster 25:**

### **Resection of Colonic Lesions Using Over-the-scope-clip System – A Case Series from a Tertiary Care Centre.**

**Dr Afrasyab Khan<sup>1</sup>, Dr Ravinder Ogra<sup>1</sup>**

<sup>1</sup>CMDHB, Auckland, NZ

Complete resection of colonic lesions during colonoscopy can be challenging with the traditional methods of resection due to non-lifting, location of lesion and extension of lesion into the appendiceal orifice. Endoscopic full-thickness resection (FTR) via over-the-scope clip systems is the first endoscopic method of full thickness resection of lesions in the gastrointestinal tract (Image 1). There is opportunity to resect mucosal and submucosal lesions that would otherwise not be amenable to endoscopic therapy and need surgical resection with associated perioperative complications and those of general anaesthesia. This technique can also be used in resection of advanced lesions in patients at high risk of severe perioperative complications. We present successful full-thickness resection of ten cases of colonic lesions using over-the-scope clip system. (Table 1). Endoscopists may be concerned about appendicitis in cases of FTR at appendiceal orifice but this complication was not seen in this case series. Two cases has mild post-polypectomy syndrome.



**Image 1.** A: Appendiceal orifice adenoma. B: Grasping into OTSC system. C: Post clip application. D: Resected specimen.

Age	Sex	Location	Size	Histology	Follow-up	Complications
68	Female	Appendiceal orifice	5mm(recurrent)	Tubulovillous adenoma	No recurrence.	None
81	Male	Appendiceal orifice	4mm(recurrent)	Sessile serrated adenoma	No recurrence.	None
64	Male	Appendiceal orifice	8mm	Tubulovillous adenoma	No recurrence.	None
80	Male	Hepatic flexure	15mm	Adenocarcinoma in polyp (Haggit 4)	No recurrence or metastasis.	None
49	Male	Appendiceal orifice	10mm	Sessile serrated adenoma	No recurrence.	Post-polypectomy syndrome – resolved with intravenous antibiotics.
71	Male	Ascending colom	20mm	Adenocarcinoma in polyp (Haggit 4)	No recurrence or metastasis.	None
81	Male	Appendiceal orifice	20mm	Sessile serrated adenoma	No recurrence.	None
85	Female	Transverse colon	20mm	Adenocarcinoma (Kikuchi SM2)	No recurrence or metastasis.	Snare wire entrapment needing laparoscopic removal.
51	Male	Appendiceal orifice	20mm	Sessile serrated adenoma	No recurrence.	None
70	Female	Appendiceal orifice	15mm	Tubular adenoma	Pending.	Post-polypectomy syndrome – resolved with intravenous antibiotics.

Table 1: Case series of patients with colonic lesions treated with full thickness resection using over the scope clip system.

## **Poster 26:**

### **FOBT is not useful in predicting CRC in symptomatic patients for up to 5 years after a negative colonoscopy**

**Mehul Lamba<sup>1</sup>**, James Irwin<sup>1</sup>

<sup>1</sup>*Department of Gastroenterology, Palmerston North, New Zealand*

**Introduction and Aims:** Faecal-occult-blood-test (FOBT) is a useful screening-tool for diagnosis of colorectal cancer (CRC). However, clinical utility in symptomatic patients after a recent negative-colonoscopy has not been established. Positive-FOBT in these individuals often leads to repeat colonoscopy or CT-colonography to exclude interval-CRC. In this retrospective observational study, we aimed to assess CRC-risk in symptomatic individuals stratified by colonoscopy and FOBT in preceding 5-years.

**Methods:** Endoscopy and laboratory data were systematically searched for procedures performed at Palmerston North hospital from 2002-2019. Negative-colonoscopy was defined as absence of advanced adenoma or CRC. Following colonoscopy indications were included: anaemia, rectal bleeding, altered bowel-habit, weight-loss or abdominal pain. Patients <18 years were excluded.

**Results:** A total of 8495 symptomatic patients underwent colonoscopy. Median-age was 65.9 years (IQR 52.9-75.4) and 43.2% were male. Among 7906 patients with no preceding colonoscopy, 7.93% (95%CI 7.35-8.55) were diagnosed with CRC. In comparison, of 482 patients with previous negative-colonoscopy, 2.08% (95%CI 1.08-3.83) developed CRC. Previous negative-colonoscopy was associated with significantly lower risk of CRC in compared to no prior-colonoscopy (RR 0.26, 95%CI 0.14-0.48,  $p<0.0001$ ). FOBT was positive in 7.43% individuals with previous negative-colonoscopy. Positive predictive value of FOBT in individuals with no prior-colonoscopy and previous negative-colonoscopy was 16.26% and 0% respectively.

**Conclusion:** A negative-colonoscopy in preceding 5-years is a strong predictor for absence of CRC even in symptomatic patients. FOBT is not useful in stratifying CRC-risk in individuals with previous negative-colonoscopy.

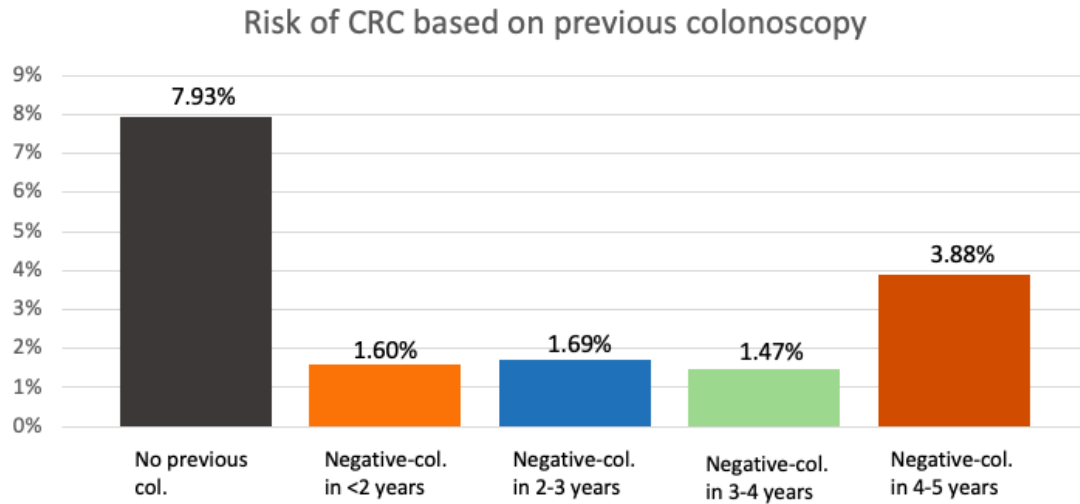


Table 1.

No previous colonoscopy		n	CRC	CRC-risk	Positive predictive value (95%CI)	Negative predictive value (95%CI)
	FOBT +ve	369	60	16.26%	16.26% (13.15-19.94)	93.31%(92.92-93.68)
	FOBT –ve	3378	226	6.69%		
	FOBT NP	4159	341	8.20%		
Previous negative-colonoscopy						
	FOB +ve	22	0	0	0%	97.45%(97.36-97.53)
	FOB –ve	274	7	2.55%		
	FOBT NP	186	3	1.61%		

NP – not performed

## **Poster 27:**

### **Value of an isolated raised Deamidated Gliadin Peptide in the diagnosis of Coeliac Disease.**

**Dr Andrew Lane**<sup>1</sup>, Dr Sean Kelly<sup>1</sup>, Mr Eddy Leonard

<sup>1</sup>Tauranga Hospital, Tauranga, New Zealand

**Background:** Coeliac serology is an important part of the work up of patients with gastrointestinal symptoms. IgA tissue Transglutaminase (tTG) and IgG deamidated gliadin peptide (DGP) are the cornerstones of this serological work-up.

This audit looked at the value of an isolated positive DGP, with a negative tTG, in the evaluation of coeliac disease.

**Methods:** This was a retrospective analysis of the results of coeliac serology and subsequent duodenal biopsies taken between January 2018 and April 2019 in the Bay of Plenty DHB. We identified patients with a negative tTG, but a positive DGP, and whether or not they subsequently went on to have duodenal biopsies. Marsh 3 appearance on histology of duodenal biopsies was considered diagnostic of coeliac disease.

**Results:** Coeliac serology was carried out on 7047 samples during that period. 120 patients were DGP positive and tTG negative. Of these patients only 61 underwent gastroscopy with duodenal biopsies. 8/61 (13.1%) had a positive duodenal biopsy with Marsh 3 changes on histology. 42/61 (68.8%) had normal histology. 10/61 (16.4%) had Marsh grade 1 lesions and 1 patient Marsh grade 2 changes.

In this study the positive predictive value (PPV) of an isolated DGP in the diagnosis of coeliac disease was 13.1%.

Endomysial antibody testing was only done in 7 of the patients undergoing duodenal biopsy and was negative in all 7, including 3 with Marsh 3 biopsies.

**Conclusions:** An isolated DGP was able to identify cases of coeliac disease in patients with negative outcomes from other serological tests. These results suggest an isolated DGP warrants proceeding to a duodenal biopsy, with a worthwhile pick up rate.

## **Poster 28:**

### **The rate of Pathological Complete Response following neoadjuvant chemoradiotherapy in Patients with Locally Advanced Rectal cancer treated at ADHB**

Dr David Law<sup>1</sup>, Ms Felicity Drumm<sup>1</sup>, Dr Osama Salih<sup>1</sup>

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**Introduction:** Recently, the “Wait and Watch” policy has emerged as an accepted approach for patients with locally advanced rectal cancer (LARC) who achieve clinical complete response (cCR) following neoadjuvant chemoradiotherapy (NACRT). This study assesses the pathological outcomes following NACRT to provide insights on the adoptability of the “Wait and Watch” policy.

**Method:** The study took place at the Regional Cancer and Blood Service, Auckland District Health Board (ADHB). Data was collected through the Radiation Oncology Minimum Data Set and medical electronic records. All patients with LARC who completed NACRT with curative intent in 2018 were included.

**Results:** 45 patients received NACRT prior to resection surgery. All patients received capecitabine concurrent chemotherapy with 89% completing 4 weeks or more of treatment. 57% patients were downstaged from clinical node positive disease to pathological node negative disease. 7 patients (15%) achieved pathological complete response (pCR).

**Conclusions:** The rate of pCR following NACRT in ADHB is in keeping with previous international reports<sup>ii</sup>. There was also considerable pathological downstaging. The “Wait and Watch” approach requires astute endoscopic and radiological follow-up to determine clinical complete response. Further studies to evaluate the correlation between pCR and cCR is warranted.

## **Poster 29:**

### **Cost-effectiveness of tight control for Crohn's disease with adalimumab-based treatment in New Zealand: Economic evaluation using data from the CALM trial**

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**Background:** Tight control (TC) for Crohn's disease (CD), using symptoms and biomarkers to direct adalimumab (ADA) treatment, was associated with improved outcomes compared with clinical management (CM) in a 48-week randomised controlled trial (CALM).<sup>1</sup> TC has been shown to be cost-effective (CE) in the UK and Canada<sup>2,3</sup>. This study evaluates the CE of TC versus CM in New Zealand (NZ).

**Methods:** An economic model was developed to evaluate the CE of TC versus CM using CALM and NZ costs. An ordered probit regression was used to estimate CDAI-based health state transition matrices. The likelihood of hospitalisation was predicted as a function of health state and randomisation to TC or CM. ADA costs were based on the NZ list price. Each health state was associated with health utility and other direct medical costs.<sup>4,5</sup> Remission rate, CD-related hospitalisations, ADA injections, other direct medical costs, quality-adjusted life-years (QALYs), and incremental cost-effectiveness ratio (ICER) were calculated at 2 and 5 years. Work Productivity and Activity Impairment was converted into productivity measures using NZ median weekly earnings. The ICERs were compared to the willingness to pay threshold used by NICE in the UK, which is NZ \$58,812.

**Results:** Over 2 years, TC was associated with a higher remission rate (65.3% vs 50.7%), fewer CD-related hospitalisations (0.275 vs 0.720/person year) and more ADA injections (mean 61.34 vs 46.17) versus CM. TC had 0.09 higher QALYs and \$3,963 higher total medical costs. The base case ICER was \$46,102 per QALY. TC became dominant (i.e. ICER<0; higher QALYs and lower costs) when including work productivity. At 5 years the ICER was \$38,248 and a negative ICER including work productivity.

**Conclusions:** TC is cost-effective compared to CM. The results improved over time when extrapolating outcomes from CALM. Incorporating work productivity costs strengthened the economic value of TC.

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## **Poster 30:**

### **Flexible sigmoidoscopy for rectal bleeding in patients >50 years of age?**

Dr Kirsty Macfarlane<sup>1</sup>, Dr Caitlin Pugh, Dr Sue Levin, Dr James Falvey, Dr Tyara Banerjee

<sup>1</sup>CDHB, Christchurch, New Zealand

**Introduction:** Flexible sigmoidoscopy (FS) to the splenic flexure is a recognised investigation for bright red rectal bleeding <50 years of age. We aimed to evaluate whether flexible sigmoidoscopy is an appropriate test, compared to colonoscopy, for patients both under and over 50 years with bright red rectal bleeding based on referral data.

**Methods:** Data from 200 consecutive colonoscopies performed in CDHB for the indication of rectal bleeding, according to referral data, between Jan – Dec 2018 were analysed. The presence of pathology proximal to the splenic flexure was recorded. Advanced neoplasia was defined as adenomas with villous morphology, polyps > 10mm, high grade dysplasia or adenocarcinoma. Patients referred for non-bright red rectal bleeding were excluded (n=50). Incomplete colonoscopies were excluded (n=4).

#### **Results:**

Findings	Total n=146	<50yrs old n=43	> 50yrs old n=103
Any pathology any location	106 (79.8%)	31 (72%))	75 (72.8%))
Advanced neoplasia any location	20 (13.7%)	6 (14%)	14 (14%)
Any pathology proximal to splenic flexure	45 (31%)	13 (30.2%)	32 (31%)
Advanced neoplasia proximal to splenic flexure	5 (3.4%)	1 (2.3%)	4 (3.9%)
Likely cause of bleeding proximal to splenic flexure	2 (1.4%)	0	2 (2%)
Adenocarcinoma	7 (4.8%)	1 (2.3%)	6 (5.8%)
Adenocarcinoma proximal to splenic flexure	1 (0.7%)	0	1 (1%)

No significant difference between any group: Fishers exact test

**Conclusion:** The rate of advanced neoplasia proximal to the splenic flexure is twice as high in those aged >50 years compared with those <50 years. Open access referral data may be inadequate to distinguish type of rectal bleeding. 30% of all patients had pathology proximal to the splenic flexure. Our data does not support a preference for flexible sigmoidoscopy over colonoscopy for the investigation of patients referred for the presenting indication of rectal bleeding.



## **Poster 31:**

### **Percutaneous versus radiologically inserted Gastrostomy: a comparison of indications and outcomes**

Dr Kirsty Macfarlane, Mrs Thysje Waghorn, DR Jeffrey Ngu, Dr Samantha Benson-Pope

**Objective:** Gastrostomy tubes for enteral nutrition can be inserted via percutaneous endoscopic gastrostomy (PEG) or radiologically inserted gastrostomy (RIG) techniques. We aimed to compare the indications and complications in patients who underwent PEG and RIG procedures done at Christchurch Public hospital.

**Methods:** Consecutive patients who underwent PEG or RIG insertion at Christchurch hospital from 1<sup>st</sup> January 2014 to 31st December 2018 were included. Indications, complications and mortality data had been prospectively collected. Comparison of these two groups were conducted using Chi square test or Fisher's exact test.

**Results:** A total of 296 patients underwent PEG insertion and 157 patients underwent RIG insertion between 2014-2018 at Christchurch public hospital. Table 1 summarises the comparisons between the two groups. It shows that there were significantly less complications (9% vs 24%;  $p < 0.01$ ) and mortality (2.5% vs 7.6%;  $p = 0.01$ ) in PEG than RIG. The most common indication for both PEG and RIG was head and neck cancer requiring radiotherapy. There was no seeding in either the PEG or RIG group.

**Conclusion:** The results demonstrate that PEG insertion has a lower complication rate and death within 6 weeks than RIG insertion. This is comparable with current and international research. Table 1: Comparative table between RIG and PEG insertion at Christchurch public hospital between 2014 -2018

	<b>PEG</b>	<b>RIG</b>	<b>P value</b>
<b>Total</b>	296	157	
<b>Indications</b>			
Head and neck cancers	153 (52%)	75 (47.8%)	0.431
Neuromuscular / neurodegenerative	30 (10%)	30 (19%)	0.0088
CVA	18 (6.10%)	5 (3.2%)	0.26
Trauma / HBI	37 (12.5%)	10 (6.4%)	0.051
Other	58 (19.6%)	37 (23.6%)	0.33
<b>Complications</b>			
<b>Total</b>	27(9%)	37(24%)	0.0001
Infection/ increased RR/ peritonitis	8 (2.7%)	9 (5.7%)	0.122
Pneumoperitoneum	8 (2.7%)	2 (1.3%)	0.505
Technical complications	9 (3%)	23 (14.6%)	0.0001
Bleeding / hematoma	0	3 (1.9%)	0.042
Patient factors ' disinhibited /	2 (0.7%)	0	
Insertion to DOD < 6 weeks	7 (2.54)	12 (7.6%)	0.012

## **Poster 32:**

### **Zenker's Diverticulum; Flexible endoscopic approach in an elderly co-morbid patient**

**Dr Victoria McGarrigle<sup>1</sup>**, Dr Rees Cameron

<sup>1</sup>*Capital & Coast DHB, Wellington, New Zealand*

**Introduction:** Zenker's diverticula can cause significant impairment in quality of life. In the aging, comorbid population standard treatment options should be considered carefully to avoid morbidity and mortality. Surgical treatments may not be suitable in this population and flexible endoscopic approach is a viable alternative.

**Case Description:** An 86 year old man presents with a 6 month history of progressive dysphagia, odynophagia and weight loss. A rapid deterioration in symptoms on the morning of admission was exacerbated by a transient ischaemic attack. Speech and language assessment revealed severe oropharyngeal dysphagia. Video fluoroscopy showed a diverticulum in the cervical oesophagus. The patient was referred to a tertiary centre for a percutaneous endoscopic gastrostomy given his significant aspiration risk. Endoscopy confirmed a large Zenker's diverticulum. Following discussion with an interventional endoscopist, a diverticular septotomy was performed via flexible endoscopy. A hook knife was used to expose the cricopharyngeus, followed by stepwise division of the circular muscle fibres until mediastinum was seen. The base was sealed with two Sureclips. The procedure was performed under conscious sedation with 2mg intravenous Midazolam and 100micrograms of Fentanyl. There were no complications and the patient was transferred back to his local hospital. Repeat video fluoroscopy did not reveal any evidence of a diverticulum or aspiration. The patient was discharged from hospital with a soft diet and symptoms have not recurred.

**Discussion:** Open surgical treatments have a higher morbidity and mortality<sup>1</sup> and not suitable for elderly co-morbid patients who are unlikely to tolerate potential complications. Rigid laryngoscopic approach requires general anaesthetic and additionally extreme neck extension must be possible. Flexible endoscopic techniques have similar success and recurrence rates<sup>2</sup> without the need for general anaesthetic. Given the issues with the above surgical approaches in co-morbid patients, flexible endoscopic approach is a good alternative to provide symptomatic benefit.

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## **Poster 33:**

### **Prospective Evaluation of Coeliac Plexus Block in Patients with Unresectable Pancreatic Cancer**

**Dr Thomas Mules<sup>1</sup>**, Dr Akhilesh Swaminathan<sup>1</sup>, Dr Kirsty MacFarlane<sup>1</sup>, Dr Jimmy Tiong<sup>1</sup>, Dr Samantha Benson-Pope<sup>1</sup>, Dr Gary Lim<sup>1</sup>

<sup>1</sup>Canterbury DHB, Christchurch, New Zealand

**Introduction:** Pancreatic cancer is an aggressive tumour associated with significant pain. Coeliac plexus block (CPB) is used as an adjunct to analgesic medications to assist in pain management. This study assesses the efficacy of CPB in improving pain and quality of life in patients with unresectable pancreatic cancer.

**Methods:** This prospective study included patients with unresectable pancreatic cancer referred for CPB in Canterbury from October 2018 to June 2019. Patients receiving chemotherapy or radiotherapy were excluded. Validated pain (Brief Pain Inventory (BPI)) and quality of life (EORTC QOL-C30) assessment tools, and an opiate diary, were completed prior to the procedure (day 0) and post-procedure at 2 and 4 weeks. CPB was performed using a central injection of 20mls 0.5% bupivacaine and 10mls 100% alcohol with endoscopic ultrasound guidance.

**Results:** Twelve patients consented for this study. Two patients died prior to the completing week 4 questionnaires and 1 did not have a safe injection site. Nine patients were included in the analysis. The median age was 63 years (range 44-77) and 6 (67%) were female. Four (44%) patients had TNM stage IV, 3 (33%) stage III, and 2 (22%) stage IIB. Performance status was ECOG 0 in 1 (11%) patient, ECOG 1 in 6 (67%) patients, and ECOG 2 in 2 (22%) patients. The BPI visual analogue for reported worst pain during a 24-h period significantly improved (day 0 versus week 4, mean 9.3 to 7.0;  $p < 0.05$ ). The other BPI domains (average pain, least pain and pain right now) also improved, but were not statistically significant. Quality of life scores and opiate intake did not significantly change during the study period. No procedural complications occurred.

**Conclusions:** Coeliac plexus block is a safe procedure that significantly improves pain related to unresectable pancreatic cancer, making it a useful adjunct to analgesic medications.

## **Poster 34:**

### **Rectal Topical 6-Thioguanine for Treatment-Resistant Distal Ulcerative Colitis: A Case Series**

**Dr Thomas Mules<sup>1</sup>**, Dr Chris Mulder<sup>2</sup>, Dr Tim Florin<sup>3</sup>, Dr Murray Barclay<sup>1</sup>

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<sup>3</sup>University of Queensland, , Australia

**Introduction:** Distal ulcerative colitis can sometimes be resistant to all conventional therapies, oral, intravenous or topical. We present a case series of a novel therapy, rectally delivered 6-thioguanine (6-TG), in patients with distal colitis resistant to conventional treatments.

**Methods:** Between August 2018 and August 2019 three patients with symptomatic treatment-resistant distal colitis were treated with rectal 6-TG in Canterbury, New Zealand. 20mg of 6-TG (2x10mg tablets) was dissolved in 50ml Pentasa enema and delivered rectally. Dosing was initially once daily and frequency was reduced as symptoms improved. Patient consent was obtained. Efficacy, adverse effects and thiopurine metabolites were monitored.

**Results:** The patients were female aged 41, 44 and 53 years. Each had ulcerative colitis > 10 years duration. Maintenance therapies included infliximab, methotrexate, azathioprine and oral mesalazine.

All had significant ano-rectal symptoms including pain, increased stool frequency and rectal bleeding, with endoscopic examination showing Mayo 2 or 3 rectal or recto-sigmoid inflammation. They had hydrocortisone acetate enemas and mesalazine suppositories for at least 3 weeks without significant improvement. One patient also received oral prednisone, stopped after 1 week due to adverse effects.

Topical and immunomodulator (azathioprine or methotrexate) therapy was stopped or reduced, and rectal 6-TG started. All patients had significant improvement in symptoms within 1 week and resolution of symptoms within 2 weeks of commencing 6-TG. Enema use was reduced over the following 2 weeks. All patients remain in clinical remission, with two patients using 1 enema each week and the other not requiring any ongoing therapy.

No adverse effects were observed. Red blood cell 6-thioguanine nucleotide and 6-methylmercaptopurine (MMP) levels on once daily dosing were 168-500 and 85-343 pmol/8x10<sup>8</sup> RBCs, respectively.

**Conclusions:** Larger studies are required, but this case series demonstrates that rectal 6-TG enema treatment is a promising, rapid-acting novel therapy for treating distal colitis.

## **Poster 35:**

### **The Impact of Disease Activity on Psychosocial Factors in Inflammatory Bowel Disease**

**Dr Thomas Mules<sup>1</sup>**, Dr Akhilesh Swaminathan<sup>1</sup>, Mrs Grace Borichevsky<sup>1</sup>, Dr Chris Frampton<sup>1</sup>, Dr Richard Gearry<sup>1</sup>

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**Introduction:** Depression, anxiety and sexual dysfunction are associated with subjective assessments of inflammatory bowel disease (IBD) activity. Using objective measures, we aimed to determine if depression, anxiety, and sexual dysfunction correlate with IBD activity.

**Methods:** We prospectively included IBD patients undergoing colonoscopy or radiology to assess IBD inflammatory activity. Depression [Patient Health Questionnaire-9 (PHQ-9)], anxiety [Generalized Anxiety Disorder-7 (GAD-7)], and sexual function [Female Sexual Function Index (FSFI) for females and International Index of Erectile Dysfunction (IIEF) for males] were measured with validated questionnaires. Disease activity was graded using UCESI, SES-CD and Lemann scores. The data were analysed descriptively. Sexual dysfunction scores were adjusted for depression and anxiety.

**Results:** To date, 68 patients (37 male, median age 33 years, 43 Crohn's disease) have been included (enrollment ongoing). Disease was endoscopically or radiologically inactive in 32 (47%) patients, mild in 22 (32%), moderate in 9 (13%) and severe in 5 (7%). Sexual activity was declared in 75% of males and 68% of females. The mean PHQ-9 (depression) and GAD-7 (anxiety) scores for objective measures of severe, moderate, mild and inactive disease were 4.8 and 3.0, 10.2 and 6.7, 7.0 and 5.9, and 7.1 and 5.9 respectively (all comparisons across disease severity  $p > 0.05$ ). The mean FSFI in females with active disease was 22.9 and 25.7 in inactive disease ( $p = 0.43$ ). Males with active disease had mean IIEF scores of 58.6 and in inactive disease 47.3 ( $p = 0.17$ ).

**Conclusions:** Although a significant proportion of patients with IBD suffer from depression, anxiety and sexual dysfunction, in the present study these are not significantly associated with disease inflammatory activity as measured objectively. Greater numbers of participants are needed to confirm these findings. Psychosocial issues should be actively sought in IBD patients with and without signs of inflammatory activity.

## **Poster 36:**

### **Severe upper gastrointestinal (GI) manifestation of immune related adverse event (IRAE) in patient treated with Pembrolizumab for undifferentiated melanoma-like tumour of the mandible**

**Dr Sethu Nagappan**<sup>1</sup>, Dr Jason Hill<sup>1</sup>

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**Introduction:** Pembrolizumab is an immune check point inhibitor (ICI) used in treatment of various neoplasms. It can induce immune related adverse events (IRAE) which can affect multiple organs, commonest being the liver and colon. However, reports of IRAE in the upper gastrointestinal (GI) tract are rare. We report a case of extensive inflammatory pathology affecting the stomach related to pembrolizumab treatment of recurrent undifferentiated melanoma-like tumour of the left mandible

**Case report:** 61 year old gentleman was referred by his primary care physician with a two month history of abdominal pain following meals and 8 kg weight loss. He had been on pembrolizumab treatment for the preceding 10 months. Gastroscopy showed extensive, diffuse, severe inflammation with erosions in the entire examined stomach. Biopsies were consistent with chronic active inflammation. These findings were consistent with IRAE secondary to pembrolizumab. The patient was treated with a tapering dose of oral prednisone starting at 60 mg daily. His abdominal pain subsided, appetite improved and he started to regain weight.

**Discussion:** There are only a few published case reports of IRAE involving the upper GI tract with ICI's. Symptoms involving the lower GI tract, such as diarrhoea and colitis, are more common and often occur soon after drug administration. In our case, symptoms occurred 8 months following the start of Pembrolizumab. This is consistent with other case reports of IRAE with upper GI involvement. Systemic corticosteroids are the mainstay of treatment. This patient demonstrated rapid symptomatic response to treatment.

**Conclusion:** With increasing use of ICI's, like pembrolizumab, it is important to recognize the potential for IRAE involving the upper GI tract. The presentation of upper GI symptoms could develop late, even months, after starting ICI's.

## **Poster 37:**

### **Biodegradable oesophageal stent in post radiation oesophageal stricture**

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**Introduction:** Post radiation oesophageal stricture can significantly affect quality of life and lead to weight loss and malnutrition. Biodegradable oesophageal stent is indicated in patients with refractory benign oesophageal stricture including post radiation stricture in whom treatment with repeated oesophageal dilatations has failed.

**Case Report:** A 76 year old man was treated with definitive chemoradiotherapy for squamous cell cancer of the distal oesophagus. Despite no evidence of recurrence, he gradually developed significant dysphagia over 11 months following treatment. The gastroscopy showed a short tight stricture of lower oesophagus due to radiation induced fibrosis. He underwent oesophageal dilatation with TTS (through the scope) balloons at 4 weekly intervals. Despite increasing balloon size with repeated oesophageal dilatation, improvement in his symptoms was not sustained beyond 3 to 4 days with recurrence of severe dysphagia. He continued to lose significant weight.

Decision was then made to insert a biodegradable oesophageal stent for more definitive management. He had an Ella BD biodegradable stent inserted under fluoroscopic guidance. Patient had sustained improvement of dysphagia following this. Repeat gastroscopy 5 weeks later showed oesophageal stent was biodegrading with the lumen widely patent.

**Discussion:** Biodegradable oesophageal stent is a valuable option in management of patients with post-radiation oesophageal stricture and may eliminate the need for repeated oesophageal dilatations. Studies have shown benefits including extended period of dilatation compared to conventional treatments and reduced stent migration rates. Another advantage of biodegradable stents is they do not require removal once inserted as they degrade spontaneously with the patency of the lumen restored

**Conclusion:** We present a case of successful use of oesophageal biodegradable stent with symptomatic improvement in a patient with post radiation stricture not previously responding to repeated oesophageal dilatations. This was the first time an oesophageal biodegradable stent was used in Dunedin Hospital for this indication

## **Poster 38:**

### **Ustekinumab therapy induced clinically meaningful improvement and remission as measured by the Inflammatory Bowel Disease Questionnaire in patients with moderate to severe ulcerative colitis: results from the phase 3 UNIFI induction and maintenance studies**

Dr Bruce Sands<sup>1</sup>, Dr Chenglong Han<sup>2</sup>, Dr Hongyan Zhang<sup>3</sup>, Dr Jewel Johanss<sup>3</sup>, Dr Philippe Szapary<sup>3</sup>, Dr Colleen Marano<sup>3</sup>, Dr Rupert Leong<sup>4</sup>, **Dr David Rowbotham<sup>5</sup>**, Dr Silvio Danese<sup>6</sup>

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**Introduction:** The UNIFI studies evaluated the safety and efficacy of ustekinumab (UST) intravenous (IV) induction and subcutaneous (SC) maintenance in moderately-to-severely active ulcerative colitis (UC). Here, we present patient-reported outcomes from the Inflammatory Bowel Disease Questionnaire (IBDQ).

**Methods:** In the induction study, eligible patients were randomized to a single IV dose of placebo (PBO, n=319), UST 130 mg (n=320), or UST ~6 mg/kg (n=322). Patients who were in clinical response 8 weeks after receiving UST induction were eligible for the maintenance study and were randomized to SC PBO (n=175), UST 90 mg q12w (n=172), or UST 90 mg q8w (n=176). The IBDQ is a 32-item questionnaire with 4 dimensions: bowel symptoms, systemic symptoms, emotional function, and social function. The total score ranges from 32 to 224, with a score  $\geq 170$  indicating remission and a change  $\geq 16$  points defined as clinically meaningful.

**Results:** Mean total IBDQ scores at induction baseline ranged from 126.0 to 127.4 and were comparable across treatment groups. Eight weeks after IV induction, patients receiving UST reported significantly greater improvement in mean IBDQ scores, and greater proportions of patients achieved clinically meaningful improvements from baseline and IBDQ remission compared with PBO ( $p < 0.001$  for all comparisons). Through 44 weeks of the maintenance study, mean IBDQ scores worsened in the PBO group, were maintained in the UST q12w group, and improved in the UST q8w group ( $p < 0.001$ ). Significantly greater percentages of patients in the UST groups achieved or maintained clinically meaningful improvement ( $p < 0.01$ ) or IBDQ remission ( $p < 0.02$ ) through Week 44 compared with PBO.

**Conclusion:** Patients reported significantly greater improvements in IBDQ scores with UST IV induction compared with PBO. In patients who responded to UST IV induction, significantly greater proportions of patients who received UST SC maintenance sustained the improvements achieved during induction through Week 44 compared with PBO.



## **Poster 39:**

### **Sustained Remission in Patients with Moderate to Severe Ulcerative Colitis: Results from the Phase 3 UNIFI Maintenance Study**

Dr Gert van Assche<sup>1</sup>, Dr Stephan Targan<sup>2</sup>, Dr Thomas Baker<sup>3</sup>, Dr Christopher O'Brien<sup>3</sup>, Dr Hongyan Zhang<sup>3</sup>, Dr Jewel Johannis<sup>3</sup>, Dr Philippe Szapary<sup>3</sup>, Dr Colleen Marano<sup>3</sup>, Dr Rupert Leong<sup>4</sup>, **Dr David Rowbotham<sup>5</sup>**, Dr Tadakazu Hisamatsu<sup>6</sup>, Dr Silvio Danese<sup>7</sup>, Dr Bruce Sands<sup>8</sup>, Dr Laurent Peyrin-Biroulet<sup>9</sup>

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**Introduction:** The UNIFI randomized-withdrawal maintenance study evaluated the safety and efficacy of subcutaneous (SC) ustekinumab in patients with moderately-to-severely active ulcerative colitis (UC) who had responded to IV ustekinumab during induction. In this analysis, we describe the durability of remission through maintenance Week 44.

**Methods:** At Week 0 of maintenance, 523 patients who had responded to IV ustekinumab induction were randomly assigned in a 1:1:1 ratio to placebo SC, ustekinumab SC 90 mg q12w, or ustekinumab SC 90 mg q8w. Partial Mayo scores, rectal bleeding and stool frequency Mayo subscores, endoscopic healing, and Inflammatory Bowel Disease Questionnaire (IBDQ) scores were used to assess remission at the level of patient-reported symptoms, endoscopy, and health-related quality of life (QoL).

**Results:** At baseline of the maintenance study, the proportions of patients in symptomatic remission and IBDQ remission were generally similar among the treatment groups. The proportion of patients with endoscopic healing at baseline was lower in the ustekinumab q8w group (32.4%) compared with the ustekinumab q12w (39.5%) and placebo groups (40.6%). Through Week 44, the proportions of patients in partial Mayo remission were sustained in the ustekinumab treatment groups, while the proportion of patients in the placebo group decreased, with consistent numerical separation from the ustekinumab q8w group by Week 8 and the q12w group by Week 16. In addition, significantly greater proportions of patients in the ustekinumab q8w and q12w groups compared with placebo maintained symptomatic remission and IBDQ remission through Week 44 and maintained endoscopic healing at Week 44 among patients who achieved each respective endpoint at maintenance baseline. Similarly, greater proportions of ustekinumab-treated patients had durable partial Mayo remission through Week 44 compared with placebo.

**Conclusion:** Both doses of ustekinumab SC maintenance therapy sustained remission, measured by patient-reported symptoms and endoscopic and QoL assessments, in moderately-to-severely active UC.

## **Poster 40:**

### **General Health Status in Patients with Moderate to Severe Ulcerative Colitis Receiving Ustekinumab: Results from the Phase 3 UNIFI Induction and Maintenance Studies**

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**Introduction:** The UNIFI studies evaluated the safety and efficacy of IV ustekinumab (UST) induction and subcutaneous (SC) maintenance in moderately-to-severely active ulcerative colitis (UC). We evaluated patient-reported outcomes related to general health status (GHS) in these studies.

**Methods:** In the induction study, patients were randomized to a single IV dose of placebo (PBO, n=319), UST 130 mg (n=320), or UST ~6 mg/kg (n=322). Patients in clinical response 8 weeks after receiving UST induction were eligible for the maintenance study and were randomized to SC PBO (n=175), UST 90 mg q12w (n=172), or UST 90 mg q8w (n=176). GHS was assessed using the 36-item Short Form Health Survey (SF-36) and the visual analog scale of EuroQoL-5D Health Questionnaire (EQ VAS). SF-36 measured 8 functional areas that were summarized into physical and mental component summary scores (PCS and MCS).

**Results:** At baseline of induction, mean SF-36 PCS and MCS scores were indicative of patients with significantly impaired GHS. Eight weeks after IV induction, patients receiving UST reported significantly greater improvements in mean SF-36 PCS, SF-36 MCS and EQ VAS scores compared with PBO ( $p<0.001$ ). Through Week 44 of maintenance, mean SF-36 PCS scores worsened in the PBO group, were maintained in the UST q12w group, and improved in the UST q8w group. Mean SF-36 MCS also worsened in the PBO group and were maintained in the UST q12w and q8w groups ( $p\leq 0.009$ ). The proportions of patients with clinically meaningful improvements in SF-36 PCS, SF-36 MCS and EQ VAS from induction baseline to maintenance Week 44 were significantly greater in the UST groups compared with PBO ( $p\leq 0.001$ ).

**Conclusion:** Patients reported significantly greater improvements in GHS after UST IV induction compared with PBO. In patients who responded to UST IV induction, improvements were sustained or increased with 44 weeks of SC UST maintenance therapy.

## **Poster 41:**

### **Endoscopic follow-up of gastric ulcer and prevalence of gastric cancer in this study population**

Dr Indika Ranasinghe, Dr. Frank Weilert, Dr. Graeme Dickson

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**Introduction:** Gastric cancer is usually diagnosed at a late stage. Follow-up of endoscopic detected gastric ulcers provides an opportunity to identify non-healing malignant ulcers. The aim of this study is to investigate whether gastric ulcers are appropriately followed up and to record the prevalence of gastric cancer on endoscopy.

**Method:** Retrospective review of all patients diagnosed with gastric ulcer on endoscopy (1/2014 – 1/2019). Demographic data as well as information regarding *Helicobacter pylori* status, rate of tissue biopsy, surveillance interval and prevalence of gastric cancer was collected.

**Results:** We included 358 patients with a gastric ulcer on endoscopy. Demographic distribution was NZ European 48%, Maori 35%, Pacific Islander 4%, Asian 4% and other 9%. The common sites of gastric ulceration were the distal stomach 56% (n=199), gastric body 33% (n=118), fundus 4% (n=16) and cardia 7% (n=25). *H. Pylori* status was positive in 18%, negative in 57% and unknown in 25%. Overall 153/358 (43%) patients were biopsied during index endoscopy. Of the 57% (n=204) of patients who underwent surveillance endoscopy (51% were <12 weeks), 24% (n=49) were re-biopsied. The prevalence of gastric cancer was 5.3% (n=19), of which 53% (n=10) were diagnosed at index and 47% (n=9) on surveillance endoscopy. Cancer of biopsied ulcers at initial biopsy vs follow-up biopsy of non-healing ulcer was 6.5% vs 18.4% (p-value 0.05). The distribution of cancer was 4.02% vs 6.92% (p-value 0.24) in distal or proximal stomach, respectively.

**Conclusion:** The prevalence of gastric cancer is 5.3%. Surveillance endoscopy occurred in 57% of GU after index endoscopy. The yield of histology in non-healing ulcer at follow-up endoscopy is more likely to be malignant. Proximal non-healing ulcer had higher rate of malignancy.

## **Poster 45:**

### **Ethnic Disparities in Colorectal Cancer in a regional centre.**

**Dr Sam Seleg<sup>1</sup>**, Dr Ana Braithwaite-Flores<sup>1</sup>, Dr Thomas Boswell<sup>1</sup>

<sup>1</sup>Hawkes Bay District Health Board, Hastings, New Zealand

**Introduction:** Colorectal cancer is the second highest cause of cancer death in New Zealand. Hawkes Bay District Health Board (HBDHB) has a significant proportion of Maori patients (24.3%). We reviewed all colorectal cancer cases managed predominantly in the public system, focusing on differences in disease characteristics amongst Maori and non-Maori patients.

**Methods:** Pathology coding for colorectal carcinoma, as well as the cancer registry were used to detect all colorectal cancer cases in HBDHB between 1<sup>st</sup> January 2016 and December 31<sup>st</sup> 2018. Baseline demographics included gender, ethnicity and age at diagnosis. Key sub-analyses included route of diagnosis and stage of cancer.

**Results:** 300 patients were identified for analysis during the study period. 169 (56%) were male. 274 (91%) patients were NZ-European, 23 (8%) Maori and three of Asian origin. Maori patients were significantly younger at diagnosis compared to non-Maori (62 vs 72 years,  $P < 0.05$ ). 40 (13%) patients were diagnosed through acute surgical intervention. 260 (87%) patients were diagnosed via colonoscopy (224 elective referrals, 33 acute or inpatient referrals, 3 surveillance cases). There was no statistically significant difference in diagnosis route between Maori and non-Maori patients.

A total of 314 colorectal carcinomas were diagnosed. 162 (54%) patients were diagnosed at an advanced stage (>III/IV), with no statistically significant difference between males and females (56% vs 59%,  $P = 0.62$ ) and Maori and non-Maori patients (71% vs 56%,  $P = 0.18$ ).

**Conclusion:** Colorectal cancer is a significant burden on the region. Maori patients are significantly younger at diagnosis compared to Non-Maori patients. There is also a trend towards diagnosis at an advanced stage amongst Maori patients in this small cohort. Efforts are needed to improve detection rates and overall outcomes, especially amongst younger Maori patients, as we look towards the roll out of the National Bowel Screening Programme.

## **Poster 46:**

### **Post-Colonoscopy Colorectal Cancer (PC-CRC) in a regional hospital.**

**Dr Sam Seleg**<sup>1</sup>, Dr Thomas Boswell<sup>1</sup>, Dr Ana Braithwaite-Flores<sup>1</sup>

<sup>1</sup>*Hawkes Bay District Health Board, Hastings, New Zealand*

**Introduction:** Post-Colonoscopy Colorectal Cancer (PC-CRC) refers to the detection of cancer in patients within five years of colonoscopy, with international rates between 2 and 8%. Furthermore, PC-CRC is increasingly recognized as a quality indicator in colonoscopy. We assessed all colorectal cancers diagnosed in Hawkes Bay District Health board within five years of previous colonoscopy.

**Methods:** Pathology disease coding and the local cancer registry were retrospectively reviewed to identify all colorectal cancers diagnosed between 1<sup>st</sup> January 2016 and 31<sup>st</sup> December 2018. Analysis of PC-CRC cases at five years included baseline demographics, route of diagnosis and interval time to diagnosis. Index colonoscopy quality, findings, and recommendations were assessed.

**Results:** 300 patients with 314 carcinomas were identified. 12 (4.0%) patients were identified in the PC-CRC group. Five patients were male. The average age at diagnosis was 73 years. 11 patients were NZ European, one was Maori. Ten cancers were detected at colonoscopy (six elective referrals, three surveillance and one acute). Two cases were diagnosed during acute bowel resections. The average interval was 29 months. Five patients had advanced malignancy (> III/IV). Ten patients had previously undergone complete colonoscopy with caecal intubation, one incomplete procedure, and one flexible sigmoidoscopy. Bowel preparation quality was at least good in six patients, poor in two patients, and undocumented in the remaining four. Eight patients had low-risk findings, one intermediate and three high-risk. Follow-up recommendations ranged from 3-month endoscopy, to no further endoscopy.

**Conclusion:** PC-CRC is an emerging challenge for endoscopists. Whilst our results are in keeping with internationally published data, a sustained focus on timely, quality colonoscopy with complete polypectomy is required moving forward. PC-CRC should be considered as a standardized quality indicator amongst units.

## **Poster 47:**

### **Clinical and biochemical markers are more closely associated with endoscopic disease activity in Ulcerative colitis than Crohn's disease: results from the New Indicators of Disease Activity in Inflammatory Bowel Disease (NIDA-IBD) cohort.**

**Dr Akhilesh Swaminathan**<sup>1</sup>, Miss Grace Borichevsky<sup>1</sup>, Dr Teagan Hoskin<sup>1</sup>, Dr Thomas Mules<sup>2</sup>, Professor Andrew Day<sup>4</sup>, Professor Mark Hampton<sup>3</sup>, Professor Anthony Kettle<sup>3</sup>, Professor Richard Gearry<sup>1</sup>

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This project has received support through the New Zealand Society of Gastroenterology and Janssen-Cilag Pty Ltd (NZSG Janssen Research Fellowship), and Royal Australasian College of Physicians (Research Entry Scholarship)

**Introduction:** Treatment of inflammatory bowel disease (IBD) (Crohn's disease (CD) and ulcerative colitis (UC)) targets mucosal healing through endoscopic assessment of disease activity, which is invasive and expensive. We aimed to determine whether non-invasive methods, including clinical and biochemical markers, correlated with endoscopic findings in the NIDA-IBD cohort.

**Methods:** IBD patients were recruited prospectively. Endoscopic severity was measured by simple endoscopic score for CD (SES-CD) and UC endoscopic index of severity (UCEIS). Clinical disease activity was assessed by the Harvey-Bradshaw index (HBI), simple clinical colitis activity index (SCCAI) and IBD questionnaire (IBDQ). Biochemical markers included faecal calprotectin (FC), full blood count and C-reactive protein (CRP). Association of endoscopic activity with clinical and biochemical markers was performed using the Spearman rank coefficient and linear regression models.

**Results:** 83 patients (median age 44 years, 42 (50.6%) male, 54 (66%) CD) have been recruited to date. For CD, 18 patients were in remission, 18 mild, 11 moderate, and 5 had severe disease. For UC, 16 patients were in remission, 9 mild, 1 moderate, and 2 had severe disease. [FC] was weak-moderately correlated with SES-CD ( $r=0.45$ ,  $p<0.05$ ), and strongly correlated with UCEIS ( $r=0.78$ ,  $p<0.0001$ ). HBI was weakly correlated with [FC] ( $r=0.35$ ,  $p<0.05$ ) and SES-CD ( $r=0.1181$ ,  $p=0.407$ ). SCCAI was moderately correlated with UCEIS ( $r=0.64$ ,  $p<0.05$ ) and [FC] ( $r=0.63$ ,  $p<0.05$ ). SES was moderately correlated with CRP ( $r=0.37$ ,  $p=0.0078$ ) and platelets ( $r=0.3308$ ,  $p=0.0178$ ). UCEIS was moderately correlated with CRP ( $r=0.5144$ ,  $p=0.0051$ ).

**Discussion:** Whilst IBD activity is best assessed by endoscopy, there is a clinically significant association between endoscopic activity in UC with both [FC] and symptoms, which may reduce the need for colonoscopies in this cohort. The poor correlation between disease activity and currently used clinical markers in CD poses a challenge for the clinician and an opportunity for the development of improved non-invasive markers of disease.

## **Poster 48:**

### **Evaluation of Methionine sulfoxide as a potential biomarker of disease activity in Inflammatory Bowel Disease (IBD): results from the New Indicators of Disease Activity in Inflammatory Bowel Disease (NIDA-IBD) cohort**

**Dr Akhilesh Swaminathan**<sup>1</sup>, Miss Grace Borichevsky<sup>1</sup>, Dr Teagan Hoskin<sup>1</sup>, Miss Bee Bathish<sup>2</sup>, Dr Thomas Mules<sup>3</sup>, Professor Andrew Day<sup>4</sup>, Professor Mark Hampton<sup>2</sup>, Professor Anthony Kettle<sup>2</sup>, Professor Richard Garry<sup>1</sup>

<sup>1</sup>Department of Medicine, University Of Otago, Christchurch, Christchurch, New Zealand, <sup>2</sup>Centre for Free Radical Research, University of Otago, Christchurch, Christchurch, New Zealand, <sup>3</sup>Department of Gastroenterology, Christchurch hospital, Christchurch, New Zealand, <sup>4</sup>Department of Paediatrics, University of Otago, Christchurch, Christchurch, New Zealand

This project has received support through the New Zealand Society of Gastroenterology and Janssen-Cilag Pty Ltd (NZSG Janssen Research Fellowship), and Royal Australasian College of Physicians (Research Entry Scholarship)

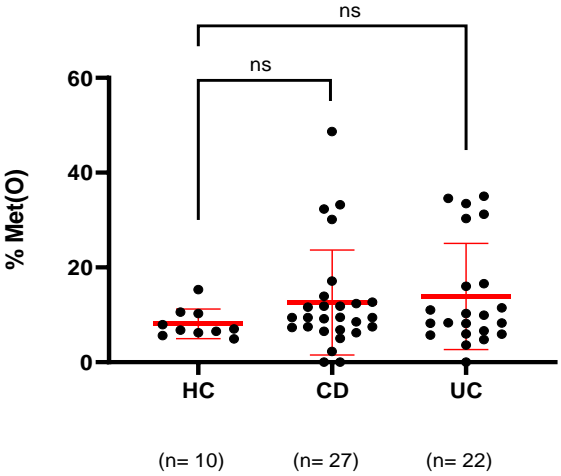
**Introduction:** Oxidative stress is implicated in the pathophysiology of inflammatory bowel disease (IBD) (Crohn's disease (CD) and ulcerative colitis (UC)). Methionine (Met) is an amino acid excreted in urine that is oxidised to methionine sulfoxide (Met(O)), a potential biomarker in inflammatory conditions. Our aim was to determine if urinary Met(O) predicted disease activity in the NIDA-IBD cohort.

**Methods:** Urine samples were collected from IBD patients prior to undergoing colonoscopy, and from healthy age-matched controls. Urinary [Met], [Met(O)] and percentage of [Met(O)] to [total Met] (%Met(O)) were measured using liquid chromatography mass spectrometry (LC-MS) methods. The simple endoscopic score for CD (SES-CD) and UC endoscopic index of severity (UCEIS) measured endoscopic severity. Association of %Met(O) with endoscopic activity was performed using the Spearman rank coefficient. Kruskal-Wallis testing was performed to compare groups and disease activity.

**Results:** 49 patients (median age 44 years, 26 (53.1%) male, 27 (55.1%) CD) from the NIDA-IBD cohort and 10 healthy controls were examined. Median %Met(O) was 6.88% in healthy controls, 9.42% in CD, and 9.13% in UC. There was no significant difference in urinary %Met(O) between controls, CD and UC (Figure 1). There were no significant correlations between %Met(O) and endoscopic disease activity in CD ( $r=0.30$ ,  $p=0.13$ ) or UC ( $r=-0.06$ ,  $p=0.80$ ). Age was not correlated with %Met(O) ( $r=0.08$ ,  $p=0.60$ ) or [Met(O)] ( $r=0.04$ ,  $p=0.77$ ).

**Discussion:** Urinary [Met(O)] does not correlate with endoscopic severity in IBD. Although oxidative stress might be heightened in IBD, these results suggest that urinary [Met(O)] and %Met(O) are unable to detect disease activity.

**Figure 1. The percentage of urinary methionine sulfoxide (%Met(O)) does not vary between healthy controls (HC), and Crohn's disease (CD) or ulcerative colitis (UC)**





## **Poster 49:**

### **Pregnancy outcomes in Inflammatory Bowel Disease patients: Retrospective cohort study from Waikato**

**Dr Vivek Tharayil<sup>1</sup>**, Dr Melissa Haines<sup>1</sup>

<sup>1</sup>*Waikato DHB, Hamilton, New Zealand*

**Aims:** Peak incidence of inflammatory bowel disease (IBD) occurs in the child-bearing years from 15 and 30 years. Caring for the pregnant IBD patients can be challenging due to concerns surrounding the impact of the disease and the therapies involved and foetal outcomes. The aims of this study was to retrospectively audit the pregnancy and foetal outcomes of women with IBD.

**Methods:** All female IBD patients who had a pregnancy between 2008 and 2019 were identified from clinical database in Waikato Hospital and Tawa Street Clinic. Clinical information including disease duration, extent, IBD treatment during pregnancy, pregnancy outcomes, mode of delivery, post-delivery complications and infant birth weight were obtained from electronic health records.

**Results:** Forty-one IBD patients were enrolled in the study. Of these, 30 have completed their pregnancy and 11 are currently pregnant. Twenty-six (63.4%) patients have Crohn's disease (CD), 14 (34.1%) have Ulcerative colitis and 1 patient has IBD-unclassified. The majority of the pregnant patients (n=29) with IBD had  $\geq 5$ -year disease burden. Sixteen percent developed a flare of their IBD during pregnancy. Thirteen patients were on biologics, of which only one patient developed serious adverse event (cytomegalovirus pneumonia). More patients with IBD (50%) underwent caesarean sections (CS) compared to the New Zealand national average (25%). Half of CS (n=7) were performed on patients for indication of existing perianal disease. There was no significant difference in birth weight between biologic users and non-users (3269 gm vs 3583gm,  $p=0.15$ ).

**Conclusions:** This is the first New Zealand study analysing outcomes of pregnancy in IBD patients. Rates of CS are higher in IBD patients due to perianal disease. Nearly one third of pregnant patients were on biologics during their pregnancy, with minimal serious adverse outcomes.

## **Poster 50:**

### **Establishment of Human Sigmoid-derived Intestinal Organoids In Vitro**

**Mr Paulo Urbano**<sup>1,2</sup>, Ass. Prof. Roslyn Kemp<sup>1</sup>, Prof. Michael Schultz<sup>2,3</sup>

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Research support: NZSG Small Research Grants 2019

**Background:** The human stem cell-derived intestinal organoid (“mini-gut”) can recapitulate the human intestinal epithelial barrier *in vitro*. In our clinical practice transverse colon biopsies are used as primary source for generation of organoids. However, a full colonoscopy is often laborious, highly invasive, requires anaesthesia, prolonged recovery time, and costly. To overcome these problems, we sought to generate organoids from the sigmoid colon, as sigmoidoscopy is less invasive, sedation is optional, recovery time is faster than the full colonoscopy and costs less. Therefore, we compared the intestinal cell diversity of organoids derived from both colon tissues to validate the usability of sigmoid colon biopsies for generation of organoids. Additionally, we investigated the capacity of sorted sigmoid-derived stem cells to generate fully differentiated organoids.

**Methods:** Biopsies derived from the transverse and sigmoid colon of healthy people were collected. Intestinal crypts were isolated and cultured in matrigel© and differentiation media. After six days, organoids were harvested, and mRNA were isolated followed by real-time PCR measurement.

**Results:** Firstly, by measuring mRNA expression we observed that overall transverse and sigmoid-derived organoids were similar regarding intestinal cell diversity. Both tissues presented low expression of Goblet cells (*FCGBP*), M cells (*SPIB*), and enteroendocrine cells (*CHGA*), compared to fresh crypts, whereas Tuft & Early enteroendocrine cells (*SOX4*), were highly increased in both transverse and sigmoid-derived organoids compared to their fresh counterpart crypts. Additionally, we did not observe differences in expression of Early enterocyte (*FABP1*), stem cells (*LGR5*), and cell proliferation (*MKI67*) between organoids and fresh crypts. Finally, we were able to generate fully mature organoids derived from single sigmoid-derived stem cells.

**Conclusion:** Sigmoid-derived organoids present similar cell diversity from transverse colon and can be easily collected. The application of sigmoid colon biopsies to generate intestinal organoids will allow for increased patient participation from multiple centres across New Zealand.

## Poster 51:

### Inadequate vitamin C status and association with inflammatory biomarkers in adults with active Crohn's disease.

Dr Catherine Wall<sup>1</sup>, Dr Kirsty MacFarlane<sup>2</sup>, Associate Professor Anitra Carr<sup>3</sup>, Professor Andrew Day<sup>2,4</sup>, Professor Richard Gearry<sup>1,2</sup>

<sup>1</sup>Department of Medicine, University Of Otago Christchurch, Christchurch, New Zealand, <sup>2</sup>Christchurch Hospital, Christchurch, New Zealand, <sup>3</sup>Department of Pathology & Biomedical Science, University of Otago Christchurch, Christchurch, New Zealand, <sup>4</sup>Department of Paediatrics, University of Otago Christchurch, Christchurch, New Zealand

**Introduction:** Vitamin C is an essential water soluble antioxidant vitamin required for tissue repair and immune function. This research aimed to determine serum vitamin C status in subjects with active Crohn's disease, measure urinary vitamin C excretion before and after exclusive enteral nutrition (EEN) and assess associations between C-reactive protein (CRP) and vitamin C.

**Methods:** Stored serum and random urine samples prospectively collected from adults with mild to moderately active Crohn's disease and adult healthy controls (HC) were analysed. Both HC and Crohn's disease groups received EEN with a known vitamin C content for two weeks. Serum and urinary vitamin C were measured using high-performance liquid chromatography with electrochemical detection. Urinary vitamin C was standardised to urinary creatinine. Non-parametric t-tests and correlations were used.

**Results:** Inadequate serum vitamin C (<50µmol/L) was present in 36/38 patients with active Crohn's disease. Seven (18%) patients were vitamin C deficient (<11µmol/L). At baseline, serum vitamin C levels correlated weakly with CRP (-0.30 (95%CI: -0.58 to 0.03, p=0.06). Urinary vitamin C excretion was low in both Crohn's disease and HC at baseline. Two weeks of EEN (vitamin C intake, median 168mg/day (range, 108-252mg/day)) increased urinary vitamin C excretion (Figure 1).

**Conclusions:** Patients with active Crohn's disease had inadequate vitamin C status. EEN increased urinary vitamin C excretion in both Crohn's disease and HC, suggesting low baseline dietary vitamin C intake and potentially enhanced utilisation. Further research with a larger patient cohort would provide a greater understanding of vitamin C metabolism in active Crohn's disease.

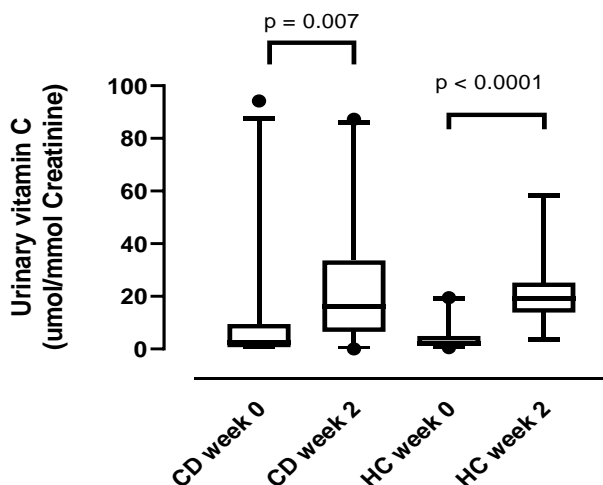


Figure 1. Urinary vitamin C excretion before and after two weeks of exclusive enteral nutrition in subjects with Crohn disease (CD) and healthy controls (HC).

## **Poster 52:**

### **Patients can accurately use an inflammatory bowel disease-specific nutrition self-screening tool (IBD-NST)**

**Dr Catherine Wall<sup>1</sup>**, Dr Akhilesh Swaminathan<sup>1</sup>, Grace Borichevsky<sup>1</sup>, Professor Richard Gearry<sup>1</sup>

<sup>1</sup>*University Of Otago Christchurch, Christchurch, New Zealand*

**Introduction:** Patients with inflammatory bowel disease (IBD) can have hidden nutrition risks that generic malnutrition screening tools may fail to identify. A newly developed IBD-specific nutrition self-screening tool (IBD-NST) aims to detect nutrition risk early and therefore identify patients that would benefit from dietetic input to prevent progression to malnutrition, improving clinical outcomes. This study reports preliminary IBD-NST data of patients attending routine or investigative radiological or endoscopic appointments.

**Methods:** Patients booked for a colonoscopy or magnetic resonance imaging were recruited and prior to the procedure electronically completed a demographic and disease history questionnaire and the IBD-NST. The IBD-NST includes questions on BMI, unintentional weight loss, and a combination of flare of symptoms and nutrition concerns. It scores nutrition risk as low, moderate or high. Patient weight and height estimates were compared with researcher measurements at appointment.

**Results:** IBD-NST was completed by 33 patients, median age 37 years (range 18 to 82 years). Twenty-three (70%) had Crohn's disease, 12 (36%) took a biologic medication and 19 (58%) had investigation for active symptoms. Self-reported metric weight and height was within 2% of measured value in 29/33 (88%) cases. Two patients overestimated their weight by more than 10kg whereas, three patients underestimated their weight by at least 5kg. IBD-NST scored 12 (33%) patients at moderate or high nutrition risk due to: BMI < 20.0kg/m<sup>2</sup> (n=3), weight loss >10% body weight (n=1), flare of symptoms and food and nutrition concerns (n=9). Eleven (58%) patients undergoing investigative procedures were at nutrition risk.

**Conclusions:** Preliminary data shows the majority of IBD patients know their current weight and height and can self-screen for nutrition risk. More than half of patients having an investigative procedure were at nutrition risk suggesting a need for increased patient access to dietetic support.

## **Poster 53:**

### **Peroral Endoscopic Myotomy (POEM) Versus Laparoscopic Heller Myotomy (LHM) for the Treatment of Achalasia – A Tertiary Centre Experience**

Dr Anthony Whitfield<sup>1</sup>, Dr Caroline Di Jiang<sup>1</sup>, Dr Rees Cameron<sup>1</sup>

<sup>1</sup>CCDHB, Wellington, New Zealand

**Introduction and Aim:** Traditionally LHM has been the standard-of-care treatment for achalasia in Wellington Hospital. However since the introduction of POEM in 2017, this has quickly replaced LHM as the preferred treatment option. This retrospective audit aims to define and compare the efficacy and safety of POEM compared to LHM; as well as compare the cost and resource effectiveness of the two procedures.

**Methods:** LHM and POEM procedures performed between 2013 to July 2019 in CCDHB were identified. Data collected included preoperative variables, pre- and post- myotomy Eckhardt Scores; complication rates, operative times, length of hospital stay, and overall costs incurred.

**Results:** 46 procedures were performed during the study period; including 26 POEMs and 19 LHMs. Approximately one third of cases in each group had prior endoscopic or surgical treatment.

The mean pre-myotomy Eckhardt Score were similar; however the POEM cohort had a lower post-myotomy Eckhardt Score with 94% of patients achieving a score of 0 or 1 after 3 month follow up. There were two complications (7.4%) in the POEM group; compared to a 16% post operative complication rate in the LHM group. Furthermore; the POEM group had significantly shorter operative times, reduced length of hospital stay, and were more cost effective.

	Lap Heller Myotomy	Per Oral Endoscopic Myotomy
Mean Pre-procedure Eckardt	6.1	7.85
Mean Post-procedure Eckardt	1.4	0.41
Proportion achieving Eckhardt score of 0 or 1 at follow-up	66.7%	94%
30 day complications	15.8%	7.4%
Mean length of admission (days)	2.4	1.65
Mean theatre time (minutes)	144	48
Mean cost	\$9853	\$5291

**Conclusion:** POEM has emerged as preferred treatment for achalasia in Wellington Hospital based on initial 12 month data. It compares favourably to LHM with excellent short term outcomes, lower complication rates; faster recovery periods and reduced lengths of stay. Furthermore; it is resource efficient with shorter theatre times and considerably more cost effective. We eagerly await long term data for this cohort.

## **Poster 54:**

### **Application of a predictive scoring tool on a cancer cohort and its potential utility in triage**

Stephen Inns, James Irwin, Dr Anthony Whitfield

**Introduction and Aim:** An internally validated prediction tool for colorectal cancer on index colonoscopy in symptomatic patients was developed at Palmerston North hospital and presented at AGW 2018 and NZSG 2018. Using this model a score of 7-10 predicted a 20% risk of bowel cancer at colonoscopy. The aim of the study was apply this scoring tool to a new cohort of patients with cancer to assess its potential impact on triage.

**Methods:** A retrospective review on all colorectal cancers presented in the Hutt Valley DHB colorectal cancer meeting between January 2016 and December 2017 were reviewed. Only those initially referred for anaemia, rectal bleeding, a change in bowel habit, abdominal pain or weight loss were included. Those patients who had a prior colonoscopy, inflammatory bowel disease and or abnormal imaging / known tumour prior to colonoscopy were excluded. Those without insufficient lab data to complete the scoring tool were also excluded. The following data was captured – date of referral for colonoscopy, triage category, time to colonoscopy and indication. The laboratory results attached to the referral and blood results readily available to the triaging clinician in the 1 year prior to referral were also reviewed. The minimum ferritin, minimum mean corpuscular haemoglobin, median white blood cell count and median platelet count was recorded.

**Results:** A total of 124 colorectal cancers were presented through the colorectal cancer MDM. Of those 47 met inclusion criteria. Of those patients 35/47 had a score of 6 or less compared to 12/47 who had a score of 7-10. Of the 12 patients with a score of 7-10, 10 (83%) were triaged as semi urgent. The average wait time for colonoscopy in the patients with a score of 7-10 was 47 days.

For reference the scoring tool applied is shown above (ROCR 0.73, Validation cohort).

**Conclusion:** In conclusion this scoring tool could be a useful adjunct when triaging to reduce time to colonoscopy in patients at high risk of colorectal cancer.

<b>Risk Factor</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
Age	<42	42-57	58-70	≥71
Indication: Bleeding	False	True		
Minimum MCH	>26	≤26		
Minimum Ferritin	≥266	45-265	11-44	≤10
Median WBC	<14.4	≥14.4		
Median Platelets	<220	≥220		

## **Poster 55:**

### **Prevalence and characteristics of post-colonoscopy colorectal cancers in the Bay of Plenty, a 10-year analysis.**

**Dr Adam Willington<sup>1</sup>**, Dr Samuel Cosgrove<sup>1</sup>, Dr Polly Davison<sup>1</sup>, Dr Robert Cunliffe<sup>1</sup>

<sup>1</sup>*Tauranga Hospital, Tauranga, New Zealand*

**Introduction:** Post-colonoscopy colorectal cancers (PCCRC) are malignancies which appear following a colonoscopy in which no cancer is diagnosed. The occurrence of PCCRC is thought to be multifactorial, reflecting both endoscopy quality as well as potential differences in tumour biology between detected colorectal cancers and PCCRC. We sought to identify the prevalence and characteristics of PCCRC in a New Zealand regional centre over a 10-year period.

**Method:** All cases of colorectal cancer (n=1055) in the Bay of Plenty region between 01/02/2009 and 01/02/2019 were cross-referenced with endoscopy coding records to identify patients who had undergone colonoscopy within the preceding 6-60 months in which cancer was not identified. Ethical approval was obtained from the Bay of Plenty Clinical School.

**Results:** 46 patients were identified to have PCCRC, giving a prevalence of 4.4%. The majority of these patients were older (80% aged 65 or over) and female (67%). The mean interval between index colonoscopy and diagnosis of PCCRC was 3.03 years. Most patients (80%) had existent pathology (diverticular disease or colonic polyps) at index colonoscopy and a significant proportion (43%) developed cancer in the same colonic segment. PCCRC were evenly distributed between the left (50%) and right (50%) colon. The majority of patients (63%) had early stage cancer.

**Conclusions:** The prevalence of PCCRC in a New Zealand cohort is consistent with other international reports. Most patients with PCCRC are older, female and have early stage disease. Of interest a high proportion of patients developed cancer within a colonic segment with existent pathology, suggesting either missed lesions or incomplete polyp resection. Awareness of these associations may help identify patients at risk of PCCRC.

## **Poster 56:**

### **The Microbiome in Functional Gastrointestinal Disorders is Characterised by Microbial Networks that Differentially Correlate with Macronutrient Intake**

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**Introduction:** Functional gastrointestinal disorders (FGID) such as Irritable Bowel Syndrome (IBS) feature chronic or recurrent abdominal discomfort, usually with changes in bowel habits. To improve our understanding of links between the microbiome and FGID, and how these links can be manipulated through diet, we undertook shotgun metagenomic sequencing of faecal samples from the COMFORT case-control study.

**Methods:** Faecal samples from 248 individuals were analysed by shotgun sequencing using the Illumina NextSeq platform. Of these, 96 were controls, 56 suffered from constipation (IBS-C or functional constipation) and 64 suffered from diarrhoea (IBS-D or functional diarrhoea). Ethical approval was obtained from the University of Otago Human Ethics Committee (Health) (Reference H16/094). Gene functions and taxonomies were assigned by MEGAN after alignment of sequences against the NCBI nr database using DIAMOND. Twenty-four microbial co-occurrence networks clusters were defined by hierarchical clustering of relative abundances. Macronutrient intakes were calculated from three-day diet diaries.

**Results:** The diarrhoea group were characterised by significantly higher prevalence of cluster 22, which consisted predominately of *Clostridium* spp., compared to control or constipation groups ( $P < 0.001$ ). Those with diarrhoea also featured lower relative abundances of cluster 21, consisting of *Oscillibacter* spp. and the methanogen *Methanobrevibacter* ( $P = 0.044$ ). In contrast, the constipation group was characterised by a higher abundance of cluster 8, which comprised numerous lactic acid bacteria (e.g. *Lactobacillus* and *Bifidobacterium*) and lactic- and acetic acid-using butyrate producers (e.g. *Butyrivibrio*, *Roseburia*, *Eubacterium*, and *Coprococcus* spp.) ( $P = 0.003$ ). Although macronutrient intakes did not differ significantly, macronutrient profiles correlated with different microbial clusters between groups. For example, cluster 8 significantly correlated with total fibre intake in controls ( $P = 0.05$ ), but not in the constipation or diarrhoea groups.

**Conclusions:** Exploring the functional and ecological relationship of the microbiome with dietary information provides a better microbial signature of FGID than considering taxonomic assignments alone.



## **Poster 57:**

### **Biofilm Formation and Survival of Bacteria to Common *Helicobacter pylori* Antibiotics**

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**Background:** Biofilm formation appeared to become another important factor affecting the susceptibility of *Helicobacter pylori*. We analyzed *H. pylori* biofilm formation and investigated the association between the planktonic and biofilm-specific resistance to five commonly used antibiotics and also the role of *H. pylori* plasmid.

**Method:** The survival of bacteria after antibiotic exposure was measured by minimum biofilm eradication concentration (MBEC).

**Results:** The result showed that 93.1% (94/101) of the strains formed a biofilm. Among the biofilm former, low biofilm former (75.5%, 71/94) was predominant compared to the high biofilm former (24.5%, 23/94). It yielded OD595 values from  $0.149 \pm 0.011$  to  $1.732 \pm 0.187$  become positively skewed distribution, and the median (IQR) is 0.329. Planktonic susceptibility between biofilm formation of high, low and negative, there was no significant difference in the MIC50 ( $P > 0.05$ ). No significant relationship was also found between vulnerability and level of biofilm ( $P > 0.05$ ). All strains resistant to multiple drugs produce biofilm formation is low and the lowest average of biofilm formation was also observed in strains resistant to multiple drugs. MBEC results showed a significant positive correlation in clarithromycin ( $r = 0.671$ ,  $P < 0.001$ ), amoxicillin ( $r = 0.430$ ,  $P = 0.05$ ), levofloxacin ( $r = 0.455$ ,  $P = 0.038$ ). A positive trends are also found in the tetracycline ( $r = 0.381$ ,  $P = 0.08$ ), but no significant correlation was found in the metronidazole. Based on the analysis of sequencing entire genomes, plasmids prevalence was 4.0% and all of them showed similarities with pHpO100 plasmid.

**Conclusion:** We revealed the same relative ability of biofilm formation on resistant strains and planktonic-sensitive. Biofilm formation increases the survival of bacteria from antibiotics despite different antibiotics may have different activity against biofilm.

**Keywords:** Antibiotic resistance, biofilm formation, biofilm-specific resistance, plasmid

## **Poster 58:**

### **Deep Neural Network-based Predication for the Risk of Advanced Colorectal Neoplasia**

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**Background/Aim:** No risk prediction algorithm using deep neural network (DNN) was developed to predict the risk of advanced colorectal neoplasia (ACRN). This study aimed to compare DNN models and simple clinical score models for the prediction of ACRN in colorectal cancer screening.

**Method:** Datasets of screening colonoscopy ( $n=121,794$ ) at Kangbuk Samsung Hospital as well as database of screening colonoscopy ( $n=3,738$ ) at Gangdong Kyung Hee University Hospital were used for development of DNN-based model. Two DNN models were developed and compared with two conventional risk prediction models, Asian-Pacific Colorectal Screening (APCS) and Korean Colorectal Screening (KCS) models, to predict ACRN. The area under the receiver operating characteristic curves (AUC) of the models was compared in both internal and external validation datasets.

**Results:** In the internal test set, the AUCs of DNN Model 1 and APCS score were 0.713 and 0.661 ( $P < 0.001$ ), and the AUCs of DNN Model 2 and KCS score were 0.730 and 0.667 ( $P < 0.001$ ), respectively. However, in the external test set, the prediction performances were not significantly different between two DNN models and corresponding APCS and KCS score, respectively (both  $P > 0.1$ ).

**Conclusion:** Simple score models for risk-stratification of ACRN could be as useful as DNN-based models when input variables are limited. However, further studies on this issue may be warranted to predict a risk of ACRN in colorectal cancer screening because DNN-based models are currently being improved.

**Keywords:** Colorectal neoplasia, Deep learning, Deep neural network, Prediction, Screening

## **Poster 59:**

### **Clinical audit of current *Helicobacter pylori* treatment outcomes in Singapore**

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**Introduction:** *H. pylori* eradication reduces the risk of gastric malignancies and peptic ulcer disease. First-line therapies include 14-day PAC [proton pump inhibitors (PPI), amoxicillin, clarithromycin] and PBMT (PPI, bismuth, metronidazole, tetracycline). Second line therapies include 14-day PBMT and PAL (PPI, amoxicillin, levofloxacin). This clinical audit examined current treatment outcomes in Singapore.

**Methods:** Clinical data of *H. pylori*-positive patients who underwent first and second line eradication therapies from 1 January 2017 to 31 December 2018 were reviewed. Treatment success was determined by <sup>13</sup>C urea breath test performed at least 4 weeks after treatment and 2 weeks after PPI cessation.

**Results:** A total of 963 [PAC: 862; PMC (PPI, metronidazole, clarithromycin): 36; PBMT: 18; PBAC (PAC with bismuth): 13; others: 34] and 98 patients (PMBT: 62; PAL: 15; others: 21) received first and second line therapies respectively. Fourteen-day first- and second-line therapies were prescribed in 65.2% and 81.6% respectively. Treatment success rates were PAC (7-day: 76.9%; 10-day: 88.3%; 14-day: 92.0%), PMC (7-day: 0; 10-day: 75.0%; 14-day: 69.8%), PBMT (10-day: 100%; 14-day: 87.5%) and PBAC 14-day 100%. Fourteen-day treatment was superior to 7-day (90.8% vs 71.4%,  $p = 0.028$ ). PAC was superior to PMC ( $p < 0.001$ ) but similar to PBMT ( $p = 0.518$ ) and PBAC ( $p = 0.288$ ) in 14-day therapies. Fourteen-day second line PAL and PBMT had similar efficacy (85.7% vs. 82.7%,  $p = 0.788$ ).

**Conclusion:** First line PAC, PBMT and PBAC for 14 days had similar efficacy. The success rates for second line PBMT and PAL were similar.

## **Poster 60:**

### **Association between *Helicobacter pylori* infection and arterial stiffness: results from a large cross-sectional study**

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**Background:** Chronic systemic inflammation is an important causative factor in the pathogenesis of atherosclerosis. We evaluated the association between chronic *Helicobacter pylori* (*Hp*) infection and arterial stiffness, a predictor of cardiovascular events, in asymptomatic healthy individuals.

**Methods:** Arterial stiffness was evaluated using the cardio-ankle vascular index (CAVI). We included subjects who underwent CAVI and anti-*Hp* IgG antibody evaluations, simultaneously, between March 2013 and July 2017. Demographic characteristics and metabolic and cardiovascular parameters were compared with respect to anti-*Hp* IgG antibody status. Multivariable logistic regression analyses were performed to determine the effect of *Hp*-seropositivity and conventional cardiovascular risk factors on arterial stiffness. The study protocol was approved by the Ethics Committee of our institution and was conducted in accordance with the Declaration of Helsinki.

**Results:** Of 2,251 subjects, 1,326 (58.9%) were included in the *Hp*-seropositive group. Median age ( $P < 0.001$ ) and systolic blood pressure ( $P = 0.027$ ) were significantly higher in the *Hp*-seropositive than in the *Hp*-seronegative group. Levels of LDL-cholesterol were significantly higher in the *Hp*-seropositive than in the *Hp*-seronegative group ( $P = 0.016$ ). Other serum metabolic parameters were not significantly different between the two groups. The median CAVI value and the proportion of subjects with a CAVI  $\geq 8$  were significantly higher in the *Hp*-seropositive than in the *Hp*-seronegative group (both  $P < 0.001$ ). On multivariable logistic regression analyses, *Hp*-seropositivity, age, body mass index, waist circumference, smoking, hypertension, diabetes mellitus, and dyslipidemia were significantly associated with high CAVI values. In the subgroup analysis conducted according to age group, a tendency towards an increased association between *Hp*-seropositivity and CAVI was observed with increasing age, even though the difference did not reach the statistical significance.

**Conclusions:** *Hp*-seropositivity was significantly associated with arterial stiffness. *Hp* infection may contribute to the development of cardiovascular diseases.

**Keywords:** *Helicobacter pylori*; Cardio-ankle vascular index; Vascular stiffness; Cardiovascular diseases

## **Poster 61:**

### **Helicobacter pylori eradication can reverse the methylation-associated regulation of miR-200a/b in gastric carcinogenesis**

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**Background:** Epigenetic change is one of the mechanisms that regulates the expression of microRNAs (miRNAs) and is known to play a role in *Helicobacter pylori*-associated gastric carcinogenesis. We aimed to evaluate the epigenetic changes of *miR-200a/b* in *H. pylori*-associated gastric carcinogenesis and restoration of these findings after eradication.

**Methods:** The levels of expression and methylation of *miR-200a/b* were evaluated in gastric cancer (GC) cell lines and human gastric mucosa of *H. pylori*-negative and -positive controls, and *H. pylori*-positive GC patients. Next, the changes of expression and methylation levels of *miR-200a/b* were compared between *H. pylori*-eradication and *H. pylori*-persistence groups at 6 months. Real-time reverse transcription-polymerase chain reaction was conducted to investigate the miRNA expression levels, and MethyLight was performed to assess methylation levels. The study protocol was approved by the Ethics Committee of our institution and was conducted in accordance with the Declaration of Helsinki.

**Results:** In GC cell lines, the levels of *miR-200a/b* methylation decreased and the levels of expression increased after demethylation. In human gastric mucosa, the *miR-200a/b* methylation levels increased in the order of *H. pylori*-negative control, -positive control, and *H. pylori*-positive GC patients. Conversely, the *miR-200a/b* expression levels decreased in the same order. In the *H. pylori*-persistence group, no significant changes were observed in the methylation and expression levels of *miR-200a/b* after 6 months, whereas the level of methylation decreased and the level of expression of *miR-200a/b* increased significantly 6 months after *H. pylori* eradication.

**Conclusions:** Epigenetic alterations of *miR-200a/b* may be implicated in *H. pylori*-induced gastric carcinogenesis. This field defect for cancerization is suggested to be improved by *H. pylori* eradication.

**Keywords:** *Helicobacter pylori*; MicroRNAs; Methylation; Epigenetic Alteration; Stomach Neoplasm

## **Poster 62:**

### **HCV epidemiology and therapy in Taranaki**

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Chronic Hepatitis C is a significant cause of liver-related morbidity, including hepatocellular carcinoma, cirrhosis, and death.<sup>1</sup> The prevalence of Hepatitis C within New Zealand (NZ) is unknown due to multiple factors including acute hepatitis C infection frequently being asymptomatic, a lack of epidemiological studies, and chronic Hepatitis C infection not being a notifiable disease. Estimates of Hepatitis C prevalence in NZ have been based off Australian data which estimates a prevalence of 1.28%.<sup>1</sup> We have completed an observational study to assess the prevalence and demographics of patients with Hepatitis C infection within Taranaki.

This was a retrospective study encompassing all private and public laboratory data within Taranaki from the previous five years.

A total of 296 people with Hepatitis C were identified out of a population of 120,050 people, giving a prevalence of 0.25%.<sup>2</sup> Of these, 138 had achieved sustained virologic response, 77 were on active treatment, and 81 patients were not on treatment. There was a higher rate of Hepatitis C in Waitara, one of the towns within Taranaki, when compared to New Plymouth (5.46 per 1000 population, compared to 2.65 per 1000 population,  $p < 0.0001$ ). Comparisons between New Plymouth and other towns within Taranaki were not statistically different. There was no difference in the ethnicity make up of the Hepatitis C population compared to the wider Taranaki population.<sup>2</sup> This study showed a much lower prevalence of Hepatitis C within Taranaki than expected. This could be explained if the prevalence in NZ differed significantly from the Australian prevalence. This needs to be fully explored further, with epidemiological studies to ascertain the true NZ prevalence. There is one town in Taranaki which seems to have disproportionately high rates of Hepatitis C, which requires further analysis to determine the contributing factors. This could be used to optimise future screening.

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## **Poster 63:**

### **Variceal bleeding aggravated by portal venous invasion of hepatocellular carcinoma**

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**Introduction:** We hypothesized that portal vein tumor thrombosis (PVTT) of hepatocellular carcinoma (HCC) may increase portal pressure, probably causing esophageal varices (EV) and variceal bleedings (VB). We aimed to explore potential risk factors of EV and VB in order to determine indications for variceal screening and prophylaxis.

**Methods:** This study included 1,709 asymptomatic HCC patients registered in Asan Medical Center, Korea. All patients experienced upper endoscopy within the first month of initial anti-HCC treatment, and had no prior history of VB nor endoscopic prophylaxis. Our registry included 206 HCC-PVTT patients. After a 1:2 individual matching, 161 HCC-PVTTs were matched to 309 HCC patients without PVTT. We examined clinico-endoscopic risk factors of high-risk EVs, defined as large/medium varices or small varices with red-color sign. Cumulative risks of VB were compared between the matched pairs.

**Results:** In a matched-pair analysis, high-risk EVs were more common in the HCC-PVTTs (23.0% vs. 13.3%;  $P < 0.05$ ). VBs were more frequent in the HCC-PVTTs with 1-year rates of 4.5% vs. 0.6%; and 2-year rates of 5.1% vs. 1.4% ( $P < 0.05$ ). Of the entire 206 PVTT patients, 28.2% had high-risk EV. Prolonged INR, lower platelet, and higher degree of Vp were independent risk factors for high-risk EV. A total of 10 VBs occurred during the median follow-up of 13.7 months. Multivariate Cox analysis revealed that presence of high-risk EV, and sorafenib usage were related to VB. Neither high-risk EV nor VB affect overall survival of PVTT patients.

**Conclusions:** Our data indicate that PVTT of HCC may increase the likelihood of developing high-risk EV and VB. Among HCC-PVTTs, at least individuals with significant coagulopathy or main PVTT need endoscopic screening, and endoscopic prevention could be considered in patients with high-risk EV or sorafenib usage.