Gastroenterology and Hepatology From Bed to Bench.

MEETING ABSTRACTS

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A Comparison of Intravenous Methylprednisolone and Hydrocortisone for the Treatment of Acute Severe Colitis

Cameron Schauer[1], Vicki Avery[1], Sam Seleq[2], Paras Garg[3], Michael Wang[4], Michael Chieng[1], Charlotte Rowan[1], Anurag Sekra[3], Mark Lane[2], Russell Walmsley[1]
[1]Waitemata District Health Board, Auckland, New Zealand,[2]Department of Gastroenterology , Auckland City Hospital, Auckland, New Zealand, [3]Department of Gastroenterology, Counties Manukau District Health Board, Auckland, New Zealand, [4]Department of Medicine, The University Of Auckland, Auckland, New Zealand.

Introduction: Despite widespread recommendation and use of intravenous corticosteroids (IVCS) for the treatment of acute severe colitis (ASC), limited evidence exists comparing outcomes of the two most common regimens, intravenous methylprednisolone (IVMP) and intravenous hydrocortisone (IVHC). IVHC has more potent mineralocorticoid effects compared to IVMP and may cause higher rates of hypokalaemia. We aimed to determine differences in the rates of hypokalaemia as well as clinical outcomes including requirement for inpatient rescue therapy and colectomy. **Method:** We conducted a multicentre cohort study of all adult patients admitted with ASC to the three tertiary hospitals in Auckland, New Zealand where the protocol at each institution is either IVMP or IVHC. All patients requiring IVCS between 20 June 2016 and 30 June 2018 were included. The IVCS protocol was then changed at North Shore hospital, where further data was prospectively collected for a further 12 months from 30 January 2019 until 30 December 2019. Ethics approval was gained at each site. **Results:** There were 482 admissions in 359 patients. A total of 156 (32.3%) patients received IVMP and 326 (67.6%) patients received IVHC. IVMP treatment resulted in less hypokalaemia (55% vs 59%, p=0.13, odds ratio [OR]=0.66; 95% confidence interval [CI], 0.41-0.99, p=0.04) and reduced the requirement for intravenous potassium replacement (37% vs 42%, p=0.36; OR=0.63; 95% CI, 0.39-0.97, p=0.03). However, there was a greater requirement for rescue therapy (33% vs 19% respectively, p=0.001; OR=2.19; 95% CI, 1.38-3.48, p=0.001). There was no difference between treatment groups for the median length of admission (5 days, interquartile range, IQR 3-8), median (IQR) duration of intravenous corticosteroid treatment (3 days, IQR 2-5) or colectomy within 30 days of admission (10.0%). **Conclusion:** IVMP causes statistically significantly less hypokalemia than IVHC, although clinically differences are negligible. However, there is significantly more requirement for inpatient rescue biologic or cyclosporin

Kiwifruit enzyme hydrolyses antigenic gluten peptides – a case for positive food synergy

Kamran Rostami[1], Isuri Jayawardena[2], Carlos Montoya[2], Mike Boland[2]
[1]Department Of Gastroenterology, MidCentral DHB, Palmerston North, New Zealand, [2]RIDDET INSTITUTE Massey University, Palmerston North, New Zealand

Introduction: Several cereals contain an important protein group, gluten, which has an unusual amino acid composition (high proline and glutamine content). Proline confers resistance to proteolysis by digestive enzymes, producing indigestible proline-rich peptides that can trigger immunogenic reactions that are responsible for gluten-related health disorders. Gluten-specific enzymes to degrade immunogenic peptides administered as tablets have shown promising results. Most of these are of microbial origin. Identification of natural alternative enzymes is desirable, with fruit-borne enzymes a possible solution. **Methods:** Green kiwifruit (*Actinidia deliciosa*), contain the enzyme actinidin. We tested the effectiveness of this enzyme in digesting gluten, using in vitro GIT digestion and animal preclinical models. We analysed the results using degree of hydrolysis (digestion of whole protein), SDS-PAGE gels (digestion of individual proteins), and reactivity with an ELISA test for gluten epitopes. For the animal study, rats (n=6/treatment: gluten plus actinidin vs gluten alone (i.e. control)) were used. For the in vitro study, three replicates were used per treatment (gluten plus actinidin vs gluten alone). The statistical analysis conducted was a One-way ANOVA. **Results:** In vivo, actinidin enhanced the gastric digestion of gluten 3.2-fold compared to the control. This was reflected in a greater degradation of specific gluten proteins that contain immunogenic peptides (e.g. 1.4-fold greater degradation of ω-gliadin when actinidin was present). The in vitro gastric digestion suggests that after 60 min of digestion actinidin reduced the number of epitopes 2.3-fold. **Conclusion:** These results suggest that the intake of green kiwifruit with a meal could be a possible natural way to manage gluten-related health disorders – an example of positive food synergy. Further preclinical and clinical studies to continue elucidating the effect of actinidin on gluten digestion and immune response are warranted.

Atopy and allergy following paediatric liver, paediatric kidney, and adult liver transplantation

Elizaveta Rakhmanova[1,2], Amin J Roberts[1,2], Alicia Lim[1,2], William Wong[3], Ed Gane[4], Jonathan Bishop[1,2], Helen M Evans[1,2]

[1]Department of Paediatric Gastroenterology, Starship Child Health, Auckland, New Zealand, [2]Department of Paediatrics, University of Auckland, Auckland, New Zealand, [3]Department of Paediatric Nephrology, Starship Child Health, Auckland, New Zealand, [4]New Zealand Liver Transplant Unit, Auckland City Hospital, Auckland, New Zealand

Introduction: There are increasing reports of atopy & allergy following solid organ transplantation in children, especially liver transplantation (LT), with a paucity of data from New Zealand. We aim to describe the prevalence of transplant-acquired atopy & allergy (TAA) in a local cohort of paediatric LT recipients, and to compare this group to paediatric kidney transplant (KT) and adult LT recipients. **Methods:** Atopy & allergy focused questionnaires were mailed to patients/caregivers of patients transplanted between 2003 and 2017 (randomly selected from the NZ transplant registry). Demographic and co-morbidity data were cross-referenced with patients' electronic health records, with additional data obtained via follow-up phone calls as needed. **Results:** 232 patients (62% male) consented to participate (111 adult LT, 82 paediatric LT & 39 paediatric KT recipients). Tacrolimus was the primary immunosuppressive agent for all LT patients; combination of tacrolimus, mycophenolate & corticosteroids was common in KT recipients. Significantly more ($p < 0.001$) paediatric LT recipients (44%) developed TAA compared to the adult LT (11%) and paediatric KT (10%) groups. Eczema was the most common (73%), followed by IgE-mediated food allergy (33%), allergic rhinitis (19%) and asthma (17%). 6 paediatric LT recipients developed eosinophilic oesophagitis. TAAs were severe enough to warrant a switch from tacrolimus to another agent in 7 paediatric LT patients. Among paediatric LT recipients, female gender and younger age at transplant were associated with TAA development. **Conclusions:** TAA are more common in paediatric LT recipients compared to paediatric KT and adult LT recipients. While the mechanisms underlying this phenomenon are still uncertain, our study identified some potential demographic risk factors. Our research highlights the need for incorporation of detailed atopy & allergy history in all pre-transplant assessments, especially given NZ's high rates of atopic disease. Further prospective studies are underway, with a particular focus on the atopy/allergy status of donors.

A case series on the management of refractory benign oesophageal strictures; A novel endoscopic stricturoplasty approach

Vicki McGarrigle, Rees Cameron

CCDHB, Wellington, New Zealand

Introduction: Oesophageal strictures are luminal narrowings which cause dysphagia. Current standard treatment is long term proton pump inhibitor with repeated oesophageal balloon dilatation (OBD) or bougie dilatation until symptom relief. A recent long term follow up study on the use of OBD showed only 60% are recurrence-free 1 year following first dilatation[1.] There is a lack of good quality evidence for the best treatment approach for strictures refractory to dilatation.

Methods: This case series describes results of a novel method of endoscopic (Hook Knife) stricturoplasty in a tertiary

Table 1. A case series on the management of refractory benign oesophageal strictures

Case	Cause	Treatments prior to stricturoplasty	Duration of treatment pre-stricturoplasty	Number of stricturoplasties	Duration of treatment with stricutroplasties (days)	Time since last treatment (days)	Other treatments following stricturoplasty
1	Peptic	3xOBD 2xIntralesional steroids	40days	4 PRN	91	460	Nil
2	Anastomotic	3xOBD	28days	7 -4 planned -3 PRN)	434	852	Nil
3	Peptic	4xOBD	63days	2 (planned)	28	544	1x OBD
4	Peptic	43xOBD 15x stents 3x intralesional steroid Misoprostol Azathioprine PEG	>9years	2 PRN	230	313	Nil
5	Radiation	44x Oesopheageal dilatation 3x stents 3x intralesional steroids	2years, 7months	7 -4 planned -3 PRN	259	7	3 x Bougie dilatations
6	Post ESD	2xOBD	42days	1	1	460	Nil
7	Post ESD	Nil		6	245	7	Nil
8	Peptic	2xOBD	84days	2 -1 planned -1 PRN	147	54	Nil

centre, NZ. As compared to published techniques, this method involves two deep incisions to muscularis propria at opposite sides of the stricture to minimise reactive fibrosis.
Results: table 1. Conclusion: This case series provides information on how endoscopic stricturoplasty may be a definitive treatment option for patients with complex benign oesophageal strictures. Albeit small patient numbers this novel treatment has been curative in some patients who have had unsuccessful treatment for many years. Further research with randomised control trials are required in this areaand much reliable results to generalize in this regard.

Audit on EMR polypectomy technique and adherence to guidelines at Hutt Valley DHB

Vicki McGarrigle[1,2], Stephen Inns[2]
[1]CCDHB, Wellington, New Zealand, [2]HVDHB, Hutt valley, Wellington, New Zealand

Introduction: Colorectal Cancer (CRC) has the 2nd highest mortality in NZ. Polypectomy reduces the incidence and mortality from CRC. Endoscopic mucosal resection (EMR) is standard of care for all large non-pedunculated colorectal polyps. This audit looks at adherence to ESGE guidelines of EMR polypectomy technique and recommendations. **Method:** Retrospective study using provation database identifying large colorectal polyps from Aug 2016- March 2019. Inclusion criteria: Non- pedunculated colorectal polyps, > 30mm, underwent treatment. **Results:** 45 polyps in 42 patients. 7 (17%) were partially retrieved, 4 proceeded to surgery, 3 site checks, 2/3 occurred, both had residual disease. 10/45 (22%) polyps were thought to be incompletely resected. 6 referred to surgery, 4 followed up by 6 months (3 complete, 1 had residual disease) - (BCSP), 8/42 (19%) of the EMR's occurred as part of BCSP, 4/8 (50%) of these recurred at follow up (table 1,2). **Conclusion:** It is evident there is room for improvement in recommended EMR technique of large non-pedunculated polyps. Post-piecemeal site checks are not carried out in accordance with guidelines. Recurrence rates of 33% at first follow up are higher than the expected 15-30%. A high number of recurrences are EMR's carried out during BCSP and recurrence rate varies according to endoscopist. Post-polypectomy surveillance is being adhered to in accordance with ESGE guidelines.

Management of soft food bolus obstruction at Southern District Health Board

Anthony Brownson
Southern Dhb, Auckland, New Zealand

Introduction: Delays in definitive management of soft food bolus obstruction can lead to serious harm including oesophageal perforation. We aim to examine factors contributing to delays and compare our practice to the 2016 European Society of Gastrointestinal Endoscopy guidelines. **Methods:** We conducted a retrospective analysis of patients who presented within Southern District Health Board (SDHB) with soft food bolus obstruction between 1st January 2016 and 31st December 2019. Patients were identified by conducting a database search of endoscopy procedural code (3047800), and International Classification of Disease code (T18.1) for foreign body in oesophagus. Outcomes of interest were timing, imaging and medical treatments. **Results:** There were 78 cases identified. The median age was 60 years and 61.5% were male. High grade obstruction was seen in 42 cases, including 10 cases with signs of oesophageal perforation. The median time to presentation was 4.5 hours (range 0.5 - 73.5hours). Endoscopy was performed in 89.7% of cases and the median inpatient wait was 6 hours. Three-quarters of cases received endoscopy within 24 hours of symptom onset, and of cases requiring inter-hospital transfer; 70% did. Of those with high-grade obstruction, 19.4% received endoscopy within 6 hours. There were 10 cases of delayed referral. There were no perforations or deaths. Plain film radiographs were performed in 48.7% of cases. Medical therapy was trialled in 76.9% of patients, contrary to guidelines. Delays to endoscopy were similar across all areas of SDHB catchment. **Conclusions:** This study highlights the complexity of factors affecting time to endoscopy within a geographically spread DHB. While we have not seen major differences in outcomes between locations, and no major adverse events relating to delays, we have shown that medical treatments and plain radiographs are being used commonly without indication.

Table 1. Audit on EMR polypectomy technique

	EMR Technique							
	Injectate	Documentation of completion	Specimen retrieval	Tattoo	Site check	Surveillance	Recurrence	Complication
In keeping with ESGE guidelines	69%	100%	83%	71%	76%	100%	33%	12%

Table 2. Audit on EMR polypectomy technique

Endoscopist	A	B	C	D	E
Injection Lift	22/24 (92%)	7/13 (54%)	3/3 (100%)	1/1(100%)	1/1 (100%)
Tattoo	20/24 (83%)	10/13 (77%)	2/3 (67%)	1/1 (100%)	1/1 (100%)
Recurrence	1/24 (4%)	3/13 (23%)	3/3 (100%)	1/1 (100%)	0 (0%)
Complication rate	3/24 (12.5%)	1/13 (8%)	1/3(33%)	1/1 (100%)	1/1 (100%)

Diagnostic utility of gastrointestinal endoscopy for the diagnosis of acute graft-versus-host-disease in children following stem cell transplantation: a 12-year experience

Phoebe Koh[1], Amin Roberts[1], Helen M Evans[1], Nyree Cole[2], Jeannette McFarlane[3]
[1]*Department of Gastroenterology, Starship Child Health, Auckland, New Zealand,*[2]*Stem Cell Transplant Unit, Starship Child Health, Auckland, New Zealand,* [3]*Department of Anatomical Pathology, Auckland City Hospital, Auckland, New Zealand.*

Introduction: Endoscopically obtained mucosal biopsies are the gold standard for diagnosing acute graft versus host disease of the gastrointestinal tract (GI-GVHD). There is no consensus on the ideal endoscopic approach in children. We aimed to ascertain which gastrointestinal sites and endoscopic approaches were most helpful for diagnosing acute GI-GVHD, and whether clinical symptoms can guide the endoscopic approach. **Methods:** A single centre retrospective review of all paediatric stem cell transplants (SCT) between 1st Jan 2007 and 31st Dec 2018. Clinical symptoms were noted. Of those with histologically-diagnosed GI GVHD, sensitivities of individual GI sites for making the diagnosis, were calculated. **Results:** 216 allogeneic SCTs were performed in 199 patients. 37 of 52 suspected GI-GHVD cases underwent endoscopy. Most patients (82%) presented with lower gastrointestinal symptoms. There was marked variability in the endoscopic approaches chosen. 21 patients (57%) had biopsy-proven GI-GVHD. 19 of these (90%) had GVHD of non-gastrointestinal sites; 10 (48%) had concurrent infections. The most sensitive GI sites were the rectosigmoid and duodenum (86% and 76% respectively). Overall sensitivity of Upper GI endoscopy (UGIE) and Lower GI endoscopy (LGIE) was 86% and 90% respectively. There was no statistically significant association between clinical symptoms and site at which histological diagnosis was obtained. **Conclusion:** We observed variability in the endoscopic approaches used by clinicians during the study period. UGIE and sigmoidoscopy had high sensitivities for diagnosing GVHD, regardless of symptoms. LGIE had minimal additional diagnostic value. This would support a standardised approach with UGIE and sigmoidoscopy for all children with suspected GI GVHD.

Is MRCP always a prerequisite for ERCP for management of gallstone disease?

Smriti Karki, Michel Alhilani, Sophie Woodhead, Amy Merchant, Prina Kakkad, Leanne Barnes, Qamar Iqbal, Sreelakshmi Mallappa
The Hillingdon Hospital Trust, London, United Kingdom.

Introduction: Magnetic Resonance Cholangio-pancreatography (MRCP) is recommended if abdominal ultrasound scan (USS) does not detect choledocholithiasis but the bile duct is dilated and/or liver function test (LFT) results are abnormal and Endoscopic Retrograde Cholangio-pancreatography (ERCP) is recommended in diagnosed choledocholithiasis. However, there is currently no consensus on the best modality of investigating Common bile duct stones. To evaluate the relevance of MRCP in patients presenting with gallstone disease. **Method:** A retrospective analysis of a prospectively maintained database of patients who underwent cholecystectomy between May 2018 and November 2019 was undertaken. A detailed review of patient case notes, radiological and endoscopic interventions was undertaken. **Results:** In a total of 96 patients (male: female; 19:77), 94 patients had an abdominal USS and two had had computed tomography (CT) scan as their initial investigation. 40 patients underwent MRCP, the indications of which were worsening LFTs (57.5%) and/or USS/CT findings of abnormally dilated ducts or inconclusive scans (42.5%). 19 patients in in our study cohort had proceeded to have ERCP. The USS of eight of those had already demonstrated abnormal ducts on USS but still went onto have MRCP before ERCP. 11 MRCPs out of 40 demonstrated abnormal ducts and 29 were normal. Out of the 29, 4 still went onto have ERCP. The median waiting time for MRCP was 6 days (0-28 days). **Conclusion:** With a waiting time of almost a week, the question arises whether the patients need MRCP before an ERCP if USS were to demonstrate abnormal duct dilatation. A significant number (14%) of patients who had a normal MRCP went onto have ERCP which questions the appropriateness and cost-effectiveness of performing both in patients presenting with obstructive jaundice as ERCP has both diagnostic as well as therapeutic benefits.

A review of the outcome of per-oral endoscopic Myotomy (POEM) in Waikato Hospital

Stephanie Yung, Junaid Beig, Jim Brooker, Frank Weilert
Waikato District Health Board, Hamilton, New Zealand

Introduction: Achalasia is traditionally treated by Heller myotomy (HM), pneumatic dilation (PD) or botulinum toxin injection (BTX). In recent years, per-oral endoscopic myotomy (POEM) has become the main mode of treatment. The aim of our study was to assess safety and efficacy of POEM that were performed in Waikato Hospital by measuring long-term symptom remission and procedure related risks. **Methods:** Retrospective study was carried out for patients with achalasia who received POEM between November 2015 and February 2020. The clinical response was measured at a minimum of 1 month follow up. The Kaplan-Meier survival curve was used to measure the procedure success rate. **Results:** Seventeen patients underwent POEM with a mean follow up of 32 months (ranged from 2-52 months). The median age was 53-year-old (ranges from 10-79 years-old); predominantly males (76%) with a median diagnosis of achalasia of five years. Type II (47%) achalasia was the most common subtype underwent the POEM procedure. Of patients who received previous treatment 8%, 67% and 25% received HM, PD and BTX respectively. At the final follow up, the median Eckardt score reduced from 7 pre-POEM to 3 ($p<0.001$). 94% of the patients were in remission (Eckardt score <3) at one-month post POEM. The estimated clinical success rates at 1 and 2 years were 92% and beyond that plateaued at 80%. The median length of hospital stay was 2 days (IQR 1.5-4 days) without long term significant complications. **Conclusion:**

POEM is a safe and effective treatment option with low rates of adverse outcome.

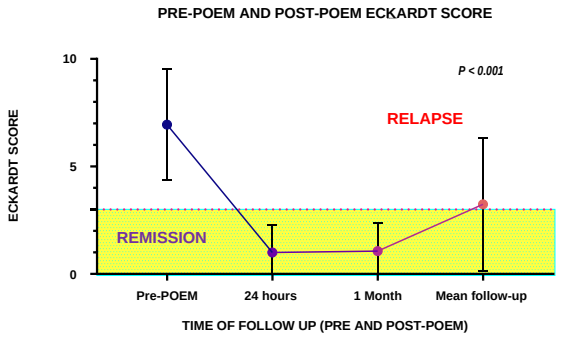


Figure 1 The pre-POEM and Post POEM Eckardt score at time of follow up

The management of antiplatelet and anticoagulation in patients who underwent endoscopic procedure in Waikato Hospital

Stephanie Yung, Katrina Twydle, Frank Weilert
Waikato District Health Board, Hamilton, New Zealand

Introduction: Balancing the risk of thromboembolism and procedural haemorrhage from interruption of anticoagulation can be challenging. Previously, the decisions on anticoagulation management before endoscopic procedure were made by the referrers based on clinical experience. The new published British Society of Gastroenterology and European Society of Gastrointestinal Endoscopy guideline allows clinical nurse specialist (CNS) to be involved in risk assessment. The aim of our study was to assess the efficacy and safety of CNS led anticoagulation management prior to endoscopy by implementing the anticoagulation guideline in Waikato Hospital. **Methods:** Retrospective study was carried out for patients who were on anticoagulant and underwent elective endoscopies between January 2019 and April 2020. Primary outcome was whether the anticoagulant management was done appropriately based on current guideline. Secondary outcomes included reasons for errors and adverse events. **Results:** One hundred and eighty patients who underwent two hundred and seventy-nine elective endoscopic procedures had a mean age of 74-year-old (ranges from 30-93 years-old). Atrial fibrillation (47%) was the most common indication for anticoagulation and Dabigatran (37%) was the most used anticoagulant, followed by Warfarin (27%). 82% (228/279) of the anticoagulation management were correctly given. In 51 procedures in which guideline was not adhered to, absence of anticoagulation instruction from the referrers, patients' non-adherence and inaccurate referrers' instructions were 55%, 29% and 16% respectively. As a result, 2 patients experienced complication with intraoperatively bleed and additional 32 (63%) endoscopies were required as anticoagulation did not allow definite therapy. 37% did not require a second procedure despite remained on anticoagulation. **Conclusion:** Endoscopy can be done safely while on anticoagulation with low complication rate. High burden of repeat procedures resulted from non-adherence to current guideline. Therefore, guideline with clear risk assessment pathway is now available for CNS to override incorrect decision from referrers to ensure accurate advice given.

Tamoxifen Therapy For Recurrent Mucosal Bleeding In Hereditary Haemorrhagic Telangiectasia

Jim Brooker, **Stephanie Yung**

A 60-year-old Caucasian male had a 55-year history of recurrent severe epistaxis and later presented with multiple gastrointestinal (GI) bleeds from hereditary haemorrhagic telangiectasia (HHT). Bleeding was exacerbated due to coexistent mild Haemophilia A. Despite repeated conventional surgical interventions, tranexamic acid and recombinant Factor VIII (FVIII) prophylaxis, bleeding episodes worsened in frequency and severity, resulting in the patient becoming transfusion dependent. The introduction of Tamoxifen therapy resulted in reduced transfusion requirement.

Inflammatory bowel disease (IBD) audit: acute admissions to a New Zealand hospital over six months

Cameron Kendall, Heidi Su, John Llewelyn, Richard Gearry
[1]*Canterbury District Health Board, Christchurch, New Zealand,* [2]*Univeristy of Otago, Christchurch, New Zealand*

Introduction: High standards of inpatient care are associated with improved clinical outcomes for IBD patients. IBD standards have been recommended internationally (e.g UK, Australia). We aimed to assess the current care of IBD inpatients, and compare to a previous audit in 2013.

Methods: We identified all patients admitted to Christchurch hospital over a 6-month period from March to August 2019 with an IBD flare using hospital discharge codes. Data were extracted from clinical records and analysed descriptively. **Results:** Seventy-two IBD flares (32 male and 40 female; median age 44 [17-81] years) were identified, including 58 with Crohn's Disease (CD) and 14 with Ulcerative Colitis (UC). Forty-one (57%) were managed under Gastroenterology, thirty-one (43%) under General Surgery. Contact with the IBD helpline resulted in three admissions (4%). Seventy-one (99%) had smoking status documented, and ten (14%) were current smokers. Compared to the 2013 audit, significantly more patients with luminal symptoms had abdominal imaging (89% vs 45%; p<.01). More patients received venous thromboembolism (VTE) prophylaxis (65% vs 48%; p=0.052). Stool cultures and *Clostridium difficile* toxin were analysed in 48% compared to 39%, p=.38. Of the forty-two (58%) discharged on oral prednisone, thirty-nine (93%) had a taper plan. No patients received bone protection. There were 43 complications in the following six-months among CD patients, and seven among UC patients. On average, time to clinic was 6.3 weeks following discharge. There were five UC and forty-one CD readmissions in the following 11 months. **Conclusions:** Some IBD standards are

being met or have improved, such as smoking status, abdominal imaging, follow up and VTE prophylaxis. Other standards could be improved; such as stool sampling and bone protection. These results will be used to drive improvements to patient care, through presentation at departmental meetings and formation of clinical protocols. Standards will be re-audited in the future.

Identification and management of iron deficiency in people with inflammatory bowel disease: a clinical audit

Catherine Wall[1], Hannah Hughes[2], Richard Gearry[3]
[1]*University Of Otago Christchurch, Christchurch, New Zealand,*[2]*Canterbury District Health Board, Christchurch, New Zealand,* [3]*University Of Otago Christchurch and Canterbury District Health Board, Christchurch, New Zealand*

Introduction: Iron deficiency and iron deficiency anaemia are common in patients with inflammatory bowel disease (IBD). Regular monitoring, and effective treatment, of iron deficiency is associated with improved quality of life. We assessed whether a cohort of patients with IBD were annually screened for iron deficiency, offered recommended treatments and whether blood iron stores were monitored after iron treatment. **Methods:** In December 2019/January 2020 medical record data (blood test results and public gastroenterology outpatient letters) of patients who recently had a surveillance or investigative colonoscopy were retrospectively audited over a 12 month period. Data was collected and compared to seven screening, diagnosis, management and monitoring anaemia statements from the European Crohn's and Colitis Organisation 2015 European Consensus on the Diagnosis and Management of Iron Deficiency and Anaemia in IBD. Ethical approval was granted by University of Otago (ref. HD19/070). **Results:** Data of 254 adults with IBD (mean age 48.2 years, 53% female, 55% Crohn's disease) was audited. A complete blood count, serum ferritin and c-reactive protein was measured at least once in 59% of patients. A complete blood count, c-reactive protein but no serum ferritin was measured in 26% of patients. A low serum ferritin was present in 58 patients (21%). In patients with a low haemoglobin, a workup was completed in 20/29 patients. Iron deficiency or anaemia was diagnosed in 17 (6.7%) patients, 10 had documented intravenous iron treatment and 10 had blood iron stores monitored within three months. **Conclusions:** Annual screening for iron deficiency occurred in less than two thirds of patients. Iron deficiency or iron deficiency anaemia was either under-diagnosed or incompletely documented in outpatient letters. The monitoring of blood iron stores post-treatment of iron deficiency or anaemia was substandard. A limitation of the audit was the inaccessibility of patient medication prescription data.

Clinical characteristics of New Zealand children with Alagille Syndrome over three decades

Amin Roberts[1,2], **Kimberley Chin-Goh**[1], **Joyce Leung**[1], Helen Evans[1,2]
[1]*Department Of Paediatric Gastroenterology, Starship Child Health, Auckland, New Zealand,* [2]*Department of Paediatrics, University of Auckland, Auckland, New Zealand*

Introduction: Alagille syndrome (ALGS) is a rare, autosomal dominant, multisystem disorder usually diagnosed in early childhood, with some children requiring liver transplantation (LT) for end stage liver disease (ESLD). There is a paucity of NZ data. This is the first study to describe the clinical spectrum of ALGS in NZ children, with regard to hepatic and extra-hepatic manifestations. **Methods:** Retrospective review of all children with a clinical diagnosis of ALGS at Starship Hospital from January 1997 to the present day. **Results:** 26 children (11 male) were diagnosed with ALGS over 33 years. 16/26 (62%) were European, 5/26 (8%) Māori, 3/26 (12%) Pasifika, 2/26 (8%) Asian (both Indian). Genetic testing was undertaken in 16 (62%) of which 14 (88%) and 0 were JAG1 and NOTCH2 mutation positive respectively. 17/20 children who developed neonatal cholestasis underwent liver biopsy. Findings included bile duct paucity (15/17, 88%), fibrosis (9/17, 53%) and giant cell hepatitis (6/17, 35%). 7/26 (27%) underwent LT for ESLD; 1 died post LT. 16 patients (62%) are still alive with their native livers. 3 children died as a result of congenital heart disease (CHD). Extrahepatic manifestations included CHD (25/26, 96%), characteristic facies (22/26, 85%), skeletal anomalies (14/26, 54%), ocular findings (12/26, 46%), renal anomalies (11/26, 42%), and vascular anomalies (both cerebral and systemic; 4/26, 15%). Peripheral pulmonary stenosis was the commonest CHD (18/26, 72%). **Conclusion:** The clinical spectrum of ALGS in NZ children is similar to the reported international literature despite our unique ethnic make-up, although a higher rate of CHD was observed. Detection of a genetic mutation was common in those who underwent testing which has implications for family screening, especially for asymptomatic parents who may be at risk of intracranial vascular anomalies. Future multicentre cohort studies, with contemporary genetic analysis (particularly that of NOTCH2 mutations) are warranted.

Transhepatic superior mesenteric vein stent placement

Qi Hao Ong[1], **Eric Zheng**[1], Apoua Muliaga[2], Xavier Kos[1]

[1]*Waikato District Health Board, Hamilton, New Zealand,* [2]*University of Auckland*

Introduction: Symptomatic superior mesenteric vein (SMV) occlusion/stenosis is uncommon. Known causes include pancreatitis, post-surgery, and malignancies such as pancreatic cancer and carcinoid mid-gut tumours. Open surgery is often challenging or impossible to perform due to tumour encasement and patient co-morbidities. The current literature regarding cases of interventional treatment of isolated SMV occlusion is limited. **Case Presentation:** A 79-year-old female with a background of small bowel neuroendocrine tumour presented with anaemia and large volume rectal bleeding. CT imaging performed on admission demonstrated a stable neuroendocrine mass completely surrounding the superior mesenteric artery with obliteration

of the SMV. The middle colic vein branches were engorged with active bleeding. Urgent embolization was performed. However, there were multiple episodes of persistent bleeding. SMV stenting was performed under general anaesthesia. Using ultrasound guidance, a 6 French sheath was inserted into segment VI branch of the portal vein. Selective catheterization of the main portal vein was performed. Venography confirmed that there was complete occlusion of the SMV. A wire was inserted into the SMV up to the middle colic vein branches and passed the region of stenosis. Angiography confirmed venous congestion and dilated veins. Pre-angioplasty of the SMV was completed with a 4x100 balloon. A 10 x 100 stent was then deployed and post-dilated using an 8x60 balloon. Final venogram showed complete recanalization of the SMV with no evidence of distal venous congestion. The transhepatic tract was embolised with one 3-2 embolisation coil and gel-foam plugs. There were no further bleeding episodes. Data were collected following ethics requirements. **Conclusions:** SMV stenting was successful in relieving haemorrhage from engorged vessels formed by venous congestion. Our experience adds to the limited evidence that SMV stenting can be a viable and an effective intervention in the management of symptomatic SMV occlusion.

Zenker's diverticulum flexible endoscopic repair results by Gastroenterology – A Single tertiary hospital experience

Eric Zheng, Frank Weilert
Waikato District Health Board, Hamilton, New Zealand

Introduction: Endoscopic repair of Zenker's diverticulum are increasingly favoured due to it being minimally invasive compared to open surgery. This audit will analyse the effectiveness of this intervention by Gastroenterology in Waikato Hospital. **Methods:** Patients with terms for both "Zenker's diverticulum" and "General anaesthesia" were identified on endoscopy database Provation®. Cases from January 2015 to April 2020 were obtained. Patients who had endoscopic Zenker's diverticulum repair had baseline demographics, co-morbidities, complications, and length of hospitalisation recorded complying with ethics requirements. Eckardt score was calculated pre- and post-intervention. This score is characterised by 4 variables comprising weight loss, dysphagia, retrosternal discomfort, and regurgitation. Each variable is ranked from 0-3 in terms of increasing severity. A total score of <3 signifies the condition has been cured. **Results:** 13 patients were identified. 2 of the patients required repeat interventions due to symptom recurrence for which 1 had a further intervention and the other had 2. In total,16 repairs were performed in Waikato Hospital with no mortalities. There were 2 complications (12.5%), both were oesophageal perforations and both were managed conservatively with antibiotics and repeat visualisation by gastroscopy. Length of hospitalisation was 19 and 20 days for these two cases. Remaining repairs were discharged on day 0 or day 1 post-intervention (87.5%). All cases had improved Eckardt scores on follow up. Mean pre-procedure and post-procedure scores were 6 and 1 respectively. 12 patients had a curative score (<3), the 13th patient scored 3. Cases with repeat interventions continued to have improved Eckardt scores on follow up. **Conclusions:** This audit suggests endoscopic repair of Zenker's diverticulum performed at Waikato Hospital provided all patients with improved symptoms post-intervention with generally minimal hospitalisation. Post-procedure complication rates were favourable (12.5% vs 47% internationally).

Physical Examination in the Gastroenterology Clinic Pre-COVID-19: How Often? How Useful?

Marija Zutic, Callum Hilton, Jim Brooker
Waikato DHB, Hamilton, New Zealand

Introduction: Traditionally, physical examination has been considered an integral part of patient assessment in the Gastroenterology Outpatient Clinic (GOPC). Conventional practice has been challenged during the COVID-19 pandemic with telemedicine playing an increasing role to help maintain physical distancing. It is important to understand the impact that restricted evaluation has during COVID-19. The aim of this study was to retrospectively measure the frequency and thoroughness of physical examination being performed in the GOPC pre-COVID-19, and quantify the incidence of significant physical findings. **Methods:** This study included all new outpatients reviewed in GOPC at Waikato Hospital from September 1st to November 30th 2019. 191 patients were identified. 14 were excluded (inadequate documentation, failure to attend, previously known to service). Clinic notes were retrospectively reviewed for 177 patients to determine the extent of examination performed. A consensus agreement was reached amongst the study team as to whether positive examination findings were deemed clinically significant. **Results:** 96/177 (54.2%) participants had a physical examination performed by their clinician. 48/96 (50%) were noted to have abnormal examination findings; however, these findings were thought significant in only 18/48 cases (37.5%). The proportion of examination documented by system was: height 71/177 (40.1%); weight 85/177 (48%); blood pressure 36/177 (20.3%); appearance 79/177 (44.6%); pulse 17/177 (9.6%); cardiac 10/177 (5.7%); respiratory 5/177 (2.8%); abdominal 87/177 (49.2%); digital rectal examination 12/177 (6.8%). **Conclusion:** This study demonstrates that approximately half of patients within the study cohort had no documented examination by their clinician prior to COVID-19. Whilst this is somewhat reassuring for COVID-19 practice, clinically significant positive findings were present in 18.75% of examined patients. This illustrates that telemedicine presents potential risks within a small subset of patients for whom examination may impact on diagnosis and management.

Video Capsule Endoscopy: Are we reporting correctly?

Sam Seleq, Graeme Dickson, Jim Brooker
Waikato District Health Board, New Zealand

Introduction: Capsule endoscopy (CE) can detect significant previously undetected pathology or help to reassure clinicians

in ruling out pathology. Therefore systematic, standardised reporting and documentation is important. Formal accreditation for CE training is being developed in New Zealand. The Australian Conjoint Committee for Recognition of Training in Gastrointestinal Endoscopy (CCRTGE) has guidelines for documentation of CE findings which can assist trainees. We audited our single centre CE reports against the suggested guidelines. **Method:** CE reports generated between January 2015 and May 2020 were reviewed against the CCRTGE 'Guidelines for the Content of Capsule Endoscopy Reports'. The five key domains were: Procedural Data, Findings, If Normal, If Abnormal and Summary and Recommendations. The categories were either essential or non-essential. **Results:**187 CE patients between January 2015 and May 2020. 180 had reports available for review via Clinical Work Station (CWS). All CEs were reported by experienced gastroenterologists. >90% compliance was reported in 19/24 categories. The audit findings are represented in Graph One. **Conclusion:** Documentation in the majority of essential categories approaches 100%. Reporting aspects that can be improved include specific documentation of small bowel view quality, transit time and the appropriateness of transit time. New Zealand trainees and training committees will need to familiarize themselves with guidelines to ensure ongoing accurate reporting and documentation.

Knowledge and Attitudes in Inflammatory Bowel Disease (IBD) in Primary Care

Sam Seleq, Russell Walmsley
Waitemata District Health Board, , New Zealand

Introduction: As a chronic disease, IBD patients receive much of their health care in primary care. An Australian survey found 37% of General Practitioners (GPs) were 'uncomfortable' with managing IBD. We assessed the knowledge and attitudes of GPs caring for IBD patients in New Zealand. **Methods:** An online survey was developed covering GP *attitudes* to care (5-point Likert scale or didactic response format), and *knowledge* (multiple choice questions about disease, investigations and treatment). The questionnaire was circulated via 2 PHOs (Procare and Comprehensive Care) and the Royal College of GP newsletter. GPs returning the questionnaire received feedback with referenced answers to the questions. All responses were anonymized. **Results:** 43 responses. 37 practices <35,000. Median 50 patients per practice. Mean 2 consultations/month. *Knowledge;* Disease: 4 questions were scored correctly by <66% of GPs; extraintestinal organ involvement 63%, constituents of disease activity indices 19% & 14%, causes of death 5%. Investigations & Treatment: 9/15 scored correctly by <66%; stool culture during flare 51%, commencement or continuation of 5-ASA therapy 7%, 58% & 51%, steroid effectiveness & treatment duration during acute flares 58% & 28%, immunomodulator examples and side-effects 23% & 51%, immunosuppressive risk with biological vs steroids 12%.

Attitudes;

Question		Response
Referring patients with flare		42% always/most of the time
Specialist referral		7% surgery;93% gastroenterology
% happy or very happy with:	Rx 5-ASA	70%
	Rx during acute flare	35%
	Rx immunomodulator	58%
	Maintaining biologic therapy	40%
	Managing pregnant IBD patients	2%
	Prescribing vaccines	81%
Increase education		95%

Conclusion: GPs are generally comfortable with caring for IBD patients. Increased access to speciality care, assistance with pregnant patients and tailored education targeting treatment can help to bridge knowledge gaps and ensure IBD patients and GPs are well supported in primary care.

Video Capsule Endoscopy: five-year single centre retrospective review

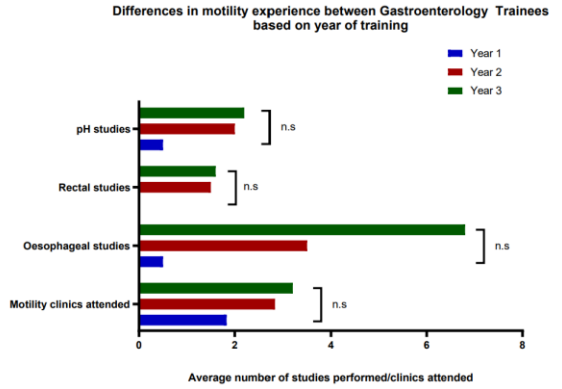
Sam Seleq, Jim Brooker, Graeme Dickson
[1]*Waikato District Health Board, , New Zealand*

Introduction: Capsule endoscopy (CE) is an important tool in patients with suspected small bowel pathology. Used appropriately, it can reveal undiagnosed significant pathology and guide subsequent treatment or reassuringly rule out pathology. We retrospectively reviewed CEs performed at Waikato District Health Board between January 2015 and May 2020. **Method:** All CE patients were identified via PillCam Reader Software ™. Clinical Work Station was used to collect reports and associated clinical data. Collected data included baseline demographics, referral details, examination findings and complications, and subsequent enteroscopy. **Results:**187 patients. 95 (50.8%) female. Median age 63 years. 124 (66%) NZ European patients, 36 (19%) Maori. 106 (57%) patients referred by Gastroenterologists, 31% by internal medicine and subspecialties, and 11% by surgical services. 58% were outpatient procedures. Most common indications were overt bleeding (42%), anaemia (37%) and IBD (16%). 80 patients required blood transfusions, average 3.7units per patient. Complete enteroscopy was achieved in 91% of procedures. The average small bowel transit time was 232 minutes. 88 (47%) patients had a positive study with relevant small bowel findings (42% for anaemia, 51% for overt bleeding, 55% for IBD). There was no statistically significant difference between transit times in positive or negative studies ($p = 0.15$). The most common findings were vascular (65%), ulceration (15%), inflammation (8%) and mass (8%). Four patients (2%) had retained capsules, two required surgical removal. 20 patients had subsequent antegrade or retrograde double-balloon enteroscopy with 17 (85%) confirming VCE findings. **Conclusion:** Capsule endoscopy is well utilized by different specialities. The high completion rate, diagnostic yield rate and low complication rates reaffirms local practices and aligns with international literature. Furthermore, subsequent device-assisted enteroscopy demonstrated excellent yield rates, re-affirming the use of capsule endoscopy as the initial investigation

Neurogastroenterology and Motility Training in New Zealand

Ahsan Siddiqui, Murray Barclay
Canterbury Dhb, Christchurch, New Zealand

Introduction: Neurogastroenterology and Motility (NGM) training is recommended by motility societies in gastroenterology training. We aimed to assess trainees' NGM experience in New Zealand. **Methods:** Survey questions were sent at the end of the 2019 training year asking about number of motility clinics, manometry studies undertaken, level of comfort in interpreting them and if they required more training. **Results:** Two 1st year, four 2nd year and four 3rd year trainees had attended motility clinics and reported oesophageal studies. Majority of them had no experience with anorectal studies or pH impedance. Analysis was performed through ANOVA – (analysis of variance; Kruskal-Wallis, non-parametric). There was no statistical difference between year of training experience and individual modalities of motility experience between trainees. There was a significant difference between total motility exposure and years of gastroenterology training between trainees. Only one trainee at the end of their training felt comfortable in clinically interpreting motility studies. All trainees indicated more training was needed.



Number of studies ordered and comfort levels with further training (Numbers in bracket denote total trainees in that year)

Trainee Year	Manometry Ordered		pH ordered		Comfort level				Training	
					Reading		Clinical interpretation		More	Self or DHB Funded
	<10	>10	<10	>10	No	Yes	No	Yes		
1 (6)	4	0	6	0	3	3	5	1	6	6
2 (6)	6	0	6	0	1	5	4	2	6	6
3 (5)	3	2	3	2	2	3	4	1	5	5
F (4)	0	4	1	3	0	4	1	3	3	4

Conclusion: Trainees had attended motility clinics in single digits. They found it challenging to interpret manometry studies within clinical parameters. Our study suggests that training in NGM needs to be reviewed.

Supratherapeutic paracetamol ingestion in New Zealand children: a national surveillance study

Logan Wingate[1], Helen M Evans[1], Peter Reed[2], Dug Yeo Han[2], Julie Chambers[1], Jonathan R Bishop[1]
[1]Starship Children's Hospital - Department of Paediatric Gastroenterology, Auckland, New Zealand, [2]Auckland District Health Board - Clinical Research Office, Auckland, New Zealand

Introduction: Supratherapeutic paracetamol ingestion in children is an important public health issue, which can result in acute liver failure and death. This may occur as a result of intentional or unintentional single overdose or recurrent, supratherapeutic overdose with therapeutic intent. The objective of this study was to describe the demographics, nature of ingestion and outcomes of children presenting to New Zealand hospitals with supratherapeutic paracetamol ingestion. **Methods:** A nationwide prospective, questionnaire-based study was performed utilising the New Zealand Paediatric Surveillance Unit reporting system. Children (age 0-15 years) presenting to hospital with suspected or proven supratherapeutic paracetamol ingestion between January 2014 and January 2016 were identified and epidemiological and clinical data were collected. **Results:** 128 cases were reported, including 65 intentional and 59 unintentional single overdoses. Intentional overdoses were predominantly teenage (median 14.3 years, range 10.9 – 15.8), female (95%) with a mental health history (74%). This group was more likely to be admitted to hospital and 9.2% had significant hepatotoxicity. The unintentional single overdose group was younger (median 2.8 years, range 0.3 – 7.3) and had a lower rate of hepatotoxicity (1.7%) despite ingesting the highest weight-adjusted paracetamol dose (mean 335mg/kg). Four cases of recurrent, supratherapeutic overdoses were reported in young children who were administered excessive paracetamol in context of a viral illness. Three of these (75%) had significant hepatoxicity. No children underwent liver transplant or died. Conclusion: This study provides unique information in regard to this important issue. The hepatotoxicity occurring in a majority of recurrent, supratherapeutic overdoses suggests that this group is at particular risk of morbidity. This study can be used to inform public health prevention measures and as a basis for future research

A rare case of Garcinia Cambodgia liver toxicity

Ahsan Siddiqui[1], Graeme Dickson[2]
[1]Canterbury Dhb, Christchurch, New Zealand, [2]Waikato DHB, New Zealand

Introduction: Over the counter dietary supplements are promoted as a weight loss therapy. We describe a rare case of *Garcinia cambodogia* induced liver toxicity. **Description:** A 48 year old lady presented with abnormal LFTs. Her only complain was arthralgia and yellowish discoloration. Medical history was significant for hypertension and quinapril for 6 months. She had not used NSAIDS, IVDU, did not smoke cigarettes but smoked marijuana intermittently and had not consumed alcohol in the last 4 months. There was no history of overseas travel. Examination was normal. An USS and MRCP, did not show any biliary obstruction or signs of chronic liver disease or malignancy. Her blood tests are shown in the table below. Autoimmune and infectious panel, iron studies, ceruloplasmin, hemochromatosis gene, alpha 1 antitrypsin tests were within normal limits. Liver biopsy was consistent with drug induced liver injury. On further questioning, patient brought to our notice of her recent use of weight loss supplements from her local pharmacy. **Conclusion:** Garcinia is a common over the counter herbal supplement promoted as an effective weight loss therapy. Physicians should take a careful history and be aware of its side effects.

Costing and feasibility of day case Peroral Endoscopic Myotomy (POEM) for the treatment of achalasia- a safety and cost analysis

Alex Wynne, Rees Cameron
CCDHB, Wellington, New Zealand

Table 1. Blood tests

	Range	15-May	18-May	19-May	22-May	23-May	25-May	28-May	31-May	17-Jul
Hb	(130-175) g/L	150	141	152	153	148	147	145	134	131
MCV	(80-99) fL	91	89	88	89	87	87	87	90	89
MCH	(27-33) pg	31	30	30	31	31	30	30	30	31
Haematocrit	(Ratio)	042	0.42	0.44	0.44	0.42	0.42	0.43	0.4	0.89
Platelets	(150-400) x10^9/L	282	306	311	342	321	345	332	334	358
WBC	(4-11) x10^9/L	5.7	5.65	6.51	5.92	6	6.15	5.18	5.13	5.58
Neutrophils	(1.9-7.5) x10^9/L	3.22	3.35	3.65	3.75	3.91	3.8	3.3	2.88	2.71
Lymphocytes	(1-4) x10^9/L	1.54	1.46	1.89	1.39	1.31	1.64	1.4	1.65	2.16
Monocytes	(0.2-1) x10^9/L	0.72	0.63	0.67	0.59	0.56	0.56	0.35	0.39	0.44
Eosinophils	(<0.6) x10^9/L	0.1	0.1	0.16	0.08	0.1	0.06	0.03	0.11	0.14
Basophils	x10^9/L	0.09	0.1	0.12	0.1	0.1	0.07	0.08	0.09	0.12
Sodium	(135-145) mmol/L	139	139	139	136	136	140	140	141	143
Potassium	(3.5-5.2) mmol/L	4	3.9	3.7	3.6	3.7	3.6	3.5	4.3	4.7
Urea	(3.2-7.7) mmol/L	3.4	3.2				2.9	3.4	4.6	6.2
Creatinine	(50-110) umol/L	73	78	86	70	75	76	73	70	80
CRP	<5 mg/L	3.5		4.1	4.1	3.5	3			
Bilirubin	(2-20) umol/L	225	336	351	417	421	391	249	141	14
Alkaline PO4	(30-150) U/L	260	220	225	188	186	182	186	166	101
GGT	(10-50) U/L	226	174	179	186	199	250	312	278	41
ALT	(0-40)U/L	3230	2700	2620	2170	1900	1630	1260	1220	21
AST	(10-50) U/L	1910		1570					732	21
Albumin	(32-48) g/L	38	37	37	34	34	33	31	32	41

	Range	17-May	19-May	22-May	25-May	28-May
INR	0.8-1.2 (ratio)	1.1	1.2	1.2	1.2	1
APTT	25-38 (sec)	35	39	38	39	39
Thrombin Clotting Time	<20 (sec)	19	19	19	20	19
Fibrinogen	1.5-4 (g/L)	2.7	2.6	2.9	2.9	3

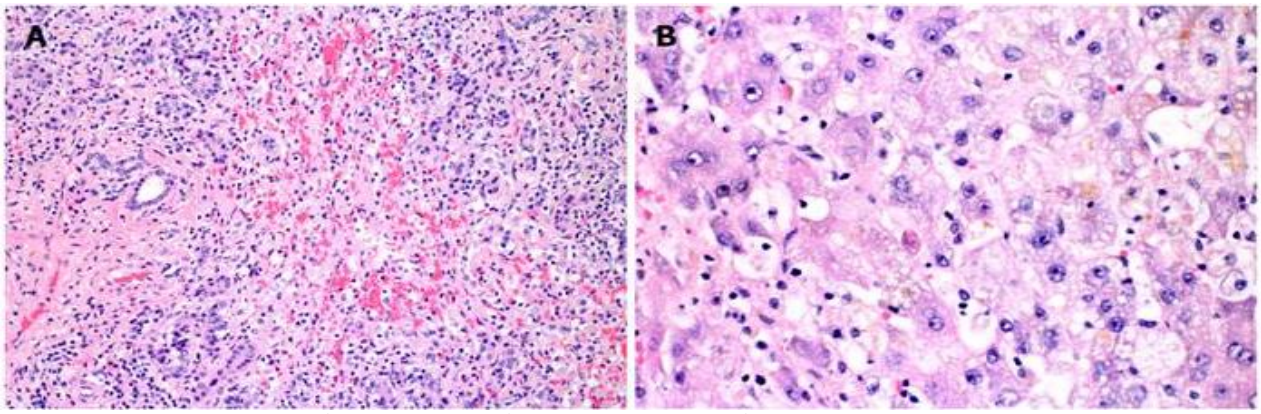


Figure 1. Histopathology. A: Areas of panacinar necrosis, florid ductal reaction and inflammatory cells. B: non necrotic areas demonstrate hepatocyte ballooning and cholestasis

Introduction: POEM has become the standard of care for the treatment of achalasia. 48 POEMs have been performed in Wellington Hospital since 2017. Based on the experience of Benias et al we adopted the practice of offering same day discharge following POEM. We present our data on this approach. [1] **Method:** From January 2020, POEM patients under the age of 70 from greater Wellington were offered same day discharge. Data was collected on reasons for overnight admission, re-presentations, and overall cost. We also compared costs for laparoscopic Heller myotomy (LHM). **Results:** 13 patients met predetermined criteria for same day discharge. Seven of the 13 patients were discharged on the same day. Of these, none re-presented to hospital. Reasons for overnight admission were: chest discomfort (4), patient choice (1), and subcutaneous emphysema (1). Two of these patients re-presented to the Emergency Department with chest pain in the week after POEM, from where they were discharged. The average overall cost per procedure is reduced with single day admission. Average total cost of POEM cases is significantly lower than LHM cases.

	POEM- Day case	POEM- Admission	LHM
Average cost	$4,190	$5,730	$9,850

Conclusion: Our experience of same day discharge following POEM is encouraging with over half of patients taking up this option. Chest pain was the predominant reason for non-discharge. Re-presentation has not been encountered. Cost savings are an additional $1,540 per patient compared to overnight stay and $5660 compared to LHM. POEM is a striking example of the evolution of a morbid open surgical procedure (Heller myotomy) to minimally invasive day-case surgery.

Many patients undergoing bowel cancer screening have pre-existing gastrointestinal symptoms

Andrew Thushyanthan, Henry Wei, Dinesh Lal
Department of Gastroenterology, Counties Manukau District Health Board, Auckland, New Zealand

Introduction: High rates of advanced neoplasia have been identified in the first year of bowel cancer screening at Counties Manukau District Health Board. One explanation for this finding is that screening participants already have pre-existing gastrointestinal symptoms. We want to examine the number and type of symptoms in our cohort. **Method:** Retrospective analysis of prospectively collected data from regional bowel cancer screening participants between July 2018 and July 2019. All participants that underwent colonoscopy after a positive immunohistochemical faecal occult blood test were audited. Symptomatology was identified from documentation prior to colonoscopy. **Results:** Colorectal cancer was detected in 50 out of 528 patients who underwent screening colonoscopy (9.5%). A total of 110 patients (20.8%) had documented gastrointestinal symptoms at time of positive iFOBT. The most common symptoms were altered bowel habits with 45 patients (8.5%), anaemia or iron deficiency with 36 patients (6.8%), rectal bleeding with 29 patients (5.5%), weight loss with 14 patients (2.7%) and abdominal pain with 13 patients (2.5%). Presence of iron deficiency or anaemia was more common among participants diagnosed with cancer with a p-value of < 0.001 as shown by Chi-squared test with Yates' correction. **Conclusion:** A significant number of participants in the CMDHB regional bowel cancer screening had pre-existing symptoms which would qualify them to undergo colonoscopy based on the national criteria. These screening patients are not truly asymptomatic and factors influencing healthcare seeking behaviour in our cohort should be explored to identify interventions that can optimize access to appropriate care.

Outcomes of bowel cancer screening programme in Counties Manukau after one year

Andrew Thushyanthan, Henry Wei, Dinesh Lal
Department of Gastroenterology, Counties Manukau District Health Board, Auckland, New Zealand

Introduction: The Counties Manukau District Health Board (CMDHB) bowel cancer screening program began in July 2018. We present the demographic data, outcomes of adenoma and cancer detection in the first year of bowel cancer screening. **Method:** Retrospective analysis of prospectively collected data from regional bowel cancer screening participants between July 2018 and July 2019. All participants that underwent colonoscopy after a positive immunohistochemical faecal occult blood test were audited. We obtained histology results and aggregate demographic data from hospital records. **Results:** Of 528 individuals who underwent colonoscopy, adenoma and/or cancer was detected in 465 (88.0%). The positive predictive value (PPV) of advanced adenomas i.e. ≥10mm, villous histology or high-grade dysplasia was 31.3% (165/528) and the PPV for cancer was 9.5% (50/528). Stage 1 and 2 cancer was seen in 62% (31/50), stage 3 cancer with nodal disease in 28% (14/50) and 10% (5/50) metastatic disease at time of diagnosis. 80% (40/50) of cancer diagnosis underwent surgery. The median age of cancer diagnosis was 70 years with males representing 68% of patients. Of the 50 cancers detected, 27 were European, 11 Asian, 7 Pacifika and 5 Maori ethnicity. On comparison of cancer detection rate there was no difference between any ethnicity although Pacific people were underrepresented in our cohort, making up 21.1% of the CMDHB population but only 11.2% of patients undergoing colonoscopy. **Conclusion:** We have high rates of advanced neoplasia detection compared to international literature however, most cancers are still diagnosed at an early stage. There may be various reasons for this and further studies will be useful to identify factors that can improve early cancer detection.

[1] Benias, et.al. (2019) Safety and feasibility of performing peroral endoscopic myotomy as an outpatient procedure with same-day discharge. *Clinical Endoscopy*. 90(4):570-578.

Elevated faecal chitinase-3-like-1 in children with cystic fibrosis

Ms Jessica Permain[1], Ms Laura Appleton[1], Shaun Ho[1], Michael Coffey[3], Chee Y Ooi[3,4,5], Jacqui I Keenan[2], **Andrew S Day[1,3]**

[1]Paediatrics, UOC, Christchurch, New Zealand, [2]Surgery, UOC, Christchurch, New Zealand, [3]School Women's and Children's Health, UNSW, Sydney, Australia, [4]Molecular and Integrative Cystic Fibrosis Research Centre, UNSW, Sydney, Australia, [5]Gastroenterology,. SCH, Sydney, Australia

Introduction: There is an increasing recognition of gastrointestinal involvement in children with cystic fibrosis (CF). Recent work has demonstrated increased levels of faecal calprotectin but not faecal S100A12 in children with CF. Chitinase-3-Like-1 (CH3L1), an inflammation-associated protein expressed by epithelial and innate immune cells, has not yet been assessed in the setting of CF. This study aimed to measure faecal CH3L1 levels in children with CF and to compare with levels in healthy control (HC) children. **Methods:** Faecal samples were collected from children with CF and HC in two tertiary paediatric centres. A commercial immunoassay was used to measure CH3L1 levels. The effects of age, sex and pancreatic sufficiency upon CH3L1 were evaluated, while the impact of CH3L1 upon growth parameters was assessed. **Results:** Faecal samples were collected from 52 children with CF and 35 HC. Higher median (+ range) levels of faecal CH3L1 were measured in children with CF than in HC (15.97 (0.19-211.7) ng/g versus 2.93 (0.19-36.3) ng/g; p=0.001). Faecal CH3L1 levels were higher in HC children less than 2 years of age than in older children (p=0.0018); this was not seen in the children with CF. Sex, age or pancreatic sufficiency status did not affect faecal CH3L1 levels in children with CF. Furthermore, faecal CH3L1 levels did not correlate with weight or height z scores in the children with CF. **Conclusions:** Children with CF were found to have higher faecal CH3L1 levels than HC children, consistent with underlying gastrointestinal inflammation. Further studies including larger numbers of subjects are now required to establish the role of CH3L1 in children with CF.

Ethnicity and social deprivation in children with intestinal failure in New Zealand: Disparities in incidence, but not in outcomes

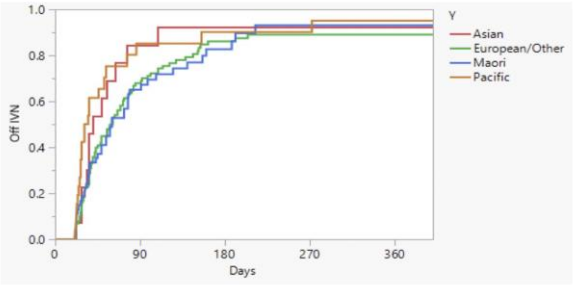
Amy Andrews[1,2], Kim Herbison[1,2], Cate Fraser-Irwin[1,2], Peter Reed[1], Helen M Evans[1,2], Amin J Roberts[1,2]

[1]Starship Child Health, Auckland, New Zealand, [2]New Zealand National Intestinal Failure Service, Auckland, New Zealand

Introduction: The New Zealand National Intestinal Failure Service (NZNIFS) was established in 2015. A recent study* investigating paediatric intestinal failure (PIF) patients referred to NZNIFS over the first three years since its inception in 2015, revealed ethnic & socioeconomic disparities in the incidence of PIF. Pasifika and Māori children were over-represented, as were children from lower socioeconomic backgrounds. This study aimed to further evaluate clinical Primary closure outcomes of this patient cohort to see if these disparities persisted. **Methods:** Clinical outcomes (enteral autonomy, IVN** dependence, death) for 208 PIF patients included in the original study were analysed; comparisons were made by ethnicity and socioeconomic status (SES). Published "prioritised-ethnicity" health data was referenced. The NZ deprivation index was used as a measure of SES. Intestinal failure (IF) was defined as IVN dependence of ≥21 days for children <18 years, and ≥30 days for preterm infants. Kaplan-Meier curves were used to assess time to enteral autonomy. **Results:** 170/208 (82%) patients (56% male, 44% preterm) achieved enteral autonomy, 14 (7%) remained IVN dependant. There were no significant differences in clinical outcomes for any patients based on ethnicity (Figure-1) or SES. **Conclusions:** While disparities in ethnicity and social deprivation do exist with regard to the incidence of PIF in NZ, clinical outcomes are similar for children regardless of ethnicity or SES. NZNIFS has achieved one of its core objectives: to achieve health equity for all patients with IF nationwide.

* Andrews A, et al. Transplantation 2019. 103(7S2): p. S42
** Intravenous nutrition

Figure-1: Number of patients who achieved enteral autonomy over 3 years, by ethnicity.



Outcomes of exclusive enteral nutrition for induction of remission in paediatric Crohn's disease in Auckland, NZ: a retrospective observational study

Amy Andrews, Kim Herbison, Vivek Rajasekaran, Dug Yeo Han, Dr Amin J Roberts, Helen M Evans, Jonathan Bishop

Starship Child Health, Auckland, New Zealand

Introduction: Exclusive enteral nutrition (EEN) is considered the first line treatment to induce disease remission in paediatric Crohn's disease (CD). The study aim was to identify paediatric patients with a new diagnosis of CD and investigate clinical outcomes of EEN use. **Methods:** Patients aged 0-16 years with CD diagnosed at Starship Child Health 2010-2020 were identified by retrospective chart review. Demographics collected include age, gender, ethnicity and socioeconomic status (SES) using the NZ Deprivation Index. Disease location and behaviour were classified according to the Paris classification. Remission was determined using clinical factors by physician global assessment. EEN duration and method were also collected with biochemical markers, anthropometric z-scores and malnutrition status at the start and end of EEN. **Results:** 103 patients were identified (60% male, mean age 11.6 years). 66% were NZ European and 24% Indian with low numbers of patients from other Asian, Maori and Pasifika ethnicities. 60% were in the highest 2 SES quintiles, though this was not statistically significant. Eighty

six (83%) patients completed 6 weeks EEN, of whom 54 (63%) achieved clinical remission of disease. Achievement of clinical remission was significantly associated with improved weight and body mass index z-scores (p<0.0001) and improvement in biochemical markers including CRP (p<0.0001), ESR (p=0.0003), haemoglobin (p=0.011), albumin (p<0.0001) and faecal calprotectin (p=0.0001). Of those who failed to complete the EEN, 17 discontinued due to lack of clinical response and 4 due to poor adherence. Disease location, behaviour, and malnutrition status at diagnosis did not significantly affect clinical outcome, nor the number of clinician points of contact, EEN duration or method of delivery. **Conclusions:** Exclusive enteral nutrition is an effective treatment for induction of clinical remission in paediatric CD. Adherence is not an issue in this patient cohort, however remission rates in Auckland are lower than recent published literature.

Equity of colonoscopy provision and performance indicators for Māori versus New Zealand European

Matthew Donachie[1], Mike Whiley[1], Marianne Lill[1-,6], Professor Ian Bissett[4,7,8]
[1]*Whanganui District Health Board, Whanganui, New Zealand,* [2]*New Zealand Conjoint Committee for Recognition of Training in Gastrointestinal Endoscopy, New Zealand,* [3]*RACS Surgical Endoscopy Committee member, New Zealand,* [4]*National Bowel Cancer Working Group, New Zealand,* [5]*NZSG and NZAGS member, New Zealand,* [6]*Endoscopy Guidance Group New Zealand, New Zealand,* [7]*Colorectal Surgical Society Australia and New Zealand, Australasia,* [8]*Auckland City Hospital, Auckland, New Zealand*

Introduction: While Māori are more likely to die of colorectal cancer, little is known about equity of colonoscopy service provision for Māori. Previous studies suggest that adenoma detection rate (ADR) in Māori may be half that of New Zealand (NZ) European. This study investigates overall colonoscopy service provision and compares quality indicators between Māori and NZ European patients undergoing colonoscopy. **Methods:** Consecutive colonoscopies at Whanganui Hospital from 1/9/2016 to 31/3/2020 were included. Colonoscopy service provision by ethnicity was calculated as a proportion of the population, by age bracket. Secondary outcomes were unadjusted colonoscopy completion rate (CCR) and colonoscope withdrawal time (CWT). In a subset having index symptomatic colonoscopy, adenoma detection rate (ADR) and polyp detection rate (PDR) were calculated. Chi^2 analysis was performed. Approval was via Whanganui DHB Clinical Board, including Iwi consultation. **Results:** 3017 colonoscopies were performed: 385 (12.8%) in Māori, 2577 (85.4%) in New Zealand European participants. For patients ≥40 years old, overall colonoscopy service provision was significantly lower for Māori than NZ European (6.1% vs. 9.3%; p<0.001). CCR (95.1% vs. 95.3%; p=0.86) and CWT ≥6 minutes (90.3% vs. 88.4%; p=0.44) were not significantly different between Māori and NZ European. In patients undergoing symptomatic index colonoscopy (n=1715) the ADR and PDR were similar (33.6% vs. 37.4%; p=0.37 and 51.0% vs. 56.4%; p=0.21 respectively). **Conclusions**: Māori were provided less colonoscopy than NZ European as a proportion of the population ≥40 years old in this study. This inequity warrants examination to identify contributing factors, and target interventions. For Māori patients who received a colonoscopy, performance indicators were not significantly different from NZ European. This suggests when colonoscopy was performed, equivalent quality procedures were provided to all. The ADR in Māori is comparable to NZ European.

Long term progression and recovery of Small Intestinal Bacterial Overgrowth (SIBO): A patient case study

Nicholas Tuckey
Personal, Richmond, New Zealand

Introduction: Small intestinal bacterial overgrowth (SIBO) is a poorly understood condition with a range of nonspecific and sporadic symptoms that include abdominal pain, bloating and distension, elevated blood histamine/sensitivity, and can be associated with chronic fatigue and weakness. Patient diagnosis remains a controversial process, but often requires an invasive small bowel aspirate/culture. Glucose or lactulose breath testing is an alternative, but currently lacks standardisation as a diagnostic tool and there is limited availability outside of major city centres. **Methods:** Here I'll present my personal medical history as a case study focussing on the long term (2005-2017) progression of SIBO. **Results:** Symptoms began with minor pompholyx in 2005 with increasing and deteriorating skin, gastrointestinal and psychological symptoms through until 2017. Short term symptoms were sporadic and linked to carbohydrate consumption typically from the FODMAP group. These symptoms were successfully managed initially through dietary manipulation, but longer term maladaptive dietary and psychological consequences focussed on dietary restriction were apparent with hindsight. This highlights specific risks involved in the sole use of dietary intervention to manage SIBO symptoms. Using recent scientific literature I'll present a picture of the biological and physiological processes contributing to the symptoms of SIBO, and the available and established treatment methods. **Conclusions:** Finally, I'll present the sequence of events in 2017 that led to my recovery and the complex interacting effects of soluble fibre supplements, high-dose probiotics and diet as management tools that have allowed the successful and robust control of my SIBO between 2017 and 2020.

Acute pancreatitis and pregnancy: A 10 year single centre experience

Deepu David, David Rowbotham
Auckland City Hospital, , New Zealand

Introduction: Acute pancreatitis is a rare event that can complicate pregnancy. This study profiles the epidemiology and outcomes of pregnant patients with acute pancreatitis. **Methods:** This retrospective study assessed the epidemiology, severity of illness, course of hospital stay and clinical outcome of all pregnant patients who got admitted with a diagnosis of acute pancreatitis between July 2010 and May 2019. **Results**: 22

patients were admitted over the study period. Majority of patients were of Maori 32% (n= 7, 32%) and European 27%(n=6) ethnicity. Mean age of patients was 30 ± 7 years. 23% of women (n=5) were primigravida. 23 %(n=5), 45%(n=10) and 32%(n=7) of the episodes occurred in the first, second and third trimesters, respectively. 95 % had mild pancreatitis, while only 5%(n=1) had moderately-severe pancreatitis according to revised Atlanta classification. No patient developed severe pancreatitis. The most common cause of pancreatitis was biliary (68%, n=15). Other causes were hypertriglyceridemia (4%,n=1), viral (4%,n=1) and idiopathic (14%,n=3). Two patients had acute-on-chronic pancreatitis (10%). There was no maternal mortality. Of the 15 patients with biliary pancreatitis, 9(60%) underwent ERCP and stone clearance and 10 (67%) underwent cholecystectomy (6 during the same admission) uneventfully. Pre-eclampsia, Intrauterine growth retardation and antepartum haemorrhage were noted in two patients each (9%), while 1 patient spontaneously aborted (4%) at 8 weeks. 17 births (91%) were term deliveries while two were pre-term (9%). Surgical termination of pregnancy was done in two patients (9%). Nine patients (41%) underwent lower segment caesarean sections. None of the patients developed other complications of pancreatitis. **Conclusion:** The incidence of pancreatitis in pregnancy is extremely low. Cholecystectomy and ERCP for common bile duct clearance, for management of biliary pancreatitis during pregnancy, appears to be safe, although challenging.

Incident Portal Vein Thrombosis in liver transplant recipients in New Zealand: predictors of risk and validation of the Portal Vein Thrombosis Risk Index calculator

Paras Garg, Barry Harrison, Stephen Munn, Edward Gane
NZ Liver transplant unit, Auckland, New Zealand

Introduction: Spontaneous portal vein thrombosis (PVT) is increased in patients on the waiting list for orthotopic liver transplant (OLT) and will increase perioperative risks. A predictive PVT risk-index (PVT-RI) calculator has been proposed to determine risk of incident PVT, with score <2.6 associated with low risk of PVT and score >4.6 associated with high risk of PVT. We reviewed patient characteristics in adult(age ≥ 18) OLT recipients in New Zealand(NZ) at time of listing, and applied PVT-RI calculator to ascertain if it can be validated in our population. **Methods:** We performed retrospective analysis on all adult patients who underwent elective transplantation at NZLTU between January 1998 and February 2020. Patients transplanted for acute/subacute liver failure and retransplants were excluded. Variables reviewed included age at listing and transplantation, wait time from listing to OLT, indication for listing (liver failure or liver cancer), gender, ethnicity, aetiology of liver disease, listing MELD score, HCC, portal hypertension manifestations (moderate-to-severe ascites and hepatic encephalopathy>grade 2), TIPPS, spontaneous bacterial peritonitis(SBP), and diabetes. **Results:** 593 out of 706 patients met inclusion criteria. 18 (3%) patients had incident PVT. The PVT-RI calculator was not validated in our cohort with only 1/18 (6%) patients with PVT scoring >4.6 and only 211/575 (37%) patients without incident PVT scoring <2.6. On statistical analysis, the only independent predictors of incident PVT risk were longer waiting time for transplant and listing for liver failure. There was a trend towards association of cholestatic liver disease with increased PVT risk. **Conclusions:** The recently proposed PVT-RI calculator did not predict incident PVT in NZ OLT recipients. Patients with longer waiting times should be monitored closely for PVT.

Per-Oral Endoscopic Myotomy (POEM) for Achalasia – Wellington hospital experience: Patient characteristics and short and medium term outcomes

Paras Garg, Rees Cameron
Wellington Regional Hospital, Wellington, New Zealand

Introduction: Per-oral endoscopic myotomy (POEM) is a novel procedure first introduced 12 years ago. It has become established as the best treatment option for achalasia. This study is a descriptive analysis of patient characteristics, safety, short and medium term outcomes and learning curve of POEM in a single centre. **Methods**: POEM was performed on 47 patients with achalasia at our institution from September 2017 through August 2020. Data was prospectively collected including patient age, gender, domicile DHB, previous achalasia treatments, procedure time, adverse events, length of hospital stay and Eckardt score at presentation, at 3 months and 1 year plus follow-up. **Results**: POEM was successfully completed in all patients. Mean age was 52.8 years (range 15-91 years). 19.2% patients had undergone a definitive treatment for achalasia prior (6 Heller myotomy, 3 LDBD, 1 POEM). Mean length of hospital stay was 1.3 days (range 0-14), 87.2% patients were discharged within 24 hours. 2(4.3%) patients had major complications: one leak and one SIRS with pleural effusion receiving intercostal drainage. 42 patients were followed up at 3 months and 25 out of 26 patients were contacted by phone for follow-up at 1 year plus. 88%(22/25) patients reported sustained benefit at medium term follow-up, 1 patient didn't experience improvement post-procedure. Mean Eckardt score 7.6 at presentation, 0.8 at 3 months and 0.7 at 1 year plus. Mean procedure times have reduced sequentially from 54 minutes (first 10) to 32 minutes (last 10). **Conclusions**: POEM is a safe and effective therapy for achalasia with shorter hospital stay, limited rates of major complications and sustained benefit at medium term follow-up. It has shown to be useful even at extremes of age and for patients with previous interventions. We have observed a progressive learning curve with reducing procedure times to at least the 40 procedure mark.

Paediatric gastroenterologist perspectives and practice of coeliac disease diagnosis in Australasia

Shaun Siong Ho[1], Sophie Hall[1,2], Jacqueline Keenan[3], Andrew Day[1]
[1]*Department of Paediatrics, University Of Otago Christchurch, Christchurch, New Zealand,* [2]*Nutrition and Dietetics, Christchurch Hospital, Christchurch, New Zealand,* [3]*Department of Surgery, University Of Otago Christchurch, Christchurch, New Zealand*

Introduction: In 2012, the European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) introduced guidelines for the diagnosis of coeliac disease (CeD) without intestinal biopsies in children and adolescents who fulfilled relevant criteria. While revised guidelines were introduced in 2020, it remains unclear whether if they have changed the approach to the diagnosis of CeD by paediatric gastronterologists in Australia and New Zealand. This study aimed to explore the perceptions and practices of Australasian paediatric gastroenterologists in diagnosing CeD. **Methods:** All paediatric gastroenterologists and gastroenterology trainees in Australasia were invited via an existing email network to complete an anonymous online questionnaire. **Results:** The questionnaire was completed by 28 respondents; 24 from Australia and four from New Zealand. Almost all respondents 26/28 (93%) ordered anti-tissue transglutaminase IgA as their routine coeliac screening serology test in any children. Anti-deamidated gliadin peptide IgG serology test was significantly ordered more frequently in children under 2 years old than in children over 2 years old, 20/28 (71%) versus 13/28 (46%), P=0.04. Furthermore, almost all physicians requested iron studies (27/28 (96%) and full blood examination (26/28, 93%) together with coeliac serology tests. Fifteen (54%) respondents relied on duodenal biopsies for the diagnosis of CeD and six (21%) followed the ESPGHAN guidelines. The remaining seven respondents offered either intestinal biopsy confirmation or non-intestinal biopsy (based on ESPGHAN guidelines) according to the parents' wishes. If undertaking intestinal biopsies, all respondents would to take biopsies from first part and second or third part of the duodenum. **Conclusion:** Anti-tissue transglutaminase IgA is the most common serologic test ordered by this group of Australasian paediatric gastroenterologists for children suspected to have CeD. Half of these physicians rely solely on duodenal biopsy for the diagnosis of CeD: a minority routinely use the ESPGHAN non-biopsy CeD diagnosis guidelines.

Paediatric gastroenterologist perspectives and practice of coeliac disease follow-up in Australasia

Sophie Hall[1,2], **Shaun Ho[1]**, Jacqueline Keenan[3], Andrew Day[1]

[1]Department of Paediatrics, University Of Otago Christchurch, Christchurch, New Zealand, [2]Nutrition and Dietetics, Christchurch Hospital, Christchurch, New Zealand, [3]Department of Surgery, University Of Otago Christchurch, Christchurch, New Zealand

Introduction: Coeliac disease (CD) is an immune-mediated small intestinal enteropathy treated with a life-long gluten-free diet. Recommendations for ongoing care in children and adolescents are not well established. This study aimed to assess the perceptions and practices of paediatric gastroenterologists on the follow-up of children diagnosed with CD. **Methods:** Paediatric gastroenterologists and gastroenterology trainees in Australasia were invited via an existing email network to complete an anonymous online questionnaire. **Results:** The questionnaire was completed by 28 respondents; 24 from Australia and four from New Zealand. Following CD diagnosis, 27(96%) gastroenterologists referred their patients to a dietitian. Among all respondents, 5 (18%) discharged patients from their care following diagnosis, 3 (11%) discharged patients from their care after one follow-up consult, 1 (4%) reviewed patients for 12 months, 6 (21%) continued to review patients until coeliac antibodies normalised and clinically asymptomatic, and 13 (46%) reviewed patients until transition into adult care. All respondents referred patients back to their general practitioner at discharge, except those who follow-up patients until adulthood (8/13 referred back to their general practitioner, 3/13 referred to adult gastroenterologists and 2/13 referred to both). Among the 23 physicians who reviewed patients at least once after diagnosis, 12 (52%) requested repeat blood tests before follow-up: the most requested tests were tissue-transglutaminase IgA antibodies (12/12, 100%), full-blood counts (11/12, 92%) and iron studies (11/12, 92%). The twenty gastroenterologists who reviewed children with CD regularly reported the three most assessed items during their follow-up consult were adherence to a gluten-free diet (N=19, 95%), growth (N=19, 95%) and screening for micronutrient deficiencies (N=16, 80%). **Conclusions:** Australasian paediatric gastroenterologists reported a wide range of CD follow-up practices. Further studies are needed to compare the effectiveness of different management strategies to establish best-practice guidance for the long-term management of patients with CD.

Parent perspectives of diagnostic and monitoring tests undertaken by their child with inflammatory bowel disease

Shaun Siong Ho[1], Jacqueline Keenan[2], Andrew Day[1]

[1]Department of Paediatrics, University Of Otago Christchurch, Christchurch, New Zealand, [2]Department of Surgery, University Of Otago Christchurch, Christchurch, New Zealand

Introduction: Children with inflammatory bowel disease (IBD) undergo various investigations as part of their diagnostic work-up and disease monitoring. Little is known about parents' perspectives of these tests. This study assessed parent perspectives of the current and potential future IBD tests for their child. **Methods:**

New Zealand parents of a child with IBD were invited to complete an anonymous online survey. Experiences relating to their child's blood or faecal tests, medical imaging (abdominal ultrasound (US), abdominal computerised tomography (CT) and magnetic resonance enterography) and colonoscopy were collected. Perceived attitudes to potential future testing of urine, saliva, and breath were sought. **Results:**Twenty-eight parents (93% female, 86% aged between 35 and 54 years) completed the survey. Almost three-quarters (72%) of the respondents' children were adolescents, while 70% had Crohn's disease, and a mean disease duration of 2.67 years. General blood tests were the most requested and completed tests, while CT was the least ordered and most refused test. Colonoscopy was rated as the least comfortable and generated the most worry. Explanation about tests significantly improved parent's levels of understanding when their child had blood, faecal, imaging (US) or colonoscopy tests. Providing an explanation, test invasiveness and the impact of the general blood results may have on their child's treatment significantly improved parents' comfort levels. However, explanation of colonoscopy generated parental concerns. Saliva, urine and blood tests were chosen by parents as the most preferred disease monitoring tests. **Conclusion:** Parents preferred any tests less invasive than colonoscopy for monitoring their

child's IBD. Although providing explanation of their child's tests enhanced parents' understanding, it can also affect parents' levels of concern and comfort. Physicians need to consider parent's test preference and allow adequate test explanations with parents and the child before ordering any investigations.

Two cases of palliative endoscopic ultrasound guided gastrojejunostomy (EUS-GJ) for gastric outlet obstruction

Crispin Ovenden[1], Rees Cameron[2]
[1]*Hutt Valley DHB, Lower Hutt, New Zealand,* [2]*Capital and Coast DHB, Wellington, New Zealand*

Introduction: EUS-GJ is emerging as a preferred palliative treatment option for gastric outlet obstruction. It is much less invasive than surgical gastrojejunostomy with minimal recovery time and is feasible in patients who are no longer surgical candidates. Its advantage over endoscopic self-expanding metal stents is due to the siting of the anastomosis away from the tumour, making it much less susceptible to stent tumour ingrowth, allowing for longer relief from symptoms. The posterior anastomosis may improve gastric emptying. We report the first two NZ cases of EUS-GJ, performed for metastatic duodenal adenocarcinoma causing gastric outlet obstruction. **Method:** Using a gastroscope, a guidewire then NJ tube are passed past the obstruction to the DJ flexure using fluoroscopic guidance. Through the NJ tube a solution of water, methylene blue and contrast is instilled. The gastroscope is removed and linear EUS scope passed to the gastric body. Using fluoroscopy and ultrasound the fluid-filled jejunum is identified and punctured directly using a Hot Axios stent delivery system. The Axios stent is deployed in the usual manner creating a gastrojejunostomy. **Cases:** 63M diagnosed July 2017, palliative duodenal SEMS Jan 2019, Jun 2019. Progressive GOO symptoms from Jan 2020. EUS-GJ performed 13/02/20, discharged next day. No obstructive symptoms at 6.5 months.62M diagnosed Mar 2019, palliative duodenal SEMS Apr 2019. Recurrent stent obstructions from Dec 2019. EUS-GJ performed 20/02/20, discharged following day. No further obstructive symptoms, died 6 months later from progressive disease. **Conclusion:** EUS-GJ has provided excellent palliation of obstructive symptoms from duodenal adenocarcinoma with next day discharge. The outcomes at our centre were consistent with international published case series, which have shown a favourable safety and cost profile.

Successful case of fistuloclysis for short gut syndrome

Crispin Ovenden[1], Christopher Cederwall[2]
[1]*Hutt Valley DHB, Lower Hutt , New Zealand,* [2]*Capital and Coast DHB, Wellington, New Zealand*

Short gut syndrome is the most common cause of intestinal failure, defined as an inability to maintain nutrition and/or electrolytes without parenteral or enteral supplementation. It has a diverse aetiology, but most frequently follows bowel resection. There is a window period where surgical re-anastomosis is contraindicated due to risk of complications and parenteral support is often indicated. We report the case of a 36 year old man with a high proximal jejunostomy supported with fistuloclysis. The patient presented after an assault with a traumatic brain injury, post hemicraniectomy and laparotomy for ischaemic gut. He had had two segments of jejunum excised, with formation of dual stomas. Initial attempts at parenteral nutrition were complicated by line sepsis and PN related liver dysfunction. By re-infusing chyme from the high proximal jejunostomy into the distal jejunostomy, we were able to support his nutrition through a six week period, prior to reversal of the dual jejunostomies with anastomosis of the two ends of small bowel.

Gastrointestinal and Mental Health symptoms cluster participants in an irritable bowel syndrome (IBS) cohort

Phoebe Heenan[1,5], Chris Frampton[1], Doctor Wayne Young[4,5,6], Nicole Roy[3,5,6,7], Jacqueline Keenan[2], Catherine Wall[1,3,6], Nicholas Talley[8], Gerald Holtmann[9], Richard Gearry[1,6]
[1]*Department of Medicine, University Of Otago, Christchurch, Christchurch, New Zealand,*[2]*Department of Surgery, University of Otago, Christchurch, Christchurch, New Zealand,*[3]*Department of Human Nutrition, University of Otago, Dunedin, New Zealand* [4]*AgResearch, Palmerston North, New Zealand,* [5]*Riddet Institute, Massey University, Palmerston North, New Zealand,* [6]*High Value Nutrition, National Science Challenge, New Zealand,*[7]*Liggins Institute, University of Auckland, Auckland, New Zealand,* [8]*Faculty of Health and Medicine, University of Newcastle, Newcastle, New Zealand,* [9]*Faculty of Medicine, University of Queensland, Brisbane, Australia*

Introduction: The Rome IV criteria, which are the gold standard diagnostic criteria for Functional Gastrointestinal Disorders (FGID), do not take underlying pathophysiological mechanisms into account and may not be applicable in different populations. This makes trialling new therapies challenging. We aimed to agnostically determine which symptoms form clusters in a New Zealand FGID cohort. **Methods:** The Christchurch IBS Cohort to investigate Mechanisms FOr gut Relief and improved Transit (COMFORT) is an observational case-control study examining FGID pathophysiology. Ethical approval (Ref 16/NTA/21) was obtained to collect demographic data from participants who also prospectively completed the Structured Assessment of Gastrointestinal Symptoms (SAGIS) and the Hospital Anxiety and Depression Scale (HADS). The SAGIS and HADS scores consistently correlated with each other, this data was included in a Principal Component Analysis (PCA). Components were extracted using Kaiser's criteria and factors loaded >0.5 were grouped. Varimax rotation was performed. **Results:** PCA extracted two components. Factor 1 contained the gastrointestinal symptoms (epigastric, IBS-diarrhoea, acid, nausea and constipation) while Factor 2 contained the mood disorder symptoms (anxiety and depression). Factors 1 and 2 described 48.9% and 17.6% of the variability in the data, respectively. Factor scores were averaged according to participants Rome IV diagnosis. Factor 1 was shown to group participants diagnosed with IBS and Factor 2 grouped those who experienced diarrhoea symptoms. **Conclusion:** This analysis showed that, when taking an agnostic approach to grouping participants based on the symptoms they experience, those who experience pain and those who experience diarrhoea symptoms, respectively, cluster together. Classifying patients based on these criteria is likely to provide a more robust pathophysiological basis for future studies

of FGID, including clinical trials. Further studies are planned to understand whether this classification also enables differentiation in terms of the microbiome and metabolome.

Intravenous iron-induced hypophosphataemia: a prospective study

Ibrahim Hassan, Phoebe Wu, David Rowbotham
Auckland City Hospital, Auckland, New Zealand

Introduction: Intravenous iron infusion has become more readily available with funding of ferric carboxymaltose (*Ferinject*) in both secondary and primary care. *Ferinject* is easier to administer with shorter infusion duration and less reported allergic side-effects compared to established infusions such as *Ferrum H* (FH). Hypophosphataemia is recognised following iron infusion (up to 10%) and is being increasingly reported in the literature, particularly following *Ferinject* infusion. Assess the prevalence and severity of hypophosphataemia following iron infusion (*Ferinject* and FH), thereby to develop local guidelines around iron infusion therapy and hypophosphataemia. **Methods:** Prospective study of all patients receiving iron infusion via Department of Gastroenterology at Auckland City Hospital from June 2019 to March 2020. Plasma phosphate concentration was measured immediately prior to iron infusion and repeated within 1-2 weeks after infusion. **Results:** 69 patients received iron infusion during the study period. 20 patients were excluded as they did not complete both before/after phosphate blood tests. Demographic data of included subjects reveal median age 49 years (range 17-89), 80% female, 71% European ethnicity, and 49% with inflammatory bowel disease. 24 Patients received *Ferinject* while the remaining 25 patients received FH. Blood phosphate concentration reduced in 92% of patients following *Ferinject* therapy (N=22) compared to 36% of FH group (N=9), P <0.0001. Proven biochemical hypophosphataemia, however, developed in 38% (N=9) and 28% (N=7) respectively, P = 0.55. 20 patients were on vitamin D supplementation and 10% of them developed hypophosphataemia (N=2) compared to 48% (N=14) of the remaining 29 patients, P = 0.0059. **Conclusions:** Iron infusion is associated with a not insignificant risk of subsequent hypophosphataemia (numerically commoner with *Ferinject*), whilst vitamin D may have a protective role. Whether this translates to actual patient harm remains unclear. Until clear we suggest routine monitoring of phosphate post-iron infusion, especially in those requiring repeated therapy.

Endoscopic management of post-laparoscopic sleeve gastrectomy leak : a 13-year experience of a large volume bariatric centre

Ibrahim Hassan, Yi-Ting Wu, Ravinder Ogra
CMDHB (Middlemore Hospital), Auckland, New Zealand

Introduction: Anastomotic leak is the most serious complication following laparoscopic sleeve gastrectomy (LGS) occurring in 1.9-2.4% and can be life threatening and difficult to manage. A variety of endoscopic techniques are required for successful outcome. To determine prevalence, complications and the success rate of endoscopic therapy for gastric sleeve leak. **Method:** This is a prospective review of all 44 patients of leak post LSG managed at our endoscopy unit between May 2008 and May 2020. Variety of endoscopic therapies included stents, metal clips and glue were used. **Result:** Leak occurred in 44 patients out of 1850 LSG (2.37%); mean age 43 years (range 23-58), 59% female and mean preoperative body mass index of 45 kg/m^2 (range 31- 58). Overall resolution of leak occurred in 43/44 patients (98%) and self-expandable metal stents (SEMS) (N=40) were the most common endoscopic modality used. Stents deployed were either partially covered (Ultraflex or Ogra N=12) or fully covered (N =28). Four patients (9%) were treated with Over-the-scope clips (OTSC)and one was treated with double pigtail drain. The majority (86%) of our patients received complementary endoscopic treatment modalities such as OTSC (N=17), hemoclip(N=16), Cyanoacrylate Injection (N=6) and thermal therapy (N=6). Significant stent migration and failure occurred in 13/40 (32.5%). No migration occurred with the Ultraflex and custom made Ogra stent. Five (12.5%) patients developed benign stent-induced oesophageal strictures

	Number	Mean days to leak resolution	Mean In patient stay
Primary closure	31/44 (70%)	59	31
Secondary closure	12/13 (92%)	119	65

Conclusions: The use of SEMS in conjunction with complementary endoscopic therapy is safe and effective in treating postoperative sleeve leaks. Stent migration can be overcome by use of partially covered and purpose built stents.

Endoscopic management of post-laparoscopic sleeve gastrectomy stenosis: a 13-year prospective study of a single centre

Ibrahim Hassan, Yi-Ting Wu, Ravinder Orga
CMDHB (Middlemore Hospital), Auckland, New Zealand

Introduction: Symptomatic sleeve stenosis is a well-known complication following laparoscopic sleeve gastrectomy (LSG) developing in up to 3.9% of patients.Endoscopic management of stenosis continues to be the first line treatment but a consensus regarding the type of therapy is still evolving. To determine prevalence, efficacy and complications of endoscopic therapy for symptomatic gastric sleeve stenosis. **Method:** This is a prospective review of all patients managed at our endoscopy unit between May 2008 and July 2020. Endoscopic dilatation was carried out using CRE^{TM} balloon and Rigiflex^{TM} Achalasia Balloons (30-40 mm). Self-expanding Metal stents (SEMS) included 18-24 mm wide fully covered removable type. **Results:** 1850 patients underwent LSG at our hospital between May 2008 and July 2020. Symptomatic stenosis developed in 92 (4.97%). Most 88(95%) were located at the mid body and incisura. Median age was 47years(range 22-67), mostly female 65(70%) with a preoperative median body mass index of 43 kg/m^2 (range 31-65).Average number of endoscopic interventions was 1.32. One patient developed perforation (1 out of 122 dilatations in total,0.8%)

Endoscopic management	Success rate
Overall	76/92 (83%)
CRE balloon dilatation (<60 days post-surgery)	14/37 (38%)

Achalasia balloon overall (>180 days post-surgery)	47/81 (58%)
Achalasia balloon results according to Diameter	
30 mm	19/42(45%)
35 mm	25/33(75%)
40 mm	3/6(50%)
SEMS overall	14/26 (54%)
SEMS as first line (Severe early stenosis)	4/4 (100%)
SEMS as second or third line (>90 days post LSG)	10/22 (45%)
Surgery (Roux-en-Y gastric bypass)	16/92(17%)

Conclusions: Endoscopic management of symptomatic sleeve stenosis with pneumatic dilatation is safe and effective. Early use of 35 mm Achalasia balloon dilator is associated with better success and some of the failed dilatations can be treated successfully with SEMS.

Indications for and outcome of Transjugular Intrahepatic Portosystemic Shunt (TIPSS), New Zealand Liver Unit New Zealand (1996-2019)

Ibrahim Hassan, Rachael Harry, Edward Gane
New Zealand Liver Transplant Unit (NZLTU),Auckland City Hospital , Auckland, New Zealand

Introduction: Trans jugular Intrahepatic Portosystemic Shunt (TIPSS) is increasingly used for a variety of indications including variceal bleeding and diuretic resistant ascites (DRA). To review the indications, complications and the outcome of TIPSS between 1996 and 2019. **Methods:** All patients referred to for TIPSS between 1996 and 2019 were included. Retrospective analysis of patients' records was made. **Results:** 203 TIPSS were performed in 116 patients; 61 % male, 77% European ethnicity and median age of 54 years. 80% of used stents were covered. TIPSS were placed most commonly for therapy of DRA ,53 %(N=62), and variceal bleeding 40% (34 patients following acute bleeding and 12 post recurrent bleeding despite maximal medical and endoscopic therapeutic modalities). Overall, the intended outcome was achieved in 81% of patients. Of the DRA group, outcome achieved in 73 %(45/62) ,of whom 1/3 were off diuretics and the remaining 2/3 were on smaller doses. Out of 17 remaining patients, 6 had chronic kidney disease, 4 died and 3 were transplanted in 30 days following TIPSS. Of those needed urgent TIPSS (N=34), cessation of variceal bleeding was achieved in 74% (25/34). 15 % (7/45) died within 30 days of TIPSS. Outcome was achieved in 92% (11/12) in patients who required elective TIPPS for recurrent variceal haemorrhage. Complications occurred in 53 % (61/116) of patients with encephalopathy being the most common in 42% (49/116) with 9 patients sustained intractable encephalopathy requiring TIPSS revision (N=5) and transplantation (N=2). All-cause mortality was 10% (12/116) ,with a median MELD of 22, in the 30-day period post and 8%(9/116) got liver transplantation at same period. **Conclusions:** TIPSS is most commonly placed for the therapy of DRA and variceal haemorrhage with a high technical and clinical success at our Centre. Careful selection is required to optimise favourable outcome and minimise complications.

Assessment of liver biopsy complications at Middlemore hospital

Ibrahim Hassan, Yi-Ting Wu, Tiffany Parmenter, Tien Huey Lim
[1]*CMDHB (Middlemore Hospital), Auckland, New Zealand*

Introduction: Liver biopsy is the gold standard diagnostic modality used in assessment of the underlying cause of liver diseases and staging of the degree of fibrosis. It is an invasive procedure and can be associated with complications which may be a deterrent in requesting a biopsy. The aim was to evaluate the safety and complication rates of blind and ultrasound-guided liver biopsy. **Methods:** Retrospective analysis of patients who underwent liver biopsy from 2001 to 2005 and from 2014 to 2018. Patients who had a biopsy for a liver lesion or in the post-transplant setting were excluded. **Results:** 857 patients were identified; 63% male, with a median age of 44 years (range 15-80). The most common indication for a liver biopsy was chronic viral hepatitis B and C (56%) followed by liver function derangement of unclear aetiology (30%). The two main histological diagnoses were inflammation secondary to viral hepatitis (55%) and non-alcoholic fatty liver disease (24%) and 15 % were cirrhotic. 85% (N=728) of biopsies were performed under ultrasound guidance and the remaining 15% (N=129) were blind percutaneous biopsies. Complication rates are shown in the following table:

Complications	Ultrasound-guided biopsies	Blind biopsies	P-Value
Total	1.7% (13/728)	7%(9/129)	0.0036
Abdominal Pain	1.2% (N=9)	3.9(N=5)	0.05
Minor subcapsular haematoma	0.13%(N=1)	1.5%(N=2)	0.6
Intraperitoneal bleeding	0.13%(N=1)	Nil	1
Bile duct injury requiring ERCP	0.27%(N=2)	0.7%(N=1)	0.38
Hospital admission	1.5%(n=)11	2.6%(N=)5	0.083
Blood transfusion	Nil	Nil	
Death	Nil	Nil	

+ Fisher's exact test and two tailed P-Value

Conclusion: The majority of liver biopsies were performed under ultrasound guidance at our center. Ultrasound-guided biopsies were shown to be safe with a low risk of major complications (0.4%) and no associated mortality. Our study results may provide assurance to clinicians and patients when a liver biopsy is indicated.

COMFORT-PSYKI: Psyllium and SunGold® kiwifruit are equally effective treatments of constipation in adults

Simone Bayer[1], Phoebe Heenan[1], Chris Frampton[1], Catherine Wall[1], Lynley Drummond[2], Richard Gearry[1]
[1]*University Of Otago, Christchurch, Christchurch, New Zealand,* [2]*Drummond Food Science Advisory Ltd, Banks Peninsula, New Zealand*

Introduction: PSYllium and SunGold® KIwifruit (PSYKI), both known treatments for constipation, were chosen as interventions to determine the effects of food on the gastrointestinal system, physical and mental health. The primary aim of this study was to translate the observational systems approach methodology used in "Christchurch IBS cOhort to investigate Mechanisms For gut Relief and improved Transit (COMFORT)" into a clinical trial. **Methods:** COMFORT-PSYKI is a single-blind, positively controlled, randomized cross over trial and examines the effect of two SunGold® kiwifruit and fibre-matched psyllium

per day on adult participants with functional constipation (FD), constipation-predominant irritable bowel syndrome (IBS-C), and healthy controls. The outcomes were changes to the Gastrointestinal Symptoms Rating System (GSRS), alterations in Complete Spontaneous Bowel Movements (CSBM), changes in the Structured Assessment of Gastrointestinal Symptoms (SAGIS), and changes to the Patient Reported Outcome Measurement Information System (PROMIS). Full data sets were analysed by ANOVA using SPSS V25. Approval was given by the New Zealand Human Disability and Ethics Committee (18/STH/154). **Results:** Seventy-four participants were recruited; 19 IBS-C, 17 FC, and 38 controls; 57 completed the study. Constipated participants had statistically significantly more CSBMs; 1.6 ± 0.7 CSBM/week with Psyllium, and 1.0 ± 0.7 CSBM/week with SunGold® kiwifruit. Consumption of SunGold® kiwifruit also resulted in less straining in constipated participants ($F[1,53]=5.639$, $p=0.0210$). GSRS constipation domain scores were significantly reduced with both interventions ($F[1,51]=8.865$, $p=0.004$), but kiwifruit had a bigger impact on FC ($F[2,51]=3.323$, $p=0.044$). The interventions also significantly reduced epigastric symptoms (SAGIS, $F[1,51]=10.001$, $p=0.003$) including indigestion (GSRS Indigestion score, $F[1,51]=7.563$, $p=0.008$), and acid regurgitation (SAGIS, $F[1,51]=11.478$, $p=0.001$), but did not affect anxiety or depression scores. **Conclusion:** SunGold® kiwifruit are as effective as psyllium in the treatment of constipation in adults. Additionally, SunGold® kiwifruit reduces straining, and both interventions have positive effects on epigastric symptoms including acid regurgitation and indigestion.

Do nursing or endoscopist derived colonoscopy comfort scores reflect patient comfort?

Henry Wei, Judy Huang
Dept of Gastroenterology, Middlemore Hospital, Counties Manukau District Health Board, Auckland, New Zealand

Introduction: The modified Gloucester comfort scale (GCS), although not formally validated, is routinely used as a quality assurance measure to assess patient discomfort during colonoscopy. We want to determine whether endoscopist or nurse derived GCS accurately reflects patient experience. **Method:** Prospectively collected data from 123 patients undergoing colonoscopies at a single centre from August to September 2019. Patients rated their comfort score using a 1=best to 5=worst ordinal scale that was compared with endoscopist and nurse assessed GCS from 1-5. Data collection was blinded for each assessor. Fleiss's kappa statistics was used to investigate inter-rater agreement of comfort scores. Patients were also asked to rate their overall satisfaction of the procedure. **Results:** Endoscopists had better comfort score agreement with nurses ($\kappa=0.36$; minimal agreement) than with patients ($\kappa=0.26$; no agreement). Nurse derived comfort sores had no agreement with patients ($\kappa=0.11$). Overall inter-rater agreement was minimal with greater variability at worse levels of discomfort. There was no significant difference in Fentanyl and Midazolam dose between those patients who reported mild discomfort versus those with high discomfort. Patients undergoing their first colonoscopy anticipated higher discomfort levels compared to those who had prior colonoscopy examination (OR 2.67 [95% CI 1.38-5.23]; $p=0.0036$) but this did not influence final pain scores. The only factor that was significantly associated with patient pain score in multivariate analysis was gender, with male more likely to report higher scores (worse comfort) than female patients (OR 2.67 [95% CI 1.18-6.05]; $p=0.018$). Patient comfort scores weakly correlated with their satisfaction of the procedure (spearman coefficient=0.29). **Conclusion:** Endoscopist and nurse derived GCS are not reliable measures of patient comfort. There is a need for a validated, easy-to-use method to assess patients' pain during colonoscopy. Assessment tools that utilize objective bedside cues such as the nonverbal pain scale may be a better quality indicator.

Nutritional status, support and outcomes in patients treated by the Northern Regional Pelvic Exenteration Service

Adam Willington, Becs Coggins, Simon Hill, John Pulford, Charlotte Rowan, Mike Hulme-Moir, Russell Walmsley
Waitemata DHB, Auckland, New Zealand

Introduction: Pelvic exenteration involves removal of some or all pelvic organs as treatment for locally advanced primary or recurrent pelvic malignancy. Major morbidity occurs in 40% patients. There is limited data published on the nutritional status of exenteration patients and none from New Zealand. We sought to identify nutritional status, support and outcomes of patients undergoing pelvic exenteration. **Method:** Retrospective analysis was performed for all pelvic exenteration patients from June 2005 to September 2019. Student-T and Mann-Whitney-Wilcoxon tests were used for continuous variables and Fisher's exact test for categorical variables. Ethical approval was obtained from WDHB. **Results:** 69 patients underwent pelvic exenteration: 31 had advanced primary cancer and 38 recurrent disease. 67 (97%) had colorectal cancer, 1 (1%) gynaecological, and 3 (2%) other. 51% of patients were male. The mean age was 61.5 (33-84 years). The majority (76.8%) of patients were NZ European/European. Nutritional status: At baseline 21.7% patients were at high risk of malnutrition (Malnutrition Universal Screening Tool [MUST] score ≥2) and 5.8% had a BMI<18.5. Baseline nutritional status was not associated with major complication or length of admission. There was a non-significant trend for parenteral nutrition (PN) requirement in patients with MUST≥2 ($p=0.10$). Nutritional support: Two (2.9%) patients required pre-operative PN. 19 (27.5%) required PN post-operatively for a mean duration of 14.7 (2-91 days). 56.5% patients undergoing cystectomy required PN.
Patients requiring PN had longer hospital admissions (35 vs. 19 days,$p=0.001$) and higher incidence of major complications (73.7% vs. 30%,$p=0.002$). PN use was complicated by re-feeding syndrome in 1 patient (5.3%) and line infection in 1 patient (5.3%). **Conclusions:** Over 25% of exenteration patients required PN. Cystectomy, incidence of major complications and length of admission were associated with PN requirement. Proposed commencement of PN in all exenteration patients is not justified, but early identification of candidates may be possible.

Access to, and usefulness of, dietetic services for inflammatory bowel disease

patients in New Zealand – a patient perspective

Nicky McCarthy[1], Catherine Wall[1], Michael Schultz[2]
[1]*Dept of Medicine, University Of Otago, Christchurch, New Zealand,* [2]*Dept of Medicine, University of Otago, Dunedin, New Zealand*

Introduction: International guidelines recommend that inflammatory bowel disease (IBD) patients should have access to specialised dietitian support. Anecdotal reports suggest that patient access to dietitians in New Zealand (NZ) is variable. The aim of this study was to investigate factors associated with NZ IBD patient access to a dietitian and the usefulness of a dietitian appointment. **Methods:** In early 2020 an electronic survey was disseminated to patients (and parents) by Crohn's and Colitis NZ and IBD health professionals (University of Otago Ethics Approval H19/167). Quantitative responses were analysed via non-parametric methods and qualitative responses were analysed thematically. **Results:** The respondents (n=407) were mostly female (74%) and NZ European (91%) and 5% identified as Māori. Only 52% had seen a dietitian, yet 95% had topics they would like to discuss with a dietitian. Patients more likely to have seen a dietitian were: younger ($p< 0.001$); diagnosed with Crohn's disease ($p= 0.001$); had previous IBD surgery ($p< 0.001$); on biologic therapy ($p= 0.005$). Most respondents who had seen a dietitian (79%) found it useful, more so if they had received written information ($p< 0.001$) or had seen a dietitian in private practice ($p= 0.007$). Common themes from qualitative data collected included the need for dietitians to have specialist knowledge of IBD and for patients to be routinely referred and to have improved access to dietitians on an ongoing basis. **Conclusion:** There is inequitable access to dietetic services for IBD patients in NZ. This may be due to perceptions that older patients or those with less severe disease will not benefit from dietitian input. Differences between publicly and privately funded dietetic services should be explored to ensure that advice provided is equally useful for patients.

Evaluation of an animated video to provide patient information for colonoscopy: Establishing consistency and standardisation of information to support informed consent

Merrilee Williams
Mercy Hospital, Dunedin, New Zealand

Introduction: The project at hand aimed to assess the acceptability of an animated video designed to improve the patients understanding of colonoscopy and provide a standardised, consistent approach to delivery of mandated information in order to support informed consent. The video was designed to meet Endoscopy Guidance Group New Zealand (EGGNZ) requirements for patient consent, as well as a specific focus on health literacy. **Methods:** Evaluation research methodology was used to evaluate the efficacy of a new, professionally produced video in clinical practise. A SurveyMonkey questionnaire collected quantitative data with free text option from 100 colonoscopy patients over a period of 3 months in 2019, at a private surgical day stay facility in Otago, New Zealand. **Results:** Feedback on the video from the study group was overwhelmingly positive. For 47%, this was their first colonoscopy. Less than half of the study group had accessed the internet for health information before, however 86% felt very positive about receiving information about colonoscopy in a video format. A very high proportion of respondents (98%) found the video visually appealing. All respondents found the information easy to understand and presented in an appropriate way. Similarly, respondents reported that the video sufficiently informed them of what to expect before, during and after their colonoscopy in an acceptable way. Known risks of colonoscopy were explained as per EGGNZ, respondents found the manner in which these were explained acceptable. **Conclusion:** Respondents overall felt the animated video to provide information about colonoscopy was of good quality, and provided information in a manner that was understandable, not frightening, and comprehensive. They felt that it provided them with enough information to feel comfortable to provide informed consent for colonoscopy.

Reopening a closed distal colonic anastomosis – 2 cases and 2 techniques

Rees Cameron
CCDHB, Wellington, NZ

Introduction: Anastomotic closure is a rare complication of anterior resection with loop ileostomy. Surgical refashioning of the anastomosis can be a difficult and significantly morbid procedure. Herewith are described two cases resolved using EUS-guided stenting using two different techniques. **Case 1:** 71M had colorectal anastomosis closure identified 5 months after laparoscopic HAR for pT4N2 sigmoid cancer. Retrograde colonoscopy through ileostomy to sigmoid colon was possible, where 200ml of water was instilled and scope withdrawn. A linear EUS scope was passed antergrade through anus to the anastomosis and the fluid filled sigmoid identified. This was punctured with 19G needle and 0.035 guidewire passed with position confirmed using fluoroscopy. Tract dilated with 4mm Hurricane balloon and then a covered metal stent 18mm diameter deployed across the anastomosis. The stent was removed 3 weeks later, ileostomy reversed 1 week after and follow-up colonoscopy 27 months later showed widely patent anastomosis. **Case 2:** 58M had anastomotic closure identified 14 months after open HAR for pT4N2 rectosigmoid cancer. Retrograde colonoscopy through ileostomy was not possible due to geometry and length of ileal segment. A linear EUS scope was passed through anus to anastomosis. EUS examination identified possible sigmoid lumen that was injected with mixture of water and contrast using 19G needle. Fluoroscopy confirmed sigmoid structure and 0.035 guidewire passed. A 20mm x 10mm Hot Axios deployed across anastomosis. Ileostomy reversed with subsequent normal passage of stool. Stent removed without incident. **Conclusion**: These cases are a reminder of the utility of EUS in (re)creating gastrointestinal luminal anastomoses, thereby avoiding surgery. Although filling the target lumen prior to EUS facilitates the procedure, as the second case demonstrates this can be performed directly by EUS-guided injection.

Inpatient upper gastrointestinal bleeding referrals at Auckland City Hospital (ACH)

Kirsty Macfarlane, Lesley-Ann Smith, Abhimati Ravikulan
Middelmore Hospital, Auckland, New Zealand

Introduction: Validated risk assessment scores are commonly used to assist in predicting clinical outcomes and need for endoscopy and intervention in upper gastrointestinal bleeding (UGIB). ACH does not currently use an endoscopy-specific inpatient referral form. The aim was to compare the standard generic inpatient referral form with an endoscopy-specific referral, incorporating the established Glasgow Blatchford Score (GBS). **Method:** A retrospective collection of 28 inpatient referrals from November 2019–February 2020, where UGIB was the indication. An endoscopy-specific referral form was designed incorporating the GBS, all wards were encouraged to use this from during April 2020. We compared the clinical information provided and whether this was sufficient to calculate a risk score. Outcomes were assessed by reviewing the gastroscopy reports. P-values were calculated using Ficher's exact test.

Results

Indicators	Generic form n=28	Endoscopy specific form N=3	P value
Melena	8/28, 28.5%	3/3, 100%	0.361
Haemoglobin	8/28, 28.5%	3/3, 100%	0.037
Blood pressure	11/28, 39%	3/3, 100%	0.081
Urea	4/28, 14.3%	2/3, 66.6%	0.087
Comorbidities	12/28, 42%	3/3, 100%	0.101
Ability to calculate GBS	1/28, 3.5%	2/3, 66%	0.018
Pathology identified on scope	5/28, 16.8%	2/3, 66.6%	0.112
Intervention needed	4/28, 14.3%	1/3, 33%	0.42, +0.027

+ Chi squared and one-tailed P-value

Conclusion: Our current inpatient UGIB referral form at ADHB performed poorly in predicting patients at higher risk of requiring intervention. Of statistical significance only 3.5% of the generic forms allowed the calculation of the GBS. Basic information provided as shown in table 1 were lacking. A limitation was small sample size during April 2020 related to the COVID-19 virus. The procedure specific referral form resulted in better information provided by the referring teams improving the prediction of the need for intervention in endoscopy.

Impact of COVID-19 lockdown on delayed endoscopy and diagnosis of gastrointestinal cancers at auckland city hospital

David Rowbotham[1], **Sharon Wing Kee Yiu[2]**
[1]Auckland City Hospital, Auckland, New Zealand, [2]University of Auckland, Auckland, New Zealand

Introduction: The COVID-19 pandemic has significantly disruptd medical care globally. This study explores the impact of COVID-19 on delayed endoscopic procedures via Auckland District Health Board (ADHB). We aimed to investigate whether our patients could potentially be harmed by the lockdown with delayed diagnosis of gastrointestinal malignancy. **Methods:** All patients on endoscopy lists that were cancelled due to the COVID-19 initial level 4 lockdown were followed. When the delayed procedure was completed the endoscopy result and any histology results were collated. **Results:** 188 patients had their endoscopic procedure delayed. Of these, 15 patients had their procedure cancelled: 10 with symptom resolution requiring no further investigation; 1 moved out of ADHB area; 1 was overseas; 1 went private; 1 whose care was taken over by a different medical service, and 1 scheduling error (already had procedure before lockdown). 9 patients did not attend their rescheduled endoscopic procedure. 1 patient was excluded as the endoscopy was a planned colorectal operative procedure in theatre. As of 31 August 2020, 143 patients had completed their delayed procedure. The majority of patients had non-significant endoscopic findings but 2 patients were diagnosed with gastrointestinal malignancy (one caecal adenocarcinoma and one rectal adenocarcinoma). The delay in diagnosis from the cancelled procedure to the actual endoscopy was 75 and 63 days respectively. **Conclusion:** This study confirms the COVID-19 NZ lockdown did result in delayed diagnosis of gastrointestinal cancers at ADHB. It is too early to know whether this might lead to a worse outcome for those patients but, as the recent reinstitution of level 3 restrictions in Auckland have shown, COVID-19 is not going anywhere soon and we must be able to adapt to these trying conditions. Hence, this study highlights the need to utilise common sense and clinical judgement when triaging to endoscopy – delay or proceed?

The Utility of anti-tTG Serology in the Investigation of Iron Deficiency Anaemia in a Provincial Hospital

Sarah Cowan, Brendan Desmond, Edmund Leung
Taranaki District Health Board, New Plymouth , New Zealand

Introduction: New Zealand Best Practice Advisory Centre (BPAC) guidelines suggest Tissue Transglutaminase antibody (anti-tTG) serology is an appropriate diagnostic tool in excluding coeliac disease as the cause of iron deficiency anaemia (IDA). The high negative predictive value (97%) of this test can circumvent the need for routine duodenal biopsy during endoscopic investigation of IDA. This audit assesses the utility of anti-tTG serology at Taranaki District Health Board (TDHB). **Methods:** Patients undergoing endoscopic investigation of IDA over a two year period from 2018-2019 inclusive were examined (n=254). Data was extracted from electronic hospital records. Those with duodenal pathology (n=33) or another cause of IDA (n=44) on endoscopy were excluded. The cost of duodenal biopsy in IDA, was established by identifying the number of duodenal biopsies performed (n=95) and the number of serological tests completed (n=37). This was then compared to a scenario where BPAC guidelines were strictly followed. **Results:** Of 178 patients without an obvious cause of IDA on endoscopy; 37 had anti-tTG serology prior. Of 129 patients who did not have serological testing, 95 duodenal biopsies were performed on macroscopically normal tissue; 62 of which were the only biopsy taken during that procedure. Financial analysis showed the cost of investigating coeliac disease was $31,240 over the audit period. When compared against a scenario in which the BPAC guidelines were followed, the potential savings were $9,013.25 per annum. **Conclusion:** Pre-endoscopy anti-tTG testing is effective in excluding coeliac disease when investigating IDA. In addition to reducing the time required for endoscopy and histopathology, mandatory anti-tTG serology as part of investigation of IDA would save TDHB up to $9000 annually. The next step is integrating mandatory coeliac serology into the referral pathway for endoscopic investigation of IDA.

Assessment of disease specific knowledge levels following an education

program for parents of children with inflammatory bowel disease

Angharad Vernon-Roberts, Richard B Gearry, Andrew S Day
University of Otago (Christchurch), New Zealand

Introduction: Children with inflammatory bowel disease (IBD) and their parents have increasing roles in disease management and require sufficient, appropriate information for communication with their clinical team. Formal education is effective at improving knowledge, disease outcomes, and mental health, yet few interventions have been targeted for parents of children with IBD. This study aimed to assess the efficacy of a parent education program at increasing disease specific knowledge for parents of children with IBD. **Methods:** A two day parent education program was held at the annual residential camp for children with IBD in New Zealand (Camp Purple) with knowledge levels tested pre and post intervention using a validated assessment tool: IBD-KID2. **Results:** Thirty parents consented, twenty-five completed the study, 70% were female and 83% had a child with Crohn's disease. The pre-intervention mean score (maximum fifteen) was 10.6 (SD 2.9), with no associations with independent variables. Knowledge levels increased significantly following the education program to a mean 12.6 (SD 2.0) ($p < 0.005$) (Figure 1). The only variable predictive of the magnitude of the longitudinal change was the initial baseline score (R 0.661, $p < 0.005$).

Figure 1. IBD-KID2 scores pre-intervention (Baseline) and two weeks after intervention (Repeat).

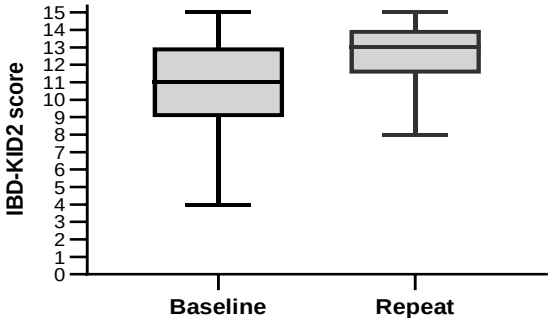


Figure 1. IBD-KID2 scores pre-intervention (Baseline) and two weeks after intervention (Repeat).

Conclusion: While opportunities for formal parent education are infrequent this study showed that it is effective at improving knowledge levels and should be regarded as an ongoing endeavour. For children with IBD and their parents, disease and treatment knowledge may improve outcomes and should, therefore, be reinforced during clinic encounters.

Assessment of disease-related knowledge among children with inflammatory bowel disease and their family using IBD-KID2; evaluating tool generalisability

Angharad Vernon-Roberts[1], Robert N Lopez[2], Peter Lewindon[2], Daniel A Lemberg[3], Nerissa L Bowcock[4], George Alex[5], Anthony Otley[6], Kevan Jacobson[7], Amin J Roberts[8], Helen M Evans[8], Prof Richard B Gearry[1], Andrew S Day[1]
[1]University of Otago (Christchurch), Christchurch, New Zealand, [2]Queensland Children's Hospital, Brisbane, Australia, [3]Sydney Children's Hospital, Sydney, Australia, [4]University of New South Wales, Sydney, Australia, [5]Royal Children's Hospital, Melbourne, Australia, [6]Dalhousie University, Nova Scotia, Canada, [7]BC Children's Hospital, Vancouver, Canada, [8]Starship Child Health, & Department of Paediatrics, Auckland, New Zealand

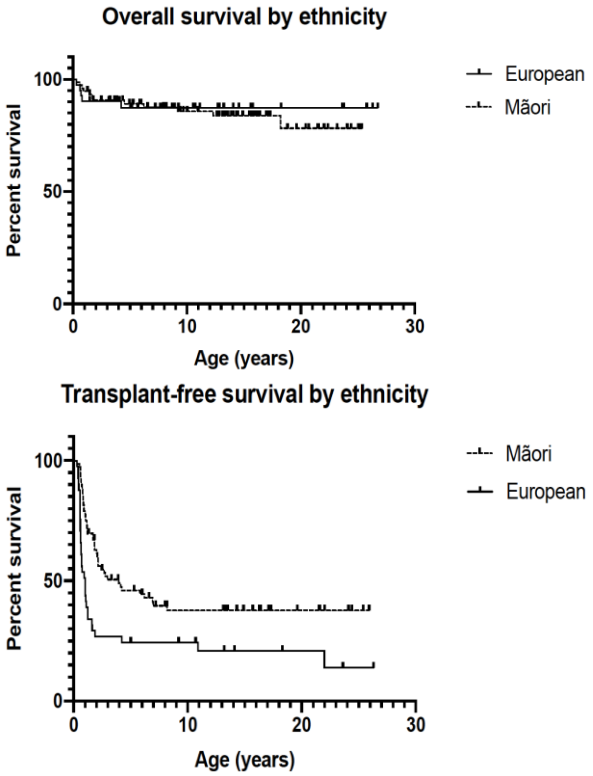
Introduction: Children with inflammatory bowel disease (IBD) and their families benefit from improved knowledge of their disease and treatment. Knowledge levels of individual family members are infrequently studied, but may identify where education is best directed. We aimed to assess disease specific knowledge among children with IBD, parents, and siblings, using a validated assessment tool (IBD-KID2), and to establish generalisability of IBD-KID2 across three countries. **Methods:** Children with IBD and family members were recruited from tertiary IBD clinics in New Zealand, Australia and Canada. All participants completed IBD-KID2 online at baseline, and the children with IBD again after two weeks to assess reliability. IBD-KID2 consists of fifteen items (nine true/false, six multiple-choice) and is scored as one point for each correct answer to a maximum of fifteen points. **Results:** Participants included 130 children with IBD, 118 mothers, 55 fathers, and 37 siblings. Children with IBD had a mean score of 9.1 (SD 2.9), significantly lower than the mother's mean score of 11.8 (SD 2.4, $P = <0.001$), father's mean score of 11.2 (SD 2.3, $P = <0.001$), and higher than the sibling mean score of 7.5 (SD 3.8, $P = <0.001$). Scores of children with IBD were positively associated with current age ($P < 0.001$), age at diagnosis ($P = 0.04$) and fathers education level ($P = 0.02$). Significant score correlations were seen between children with IBD and their mother ($P = <0.001$) but not father. Sibling scores were not correlated with either parent. Test-retest reliability was high. The cohorts from each country were comparable, and no difference in group scores were seen between countries. **Conclusion:** IBD-KID2 is a generalisable and reliable tool for the assessment of disease and treatment knowledge for children with IBD and their family. Score correlations between parents and children with IBD suggest transfer of knowledge, but sibling knowledge is low and targeted education may be beneficial.

Ethnic disparity in outcome of biliary atresia in New Zealand: improved transplant-free survival in Māori patients endures into adulthood

Helen Evans[1], Innes Asher[3], John McCall[2], John Atkinson[1], Philip Morreau[1]
[1]Starship Child Health, Auckland, New Zealand, [2]Auckland City Hospital, Auckland, New Zealand, [3]The University of Auckland, Auckland, New Zealand

Introduction: Compared to European children, New Zealand (NZ) Māori children have three times the incidence of biliary atresia (BA) but higher transplant-free survival (TFS) during childhood despite undergoing Kasai portoenterostomy at an older age[1]. The aim was to determine whether the higher TFS rate in Māori children endures into adulthood. **Methods:** All cases of BA born 1993-2018 in NZ were identified via coding data, paediatric surgical and national transplant databases. Ethnicity was recorded from the National Health Index database. Outcome was determined and statistical analysis of overall survival (OS) and TFS undertaken using GraphPad prism. Institutional ethical approval was granted. **Results:** 159 patients were identified

(Māori 76 (48%), European 43 (27%), Others 40 (25%)). Europeans, Māori and Other children underwent Kasai at a median of 49, 63 and 60 days respectively ($p < 0.001$). 87 patients underwent liver transplantation (LT) at a median of 1.0 years (0.4 – 22.0); 29 (67%) Europeans (median 0.7 years (0.4-22.0)); 39 (51%) Māori (median 2.4 years (0.6-8.2)). TFS was superior at all timepoints for Māori ($p < 0.05$). 12 (16%) Māori patients died (median age 2.7 years (0.3-18.2)) – 6 deaths after LT (15.4% of transplanted Māori patients), 5 while awaiting LT. 6 (14%) Europeans died (median age 0.7 years (0.3-4.2)) – 1 death after LT (3.4% of transplanted European patients), 2 while awaiting LT. There was no difference in OS between ethnicities at any timepoint. **Conclusions:** Ethnic disparity in outcomes of BA endure into adulthood with Māori having higher TFS up to 25 years of age compared to Europeans, despite being older at Kasai. These data may provide evidence a different BA phenotype in Māori patients. However superior TFS does not translate into improved OS with more Māori dying after LT. This warrants further research to ensure patients are not disadvantaged by being transplanted at an older age.

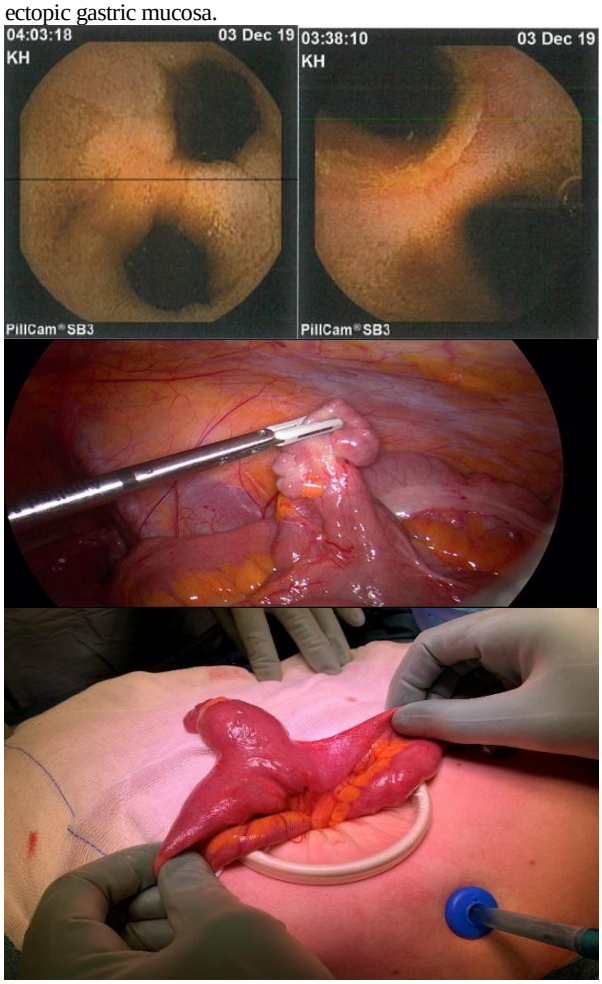


Diagnosis of Meckel's Diverticulum through Video Capsule Endoscopy

Jack Ye[1], Jason Hill[1], Mark Thompson-Fawcett[2], Srikantaiah Manjunatha[1]

[1]*Southern DHB Gastroenterology Department, Dunedin, New Zealand,* [2]*Southern DHB Surgical Department, Dunedin, New Zealand*

Introduction: Meckel's diverticulum is a congenital condition most frequently diagnosed in children and adolescents and is a rare diagnosis in adults. It is often difficult to diagnose due to the low sensitivity of the available imaging methods. The video capsule endoscopy is emerging to be a valuable modality in the pre-operative diagnosis of Meckel's diverticulum. **Case report:** We describe a case of Meckel's diverticulum in a 23-year-old female who presented with a history of ongoing iron deficiency anaemia associated with previous episodes of rectal bleeding. She was diagnosed with coeliac disease over 10 years ago with strict adherence to a gluten free diet. Previous upper and lower gastrointestinal endoscopic evaluations did not demonstrate a source of gastrointestinal bleeding. It was felt that the iron deficiency could not be explained by coeliac disease due to strict adherence to gluten free diet and negative serology. A Meckel's scan was negative. She subsequently underwent video capsule endoscopy which demonstrated the presence of a double lumen sign with surrounding rim ulceration. With the results of the capsule endoscopy, she was referred to the surgical service and underwent laparoscopic resection of the Meckel's diverticulum with operative and histological confirmation, with no evidence of ectopic gastric mucosa.



Conclusion: Meckel's diverticulum remains a rare diagnosis among adults presenting with gastrointestinal bleeding. The common available radiological imaging modalities have a low to moderate sensitivity in the identification of Meckel's diverticulum. Video capsule endoscopy can have a role in the investigation and identification of Meckel's diverticulum in adults when the clinical suspicion is high and other modalities of investigations have drawn a blank.

			p value	
Variable	Diagnosis	Mean (SD)	BA & NC vs Control	BA vs NC
Phenylalanine	BA	69.8 (17.64)	<.0001	0.7282
	NC	68.7 (18.15)	<.0001	
	Control	61.4 (13.24)		
Methionine	BA	30.52 (11.59)	<.0001	0.0046
	NC	25.49 (7.69)	0.0039	
	Control	22.68 (7.27)		
Leucine	BA	168.63 (50.59)	0.0412	0.0396
	NC	149.59 (53.03)	0.1908	
	Control	157.09 (43.65)		
Galactose	BA	0.21 (0.18)	<.0001	0.2454
	NC	0.17 (0.15)	0.0123	
	Control	0.14 (0.11)		

Utility of oesophageal manometry in a paediatric patients

Stephen Mouat

Starship Children's Health, Auckland District Health Board, Auckland, New Zealand

Introduction: High resolution oesophageal manometry /impedanceis is an investigative modalities that describes pressure and fluid movement in the oesophagus. In this study we describe the utility of eosophageal manometry to alter management in a paediatric population. **Methods:** 32 patients, age 2.1-14.3 years, weight 11.2- 96.6kg underwent oesophageal manometry at Starship Hospital between December 2012 and November 2019. Indications were unexplained dysphagia or feeding difficulties where upper gastrointestinal endoscopy and contrast study did not provide a definitive explanation. 4 patients had suspected achalasia, 3 post oesophageal atresia repair, 5 known dysmotility syndromes (pseudo-obstruction), 4 eosinophilic oesophagitis with ongoing dysphagia despite normal mucosa histology and 16 with dysphagia symptoms. **Results:** 11 out of the 32 patients had a clinically significant abnormality noted in their study. 2/5 patients with other gastrointestinal dysmotility issues, 1/4 of patients with eosinophilic oesophagitis, 3/3 oesophageal atresia repair, 4/4 patients with achalasia and 4/16 of patients with dysphagia symptoms. On 6 month review: 4 of the patients with achalasia had undergone successful surgery, 3 patients with oesophageal atresia and the four patients with "other" dysphagia symptoms and an abnormal manometry had improved outcome with specific positioning and eating pattern advice, 2 patients with other gastrointestinal dysmotility and 1/3 patients with oesophageal atresia avoided potentially deleterious fundoplication, 1 patient with the eosinophilic oesophagitis and abnormal manometry responded well to systemic steroids, 12 patient with dysphagia symptoms and normal manometery, 6 had resolved, 2 had undergone fundoplication with good functional outcome. 2 were still receiving care for anxiety issues, 2 there was no follow-up record available. **Conclusion:** Oesophageal manometry is a useful investigation that positively influences outcome in a select paediatric population.

Newborn screening (Guthrie card) results in infants with biliary atresia and neonatal cholestasis

Stephen Mouat[1], Helen M Evans[1,2], Diane Webster[3]

[1]*Starship Childrens Health, Auckland, New Zealand,*[2]*The University of Auckland, Auckland, New Zealand,*[3]*Newborn Metabolic Screening Programme, Auckland, New Zealand*

Introduction: Biliary atresia is a severe neonatal cholangiopathy. It is the leading indication for liver transplant in children. Diagnosis is usually made after the first month of life with little known about the early neonatal course. All New Zealand infants have blood taken (Guthrie card) at 48 hours of life to allow early diagnosis of a number of rare treatable conditions. In this study we compare the Guthrie card results of patients with Biliary Atresia, neonatal cholestasis and normal controls. **Methods:** The Guthrie card results between 9/2008 and 8/2019 from 65 BA and 65 neonatal cholestasis patients were retrospectively reviewed. Ten adjacent card results from unaffected infants for each case were used as controls. The results of 28 primary metabolites measured, screening for disorders of amino acid metabolism, fatty acid oxidation, thyroid, cystic fibrosis, adrenal hypoplasia, galactosaemia, biotinidase deficiency and severe combined immunodeficiency, were compared between cases and controls. **Results:** Gestational ages were median 39 weeks in all three groups ($p>0.05$), Birth weight BA 3305g (S.D. 532g) $p=0.03$, NC 2940g (508g) $p= 0.0004$, control 3470g (541g). The median age of blood acquisition was 48 hours. The areas under the curve for BA compared with controls AUC (95% CI) = 0.77 (0.71-0.83). **Conclusion:** At 48 hours of life there are biochemical changes in children with BA and NC compared to controls. This suggests an antenatal/ very early post-natal onset of disease. These changes are consistent with metabolic profiles reported in older children and adults with liver disease. Combined, these findings justifies further work in neonatal screening for biliary atresia.