Welcome

Welcome to the November edition of NewWave.

If you have any relevant articles or papers that you would like to be included in future editions, please email them to steve.perring@poole.nhs.uk

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Forthcoming Events 2019:

1st March 2019    AGIP Masterclass in Upper GI Physiology
                 To book a place go to the address below:
                 https://www.eventbrite.co.uk/e/bsg-agip-upper-gi-masterclass-2019-tickets-51872754806

25-29 January 2019    BSPGHAN Annual Meeting, Oxford
                     https://www.bspghan.org.uk/content/bspghan-2019

14th March 2019    Impedance/pH Reflux Testing Clinical Seminar
                    http://www.synmed.co.uk/index.htm

18-21 May 2019    Digestive Diseases Week
                   San Diego Convention Center
                   San Diego, CA
                   http://www.ddw.org/home

17-20 June 2019    BSG Annual Meeting
                    Glasgow

3-6 September 2019    ICS 2019, Gothenburg, Sweden
                     https://www.ics.org/2019

8-10 September 2019    GESA Australian Gastroenterology Week (AGW), Adelaide
                        South Australia
                        gastroenterology-week/

19-23 October 2019    United European Gastroenterology (UEG) Week
                      Barcelona, Spain
An exciting opportunity for an experienced Clinical Measurement GI Physiologist to be based in St James’s Hospital, Dublin. This unit provides a comprehensive service in GI Function Testing within its local catchment population and at a national level. It is the national training centre for GI Physiology and is an Accredited Training and Service unit with the Association of GI Physiologist of Great Britain and Ireland.

Under the direction of the Chief Physiologists the appointed Physiologist will undertake the duties appropriate to a basic grade GI Physiologist. Conduct a full range of GI diagnostic tests including High resolution Manometry, 24 h pH/impedance monitoring and carrying out full range Hydrogen breath tests.

This post will allow the post holder to develop and expand their experience whilst continuing to provide a quality service for patients by ensuring that every patient is treated as an individual in terms of courtesy, kindness, efficiency, efficacy, and confidentiality.

GI physiologist post is listed as part of the highly skilled eligible occupations for work visas/permits. See


For further information and details, please check the website link below where candidates can apply, closing date 13 Jan 2019 on

http://www.stjames.ie/Careers/AlliedHealthSocialCare/
AGIP has worked with the National School of Healthcare Science (NSHCS) to pilot ASP for GI and has been instrumental in making ASP available to all disciplines. As a professional body we should be very proud that we have been a crucial part in the development of ASP across healthcare science. We are pleased to report this hard work has resulted in the first ASP graduate in GI this September.

The NSHCS has published processes for Accredited Scientific Practice (ASP) so that it is in line with the STP timeframe. It is important to state at this point that ASP is a generic term, and there will be ASP courses at different levels. For GI this is at masters’ level and has previously been referred to as ASSP (specialist). Working with these timelines if workplaces are planning on a member of staff going through ASP they need to plan in advance. If a new ASP course is required (ie one that is not already approved) this needs to be approved by the NSHCS BEFORE an individual applies for that ASP. Currently we have 3 ASP courses – Upper GI, Lower GI and combined Upper and Lower GI. All of these courses include introduction to GI. We are aware that the introduction to GI academic teaching is after the specialist module. This is due to where these courses lay in the STP timetable, as ASP courses access STP modules. All ASPs will follow the same time line (see diagram). For each ASP there is an academic element and a workplace element. These are to be done in parallel. It is advised that when an individual applies to NSHCS for the ASP and workplace part they should also apply to Newcastle for the academic part at the same time. This is because there are a limited number of places and deferral of one element is not an option. It is also important to note that once an individual starts an ASP they must follow the timeline. Deferral is only an option in extenuating circumstances, as it would be for an STP trainee.

All ASPs, regardless of discipline, will follow the same timeframe.

Below is a diagram of the timeline with regards to ASP and how this fits with STP. Please be aware that if applications are after April the individual cannot start until the September of the following year, for example after April 2019 will start Sept 2020.

For further information please go to the NSHCS website and their ASP page


Contact details:
NSHCS: NSHCS@hee.nhs.uk
AGIP: elisa.skinner@srft.nhs.uk
Newcastle: pgclinsci@newcastle.ac.uk
Model timetable for ASP

**ASP Proposal and Approval Process**

- ASP Proposal form submitted
  - Proposals can be submitted AT ANY TIME
  - Approved programmes will be listed on the website for application
  - For a programme to be made available for application and enrolment in the following calendar year, applications should be received by 31st December

**ASP Application Process**

- ASP Programmes open for application
- ASP Application process closed 30th April

**ASP STP Completion**

- Trainee starts the ASP programme
  - The trainee is provided with e-portfolio access and completes learning and data sharing agreement
- Trainee completes ASP programme modules in the workplace AND university throughout the year(s)
- Trainee books place at the OSFA
- Trainee completes the OSFA
- ASP Completion
  - NSHCS reviews OSFA results and e-portfolio completion
  - Trainee provides University transcript
  - Completion certificate issued

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Dear AGIP members,

The AGIP Council are currently recruiting new members. If you are an AGIP independent practitioner and would like to be considered for a role on the council, please fill out the form below and return it by 4th December 2018.

**Expression of interest for a position on the AGIP Council**

ASSOCIATE MEMBERS AND STUDENTS ARE NOT ELIGIBLE FOR NOMINATION

**Title:**

________________________________________

**Name:**

________________________________________

**Job Title:**

________________________________________

**Address:**

________________________________________

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________________________________________

**BSG Number:**

________________________________________

**Signature:**

________________________________________

SHORT CV AND BRIEF COVERING LETTER MUST BE ATTACHED WITH THIS FORM

Please return (via email) to:

AGIP Membership Secretary
jennifer.burke@hey.nhs.uk
This was a fantastic 2 day meeting packed full of informative talks from the great and the good of the colorectal world hosted by the Mark Scott and Charlie Knowles from The Royal London and sponsored by Ardmore Healthcare.

**Day 1**

Dr Jose Troche from Veracruz discussed the societal impact of constipation which is has 13-15% prevalence and highlighted the importance of identifying what is more important to the patient the symptoms or the frequency. For most doctors they define constipation as defecation once every 4 days or less. Whereas in fact it may be better to define it as needing to strain more to pass a motion. There is a significant link with maltreatment, emotional and sexual abuse and an increased incidence of constipation with associated decrease in QoL which is comparable with other chronic conditions. 85% of patients will require medical care with the bulk of the costs associated with treatment occurring in the first 3 months of symptoms.

Dr Erini Dimidi, London talked about the perceptions of constipation and highlighted the difference between what is important to the patient is often different to the medics. The most important symptoms for patients are: excessive straining, spending a long time on the toilet and laxative use which are not part of the formal diagnostic criteria. For the doctors it appears that infrequent bowel movements is the key identifier and that doctors are actually better at identifying the absence of constipation and by using Rome IV they are missing some of the positive patients. Dr Dimidri concluded by saying that in terms of making a correct diagnosis the patient is best, then the GP’s, then the specialists and then Rome IV.

Prof Simren from Gothenburg identified constipation as associated with abdominal pain with a change in bowel habit and a reduction in frequency. Straining is associated with >25% of bowel movements with less than 3 motions per week. The mechanisms of constipation were cited as diminished colonic propulsion, reduced rectal sensation and defecatory discoordination. It is associated with increased transit time and visceral hypersensitivity. There appears to be a lower pain threshold in IBS-C and an increase in depression scores and symptom severity than in functional constipation.

Dr Asma Kikree from London discussed how constipation is common in inflammatory and non inflammatory connective tissue disorders, namely systemic sclerosis (SS) with 90% of SS patients having some GI involvement in either the ano-rectum or oesophagus. Constipation is seen in 20-50% of SS patients which is higher than the prevalence in non SS. SS patients will often have colonic dysmotility, slow transit and an impaired gastro-colic reflex. In patients with SS it is often found they have hypersensate rectums with lower balloon filling volumes during ARP along with IAS atrophy. Treating constipation in SS includes avoiding fibre. Simulant laxatives, senna and bisocodyl are better and prucalopride is associated with improved symptoms and decreases colonic transit time. It is best to treat anorectal disorders early in SS to reduce risk of progression to FI.
Elhers danlos / joint hypermobility patients are associated with 50% having constipation with GI involvement in 86% of patients. Patients with EDS have recurrent hernias, they dislocate joints easily, have fragile tissues and bleed heavily and are prone to pelvic organ prolapse. They are more likely to have chronic pain, fatigue and anxiety and depression and will have had bowel problems in early life/childhood. EDS patients will have delayed transit (43%), dysynergia (43%) megarectum (12%). Treatment is often difficult as patients do little or no exercise, have a limited diet and are taking high dose opiates.

Mark Scott, London spoke about the coexistence of FI and Constipation and stated only 5-27% of patients will disclose symptoms and you have to ask them specifically. The occurrence appears to be evenly spread between males and females and obstetric trauma is clearly not the only factor. When looking at referral letters only 14% had both FI and CC mentioned however the real overlap between CC and FI is likely to be nearly 50%. However if you don't ask the patients they won't volunteer the information. Incontinence is often likely as secondary to incomplete rectal emptying manifesting as passive or post defecatory leakage. Some limited evidence to show that resolution of evacuatory dysfunction parallels improvement in symptoms of FI.

Miss Karen Nugent discussed constipation and cancer surgery. Surgery for bowel cancer, radiotherapy and chemotherapy all affect bowel function adversely. 5yr survival is now high, with good long term outcomes, but multiple symptoms are commonly associated with cancer treatment, particularly low anterior resection syndrome (LARS). LARS is normally associated with urgency and FI, but other bowel issues such as straining and incomplete emptying are reported. The LARS score does not reflect these other symptoms well, as the LARS score only has 5 of the 18 questions related to constipation.

Dr Phil Dinning from Australia talked about colonic manometry. In chemically induced diarrhoea there is an increase in proximal colon patterns associated with the sigmoid colon. The number of motor patterns in health increase in the morning on waking. It is also known that prucalopride and bisocodyl can increase the number of high amplitude propagated contractions in the gut. Cyclic motor patterns seen in the gut control the speed and activity and act as a braking mechanism. In response to a meal, cyclic activity speeds up in health but not in constipation.

Solid state manometry offers different sensor spacing and is commercially available however it is expensive, easily damaged and limited to 40 sensors. Fibre optic catheters have a higher number of sensors but is also expensive, fragile and only available in NZ and Australia. Water perfused catheters are cheaper and flexible in design up to 84 sensors however you end up causing a high volume of water to enter the body over a 4 hour study.

Dr Rebecca Burgell, a gastroenterologist from Australia covered the role of colorectal sensory dysfunction. 30% of constipated patients report a loss of urge with rectal hyposensation in 25-56% of patients. Hyposensation may relate to afferent nerve dysfunction which occurs in 30% of patients or a change in central processing or a change in compliance and increased rectal diameter. Patients with hyposensation are more likely to have long history of constipation and are 3x more likely to have evacuatory difficulty.

Professor Charlie Knowles from London gave a very in-depth and interesting talk about the genetic basis for constipation. There appears to be a 60% chance of slow transit constipation in patients with a family history. There is a strong association between autism and constipation and overflow and in Hirschsprungs a mutation of the same gene can result in different allelic variation.

Miss Emma Carrington, London discussed the limitations of methods used to describe evacuation. She cited ARP as being flawed for being performed in wrong position with an empty rectum with no native urge to defecate. The balloon expulsion is an indirect measure but at least the patient is sitting in correct position, sensitivity is 51% and specificity is 100%. This measures success of failure in passing balloon. Proctography is more physiological with the use of porridge neo-stool and has fair agreement with balloon expulsion. In health you may see rectocele and prolapse but never an external prolapse, an enterocoele or perineal descent.
Professor Marc Benninga from The Netherlands gave a fantastic keynote address covering constipation in children, the question being is constipation the same in children as in adults? Paediatric constipation occurs mostly in boys pre-puberty and then increases in girls >12yrs. The prevalence of paediatric constipation is 9.5% wherever in the world. Abuse in children and incidence of constipation is a big factor. Dietary factors can play a big part. In those children with CC and on a low fibre diet when increasing the fibre content interestingly they still do not apparently defecate.

Children can look like they are straining but in fact they are actively withholding. In those with severe constipation they can develop disturbed rectal compliance as a result of withholding.

80% of children with CC will do well on laxatives namely PEG polyethylene glycol. However, only 40% of pts will do what you say and take the laxatives and only 13% will self-administer laxatives so they have to be carefully managed.

Enemas also work equally well in children with CC and Senna and Bisocodyl are safe in children. Biofeedback in constipated children disappointingly doesn’t seem to work. For children with overflow irrigation works well and also botox therapy in high pressure sphincters seems to have a long lasting response. There is also some evidence that SNS works well in children for CC.

One alarming fact is that 20-30% of constipated children go on to become constipated adults which we inherit in the adult service.

There was lively debate surrounding the case studies with varied and often conflicting views on how to treat the patients highlighting the difficulty in managing constipation.

Day 2

The first part of the morning revolved around evidenced-based approach to behavioural interventions. Professor Bill Whitehead spoke on ‘Which outcomes should we measure?’ He presented a variety of currently used questionnaires for lower GI disorders, but mentioned that none of these questionnaires accurately capture the patients’ constipation symptoms or differentiate dyssynergic defecation with other types of constipation. He discussed the variety of drugs that may be used for IBS-C, but clearly outlined the limitations and side-effects these may have. He argued that biofeedback was superior to any use of laxatives for patients suffering with dyssynergic defecation.

Ms Michelle Henderson then eloquently described the ‘nurse-led behavioural management of constipation’. An interesting point she made was how patient compliance could be increased when spending more time in the initial appointment of biofeedback. She mentioned the significance of educating the patient on fibre and fluid intake, the need for exercise in elderly or sedentary patients, and the brace and bulge technique. She described how a good chunk of biofeedback sessions were based on dispelling common myths patients had regarding laxative use and its possible side effects.

A talk on biofeedback was then delivered by Guiseppe Chiarioni. He presented evidence on how biofeedback is only effective in patients with dyssynergic defecation, not chronic constipation. A good predictor of biofeedback success is when the patient fails the balloon expulsion test.

Anton Emmanuel then took the stage highlighting the position of rectal irrigation in managing patients with constipation. He discussed how in a study involving scintigraphy, healthy volunteers usually emptied their rectum, sigmoid and left colon. He argued that this could equally be achieved in patients with chronic constipation when using rectal irrigation. He also emphasised that the risk of perforation could be reduced if the patient is given good advice and correct technique within the first year of use. Another important point was that the presence of anxiety or depression concerning rectal irrigation doesn’t affect outcome use.
The final talk before the coffee break was delivered by Professor Kevin Whelan on ‘Gut microbiota and probiotics in constipation’. He stated that there are typically 38 million bacteria in the guts of healthy people. However the stool biome in constipated patients were the same as healthy volunteers, but mucosal biome of constipated patients were different. Through research, they identified that there was a reduction of transit time by 12 hours in patients with constipation when taking probiotics. However, it is not yet known what bacteria in particular is the active ingredient in improving constipation.

Professor Robin Spiller spoke about fibre, and whether its recommendation as first-line therapy is justified. He discussed the various mechanical properties of Bran, the osmotic effects of prunes and the water-trapping qualities of kiwifruit.

Anton Emmanuel then returned, but this time to talk about which laxatives are most effective. He began by stating that laxatives are dependent on the length of time the agent has been in contact with the intestinal mucosa. For patients with faecal impaction of 5 days, Macrogol is the most effective treatment. He also concluded that using a combination of laxatives is justifiable and safe to do too.

Adam Farmer then discussed the strategies for management of opioid-induced constipation. He argued that opioids are effective in acute pain, not chronic pain where patients may develop opioid-induced hyperalgesia. Instead patients should be prescribed PAMORA drugs: peripherally acting mu opioid receptor antagonists to help manage their constipation symptoms.

The final talk before lunch was by Maura Corsetti, on the future of medical therapies for constipation. She mentioned the presence of increased pan-colonic pressurisations and anal sphincter relaxations in healthy patients, and how these responses were reduced in patients with treatment refractory chronic constipation.

The afternoon was dedicated to surgical approaches for chronic constipation which included an
introduction from Professor Charles Knowles, followed by a talk on ‘colonic resection’ by Pasqua-le Giordano, ‘hitching procedures’ by Steve Brown, ‘excisional procedures’ by Ugo Grossi, recto-vaginal reinforcement procedures by Andy Williams, ‘sacral nerve stimulation’ by Tom Dudding and finally evidence-based recommendations. There was much debate on the role of caeco-rectal anastomosis, loop ileostomies, end-ileostomies, colostomies and patient selection for these surgeries.

Overall, the masterclass was a comprehensive programme covering all aspects of constipation, including lots of cutting-edge research from the authors themselves. The 2-day event was thoroughly informative and well-structured, which encompassed plenty of opportunity for networking. I never expected the topic of constipation to be so complex, enriching and thought provoking.

**Take-Home Messages**

- Constipation is a very common issue and a huge financial burden to health services worldwide
- Constipation is complex and multi-factorial, difficult even to define, yet alone treat
- Treatments are various, from the “simple” treatments e.g. probiotics to complex surgery
Case Study

HR Anal Manometry of a patient with Mixed Pattern Faecal Incontinence and Reduced Mobility

By Steve Perring and Sally Sheppard
Poole Hospital

76 year old lady with mixed urge and passive faecal incontinence, as well as urinary incontinence
Failed pelvic floor repair of vaginal prolapse
Ring pessary improved her urinary symptoms, no effect on faecal incontinence
Uneventful obstetric history
Reduced mobility. Uses a frame

Endoanal Ultrasound: Short sphincter. IAS and EAS intact

A joint study was requested for combined anorectal physiology (Steve Perring) with pelvic floor physiotherapy (Sally Sheppard)

Resting Anus

Mean resting pressure 18mmHg
Effective functional length 13mm

Anal Squeeze

Maximum anal pressure 83mmHg
Rapid attenuation of anal pressure
The patient leaked during this manoeuvre
Why did this patient paradoxically leak on squeezing?

- Initial squeeze was reasonable. However the effort was from such a low baseline that the absolute squeeze pressure was poor.
- Rapid attenuation of anal pressure
- Substantial abdominal pressurisation leading to a high rectal pressure (marked “B” on the squeeze plot)
- By point “A” the anal pressure gradient (anal pressure—rectal pressure) was insufficient to maintain continence.
- Observing the patient, she was holding her breath, closing her eyes and distorting her face with effort during squeezing

The patient was encouraged to avoid breath holding and observe the trace, looking out for high pressure in the rectum and practicing reducing this.

Subsequent Anal Squeeze

![Graph showing reduced rectal pressure and maintained anal squeeze effort with no loss of continence.]

The patient had lost lots of muscle bulk, particularly of gluteal muscle, and was suffering from discomfort on sitting
- The patient was observed to perform a similar effort including breath-holding on standing, increasing the risk of loss of continence on standing
- Physiotherapy sessions were booked with a view to strengthening gluteal muscles as well as pelvic floor training

Anal Strain Response

![Graph showing inappropriate anal squeezing on the strain manoeuvre with strong rectal pressurisation and loss of rectal contents observed.]

Inappropriate anal squeezing on the strain manoeuvre

Strong rectal pressurisation

Loss of rectal contents observed
Rectal Filling

Volume for onset of urgency 75 ml
Maximum tolerated volume 165 ml
Rectal compliance 2.7 ml/mmHg
Poor EAS muscle recruitment
Loss of continence observed

The strain and rectal filling procedures confirmed the tendency of this patient to severe loss of continence and the absence of significant issues of obstructive defecation.

Take-Home Messages

- It is possible for a patient to actively lose continence during what is apparently an effective squeeze manoeuvre
- The presence of apparent dyssynergia on straining is often irrelevant in patients with incontinence
- As well as being used for diagnosis, manometry has a useful role in biofeedback therapy

Budding Reviewers

If you would like to review a meeting for a future edition of NewWave or have an interesting case study that you would like to share with the GI Physiology Community, please contact Steve Perring at steve.perring@poole.nhs.uk
A regular meeting of GI Physiologists from the South West of England and beyond, the meeting was held this time in Poole, famed for its sandy beaches and large natural harbour. This time the meeting was held in Poole Hospital.

Dr Elizabeth Williams (Consultant Gastroenterologist at Poole Hospital) set the stage with some talk on the ill-defined and complex medical condition-irritable bowel syndrome (IBS) and how small bowel bacterial overgrowth (SBBO) may be a manifestation of this. She stated that IBS affects 10-15% of the UK population and takes up to 40% of gastroenterology appointments. She then linked this with the frequency of SBBO in IBS patients, and how performing breath tests may identify IBS patients suffering with SBBO. Typically, however, it is only the middle-class well informed patient that benefits from the effective antibiotics, as not all of them are currently on the formulary for SBBO. In these polarised times of NHS cuts, an interesting discussion followed on whether pragmatic therapeutic trials of Rifaximin should be offered to all patients.

The award-winning presenter of the day, Hannah Dicker (Trainee Clinical Scientist at Southampton Hospital) then talked about her audit on breath testing. She aimed to find a correlation between symptoms, gender, a positive SBBO test, the choice of antibiotic prescribed and its effectiveness to treatment. One of the main take home messages was a highlighted lack of consistency among consultants in treating SBBO (even from the consultant physician who had written the recommended treatment plan himself). This emphasises the lack of confidence consultants hold when prescribing antibiotics for patients suffering with SBBO.

The confusion and self-doubt in the room was turned up a notch when an array of interesting HBT cases were presented. The outcome was a room full of specialists divided on their diagnosis for each case, with most of us retreating into indecision!
Ross Stephens (Trainee Clinical Scientist at Poole Hospital) then delivered a talk enlightening us of the causes of systematic error in pressure measurements observed using water perfused catheters. Following many exhaustive experiments on testing various attributes of water perfused catheters, he concluded that downstream resistance will occur in all water perfused catheters, and the only way to solve this problem is to apply a gain calibration. This, he argued, would reduce error from approximately 8.22% to 0.59%.

A new territory of the oesophagus was then breached by Reza Nouraei (Consultant ENT surgeon) looking at the potential role of upper oesophageal sphincter (UOS) physiology in assessment of ENT pathology and treatment. This is a novel area of GI physiology which left many of the attendees intrigued into what parameters of the UOS are important to measure. Mr Nouraei reminded us of the physiology of normal swallowing, outlined certain pathologies of the UOS, and emphasised the importance of the LOS when considering UOS treatment.

![Diagram of Oropharyngeal Dysphagia](image)

I then delivered a case study involving an elderly man that was admitted into hospital a few hours after pH catheter intubation. He suffered a bout of unexpected pneumonia, but was treated successfully with antibiotics. This raised rich discussions on whether we should be scoring patients’ frailty and their co-morbidities. In most centres we rely on the wisdom of the referrer’s knowledge of the patient’s full clinical history to make this judgement. However most attendees questioned whether the benefits of the investigation outweighed the risks in certain patients.

Taking the world of anorectal manometry slightly wider, Emma Jones (Clinical Scientist at Southampton Hospital) educated us on her experience with performing awake anorectal physiology in paediatrics. Her main points included thorough preparation with the parents, the psychologist and the play therapist, performing essential measurements first, and finally no negotiating with children! She also touched on how parents may be contributing to the child’s disorder, and how this may make the investigation more difficult than it intends to be.

This was nicely followed on with Jacqui Porter’s talk on her experience and practicalities of performing paediatric pH and impedance (Gastrointestinal Nurse practitioner at BRH for children). She mentioned having similar experiences with dealing with children and their parents’ as Emma Jones, and described her many creative ways in keeping the paediatric patients entertained. She emphasised the considerable difference in finance between paediatric and adult oesophageal manometry due to how nuanced and complex children can be.