

Congress Review

Review of the 27th United European Gastroenterology (UEG) Week Congress

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One can walk in almost any direction through the bustling streets of Barcelona and be presented with constant reminders of the ingenuity and creativity that has for centuries sprouted from the Catalanian earth. Brilliant architectural minds such as Antoni Gaudi and Lluís Domènech i Montaner have graced the city with a unique aesthetic that to this day enamours visitors, while artistic contributions from innovators such as Joan Miró helped cement Barcelona as a cultural hub on the world stage. True and lasting innovation, however, comes through debate and co-operation, both ideals that Barcelona has built a reputation for through the facilitation of numerous annual congresses, a significant attention of which is given to different aspects of the medical landscape. This year, we have had the pleasure of attending a number of these meetings, making this review of the 27th United European Gastroenterology (UEG) Week Congress a fitting conclusion to our 2019 publication schedule.

Welcoming approximately 13,204 attendees from across 122 countries, UEG President Paul Fockens opened proceedings with news of this being the first time that >4,000 abstracts were submitted for consideration at the meeting, and that this same number of individuals attended the Postgraduate Teaching Programme. This is a sign of not only the growth of UEG Week as an institution, but of the growth the gastroenterological field is experiencing regarding the continual advancement of patient-tailored and effective therapies. "I believe we generated a hugely exciting programme and sincerely hope that attendees engaged in stimulating debates and enjoyed the latest science," concluded Herbert Tilg, Chair of the UEG Scientific Committee, following the Congress.

A number of highly informative abstract presentations were delivered at UEG, of which we have highlighted two that we believe deserve special mention. Metwaly et al. have graciously contributed a summary of their work into the metabolome and how it can





reveal functional signatures in Crohn's disease through a connection with sulphur metabolism. It is tremendously exciting to see how rapidly research into the metabolome is progressing, and undoubtedly the gastroenterological community is at the forefront of this investigation. Hassan et al. shift the conversation to Paneth cell lymphangiogenesis regulation, both in normal physiology and experimental portal hypertension, and in doing so identify a new function of this cellular niche. Also included within our review is a recap of the abstract award winner ceremony at this year's event; Drs Magdy El-Salhy, Lissy de Riddler, and Yang Wang among others were commended for their efforts in advancing the field, and collectively these achievements represent a very proud moment for the Congress and the field as a whole.

One of the most valuable benefits of medical congress attendance is the opportunity to hear the exciting breakthroughs in a given field for the first time, and UEG Week was no exception. In one press release, it was reported that nearly half of 41 commonly prescribed drugs considerably affect the gut microbiome, perhaps eluding to unexplained side-effects associated with medication use; alarming findings were presented suggesting a significant underestimation of inflammatory bowel disease prevalence in the UK, and how this can have impacts on factors outside of personal health; and faecal microbiota transplantation has shown highly encouraging results for the treatment for irritable bowel syndrome. The gastroenterological field can be defined as much by its unique challenges as it is by the innovative solutions being proposed for its betterment, however the passion this community brings to the table is ubiquitous. These stories and more are described in the following pages.

Complementary to these discoveries are informative interviews with members of two UEG Week committees: Prof Dan Dumitrascu and Prof Nurdan Tözün. Representing the views of the National Societies Committee and the Equality & Diversity Task Force, respectively, these key figures in the gastroenterological field

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provide an astute opinion regarding various aspects of the therapeutic area and the inner workings of a hugely influential society in UEG. It is a constant source of amazement to us hearing first-hand from committee members how meetings as successful as UEG Week come to fruition, and the commentary these pillars of the society give can most certainly enhance the mindsets of other aspiring researchers and clinicians.

This has been a fantastic year across all the therapeutic disciplines that EMJ covers however the advancements presented at UEG mark an explosive ending to the year. It is obvious that the congress has and will continue to grow from strength to strength, making next year's event in our home city of London a clear highlight to mark in your calendars. Until then, and from the entire EMJ family, we hope you enjoy getting stuck into this Congress Review.



Increased Rates of Digestive Diseases within the Last 30 Years

GLOBAL death rates for pancreatic cancer and incidence rates for colorectal cancer have increased by 10% between 1990 and 2017 according to a press release revealed at UEG Week 2019 in Barcelona, Spain. The results of the Global Burden of Disease Study which spanned across 195 countries is the first to provide an estimate of the worldwide burden, epidemiological features, and risk factors of a number of digestive diseases.

The study showed that the number of pancreatic deaths increased from 196,000 in 1990 to 448,000 in 2017. Some of the increases in the 27-year study period can be attributed to rising population numbers and life-expectancy; however, age-standardised incidence and death rates for pancreatic cancer increased by 12% and 10%, respectively. These increases are believed to be associated to the rise in the prevalence of diabetes and obesity, reflected in the risk factors of high BMI and hyperglycaemia which are two of the main risk factors for pancreatic cancer. According to Prof Reza Malekzadeh, Tehran University of Medical Sciences, Tehran, Iran, “pancreatic cancer is one of the world’s deadliest cancers, with an overall 5-year survival rate of just 5% in high, middle, and low-income countries. Major risk factors for the disease, such as smoking, diabetes, and obesity, are largely modifiable and present a huge opportunity for prevention.”

Globally, age-standardised incidence rates for colorectal cancer increased by 9.5% from 1990 to 2017; however, age-standardised death rates decreased by 13.5%. Colorectal cancer screening programme inductions are believed to be the catalyst for the decreased death rate, leading to earlier detection and increased survival rates. Results from the study also indicated that risk factors for colorectal cancer differ between males and females and should therefore be considered in national policy and prevention programmes. Risk factors for males include alcohol use, smoking, and diets low in calcium, milk, and fibre; for females, dietary risks, but not alcohol use or smoking, were found to be risk factors.

In the case of age-standardised gastric cancer death rates and incidence, a steady decrease was observed between 1990 and 2017, yet this decline did not lead to a lower burden on the health system in high-risk countries prompting experts to believe that local strategies should be tailored to each country’s specific risk factor profile. Prof Malekzadeh concluded that “beyond the current decline in incidence and death rates, a decrease in the absolute number of cases and deaths will be possible if the burden in east Asia, where currently almost half of the cases and deaths occur, is further reduced.”

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Rising Cases of Antibiotic Resistance to Clarithromycin

TREATMENT involving antibiotics is becoming a challenge with *Helicobacter pylori* bacterial infections because resistance to the commonly used antibiotic clarithromycin has almost doubled in the last 20 years. This is according to findings presented at the 27th UEG Week in Barcelona, Spain, and reported in a press release dated 21st October 2019. *H. pylori* causes inflammation of the stomach lining and can lead to harmful stomach conditions such as gastric ulcer, lymphoma, and gastric cancer. It is frequently treated with clarithromycin, as well as levofloxacin and metronidazole.

The study, led by the research team of Prof Francis Megraud, University of Bordeaux, Bordeaux, France, collected data from 1,232 *H. pylori*-infected patients across 18 European countries. Results indicated that between 1998 and 2018, resistance to clarithromycin increased from 9.9% to 21.6%. Trends were also spotted within countries: the highest resistance rates were reported in south Italy (39.3%), Croatia (34.6%), and Greece

(30.0%). This correlates to previous findings that these countries overconsume antibiotics for common colds and flu and is further evidence of predictions that these countries will have highest death rates for antimicrobial resistance by 2050.

Resistance to antibiotics is considered to be one of the biggest threats to global health as resistance rates are climbing nearly 1% a year and causing over 750,000 deaths globally per annum. Resistance occurs when a bacterium acquires the ability to survive antibiotic treatments which have historically killed them. This research is especially poignant as *H. pylori* is thought to be present in half of the world’s population, leading to the World Health Organization (WHO) naming clarithromycin resistance in the bacteria as a high priority for research and development in 2017. Professor Megraud expressed his concern as he declared, “treatment options for *H. pylori* will become progressively limited and ineffective if novel treatment strategies remain undeveloped.”

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Inflammatory Properties of Gut Microbiota Affected by Consumption of Certain Foods

CONSUMPTION of certain foods has been shown to have beneficial effects on gut microbiota, as observed by researchers from the University Medical Center Groningen in Groningen, Netherlands. This study was presented as part of a press release on 21st October at the UEG Week held in Barcelona, Spain.

The researchers found that the increased levels of gut bacteria, which aid the biosynthesis of essential nutrients and short chain fatty acids, were associated with consumption of certain foods. By including foods such as legumes, bread, fish, nuts, and wine in the diet, the gut could be provided with additional protection and to a certain extent, disease control. The lead researcher of the study, Dr Laura Bolte, commented, "we looked in depth at the association between dietary patterns or individual foods and gut microbiota. Connecting the diet to the gut microbiome gives us more insight into the relation between diet and intestinal disease. The results indicate that diet is likely to become a significant and serious line of treatment or disease management for diseases of the gut - by modulating the gut microbiome".

Research was obtained by collection and analysis of stool samples from participants in divided into four main study groups: patients with Crohn's disease, irritable bowel syndrome, ulcerative colitis, and the general population not suffering from any of these conditions. By analysing the samples provided by the patients, researchers were able to reconstruct the individual's microbiota and use this to compare with a food frequency survey to identify food patterns with microbial populations or groups.

From the food types tested, 61 individual items were shown to be associated with microbial populations and correlation between food patterns and microbial groups was identified in 49



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instances. The researchers observed a decrease in harmful, aerobic bacteria and lower levels of inflammatory markers in the stool analysis of participants with a diet high in legumes, bread, fish, and nuts. Increased consumption of these foods, as well as red wine, fruit, and vegetables, was also associated with greater levels of bacteria with anti-inflammatory functions.

The study showed that increased consumption of meat, fast food, or refined sugar was associated with decreased function of beneficial bacteria and increased inflammatory markers, certain markers of which are known to rise during intestinal inflammation. There was a great contrast between the effects of animal and plant-derived protein on the gut microbiota to such an extent that entirely opposing associations were seen. A plant-based diet was associated with increased production of bacterial short chain fatty acids, increased biosynthesis of vitamins and amino acids, breakdown of sugar alcohols, and ammonium excretion.

The research showed that certain diets are risk factors to the incidence of intestinal disease. By ascertaining which foods are beneficial to the gut microbiota with anti-inflammatory properties, effective dietary decisions can be made to increase consumption of these foods and create management strategies to combat disease.

Commonly Used Drugs Affect the Gut Microbiome

THE GUT microbiome is impacted by nearly half of the drugs most commonly used, as found in a study and presented in a press release from EUG Week 2019 dated Wednesday 23rd October 2019. Of the 41 commonly used drugs studied, 18 were found to considerably impact the gut microbiome, both its taxonomic structure and metabolic potential.

Within the study, researchers studied 41 drugs that were categorised as common use. The patient cohort comprised people living with irritable bowel syndrome, people who have inflammatory bowel disease, and healthy controls. From these participants, 1,883 faecal samples were collected, and taxonomic and metabolic functions were measured. Comparisons were made for drug users versus non-drug users to identify the impact of both single and combined medication use.

Results showed that identified changes could lead to a higher chance of obesity, intestinal infections, and other gut microbiome health conditions. Proton pump inhibitors, metformin, antibiotics, and laxatives were the four drug categories found to have the biggest effect on

the gut microbiome. Participants who were using proton pump inhibitors displayed higher levels of upper gastrointestinal tract bacteria. Patients on metformin showed increased levels of *E.coli*: a potentially damaging bacteria.

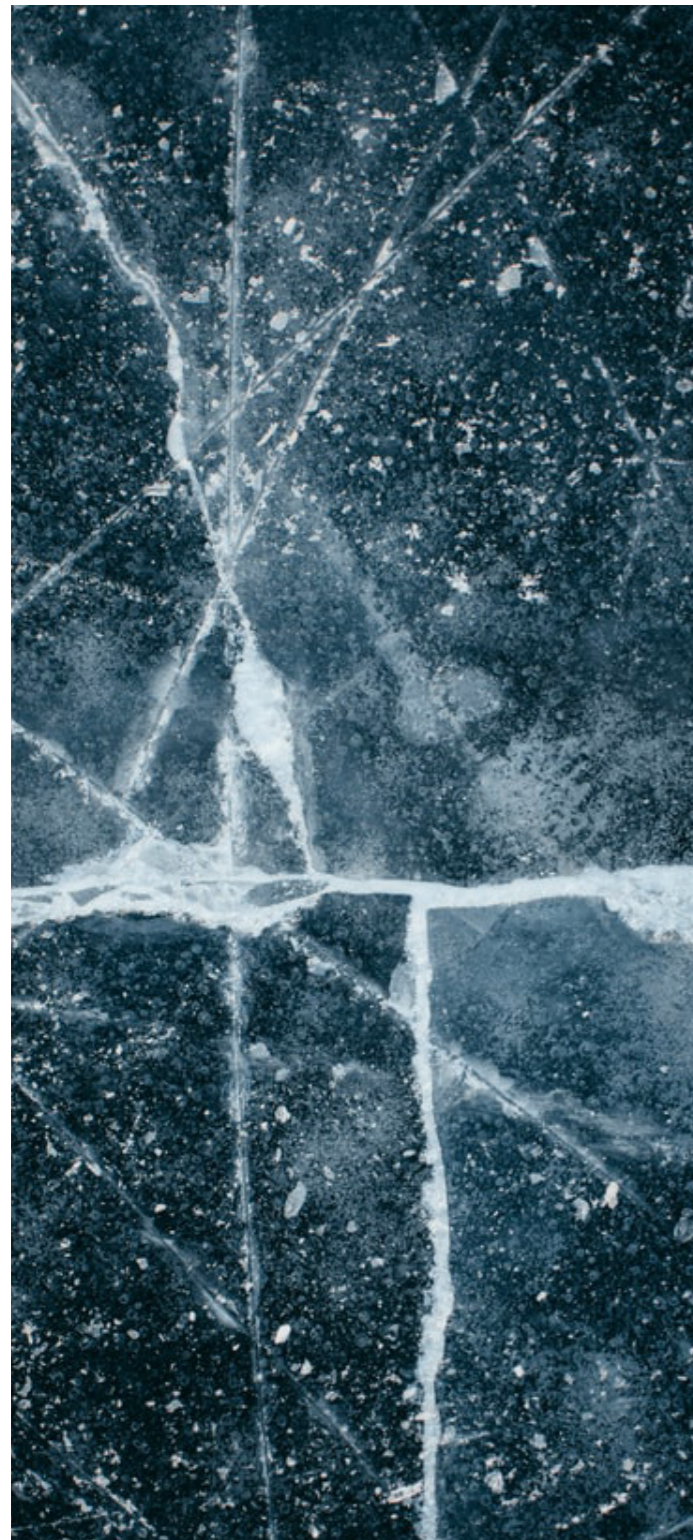
Of the drug categories studied, seven were found to be associated with differences in the gut's bacterial population. Selective serotonin reuptake inhibitors were linked to an increase of the bacteria species *Eubacterium ramulus*, which is also potentially harmful. Steroid use was found to be associated with an increase of methanogenic bacteria: a bacteria linked to obesity and higher BMI.

Arnau Vich Vila, University Medical Center of Groningen, Groningen, Netherlands, concluded: "It is crucial to understand which are the consequences of medication use in the gut microbiome. Our work highlights the importance of considering the role of the gut microbiota when designing treatments and also points to new hypotheses that could explain certain side-effects associated with medication use."

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Frozen Faecal Transplant from Super-Donor Proves a Success for Irritable Bowel Syndrome



FAECAL microbiota transplantation (FMT) has been speculated as a potential treatment for inflammatory bowel disease (IBD) until now. Results presented in a UEG Week press release dated 21st October 2019 have now confirmed that FMT from a single 'super-donor' is well tolerated, effective, and shows marked IBS symptom improvement.

The large, randomised, double-blind, placebo-controlled study involved 164 individuals with IBS and moderate-to-severe IBS. Placebo consisted of a solution of the participants own faeces. Those not on placebo received either a 30 g or 60 g donor transplant solution containing faecal matter from a super-donor. In contrast to other studies, the transplant material had been stored at -80°C then administered into the proximal duodenum via gastroscopy once thawed.

The super-donor chosen for this study was an athletic, 36-year-old, Caucasian male. He had no significant medical history and had only received three courses of antibiotics during his lifetime. "We set out to optimise our chances of treatment success by selecting a single, well-defined donor who fulfilled European guidelines for FMT donors, and who had a favourable faecal microbial profile," commented the study lead investigator Prof Magdy El-Salhy, Haukeland University Hospital, Bergen, Norway.

A response (≥ 50 -point reduction in IBS-SSS [IBS severity scoring system] at 3 months after FMT) occurred in 23.6%, 76.9%, and 89.1% of patients who received placebo, FMT 30 g, and FMT 60 g, respectively. Furthermore, clinically significant improvements in symptoms (a ≥ 175 -point reduction in IBS-SSS) was observed in 5.5%, 35.2%, and 47.3% of participants on placebo, FMT 30 g, and FMT 60 g, respectively.

The study investigators stressed the importance of the super-donor in the effectiveness of the treatment and Prof El-Salhy concluded: "The use of frozen faeces eliminates the logistical problems associated with FMT involving fresh faeces, making it possible to establish bio-banks for the routine use of FMT in clinical practice."

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New Estimates for Inflammatory Bowel Disease Prevalence in UK



"As there is currently no known cure for IBD, patients will often need complex and costly treatments throughout their lives. This predicted rise in prevalence may place an even greater strain on already overburdened healthcare systems."

FINDINGS have emerged from a press release dated October 21st at UEG Week Barcelona 2019 suggesting that assumptions the gastrointestinal clinical community had made regarding inflammatory bowel disease (IBD) prevalence in the UK were underestimating the problem, and that the number of IBD patients is three times higher than previously thought. The analysis also deduced that this demographic is at an increased risk of colorectal cancer development.

Acknowledging limitations in existing data, researchers from Sandwell and West Birmingham hospitals NHS trust and the University of Birmingham conducted a new analysis into ulcerative colitis (UC) and Crohn's disease (CD) cases dating back to 2000. Incorporating additional data from the Health Improvement Network (THIN), an alarming realisation was made in the discovery of a three-fold increase in IBD prevalence: 55% and 83% increases were found for UC and CD, respectively, from 2000–2017. Furthermore, a 25% prevalence jump is predicted by 2025.

Speaking at UEG Week, researcher Dr Dominic King from the University of Birmingham elaborated on the findings: "As there is currently no known cure for IBD, patients will often need complex and costly treatments throughout their

lives. This predicted rise in prevalence may place an even greater strain on already overburdened healthcare systems." Dr King also highlighted the association the team found with malignancy, in that CD patients exhibited a 23% increased risk of colorectal cancer development compared to matched controls; this risk was nearly doubled (43%) in patients with UC.

Given the European-wide scale of IBD (an estimated 3 million people affected), as well as the severity and duration of the symptoms associated with this group of disorders, the importance of these findings cannot be underestimated. IBD patients experience higher rates of depression and reduced workforce participation, meaning the challenges facing clinicians looking to treat IBD are shared by patients and policy makers nationwide. "The cost to society, either through direct medical costs or indirect costs such as lost days at work, lost educational opportunities, or caring for an affected family member, are enormous," commented President of the European Federation of Crohn's and Ulcerative Colitis Associations (EFCCA) Salvo Leone. However, whilst alarming, a new and more accurate appreciation of the epidemiological data and outlook for the future will undoubtedly help towards finding effective treatments for these patients.