EUROPEAN HELICOBACTER AND MICROBIOTA STUDY GROUP

EHMSG – 37th International Workshop on Helicobacter & Microbiota in Inflammation & Cancer

September 12 - 14, 2024

Porto, Portugal

Accepted Abstracts

www.microbiotajournal.com

DOI: 10.26355/mhd_20249_1023

EUROPEAN HELICOBACTER AND MICROBIOTA STUDY GROUP

PRESIDENT: **José C. Machado,** *Portugal*

MEMBERS AND INTERNATIONAL SCIENTIFIC COMMITTEE

Emilie Bessède, *France*
Lars Engstrand, *Sweden*
Javier P. Gisbert, *Spain*
Georgina Hold, *Australia*
Gianluca Ianiro, *Italy*
Josbert Keller, *The Netherlands*
Juozas Kupcinskas, *Lithuania*
Marcis Leja, *Latvia*
José C. Machado, *Portugal*
Peter Malfertheiner, *Germany*
Francis Mégraud, *France*
Colm A. O'Morain, *Ireland*
Mirjana Rajilić-Stojanović, *Serbia*
Ari P. Ristimäki, *Finland*
Theodore Rokkas, *Greece*
Christian Schulz, *Germany*
Annemieke Smet, *Belgium*
Sinead Smith, *Ireland*
Herbert Tilg, *Austria*

LOCAL SCIENTIFIC AND ORGANISING COMMITTEE

Nuno Almeida, *Coimbra, Portugal*
João Antunes, *Porto, Portugal*
Miguel Areia, *Coimbra, Portugal*
Fátima Carneiro, *Porto, Portugal*
Patrícia Carneiro, *Porto, Portugal*
Mário Dinis Ribeiro, *Porto, Portugal*
Rui Ferreira, *Porto, Portugal*
Céu Figueiredo, *Porto, Portugal*
Joana Figueiredo, *Porto, Portugal*
Diogo Libânio, *Porto, Portugal*
José Carlos Machado, *Porto, Portugal*
Carla Oliveira, *Porto, Portugal*
Carina Pereira, *Porto, Portugal*
Armando Peixoto, *Porto, Portugal*
Ricardo Marcos *Pinto, Porto, Portugal*
Celso Reis, *Porto, Portugal*

EMERITUS MEMBERS

Leif P. Andersen, *Denmark*
Anthony Axon, *United Kingdom*
Michel A.L. Deltenre, *Belgium* †
Bram Flahou, *Belgium*
Giovanni Gasbarrini, *Italy*
Alexander M. Hirschl, *Austria*
Pierre Michetti, *Switzerland*
José M. Pajares Garcia, *Spain* †
Ashley B. Price, *United Kingdom* †
Mario G. Quina, *Portugal* †
Erik A.J Rauws, *The Netherlands*
Pentti I. Sipponen, *Finland* †
Torkel M. Wadström, *Sweden*

HONORARY MEMBERS

Franco Bazzoli, *Italy*
Bram Flahou, *Belgium*
James G. Fox, *United States*
Antonio Gasbarrini, *Italy*
David Y. Graham, *United States*
Ernst Kuipers, *The Netherlands*
Adrian Lee, *Australia* †
Barry Marshall, *Australia*
Guido N.J. Tytgat, *The Netherlands*

CORRESPONDING FELLOWS

Niyaz Ahmed, *India*
Dmitry Bordin, *Russia*
Luis G. Vaz Coelho, *Brazil*
Hwoon-Yong Jung, *Korea*
Jae Gyu Kim, *Korea*
Varocha Mahachai, *Thailand*
Yaron Niv, *Israel*
Oleg Shvets, *Ukraine*
Chun-Ying Wu, *Taiwan*
Yoshio Yamaoka, *Japan*
Weicheng You, *China*

TABLE OF CONTENTS

Conflict of interest declarations:

In order to help readers form their own judgments of potential bias in published abstracts, authors are asked to declare any competing financial interests.
Contributions of up to EUR 10.000.-(or equivalent value in kind) per year per entity are considered “Modest”. Contributions above EUR 10.000.-per year are considered “Significant”.

Missing abstracts within the consecutive presentation numbers represent withdrawn papers.

WORKSHOPS

SESSION 01: HOT TOPICS IN *H. PYLORI* AND GUT MICROBIOTA

01.04.

VACCINATION PROTECTS AGAINST GASTRIC CANCER

T.B. BOREN[1], *J.A. BUGAYTSOVA*[1], *A. PIDDUBNYI*[1], *I. TKACHENKO*[1], *R. MOSKALENKO*[2], *L. HAMMARSTRÖM*[3]
[1]Umea University, Umea, Sweden; [2]Sumy State University, Sumy, Ukraine; [3]Karolinska Institutet, Stockholm, Sweden

Objective: The majority of the world's population carries *Helicobacter pylori,* but most individuals experience little or no symptoms. Here, we report on a protective mechanism where *H. pylori* attachment and chronic mucosal inflammation can be reduced by broadly blocking antibodies (bbAbs) that are present in the majority of *H. pylori* carriers.
Patients and Methods: We tested ~1,000 individual serum samples from *H. pylori* carriers for their individual levels of bbAbs.
Results: We found that most individuals demonstrate bbAb titers, which can reduce the attachment of *H. pylori* in the gastric mucosa. Patients with duodenal ulcer disease (DU) or gastric cancer have significantly lower levels of these bbAbs, which is relevant for gastric disease. To test for possibilities to elicit a protective immune response, we found: 1) that challenge infections with *H. pylori* induced bbAbs in human volunteers and rhesus macaques; 2) vaccination induced bbAbs to the critically necessary protective level/titers in rhesus macaques; 3) vaccination in a mouse model induced bbAbs; 4) structural stabilization of the vaccine antigen increased the immune responses of such bbAbs; 5) the vaccination resulted in reduced gastric mucosal inflammation; 6) and fully protected the mice from gastric cancer caused by *H. pylori.*
Conclusions: Our results suggest that the human immune response with bbAbs target an Achilles heel for the immune evasion strategy of *H. pylori.* The results show that the bbAbs reduce *H. pylori* adherence, reduce gastric inflammation, and reduce the risk for severe gastric disease.

Conflict of Interest
T.B. Boren: None. J.A. Bugaytsova: None. A. Piddubnyi: None. I. Tkachenko: None. R. Moskalenko: None. L. Hammarström: None.

SESSION 02: NEWS ON GASTRITIS

02.04.

HELICOBACTER PYLORI SEROPREVALENCE IN HISTOLOGICALLY *HELICOBACTER PYLORI*-NEGATIVE AUTOIMMUNE ATROPHIC GASTRITIS PATIENTS

M. VAVALLO[1], *J. BUTT*[2], *S. CINGOLANI*[1], *L. DOTTORI*[1], *G. COZZA*[1], *F. SCHIAVONE*[1], *L. BELLONI*[1], *M. FRANCHITTO*[1], *E. DILAGHI*[1], *B. ANNIBALE*[1], *T. WATERBOER*[2], ***E. LAHNER***[1]
[1]"Sapienza" University of Rome, Rome, Italy; [2]Division of Infections and Cancer Epidemiology, German Cancer Research Center (DKFZ), Heidelberg, Germany

Objective: Autoimmune atrophic gastritis (AAG) may be triggered by *Helicobacter pylori* (Hp) infection, but diagnosis of Hp is challenging due to oxyntic mucosa atrophy, hypochlorhydria, and gradual Hp clearance. There was previous evidence of Hp seropositivity in AAG. This study aimed to assess sero-

reactivity against Hp proteins in patients with autoimmune atrophic gastritis (AAG) who were negative for Hp at histological evaluation of gastric biopsies and had no history of Hp infection. The assessment was done using a specific Hp-multiplex serology assay.
Patients and Methods: This was a single-center case-control study on 75 adults with histological AAG diagnosis, compared with 2 control groups: 62 healthy stomach subjects (HS) and 16 controls with Hp-positive antral non-atrophic gastritis (NAHp). Frozen sera (-20°C) were analyzed by Hp-multiplex serology assay measuring antibody responses to 13 specific Hp-proteins.
Results: AAG pts showed a higher, not significant Hp-seropositivity than HS (n=16/21.3% *vs*. n=6/9.7%, p=0.06) but significantly lower seropositivity than NAHp (12/75%, p<0.0001). The number of participants positive to none of the Hp-antigens was similar in AAG and HS (n=22/29.3% *vs*. n=24/38.7%, p=0.25), and significantly higher than in NAHp (n=1/6.2%, p=0.05). The number of seroreactive antigens was significantly higher in AAG than in HS (mean±SEM 2.2±0.3 *vs.* 1.4±0.2, p=0.04), and lower than in NAHp (5.4±0.7, p<0.0001). Severe corpus atrophy was more frequent in the 22 AAG pts without any seroreactivity than in seropositive (p=0.019) suggesting more severe disease in pts never exposed to Hp.
Conclusions: By Hp-multiplex serology, 30% of histologically Hp-negative AAG pts had a complete absence of seroreactivity, likely belonging to the pure AAG type. In contrast, 20% of AAG pts showed exposure to Hp, indicating that infection might have played a role in triggering gastric autoimmunity.

Conflict of Interest
E. Lahner: None. M. Vavallo: None. J. Butt: None. S. Cingolani: None. L. Dottori: None. G. Cozza: None. F. Schiavone: None. E. Dilaghi: None. L. Belloni: None. M. Franchitto: None. B. Annibale: None. T. Waterboer: None.

02.05.

INTERLEUKIN-27 IS HIGHLY EXPRESSED IN THE SERUM AND GASTRIC MUCOSA OF CHILDREN WITH *HELICOBACTER PYLORI* (HP)-ASSOCIATED GASTRODUODENAL DISEASES

D.M.M. QUEIROZ[1], *F.F. MELO*[2], *G.A. ROCHA*[1], *B.B. BRITO*[2], *F.A.F. SILVA*[2]
[1]Laboratory of Research in Bacteriology, Faculty of Medicine, UFMG, Belo Horizonte, Brazil; [2]Instituto Multidisciplinar em Saúde, Universidade Federal da Bahia, Vitória da Conquista, Brazil

Objective: *Helicobacter pylori* (HP) induces an immune response that strongly participates in the infection outcome. Although the infection is mainly acquired in childhood, conversely to adults who may have gastric ulcer, duodenal ulcer (DU), and gastric cancer, severe diseases are rare in children. Interleukin-27 (IL-27) is now accepted as a potent inhibitor of Th17 cell differentiation associated with gastric carcinogenesis by down-regulating ROR-yt, a key factor for IL-17A transcription.
Patients and Methods: Due to the connection between the Th17 axis and *H. pylori*-associated cancer in adults, we wanted to see how the protein IL-27 affects the development of Th17 cells. Since there are no studies on this topic in children, we decided to compare the levels of IL-27 in the stomach (pg/mg) and blood (pg/mL) as well as the cytokines related to Th17 cells in children (245, 103 with *H. pylori*) to those in adults (140, 100 with *H. pylori*). We used ELISA to measure IL-27 levels.
Results: IL-27 was almost absent from the serum of HP-negative adults (1.14) but it was present in all HP-negative children (898.76 p=0.0001). The serum (3,854.62 *vs*. 394.54) and gastric (6,344.57 *vs*. 387.49) concentrations of IL-17 were higher in children than in adults with DU (p=0.0001). In the gastritis group, IL-27 gastric (3,105.88 *vs*. 81.88) and serum (1,838.58 *vs*. 25.62) levels were higher in children than in adults (p=0.0001). Conversely, the Th17-associated cytokine and IL-17/IL-6 concentrations were higher in adults with gastritis and DU, respectively, than in children.
Conclusions: IL-27 production is higher in children than in adults, which may explain at least in part the less severe outcome of HP infection in this age group. All authors declare no conflicts of interest.

Conflict of Interest
D.M.M. Queiroz: None. F.F. Melo: None. G.A. Rocha: None. B.B. Brito: None. F.A.F. Silva: None.

02.06.

AUTOIMMUNE GASTRITIS IN PEDIATRIC AGE AND ITS RELATIONSHIP WITH *HELICOBACTER PYLORI* INFECTION

I. AIRES MARTINS[1], *J. CARVALHO QUEIRÓS*[1], *F. MOURÃO*[2], *H. SILVA*[2], *M. TAVARES*[2], *E. COSTA*[3],*R. LIMA*[2]
[1]Pediatrics Department, Centro Materno-Infantil do Norte Albino Aroso, Unidade Local de Saúde Santo António, Porto, Portugal; [2]Pediatrics Department, Gastroenterology Unit, Centro Materno-Infantil do Norte Albino Aroso, Unidade Local de Saúde Santo António, Porto, Portugal; [3]Pediatrics Department, Hematology Unit, Centro Materno-Infantil do Norte Albino Aroso, Unidade Local de Saúde Santo António, Porto, Portugal

Objective: Autoimmune gastritis (AIG) is a chronic inflammation characterized by immune-mediated destruction of parietal cells. The inflammation is restricted to the corpus and fundus, sparing the antrum, which distinguishes AIG from conditions such as *Helicobacter pylori* (HP) infection. Evidence suggests that HP may influence the development and progression of AIG through complex immune mechanisms. This study aimed to determine HP prevalence in a population of pediatric patients with AIG and to assess whether it alters AIG typical inflammatory course.
Patients and Methods: Cross-sectional study involving AIG patients followed in a Pediatric Gastroenterology Unit between 2007 and 2023.
Results: Thirty-two cases were included (69% females). The median age at diagnosis was 12 years old (3-17), 91% presented with iron deficiency anemia, and 9% with non-specific gastrointestinal symptoms. HP infection was identified in 56%. Histologically, glandular atrophy of the corpus was similar between HP positive and negative cases (56% and 57%, respectively). In the antrum, histological atrophy was found in 39% of HP-positive cases and 14% of HP-negative cases. Intestinal metaplasia of the corpus was observed in 21% of HP cases. No cases of dysplasia were detected.
Conclusions: HP prevalence was consistent with previous reports. In AIG patients with previous/concomitant HP infection, atrophic metaplastic lesions might involve both mucus-secreting antral glands (HP-mediated) and corpus or fundus oxyntic mucosa (immune-mediated). A higher prevalence of antral atrophy was observed in HP infection cases, and HP was present in all cases of metaplasia. Understanding this controversial relationship between AIG and HP is essential for effective diagnosis and management.

Conflict of Interest
I. Aires Martins: None. J. Carvalho Queirós: None. F. Mourão: None. H. Silva: None. M. Tavares: None. E. Costa: None. R. Lima: None.

SESSION 03: MICROBIOME MECHANISMS OF ACTION

03.04.

MICROBIOME COMPOSITION IN PATIENTS WITH UPPER GASTROINTESTINAL CANCER AND SMALL INTESTINAL BACTERIAL OVERGROWTH (SIBO)

R. ROSANIA*, N. HIPLER, K. LEHR, V. KEITEL-ANSELMINO, A. LINK, M. VENERITO*
Otto Von Guericke University Hospital, Magdeburg, Germany

Objective: Small intestinal bacterial overgrowth (SIBO) is frequent in patients with past or active upper gastrointestinal (GI) cancer. The aim of our study was to characterize the microbiome composition of patients with upper GI cancer with or without SIBO.
Patients and Methods: Patients with past or active GI cancer and treatment-naïve patients with a first diagnosis of upper GI cancer were enrolled. All patients were offered upper endoscopy with duodenal aspirate and provided a 30-day with no antibiotic intake. SIBO was defined as a bacterial count greater

than 10^3 cfu/ml. Using the optimized protocol, the DNA from duodenal aspirate was extracted and the V1-V2 region of the 16S rRNA gene was amplified by PCR and sequencing using the Illumina platform.
Results: The microbiome composition was analyzed in 7 controls, 17 SIBO, and 12 no SIBO. We detected 513 phylotypes from 71 genera belonging to 11 *phyla*. The most abundant genera were *Streptococcus*, *Veillonella*, and *Prevotella*. All three groups differed significantly in terms of their microbiome at the *phylum* level (PERMANOVA $p<0.05$). Analyzing individual *phyla*, the abundance of *Proteobacteria* was significantly higher in the SIBO group (Kruskal-Wallis test $p<0.05$). *Proteobacteria* correlated positively with diarrhea intensity (Spearman r=0.35, $p=0.0362$), and *Bacteroidetes* correlated negatively with the reduction in quality of life (Spearman r=-0.4525, $p=0.0056$). Within the overall cohort, we were able to identify two clusters characterized by different microbial compositions, underlying malignant diseases, and clinical symptoms.
Conclusions: The microbiome composition of patients with SIBO was different compared to patients with no SIBO and controls, and it may offer the opportunity for a personalized treatment.

Conflict of Interest
R. Rosania: None. N. Hipler: None. K. Lehr: None. V. Keitel-Anselmino: None. A. Link: None. M. Venerito: None.

03.05.

THE IMPACTS OF THE CROSSTALK BETWEEN *BACTERIAL VAGINOSIS*-ASSOCIATED BACTERIA AND *TRICHOMONAS VAGINALIS* ON THE PATHOGENESIS AND HOST IMMUNE RESPONSES

S. CHIU[1,2]*, K. HUANG*[3]
[1]Graduate Institute of Medical Sciences, National Defense Medical Center, Taipei, Taiwan; [2]Department of Inspection, Taipei City Hospital, Taipei, Taiwan; [3]Graduate Institute of Pathology and Parasitology, National Defense Medical Center, Taipei, Taiwan

Objective: *Bacterial vaginosis* (BV) is an enigmatic polymicrobial condition characterized by a depletion of health-associated *Lactobacillus* and an overgrowth of anaerobes. Trichomoniasis, caused by *Trichomonas vaginalis*, is a common infection of the urogenital system. Notably, BV-associated bacteria (BVB) and *T. vaginalis* are linked to adverse gynecologic outcomes, including an increased risk of sexually transmitted infections and cervical cancer. In this study, we aim to investigate whether BVB acts as pathobionts of *T. vaginalis* infection by altering the pathogenic capabilities of the parasite, focusing on adhesion to vaginal substrates and regulation of host immune responses.
Materials and Methods: We established a co-culture system to investigate the interaction of *T. vaginalis* and vaginal bacteria (*Lactobacillus crispatus, Escherichia coli, Prevotella bivia*, and *Lactobacillus iners*), forming a polymicrobial infection on ectocervical cell (Ect). After interacting with *P. bivia*, the gene expression of *T. vaginalis* adhesin AP65 significantly increased.
Results: This interaction promoted *T. vaginalis* growth and affected the survival of Ects, causing higher cytotoxicity and upregulation of IL-6, IL-8, CXCL1, and IP-10. However, *L. crispatus* suppressed the *T. vaginalis*-induced chemokines. Additionally, the crosstalk between *T. vaginalis* and *P. bivia* activated of PI3K, ERK1/2, and MAPK pathways, enhanced the EMT event (the loss of E-cadherin and increased expression of Snail) in Ect, and promoted the pathogenic effects of the parasite.
Conclusions: Together, this study demonstrates the impacts of the crosstalk between BVB and *T. vaginalis* on the pathogenesis and host immune responses, and BVB accompanied by *T. vaginalis* infection function as pathobionts to enhance the pathogenic capabilities of this parasite.

Conflict of Interest
S. Chiu: None. K. Huang: None.

03.06.

MYCOBIOME DYSBIOSIS IN LIVER CIRRHOSIS PATIENTS

E. KIUDELIENE, I. KARALIUTE, ***D. NIKITINA****, R. LUKOSEVICIUS, J. SKIECEVICIENE, J. KUPCINSKAS*
Lithuanian University of Health Sciences, Kaunas, Lithuania

Objective: Chronic liver damage triggers inflammation, leading to fibrosis accumulation, progression to cirrhosis, and liver failure. While studies often examine bacterial alterations in gut microbiota concerning pathogenesis, progression, and complications of liver cirrhosis, recent attention has turned to the impact of gut fungal dysbiosis, necessitating further investigation.
Patients and Methods: This study aimed to determine gut fungi composition changes in liver cirrhosis patients and the correlation with disease severity. Fecal samples for DNA extraction were collected from healthy controls and liver cirrhosis patients. We amplified the intern transcribed spacer (ITS), and sequencing was performed. Afterward, bioinformatical and statistical analyses were carried out for the fungal profile of each cohort.
Results: In comparison of the healthy controls (n=45) and liver cirrhosis patients' group (n=45), no significant differences were observed in phenotypical traits, such as age and gender. Significantly reduced fungal richness was found in liver cirrhosis patients compared to the healthy controls. Furthermore, we categorized the patients' groups based on the severity of the disease according to the Child-Pugh classification and observed that patients with Child-Pugh C liver cirrhosis had a significantly increased fungal abundance compared to the Child-Pugh A group. Furthermore, an elevated abundance of the *Candida* genus was observed in the liver cirrhosis patients' group, while the *Saccharomyces* genus was increased in the control group.
Conclusions: Patients with liver cirrhosis had reduced richness in stool fungal composition and increased abundance of the *Candida* genus. Moreover, patients with more advanced liver disease had significant shifts in fecal fungal composition.

Conflict of Interest
E. Kiudeliene: None. I. Karaliute: None. D. Nikitina: None. R. Lukosevicius: None. J. Skieceviciene: None. J. Kupcinskas: None.

SESSION 05: *HELICOBACTER PYLORI*: GENETICS AND BEYOND

05.04.

HELICOBACTER PYLORI INFECTION LEADS TO SYSTEMIC METABOLIC REPROGRAMMING THROUGH THE IL-6/JAK/STAT3 PATHWAY

B. YU*, C. CHEN, M. PEPPELENBOSCH, G. FUHLER*
Erasmus MC, Rotterdam, The Netherlands

Objective: *Helicobacter pylori* infects over half the world's population. While its significance in numerous disorders has been proven, the mechanisms by which it exerts systemic effects have not been fully understood. Recent studies reveal that *H. pylori* could lead to systemic metabolic alterations, which sheds light on its link to a variety of non-gastrointestinal disorders. Our research aims to understand how *H. pylori* influences systemic metabolism, which may disclose disease progression mechanisms beyond the stomach.
Materials and Methods: GES-1 and human gastric organoids (HGO) were stimulated with heat-killed *H. pylori* or interleukin (IL)-6. Pamgene kinome profiling, colorimetric analysis, and CellTiter-Glo assay measured kinomic changes, L-lactate secretion, and ATP production. Metabolic protein and gene expression were measured by western blot and quantitative polymerase chain reaction (qPCR). Assays were performed in the absence or presence of JAK2 inhibitors.
Results: Kinome profiling of GES-1 and HGO revealed a unique kinase activation pattern suggestive of a shift toward cancer-associated metabolic pathways. Both *H. pylori* and IL-6, a cytokine upregulated during infection, triggered similar metabolic changes, including increased expression of HIF-1α and LDHA and enhanced

lactate and ATP production. In addition to reducing signal transducer and activator of transcription 3 (STAT3) phosphorylation, inhibition of the JAK2 pathway significantly reduced *H. pylori* and IL-6-mediated metabolic effects, demonstrating its critical role in mediating *H. pylori* metabolic reprogramming.
Conclusions: *H. pylori* can cause systemic IL-6 production. Both *H. pylori* and IL-6 cause gastric cells to switch to glycolysis *via* the JAK2/STAT3 pathway. These findings not only deepen our understanding of gastric cancer development but may also inform broader implications for metabolic changes in health and disease.

Conflict of Interest
B. Yu: None. C. Chen: None. M. Peppelenbosch: None. G. Fuhler: None.

05.05.

THE *HELICOBACTER PYLORI* AUTOTRANSPORTER IMAA ASSOCIATES WITH EXTRACELLULAR VESICLES TO MODULATE HOST INFLAMMATORY RESPONSES IN GASTRIC EPITHELIAL CELLS

A. CRAMOND[1,2], *J. EMERY*[1,2], *N. COLON*[1], *D. TONG*[1], *C. SKENE*[1], *R.L. FERRERO*[1,2]
[1]Hudson Institute of Medical Research, Clayton, Australia; [2]Monash University, Clayton, Australia

Objective: *Helicobacter pylori* produces several autotransporter proteins that use a conserved beta-barrel to transport passenger domains through the bacterial membrane. With the exception of the vacuolating cytotoxin, VacA, these autotransporters remain largely uncharacterized. Previous studies have identified the *H. pylori* immunomodulatory autotransporter (ImaA) to be a potential immunomodulatory protein. Proteomic studies showed that ImaA was associated with *H. pylori* extracellular vesicles (EVs). Thus, we hypothesized that EV-associated ImaA may be able to modulate host immune responses.
Materials and Methods: EVs were isolated from *H. pylori* wild-type (WT) or *imaA* mutant bacteria by ultracentrifugation. EVs were characterized by nanoparticle tracking analysis (NTA). IL-8 responses of AGS gastric epithelial cells to EVs were determined by ELISA. To investigate the immunomodulatory effects of ImaA *in vivo*, we stimulated splenocytes from mice that had been vaccinated with *H. pylori* WT or *imaA* EVs, or PBS.
Results: NTA showed that *H. pylori imaA* and WT EVs have similar particle sizes (median size 95 and 100 nm, respectively). *imaA* EVs induced stronger IL-8 responses than WT EVs (321 *vs*. 216 pg/mL, respectively, $p<0.05$). Splenocytes from mice vaccinated with *H. pylori* WT or *imaA* EVs showed reduced IFNγ and IL-17 responses to ConA, when compared with splenocytes from unvaccinated mice, suggesting *H. pylori* EVs suppress Th1 and Th17 responses.
Conclusions: We propose that *H. pylori* ImaA modulates inflammatory responses in gastric epithelial cells. Further work is required to understand the role of EV-associated ImaA *in vivo*.

Conflict of Interest
A. Cramond: None. J. Emery: None. N. Colon: None. D. Tong: None. C. Skene: None. R.L. Ferrero: None.

05.06.

THE PROPHAGES OF THE *HELICOBACTER* GENUS

M. PROENÇA[1,2], *L. TANOEIRO*[1,2], *J.G. FOX*[3], ***F.F. VALE***[1,2]

[1]Pathogen Genomics and Translational Microbiology Lab, BioISI – Instituto de Biosistemas e Ciências Integrativas, Faculdade de Ciências, Universidade de Lisboa, Lisboa, Portugal; [2]Research Institute for Medicines (iMed-ULisboa), Faculty of Pharmacy, Universidade de Lisboa, Lisboa, Portugal; [3]Division of Comparative Medicine, Massachusetts Institute of Technology, Cambridge, MA, United States

Objective: Although bacteriophages make up the majority of organisms in the biosphere, their consistent presence in *Helicobacter pylori* genomes was discovered relatively recently. *H. pylori* serves as the type species of the genus *Helicobacter*, which encompasses species colonizing either the gastric mucosa (gastric *Helicobacter*) or the liver/intestinal tracts (enterohepatic *Helicobacter*) of various classes within the subphylum *Vertebrata*, including mammals, birds, and reptiles. Here, the research progress on *Helicobacter* prophage genomics is presented.

Materials and Methods: The advancement of sequencing technologies has resulted in the public availability of numerous genomes, enabling the search for prophages in non-pylori *Helicobacter* species. We have retrieved 343 *Helicobacter* genomes from the Pathosystems Resource Integration Center, comprising 44 different species. These genomes were mined for the presence of prophages using the software PHASTER, Phage Hunter, and BLAST search using reference prophages as the query. All sequences were manually inspected and curated.
Results: We have identified 119 complete prophages among non-pylori *Helicobacter* species. Complete prophages were present in 18 out of 44 species. Most prophages from each species are grouped in monophyletic clades, supporting a common ancestor. In a few cases, a co-evolutionary scenario between the host and prophage does not hold, pointing to the existence of host jumps.
Conclusions: Our findings revealed a wealth of new prophages, considerably enriching our understanding of these genetic elements within the genus. *Helicobacter* prophages presented high genomic heterogeneity. The ecological barrier between enterohepatic and gastric *Helicobacter* species is observed for most prophages, with minor exceptions. These findings contribute to our understanding of the complex coevolution and interaction of phage bacteria.

Conflict of Interest
M. Proença: None. L. Tanoeiro: None. J.G. Fox: None. F.F. Vale: None.

SESSION 06: ONCOBIOME

06.04.

LONGITUDINAL DEFINITION OF THE GASTRIC MICROBIOME FROM A HIGH-GASTRIC-CANCER-RISK COHORT FROM COLOMBIA, SOUTH AMERICA

A. MANNION[1]*, Z. SHEN*[1]*, J. DZINK-FOX*[1]*, M.B. PIAZUELO*[2]*, K.T. WILSON*[2]*, R. PEEK*[2]*, J.G. FOX*[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, United States; [2]Vanderbilt University Medical Center, Nashville, TN, United States

Objective: While *Helicobacter pylori* (Hp) infection is the strongest risk factor for developing gastric disease, only certain patients progress from gastritis to stomach cancer. Studies have associated non-Hp gastric microbiota with cancer risk. However, the specific non-Hp microbes responsible for disease progression require further evaluation. We describe the longitudinal composition of the gastric microbiome assessed *via* 16S rRNA profiling and culture in a Colombian cohort with endemic Hp infection and high gastric cancer risk.
Materials and Methods: DNA was extracted from antral gastric biopsies collected from patients who progressed histologically (progressors, n=11) or remained histologically stable (non-progressors, n=11) during 20- and 26-year endoscopic evaluations. 16S rRNA genes were sequenced using Illumina and classified using Kraken2/Bracken. Biopsy samples were subjected to aerobic, anaerobic, and microaerobic bacterial cultures.
Results: The most abundant taxa represented species associated with gastric, skin, oral, and plant/soil environments. Hp was the predominant taxa in all Hp-positive samples and absent in Hp-negative samples (Hp-status per Steiner stain). Beta diversity was significantly different based on Hp-status as well as progressor or non-progressor status at the 20- *vs.* 26-year timepoints, but not between progressor *vs.* non-progressor patients. *Streptococcaceae* species were enriched in 26-year *vs.* 20-year biopsies. Between 1-11 bacterial genera were isolated per biopsy. *Streptococcus* species were cultured from >80% of samples.
Conclusions: We illustrate that the gastric microbiota changes temporally, and the overrepresentation of non-Hp species may modulate disease progression. Bacterial culture of biopsies will enable further definition of prominent microbes in progressors and non-progressors, allowing the study of their effects on gastric pathology in germ-free INS/GAS mice.

Conflict of Interest
A. Mannion: None. Z. Shen: None. J. Dzink-Fox: None. M.B. Piazuelo: None. K.T. Wilson: None. R. Peek: None. J.G. Fox: None.

06.05.

CHARACTERIZATION OF THE INTRATUMORAL MICROBIOTA IN GASTRIC CANCER PATIENTS

M. JAUVAIN[1], *M. MARTY*[2], *C. GRONNIER*[1], *C. VARON*[1], *E. BESSÈDE*[1]
[1]Bordeaux Institute of Oncology, U1312 BRIC, Bordeaux, France; [2]University Hospital of Bordeaux, Bordeaux, France

Objective: Gastric adenocarcinoma is associated with *Helicobacter pylori* infection; it is now recognized that environmental factors, including the digestive microbiota, play a significant role in carcinogenesis. Recent advancements in sequencing techniques have unveiled the presence of tumor-specific bacteria in certain cancers, but the gastric intratumoral microbiota remains poorly characterized. This study aims to describe the intratumoral bacteria in gastric cancer and compare it with the microbiota of adjacent healthy tissue.
Materials and Methods: Five gastric tumors were initially collected from patients undergoing gastrectomy as part of their cancer management. The presence of intratumoral bacteria was determined using immunohistochemistry targeting components of the bacterial wall, RNAscope® targeting 16S ribosomal RNA (16S rRNA), and real-time quantitative PCR (qPCR) targeting 16S rDNA. Characterization of the intratumoral microbiota was achieved by sequencing the V3-V4 region of the 16S rDNA gene.
Results: Preliminary results from the five patients revealed the presence of bacteria in gastric tumors using RNAscope targeting 16S rRNA and qPCR for 16S rDNA. Significantly varied quantification of 16S rDNA was observed among patients. Following the removal of contaminating sequences, sequencing of 16S rDNA allowed the description of intratumoral microbiota, highlighting the predominance of *Lactobacillales* and *Fusobacteriales* bacteria. Analysis of 32 additional patients (including tumors and non-tumoral mucosa) using well-established techniques is ongoing.
Conclusions: This study identified and characterized the presence of intratumoral bacteria in gastric tumors. Thanks to the bigger cohort recently obtained and the comparison with the healthy adjacent tissue microbiota composition, potential biomarkers might be identified.

Conflict of Interest
M. Jauvain: None. M. Marty: None. C. Gronnier: None. C. Varon: None. E. Bessède: None.

06.06.

MICROBIOME-DERIVED METABOLITES AS NOVEL BIOMARKERS OF GASTRIC CANCER

R.M. FERREIRA[1,2], *L. PORTELA*[1,3], *I. CASTRO*[1,4], *J. SOUSA*[1,4], *M. MENDES-ROCHA*[1,4], *J. PEREIRA-MARQUES*[1,2], *F. CARNEIRO*[1,2,4], *C. FIGUEIREDO*[1,2,4]
[1]i3S – Instituto de Investigação e Inovação em Saúde, University of Porto, Porto, Portugal; [2]Ipatimup – Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal; [3]FCUP – Faculty of Sciences of the University of Porto, Porto, Portugal; [4]FMUP – Faculty of Medicine of the University of Porto, Porto, Portugal

Objective: Gastric cancer (GC) is influenced by the gastric microbiome. We propose that the gastric microbiome has a distinct metabolic program and produces metabolites that induce neoplastic transformation in the stomach and promote tumor progression. Our aim is to uncover potential gastric cancer biomarkers derived from microbiome metabolites.
Patients and Methods: Thirty GC patients were included in the training cohort. Untargeted metabolomics determined the metabolite profile, and metatranscriptomics assessed the microbial taxa and gene families. The pairs of metabolomics and metatranscriptomics data were used to train a machine learning (ML) algorithm to predict the microbiome-derived metabolites. The RNA-seq data from a test cohort (comprising 343 GC from TCGA) were used to predict the microbiome metabolite composition in GC.
Results: In the training cohort, we detected a total of 813 metabolites, 217 microbial taxa, and 647 gene families. Using these data, we trained an ML model that revealed the presence of 72 microbiome metabolites, with a good positive correlation between predicted and observed values. By applying the

ML model to the TCGA test cohort, 68 microbiome metabolites were predicted in GC. The most abundant metabolites were associated with stage I-II non-MSI-high tumors. The model is currently being retrained with additional data to improve current predictions and associations in GC.
Conclusions: We have uncovered microbiome-derived metabolites in GC associated with particular cancer subtypes. Microbiome metabolites may pave the way for future stratification strategies for GC patients.

Acknowledgments
FCT – 2022.02141.PTDC.

Conflict of Interest
R.M. Ferreira: None. L. Portela: None. M. Mendes-Rocha: None. J. Pereira-Marques: None. C. Figueiredo: None. I. Castro: None. J. Sousa: None. F. Carneiro: None.

SESSION 07: GASTRIC CARCINOGENESIS

07.04.

UNVEILING PLASMA PROTEIN SIGNATURES FOR GASTRIC PRENEOPLASIA AND CANCER LESION DETECTION

E. TOUATI[1], *Q. GIAI GIANETTO*[1], *K. NOZERET*[1], *V. MICHEL*[1], *T. DOUCHÉ*[1], *M. MATONDO*[1], *D. LAMARQUE*[2,3]
[1]Institut Pasteur, Paris, France; [2]Université Paris Saclay/UVSQ, Boulogne Billancourt, France; [3]AP-HP, Hôpital Ambroise Paré, Boulogne Billancourt, France

Objective: Gastric cancer (GC) still remains a public health concern, with 1 million new cases/year. GC is often of poor prognosis. GC is diagnosed by endoscopy, which has its limitations in detecting gastric preneoplasia, intestinal metaplasia (IM), and dysplasia (Dys). Therefore, the discovery of non-invasive biomarkers based on liquid biopsies as blood is crucial for improving the detection of these lesions.
Patients and Methods: Plasma samples were collected from patients with non-atrophic gastritis (NAG) (n=48), gastric preneoplasia (AGP), including atrophic gastritis (AG), IM, and Dys (n=38) and GC (n=68), with healthy subjects (H) (n=48) as control (ICAReB, Institut Pasteur). The plasma proteome was analyzed using mass spectrometry (MS) (10 samples/group) and proteome profiler arrays focusing on oncogenic pathways. Candidate biomarkers were further validated using ELISA on the entire cohort.
Results: The statistical analysis of the data revealed 17 proteins showcasing robust diagnostic accuracy to predict AGP and GC. Through multinomial logistic regression modeling, we pinpointed optimal combinations of 6 biomarkers with two standout signatures (SIG): to predict gastric preneoplasia, SIG-AGP (AUC: 0.852, Se 91.4%, Sp 79%), and cancer lesions, SIG-GC (0.928, Se 92.9%, Sp 92.7%). The statistical analysis of the data revealed 17 proteins showcasing robust diagnostic accuracy to predict AGP and GC. Through multinomial logistic regression modeling, we pinpointed optimal combinations of 6 biomarkers with two standout signatures (SIG): to predict gastric preneoplasia, SIG-AGP (AUC: 0.852, Se 91.4%, Sp 79%), and cancer lesions, SIG-GC (0.928, Se 92.9%, Sp 92.7%). Experiments are ongoing on plasma samples from a new multicentric cohort, to further confirm these signatures, using customized xMAP Luminex-based assays.
Conclusions: We identified 2 panels of 6 proteins to predict gastric preneoplasia and cancer lesions *via* a straightforward blood sampling approach. They constitute an important tool to improve GC detection/prevention, paving the way for the future development of a non-invasive diagnostic test.

Conflict of Interest
E. Touati: None. Q. Giai Gianetto: None. K. Nozeret: None. V. Michel: None. T. Douché: None. M. Matondo: None. D. Lamarque: None.

07.05.

GASTRIC CANCER INVASION: PHYSICAL AND BIOCHEMICAL NUCLEAR READOUTS ELICITED BY E-CADHERIN LOSS

J. FIGUEIREDO[1,2,3], *J. PEREIRA*[1,2,3], *R.M. FERREIRA*[1,2], *L. CARVALHO*[1,2,3], *J.P. SANTOS*[1,2,3], *M. GONÇALVES*[1,4,5], *S. MELO*[1,2,6], *P. CARNEIRO*[1,2], *J.C. MACHADO*[1,2,3], *E. MORAIS-DE-SÁ*[1,4], *R. SERUCA*[1,2]
[1]i3S - Instituto de Investigação e Inovação em Saúde, University of Porto, Porto, Portugal; [2]IPATIMUP - Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal; [3]Medical Faculty of the University of Porto, Porto, Portugal; [4]IBMC - Institute for Molecular and Cell Biology, University of Porto, Porto, Portugal; [5]ICBAS - Instituto de Ciências Biomédicas de Abel Salazar, University of Porto, Porto, Portugal; [6]Institute for Systems and Robotics, Instituto Superior Técnico, Lisboa, Portugal

Objective: Genetic and epigenetic alterations of E-cadherin (*CDH1*) occur in 60% of gastric carcinomas and result in increased cell invasion and subsequent metastasis. However, the mechanisms underlying disease etiology are far from understood, perpetuating its poor prognosis. We aim to address the hypothesis that loss of cell-cell adhesion mediated by E-cadherin mutations causes an imbalance in mechanical loads throughout the actin cytoskeleton, inducing nucleus remodeling and a consequent invasive signature.
Patients and Methods: We have established cell lines and Drosophila strains expressing wild-type E-cadherin or a novel variant identified in gastric cancer patients. Nuclear architectural features and cell migration were evaluated using confocal microscopy and advanced bioimaging techniques. In addition, we have investigated the composition of the nuclei envelope from mutant and wild-type cells through high-resolution Mass Spectrometry (LC-MS).
Results: We verified that cells expressing E-cadherin variants display increased migratory rates *in vivo* compared with those expressing the wild-type protein. Nuclear morphology assessment revealed that area, perimeter, and circularity are higher in nuclei from E-cadherin mutant cells, suggesting a more relaxed and flexible structure. Mutant E-cadherin further elicited delocalization of the nucleus towards the epithelial basal surface, which is indicative of a closer interaction with the basement membrane. Ultimately, we identified a distinct molecular profile of the nuclear envelope from E-cadherin mutant cells. Differentially abundant proteins include critical molecules for the structural integrity of the nucleus.
Conclusions: This work provides evidence that the invasive nature of gastric cancer cells correlates with physical and biochemical nuclear features elicited by E-cadherin dysfunction.

Conflict of Interest
J. Figueiredo: None. J. Pereira: None. R.M. Ferreira: None. L. Carvalho: None. J.P. Santos: None. M. Gonçalves: None. S. Melo: None. P. Carneiro: None. J.C. Machado: None. E. Morais-de-Sá: None. R. Seruca: None.

07.06.

THE AUTOPHAGY PROTEIN IRGM IS A KEY PLAYER IN GASTRIC CARCINOGENESIS

E. KALLUZHATHIL*, N. CASTANO RODRIGUEZ, K.V. PACHECO*
UNSW, Kensington, Australia

Objective: Infection with *Helicobacter pylori* is the primary cause of gastric cancer (GC), but not all infections lead to cancer. This suggests that factors such as the host's genetic makeup and other non-*H. pylori* microbiota and environmental influences also play significant roles. Germline variants in *IRGM*, the key regulator of anti-microbial autophagy, are hypothesized to contribute to an aberrant host inflammatory profile conducive to carcinogenesis. Here, we aimed at investigating the underlying mechanisms of *IRGM* variants in acute infection and impact on gastric microbiota using an international high-risk study sample.
Patients and Methods: *IRGM* rs10065172 and rs4958847 were genotyped in 16 GC patients and 146 controls (Mestizo Colombian, Han Chinese) using MALDI-TOF. Gastric microbiota surveying was performed using 16S rRNA gene amplicon sequencing (V4). Host gastric transcriptomics was unveiled through RNA-Seq. Through CRISPR/Cas9, rs10065172 and rs4958847 knock-in AGS cells were developed to assess the acute inflammatory response upon infection with a highly virulent *H. pylori* strain (GC026).

Results: rs4958847 was found to influence both α- and β-diversity, as well as microbiota composition with enrichment of *Dialister* (p<0.001). rs10065172 was associated with enriched *Prevotella* (p=0.02). The variants significantly modulated the expression of proto-oncogenes (*RAF1*, *PIM2*) and key inflammatory signaling genes (*NOD2*, *NLRP3*). *IL-8* and *TNF-α* expression was exacerbated in *H. pylori*-challenged knock-in epithelial cells harboring rs10065172 and rs4958847, demonstrating an abnormal inflammatory response.
Conclusions: *IRGM* rs10065172 and rs4958847 can modulate the host inflammatory response to *H. pylori* infection, enriching other known cancer-associated bacterial taxa and favoring cancer progression. These variants are potential key biomarkers for the surveillance of GC development in high-risk subjects.

Conflict of Interest
E. Kalluzhathil: None. N. Castano Rodriguez: None. K.V. Pacheco: None.

SESSION 08: FMT

08.04.

EFFECTIVENESS OF FECAL MICROBIOTA TRANSPLANT IN METABOLIC SYNDROME: A RANDOMIZED DOUBLE-BLINDED PLACEBO-CONTROLLED TRIAL

S. PIWCHAN, N. AUMPAN, V. MAHACHAI, ***R. VILAICHONE***
Thammasat University, Pathumthani, Thailand

Objective: Gut microbiota plays a crucial role in human metabolism, and FMT could restore the balance of gut microbiota. This study aimed to assess the effects of FMT on metabolic syndrome *via* rectal enema.
Patients and Methods: In this double-blind, randomized controlled trial, subjects with metabolic syndrome and moderate-to-severe insulin resistance (HOMA-IR >2.5) were randomly assigned in 1:1 ratio in blocks of four to receive either allogenic FMT (from a healthy lean donor; n=8) or placebo (normal saline; n=10) delivered *via* rectal enema. Participants were followed for 12 weeks. The primary outcome was a mean difference (MD) in the homeostatic model assessment of insulin resistance (HOMA-IR), and secondary outcomes included FBS, BMI, inflammatory markers such as hs-CRP and ESR, and adverse events at 6 and 12 weeks after FMT.
Results: Patients had a mean age of 50.4±10.7 years; 44% of whom were males. Baseline BMI and HOMA-IR were comparable between the two groups (28.9±4.6 *vs.* 29.8±6.2 kg/m^2 and 6.51±3.95 *vs.* 4.6±1.5 in the FMT and placebo groups, respectively). FMT exhibited significant improvement in mean difference (MD) of HOMA-IR at 6-week intervals than placebo (-0.98±1.23 *vs.* 0.47±0.29; p=0.02). Furthermore, the mean change of serum FBS levels and hs-CRP were significantly improved in the FMT group than in placebo (-7.1±8.9 *vs.* 0.9±7.3 mg/dL, p=0.009 and 0.23±1.04 *vs.* 1.62±1.48, p=0.028, respectively). Only minor adverse events, such as nausea, vomiting, and mild diarrhea, were reported, and there were no differences noted. No serious adverse events were observed.
Conclusions: FMT *via* rectal enema had favorable changes in insulin resistance, as measured by HOMA-IR and serum FBS after treatment. FMT might be an alternative effective treatment for patients with metabolic syndrome.

Clinical Trial Registration: ***TCTR20240805004.***

Conflict of Interest
R. Vilaichone: None. S. Piwchan: None. N. Aumpan: None. V. Mahachai: None.

08.05.

FECAL MICROBIOTA TRANSPLANTATION (FMT) *VS.* PLACEBO IN PATIENTS RECEIVING PEMBROLIZUMAB PLUS AXITINIB FOR ADVANCED RENAL CELL CARCINOMA. A DOUBLE-BLIND RANDOMIZED CONTROLLED TRIAL (TACITO TRIAL)

S. PORCARI[1], C. CICCARESE[1], A. SEVERINO[1], D. RONDINELLA[1], S. BUTI[2], G. FORNARINI[3], F. PRIMI[4], L. STUMBO[5], D. ARDUINI[1], F. PINTO[6], G. QUARANTA[1], L. MASUCCI[1], M. SANGUINETTI[1], A. GASBARRINI[1], G. TORTORA[1], G. CAMMAROTA[1], N. SEGATA[6], R. IACOVELLI[1], ***G. IANIRO***[1]

[1]CATHOLIC University, Rome, Italy; [2]University of Parma, Parma, Italy; [3]Genova University, Genova, Italy; [4]Belcolle Hospital, Viterbo, Italy; [5]Campus Biomedico University, Rome, Italy; [6]Trento University, Trento, Italy

Objective: Combinations of VEGFR-TKIs plus immune checkpoint inhibitors (ICI) targeting PD-1/PD-L1 are the standard first-line therapy for patients with metastatic renal cell carcinoma (mRCC). Gut microbiota plays a crucial role in response and resistance to ICIs. Fecal microbiota transplantation (FMT) has been investigated as a potential therapeutic approach to enhance immunotherapy activity. We investigated whether FMT can increase the efficacy of VEGFR-TKI + ICI in mRCC pts.

Patients and Methods: This is a double-blind, randomized, placebo-controlled, phase 2 trial of patients with mRCC treated with axitinib+pembrolizumab, randomized 1:1 to FMT or placebo. Treatments were performed at baseline (within 8 weeks from the start of axitinib+pembrolizumab) with colonoscopy, and at 90 days and 180 days by capsulized FMT. The donor was a mRCC patient with a complete and long-lasting response to immunotherapy. The primary endpoint was the rate of pts without disease progression after one year from randomization (1-year PFS rate). Secondary endpoints were median PFS, overall survival, objective response rate, and characterization of microbiota composition through microbiome analysis with shotgun sequencing.

Results: From February 2021 to November 2023, 54 pts were evaluated; 50 pts met the inclusion criteria and were randomized. We expected to improve the 1-year PFS rate of 20% (from 60% in the placebo group to 80% in the FMT group). Preliminary results will be available in September 2024.

Conclusions: The TACITO trial is the first randomized study to investigate the role of FMT in increasing the efficacy of axitinib + pembrolizumab as first-line therapy for mRCC.

ClinicalTrials.gov: ***NCT04758507.***

Conflict of Interest

G. Ianiro: None. S. Porcari: None. C. Ciccarese: None. A. Severino: None. D. Rondinella: None. S. Buti: None. G. Fornarini: None. F. Primi: None. L. Stumbo: None. D. Arduini: None. F. Pinto: None. G. Quaranta: None. L. Masucci: None. M. Sanguinetti: None. A. Gasbarrini: None. G. Tortora: None. G. Cammarota: None. N. Segata: None. R. Iacovelli: None.

08.06.

EFFICACY AND SAFETY OF FECAL MICROBIOTA TRANSPLANTATION IN PATIENTS WITH IRRITABLE BOWEL SYNDROME: A PRELIMINARY REPORT

H. LEE*, C. SHIN, Y. CHANG, Y. CHOI, H. YOON, Y. PARK, N. KIM, D. LEE*

Department of Internal Medicine, Seoul National University Bundang Hospital, Seongnam-si, Republic of Korea

Objective: This study aimed to verify the clinical effect, long-term effectiveness, and safety of fecal microbiota transplantation (FMT) in Korean irritable bowel syndrome (IBS) patients.

Patients and Methods: Patients with moderate to severe diarrhea-predominant IBS (IBS-D) or mixed-type IBS (IBS-M) were enrolled. FMT solution from a super-donor was delivered to duodenum 3rd portion *via* esophagogastroduodenoscopy. IBS-symptom severity score (IBS-SSS), Bristol Stool Form Scale (BSFS), IBS Quality of Life (IBS-QoL) questionnaires, Hospital Anxiety and Depression Scale (HADS) were collected at baseline, as well as 4 and 12 weeks after FMT.

Results: A total of 44 patients with IBS were enrolled. By April 30th, 2024, 39 patients (IBS-D: IBS-M=29:10) had completed a 4-week follow-up, and 31 patients had completed a 12-week follow-up (IBS-D: IBS-M=24:7). At week 12, IBS-SSS score decreased from 335.5 to 272.8 (p=0.015) and IBS-QoL score increased from 46.1 to 61.8 after FMT (p<0.001). In IBS-D patients, BSFS was decreased from 5.4 to 4.5 after FMT (at week 12, p=0.003). HADS-anxiety score and HADS-depression scores decreased from 8.9 to 7.8, and from 8.9 to 7.4 at 12 weeks after FMT (p=0.013, p=0.042, respectively). Bowel symptom scores for abdominal pain, abdominal discomfort, abdominal distension, and flatulence all decreased in 12 weeks after FMT. No serious adverse reactions were reported except 2 patients with abdominal pain and 6 patients with diarrhea.
Conclusions: FMT may improve bowel symptoms and quality of life in moderate to severe IBS patients after treatment. Analyses of fecal microbiome profiles are being conducted to clarify the gut microbiome change after FMT.

Conflict of Interest
H. Lee: None. C. Shin: None. Y. Chang: None. Y. Choi: None. H. Yoon: None. Y. Park: None. N. Kim: None. D. Lee: None.

SESSION 10: H. *PYLORI* MANAGEMENT

10.04.

EFFECTIVENESS AND SAFETY OF FIRST-LINE EMPIRICAL NON-BISMUTH CONCOMITANT THERAPY *VS.* SINGLE-CAPSULE BISMUTH QUADRUPLE THERAPIES IN SPAIN: ANALYSIS OF 12,000 PATIENTS FROM THE EUROPEAN REGISTRY ON *HELICOBACTER PYLORI* MANAGEMENT (HP-EUREG)

O.P. NYSSEN[1], *N. MONTES*[2], *Á. PÉREZ-AÍSA*[3], *S.J. MARTÍNEZ-DOMÍNGUEZ*[4], *L. RODRIGO*[5], *A.J. LUCENDO*[6], *J.M. HUGUET*[7], *J. TEJEDOR-TEJADA*[8], *A. GARRE*[1], *L. BUJANDA*[9], *M. PABÓN-CARRASCO*[10], *M. CASTRO-FERNÁNDEZ*[10], *M. PERONA*[11], *L. HERNÁNDEZ*[12], *A. CANO-CATALÀ*[13], *P. PARRA*[1], *L. MOREIRA*[14], *F. MÉGRAUD*[15], *C. O'MORAIN*[16], *J.P. GISBERT*[1], *ON BEHALF OF THE HP-EUREG INVESTIGATORS*
[1]Department of Gastroenterology, Universidad Autónoma de Madrid (UAM), Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa, Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [2]Plant Physiology, Pharmaceutical and Health Sciences Department, Faculty of Pharmacy, Universidad San Pablo-CEU, CEU-Universities, Unidad de Metodología, IIS-Princesa, Servicio de Reumatología, Hospital Universitario de La Princesa, Boadilla del Monte, Spain; [3]Department of Gastroenterology, Hospital Universitario Costa del Sol, Redes de Investigación Cooperativa Orientada a Resultados en Salud (RICORS), Marbella, Spain; [4]Department of Gastroenterology, Hospital Clínico Universitario Lozano Blesa, Instituto de Investigación Sanitaria de Aragón (IIS Aragón), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Zaragoza, Spain; [5]Department of Gastroenterology, Universidad de Oviedo, Oviedo, Spain [6]Department of Gastroenterology, Hospital General de Tomelloso, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Tomelloso, Spain; [7]Department of Gastroenterology, Hospital General Universitario de Valencia, Valencia, Spain; [8]Department of Gastroenterology, Hospital Universitario de Cabueñes, Gijón, Spain; [9]Department of Gastroenterology, Biodonostia Health Research Institute, Department of Medicine, Universidad del País Vasco (UPV/EHU), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), San Sebastián, Spain; [10]Department of Gastroenterology, Hospital Universitario Virgen de Valme, Seville, Spain; [11]Department of Gastroenterology, Hospital Quirón Marbella, Marbella, Spain; [12]Department of Gastroenterology, Hospital Santos Reyes, Aranda

de Duero, Spain; [13]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) Research Group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [14]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [15]INSERM U1312, Université de Bordeaux, Bordeaux, France; [16]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: The V Spanish Consensus Conference on *H. pylori* recommends two first-line treatments: a non-bismuth quadruple concomitant regimen [proton pump inhibitors (PPI), clarithromycin, amoxicillin, and metronidazole] for 14 days or a bismuth-containing quadruple therapy as a single-capsule (PPI, bismuth, tetracycline, and metronidazole) for 10 days. Our aim was to compare the effectiveness and safety of these treatments in Spain.
Patients and Methods: Treatment-naïve patients registered in the European Registry on *H. pylori* management (Hp-EuReg) in 2013-2023, treated with either concomitant or single-capsule bismuth therapy, were analyzed. Propensity score analyses and multivariate logistic regression were conducted to determine the modified intention-to-treat effectiveness (mITT) in both groups.
Results: 11,720 treatments were analyzed, with 54% receiving concomitant therapy and 46% single-capsule. Concomitant therapy for 10 and 14 days showed lower mITT effectiveness [88%; OR=0.53 (95% CI 0.43-0.66); and 90%; OR=0.62 (0.53-0.73), respectively] compared to 10-day-single-capsule therapy (93% mITT, $p<0.01$). Compliance [OR=6.81 (5.05-9.15)], presence of ulcer [OR=1.49 (1.17-1.91)], and central geographical region [OR=2.51 (1.94-3.29)] were the variables associated with greater eradication success ($p<0.001$). However, there was no benefit of using high-dose PPIs. Compliance was higher with single-capsule (98%) compared to 10 and 14 days of concomitant therapy (97% each). Adverse effects were lower with 10-day than with 14-day concomitant therapy (25% *vs*. 33%), with the latter being significantly higher than with single-capsule (25%) ($p<0.0001$). Regarding serious adverse effects, 9 (0.1%) and 7 (0.1%) cases were reported with concomitant therapy and single-capsule therapy, respectively.
Conclusions: In Spain, bismuth-containing quadruple therapy prescribed as a single capsule is more effective and better tolerated than non-bismuth quadruple concomitant treatment.

Conflict of Interest
O. P. Nyssen: Other; Significant; Mayoly, Allergan/Abbvie, Richen, Juvisé and Biocodex. N. Montes: None. Á. Pérez-Aísa: None. S. J. Martínez-Domínguez: None. L. Rodrigo: None. A. J. Lucendo: None. J. M. Huguet: None. J. Tejedor-Tejada: None. A. Garre: None. L. Bujanda: None. M. Pabón-Carrasco: None. M. Castro-Fernández: None. M. Perona: None. L. Hernández: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. F. Mégraud: None. C. O›Morain: None. J. P. Gisbert: Other; Significant; Mayoly, Allergan/Abbvie, Diasorin, Richen, Juvisé and Biocodex.

10.05.

A NOVEL MULTI-EPITOPE-BASED VACCINE AGAINST *HELICOBACTER PYLORI*: EVALUATION OF THE PROTECTIVE EFFECT

B. KALALI[1,2], *H. MOEINI*[1], *A. MOSTAFAZADEH*[3], *B. YADEGAR*[4], *V. WEDERSHOVEN*[1], *C. SCHULZ*[2], *P. MALFERTHEINER*[2]
[1]Iguana Biotechnology, Munich, Germany; [2]Ludwig-Maximilians University, Munich, Germany; [3]Babol University of Medical Sciences, Babol, Iran; [4]Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: The development of a vaccine against *H. pylori* remains an unmet need in medical research. Challenges for a successful vaccine arise from the unique characteristics of this bacterium. In this study, we aimed to address this gap by developing a novel multi-epitope *H. pylori* vaccine consisting of B- and T-cell epitopes from six conserved virulence factors of the bacteria.

Materials and Methods: By applying comprehensive bioinformatic analysis, 16 B- and T-cell epitopes were selected, with consideration given to both MHC classes I and II for the T-cell epitopes. The recombinant Multi-Epitope-Unit antigen (MEU) was combined with flagellin as an adjuvant. Recombinant Modified Vaccinia virus Ankara (MVA) encoding the MEU antigen was also generated. The vaccine candidates (protein or MVA) were administered intramuscular (IM) in C57/Bl6 mice (n=53; subdivided into 7 experimental groups) on days 0, 7, and 14. Two weeks after the last immunization, animals were challenged with three doses of mouse-adapted *H. pylori* SS1 strain.
Results: Protection and infection levels were evaluated four weeks after the infection through culturing of the gastric samples. Both vaccine protocols, flagellin-adjuvanted MEU antigen and the recombinant MVA, demonstrate absolute protection against infection with *H. pylori* compared to non-immunized animals. This protection was achieved through either a schedule of immunization with the protein-based construct followed by an MVA boost or two administered doses of MVA.
Conclusions: This study demonstrated a significant level of protection against *H. pylori* infection using the novel multi-epitope unit antigen, regardless of the vaccination protocols.

Conflict of Interest
B. Kalali: A. Employment (full or part-time); Significant; guana Biotechnology GmbH. H. Moeini: A. Employment (full or part-time); Significant; Iguana Biotechnology GmbH. A. Mostafazadeh: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; guana Biotechnology GmbH. B. Yadegar: None. V. Wedershoven: A. Employment (full or part-time); Significant; guana Biotechnology GmbH. C. Schulz: None. P. Malfertheiner: None.

10.06.

7-DAY THERAPY *VS.* 14-DAY THERAPY IN EMPIRICAL AND TAILORED THERAPY: A PLACEBO-CONTROLLED RANDOMIZED NATIONWIDE TRIAL IN KOREA

B. KIM[1], *J. KIM*[1], *J. KIM*[2], *W. CHUNG*[3], *S. JUNG*[4], *C. BANG*[5], *G. KIM*[6], *S. LEE*[7], *S. JEON*[8], *M. JOO*[9]
[1]Incheon St. Mary's Hospital, The Catholic University of Korea, Incheon, Republic of Korea; [2]Yeouido St. Mary's Hospital, The Catholic University of Korea, Seoul, Republic of Korea; [3]St. Vincent's Hospital, The Catholic University of Korea, Suwon, Republic of Korea; [4]Korea University Ansan Hospital, Ansan, Republic of Korea; [5]Chuncheon Sacred Hospital, Hallym University College of Medicine, Chuncheon, Republic of Korea; [6]Pusan National University Hospital, Busan, Republic of Korea; [7]Yeungnam University College of Medicine, Daegu, Republic of Korea; [8]Kyungpook National University Chilgok Hospital, Chilgok, Republic of Korea; [9]Korea University Guro Hospital, Seoul, Republic of Korea

Objective: The literature shows that 14-day therapy has better outcomes than 7-day therapy. However, no placebo-controlled study has been conducted. The aim of this study was to compare the eradication rates of 7 days *vs*. 14 days for empirical and tailored therapy.
Patients and Methods: This was a randomized, double-blind, placebo-controlled trial performed in 21 centers in Korea. The enrollment algorithm is presented in Figure 1. The primary outcome was the eradication rate of each therapy.
Results: A total of 554 patients were enrolled in this study. For empirical therapy, there was no difference in eradication rates of 7-day (146) *vs*. 14-day (137) triple therapy (85.2 *vs*. 83.8, p=0.077). There was no difference in eradication rates of 7-day (108) *vs*. 14-day (105) triple therapy for clarithromycin sensitive group (85.2 *vs*. 83.8, p=0.982) and 7-day (29) *vs.* 14-day (29) bismuth quadruple therapy for clarithromycin resistance group (93.1 *vs*. 86.2, p=0.744).
Conclusions: Increasing the duration to 14 days did not increase the eradication rates for both empirical and tailored therapy.

Conflict of Interest
B. Kim: None. J. Kim: None. J. Kim: None. W. Chung: None. S. Jung: None. C. Bang: None. G. Kim: None. S. Lee: None. S. Jeon: None. M. Joo: None.

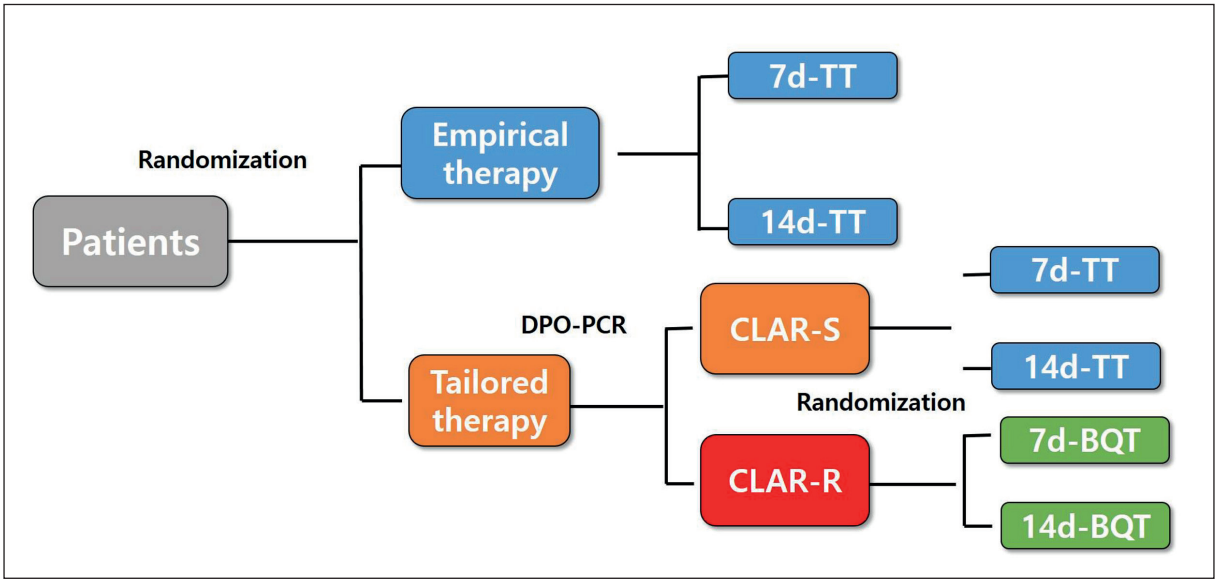

Figure 1. Algorithm of enrollment for this study. (TT, triple therapy; CLAR-S, clarithromycin sensitive; CLAR-R, clarithromycin resistant; BQT, bismuth-based quadruple therapy).

SESSION 11: PROBIOTICS

11.03.

DIETARY SULFORAPHANE INCREASES BUTYRATE-PRODUCING INTESTINAL MICROBIOTA AND DECREASES FECAL CALPROTECTIN LEVELS IN PATIENTS WITH ULCERATIVE COLITIS

A. YANAKA[1], *T. OHMORI*[2], *M. OCHI*[3], *H. SUZUKI*[4]
[1]University of Tsukuba, Tsukuba, Japan; [2]Ohmori Toshihide GI Clinic, Ageo, Japan; [3]Hitachi Medical Education and Research Center, Hitachi, Japan; [4]Tsukuba GI Endoscopy Clinic, Tsukuba, Japan

Objective: Ulcerative Colitis (UC), caused by chronic oxidative stress, is increasing in Japan due to the recent Westernization of dietary habits. Sulforaphane (SFN), rich in broccoli sprouts (BS), has been shown to enhance antioxidant activity by up-regulating nrf2-mediated antioxidant enzymes. We have previously shown that dietary intake of SFN-rich broccoli sprouts mitigates *H. pylori*-induced gastritis by inhibiting *H. pylori* activity. In this study, we examined if dietary SFN affects intestinal microflora and mitigates colonic inflammation in mesalazine-treated human UC patients.
Patients and Methods: Twenty-eight subjects with mild UC patients treated with mesalazine were assigned to either the SFN-rich broccoli sprouts (BS) group (n=14) or the SFN-free alfalfa sprouts (AS) group (n=14). They were instructed to consume 20 g daily of raw BS or AS for 8 weeks. BS contains 4.4 mg/g sulforaphane glucosinolate (SGS), a precursor of SFN, while AS contains no SGS. Stool samples were obtained just before and after the 8 weeks treatment with sprouts. In this study, levels of fecal calprotectin were measured as the quantitative indices of colonic inflammation. We also analyzed intestinal microflora using terminal restriction fragment length polymorphism flora analysis.
Results: Treatment with BS, but not AS, reduced the level of fecal calprotectin and was accompanied by an increase in *Clostridium* IV and XIVa in the feces, which are known to enhance butyrate production.
Conclusions: These results indicate that dietary approach with SFN mitigates colonic inflammation in mesalazine-treated UC patients, and further suggest that these effects of SFN may be related with the increase in butyrate-producing intestinal microbiota.

Conflict of Interest
A. Yanaka: F. Consultant/Advisory Board; Significant; Murakami Farm Inc. T. Ohmori: None. M. Ochi: None. H. Suzuki: None.

11.04.

THE BENEFICIAL EFFECT OF A PROBIOTIC INTERVENTION ON QUALITY OF SLEEP - A RANDOMIZED, DOUBLE-BLINDED, PLACEBO-CONTROLLED STUDY

A. HORVATH[1,2], *N. FELDBACHER*[1,2], *V. STADLBAUER*[1,2]
[1]Center for Biomarker Research in Medicine, Graz, Austria; [2]Medizinische Universität Graz, Graz, Austria

Objective: The intestinal microbiome has been shown to regulate human chronobiology and might, therefore, harbor the potential to treat chronic sleep disturbances through probiotic modulation. This hypothesis was tested in a randomized, double-blind, placebo-controlled study.
Patients and Methods: In total, 130 volunteers with impaired quality of sleep (PSQI>5) were randomized in a 1:1 ratio to a 28-day intervention with either a multispecies probiotic (Omnibiotic-Stress Repair) or a placebo. Participants completed validated questionnaires to estimate quality of sleep, quality of life, and perceived stress, and collected stool samples for 16S rRNA sequencing before and after the intervention. Ninety-four participants finished the study and could be included in the analysis.
Results: The 50 participants (88.6% female, 41.2±10.6 years old) analyzed in the probiotic group and 44 participants (88.0% female, 40.1±10.7 years old) in the placebo group were well comparable at baseline, including the initial PSQI-score (10.1±2.7 *vs*. 10.5±2.6). The probiotic intervention led to improved sleep efficiency and latency and thereby improved the quality of sleep beyond an observable placebo effect (6.8±2.9 *vs*. 7.7±3.1; *p*=0.036, probiotic and placebo group, respectively). Probiotic bacteria were partially recovered in the microbiome, causing a slight shift in beta diversity in the probiotic group. The intervention did not influence the quality of life or perceived stress.
Conclusions: In conclusion, this well-powered RCT confirms that an intervention with a multispecies probiotic can improve sleep quality and that modulating the microbiome can be effective in alleviating sleep disturbances.

Conflict of Interest
A. Horvath: None. N. Feldbacher: None. V. Stadlbauer: A. Employment (full or part-time); Modest; Institut Allergosan, Graz Austria, Winclove Probiotics, Amsterdam, the Netherlands. B. Research Grant (principal investigator, collaborator or consultant, and pending grants as well as grants already received); Modest; Institut Allergosan, Graz, Austria, Winclove Probiotics, Amsterdam, The Netherlands. D. Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Modest; Institut Allergosan, Graz, Austria, Winclove Probiotics, Amsterdam, The Netherlands.

11.05.

BIFIDOBACTERIUM MODULATES THE IMMUNE RESPONSE IN A MICROSATELLITE INSTABILITY COLORECTAL CANCER MOUSE MODEL

P. VIEIRA[1,2,3], *J. PEREIRA-MARQUES*[1,2], *M. TAVARES*[1,2], *C. RESENDE*[1,2], *R. FERREIRA*[1,2], *J.C. MACHADO*[1,2,3], *C. FIGUEIREDO*[1,2,3]
[1]i3S – Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal; [2]IPATIMUP – Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal; [3]FMUP – Faculty of Medicine of the University of Porto, Porto, Portugal

Objective: Recent evidence showed that the gut microbiome influences cancer development and predicts response to immunotherapy in colorectal cancer (CRC) with microsatellite instability (MSI) patients. Therefore, our aim was to use CRC with MSI as a model to explore the interplay between the microbiome and cancer immune response.
Materials and Methods: We used a conditional and inducible mouse model of CRC with MSI, characterized by loss of *Msh2* in Lrig1-expressing quiescent intestinal progenitor cells (Lrig1[CreERT2/+]; Msh2[Loxp/Loxp]). The gut microbiome was depleted with antibiotics, followed by repopulation with *Bifidobacterium* species. Mice were euthanized 300 days post-induction. Fecal samples were collected for gut microbiome analysis, and tumor tissues were collected for immune profile characterization.

Results: Mice inoculated with *Bifidobacterium* species had a lower tumor incidence (39%; n=18) in comparison with control animals (60%; n=20). The number of tumors per animal and the tumor size were also smaller in *Bifidobacterium*-inoculated mice. Transcriptomics analysis identified 288 differentially expressed genes between tumors of the two groups. Functional annotation clustering identified pathways associated with the innate and adaptive immune response. Cell-type enrichment analysis revealed an increase in the adaptive immune response, characterized by increased B and T cells in the *Bifidobacterium*-inoculated mice, as well as an increase in gamma-delta T cells. In mice inoculated with *Bifidobacterium*, tumors show diminished CTLA-4 expression, suggesting a decreased capacity to induce T cell exhaustion.
Conclusions: *Bifidobacterium* effectively reduced tumor burden, promoting an anti-inflammatory phenotype while enhancing anti-tumor immunity. These findings underline the role of the microbiome in modulating tumor dynamics.

Acknowledgements
FCT_2020.06228.BD.

Conflict of Interest
P. Vieira: None. J. Pereira-Marques: None. M. Tavares: None. C. Resende: None. R. Ferreira: None. J.C. Machado: None. C. Figueiredo: None.

11.06.

BACTERIAL GENOTOXINS TRIGGER INVADOSOME FORMATION ASSOCIATED WITH MATRIX DEGRADATION

*M. DA SILVA SARAIVA[1], **L. AZZI-MARTIN**[1], C. VARON[1], F. SALTEL[2], A. MÉNARD[1]*
[1]Université de Bordeaux, Bordeaux, France; [2]Inserm, Bordeaux, France

***Objectives*:** Humans are frequently exposed to bacterial genotoxins, such as Cytolethal Distending Toxin (CDT) and colibactin, produced by bacteria from the microbiota. These genotoxins cause DNA damage and high ploidy in host cells, which are well-known risk factors for carcinogenesis, along with stress fiber formation and deep cytoskeleton remodeling. We observed circular F-actin structures following exposure to bacterial genotoxins, *Helicobacter hepaticus*' CDT, and *Escherichia coli*'s colibactin, that may correspond to invadosomes, whose ability to degrade the extracellular matrix (ECM) contributes to invasion and metastasis. In this study, we investigated the invadosome formation in response to bacterial genotoxins.
Materials and Methods: We used transgenic human cell lines expressing the CdtB catalytic subunit of CDT or its inactive mutant and cocultures of cells with bacteria producing genotoxins (CDT or colibactin).
Results: *In vitro*, the staining of invadosomes' markers associated with ECM degradation in hepatic cell lines infected with genotoxin-producing bacteria allowed the confirmation of functional invadosome formation. Increased invadosome formation was dependent on the CDT and colibactin and not observed in noninfected cells and in response to the corresponding mutant strains invalidated for these toxins. Similar results were observed when using transgenic cell lines expressing CdtB subunit, as well as with DNA-damaging agents (Etoposide and Streptozocin), suggesting that DNA damage leads to invadosome formation and ECM degradation. In response to CdtB, a global kinase activity assay confirmed the activation of Src-family kinases, crucial in invadosome formation, that was corroborated by invadosome inhibition after using a Src-family kinases inhibitor.
Conclusions: The genotoxic stress induced by bacterial genotoxins leads to invadosome formation and ECM degradation, suggesting that chronic and/or repeated exposure to genotoxin-producing bacteria is implicated in tissue remodeling and cancer progression.

Conflict of Interest
M. Da Silva Saraiva: None. L. Azzi-Martin: None. C. Varon: None. F. Saltel: None. A. Ménard: None.

POSTER

POSTER SESSION 01: HELICOBACTER 01

P01.01.

COMPARISON OF STANDARD TRIPLE THERAPY WITH OR WITHOUT BISMUTH AS AN INITIAL TREATMENT FOR *HELICOBACTER PYLORI* INFECTION

M. KOH[1], ***S. CHOI***[2]
[1]Dong-A University, Busan, Republic of Korea; [2]Clinic of Internal Medicine, Busan, Republic of Korea

Objective: *Helicobacter pylori* infection is a common global infection known to cause various gastrointestinal disorders, necessitating treatment. Despite the availability of various treatment methods, the increasing antibiotic resistance has led to decreased eradication rates. This study aims to overcome antibiotic resistance and achieve higher eradication rates by incorporating bismuth into the standard treatment regimen, seeking a more effective treatment approach.
Subjects and Methods: This retrospective single-center study compared the eradication rates of standard triple therapy with and without bismuth. A total of 427 patients diagnosed with *H. pylori* infection through endoscopic examination at Dong-A University Hospital from March 2018 to August 2023 were enrolled, and data were collected from their medical records.
Results: The eradication success rate of the bismuth-containing therapy group (89.7%) was slightly higher than that of the standard triple therapy group (87.6%), but no statistically significant difference was observed (p=.572).
Conclusions: In conclusion, for patients with unknown or confirmed absence of antibiotic resistance, it is advisable to consider standard triple therapy, sequential therapy, or concomitant therapy as recommended. The evidence supporting the addition of bismuth to standard therapy is not sufficient based on this study. Despite this, it may be worthwhile to consider using bismuth in patients with clarithromycin resistance. Further prospective randomized controlled trials involving a larger number of patients are needed to investigate this issue more thoroughly.

Conflict of Interest
M. Koh: None. S. Choi: None.

P01.02.

IDENTIFICATION OF POTENTIALLY NEW ANT INFECTIVES AGAINST *H. PYLORI* BY REPURPOSING FDA-APPROVED DRUGS

D. PFEIFFER[1], *T. BURRELL*[1], *B. STECHER-LETSCH*[2], *R. MEJÍAS-LUQUE*[1], *M. GERHARD*[1]
[1]Technical University, Munich, Germany; [2]Ludwig Maximilians University, Munich, Germany

Objective: *Helicobacter pylori* shows high resistance rates to the most commonly used antibiotics, metronidazole (25-60%), clarithromycin (15-30%), and levofloxacin (20%). These high resistance rates, in combination with the role of *H. pylori* as a major risk factor for gastric cancer, represent an adverse constellation. Successful eradication of *H. pylori* can significantly reduce the risk of gastric cancer. However, increasing resistance makes eradication more difficult, potentially leading to more cases and deaths from gastric cancer. This underscores the need for alternative treatment approaches to overcome antibiotic resistance. Our strategy is drug repurposing, which aims to screen drugs already approved by the US Food and Drug Administration (FDA) for new therapeutic applications.

Materials and Methods: Our strategy is drug repurposing, which aims to screen drugs already approved by the US Food and Drug Administration (FDA) for new therapeutic applications. Screening these drugs for their ability to hinder the growth of *H. pylori* is a faster and more cost-effective option than conventional drug discovery, as it only takes approximately six years for approval, lowering the costs to nearly one quarter. This project aims to perform drug screening for *H. pylori* bactericidal compounds.
Results: We have developed a robust screening platform to identify compounds effective against *H. pylori*. For the first screening, we used the Prestwick Chemical Library, a collection of 1500 FDA-approved drugs. Our initial results have yielded potential (hit) candidates that are now being further validated. We plan to investigate these hit candidates *in vitro* and *in vivo* to uncover a lead candidate that can potentially be tested in clinical trials.
Conclusions: Overall, the outcomes of this drug screening and validation process hold the potential to identify new *H. pylori* treatment strategies to mitigate the rising rates of antibiotic resistance.

Conflict of Interest
D. Pfeiffer: None. T. Burrell: None. B. Stecher-Letsch: None. R. Mejías-Luque: None. M. Gerhard: None.

P01.03.

THE EFFICACY OF RIFABUTIN-BASED *HELICOBACTER PYLORI* ERADICATION REGIMEN

Y. KIM[1], *J. LEE*[2], *H. NA*[2], *K. JUNG*[2], *J. AHN*[2], *D. KIM*[2], *K. CHOI*[2], *H. SONG*[2], *G. LEE*[2], *H. JUNG*[2]
[1]Department of Internal Medicine, Keimyung University School of Medicine, Daegu, Republic of Korea; [2]Department of Gastroenterology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea

Objective: As the antibiotic resistance rate of *Helicobacter pylori* and treatment failure are rising, the need for rescue therapy with rifabutin for *H. pylori* eradication (HPE) is also increasing. We investigated the efficacy, resistance status, and adverse events in patients with rifabutin-based HPE.
Patients and Methods*:* Between January 2020 and December 2022, 1,792 patients who underwent esophagogastroduodenoscopy (EGD) with *H. pylori* culture tests were enrolled in our study. The medical records of these patients were retrospectively reviewed, and clinical features and outcomes were assessed.
Results: 630 (35.2%) and 631 (35.2%) patients were resistant to clarithromycin and metronidazole, respectively, and only 14 (0.8%) patients were found to be rifabutin-resistant. 665 (37.1%) patients were found to have multidrug-resistant (MDR) *H. pylori*. Patients with rifabutin-resistant *H. pylori* infection had a significantly higher rate of previous tuberculosis treatment history (2.8% *vs.* 28.6%, $p<0.001$) and a higher portion of MDR *H. pylori* (49.6% *vs.* 85.7%, $p<0.001$) than those with rifabutin-susceptible *H. pylori* group. Among the 45 patients who underwent a rifabutin-based HPE regimen, 31 (68.8%) were successfully eradicated. 19 (42.2%) patients experienced at least one symptom of an adverse event; however, the severity of side effects was mild, and no patient discontinued treatment due to side effects.
Conclusions: A rifabutin-based *H. pylori* eradication regimen is an effective and safe treatment method. Particularly, it is considered a viable therapeutic option for patients who require HPE but have previously failed multiple HPEs.

Conflict of Interest
Y. Kim: None. J. Lee: None. H. Na: None. K. Jung: None. J. Ahn: None. D. Kim: None. K. Choi: None. H. Song: None. G. Lee: None. H. Jung: None.

P01.04.

DUODENOGASTRIC REFLUX IN *HELICOBACTER PYLORI* INFECTION AND RE-INFECTION

A. BARRIOS
Clínica las Torres, Quetzaltenango, Guatemala

Objective: We investigated the role of duodenogastric reflux in *H. pylori* infection and re-infection in gastric mucosa of 100 patients, who were evaluated using esophagogastroduodenoscopy (EGD) and a 13C urea breath test (UBT). All patients presented duodenogastric reflux. We found that the presence of bile acids in gastric juices as a consequence of duodenogastric biliary reflux is one factor that affects gastric pH and facilitates the activation of urease produced by *H. pylori*. This allows the bacteria to survive and cause infectious gastritis.
Patients and Methods*:* 100 patients between 20 and 80 years old (46 men, 54 women) participated in this study (8 of whom were diabetic, and 11 had undergone cholecystectomy). We excluded patients who had cancer, were immunocompromised, or had undergone chemotherapy or radiotherapy. All underwent gastroscopy and a 13C UBT.
Results: 76 tested positive for *H. pylori* and received one treatment. Ten presented *H. pylori* twice and received two treatments. Two tested positive three times. Twelve tested positive but did not receive treatment.
Presence of *H. pylori* urease was correlated with, not only more resistant infections, but also a greater likelihood of re-infection. We found that adding commercial precipitates of cholesterol, which is a natural component of bile, could enrich some of culture media.
Conclusions: We demonstrated that duodenogastric biliary reflux favors the growth and permanence of H. pylori in gastric mucosa because it contains bile and cholesterol.

Conflict of Interest
A. Barrios: None.

P01.05.

THE WIDELY USED 15% CLARITHROMYCIN RESISTANCE CUT-OFF RULE FAILS TO PREDICT *H. PYLORI* TREATMENT SUCCESS OR FAILURE AND SHOULD BE ABANDONED

S. THIRUMURTHI[1], *Y. LEE*[2], *D.Y. GRAHAM*[3,4]
[1]MD Anderson Cancer Center, Houston, TX, USA; [2]National Taiwan University, Taipei, Taiwan; [3]Baylor College of Medicine, Houston, TX, USA; [4]Michael E. DeBakey VA Medical Center, Houston, TX, USA

Objective: Maastricht I summary states treatment should “achieve an eradication rate of over 80% on an ITT basis”. Maastricht III also requires achieving eradication rates >80% or a clarithromycin resistance susceptibility result of less than 15-20%. Maastricht VI reports have adopted the >15% resistance rule, which, in contrast with eradication rates, is not intuitive, readily available, or shown to correlate with eradication rate cut-offs.
Materials and Methods: We directly calculated *H. pylori* cure rates and used the HP nomogram to determine the effectiveness of clarithromycin triple therapy with different proton pump inhibitions (PPIs) as the cure rate with resistant infections is related to the PPI’s ability to suppress acid (i.e., in susceptible infections, both clarithromycin and amoxicillin play active roles whereas with clarithromycin resistance, only the PPI plus amoxicillin are active). The population cure rate is the sum of the outcomes with susceptible and resistant infections. We examined the cure rates with 14-day clarithromycin triple therapy (b.i.d.) containing 40 mg esomeprazole, 20 mg omeprazole, 40 mg omeprazole, 40 mg pantoprazole in susceptible infections to determine the predictive value of the 15% clarithromycin resistance rule.
Results: All regimens achieved a cure rate >90% with susceptible strains. With 15% resistance, cure rates varied (94% to 78%) depending on the PPI used. The 15% rule failed to reliably predict outcomes (i.e., clinical success or failure of therapies).

Conclusions: Despite the absence of discriminatory ability, the 15% resistance rule is widely used at decision nodes in guidelines and algorithms. A defined cure rate (e.g., ≥85%) provides clinicians with practical, useful, and intuitive guidance.

Conflict of Interest
S. Thirumurthi: None. Y. Lee: None. D.Y. Graham: None.

P01.06.

HELICOBACTER SUIS INFECTION INDUCE XENOPHAGY AND APOPTOSIS IN MOUSE PARIETAL CELLS

M. NAKAMURA[1], *H. TSUGAWA*[1], *S. TAKAHASHI*[2], *H. SUZUKI*[1]
[1]Tokai University, Isehara, Japan; [2]Kyorin University, Mitaka, Japan

Objective: Concerning the interaction of *Helicobacter pylori* (Hp) with autophagy, pathogenic factor (e.g., CagA and VacA)-related metabolic pathways, especially those associated with gastric carcinogenesis, attract relevant attention. However, no study has described Hp endocytosis by gastric epithelial cells and subsequent processes. During *Helicobacter suis* (Hs) infection in mice, our electron microscopic investigations revealed bacilli in intracellular canaliculi of the parietal cells and large autolysosome-like structures in the parietal cell cytoplasm. Therefore, in this study, we aimed to characterize the peculiar structure within the parietal cells and other alterations in the Hs-infected mouse gastric mucosa.
Materials and Methods: We assessed the autophagic changes by immunohistochemistry using autolysosome-labelling LC3 antibody and lysosome and autolysosome-labelling acid phosphatase (ACP) antibody. We investigated the apoptotic reaction using an active caspase 3 antibody.
Results: After one month of infection, we detected numerous bacilli in the intracellular canaliculi of the parietal cells as well as LC3- and ACP-positive structures in the cytoplasm of the parietal cells. Three months after the infection, Hs numbers in the intracellular canaliculi gradually decreased, whereas the number of LC3 or ACP-positive structures markedly increased in the parietal cell cytoplasm. In addition, certain parietal cell nuclei evidently degenerated with active caspase 3 positivity. These changes could be seldom observed under uninflected conditions.
Conclusions: Hs infection induced marked xenophagic and apoptotic alterations mostly in the parietal cells. These changes might have been potentially overlooked in the case of Hp infections and should be investigated in the future.

Conflict of Interest
M. Nakamura: None. H. Tsugawa: None. S. Takahashi: None. H. Suzuki: None.

P01.07.

CHANGES OF METABOLIC PROFILE AFTER ERADICATION OF *HELICOBACTER PYLORI*

M. JOO[1], *J. PARK*[1], *B. LEE*[1], *S. KIM*[1], *W. KIM*[1], *J. KIM*[1], *C. KWON*[1], *S. LEE*[1], *J. KANG*[1], *M. KANG*[1], *S. KIM*[1], *H. CHUN*[2]
[1]Korea University Guro Hospital, Korea University College of Medicine, Seoul, Republic of Korea
[2]Korea University Anam Hospital, Korea University College of Medicine, Seoul, Republic of Korea

Objective: *Helicobacter pylori* (*H. pylori*) infection is known to lead to multiple inflammatory processes outside the stomach. We investigated the changing pattern of inflammatory and metabolic profiles caused by eradication of *H. pylori*.

Patients and Methods: We enrolled 482 subjects who were confirmed as positive for *H. pylori* infection: 427 were successfully eradicated (eradicated group), and 55 were not eradicated (persistent group). We collected data on various inflammatory or metabolic profiles and analyzed the difference in terms of *H. pylori* eradication.
Results: Compared with baseline, serum low-density lipoprotein (LDL) was significantly lowered 1.5 years after eradication in the eradicated group (125.8 *vs.* 121.5 mg/dL, p=0.035); however, other inflammatory or metabolic markers such as blood pressure, high density lipoprotein, triglyceride, body mass index, waist circumference, erythrocyte sediment ratio or C-reactive protein were not significantly changed. Compared with the persistent group, serum LDL was maintained lower during 1.5 and 3.0 years after *H. pylori* eradication in the eradicated group (125.8→121.5→112.8 mg/dL, p<0.05). However, it was not significantly changed during the same period of follow-up in the persistent group (130.2→130.3→129.2 mg/dL). Among the eradicated group, 74 subjects were continuously followed up 1.5, 3.0, and 4.5 years before and after eradication, and we found that serum LDL was gradually increased before eradication (120.7→121.6→124.9→125.2 mg/dL). However, it was significantly lowered and maintained after eradication (125.2→120.2→119.2→122.7 mg/dL).
Conclusions: *H. pylori* eradication may reduce serum LDL level, which is expected to be positive for modulation of lipid profile.

Conflict of Interest
M. Joo: None. J. Park: None. B. Lee: None. S. Kim: None. W. Kim: None. J. Kim: None. C. Kwon: None. S. Lee: None. J. Kang: None. M. Kang: None. S. Kim: None. H. Chun: None.

P01.08.

NEW IN-OFFICE *H. PYLORI* DETECTION DEVICE

M.K. MOUTZOUKIS[1], *S. KARTSIOLI*[2], *E. TZANNI*[3], *M. PRODROMIDIS*[3], *D. CHRISTODOULOU*[1]
[1]Department of Gastroenterology, Medical School and University Hospital of Ioannina, Ioannina, Greece; [2]Department of Gastroenterology, Tzanio General Hospital, Piraeus, Piraeus, Greece; [3]Department of Analytical Chemistry, University of Ioannina, Ioannina, Greece

Objective: Collaborating with the University of Ioannina's Polymeric Materials Laboratory, Analytical Chemistry Department, Gastroenterology Department, and ETRIS company, we endeavored to develop Point-of-Care (PoC) diagnostic devices for detecting *H. pylori* in clinical settings.
Patients and Methods: Tissue sections from the antrum were procured from patients with dyspeptic complaints or risk of *H. pylori* infection endoscopically. History and treatment details were documented. One biopsy was designated for the diagnostic device separately, one for the CLO test, and one or more biopsies for the laboratory. The device biopsy was submerged in a urea solution at room temperature within a specified area on a copper tape and scrutinized for sensor reaction.
Results: Initially, employing Eudragit S100 membrane for analyzing collected biopsy samples (125 in total), a high rate of false positives (15.2%) prompted a switch to 1:2 PMAA-PMMA. Twenty-eight samples were examined with the new membrane, revealing histological detection of *Helicobacter* in 5 patients (17.86%). This method demonstrated a sensitivity of 60% (95% CI: 14.6-94.73%), specificity of 60.87% (95% CI: 38.54-80.29%), and accuracy of 60.71% (95% CI: 40.58-78.50%). Subsequent modification to 1:2.5 PMAA-PMMA yielded 5 false positives (4.76%) and 6 false negatives (5.7%) out of 105 samples. The CLO test exhibited 2 false positives (1.9%) and 6 false negatives (5.76%).
Conclusions: BioPoC shows 92% specificity and 83% sensitivity, compared to the CLO test's (75-98% sensitivity and 82-100% specificity). Instances occurred where BioPoC matched biopsy results while CLO did not, at 1/28 for 1:2 PMAA-PMMA membranes and 3/105 for 1:2.5 PMAA-PMMA membranes. Also, BioPoC provided results in under 20 minutes, compared to CLO's one-day wait.

Conflict of Interest
M.K. Moutzoukis: None. D. Christodoulou: None. S. Kartsioli: None. M. Prodromidis: None. E. Tzanni: None.

P01.09.

BRAZILIAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-BRAZILREG) ANALYSIS OF 835 FIRST-LINE EMPIRIC TREATMENTS

S.R. CHAVES[1], O.P. NYSSEN[2], J.C.S. VELOSO[3], H.P. BREYER[4], H. OKAMOTO[5], J.R. MARINHO[6], L.S. SILVA[7], G. COUTO8, L.A.S. SOUSA[9], C.S. ALENCAR[10], L.F. PENA[11], H.O. GALIZZI[12], B.S. SANCHES[13], G.G.L. CANÇADO[14], L.T. RIBEIRO[15], P.P. PARRA[2], A. CANO-CATALÀ[16], L. MOREIRA[17], J.P. GISBERT[2], ***L.G.V. COELHO[18]***

[1]Universidade Federal de Minas Gerais, Rede Mater Dei de Saude, Belo Horizonte, Brazil; [2]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [3]Hospital Santa Helena, Brasília, Brazil; [4]Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil; [5]Centro Medico Oxford, São Bento do Sul, Brazil; [6]Universidade Estadual de Ciencias da Saude de Alagoas, Maceió, Brazil; [7]Hospital Adventista de Manaus, Manaus, Brazil; [8]Centro de Consultas Especializadas, Contagem, Brazil; [9]Coopeclin, Recife, Brazil; [10]Clinicas Reunidas São Victor, Rio de Janeiro, Brazil; [11]UNIMED BH, Belo Horizonte, Brazil; [12]Hepscan, Belo Horizonte, Brazil; [13]Universidade Federal de Minas Gerais (UFMG), Biocor Instituto, Belo Horizonte, Brazil; [14]Hospital Militar de Minas Gerais, Belo Horizonte, Brazil; [15]Divisão de Endoscopia, Hospital Universitário Prof. Alberto Antunes, Maceió, Brazil; [16]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) Research Group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [17]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [18]Instituto Alfa de Gastroenterologia/Hospital das Clínicas/Ebserh-UFMG, Belo Horizonte, Brazil

Objective: The aim of this study was to evaluate the effectiveness of empirical first-line eradication treatments.
Materials and Methods: Hp-BrazilReg (partner of Hp-WorldReg) is a multicenter-prospective real-life registry of outcomes of *H. pylori* management by Brazilian gastroenterologists. Data were registered at e-CRF AEG-REDCap from March 2022 to September 2023. Effectiveness was evaluated by modified intention-to-treat (mITT) analysis. Data were subject to quality review.
Results: There were 1,133 patients in first-line empiric treatments, mean age 53 years, 62% women. The main treatment indications were dyspepsia (58%), gastroduodenal ulcers (12%), and premalignant gastric lesions (3%). Diagnostic endoscopy was performed in 97% of the cases, and no pre-treatment resistance test was performed. 835 patients were included in the mITT analysis. Low, standard, and high-dose PPIs or vonoprazan (VPZ) were used in 31%, 34%, 23%, and 11% of the cases, respectively. The main first-line regimens were triple-clarithromycin+amoxicillin (92% of the cases), with PPI or VPZ (14-day prescription), and dual-VPZ+amoxicillin (4%), 10-day prescription. Eradication was confirmed by endoscopic methods (86%) and 14C-UBT (14%). Overall, mITT effectiveness was 87%, and the triple-PPI+clarithromycin+amoxicillin reported better results, although non-significant, than the same drug combination with VPZ (87% *vs.* 82%, p=0.34) (Table 1). Dual VPZ+amoxicillin effectiveness was 100%, with a short sample. Overall, 25% of patients presented mild adverse events; compliance was 99%.
Conclusions: Triple-PPI+clarithromycin+amoxicillin is the most used first-line treatment in Brazil, with an acceptable eradication rate (87%). Dual VPZ+amoxicillin therapy shows initial promising results.

TABLE 1. RESULTS OF FIRST-LINE *H. PYLORI* EMPIRICAL TREATMENTS IN BRAZIL (N-835).

First-line treatment	N	Duration days Mean (SD)	% Use	% Eradication (mITT)
PPI+A+C	719	13.9 (1.1)	86.1	86.5 (*)
VPZ+A+C	49	13.9 (0.9)	5.9	81.6 (*)
VPZ+A	33	10.4 (3.6)	4.0	100.0
PPI+M+T+Bi	2	14.0 (0.0)	0.2	100.0
VPZ+M+T+Bi	1	14.0 (0.0)	0.1	100.0
Others	31	14.0 (2.8)	3.7	87.1
TOTAL	835	13.7 (1.4)	100.0	86.8

PPI-proton pump inhibitor; C – clarithromycin; A – amoxicillin; Bi - bismuth salts; VPZ – vonoprazan; T – tetracycline; M – metronidazole; SD - standard deviation; CI - confidence interval; mITT -modified intention-to-treat.
(*) PPI+A+C versus VPZ+A+C → *p*-value = 0.34

Conflict of Interest
S.R. Chaves: None. O.P. Nyssen: None. J.C.S. Veloso: None. H.P. Breyer: None. H. Okamoto: None. J.R. Marinho: None. L.S. Silva: None. G. Couto: None. L.A.S. Sousa: None. C.S. Alencar: None. L.F. Pena: None. H.O. Galizzi: None. B.S. Sanches: None. G.G.L. Cançado: None. L.T. Ribeiro: None. P.P. Parra: None. A. Cano-Català: None. L. Moreira: None. J.P. Gisbert: None. L.G.V. Coelho: None.

P01.10.

BRAZILIAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-BRAZILREG) ANALYSIS OF 300 EMPIRIC SECOND-LINE AND RESCUE TREATMENTS

B.S. SANCHES[1], O.P. NYSSEN[2], S.R. CHAVES[3], J.C.S. VELOSO[4], H.P. BREYER[5], H. OKAMOTO[6], J.R. MARINHO[7], L.S. SILVA[8], G. COUTO[9], L.A.S. SOUSA[10], C.S. ALENCAR[11], L.F. PENA[12], H.O. GALIZZI[13], G.G.L. CANÇADO[14], M.J.G. MASSOTE[15], P.P. PARRA[2], A. CANO-CATALÀ[16], L. MOREIRA[17], J.P. GISBERT[2], ***L.G.V. COELHO[18]***

[1]Universidade Federal de Minas Gerais, Biocor Instituto, Belo Horizonte, Brazil; [2]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [3]Universidade Federal de Minas Gerais, Rede Mater Dei de Saude, Belo Horizonte, Brazil; [4]Hospital Santa Helena, Brasília, Brazil; [5]Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil; [6]Centro Medico Oxford, São Bento do Sul, Brazil; [7]Universidade Estadual de Ciencias da Saude de Alagoas, Maceió, Brazil; [8]Hospital Adventista de Manaus, Manaus, Brazil; [9]Centro de Consultas Especializadas, Contagem, Brazil; [10]Coopeclin, Recife, Brazil; [11]Clinicas Reunidas São Victor, Rio de Janeiro, Brazil; [12]UNIMED BH, Belo Horizonte, Brazil; [13]Hepscan, Belo Horizonte, Brazil; [14]Hospital Militar de Minas Gerais, Belo Horizonte, Brazil; [15]Unidade de Saúde, Santos, Brazil; [16]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [17]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [18]Instituto Alfa de Gastroenterologia/Hospital das Clínicas/Ebserh-UFMG, Belo Horizonte, Brazil

Objective: Eradication treatment effectiveness decreases as therapy failure accumulates. The objective of the study was to evaluate the effectiveness of empirical retreatments in Brazil.
Materials and Methods: Hp-BrazilReg (partner of Hp-WorldReg) is a multicenter-prospective real-life registry of outcomes of *H. pylori* management by Brazilian gastroenterologists. Data were registered at e-CRF AEG-REDCap from March 2022 to September 2023. The effectiveness was evaluated by modified intention-to-treat (mITT) analysis. Data were subject to quality review.

Results: 298 patients, with a mean age of 52 years, 66% women, were evaluated. Overall, the main treatment indications were dyspepsia (60%) and gastroduodenal ulcer (12%). 196 (66%) patients received a second-line therapy, and 102 (34%) received a further 3rd-, 4th-, and 5th-line treatment. Low-, standard-, and high-dose PPIs, as well as vonoprazan (VPZ), were used in 39%, 13%, 27%, and 27% of cases, respectively. No pre-treatment resistance test was performed. Overall, the mean intention-to-treat (mITT) effectiveness of second-line therapy was 83%. The two most common regimens were a 10-day triple therapy of PPI + amoxicillin + levofloxacin with 80% effectiveness in 54% of the patients and dual therapy with VPZ + amoxicillin with 89% effectiveness in 9% of cases. In subsequent rescue regimens, classical bismuth quadruple was the most used regimen with 91% effectiveness (Table 1). Overall, 27% of the patients presented mild adverse events; compliance was at 99%.
Conclusions: In Brazil, the overall effectiveness of second-line therapy achieved 83%. From the 3rd to the 5th rescue treatment line, empirical bismuth quadruple therapy was the most used regimen, providing ≥90% effectiveness. Dual VPZ+amoxicillin therapy showed promising results in second and subsequent rescue therapies.

TABLE 1. ANTI-*H. PYLORI* SECOND-LINE AND RESCUE REGIMENS AND THEIR EFFICACIES (N=298).

	Retreatment regimens (2nd-line)			
	N	**Duration days Mean (SD)**	**% use**	**% eradication (mITT)**
PPI+A+L	105	11.8 (2.0)	53.6	79
PPI+A+C	28	14 (0.0)	14.3	89
VNZ +A	18	11.7 (3.5)	9.2	89
PPI+A+L+Bi	12	13.7 (1.2)	6	100
PPI+M+T+Bi	7	14 (0.0)	3.6	57
VNZ+A+L	6	14 (0.0)	3.1	100
VNZ+A+C	5	14 (0.0)	2.6	80
VNZ+M+T+Bi	4	14 (0.0)	2.0	80
Others	11	13.8 (1.2)	6	90
TOTAL	196	12.6 (2.0)	100.0	83
	Rescue regimens (3rd-line and more)			
	N	**Duration days Mean (SD)**	**% use**	**% eradication (mITT)**
PPI+M+T+Bi	22	12.9 (0.38)	22	91
VNZ +A	17	14.4 (1.6)	17	100
PPI+M+D+Bi	11	14.08 (0.27)	11	100
PPI+A+C	8	14.0 (0.0)	7.8	75
VNZ+A+L	7	13.4 (1.5)	7	57
VNZ+M+T+Bi	7	14.0 (0.0)	7	100
PPI+ A+D+Bi	5	14.0 (0.0)	5	100
R + A + Bi + [PPI (1) / VNZ (3)]	4	14.0 (0.0)	4	100
PPI+A+L	4	14.0 (14.0)	4	75
VNZ+A+C	3	14.0 (0.0)	3	100
Others	14	13.5 (1.4)	14	86
TOTAL	102	13.7 (1.3)	100.0	90

PPI – proton pump inhibitor; A – amoxicillin; L – levofloxacin; VPZ – vonoprazan; M – metronidazole; T – tetracycline; C – clarithromycin; Bi – bismuth salts; D – doxycycline; R -rifabutin; SD – standard deviation; CI – confidence interval; mITT – modified intention to Treat.

Conflict of Interest

B.S. Sanches: None. O.P. Nyssen: None. S.R. Chaves: None. J.C.S. Veloso: None. H.P. Breyer: None. H. Okamoto: None. J.R. Marinho: None. L.S. Silva: None. G. Couto: None. L.A.S. Sousa: None. C.S. Alen-

car: None. L.F. Pena: None. H.O. Galizzi: None. G.G.L. Cançado: None. M.J.G. Massote: None. P.P. Parra: None. A. Cano-Català: None. L. Moreira: None. J.P. Gisbert: None. L.G.V. Coelho: None.

P01.11.

EFFECTIVENESS OF FIRST-LINE TREATMENT FOR H. PYLORI INFECTION IN ISRAEL: RESULTS FROM THE EUROPEAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-EUREG)

D. BOLTIN[1,2]*, A. MARI*[3]*, L. BRICKNER*[4]*, S. ODEH*[4]*, J. WARDI*[5]*, H. SCHWEISTEIN*[1]*, A. BAR-GIL SHITRIT*[6]*, A. STEIN*[7]*, Y. NIV*[8]*, A. CANO-CATALÀ*[9]*, L. MOREIRA*[10]*, P. PARRA*[11]*, O.P. NYSSEN*[11]*, F. MÉGRAUD*[12]*, C. O'MORAIN*[13]*, J.P. GISBERT11, ON BEHALF OF THE HP-EUREG INVESTIGATORS*

[1]Division of Gastroenterology Rabin Medical Center, Petah Tikva, Israel; [2]Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel; [3]Gastroenterology and Endoscopy Unit, Faculty of Medicine, Nazareth Hospital EMMS, Nazareth, Israel; [4]Gastroenterology and Liver Diseases Unit, Bnai Zion Medical Center, Haifa, Israel; [5]Gastroenterology Institute, Wolfson Medical Center, Faculty of Medicine, Holon, Israel; [6]Digestive Diseases Institute, Shaare Zedek Medical Center, Hebrew University of Jerusalem, Jerusalem, Israel; [7]Division of Gastroenterology and Hepatology, Faculty of Medicine, Meir Medical Center, Tel Aviv University, Kfar Saba, Israel; [8]Adelson Faculty of Medicine, Risk Management Education Center, Ariel University, Ariel, Israel; [9]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain ; [10]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [11]Department of Gastroenterology, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas, Madrid, Spain; [12]INSERM U1312, Université de Bordeaux, Bordeaux, France; [13]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: The effectiveness of first-line treatment for *H. pylori* infection varies between countries. Local data should guide clinical practice. We aimed to assess the effectiveness of first-line eradication treatments for *H. pylori* in Israel.

Patients and Methods*:* Hp-EuReg is a non-interventional, prospective, registry evaluating the management of H. pylori by European gastroenterologists. Infected adults and treatment-naïve cases from 10 Israeli centers were registered at e-CRF AEGRedCap (2013-2023). Effectiveness was assessed by modified intention-to-treat (mITT) and per-protocol (PP) analyses.

Results: Overall, 663 cases were analyzed, with 320 (48%) cases receiving 1st line empirical therapy (age 51±18 years, 57% females). Quadruple concomitant therapy with PPI-clarithromycin-amoxicillin-tinidazole was the most frequent 1st line treatment (43%), followed by triple therapy with PPI-clarithromycin-amoxicillin (16%). Prescriptions were of 14-day (70%) length, 10-day (22%), and 7-day (7.3%). High-potency proton pump inhibition (PPI) was mostly prescribed (75%). Overall treatment success was 84% and 86% by mITT and PP, respectively (Table 1), where the highest mITT effectiveness was seen with 10-day and high-dose PPI sequential therapy with clarithromycin-amoxicillin-tinidazole (89.5%) and with 14-day and high-dose PPI concomitant therapy with clarithromycin-amoxicillin-tinidazole (85%). Longer treatment durations and higher PPI doses were more effective. Effectiveness did not change significantly during the study period and remained suboptimal (<90%).

Conclusions: In Israel, empirical first-line treatment for *H. pylori* eradication is suboptimal (<90%). Treatments should consist of four drugs and be optimized with 14 days and standard/high PPI dose.

TABLE 1. EFFECTIVENESS OF FIRST-LINE THERAPY (MODIFIED INTENTION-TO-TREAT AND PER-PROTOCOL).

	Use, n (%)	mITT Success n/N (%)	PP Success n/N (%)
Treatment scheme			
Triple-C+A	49 (16.1)	36/44 (81.8)	36/44 (81.8)
Sequential-C+A+T	20 (6.6)	17/19 (89.5)	17/19 (89.5)
Quadruple-C+A+T	132 (43.3)	73/86 (84.9)	71/80 (88.8)
Quadruple-C+A+M	38 (12.5)	13/13 (100)	13/13 (100)
Treatment duration			
7 days	22 (7.3)	16/20 (80)	16/20 (80)
10 days	68 (22.4)	43/50 (86)	42/49 (85.7)
14 days	213 (70.3)	92/111 (82.9)	88/102 (86.3)
Potency of acid inhibition*			
Low	63 (20.6)	48/58 (82.8)	47/57 (82.5)
Standard	12 (3.9)	6/6 (100)	6/6 (100)
High	231 (75.5)	105/125 (84)	101/116 (87.1)
Overall	320 (100)	160/191 (83.8)	155/181 (85.6)

n: total number of patients analysed; mITT, modified intention to treat; PP, per-protocol; C, clarithromycin; A, amoxicillin; T, tinidazole; M, metronidazole; *Low-dose PPI - 4.5 to 27 mg omeprazole equivalents. b.i.d.; standard dose PPI - 32 to 40 mg omeprazole equivalents. b.i.d.; high-dose PPI - 54 to 128 mg omeprazole equivalents. b.i.d.

Conflict of Interest

D. Boltin: None. A. Mari: None. L. Brickner: None. S. Odeh: None. J. Wardi: None. H. Schweistein: None. A. Bar-Gil Shitrit: None. A. Stein: None. Y. Niv: None. A. Cano-Català: None. L. Moreira: None. P. Parra: None. O.P. Nyssen: None. F. Mégraud: None. C. O'Morain: None. J.P. Gisbert: None.

P01.12.

PRESCRIPTIONS AND EFFECTIVENESS ARE INFLUENCED BY INDICATIONS FOR *HELICOBACTER PYLORI* INVESTIGATION: EUROPEAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-EUREG)

S.J. MARTINEZ-DOMINGUEZ[1,2,3,] *O.P. NYSSEN*[4], *A. LANAS*[1], *E. ALFARO*[1], *L. JONAITIS*[5], *U. MAHMUDOV*[6], *I. VOYNOVAN*[7], *B. GULUSTAN*[8], *L. RODRIGO*[9], *G. FIORINI*[10], *A. PEREZ-AISA*[11], *J. TEJEDOR-TEJADA*[12], *B. TEPES*[13], *L. VOLOGZANINA*[14], *A. CANO-CATALÀ*[15], *P. PARRA*[4], *L. MOREIRA*[16], *F. MEGRAUD*[17], *C. O'MORAIN*[18], *J.P. GISBERT*[4], *ON BEHALF OF THE HP-EUREG INVESTIGATORS*

[1]Lozano Blesa University Hospital, Zaragoza, Spain; [2]Aragón Health Research Institute, Zaragoza, Spain [3]Facultad de Medicina, Universidad de Zaragoza, Zaragoza, Spain; [4]Hospital La Princesa, Madrid, Spain [5]Lithuanian University of Health Sciences, Kaunas, Lithuania; [6]Modern Hospital, Baku, Azerbaijan; [7]A.S. Loginov Moscow Clinical Scientific Center, Moscow, Russian Federation; [8]Department of Therapy, Azerbaijan State Advanced Training Institute for Doctors named by A.Aliyev, Baku, Azerbaijan; [9]University of Oviedo, Oviedo, Spain; [10]Chest and Vascular Department, Cardiovascular Medicine Unit, Heart, IRCCS Azienda Ospedaliero-Universitaria di Bologna, Bologna, Italy; [11]Hospital Universitario Costa del Sol, Marbella, Spain; [12]Hospital Universitario de Cabueñes, Gijón, Spain; [13]DC Rogaska, Rogaska Slatina, Slovenia; [14]Gastrocenter, Perm, Russian Federation; [15]Althaia Xarxa Assistencial Universitària de Manresa, Manresa, Spain; [16]Hospital Clinic, Barcelona, Spain; [17]INSERM U1312 BRIC, Université de Bordeaux, Bordeaux, France; [18]Trinity College Dublin, Faculty of Health Sciences, Dublin, Ireland

Objective: The influence of indications for *Helicobacter pylori* investigation on treatment effectiveness and prescriptions is unclear. The aim of this study was to evaluate the appropriateness of indications for *H. pylori* investigation in Europe and its influence on prescriptions and effectiveness.

Materials and Methods: This is an international, prospective, non-interventional registry of the management of H. pylori infection by European gastroenterologists (Hp-EuReg). Treatment-näive patients collected at e-CRF AEG-REDCap from 2013 to 2023 were included. Effectiveness was analyzed by modified intention-to-treat (mITT).
Results: Overall, 53,636 treatment-naïve cases from 34 European countries were included. The most frequent indications were dyspepsia with normal endoscopy (49%), non-investigated dyspepsia (20%), duodenal ulcer (11%), gastric ulcer (7.7%), and gastroesophageal reflux disease (GERD) (2.6%). Indications for *H. pylori* investigation were inappropriate in 2,989 (5.6%) cases. Overall mITT effectiveness differed according to indications: duodenal ulcer (91%), gastric ulcer (90%), preneoplastic lesions (90%), dyspepsia with normal endoscopy (89%), GERD (88%), and non-investigated dyspepsia (87%); $p<0.001$. Concomitant quadruple therapy with PPI-clarithromycin-amoxicillin-tinidazole/metronidazole reached 90% effectiveness except in patients with non-investigated dyspepsia. Bismuth quadruple therapies provided optimal cure rates (>90%) in all indications except GERD. Triple therapies with PPI-clarithromycin-amoxicillin/metronidazole reported suboptimal eradication rates in all indications.
Conclusions: Indications for *H. pylori* investigation could be improved in approximately 6% of cases in Europe. Effectiveness was higher in patients with gastric/duodenal ulcers and preneoplastic lesions. Bismuth and non-bismuth quadruple therapies achieved 90% effectiveness in most indications.

Conflict of Interest
S.J. Martinez-Dominguez: D. Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Modest; JUVISE. O.P. Nyssen: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Mayoly, Allergan, Diasorin, Biocodex, Juvisé, Richen. A. Lanas: D. Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Modest; JUVISE. E. Alfaro: None. L. Jonaitis: None. U. Mahmudov: None. I. Voynovan: None. B. Gulustan: None. L. Rodrigo: None. G. Fiorini: None. A. Perez-Aisa: None. J. Tejedor-Tejada: None. B. Tepes: None. L. Vologzanina: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. F. Megraud: None. C. O´Morain: None. J.P. Gisbert: Other; Modest; Mayoly, Allergan, Diasorin, Biocodex, Juvisé, Richen.

POSTER SESSION 02: HELICOBACTER 02

P02.01.

CULTURE-BASED SUSCEPTIBILITY-GUIDED TAILORED THERAPY *VS.* EMPIRICAL CONCOMITANT THERAPY AS FIRST-LINE *HELICOBACTER PYLORI* TREATMENT: A RANDOMIZED CLINICAL TRIAL

B. MIN[1], *J. LEE*[2], *H. JUNG*[2], *J. KIM*[1]
[1]Samsung Medical Center, Seoul, Republic of Korea; [2]Asan Medical Center, Seoul, Republic of Korea

Objective: With the increasing resistance to antimicrobial agents, susceptibility-guided tailored therapy has been emerging as an ideal strategy for eradicating *Helicobacter pylori*. We aimed to compare the efficacy of culture-based susceptibility-guided tailored therapy *vs.* empirical concomitant therapy as the first-line *H. pylori* treatment.
Patients and Methods: This open-label, randomized trial was performed in four Korean institutions. A total of 312 patients with *H. pylori*-positive culture test and naïve to treatment were randomly assigned in a 3:1 ratio to either culture-based susceptibility-guided tailored therapy (clarithromycin-based or metronidazole-based triple therapy for susceptible strains or bismuth quadruple therapy for dual-resistant strains) or empirical concomitant therapy for ten days. Eradication success was evaluated by ^{13}C-urea breath test at least four weeks after treatment.
Results: Prevalence of dual resistance to both clarithromycin and metronidazole was 8%. *H. pylori* eradication rates for tailored and concomitant groups were 84.2% and 83.3% by intention-to-treat analysis ($p=0.859$), respectively, and 92.9% and 91.5% by per-protocol analysis, respectively ($p=0.702$), which were comparable between two groups. However, eradication rates for dual-resistant strains were significantly higher in the tailored group using bismuth quadruple therapy than in the concomitant group. All adverse events were grade 1 or 2 based on the Common Terminology Criteria for Adverse Events (CTCAE), and the incidence was significantly lower in the tailored group.

Conclusions: The culture-based susceptibility-guided tailored therapy failed to show superiority over the empirical concomitant therapy in terms of eradication rate. Based on these findings, the treatment choice in clinical practice would depend on the background rate of antimicrobial resistance, availability of resources, and costs associated with culture and susceptibility testing.

Conflict of Interest
B. Min: None. J. Lee: None. H. Jung: None. J. Kim: None.

P02.02.

HELICOBACTER PYLORI STATUS IS NOT PREDICTIVE OF PERIODONTAL DISEASE

M. NIKOLIC[1]*, M. ZIVKOVIC*[1]*, S. PELAJIC*[1]*, I. VULIC*[2]*, N. BLAZEVIC*[1]*, I. BUDIMIR*[1]*, D. VRAZIC*[3]*, D. VRAZIC*[3]
[1]Universital Hospital Center Sestre milosrdnice, Zagreb, Croatia; [2]General Hospital Pula, Pula, Croatia; [3]School of Dental Medicine, University of Zagreb, Zagreb, Croatia

Objective: There is growing evidence supporting a link between *Helicobacter pylori* infection and periodontal disease. However, caution is warranted regarding the interpretation of causality and certainty of this association. Studies exploring this issue on the European population are also underrepresented.
Patients and Methods*:* From March 2022 to February 2024, an observational prospective study was performed in UHC Sestre milosrdnice, Zagreb, on patients undergoing routine upper endoscopy to evaluate gastric reflux symptoms. The presence of *Helicobacter pylori* was determined using a biopsy. Participants were subsequently examined by a stomatologist specialized in periodontal disease. Chi-square and Spearman tests were used to compare groups.
Results: 135 patients were enrolled, 74 were females, with a mean age of 60±14 years. There were 37 participants without periodontitis, 46 with mild, and 52 with severe periodontitis. *Helicobacter pylori* was found in 11 patients without periodontitis, 17 with mild, and 16 with severe periodontitis. We found no statistically significant difference between the presence and/or severity of periodontitis and *Helicobacter pylori* infection.
Conclusions: In this prospectively conducted multidisciplinary study involving oral medicine and gastroenterology specialists performed on the European population, we found no association between *Helicobacter pylori* status and periodontitis, although the single center design and relatively small study population might fail to detect smaller effect sizes.

Conflict of Interest
M. Nikolic: None. M. Zivkovic: None. S. Pelajic: None. I. Vulic: None. N. Blazevic: None. I. Budimir: None. D. Vrazic: None. D. Vrazic: None.

P02.03.

DIMINISHING OF *HELICOBACTER PYLORI* ADHESION TO GASTRIC TISSUE OF *CAVIE PORCELLUS* INOCULATED WITH THESE BACTERIA DUE TO PREVIOUS INOCULATION WITH BCG VACCINE MYCOBACTERIA

W. GONCIARZ[1]*, M. CHYB*[2]*, P. PŁOSZAJ*[1]*, M. CHMIELA*[1]
[1]Department of Immunology and Infectious Biology, Faculty of Biology and Environmental Protections, University of Lodz, *Łódź*, Poland; [2]Department of Molecular Microbiology, Faculty of Biology and Environmental Protection, University of Lodz, *Łódź*, Poland

Objective: *Mycobacterium bovis* onco-BCG bacilli used in immunotherapy of bladder cancer are candidates for the training of immune cells towards microbial pathogens. The mucin 5 (MUC5) ligands could potentially be a therapeutic target since they are involved in the colonization of gastric mucosa by *Helicobacter pylori* (*Hp*). The aim of the study was to examine the ability of *M. bovis* BCG to reduce *Hp* adhesion to gastric epithelial cells using the *Cavia porcellus* model. The study was performed after obtaining the approval of the Local Ethics Committee for Anima Experiments, Medical University of Lodz Poland (decision No. 58/ŁB45/2016).

Materials and Methods: Animals were inoculated *per os* three times in two-day intervals with 0.85% NaCl, the reference HpCCUG17874 alone, *M. bovis* BCG alone, or first with *M. bovis* BCG and then with *H. pylori.* After 7 to 28 days from the last inoculation, the bindings of MUC5 and Hp to the gastric epithelium were assessed in gastric tissue specimens by staining with anti-MUC5 and anti-Hp antibodies, respectively. Both antibodies were fluorescently labeled. Primary gastric epithelial cells were also treated *ex vivo* with live *Hp* or *Hp* surface antigens alone or with *M. bovis* BCG. In such cells, MUC5 and *Hp* binding were determined as above.
Results: *Mycobacteria* reduced the amount of MUC5 and adhesion of *Hp* to gastric tissue (about 50%) in infected animals and in gastric epithelial cells pulsed *in vitro* with *Hp* components.
Conclusions: The obtained results indicate that vaccine mycobacteria, by diminishing the amount of MUC5 in gastric epithelial cells, may reduce *Hp* adhesion.

Funding
The research was financially supported by the National Science Center grant SONATA 18 "Assessment of the ability of Mycobacterium bovis BCG-onco bacilli to control the development of *Helicobacter pylori* infection", UMO-2022/47/D/NZ7/01097.

Conflict of Interest
W. Gonciarz: None. M. Chyb: None. P. Płoszaj: None. M. Chmiela: None.

P02.04.

SPRAY DRIED PH-SENSITIVE CHITOSAN MICROPARTICLES LOADED WITH *MYCOBACTERIUM BOVIS* – BCG INTENDED FOR SUPPORTING THE TREATMENT OF *HELICOBACTER PYLORI* INFECTION

W. GONCIARZ[1], *M. BRZEŹIŃSKI*[2], *P. WAWRZYNIAK*[3], *A. LEWANDOWSKI*[3], *A. LEWANDOWSKI*[3], *M. CHMIELA*[1]
[1]Department of Immunology and Infectious Biology, Faculty of Biology and Environmental Protection, Institute of Microbiology, Biotechnology and Immunology, University of Lodz, *Łódź*, Poland; [2]Centre of Molecular and Macromolecular Studies, *Łódź*, Poland; [3]Department of Environmental Engineering, Faculty of Process and Environmental Engineering, Lodz University of Technology, *Łódź*, Poland

Objective: *Helicobacter pylori* (*Hp*) bacteria induce the development of different pathological gastric disorders. The growing resistance of *Hp* to antibiotics prompts the search for new therapeutic formulations, both antibacterial and to improve the activity of the immune system. A promising candidate is *Mycobacterium bovis* BCG (BCG), which has immunomodulatory properties.
Materials and Methods: For this purpose, we used *Cavia porcellus* bone marrow macrophages and fluorescently labeled *Escherichia coli*. Mucoadhesive properties of chitosan prompted us to encapsulate live BCG bacilli in spray-dried chitosan microparticles (CHI-MPs) and assess the pH-dependent release of mycobacteria in pH conditions mimicking gastric (acidic) or gut (alkaline) milieu. Microparticles (MPs) made of chitosan were coated with Pluronic F-127-(Plur) or N-Acetyl-D-Glucosamine-(GlcNAc) to increase the MPs resistance to low pH or to increase anti-*Hp* effect, respectively. The spray-drying method was used for the microencapsulation of live BCG. The biosafety of tested CHI-MPs has been confirmed using cell models *in vitro* and the model of guinea pig *in vivo*. The live BCG bacilli were released from MPs at pH 3.0 (CHI-GlcNAc-MPs) or pH 8.0. (CHI-Plur-MPs).
Results: Mycobacteria were able to upregulate the phagocytic activity of macrophages, which was diminished by *Hp*.
Conclusions: In future studies, the CHI-MPs loaded with live BCG will be used for the *per os* inoculation of *Cavia porcellus* to check the effectiveness of delivered mycobacteria in increasing anti-*H. pylori* host response.

Funding
The research was financially supported by the National Science Center by the grant SONATA 18 "Assessment of the ability of *Mycobacterium bovis* BCG-onco bacilli to control the development of *Helicobacter pylori* infection", UMO-2022/47/D/NZ7/01097.

Conflict of Interest
W. Gonciarz: None. M. Brzeźiński: None. P. Wawrzyniak: None. A. Lewandowski: None. A. Lewandowski: None. M. Chmiela: None.

P02.05.

ASSESSMENT OF THE PREVALENCE OF SIGNIFICANT ENDOSCOPIC LESIONS IN PATIENTS OVER 18 YEARS WITH *HELICOBACTER PYLORI* INFECTION IN A CENTER IN NORTH-EAST ROMANIA

E.L. POPOVICI[1], *A.E. OROS*[2], *I.L. BALTATESCU*[1]
[1]County Emergency Hospital, Bacau, Romania; [2]"Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

Objective: *Helicobacter pylori (H. pylori)* infection is one of the most frequent gastrointestinal diseases. All subjects colonized with *H. pylori* develop chronic active gastritis lesions. The CORREA sequence of evolution is the basis for assigning *H.* pylori as a type I carcinogen (IAARC).
Patients and Methods*:* 110 patients hospitalized in the Gastroenterology Department of the Emergency County Hospital in Bacău were evaluated between January 1 and December 31, 2019. The patients had *H. pylori* infection, which was determined by identifying the fecal antigen for *H. pylori.* All patients were evaluated using upper digestive endoscopy. The patients participating in the study were analyzed according to demographic criteria, associated risk factors, and symptoms at admission.
Results: Endoscopic lesions were identified in 68.18% (75/110) patients with *H. pylori* infection: duodenal ulcer 17.27% (19/110), gastric ulcer 10.90% (12/110), erosive gastritis 10% 11/110), chronic antral gastritis 9% (10/110), atrophic gastritis 5.45% (6/110), gastroduodenitis 5.45% (6/110), chronic pangastritis 2.72% (3/110), gastric polyp 1.81% (2/110), gastric cancer 1.81% (2/110), duodenal polyp 0.90% (1/110), esophagitis reflux 0.81% (2/110). By age group, 86% (94/110) of the patients belonged to the 40-79 age range. Consumption of non-steroidal anti-inflammatory drugs (NSAIDs) and endoscopic lesions were found in 38.11% of the patients (42/110). There are also asymptomatic patients with endoscopic lesions 2.72% (3/110): atrophic gastritis 1.81% (2/110), erosive gastritis 0.90% (1/110).
Conclusions: *H. pylori* infection is associated with numerous endoscopic lesions in both symptomatic and asymptomatic patients. The association of *H. pylori*, NSAID consumption, and smoking produces more severe endoscopic lesions. Early identification of *H. pylori* infection and its eradication can prevent the development of severe irreversible lesions at the gastroduodenal level.

Conflict of Interest
E.L. Popovici: None. A.E. Oros: None. I.L. Baltatescu: None.

P02.06.

PRESCRIPTION TRENDS OF *HELICOBACTER PYLORI* ERADICATION TREATMENT IN IRISH PRIMARY CARE FROM 2015 TO 2019: A CROSS-SECTIONAL ANALYSIS

M. DOBRIC*, S. SMITH, C. MEDINA, C. RYAN*
Trinity College Dublin, Dublin, Ireland

Objective: Decreasing *H. pylori* eradication rates and increasing antibiotic resistance in Europe led to the creation of the Irish consensus guidelines for *H. pylori* management (2017). Fourteen-day clarithromycin-based triple therapy was recommended as first-line treatment, and bismuth quadruple therapy was recommended as an alternative. The study aimed to compare the prescription of *H. pylori* eradication treatment in Irish primary care before (2015-2016) and after the guidelines were introduced (2017-2019).

Materials and Methods: A cross-sectional analysis of a national pharmacy claims database, which represents patients eligible for General Medical Services (GMS; >30% of the Irish population), was performed. Prescribing rates per 100,000 GMS people and 95% confidence intervals (CIs) were calculated. Associations between treatment durations and years before (2015-2016) and after (2017-2019) guideline introduction were investigated.
Results: From 2015 to 2019, 51,428 eradication therapies were prescribed. Clarithromycin-amoxicillin triple therapy was most prescribed across all years (455.63/100,000 GMS, 95% CI 451.00-460.27), followed by clarithromycin-metronidazole triple therapy (77.13/100,000 GMS, 95% CI 75.22-79.04). Bismuth quadruple therapy was prescribed in 0.08% (43/51,428) of cases. Treatment durations were calculated for 18,870 cases in 2015-2016 and 25,258 cases in 2017-2019. Seven-day treatment prescription decreased from 14,181 (75.2%) to 12,502 (49.5%) (χ^2=2,973.613, p<0.05), while fourteen-day treatment prescription increased from 2,154 (11.4%) to 9,073 (35.9%) (χ^2=3,419.554, p<0.05) from 2015-2016 to 2017-2019, respectively.
Conclusions: Clarithromycin-based triple therapies were the most prescribed before and after the introduction of the national guidelines. Bismuth quadruple therapy remains rarely prescribed. The increase in prescribing fourteen-day treatments occurred at the same time as the introduction of the guidelines. Further studies are needed to determine the eradication success of these therapies.

Conflict of Interest
M. Dobric: None. S. Smith: None. C. Medina: None. C. Ryan: None.

P02.07.

USEFULNESS OF ANTIMICROBIAL SUSCEPTIBILITY TESTING IN THE ERADICATION TREATMENT OF PATIENTS WITH TWO OR MORE FAILED *HELICOBACTER PYLORI* ERADICATION TREATMENTS

M. HOJO*, K. UEDA, T. TAKEDA, S. OKI, D. ABE, Y. AKAZAWA, T. MURAKAMI, H. FUKUSHIMA, H. UEYAMA, D. ISHIKAWA, T. SHIBUYA, A. NAGAHARA*
Juntendo University Faculty of Medicine, Tokyo, Japan

Objective: Since June 2020, our hospital has been providing *Helicobacter pylori* (*H. pylori*) eradication treatment based on antimicrobial susceptibility to patients who have not responded successfully to two prior treatment attempts. The aim of this study was to examine the susceptibilities of *H. pylori* strains to antibiotics used in eradication treatment and to examine the outcome of eradication therapy based on antimicrobial susceptibility.
Patients and Methods*:* The patients underwent gastric biopsy for *H. pylori* culture during an upper endoscopic examination at our hospital from June 2020 to December 2023. *H. pylori* was cultured and identified. The MICs of the following five antimicrobial agents were determined using the agar plate dilution method: Amoxicillin (AMPC), clarithromycin (CAM), metronidazole (MNZ), sitafloxacin (STFX), and minocycline (MINO). The eradication regimens were administered according to susceptibility results. A ^{13}C-urea breath test was performed at least eight weeks after the end of treatment.
Results: Thirteen subjects were included in this study. The mean age was 49 years, with eight males and five females. All the subjects except one achieved success in the susceptibility testing. Resistance rates to AMPC, CAM, MNZ, STFX, and MINO were 8.3%, 100%, 75%, 50%, and 0%, respectively. Eleven subjects underwent eradication treatment. The eradication rate was 73% (8/11), the eradication rate of AMPC + VPZ therapy was 25% (1/4), and the eradication rate of the MINO combination therapy was 100% (7/7).
Conclusions: The selection of antimicrobial agents based on susceptibility for multiple eradication failure patients resulted in a high eradication rate. The success rate was particularly high with MINO combination therapy.

Conflict of Interest
M. Hojo: None. K. Ueda: None. T. Takeda: None. S. Oki: None. D. Abe: None. Y. Akazawa: None. T. Murakami: None. H. Fukushima: None. H. Ueyama: None. D. Ishikawa: None. T. Shibuya: None. A. Nagahara: None.

P02.08.

EMPIRICAL FIRST-LINE *H. PYLORI* ERADICATION THERAPY IN ITALY FROM 2013 TO 2023: EFFECTIVENESS RESULTS FROM THE EUROPEAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-EU-REG)

L. GATTA[1], *O.P. NYSSEN*[2], *M. PAVONE*[3], *G. FIORINI*[3], *M. ROMANO*[4], *A. GRAVINA*[4], *L. GRANATA*[4], *R. PELLICANO*[5], *A. GASBARRINI*[6], *A. DI LEO*[7], *G. LOSURDO*[7], *F. FRANCESCHI*[8], *G. NARDONE*[9], *A. ROCCO*[9], *M. DORE*[10], *F. FARINATI*[11], *M. GHISA*[11], *M. BELLINI*[12], *R. MANTA*[13], *J. HOLTON*[14], *D. VAIRA*[3], *C. BORGHI*[15], *A. CANO-CATALÀ*[16], *P. PARRA*[2], *L. MOREIRA*[17], *F. MÉGRAUD*[18], *C. O'MORAIN*[19], *J. GISBERT*[2]

[1]Oncology Screening Department, Azienda USL Toscana Nord Ovest (ATNO), Carrara, Italy; [2]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [3]Department of Medical and Surgical Sciences, IRCCS S. Orsola, University of Bologna, Bologna, Italy; [4]Università degli Studi della Campania "Luigi Vanvitelli", Naples, Italy; [5]Molinette-SGAS Hospital, University of Turin, Turin, Italy; [6]Medicina Interna, Fondazione Policlinico Universitario A. Gemelli IRCCS, Università Cattolica del Sacro Cuore, Rome, Italy; [7]Department of Emergency and Organ Transplantation, Section of Gastroenterology, University "Aldo Moro" of Bari, Bari, Italy; [8]Emergency Medicine, Fondazione Policlinico Universitario "A. Gemelli" IRCCS, Università Cattolica del Sacro Cuore, Rome, Italy; [9]Department of Clinical Medicine and Surgery, Gastroenterology Unit, University Federico II of Naples, Naples, Italy; [10]Department of Medical, Surgical and Experimental Science, University of Sassari, Sassari, Italy; [11]Department of Surgery, Oncology and Gastroenterology, Gastroenterology Unit, University Hospital of Padua, Padua, Italy; [12]Department of Translational Sciences and New Technologies in Medicine and Surgery, Gastrointestinal Unit, University of Pisa, Pisa, Italy; [13]Digestive Endoscopy Unit, Azienda USL Toscana Nord Ovest (ATNO), "Spedali Riuniti" Hospital, Livorno, Italy; [14]Deptartment Natural Sciences (Microbiology), University of Middlesex, London UK & Dartford & Gravesham NHS Trust, Darent Valley Hospital, Dartford Kent UK, London, United Kingdom; [15]Department of Medical and Surgical Sciences, IRCCS S. Orsola, University of Bologna, Bologna, Italy; [16]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [17]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [18]Université de Bordeaux, Bordeaux, France; [19]Trinity College, Dublin, Ireland

Objective: It is not yet clear what is the best first-line empirical therapy for *Helicobacter pylori* (*H. pylori*) infection. This study aimed to assess the effectiveness of empirical first-line treatment in Italian patients non-allergic to penicillin.

Materials and Methods: The Hp-EuReg is an international, multicenter, prospective, non-interventional registry on *H. pylori* infection management running since 2013. Data of all *H. pylori*-positive treatment-naïve patients enrolled until December 2023 by Italian centers participating in the Hp-EuReg were evaluated. Effectiveness was analyzed by both modified intention-to-treat (patients who completed follow-up with a confirmatory test of success or failure available after eradication treatment) and per-protocol (patients who completed follow-up and took at least 90% of the treatment drugs).

Results: The analysis included 4,144 patients (mean age 52 years, SD±5, 60% women). The overall prevalence of patients allergic to penicillin was 1.0%. 10-day sequential therapy [mainly as proton pump inhibitions (PPIs)-clarithromycin-amoxicillin-tinidazole] was most commonly prescribed (54%), followed by 10-day single capsule bismuth quadruple therapy with metronidazole and tetracycline (19 %), and 10 or 14-day non-bismuth concomitant treatment (mainly as PPI-clarithromycin-amoxicillin-tinidazole) (9.3%), providing all the following regimens optimal cure rates: 91.5%, 95.5%, 92% and 97%, respectively (Table 1).

Conclusions: In Italy, optimal (>90%) first-line empiric therapy effectiveness was achieved with the 10-day single-capsule bismuth quadruple therapy with metronidazole-tetracycline-bismuth, 10-day sequential therapy with clarithromycin-amoxicillin-tinidazole, and with 10 or 14-day non-bismuth concomitant therapy with clarithromycin-amoxicillin-tinidazole.

TABLE 1. EFFECTIVENESS BY MODIFIED INTENTION-TO-TREAT (MITT), AND PER-PROTOCOL (PP) ANALYSES OF FIRST-LINE EMPIRICAL TREATMENTS IN PATIENTS NOT ALLERGIC TO PENICILLIN, IN ITALY.

First-line treatment	Length (days)	mITT % (95% CI)	PP % (95% CI)
Sequential (PPI + C-A-T/M)	10	91.5 (90.2 to 92.7)	90.9 (89.5 to 92.1)
PPI + Single capsule (M+Tc+B)	10	95.5 (93.7 to 96.8)	96.6 (94.9 to 97.7)
Concomitant (PPI + C-A-M/T)	10	92.2 (86.6 to 95.6)	93.5 (88.1 to 96.5)
Concomitant (PPI + C-A-M/T)	14	96.6 (93.6 to 98.4)	98.1 (95.6 to 99.2)
Triple PPI-C-A	7	83.6 (72.9 to 90.6)	86.2 (75.7 to 92.5)
Triple PPI-C-A	10	80 (71.1 to 86.7)	80.4 (71.4 to 87.1)
Triple PPI-C-A	14	100 (77 to 100)	100 (77 to 100)
Triple PPI-A-L	10	81.4 (72.7 to 87.7)	82.8 (74.2 to 89)

mITT: modified intention-to-treat; PP, per protocol; A, amoxicillin; B, bismuth salt; C, clarithromycin; L, levofloxacin; M, metronidazole; PPI, proton pump inhibitor; T, tinidazole; Tc, tetracycline.

Conflict of Interest

L. Gatta: None. O.P. Nyssen: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Mayoly, Allergan. M. Pavone: None. G. Fiorini: None. M. Romano: None. A. Gravina: None. L. Granata: None. R. Pellicano: None. A. Gasbarrini: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Abbvie, Actial, Alpha-Sigma, Eisai, Gilead, Malesci. A. Di Leo: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; THD SpA. G. Losurdo: None. F. Francheschi: None. G. Nardone: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Sofar, Alpha-Sigma. A. Rocco: None. M. Dore: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Sanofi, Takeda. F. Farinati: None. M. Ghisa: None. M. Bellini: None. J. Holton: None. D. Vaira: None. C. Borghi: D. Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Modest; Servier, Novo-Nordisk, Astra-Zeneca, Sanofi. A. Cano-Català: None. P. Parra: None. L. Moreira: None. F. Mégraud: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Allergan, bioMerieux, Mobidiag (to the Institution). D. Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Modest; Biocodex, Mayoly. C. O'Morain: None. J. Gisbert: D. Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Modest; Mayoly, Allergan, Diasorin, GebroPharma, Riche. R. Manta: None.

P02.09.

CHANGE OF TREATMENT PATHWAY OF *HELICOBACTER PYLORI* INFECTION AFTER THE GUIDELINE UPDATE: A DISTRIBUTED NETWORK ANALYSIS OF MULTI-CENTER DATABASES USING COMMON DATA MODEL

*W. SHIN[1], **Y. CHAE**[1], K. LEE[2], S. SEO[1]*
[1]Hallym University College of Medicine, Seoul, Republic of Korea; [2]Department of Medical Informatics and Statistics, Kangdong Sacred Heart Hospital, Seoul, Republic of Korea

Objective: The fourth-revised Korean guidelines, published in 2020, recommended an empirical bismuth quadruple therapy or a tailored therapy according to the clarithromycin resistance test as a first-line therapy for *Helicobacter pylori* (*H. pylori*) infection. We aimed to analyze the change in first-line and rescue therapies for *H. pylori*-infected patients after guideline update using an Observational Medical Outcomes Partnership common data model (OMOP-CDM).
Materials and Methods: We extracted CDM records of patients who underwent a rapid urease or serum anti-*H. pylori* IgG test from 7 secondary or tertiary institutions in Korea. As of January 1, 2021, we compared the *H. pylori* treatment protocols before and after the guidelines were published and visualized the results using a sunburst plot provided by the ATLAS platform.
Results: Out of 226,887 patients tested for *H. pylori* infection, 60,449 received treatment protocols. Of those, 92.4% (55,865/60,449) underwent clarithromycin triple therapy for 7-14 days. The proportion of patients treated with bismuth quadruple therapy as a first-line protocol slightly increased from 3.8% (2,003/52,487) before 2021 to 9.7% (773/7,962) after 2021 (p<0.001). However, the rates of increase in the use of bismuth quadruple therapy as an initial treatment varied from hospital to hospital.
Conclusions: The bismuth quadruple therapy as a first-line therapy for *H. pylori* treatment protocol was increased after updating the guidelines, though the increasing degree was small.

Conflict of Interest
W. Shin: None. Y. Chae: None. K. Lee: None. S. Seo: None.

P02.11.

EFFECTIVENESS OF FIRST-LINE EMPIRICAL TREATMENT IN PORTUGAL: DATA FROM THE EUROPEAN REGISTRY ON *HELICOBACTER PYLORI* MANAGEMENT (HP-EUREG)

M.I. VIEGAS[1], *M. AREIA[1], L. ELVAS[1], R. MARCOS-PINTO[2], H. MENDES[2], S. ALVES[1], D. BRITO[1], S. SARAIVA[1], A. CADIME[1], A. CANO-CATALA[3], P. PARRA[4], L. MOREIRA RUIZ[5], F. MEGRAUD[6], C. O'MORAIN[7], O.P. NYSSEN[4], J.P. GISBERT[4]*
[1]Portuguese Oncology Institute of Coimbra, Coimbra, Portugal; [2]Centro Hospitalar do Porto, Porto, Portugal; [3]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [4]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [5]Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [6]INSERM U1312 BRIC, Université de Bordeaux, Bordeaux, France; [7]Faculty of Health Sciences, Trinity College Dublin, Dublin, Ireland

Objective: As Portugal exhibits some of the highest gastric cancer rates in Europe, optimizing the *H. pylori* eradication rate is imperative. We aimed to describe *H. pylori* treatment regimens in Portugal within a real clinical practice setting.

Patients and Methods: This is a prospective cohort study of Portuguese patients diagnosed with *H. pylori* between May 2013 and December 2022 within the European Registry on *H. pylori* management (Hp-EuReg). Demographic and clinical data, diagnostic methods, treatment regimens, and prescription trends, as well as their effectiveness, were analyzed by modified intention-to-treat (mITT) and per-protocol (PP) analyses.

Results: Overall, 700 cases, mainly from 2 centers (98% of cases), were included (59% of female patients with a mean age of 54±15 years). Treatment-naïve cases encompassed 81% of cases. Overall compliance (>90% drug intake) was reported in 99% of cases. Overall effectiveness was 87%, both by mITT and PP analyses. The triple PPI-clarithromycin-amoxicillin therapy reported a decrease in prescriptions from 29% in 2013 to 0% in 2022. Conversely, quadruple therapies concomitant PPI-clarithromycin-amoxicillin-metronidazole and the PPI-bismuth-metronidazole-tetracycline were predominantly used from 2016 onwards, with PPI-bismuth-metronidazole-tetracycline representing 76% of prescriptions in 2022, achieving an overall mITT effectiveness of 92% and 91%, respectively (Table 1). The remaining regimens provided suboptimal (<90%) results.

Conclusions: In Portugal, concomitant quadruple therapy with PPI-clarithromycin-amoxicillin-metronidazole and bismuth quadruple with PPI-bismuth-metronidazole-tetracycline provided optimal (>90%) effectiveness, in line with results in other Southern European countries.

TABLE 1. PRESCRIPTIONS, PER-PROTOCOL, AND MODIFIED INTENTION-TO-TREAT EFFECTIVENESS IN FIRST-LINE TREATMENT.

First-line eradication regimens	Prescription frequency, % (n/N)	PP, % (n/N)	mITT, % (n/N)	PPI dose, N (%)			Treatment duration (days), N (%)		
				Low	Standard	High	7	10	14
Concomitant quadruple with PPI-clarithromycin-amoxicillin-metronidazole	31.9% (180/564)	91.7% (165/180)	91.7% (165/180)	65 (33.3%)	60 (30.8%)	70 (35.9%)	0	17 (10%)	150 (90%)
Bismuth quadruple therapy with PPI-tetracycline-metronidazole	27% (152/564)	91.4% (139/152)	91.4% (139/152)	71 (41.8%)	39 (22.9%)	60 (35.3%)	0	170 (99.4%)	1 (0.6%)
Standard triple therapy with PPI-clarithromycin-amoxicillin	20.2% (114/564)	81.3% (91/112)	80.7% (92/114)	40 (34.4%)	55 (47.4%)	21 (18.1%)	2 (4.8%)	5 (12%)	35 (83.3%)
Sequential PPI-clarithromycin-amoxicillin-metronidazole	8.9% (50/564)	84% (42/50)	84% (42/50)	38 (73.1%)	8 (15.3%)	6 (11.5%)	0	51 (98.1%)	1 (1.9%)

Modified intention-to-treat (mITT), per-protocol (PP).

Conflict of Interest

M.I. Viegas: None. M. Areia: None. L. Elvas: None. R. Marcos-Pinto: None. H. Mendes: None. S. Alves: None. D. Brito: None. S. Saraiva: None. A. Cadime: None. A. Cano-Catala: None. P. Parra: None. L. Moreira Ruiz: None. F. Megraud: None. C. O'Morain: None. O.P. Nyssen: None. J.P. Gisbert: None.

POSTER SESSION 03: HELICOBACTER 03

P03.01.

FIRST-LINE PRESCRIPTION PATTERNS AND ERADICATION RATES IN IRELAND OVER A 10-YEAR PERIOD: DATA FROM THE EUROPEAN REGISTRY ON *HELICOBACTER PYLORI* MANAGEMENT (HP-EUREG)

S.M. SMITH[1], *O.P. NYSSEN*[2], *R. FITZGERALD*[1], *T.J. BUTLER*[1], *D. MCNAMARA*[1,3], *A. QASIM*[4], *A. CANO-CATALÁ*[5], *P. PARRA*[2], *L. MOREIRA*[6], *F. MEGRAUD*[7], *C. O'MORAIN*[1,4], *J.P. GISBERT*[2]
[1]Trinity College Dublin, Dublin, Ireland; [2]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [3]Tallaght University Hospital, Dublin, Ireland; [4]Beacon Hospital, Dublin, Ireland; [5]GOES research group, Althaia Xarxa Assistencial Universitària de Manresa, Manresa, Spain; [6]Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), IDIBAPS (Institut d'Investigacions Biomèdiques August Pi i Sunyer), University of Barcelona, Barcelona, Spain
[7]Laboratoire de Bactériologie, Hôpital Pellegrin, Bordeaux & INSERM U1053 BaRITOn, Université de Bordeaux, Bordeaux, France

Objective: Local audits of *H. pylori* prescriptions and eradication rates are necessary to assess effectiveness and guideline compliance. The aim of this study was to investigate first-line prescriptions and effectiveness over a 10-year period in Ireland and evaluate the impact of the first Irish consensus guidelines (2017).
Materials and Methods: Data were collected at e-CRF AEG-REDCap from the European Registry on *H. pylori* management (Hp-EuReg) and quality reviewed from 2012-2022. All treatment-naïve cases were assessed for effectiveness by modified intention-to-treat (mITT) analysis. Further multivariate analysis was performed.
Results: Data from 1,000 patients (mean age 50±15 years; 54% female) were analyzed. Clarithromycin-amoxicillin triple therapy (CTT) represented 88% of treatments. Prescriptions for 14, 10, and 7 days were 87%, 4.5%, and 8.5%, respectively. 86%, 0.9%, and 13% of prescriptions were for high, standard, and low dose proton pump inhibitors (PPI; 80 mg, 40 mg, 20 mg omeprazole equivalent b.i.d., respectively). The eradication rate was 80% (95% CI 78-83%) overall and 81% (95% CI 79-84%) for CTT. Good compliance and high-dose PPI were associated with higher overall mITT rates (OR 4.5, 95% CI 1.4-14.2 and OR 1.9, 95% CI: 1.2-2.8, respectively) and CTT mITT rates (OR 4.2, 95% CI 1.2-14.2 and OR 1.9, 95% CI: 1.1-3.2, respectively). Overall eradication rates increased from 74% (95% CI 68-80%) pre-2017 to 82% (95% CI 79-84%; $p<0.05$) by the end of 2022; likewise, CTT eradication rates increased from 76% (95% CI 68-82%) to 83% (95% CI 80-85%; $p<0.05$) during the same period.
Conclusions: While effectiveness increased following the publication of the Irish guidelines, cure rates remained below 90%. Alternative first-line strategies are required in Ireland.

Conflict of Interest
S.M. Smith: None. O.P. Nyssen: None. R. FitzGerald: None. T.J. Butler: None. D. McNamara: None. A. Qasim: None. A. Cano-Catalá: None. P. Parra: None. L. Moreira: None. F. Megraud: None. C. O'Morain: None. J.P. Gisbert: None.

P03.02.

PREVALENCE OF PRIMARY CLARITHROMYCIN RESISTANCE IN PATIENTS INFECTED WITH *HELICOBACTER PYLORI* IN EUROPE IN THE LAST FOUR DECADES

B. NAFRÍA[1], ***O.P. NYSSEN***[2], *L. BUJANDA*[3], *J.P. GISBERT*[2]
All authors contributed equally to this study
[1]Instituto de Investigación Sanitaria Biodonostia, *Área* de Enfermedades Hepáticas y Gastrointestinales, San Sebastian, Spain; [2]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa and CIBEREHD, Digestive Services, Madrid, Spain; [3]Instituto de Investigación Sanitaria Biodonostia, Hospital Universitario Donostia-San Sebastián, Servicio de Aparato Digestivo, San Sebastian, Spain

Objective: Global rise in primary rates of clarithromycin resistance (ClaR) in *Helicobacter pylori* (*H. pylori*) has led to a decrease in the treatment efficacy.
Materials and Methods: This review aimed to evaluate the prevalence and geographical distribution of *H. pylori* primary ClaR in Europe. Bibliographical searches were performed in PubMed up to March 2024. Studies assessing rates of *H. pylori* primary ClaR with no restrictions on time or language were included. Studies focusing on children only or non-European countries were excluded.
Results: Overall, 188 studies were included, evaluating 81,458 patients over more than 30 years (1990-2024) (Table 1). In this time span, the mean prevalence of primary *H. pylori* ClaR in Europe was 17%. This rate increased from 7.3% (1990-1999) to 13% (2000-2009), reaching 26% (2010-2019), and a recent reduction rate to 22% (2020-2024). In almost all European countries, ClaR increased over time, with the highest rates in Switzerland (67%), Ireland (50%), Israel (44%), Portugal (40%), and Poland (39%). The prevalence remained stable in recent years in France (21-17%), Spain (15%), and Turkey (28-15%). Southern European countries reported higher rates than northern countries.
Conclusions: Overall, *H. pylori* primary ClaR in Europe has been above 15% in the last 30 years. Variability exists between countries, with Southern European and Mediterranean countries showing higher levels of resistance.

TABLE 1. PRIMARY CLAR PREVALENCE IN EUROPE IN LAST FOUR DECADES (1990-2024).

Country (number of studies)	ClaR prevalence % (n/N) 1990-1999	ClaR prevalence % (n/N) 2000-2009	ClaR prevalence % (n/N) 2010-2019	ClaR prevalence % (n/N) 2020-2024
Armenia (1)	NA	NA	2.2 (2/91)	NA
Austria (5)	3.3 (11/331)	NA	19.6 (133/680)	NA
Belgium (9)	9.9 (125/1,260)	6.1 (825/13,587)	3.6 (131/3,661)	18.9 (51/269)
Bosnia and Herzegovina (1)	NA	NA	NA	28.26 (13/46)
Bulgaria (10)	9.3 (26/278)	18.1 (338/1,869)	23.1 (131/569)	30 (15/50)
Croatia (7)	NA	13.2 (146/1,105)	21.2 (73/345)	NA
Denmark (1)	NA	7.1 (63/894)	NA	NA
Estonia (2)	2.8 (3/106)	NA	NA	NA
Finland (2)	NA	13.1 (173/1,329)	NA	NA
France (8)	25.8 (81/314)	21.8 (172/786)	17.7 (370/2,093)	NA
Germany (13)	2.4 (52/2,143)	3.2 (81/2,567)	11.7 (315/2,682)	NA
Greece (2)	NA	30 (15/50)	30.7 (59/192)	NA
Iceland (1)	NA	NA	6 (6/100)	NA
Ireland (5)	4.5 (25/557)	14.2 (21/148)	50.5 (53/105)	NA
Israel (2)	NA	7.9 (11/138)	44.1 (198/449)	NA
Italy (33)	9.5 (65/686)	16.5 (271/1,645)	23.2 (1,499/6,456)	27.1 (79/292)
Lithuania (1)	1.1 (1/89)	4.4 (4/90)	NA	NA
Netherlands (5)	0.7 (7/893)	7.8 (61/778)	18.2 (61/336)	NA
Norway (2)	NA	5.8 (6/102)	9.5 (4/42)	NA
Poland (9)	9.1 (6/66)	24.88 (158/635)	39.1 (81/207)	NA
Portugal (3)	13.9 (47/336)	NA	40 (58/145)	NA
Romania (1)	NA	NA	NA	20 (18/90)
Russia (4)	NA	5.3 (7/133)	9.5 (116/1220)	NA
Scotland (1)	1.8 (3/162)	NA	NA	NA
Serbia (1)	NA	NA	NA	24.03 (68/283)
Slovenia (2)	NA	NA	10.7 (44/412)	NA
Spain (26)	8.9 (143/1,599)	15.8 (730/4,623)	17.1 (2,835/30,697)	15.1 (193/1,283)
Sweden (3)	2.7 (3/109)	1.3 (7/538)	NA	NA
Switzerland (4)	11.6 (13/112)	17.6 (29/165)	67.1 (145/216)	NA
Turkey (15)	NA	28.9 (128/442)	28.4 (173/609)	15.5 (64/413)
United Kingdom (9)	5.5 (23/415)	10.7 (198/1,845)	35.8 (97/271)	NA

Number of patients tested for ClaR: n (positive resistance results)/N (total with *H. pylori*). NA: not available.

Conflict of Interest
B. Nafría*: None. O.P. Nyssen*: Other; Significant; Mayoly, Allergan/Abbvie, Richen, Juvisé, Biocodex. L. Bujanda**: None. J.P. Gisbert**: Other; Significant; Mayoly, Allergan/Abbvie, Diasorin, Richen, Juvisé, Biocodex.
*Both first authors contributed equally to the study
**Both senior authors contributed equally to the study

P03.03.

SEROPREVALENCE OF *H. PYLORI* IN 25-64 YEARS OLD POPULATION IN LITHUANIA

***L. KUPCINSKAS**, E. CIUPKEVICIENE, V. SALTENIENE, L. JONAITIS, J. PETKEVICIENE, J. KUPCINSKAS*
Lithuanian University of Health Sciences, Kaunas, Lithuania

Objective: Previous studies on *H. pylori* in Lithuania were performed on small-size selective population groups. Therefore, the study's aim was to investigate *H. pylori* seroprevalence in the general adult population.
Patients and Methods: The study involved Kaunas residents aged 25-64 who were randomly selected from population register lists. The classic *H. pylori* IgG (Serion, Germany) test was used to detect IgG antibodies. All participants filled out a questionnaire about factors possibly associated with *H. pylori* infection.
Results: *H. pylori* antibodies were tested in the blood serum of 1,046 participants. The mean age was 47.2±11.5 years. Seroprevalence of *H. pylori* in males was 66.0%, in females 59.3%, and in all subjects 61.8%. Seroprevalence increased with age in groups of 25-34, 35-44, 45-54, and 55-64 years and was 49.2%, 62.5%, 71.1%, 67.5%, and 64%, respectively. *H. pylori* antibodies were more common (p<0.05) in subjects with secondary and lower education compared to those with higher education. The prevalence of *H. pylori* antibodies was found to be higher in homes without hot water when growing up. 17.6% of participants were previously tested for *H. pylori*, and infection was detected in 56.5% of them. Medication for eradication was used by 132 (84.6%) participants with a history of infection. In the current study, *H. pylori* antibodies were found in 58.3% of subjects who previously underwent eradication, but seroprevalence decreased (p<0.05) with increasing time since eradication, especially in women.
Conclusions: The high seroprevalence of H. pylori in Lithuania (a country with a moderate incidence of gastric cancer) raises a question on the possible introduction of screen-and-test strategies for *H. pylori* to diminish gastric cancer incidence and mortality.

Conflict of Interest
L. Kupcinskas: None. E. Ciupkeviciene: None. V. Salteniene: None. L. Jonaitis: None. J. Petkeviciene: None. J. Kupcinskas: None.

P03.04.

STATUS OF THE *HELICOBACTER PYLORI* SCREENING AT OUR INSTITUTION OVER FOUR YEARS

***K. UEDA**, M. HOJO, A. NAGAHARA*
Faculty of Medicine, Juntendo University, Tokyo, Japan

Objective: We started the *Helicobacter pylori* (*H. pylori*) screening at our institution in 2020. After four years, we report the status of this program.
Materials and Methods: The students and employees of our institution enrolled between 2020 and 2023 were recruited for this study. The anti-*H. pylori* antibody test was used to detect *H. pylori* infection. If serum anti-*H. The pylori* antibody titer was found to be lower than 3 U/ml, *so* the subject could be considered negative for *H. pylori* infection. If the antibody titer was 3 U/ml or higher, the subject was possibly infected, and it was recommended that the patient visit a hospital for further testing. Esophagogastroduodenoscopy and ^{13}C-urea breath test were performed to diagnose *H. pylori* infection at the hospital.

Results: A total of 1,793 subjects were screened over four years. Of these, 175 (9.8%) were recommended to visit a hospital. Eighteen did not follow through, resulting in a 90% response rate. Among the 157 who visited a hospital, 144 went to our hospital, while 13 visited other hospitals. Eradication therapy was provided to 39 subjects (2.2%, 39/1,793), with 35 receiving treatments at our hospital and 4 at other locations. At our hospital, among those undergoing first-line eradication therapy, 26 were successful, 4 were unsuccessful, and 5 were undetermined, yielding an eradication rate of 86.7% (26/30) in the per-protocol analysis. Of the 35 treated, 8 had nodularity, 19 had closed-type atrophy, and 8 had open-type atrophy.
Conclusions: Out of 1,793 subjects, 175 (9.8%) were recommended to visit a hospital, with a 90% response rate. The screening program resulted in eradication therapy for 2.2% of those screened.

Conflict of Interest
K. Ueda: None. M. Hojo: None. A. Nagahara: None.

P03.05.

COMPARATIVE EFFICACY AND SAFETY OF POTASSIUM-COMPETITIVE ACID BLOCKER (P-CAB) BASED DUAL, TRIPLE AND QUADRUPLE REGIMENS FOR FIRST LINE *H. PYLORI* INFECTION TREATMENT: A SYSTEMATIC REVIEW AND NETWORK META-ANALYSIS

T. ROKKAS[1]*, K. EKMEKTZOGLOU*[1]*, Y. NIV*[2]*, D.Y. GRAHAM*[3]
[1]Henry Dunant Hospital, Athens, Greece; [2]Adelson Faculty of Medicine, Ariel University, Tel Aviv, Israel; [3]Department of Medicine, Michael E. DeBakey Veterans Affairs Medical Center and Baylor College of Medicine, Houston, TX, USA

Objective: In the last few years, numerous new potassium-competitive acid blocker (P-CAB)-based randomized controlled trials (RCTs) concerning first-line regimens for *H. pylori* infection treatment from various countries have been published. However, no network meta-analysis (NWM) that examines the comparative efficacy and safety of P-CAB-based dual-, triple-, and quadruple treatments exists. Therefore, in this NWM, we examined this matter by comparing the efficacy and safety of these P-CAB-based regimens.
Materials and Methods: Databases were searched for identification, screening, eligibility, and inclusion of relevant
RCTs. Extracted data were entered into a Bayesian NWM, and the ranking order for each regimen was evaluated by means of surfaces under cumulative ranking area (SUCRA) values.
Results: Twenty-five eligible RCTs were included with 7,605 patients randomized to 6 first-line regimens, i.e., PCAB-dual, PCAB-triple, PCAB-quadruple, PPI-dual, PPI-triple, and PPI- quadruple. The SUCRA values (%) for these six regimens were 92.7, 62.5, 33.9, 75.1, 19.4, and 16.3, respectively. The comparative effectiveness ranking showed that the PCAB-dual regimen ranked first for efficacy and last for adverse effects and had the best profile for integrated efficacy and safety.
Conclusions: In this NWM concerning the comparative efficacy and safety of P-CAB-based dual, triple, and quadruple regimens for first-line *H. pylori* infection treatment, the overall results showed that PCAB-based dual treatment ranked first for efficacy with the best-integrated efficacy-safety profile. This is of importance since the dual regimens overcome the crucial issue of clarithromycin resistance. Consequently, these findings are expected to be useful in helping clinical decision-making and future guidelines.

Conflict of Interest
T. Rokkas: None. K. Ekmektzoglou: None. Y. Niv: None. D.Y. Graham: Other; Modest; RedHill Biopharma, Phathom Pharmaceuticals.

P03.06.

RELATIONSHIP BETWEEN THE PRESENCE OF ANTIBODIES TO THE CAGA OF *H. PYLORI* AND THE STAGE OF CHRONIC GASTRITIS ACCORDING TO THE OLGA SYSTEM

D.S. Bordin[1,2,3], K.A. Nikolskaya[1,4], S.G. Khomeriki[1], A.S. Dorofeev[1], M.V. Chebotareva[1,4], A.Y. Spasenov[1], N.A. Neyasova[1], E.S. Kuznetsova[1], I.N. Voynovan[1], I.E. Khatkov[1,2]
[1]A.S. Loginov Moscow Clinical Scientific Center, Moscow, Russian Federation; [2]Russian University of Medicine, Moscow, Russian Federation; [3]Tver State Medical University, Tver, Russian Federation; [4]Research Institute of Health Organization and Medical Management, Moscow, Russian Federation

Objective: *H. pylori* causes chronic gastritis. However, the development of atrophic gastritis is associated both with the duration of the disease and, possibly, with the presence of virulence factors. The aim of this study was to determine the influence of the presence of antibodies to the CagA of *H. pylori* on the development of atrophic gastritis.
Patients and Methods*:* 88 *H. pylori*-positive patients were examined as part of the study on the prevalence of *H. pylori* in Moscow (Grant of the Moscow Center for Innovative Technologies in Healthcare, 0903-1/22). The mean age of the patients included in the study was 51.2±14.3 years. The presence of *H. pylori* was confirmed by a ^{13}C-urea breath test. All patients underwent endoscopy with morphological examination by the OLGA system and serological determination of antibodies to CagA.
Results: Antibodies to CagA were detected in 54.54% of patients. The proportion of CagA-positive patients was higher in groups with atrophic gastritis and was rising with increasing stage of atrophy (maximum at stage IV – 85.7%) [Kendall's correlation coefficient (K.c.c.) 0.227 (p=0.015)] (Table 1). The mean age of patients without atrophy and with stage I atrophy was lower than that of patients with stage II, III, and IV [K.c.c. 0.304 (p<0.01)]. Groups with II, III and IV stages of atrophy were comparable in age.
Conclusions: We found a positive relationship between the presence of antibodies to CagA and the atrophy stage of the OLGA system in H. pylori gastritis patients not related to age.

TABLE 1. FREQUENCY OF DETECTION OF CAGA + *H. PYLORI* DEPENDING ON THE STAGE OF ATROPHY AND THE AGE OF PATIENTS.

Atrophy stage by OLGA system	Number of patients	Mean age, years	Proportion of CagA+ patients, %	Mean level of CagA antibodies at CagA+ patients, c.u.
0	22	41.9±14.1	22.7	1.56±0.9
1	22	47.6±15.1	63.6	1.5±0.75
2	18	58.1±13	66.7	1.2±0.41
3	19	57.6±9.3	57.9	1.59±0.54
4	7	56.9±8.3	85.7	1.355±0.55

Conflict of Interest

D.S. Bordin: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Research Grant Moscow Center for Innovative Technologies in Healthcare. Grant #0903-1/22. K.A. Nikolskaya: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Research Grant Moscow Center for Innovative Technologies in Healthcare. Grant #0903-1/22. S.G. Khomeriki: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Research Grant Moscow Center for Innovative Technologies in Healthcare. Grant #0903-1/22. A.S. Dorofeev: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Research Grant Moscow Center for Innovative Technologies in Healthcare. Grant #0903-1/22. M.V. Chebotareva: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Research Grant Moscow Center for Innovative Technologies in Healthcare. Grant #0903-1/22. A.Y. Spasenov: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Research Grant Moscow Center for Innovative Technologies in Healthcare. Grant #0903-1/22.

N.A. Neyasova: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Research Grant Moscow Center for Innovative Technologies in Healthcare. Grant #0903-1/22. E.S. Kuznetsova: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Research Grant Moscow Center for Innovative Technologies in Healthcare. Grant #0903-1/22. I.N. Voynovan: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Research Grant Moscow Center for Innovative Technologies in Healthcare. Grant #0903-1/22. I.E. Khatkov: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Research Grant Moscow Center for Innovative Technologies in Healthcare. Grant #0903-1/22.

P03.07.

IDIOPATHIC GASTRIC ANTRAL ULCERS

K.N. NAKAMICHI, ***K. NAKAMICHI***
Hukuokatokushukai Hospital, Hukuoka, Japan

Background: A Japanese 64-year-old woman presented with gastric antral ulcers accompanied by erosion and edema, demonstrating a chronic pattern of improvement and recurrence for more than ten years. Ten years ago, she was treated for a gastric ulcer at another hospital. Five years ago, she was hospitalized at another hospital for bleeding from the ulcer.
Case report: The patient presented to our hospital with a chief complaint of epigastric pain. She had no history of treatment with NSAIDs. *Helicobacter pylori* infection was ruled out. Other potential etiologies contributing to gastric ulcers were eliminated on the basis of endoscopic biopsy and blood laboratory findings. She was treated with vonoprazan 20 mg/day. However, she resisted treatment and was not cured even after eight weeks. Consequently, the patient was diagnosed with an idiopathic gastric antral ulcer.
Conclusions: Idiopathic gastric antral ulcers are characterized by the presence of small ulcers, primarily located in the greater curvature of the stomach, accompanied by edema of the surrounding mucosa and erosion of other regions of the antrum. Idiopathic gastric antral ulcers are relatively unfamiliar pathological entities, and their diagnosis generally relies on the exclusion of other diseases. Nevertheless, attending physicians should be aware of this clinical condition to avoid redundant diagnostic investigations. This disease is often overlooked, and endoscopic images provided in this report can be used as a reference. We herein report a case of idiopathic antral gastric ulcer that presented with chronological endoscopic images.

Conflict of Interest
K.N. Nakamichi: None. K. Nakamichi: None.

P03.08.

REAL-WORLD EFFICACY OF SECOND-LINE THERAPIES FOR *HELICOBACTER PYLORI*: A POPULATION-BASED STUDY

C. GUO[1,2], J. FANG[1], S. ZHANG[2], ***W. LEUNG[1]***
[1]University of Hong Kong, Hong Kong, Hong Kong; [2]Beijing Friendship Hospital, Beijing, China

Objective: We aimed to evaluate the real-world efficacy of commonly used second-line therapies for *Helicobacter pylori* after failure of clarithromycin (CLA)-containing triple therapy and identify factors associated with retreatment success.
Patients and Methods: This is a retrospective population-based cohort study of *H. pylori*-infected patients who had received the second-line treatment after the failure of the primary CLA triple therapy between 2003 and 2018. The retreatment success rates of different second-line therapies were compared and risk factors were evaluated using logistic regression model.

Results: A total of 7,577 patients who failed primary treatment were included. Notably, the most commonly prescribed retreatment regime was still CLA-amoxicillin (AMO) triple, but the frequency of use had decreased from 44.9% in 2003-2006 to 24.5% in 2015-2018. Concomitant quadruple containing AMO, levofloxacin (LEV), and tetracycline (TET) had emerged as the commonest regime recently (from 0.8% in 2003-2006 to 38.4% in 2015-2018). The overall success rate of second-line therapies was 74.2%, which increased to 81.9% after excluding patients who reused CLA-containing therapies. Of various second-line therapies, bismuth (BIS) quadruple had the highest (86.3%) and persistent success rate, and the rifabutin-containing regime had a success rate of over 82%. However, retreatments prescribed in recent years (2015-2018) were associated with a lower success rate. Multivariable analysis showed that older age, duodenal ulcer at baseline, 14-day second-line treatment, and first-line treatment with CLA-AMO triple were all associated with higher second-line treatment success.
Conclusions: BIS quadruple therapy was the most effective second-line regimen for *H. pylori* in this real-world study from Asia.

Conflict of Interest
W. Leung: None. C. Guo: None. J. Fang: None. S. Zhang: None.

P03.09.

MUC5AC EXPRESSION IN THE GASTRIC MUCOSA OF *HELICOBACTER PYLORI* POSITIVE GASTRITIS - A SYSTEMATIC REVIEW AND META-ANALYSIS

A. KOL-YAKOV, ***Y. NIV***
Ariel University, Ariel, Israel

Objective: MUC5AC, a secreted mucin, is the most important component of the gastric mucus unstirred, protecting layer, preventing the enzymatic attack of acid and pepsin, toxins, and microorganisms. The aim of the study was to investigate the effect of *H. pylori* infection on MUC5AC expression in the gastric mucosa.
Materials and Methods: English Medical literature searches were conducted for gastric MUC5AC expression in *H. pylori*-infected patients compared to uninfected people or cases after eradication. Searches were performed in PubMed, EMBASE, Scopus, and CENTRAL. Meta-analysis was performed, and pooled odds ratios (ORs) and 95% confidence intervals (95% CIs) were calculated. Heterogeneity was evaluated, and I^2 statistics were used to measure the proportion of inconsistency in individual studies. We also calculated a potential publication bias.
Results: 11 studies representing 13 sub-studies were selected according to the inclusion criteria. The odds ratio of MUC5AC expression in a random effect analysis was 0.217 (95% CI 0.124 to 0.377, $p<0.0001$), significantly lower in *H. pylori* gastritis than in normal mucosa. When only studies with high-quality scores were calculated, OR was 0.239 (95% CI 0.137 to 0.419, $p<0.0001$). Heterogeneity and inconsistency were small, with no significant publication bias.
Conclusions: This meta-analysis showed that MUC5AC expression is lower in *H. pylori*-infected mucosa, which may significantly affect the effective colonization and survival of the bacterium and persistent chronic inflammation.

Conflict of Interest
A. Kol-Yakov: None. Y. Niv: None.

P03.10.

HELICOBACTER PYLORI INFECTION RECURRENCE IN DEVELOPED *VS.* DEVELOPING COUNTRIES - A SYSTEMATIC REVIEW AND META-ANALYSIS

M. SCHECHTER, ***Y. NIV***
Ariel University, Ariel, Israel

Objective: *Helicobacter pylori* infection is highly prevalent in developing countries, especially in low-economic class populations living in peripheral areas. In 2015, in a previous systematic review and meta-analysis, we demonstrated a significantly higher reinfection in developing countries than in developed countries after a successful eradication. The aim of this study was to reinvestigate *Helicobacter pylori* recurrence rate (recrudescence and reinfection) after successful eradication, comparing developing and developed countries.
Materials and Methods: We searched the literature until 31/12/2023 to identify human studies written in English. Studies were included according to the following criteria: complete articles with data that can be extracted, articles written in English, and prospective studies that examined *H. pylori* status at least 12 months after successful eradication. The heterogeneity was calculated using the Cochran Q test and I^2 inconsistency.
Results: After the exclusion of studies that did not stand in the inclusion criteria, we were left with 20 studies (35 data sets), 19 in developing countries and 16 in developed countries. Altogether, 16,785 people had undergone *H. pylori* eradication therapy and followed for at least 12 months after that. The mean effect size of the event rate was 0.040, 95% CI 0.029 to 0.053. The corresponding figures for annual recrudescence and reinfection in developing and developed countries were 0.049 (95% CI 0.032-0.075), 0.036 (95% CI 0.013-0.095), 0.040 (95% CI 0.030-0.052), and 0.030, (95% CI 0.018-0.051), respectively.
Conclusions: The difference in reinfection rate between developing and developed countries that was demonstrated two decades ago disappeared, probably due to better sanitation and prevention of *Helicobacter pylori* infection in older age.

Conflict of Interest
M. Schechter: None. Y. Niv: None.

P03.11.

TRENDS IN THE PRESCRIPTION OF ERADICATION TREATMENTS AND THEIR EFFECTIVENESS IN NAÏVE PATIENTS OVER 11 YEARS (2013-2023) IN EUROPE: DATA FROM THE EUROPEAN REGISTRY ON *HELICOBACTER PYLORI* MANAGEMENT (HP-EUREG)

O.P. NYSSEN[1], *L. JONAITIS*[2], *Á. PÉREZ-AÍSA*[3], *B. TEPES*[4], *U. MAHMUDOV*[5], *I. VOYNOVAN*[6], *S.J. MARTÍNEZ-DOMÍNGUEZ*[7], *L. BUJANDA*[8], *A.J. LUCENDO*[9], *L. RODRIGO*[10], *J. KUPCINSKAS*[2], *L. HERNÁNDEZ*[11], *G. BABAYEVA*[12], *D.S. BORDIN*[13], *A. CANO-CATALÀ*[14], *P. PARRA*[1], *L. MOREIRA*[15], *F. MÉGRAUD*[16], *C. O'MORAIN*[17], *J.P. GISBERT*[1], *ON BEHALF OF THE HP-EUREG INVESTIGATORS*
[1]Department of Gastroenterology, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa, Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica

en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [2]Department of Gastroenterology, Lithuanian University of Health Sciences, Kaunas, Lithuania; [3]Department of Gastroenterology, Hospital Universitario Costa del Sol, Redes de Investigación Cooperativa Orientada a Resultados en Salud (RICORS), Marbella, Spain; [4]Department of Gastroenterology, DC Rogaska, Rogaska Slatina, Slovenia
[5]Modern Hospital, Baku, Azerbaijan; [6]A.S. Loginov Moscow Clinical Scientific Center, Moscow, Russian Federation; [7]Department of Gastroenterology, Hospital Clínico Universitario Lozano Blesa, Instituto de Investigación Sanitaria de Aragón (IIS Aragón), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Zaragoza, Spain; [8]Department of Gastroenterology, Biodonostia Health Research Institute, Department of Medicine, Universidad del País Vasco (UPV/EHU), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), San Sebastián, Spain; [9]Department of Gastroenterology, Hospital General de Tomelloso, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Tomelloso, Spain; [10]Department of Gastroenterology, Universidad de Oviedo, Oviedo, Spain; [11]Department of Gastroenterology, Hospital Santos Reyes, Aranda de Duero, Spain; [12]Department of Therapy, Azerbaijan State Advanced Training Institute for Doctors named by A. Aliyev, Baku, Azerbaijan; [13]A.S. Loginov Moscow Clinical Scientific Center, Tver State Medical University, Russian University of Medicine, Moscow, Russian Federation; [14]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain
[15]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [16]INSERM U1312, Université de Bordeaux, Bordeaux, France; [17]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: The impact of consensus, prescription choices, and efficacy trends on clinical practice over time has not been studied in depth.
Materials and Methods: Multicenter, prospective registry evaluating the decisions and outcomes of *Helicobacter pylori* management by European gastroenterologists (Hp-EuReg, Hp-WorldReg's partner). Data were registered at AEG-REDCap e-CRF until December 2023. Modified intention-to-treat (mITT) and time trend analyses were performed.
Results: Overall, 58,334 (82%) were first-line empirical prescriptions. The most common treatments in 2013-2023 were triple therapies; however, a shift in antibiotic regimens was identified. Triple therapy prescriptions decreased from approximately 60% during 2013-2015 to 30% in 2023; likewise, non-bismuth concomitant therapy use decreased from 21% in 2013-2015 to 15% in 2021/2023, while three-in-one single-capsule increased from 0.3% in 2013/2015 to 20% in 2021/2023. An increase in the average duration of treatments (from 9.8 days to 12.4 days) in 2013-2023 was identified, as well as in the use of standard/high-dose of PPIs (increasing from 36% to 60%) in 2013-2023. There was a ≈10% overall improvement in first-line mITT overall effectiveness from 86% to 94% in 11 years of evolution, both globally and in most geographic regions (Table 1).
Conclusions: European gastroenterological practice is constantly adapting to the newest published evidence and recommendations (reducing the use of triple therapies and increasing both the duration of treatment and the dose of PPIs), with a subsequent progressive improvement in overall effectiveness.

Conflict of Interest

O.P. Nyssen: Other; Significant; Mayoly, Allergan/Abbvie, Richen, Juvisé and Biocodex. L. Jonaitis: None. Á. Pérez-Aísa: None. B. Tepes: None. U. Mahmudov: None. I. Voynovan: None. S. J. Martínez-Domínguez: None. L. Bujanda: None. A. J. Lucendo: None. L. Rodrigo: None. J. Kupcinskas: None. L. Hernández: None. G. Babayeva: None. D. S. Bordin: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. F. Mégraud: None. C. O'Morain: None. J.P. Gisbert: Other; Significant; Mayoly, Allergan/Abbvie, Diasorin, Richen, Juvisé and Biocodex.

TABLE 1. PRESCRIPTIONS AND EFFECTIVENESS TRENDS OF FIRST-LINE EMPIRICA! TREATMENTS IN EUROPE IN THE PERIOD 2013-2023.

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Quadruple-C+A+B	2.3%	3.2%	6.2%	18.5%	11.8%	24.8%	10.9%	13.1%	15.1%	14.0%	15.3%
Single-capsule	0.2%	0.2%	0.5%	14.2%	21.0%	16.7%	20.7%	19.2%	18.6%	20.9%	20.4%
Quadruple-M+ Tc+B	1.9%	1.7%	0.4%	0.2%	0.3%	0.6%	1.2%	1.3%	1.2%	3.1%	2.1%
Concomitant-C+A+M/T	19.4%	18.8%	23.9%	19.5%	17.8%	8.6%	11.8%	13.9%	14.6%	13.6%	16.6%
Sequential-C+A+M/T	15.3%	9.1%	6.8%	1.8%	7.6%	7.1%	5.7%	3.5%	3.3%	3.5%	1.4%
Triple-A+L	2.1%	2.1%	2.9%	1.7%	0.6%	0.6%	1.2%	1.2%	1.4%	2.4%	3.4%
Triple-A+M	4.9%	4.3%	3.2%	2.9%	2.8%	0.5%	1.6%	1.0%	1.5%	2.6%	1.6%
Triple-C+M	3.2%	5.5%	7.2%	5.4%	1.2%	0.8%	1.1%	6.2%	3.8%	3.8%	2.9%
Triple-C+A	45.9%	50.3%	41.6%	29.0%	30.3%	30.3%	35.8%	31.9%	32.0%	26.4%	23.1%
Therapy length											
7 days	27.6%	26.0%	22.0%	15.4%	7.2%	2.0%	2.7%	3.2%	2.8%	8.9%	3.6%
10 days	56.8%	55.8%	59.7%	50.0%	53.1%	46.4%	41.0%	38.2%	42.6%	43.7%	35.1%
14 days	15.7%	18.2%	18.3%	34.5%	39.7%	51.6%	56.3%	58.6%	54.6%	47.5%	61.3%
PPI doses**											
Low	64.4%	54.6%	45.6%	39.1%	43.8%	30.9%	34.6%	44.7%	41.5%	33.7%	40.4%
Standard	15.8%	22.9%	24.3%	22.6%	22.7%	37.0%	27.9%	23.5%	26.2%	36.0%	32.3%
High	19.9%	22.5%	30.1%	38.3%	33.5%	32.1%	37.5%	31.7%	32.3%	30.3%	27.3%
Overall effectiveness											
Eradication rate (mlTT)	86.0%	85.9%	86.3%	87.7%	88.2%	90.3%	89.0%	89.6%	90.9%	91.9%	93.9%
Effectiveness depending on geographical region											
East 91.5%	80.5%	85.2%	82.9%	81.4%	91.3%	89.5%	92.0%	92.9%	91.5%	93.1%	
East-Centre	87.4%	84.9%	85.2%	84.7%	86.1%	88.2%	89.6%	93.1%	91.5%	91.7%	95.4%
South-West	84.2%	86.8%	86.0%	89.8%	91.3%	90.6%	88.4%	86.1%	91.0%	93.5%	95.3%
West-Centre	88.7%	92.1%	92.9%	94.3%	89.1%	92.4%	91.4%	89.9%	88.3%	93.8%	92.5%
North	83.8%	84.4%	85.6%	86.5%	86.6%	77.5%	83.0%	82.5%	82.1%	83.7%	81.9%

PPI: proton pump inhibitor; mlTT: modified intention-to-treat; A - amoxicillin; C - clarithromycin; M - metronidazole; T - tinidazole; L - levofloxacin B; - bismuth salts; Te - tetracycline; East - Ukraine, Serbia, Bulgaria, Turkey, Russia , Romania, Albania, North Macedonia; East-Centre - Croatia, Poland, Hungary, Latvia, Lithuania, Greece, Slovenia, Czech Rep, Azerbaijan, Slovakia, Malta; South-West - Portugal, Spain; West-Centre - France, Austria, Belgium, Germany, ltaly; North -United Kingdom, Finland, The Netherlands, lreland, lsrael, Norway, Switzerland, Sweden, Oenmark; •Three-in-one singlecapsule containing metronidazole. tetracycline and bismuth; .. Low dose PPI - 4.5 to 27 mg omeprazole equivalents. b.i.d.; standard dose PPI - 32 to 40 m omeorazole e uivalents. b.i.d.: hioh dose PPI - 54 to 128 m ome razole e uivalents. b.i.d.

P03.12.

EMPIRICAL SECOND-LINE TREATMENTS IN EUROPE: DATA FROM 9,000 CASES FROM THE EUROPEAN REGISTRY ON *HELICOBACTER PYLORI* MANAGEMENT (HP-EUREG)

O.P. NYSSEN[1], *L. JONAITIS*[2], *Á. PÉREZ-AÍSA*[3], *L. RODRIGO*[4], *S.J. MARTÍNEZ-DOMÍNGUEZ*[5], *B. TEPES*[6], *L. VOLOGZANINA*[7], *A. GARRE*[1], *L. BUJANDA*[8], *M. PABÓN-CARRASCO*[9], *M. CASTRO-FERNÁNDEZ*[9], *J. KUPCINSKAS*[2], *L. HERNÁNDEZ*[10], *D.S. BORDIN*[11], *A. CANO-CATALÀ*[12], *P. PARRA*[1], *L. MOREIRA*[13], *F. MÉGRAUD*[14], *C. O'MORAIN*[15], *J.P. GISBERT*[1], *ON BEHALF OF THE HP-EUREG INVESTIGATORS*

[1]Department of Gastroenterology, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa, Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [2]Department of Gastroenterology, Lithuanian University of Health Sciences, Kaunas, Lithuania; [3]Department of Gastroenterology, Hospital Universitario Costa del Sol, Redes de Investigación Cooperativa Orientada a Resultados en Salud (RICORS), Marbella, Spain; [4]Department of Gastroenterology, Universidad de Oviedo, Oviedo, Spain [5]Department of Gastroenterology, Hospital Clínico Universitario Lozano Blesa, Instituto de Investigación Sanitaria de Aragón (IIS Aragón), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Zaragoza, Spain; [6]Department of Gastroenterology, DC Rogaska, Rogaska Slatina, Slovenia; [7]Gastrocentr, Perm, Russian Federation; [8]Department of Gastroenterology, Biodonostia Health Research Institute, Department of Medicine, Universidad del País Vasco (UPV/EHU), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), San Sebastián, Spain; [9]Department of Gastroenterology, Hospital Universitario Virgen de Valme, Seville, Spain [10]Department of Gastroenterology, Hospital Santos Reyes, Aranda de Duero, Spain; [11]A. S. Loginov Moscow Clinical Scientific Center, Tver State Medical University, Russian University of Medicine, Moscow, Russian Federation; [12]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [13]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [14]INSERM U1312, Université de Bordeaux, Bordeaux, France; [15]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: After a first attempt, approximately 10-20% of patients fail to achieve *H. pylori* eradication. The aim of this study was to evaluate the effectiveness of second-line empirical treatment in Europe.
Materials and Methods: A prospective registry of the clinical practice of European gastroenterologists on *H. pylori* management (Hp-EuReg, Hp-WorldReg's partner) systematically registered infected adult patients at AEG-REDCap e-CRF until December 2023. Modified intention-to-treat (mITT) and per-protocol (PP) analyses were performed.
Results: Overall, 8,984 patients were included, and the overall mITT/PP effectiveness was 83% (Table 1). None of the European regions achieved optimal effectiveness. However, in patients receiving optimized therapy (i.e., 14-days and high-dose PPIs), triple regimens containing levofloxacin and bismuth quadruple therapies either with metronidazole-tetracycline or clarithromycin-amoxicillin, as well as quadruple therapy with clarithromycin-amoxicillin-metronidazole, showed optimal effectiveness. Also, 10-day bismuth quadruple therapy as a single capsule achieved over 90% cure rates when prescribed with standard PPI doses. After the failure of first-line clarithromycin-containing therapy, optimal eradication was only obtained with moxifloxacin-containing triple therapy (92%). Quadruple therapy with clarithromycin-amoxicillin-metronidazole and bismuth quadruple therapies either with clarithromycin-amoxicillin, amoxicillin-levofloxacin or the single-capsule provided encouraging results (>85%).
Conclusions: Empirical second-line treatment achieves optimal effectiveness with bismuth quadruple therapy as a single capsule when prescribed standard doses of PPIs and when regimens including triple therapy with levofloxacin, quadruple therapy with clarithromycin-amoxicillin-metronidazole, and bismuth quadruple therapies with metronidazole-tetracycline or clarithromycin-amoxicillin are prescribed in optimized conditions. Many other second-line treatments evaluated achieved low eradication rates.

TABLE 1. SECOND-LINE EMPIRICAL TREATMENT PRESCRIPTIONS AND EFFECTIVENESS BY TREATMENT SCHEME AND GEOGRAPHICAL REGION.

Treatment	N	Use (%)	mITT, N (%)	(95% CI)	PP, N (%)	(95% CI)
Triple-A+L	2,212	25.5	1,959 (81)**	(79-83)	1,936 (81)	(79-83)
Single-capsule*	1,783	20.6	1,659 (88)**	(86-89)	1,621 (89)	(87-90)
Quadruple-A+L+B	1,170	13.5	929 (85)	(83-87)	910 (85)	(83-88)
Quadruple-C+A+M	560	6.5	534 (85)**	(82-88)	523 (85)	(82-89)
Triple-C+A	525	6.1	424 (79)**	(75-83)	416 (79)	(75-83)
Quadruple-M+ Tc+B	451	5.2	405 (83)**	(79-87)	386 (85)	(81-88)
Quadruple-C+A+B	370	4.3	251 (89)**	(85-93)	240 (90)	(86-94)
Triple-A+M	225	2.6	198 (62)	(55-69)	195 (63)	(56-70)
Triple-A+R	212	2.4	189 (83)	(77-88)	187 (83)	(77-89)
Triple-A+Mx	153	1.8	147 (92)	(87-97)	147 (92)	(87-97)
Other	1,013	11.5	NA	NA	NA	NA
Overall	8,674	100	7,563 (83)	(82-84)	7,410 (83)	(83-84)
Overall (optimized conditions)	2,005	23.1	1,747 (89)	(87-90)	1,709 (89)	(88-91)
East	1,425	15.9	1,159 (84)	(82-86)	1,121 (84)	(82-87)
East-Centre	1,625	18.1	1,160 (84)	(82-86)	1,147 (84)	(82-87)
South-West	4,190	46.7	3,973 (83)	(82-85)	3,895 (84)	(83-85)
West-Centre	1,103	12.3	979 (84)	(82-87)	962 (85)	(82-87)
North	631	7.0	547 (72)	(68-76)	530 (73)	(69-77)
Total	8,974	100	7,803 (83)	(82-84)	7,641 (83)	(83-84)

95% Cl -confidence interval; mITT: modified intentjon-to-treat; PP: per-protocol, N: total number of patients analysed; C - clarithromycin; rv1- metronidazole; A- amoxicillin; L - levofloxacin; B - bismuth salts; Te - tetracycline; R - rifabutin; Mx - moxifloxacin; Other - Other second-line empirica I treatments with less than 150 patients treated in each category; East - Ukraine, Serbia, Bulgaria, Turkey, Russia, Romania, AJbania, North Macedonia; East-Centre - Croatia, Poland, Hungary, Latvia, Lithuania, Greece, Slovenia, Czech Rep, Azerbaijan, Slovakja, Malta; South-West- Portugal, Spain; West-Centre - France, Austria, Belgium, Germany, ltaly; North - United Kjngdom, Finland, The Netherlands, lreland, lsrael, Norway, Switzerland, Sweden, Denmark; *three-in-one single-capsule containing metronidazole tetracycline and bismuth; **achieved aver 90% effectiveness when optimised (high-dose PPIs and 14- days length in all schemes but the single-capsule optimised with standard-dose PPIs).

Conflict of Interest

O.P. Nyssen: Other; Significant; Mayoly, Allergan/Abbvie, Richen, Juvisé and Biocodex. L. Jonaitis: None. Á. Pérez-Aísa: None. L. Rodrigo: None. S. J. Martínez-Domínguez: None. B. Tepes: None. L. Vologzanina: None. A. Garre: None. L. Bujanda: None. M. Pabón-Carrasco: None. M. Castro-Fernández: None. J. Kupcinskas: None. L. Hernández: None. D. S. Bordin: None. A. Cano-Català: None. L. Moreira: None. F. Mégraud: None. C. O'Morain: None. J.P. Gisbert: Other; Significant; Mayoly, Allergan/Abbvie, Diasorin, Richen, Juvisé and Biocodex. P. Parra: None.

POSTER SESSION 04: HELICOBACTER 04

P04.01.

EFFECTIVENESS AND SAFETY OF 1ST LINE ANTI-*H. PYLORI* THERAPY IN UKRAINE (ACCORDING TO HP-EUREG DATA)

O. GRIDNYEV[1], *G. FADIEIENKO*[1], *O. SVETS*[2], *O.P. NISSEN*[3], *P. PARRA*[3], *A. CANO-CATALA*[4], *L. MOREIRA*[5], *F. MÉGRAUD*[6], *C. O'MORAIN*[7], *J.P. GISBERT*[3]

[1]Government Institution "L.T. Malaya Therapy National Institute of the National Academy of Medical Sciences of Ukraine", Kharkiv, Ukraine; [2]Association of Dietologist of Ukraine, Kyev, Ukraine; [3]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [4]GOES Research Group, Althaia, Xarxa Assistencial Universitària de Manresa, Manresa, Spain; [5]Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), IDIBAPS (Institut d'Investigacions Biomèdiques August Pi i Sunyer), University of Barcelona, Barcelona, Spain; [6]INSERM U1312, Université de Bordeaux, Bordeaux, France; [7]Trinity College Dublin, Dublin, Ireland

Objective: Little is known about the best clinical strategy for managing *H. pylori* infection in Ukraine; therefore, our aim was to evaluate the effectiveness and safety of first-line empirical treatment between 2013 and 2023.

Materials and Methods: The results were obtained within the framework of a sub-study of the international multicenter prospective non-interventional European Registry on *H. pylori* management (Hp-EuReg). *H. pylori*-infected adult treatment-naïve patients were collected at e-CRF AEGReDCap platform and were evaluated. Effectiveness analysis was performed using a modified intention-to-treat analysis.

Results: In total, 1,007 patients were analyzed. Overall, 1st line therapy effectiveness was 95%. Quadruple therapy with clarithromycin, amoxicillin, and bismuth (in 64% of patients) and triple therapy with clarithromycin and amoxicillin (in 26% of patients) were used most often as first-line empirical therapies, achieving both optimal effectiveness of 97% and 90%, respectively. Decreased eradication rates were associated with the use of low doses of proton pump inhibitors (PPI) and the duration of treatment of 7 days. The incidence of at least one adverse event was observed in 8.5% of patients. Compliance was reported in 99% of cases.

Conclusions: In Ukraine, first-line empirical therapy effectiveness is optimal, and most frequently prescribed regimens have a good safety profile. Higher PPI doses and longer treatment durations should be prescribed to achieve better cure rates.

Conflict of Interest

O. Gridnyev: None. G. Fadieienko: None. O. Svets: None. O.P. Nissen: None. P. Parra: None. A. Cano-Catala: None. L. Moreira: None. F. Mégraud: None. C. O'Morain: None. J.P. Gisbert: None.

P04.02.

HELICOBACTER PYLORI FIRST-LINE EMPIRICAL THERAPY EFFECTIVENESS AND ITS RELATIONSHIP WITH ANTIBIOTIC CONSUMPTION IN THE COMMUNITY: DATA FROM THE EUROPEAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-EUREG)

O.P. Nyssen[1], G. J. Ortega[2], L. Jonaitis[3], Á. Pérez-Aísa[4], B. Tepes[5], U. Mahmudov[6], I. Voynovan[7], S.J. Martínez-Domínguez[8], L. Bujanda[9], A. J. Lucendo[10], J. Kupcinskas[3], L. Hernández[11], G. Babayeva[12], D.S. Bordin[13], A. Cano-Català[14], P. Parra[1], L. Moreira[15], F. Mégraud[16], C. O'Morain[17], J.P. Gisbert[1], on behalf of the Hp-EuReg investigators

[1]Department of Gastroenterology, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa, Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [2]Unidad de Análisis de Datos, Hospital Universitario de la Princesa, CONICET, Universidad Nacional de Quilmes – Argentina, Madrid, Spain; [3]Department of Gastroenterology, Lithuanian University of Health Sciences, Kaunas, Lithuania [4]Department of Gastroenterology, Hospital Universitario Costa del Sol, Redes de Investigación Cooperativa Orientada a Resultados en Salud (RICORS), Marbella, Spain; [5]Department of Gastroenterology, DC Rogaska, Rogaska Slatina, Slovenia; [6]Modern Hospital, Baku, Azerbaijan; [7]A.S. Loginov Moscow Clinical Scientific Center, Moscow, Russian Federation; [8]Department of Gastroenterology, Hospital Clínico Universitario Lozano Blesa, Instituto de Investigación Sanitaria de Aragón (IIS Aragón), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Zaragoza, Spain; [9]Department of Gastroenterology, Biodonostia Health Research Institute, Department of Medicine, Universidad del País Vasco (UPV/EHU), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), San Sebastián, Spain; [10]Department of Gastroenterology, Hospital General de Tomelloso, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Tomelloso, Spain 11Department of Gastroenterology, Hospital Santos Reyes, Aranda de Duero, Spain; [12]Department of Therapy, Azerbaijan State Advanced Training Institute for Doctors named by A. Aliyev, Baku, Azerbaijan, [13]A.S. Loginov Moscow Clinical Scientific Center, Tver State Medical University, Russian University of Medicine, Moscow, Russian Federation; [14]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [15]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [16]INSERM U1312, Université de Bordeaux, Bordeaux, France; [17]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: The link between the misuse of global antibiotic consumption and increased antimicrobial resistance is well documented. Our aim was to explore the relationship between the consumption of macrolides in the population as a factor influencing the effectiveness of *H. pylori* clarithromycin-containing regimens.

Materials and Methods: Multivariate logistic regression used the modified intention-to-treat (mITT) effectiveness as the outcome and the following main effects: first-line treatment (10 most frequent therapies), treatment duration (7/10/14-days), PPIs dose (low/standard/high as 20/40/80 mg omeprazole equivalent/b.i.d.), compliance (>90% drug intake), and clarithromycin consumption (daily-dose/1,000 inhabitants). Macrolide community consumption data was taken from the European Surveillance of Antimicrobial Consumption Network (ESAC-Net). Hierarchical nested models were constructed by adding macrolide consumption, matching by year and country with the corresponding therapy, and the interaction between consumption and treatment scheme, taken from the European Registry on *Helicobacter pylori* management (Hp-EuReg).

Results: 28,590 treatment-naïve patients from 24 European countries, on which data of macrolides consumption in 2013-2022 was available, were evaluated through three nested models: (A) with the main effects without macrolides consumption, (B) with the main effects including macrolides consumption, and (C) including both macrolides consumption and interactions between this main effect.

Model B (without interactions) showed a global decrease in mITT effectiveness [OR: 0.95 (0.91-0.99)]. Model C (with interactions) showed a significant decrease in the mITT effectiveness in triple-clarithromycin-metronidazole [OR: 0.37 (0.25-0.53)], triple-clarithromycin-amoxicillin [OR: 0.60 (0.43-0.82)], and sequential-clarithromycin-amoxicillin-metronidazole/tinidazole [OR: 0.60 (0.43-0.84)]; whereas bismuth quadruple therapy (single capsule) remained unaffected (Table 1).

Conclusions: In Europe, an inverse association between clarithromycin consumption and empirical first-line therapy's overall effectiveness was observed.

TABLE 1. MULTIVARIATE LOGISTIC REGRESSION (MODEL C) EVALUATING THE INTERACTION BETWEEN CLARITHROMYCIN CONSUMPTION AND FIRST-LINE EMPIRICAL TREATMENT EFFECTIVENESS (BY MODIFIED INTENTION-TO-TREAT) IN EUROPE BETWEEN 2013 AND 2022.

	OR	95%CI	*p*-value
Intercept	0.42	0.15-1.22	0.17
Compliance (>90% of drug intake)	7.41	6.30-8.71	1.01e-92
10 days prescriptions	0.92	0.92-1.04	0.25
14 days prescriptions	1.06	0.94-1.21	0.43
Standard-dose PPI *	1.58	1.44-1.74	1.08e-15
High-dose PPI*	1.79	1.65-1.95	7.23e-31
Triple-PPI+C+A	2.32	0.80-6.34	0.18
Triple-PPI+C+M	3.95	1.25-11.93	0.04
Triple-PPI+A+M	1.90	0.64-5.43	0.32
Triple-PPI+A+L	1.29	0.36-4.40	0.74
Conco-PPI+C+A+T/M	1.97	0.68-5.42	0.28
Seq-PPI+C+A+T/M	4.71	1.55-13.66	0.02
Quadruple-PPI+C+A+ 1B	0.99	0.21-4.88	0.99
Quadruple-PPI+single capsule**	2.32	0.76-6.69	0.20
Other	1.45	0.47-4.22	0.58
C cons	1.42	1.04-1.96	0.07
Triple-PPI+C+A: C cons	0.60	0.43-0.82	0.01
Triple-PPI+C+M: C cons	0.37	0.25-0.53	1.58e-05
Triple-PPI+A+M: C cons	0.71	0.49-1.01	0.11
Triple-PPI+A+L: C cons	0.76	0.51-1.12	0.24
Conco-PPI+C+A+T/M: C cons	0.76	0.54-1.04	0.15
Seq-PPI+C+A+T/M: C cons	0.60	0.43-0.84	0.01
Quadruple-PPI+C+A+ 1B:C cons	0.89	0.52-1.48	0.72
Quadruple.PPI 1+Single capsule**: C cons	0.86	0.60-1.20	0.46
Other: C cons	0.72	0.51-1.00	0.10

OR: odds ratio; Cl: confidence interval; *low dose PPI – 4.5 to 27 mg omeprazole equivalents. b.i.d.; standard dose PPI – 32 to 40 mg omeprazole equivalents. b.i.d.: high dose PPI – 54 to 128 mg omeprazole equivalents. b.i.d.: A: amoxicillin: B: bismuth; C: clarithromycin: L: levofloxacin: M: metronidazole; T: tetracycline. **Three-in-one single-capsule containing metronidazole tetracyclinea and bismuth; C cons: clarithromycinc consumption.

Conflict of Interest

O.P. Nyssen: Other; Significant; Mayoly, Allergan/Abbvie, Richen, Juvisé and Biocodex. G.J. Ortega: None. L. Jonaitis: None. Á. Pérez-Aísa: None. B. Tepes: None. U. Mahmudov: None. I. Voynovan: None. S. J. Martínez-Domínguez: None. L. Bujanda: None. A. J. Lucendo: None. J. Kupcinskas: None. L. Hernández: None. G. Babayeva: None. D. S. Bordin: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. F. Mégraud: None. C. O'Morain: None. J.P. Gisbert: Other; Significant; Mayoly, Allergan/Abbvie, Diasorin, Richen, Juvisé and Biocodex.

P04.03.

EXPERIENCE WITH SINGLE-CAPSULE BISMUTH QUADRUPLE THERAPY IN 11,000 PATIENTS FROM THE EUROPEAN REGISTRY ON *HELICOBACTER PYLORI* MANAGEMENT (HP-EUREG)

O.P. NYSSEN[1], *Á. PÉREZ-AÍSA*[2], *L. RODRIGO*[3], *S.J. MARTÍNEZ-DOMÍNGUEZ*[4], *A.J. LUCENDO*[5], *J. TEJEDOR-TEJADA*[6], *B. GÓMEZ RODRÍGUEZ*[7], *Ó. NÚÑEZ*[8], *M. PERONA*[9], *A. MORENO LORO*[10], *J.M. HUGUET*[11], *M. ROMANO*[12], *A. GASBARRINI*[13], *L. HERNÁNDEZ*[14], *A. CANO-CATALÀ*[15], *P. PARRA*[1], *L. MOREIRA*[16], *F. MÉGRAUD*[17], *C. O'MORAIN*[18], *J.P. GISBERT*[1], *ON BEHALF OF THE HP-EUREG INVESTIGATORS*

[1]Department of Gastroenterology, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa, Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [2]Department of Gastroenterology, Hospital Universitario Costa del Sol, Redes de Investigación Cooperativa Orientada a Resultados en Salud (RICORS), Marbella, Spain; [3]Department of Gastroenterology, Universidad de Oviedo, Oviedo, Spain; [4]Department of Gastroenterology, Hospital Clínico Universitario Lozano Blesa, Instituto de Investigación Sanitaria de Aragón (IIS Aragón), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Zaragoza, Spain; [5]Department of Gastroenterology, Hospital General de Tomelloso, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Tomelloso, Spain; [6]Department of Gastroenterology, Hospital Universitario de Cabueñes, Gijón, Spain; [7]Department of Gastroenterology, Hospital Universitario Virgen Macarena, Seville, Spain; [8]Department of Gastroenterology, Hospital Universitario Sanitas La Moraleja, Madrid, Spain; [9]Department of Gastroenterology, Hospital Quirón Marbella, Marbella, Spain; [10]Department of Gastroenterology, Hospital Universitario Virgen del Rocío, Seville, Spain; [11]Department of Gastroenterology, Hospital General Universitario de Valencia, Valencia, Spain; [12]Department of Gastroenterology and Endoscopy, Department of Precision Medicine, Università Vanvitelli, Napoli, Italy; [13]Department of Internal Medicine and Gastroenterology, Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome, Italy; [14]Department of Gastroenterology, Hospital Santos Reyes, Aranda de Duero, Spain; [15]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [16]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [17]INSERM U1312, Université de Bordeaux, Bordeaux, France; [18]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: There has been a resurgence in the use of bismuth quadruple therapy [proton pump inhibitors (PPI), bismuth, tetracycline, and metronidazole] in Europe with the commercialization of a three-in-one single-capsule formulation, but the evidence is still limited. Therefore, the aim of this study was to evaluate the effectiveness and safety of the three-in-one single-capsule in the European Registry on *Helicobacter pylori* Management (Hp-EuReg).

Materials and Methods: Multicenter, prospective registry (Hp-EuReg, Hp-WorldReg's partner) evaluating infected adult patients treated with 10-day single-capsule according to data sheet (3 capsules/6 h) or alternative three times a day (4 capsules/8 h) prescriptions and registered at AEG-REDCap e-CRF until December 2023. Modified intention-to-treat (mITT) and per-protocol (PP) analyses were performed.

Results: Overall, 11,130 (16%) received single-capsule bismuth quadruple therapy, achieving a high eradication rate based on the mITT (92%) and PP (93%) analyses, especially in first-line treatment (94%), but it also had high effectiveness as rescue therapy, both in second-line (88%) or subsequent lines of therapy (3rd-6th lines: 84%) (Table 1). Compliance was reported in 97% of cases and was the factor most closely associated with the effectiveness. Adverse events (26%) were generally mild-transient; only 0.1% of patients reported serious adverse events, leading to the discontinuation of treatment in 1.7% of patients.

Conclusions: The 10-day treatment with single-capsule bismuth-quadruple therapy achieved *H. pylori* eradication in approximately 90% of patients by mITT in real-world clinical practice, both as a first-line and rescue treatment, with a favorable safety profile.

TABLE 1. THREE-IN-ONE SINGLE-CAPSULE EFFECTIVENESS IN FIRST-LINE AND CONSECUTIVE RESCUE TREATMENT LINES.

	Use, N (%)	mITT, N (%)	95%CI	PP, N (%)	95%CI
Overall	11,130 (16*)	10,441 (92)	(91-93)	10,248 (93)	(92-93)
1st line (naive)	8,551 (77)	8,041 (94)	(93-94)	7,909 (94)	(94-95)
2nd line	1,783 (16)	1,659 (88)**	(86-89)	1,621 (89)	(87-90)
3rd to 6th line	796 (7.2)	741 (84)	(81-87)	718 (85)	(83-88)

*Of the total of treatments included in the Hp-EuReg up to December 2023 (i.e., N = 70,683); **achieved over 90% effectiveness when therapy was optimised (i.e., using standard-dose PPIs, that is 40 mg omeprazole equivalent twice a day); mITT: modified intention-to-treat; PP: per-protocol, N: total number of patients analysed, 95% CI – confidence interval.

Conflict of Interest

O.P. Nyssen: Other; Significant; Mayoly, Allergan/Abbvie, Richen, Juvisé and Biocodex. Á. Pérez-Aísa: None. L. Rodrigo: None. S.J. Martínez-Domínguez: None. A.J. Lucendo: None. J. Tejedor-Tejada: None. B. Gómez Rodríguez: None. Ó. Núñez: None. M. Perona: None. A. Moreno Loro: None. J.M. Huguet: None. M. Romano: None. A. Gasbarrini: None. L. Hernández: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. F. Mégraud: None. C. O'Morain: None. J.P. Gisbert: Other; Significant; Mayoly, Allergan/Abbvie, Diasorin, Richen, Juvisé and Biocodex.

P04.04.

EFFECTIVENESS OF SINGLE-CAPSULE BISMUTH QUADRUPLE RE-TREATMENT AFTER PREVIOUS FAILURE WITH THE SAME THERAPY: RESULTS FROM THE EUROPEAN REGISTRY ON *HELICOBACTER PYLORI* MANAGEMENT (HP-EUREG)

O.P. NYSSEN[1], *M. PABÓN-CARRASCO*[2], *M. CASTRO-FERNÁNDEZ*[2], *S.J. MARTÍNEZ-DOMÍNGUEZ*[3], *A. KECO-HUERGA*[2], *A.J. LUCENDO*[4], *E. IYO*[5], *G. KAMTOH*[6], *T. MATYSIAK-BUDNIK*[7], *I. ORTIZ-POLO*[8], *L. RODRIGO*[9], *B. GÓMEZ RODRÍGUEZ*[10], *L. HERNÁNDEZ*[11], *W. MARLICZ*[12], *A. CANO-CATALÀ*[13], *P. PARRA*[1], *L. MOREIRA*[14], *F. MÉGRAUD*[15], *C. O'MORAIN*[16], *J.P. GISBERT*[1], *ON BEHALF OF THE HP-EUREG INVESTIGATORS*

[1]Department of Gastroenterology, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa, Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [2]Department of Gastroenterology, Hospital Universitario Virgen de Valme, Seville, Spain; [3]Department of Gastroenterology, Hospital Clínico Universitario Lozano Blesa, Instituto de Investigación Sanitaria de Aragón (IIS Aragón), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Zaragoza, Spain; [4]Department of Gastroenterology, Hospital General de Tomelloso, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Tomelloso, Spain; [5]Department of Gastroenterology, Hospital Comarcal de Inca, Inca, Spain; [6]Hepatic Medical, Private Medical Center, Krakow, Poland; [7]Hepato-Gastroenterology and Digestive Oncology Unit, University Hospital of Nantes, Nantes, France; [8]Department of Gastroenterology, Hospital Universitario y Politécnico la Fe, Valencia, Spain; [9]Department of Gastroenterology, Universidad de Oviedo, Oviedo, Spain; [10]Department of Gastroenterology, Hospital Universitario Virgen Macarena, Seville, Spain; [11]Department of Gastroenterology, Hospital Santos Reyes, Aranda de Duero, Spain; [12]Department of Gastroenterology, Pomeranian Medical University in Szczecin, The Centre for Digestive Diseases, Endoklinika, Szczecin, Poland; [13]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [14]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [15]INSERM U1312, Université de Bordeaux, Bordeaux, France; [16]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: *H. pylori* treatment effectiveness decreases with eradication failures, but bismuth quadruple therapy with the single capsule has shown optimal results even in patients receiving rescue therapy or in those with bacterial-resistant strains. Our aim was to evaluate the use and effectiveness of single-capsule bismuth quadruple therapy when empirically prescribed as retreatment after one or multiple previous failures with the same treatment.
Patients and Methods*:* Patients registered at e-CRF AEG-REDCap within the European Registry on *H. pylori* management (Hp-EuReg) in 2013-2023 who had received single-capsule therapy in at least two different treatment lines (not necessarily consecutive) were analyzed.
Results: Among 2,579 patients treated with the single-capsule from 2nd to 6th rescue treatment line, 101 received the same single capsule therapy in at least two different lines: 67 re-treatments in 2nd line having previously failed in 1st line with the single-capsule; 16 same therapy re-treatments in 3rd line; 11 in 4th line; 4 in 5th line; and further 3 in 6th line (Table 1). The effectiveness of bismuth quadruple therapy as a single capsule when empirically prescribed repeatedly in the 2nd line was over 90%, and almost 80% was achieved in all cases retreated in the 3rd line.
Conclusions: Empirical administration of bismuth quadruple therapy as single-capsule in 2nd line retreatment after previous failure achieves optimal effectiveness (>90%). This indicates its potential as a reliable treatment option even after multiple treatment failures of the same regimen.

TABLE 1. USE OF BISMUTH QUADRUPLE RESCUE THERAPY AS SINGLE-CAPSULE WHEN PRESCRIBED EMPIRICALLY AFTER PREVIOUS FAILURE(S) WITH THE SAME THERAPY.

Previous failed line, N	2nd line	3rd line	4th line	5th line	6th line
1st line	67	4	3	0	0
2nd line	0	12	5	1	1
3rd line	0	0	3	1	0
4th line	0	0	0	2	2
Total number of cases re-treated	**67**	**16**	**11**	**4**	**3**

Effectiveness by modified intention-to-treat of bismuth quadruple rescue therapy as single-capsule when prescribed empirically after previous failure(s) with the same therapy

Previous failed line, %, (n/N)	2nd line	3rd line	4th line	5th line	6th line
1st line	94% (62/66)	75% (3/4)	100% (2/2)		
2nd line		80% (8/10)	75% (4/4)	100% (1/1)	
3rd line			67% (2/3)	100% (1/1)	
4th line				50% (1/2)	100% (2/2)
Overall	**94% (62/66)**	**79% (11/14)**	**78% (7/9)**	**75% (3/4)**	**100% (2/2)**

N: total number of patients analyzed; n/N: patients with a successful eradication/total number of patients analyzed.

Conflict of Interest

O.P. Nyssen: Other; Significant; Mayoly, Allergan/Abbvie, Richen, Juvisé and Biocodex. M. Pabón-Carrasco: None. M. Castro-Fernández: None. S. J. Martínez-Domínguez: None. A. Keco-Huerga: None. A. J. Lucendo: None. E. Iyo: None. G. Kamtoh: None. T. Matysiak-Budnik: None. I. Ortiz-Polo: None. L. Rodrigo: None. B. Gómez Rodríguez: None. L. Hernández: None. W. Marlicz: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. F. Mégraud: None. C. O'Morain: None. J. P. Gisbert: Other; Significant; Mayoly, Allergan/Abbvie, Diasorin, Richen, Juvisé and Biocodex.

P04.05.

NON-BISMUTH QUADRUPLE CONCOMITANT TREATMENT FOR *HELICOBACTER PYLORI* ERADICATION: SYSTEMATIC REVIEW AND META-ANALYSIS

***P. PARRA**, O.P. NYSSEN, J.P. GISBERT*
Gastroenterology Unit, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-IP), Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain
O.P. Nyssen and J.P. Gisbert contributed equally to the study

Objective: *Helicobacter pylori* eradication with standard triple therapy fails in ≥20% of cases. Non-bismuth quadruple concomitant therapy (proton pump inhibitor, clarithromycin, amoxicillin and nitroimidazole) is among the recommended first-line treatments. Our aim was to evaluate its efficacy and safety and to compare it with other triple and quadruple regimens.
Materials and Methods: PubMed searches were conducted up to April 2024. We performed a meta-analysis of the studies evaluating the concomitant therapy as a first-line regimen, and of the randomized controlled trials comparing concomitant *vs.* standard triple, sequential, hybrid, and bismuth quadruple therapies.
Results: 115 studies (78 RCTs) evaluated 23,454 patients. The concomitant regimen achieved an overall efficacy of 86% (95% CI=85-86%) by intention-to-treat, and 90% (90-91%) by per-protocol, and high efficacy in single clarithromycin (89%) and metronidazole resistance (95%), but lower in dual (clarithromycin and metronidazole) resistance (68%). The overall efficacy with concomitant therapy was significantly higher than with triple therapy [risk difference (RD)=0.11; 95% CI=0.09-0.14; 39 studies] and sequential therapy (RD=0.04; 0.02-0.06; 38 studies); however, in the latter comparison, when only 14-day prescriptions were considered, no significant differences were observed (RD=0.01; -0.05-0.06; 4 studies). Likewise, the overall efficacy of concomitant therapy was similar to hybrid (RD=0.01; -0.01-0.03; 12 studies), and to bismuth quadruple therapy, encompassing the classical form and the single-capsule (RD=0.01; -0.03, 0.06; 11 studies). The overall incidence of adverse events with concomitant therapy was 37% (36-38%; 85 studies).
Conclusions: Non-bismuth quadruple concomitant therapy is highly effective (~90%) for *H. pylori* eradication, even with clarithromycin or metronidazole resistance. It is superior to standard triple and sequential therapies and similar to hybrid and bismuth quadruple regimens. Tolerance is similar to that of triple and bismuth quadruple regimens.

Conflict of interest
P. Parra: None. O. P. Nyssen*: Other; Significant; Mayoly, Allergan/Abbvie, Richen, Juvisé and Biocodex. J. P. Gisbert*: Other; Significant; Mayoly, Allergan/Abbvie, Diasorin, Richen, Juvisé and Biocodex.
**Authors contributed equally*

P04.06.

EMPIRICAL FIRST-LINE PRESCRIPTIONS AND EFFECTIVENESS TRENDS IN AZERBAIJAN IN THE PERIOD 2020-2023: RESULTS FROM THE EUROPEAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-EURREG)

G.H. Babayeva[1,2], U.R. Mahmudov[3], E.E. Mammadov[1,4], F.V. Guliyev[5], E.K. Verdiyev[6], U.R. Machanov[7], R.F. Ibishov[8], H. M. Huseynov[9], Z.S. Zalov[10], S.Y. Ismayilova[11], R.A. Hasanov[1,12], H.I. Ibrahimli[13], A. Cano-Català[14], P. Parra[15], L. Moreira[16], O.P. Nyssen[15], F. Mégraud[17], C. O'Morain[18], J.P. Gisbert[15]
[1]Azerbaijan State Advanced Training Institute for Doctors named after A. Aliyev, Baku, Azerbaijan; [2]Memorial Klinik, Baku, Azerbaijan; [3]Modern Hospital, Baku, Azerbaijan; [4]MediLand Hospital, Baku, Azerbaijan; [5]National Centry of Oncology, Baku, Azerbaijan; [6]Central Hospital, Baku, Azerbaijan; [7]Ganja International Hospital, Ganja, Azerbaijan; [8]Zafaran Hospital, Baku, Azerbaijan; [9]Azerbaijan Medical University, Oncology Clinic, Baku, Azerbaijan; [10]Istanbul NS Klinika, Baku, Azerbaijan; [11]StarLab Medical Center, Baku, Azerbaijan; [12]German Hospital, Baku, Azerbaijan; [13]Azerbaijan State Advanced Training Institute for Doctors named after A.Aliyev, Baku, Azerbaijan; [14]GOES research group, Althaia Xarxa Assistencial Universitària de Manresa, Manresa, Spain; [15]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [16]Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), IDIBAPS (Institut d'Investigacions Biomèdiques August Pi i Sunyer), University of Barcelona, Barcelona, Spain; [17]INSERM U1312, Université de Bordeaux, Bordeaux, France
[18]Trinity College Dublin, Dublin, Ireland

Objective: Modern medicine remains concerned about problems associated with gastric lesions caused by *Helicobacter pylori* and the effective treatment of this pathology.
Patients and Methods: Data were collected at AEG-REDCap from the European Registry on *H. pylori* Management (Hp-EuReg) and quality reviewed from January 2020 to May 2023. All treatment-naïve cases were assessed for effectiveness by modified intention-to-treat (mITT), per-protocol (PP) analyses, and a separate multivariate analysis was performed.
Results: The study included 3,898 patients. Triple therapy with PPI-clarithromycin+amoxicillin was most often prescribed [2,117 patients (54%)]. The treatment length varied from 14 days in 2,132 (56%) cases, 10 days in 1,041 (27%) and 7 days in 650 (17%). Following 14-day therapies provided more than 90% cure rates: PPI-clarithromycin+amoxicillin (94%), PPI-clarithromycin+metronidazole (97%), PPI-clarithromycin+metronidazole+bismuth (96%) and PPI-clarithromycin+amoxicillin+bismuth (98%). Further therapies with standard-dose PPIs were also effective: PPI-amoxicillin+tetracycline (100%) and PPI-clarithromycin+amoxicillin+bismuth (96%); and following with high-dose PPIs: PPI-clarithromycin+amoxicillin (94%), PPI-clarithromycin+metronidazole (97%), PPI-clarithromycin+metronidazole+bismuth (100%) and PPI-clarithromycin+amoxicillin+bismuth (99%) (Table 1). Compliance with treatment was over 90% in the vast majority of the cases. The incidence of at least one adverse event was reported in 12% of cases.
Conclusions: The prescribed *H. pylori* eradication regimens during the period 2020-2023 in Azerbaijan adhered only partially to the Maastricht VI recommendations; however, most of first-line empirical therapies achieved high (more 90%) cure rates, providing a good safety profile.

TABLE 1. FIRST-LINE EMPIRIC TREATMENT REGIMENS, USE OF PPIS OF VARYING ACID-INHIBITORY STRENGTHS, AND MOST COMMON TREATMENT DURATIONS.

	Number of prescriptions and use (%)	mITT, N (%)	PP, N (%)	mITT, N (%) low-dose PPI	mITT, N (%) standard-dose PPI	mITT, N (%) high-dose PPI	7 days	10 days	14 days
Triple- C+A	2,117; 54.3%	1,832 (91.2%)	1,819 (95.2%)	873 (91.2%)	527 (89.3%)	420 (93.8%)	321 15.3%	528 25.2%	1,250 59.6%
Triple-C+M	760; 19.5 %	584 (93.3%)	581 (96.5%)	326 (93.4%)	89 (86.4%)	167 (97.1%)	147 19.5%	223 29.6%	383 50.9%
Quadruple-C+A+B	610; 15.6 %	579 (98%)	574 (99.8%)	219 (98.2%)	187 (96.4%)	178 (99.4%)	3 0.5%	144 25.3%	422 74.2%
Triple-A+L	159; 4.1%	124 (82.1%)	124 (99.2%)	52 (82.5%)	68 (81.9%)	4 (80.0%)	69 43.4%	84 52.8%	6 3.8%
Triple-A+Tc	75; 1.9 %	71 (94.7%)	71 (100.0%)	28 (93.3%)	43 (95.6%)	NA	62 82.7%	13 17.3%	0 0%
Quadruple-C+M+B	44; 1.1 %	40 (95.2%)	40 (100.0%)	26 (100.0%)	6 (75.0%)	8 (100.0%)	0 0.0%	11 29.7%	26 70.3%
Other	133; 100.0%	114 (90.5%)	113 (97.4%)	55 (93.2%)	55 (90.2%)	4 (66.7%)	48 36.6%	38 29.0%	45 34.4%
Total	3,881; 100.0%	3,344 (92.4%)	3,322 (96.6%)	68 (92.5%)	975 (89.9%)	776 (95.4%)	650 17.0%	1,041 27.2%	2,132 55.8%

A- amoxicillin, C- clarithromycin, M- metronidazole, L- levofloxacin, Tc- tetracycline, B- bismuth, mITT- modified intention-to-treat, PP- per-protocol, PPI- proton pump inhibitors. *PPI doses defined as: low-dose, when the potency of acid inhibition was between 4.5 and 27 mg omeprazole equivalents given twice a day; standard-dose, between 32 and 40 mg omeprazole equivalents given twice a day; high-dose, between 54 and 128 mg omeprazole equivalents given twice a day. NA: not available data.

Conflict of Interest

G.H. Babayeva: None. U.R. Mahmudov: None. E.E. Mammadov: None. F.V. Guliyev: None. E.K. Verdiyev: None. U.R. Machanov: None. R.F. Ibishov: None. H.M. Huseynov: None. Z.S. Zalov: None. S.Y. Ismayilova: None. R.A. Hasanov: None. H.I. Ibrahimli: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. O.P. Nyssen: None. F. Mégraud: None. C. O'Morain: None. J.P. Gisbert: None.

P04.07.

HELICOBACTER PYLORI FIRST- AND SECOND-LINE EMPIRICAL PRESCRIPTIONS AND EFFECTIVENESS IN LITHUANIA DURING THE YEARS 2013-2023: ANALYSIS OF THE EUROPEAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-EUREG)

P. JONAITIS[1], *J. KUPCINSKAS*[1], *O.P. NYSSEN*[2], *P. PARRA*[2], *L. MOREIRA*[3], *A. CANO-CATALÀ*[4], *F. MÉGRAUD*[5], *C. O'MORAIN*[6], *J.P. GISBERT*[2], *L.V. JONAITIS*[1]

J.P. Gisbert and L.V. Jonaitis share authorship

[1]Department of Gastroenterology and Institute for Digestive Research, Lithuanian University of Health Sciences, Kaunas, Lithuania; [2]Department of Gastroenterology, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), CIBERehd, Madrid, Spain; [3]Department of Gastroenterology, Hospital Clínic Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBEREHD), IDIBAPS (Institut d'Investigacions Biomèdiques August Pi i Sunyer), University of Barcelona, Barcelona, Spain; [4]GOES Research Group, Althaia Xarxa Assistencial Universitària de Manresa, Manresa, Spain; [5]INSERM U1312, Université de Bordeaux, Bordeaux, France; [6]Faculty of Health Sciences, Trinity College Dublin, Dublin, Ireland

Objective: The prevalence of *H. pylori* in Lithuania remains high (~30-40%). It is important to analyze local practices in *H. pylori* management to achieve better treatment results.

Materials and Methods: Hp-EuReg is an international, prospective, multicenter, non-interventionist Registry by European gastroenterologists on the management of *H. pylori.* Lithuanian data from 2013 to 2023 were analyzed. The effectiveness of the most frequent first- and second-line *H. pylori* eradication prescriptions was evaluated using the modified intention-to-treat (mITT) analysis.
Results: 4,168 patients from Lithuania were included in Hp-EuReg. The overall first-line treatment effectiveness was 88%; the effectiveness of the most frequent first-line treatment prescription (triple therapy with clarithromycin-amoxicillin) increased from 78% in 2013 to 95% in 2023, obtaining optimal (>90%) cure rates during the last 4 years. The overall second-line treatment effectiveness was 91%; the overall effectiveness of the most frequent second-line treatment prescription (triple therapy with amoxicillin-levofloxacin) was 92%. Since 2020, this triple therapy was taken over by bismuth quadruple therapy with amoxicillin-levofloxacin in prescription frequency, which managed to maintain optimal cure rates during the last 6 years. The trends and effectiveness of other most frequent first- and second-line prescriptions are presented in Table 1.
Conclusions: From 2013 to 2023, the main first-line prescription's effectiveness in eradicating *H. pylori* increased, maintaining optimal rates in the last four years. Since 2018, there has been an increase in first- and second-line quadruple therapy prescriptions.

TABLE 1. MOST FREQUENT FIRST- AND SECOND-LINE PRESCRIPTIONS AND THEIR MODIFIED INTENTION-TO TREAT (MITT) EFFECTIVENESS IN LITHUANIA DURING 2013-2023.

	Years period								
	2013-2016			2017-2020			2021-2023		
	Prescription frequency, n (% of top 5)	Test post-treatment, n (follow-up %)	mITT (95% CI)	Prescription frequency, n (% of top 5)	Test post-treatment, n (follow-up %)	mITT (95% CI)	Prescription frequency, n (% of top 5)	Test post-treatment, n (follow-up %)	mITT (95% CI)
FIRST-LINE TREATMENT									
Triple+C+A	662 (97.1%)	301 (45.5%)	84.4% (80-88%)	1477 (89.5%)	553 (37.4%)	85.7% (83-89%)	686 (68.5%)	267 (38.9%)	93.3% (90-96%)
Quadruple +C+A+B	0 (0%)	N/A	N/A	72 (4.4%)	20 (27.8%)	100% (83-100%)	155 (15.5%)	35 (8%)	88.6% (73-97%)
Triple+A+L	2 (0.3%)	1 (50%)	100% (3-100%)	35 (2.1%)	23 (65.7%)	100% (85-100%)	11 (1.1%)	7 (63.6%)	100% (59-100%)
Triple+C+M	18 (2.6%)	7 (46.6%)	100% (59-100%)	39 (2.4%)	14 (95.9%)	92.9% (66-100%)	13 (1.3%)	8 (61.5%)	87.5% (47-100%)
Quadruple +A+M+B	0 (0%)	N/A	N/A	27 (1.6%)	6 (22.2%)	83.3% (36-100%)	137 (13.7%)	7 (5.1%)	100% (59-100%)
SECOND-LINE TREATMENT									
Quadruple +A+L+B	0 (0%)	N/A	N/A	110 (39.4%)	48 (43.6%)	97.9% (89-100%)	167 (65.2%)	40 (24%)	95% (83-99%)
Triple+A+L	57 (79.2%)	24 (42.1%)	87.5% (68-97%)	124 (44.4%)	84 (67.7%)	91.7% (84-97%)	44 (17.8%)	26 (59.1%)	96.2% (80-100%)
Quadruple +A+M+B	0 (0%)	N/A	N/A	21 (7.5%)	7 (33.3%)	71.4% (29-96%)	32 (12.5%)	9 (28.1%)	88.9% (52-100%)
Triple+C+A	15 (20.8%)	8 (53.3%)	100% (63-100%)	13 (4.7%)	9 (69.2%)	100% (66-100%)	9 (3.5%)	5 (55.6%)	100% (48-100%)
Quadruple +C+A+B	0 (0%)	N/A	N/A	11 (3.9%)	4 (36.4%)	100% (40-100%)	11 (4.3%)	6 (54.5%)	83.3% (36-100%)

mITT - modified Intention-to-Treat analysis; C - clarithromycin; A - amoxicillin; B - bismuth; L - levofloxacin; M - metronidazole; 95% CI - 95% confidence interval; N/A - not applicable.

Conflict of Interest

P. Jonaitis: None. J. Kupcinskas: None. O.P. Nyssen: None. P. Parra: None. L. Moreira: None. A. Cano-Català: None. F. Mégraud: None. C. O'Morain: None. J.P. Gisbert*: None. L.V. Jonaitis*: None.
**Both senior authors shared authorship.*

P04.08.

PRESCRIPTIONS AND EFFECTIVENESS OF 3,351 EMPIRICAL RESCUE THERAPIES ON THIRD AND SUBSEQUENT LINES: DATA FROM THE EUROPEAN REGISTRY ON *HELICOBACTER PYLORI* MANAGEMENT (HP-EUREG)

O.P. NYSSEN[1], *M. PAVONI*[2], *A. GARRE*[1], *D. BOLTIN*[3], *Á. PÉREZ-AÍSA*[4], *L. RODRIGO*[5], *L. JONAITIS*[6], *P.S. PHULL*[7], *S.J. MARTÍNEZ-DOMÍNGUEZ*[8], *I.L.P. BEALES*[9], *J. BARRIO*[10], *A. GASBARRINI*[11], *L. HERNÁNDEZ*[12], *J. KUPCINSKAS*[6], *A. CANO-CATALÀ*[13], *P. PARRA*[1], *L. MOREIRA*[14], *F. MÉGRAUD*[15], *C. O'MORAIN*[16], *J.P. GISBERT*[1], *ON BEHALF OF THE HP-EUREG INVESTIGATORS*

[1]Department of Gastroenterology, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa, Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [2]Department of Medical and Surgical Sciences, Sant'Orsola-Malpighi University Hospital, Bologna, Italy; [3]Department of Gastroenterology, Rabin Medical Center, Tel Aviv University, Tel Aviv, Israel; [4]Department of Gastroenterology, Hospital Universitario Costa del Sol, Redes de Investigación Cooperativa Orientada a Resultados en Salud (RICORS), Marbella, Spain; [5]Department of Gastroenterology, Universidad de Oviedo, Oviedo, Spain; [6]Department of Gastroenterology, Lithuanian University of Health Sciences, Kaunas, Lithuania; [7]Department of Digestive Disorders, Aberdeen Royal Infirmary, Aberdeen, United Kingdom; [8]Department of Gastroenterology, Hospital Clínico Universitario Lozano Blesa, Instituto de Investigación Sanitaria de Aragón (IIS Aragón), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Zaragoza, Spain; [9]Norwich Medical School, University of East Anglia, Norwich, United Kingdom; [10]Department of Gastroenterology, Hospital Universitario Río Hortega, Gerencia Regional de Salud de Castilla y León (SACYL), Valladolid, Spain; [11]Department of Internal Medicine and Gastroenterology, Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome, Italy; [12]Department of Gastroenterology, Hospital Santos Reyes, Aranda de Duero, Spain; [13]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) Research Group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [14]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [15]INSERM U1312, Université de Bordeaux, Bordeaux, France; [16]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: *Helicobacter pylori* treatment's effectiveness decreases as treatment eradication attempts fail. The aim of this study was to evaluate the use and effectiveness of empirical rescue therapies on third and subsequent lines in Europe.

Materials and Methods: This is a sub-study of the European Registry on *H. pylori* Management (Hp-EuReg), an international, prospective, registry by European gastroenterologists (Hp-EuReg, Hp-WorldReg's partner), registering infected adult patients at AEG-REDCap e-CRF until December 2023. All cases with three or more eradication attempts were extracted. Only empirically prescribed therapies were analyzed. Data were subject to quality review.

Results: Overall, 3,351 rescue treatments were included: 2,349, 688, 228 and 86 in third-, fourth-, fifth- and sixth-line treatments, respectively. Sixty-eight different regimens were used, being the three-in-one single-capsule bismuth quadruple therapy the most commonly prescribed (Table 1). Overall effectiveness was 73% by modified intention-to-treat (mITT) and 74% by per-protocol (PP) analyses. Bismuth quadruple therapy as single-capsule provided the highest mITT cure rate (84%) and achieved 87% when optimized with high-dose PPIs ($p>0.05$). Quadruple PPI-bismuth-tetracycline-metronidazole achieved optimal eradication rate (91% by mITT) only when high-dose PPIs and 14-day prescriptions were used. The use of doxycycline instead of tetracycline was associated with lower eradication rates in classical bismuth quadruple therapies ($p<0.05$).

Conclusions: Empirical rescue treatments in the third and subsequent lines obtain, in general, suboptimal eradication rates; however, bismuth quadruple therapy as a single-capsule obtained encouraging results. Only the optimized bismuth quadruple therapy achieved ≥90% effectiveness.

TABLE 1. EFFECTIVENESS OF THE MOST FREQUENTLY PRESCRIBED EMPIRICAL THERAPIES ON THIRD AND SUBSEQUENT TREATMENT LINES.

		Modified intention-to-treat		Per-protocol	
Rescue therapy	Use, N (%)	n	Effectiveness, % (95% CI)	n	Effectiveness, % (95% CI)
PPI-Single capsule B-Tc-M	796 (25%)	741	84 (81-87)	718	85 (83-88)
Triple PPI-A-L	486 (15%)	380	80 (76-84)	374	81 (77-85)
Triple PPI-A-R	363 (11%)	317	70 (65-75)	309	71 (66-76)
Quadruple PPI-A-L-B	275 (8.7%)	246	74 (69-80)	239	75 (70-81)
Quadruple PPI-B-Tc-M	243 (7.7%)	230	68 (62-74)*	222	69 (63-75)
Quadruple PPI-C-A-M	147 (4.7%)	137	65 (57-73)	134	66 (57-74)
Quadruple PPI-B-D-M	120 (3.8%)	116	63 (54-72)	112	63 (54-73)
Triple PPI-C-A	75 (2.4%)	66	59 (46-72)	64	59 (47-72)
Triple PPI-A-M	68 (2.2%)	61	59 (46-72)	59	59 (46-73)
Overall	3,161 (100%)	2,964	73 (71-74)	2,875	74 (72-76)

mITT, modified intention-to-treat; PP, per-protocol; N, total number of patients analysed; 95% CI - confidence interval; PPI, Proton Pump Inhibitor; A, amoxicillin; B, bismuth; C, clarithromycin; D, doxycycline; L, levofloxacin; M, metronidazole; Tc, tetracycline; R, rifabutin; *, achieved over 90% effectiveness when optimised (high-dose PPIs and 14-days length).

Conflict of Interest

O. P. Nyssen: Other; Significant; Mayoly, Allergan/Abbvie, Richen, Juvisé and Biocodex. M. Pavoni: None. A. Garre: None. D. Boltin: None. Á. Pérez-Aísa: None. L. Rodrigo: None. L. Jonaitis: None. P. S. Phull: None. S. J. Martínez-Domínguez: None. I. L. P. Beales: None. J. Barrio: None. A. Gasbarrini: None. L. Hernández: None. J. Kupcinskas: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. F. Mégraud: None. C. O'Morain: None. J. P. Gisbert: Other; Significant; Mayoly, Allergan/Abbvie, Diasorin, Richen, Juvisé and Biocodex.

P04.09.

UPDATING PRIMARY ANTIBIOTIC RESISTANCE IN *H. PYLORI* STRAINS

*I. SARACINO[1], **M. PAVONI**[1], G. FIORINI[2], A. ZULLO[3], D. VAIRA[4,5]*

[1]Department of Medical and Surgical Sciences, University of Bologna, Bologna, Italy; [2]Heart, Chest and Vascular Department, Cardiovascular Medicine Unit, IRCCS Azienda Ospedaliero-Universitaria di Bologna, Bologna, Italy; [3]Gastroenterology and Digestive Endoscopy, Nuovo Regina Margherita Hospital, Rome, Italy; [4]Medical and Surgical Sciences Department, Hypertension and Cardiovascular Risk Research Center, Alma Mater Studiorum University of Bologna, Bologna, Italy; [5]IRCCS Azienda Ospedaliero-Universitaria di Bologna, Cardiovascular Medicine Unit, Heart, Chest and Vascular Dept., IRCCS Azienda Osp, Bologna, Italy

Objective: Bacterial resistance toward the most used antibiotics is increasing in *Helicobacter pylori* strains worldwide. The emergence of multidrug resistance significantly affects the efficacy of standard therapy regimens. Therefore, monitoring for primary antimicrobial resistance is essential for *H. pylori* management in clinical practice.

Materials and Methods: *H. pylori* isolates obtained from patients consecutively observed in a single center were tested for primary resistance by using the E-test method. The minimum inhibitory concentration (MIC) breakpoints to define resistance to clarithromycin, metronidazole, and levofloxacin were, respectively, greater than 0.5 mg/L, 8 mg/L, and 1 mg/L, according to updated EUCAST recommendations. The trend of antibiotic prevalence, either single or combined, during 2020-2023 was assessed.

Results: A total of 789 patients meeting inclusion criteria were diagnosed with *H. pylori* infection, but bacterial strains were overall recovered in 632 (80.1%) cases. At bacterial culture, primary resistance rate was 36.7% for clarithromycin, 32.8% for metronidazole, and 20.4% for levofloxacin, whilst dual clarithromycin-metronidazole resistance rate was detected in 17.4%, and triple resistance in 9%.
Conclusions: Our data found that primary resistance towards both clarithromycin and metronidazole, as well as dual resistance, is substantially stable, whilst the prevalence of levofloxacin resistance seems to be decreasing in our geographic area.

Conflict of Interest
I. Saracino: None. M. Pavoni: None. G. Fiorini: None. A. Zullo: None. D. Vaira: None.

P04.10.

GASTRIC ACID INHIBITION WITH ESOMEPRAZOLE OR PANTOPRAZOLE IN THE SEQUENTIAL THERAPY FOR *H. PYLORI* ERADICATION IN CLINICAL PRACTICE

M. PAVONI[1], *G. FIORINI*[2], *A. ZULLO*[3], *I. SARACINO*[1], *D. VAIRA*[4,2]
[1]Department of Medical and Surgical Sciences, University of Bologna, Bologna, Italy; [2]Heart, Chest and Vascular Department, Cardiovascular Medicine Unit, IRCCS Azienda Ospedaliero-Universitaria di Bologna, Bologna, Italy; [3]Gastroenterology and Digestive Endoscopy Unit, Nuovo Regina Margherita Hospital, Bologna, Italy; [4]Medical and Surgical Sciences Department, Hypertension and Cardiovascular Risk Research Center, Alma Mater Studiorum University of Bologna, Bologna, Italy

Objective: *H. pylori* infection is largely prevalent worldwide, causing both gastroduodenal and extraintestinal diseases. Among the potential factors affecting therapy success, the degree of gastric acid inhibition plays a relevant role, preserving antibiotics activity in the stomach.
Materials and Methods: We tested whether esomeprazole- and pantoprazole-based sequential therapy achieved different cure rates.
Results: Data from 1,336 consecutive patients referred by their own GP to Endoscopic unit of IRCCS Sant'Orsola Hospital, including 727 and 599 patients treated with esomeprazole- and pantoprazole-based regimens, respectively. *H. pylori* was cured in 673 (92.6%; 95% CI: 90.1-94.3) in the esomeprazole arm and in 535 (89.3%; 95% CI: 86.8-91.2) in the pantoprazole (92.6% *vs.* 89.3%, p=0.038). The esomeprazole regimen achieved similar cure rates in patients with strains harboring either clarithromycin (92.9%; p=0.2) or metronidazole (93.3%; p=0.2) single resistance and in those with susceptible strains (95.9%), whilst the eradication rate dropped to 84.7% (p<0.001) when there was dual resistance to clarithromycin and metronidazole. Following the pantoprazole-based therapy, the cure rates achieved in patients with bacterial strains showing either clarithromycin (86.9%; p=0.034) or metronidazole (90.5%; p=0.024) single resistance, as well as with dual resistance (77.4%; p<0.001), were significantly lower than in susceptible strains (93.8%).
Conclusions: Data from this study showed that sequential therapy with full-dose esomeprazole achieves significantly higher *H. pylori* cure rates than the pantoprazole regimen.

Conflict of Interest
M. Pavoni: None. G. Fiorini: None. A. Zullo: None. I. Saracino: None. D. Vaira: None.

P04.11.

FOURTEEN-DAY AMOXICILLIN OR TETRACYCLINE CONTAINING BISMUTH QUADRUPLE THERAPY *VS.* 14-DAY METRONIDAZOLE BASED TRIPLE THERAPY AS A FIRST-LINE TREATMENT FOR CLARITHROMYCIN RESISTANT *HELICOBACTER PYLORI* INFECTION: A MULTICENTER RANDOMIZED CONTROLLED TRIAL

S. JEE[1], *J. MOON*[1], *M. KOH*[2], *C. CHOI*[3], *D. RYU*[3], *S. YU*[1], *S. KIM*[4], *K. JUNG*[4], *B. LEE*[3], *M. LEE*[3], *D. JOO*[3], *J. LEE*[5], *R. CHA*[6], *S. SEOL*[7]
[1]Inje University, Busan, Republic of Korea; [2]DongA University, Busan, Republic of Korea; [3]Busan University, Busan, Republic of Korea; [4]Kosin University, Busan, Republic of Korea; [5]Inje University Haeundae Paik Hospital, Busan, Republic of Korea; [6]Gyeongsang University, Changwon, Republic of Korea; [7]Isam Hospital, Busan, Republic of Korea

Objective: Due to the increase in clarithromycin resistance, the eradication rate of *Helicobacter pylori* is decreasing. Through this study, we compared the success rate of eradication with PAM (PPIs, amoxicillin and metronidazole) regimen and PBMT (PPIs, bismuth, metronidazole and tetracycline) regimen by adding bismuth to PAM regimen.
Patients and Methods*:* This prospective multicenter study compared the eradication rates among B-PAM (bismuth 300 mg four times, rabeprazole 20 mg, amoxicillin 1 g, and clarithromycin 500 mg twice daily), PAM, and PBMT (rabeprazole 20 mg twice, metronidazole 500 mg three times and tetracycline 500 mg with bismuth 300 mg four times daily) regimens for 14 days. From December 2022 to February 2024, a total of 198 patients were enrolled at seven medical institutions in Busan, Ulsan, and Gyeongnam regions of South Korea. To diagnose the presence of clarithromycin resistance, we conducted the DPO-PCR method.
Results: A total of 170 patients were included in the PP analysis. When comparing the eradication rates among the groups, the B-PAM group demonstrated a similar rate of 96.5% compared to the PBMT group (94.6%, p=0.633), while statistically significant differences were observed when compared to the PAM group (75.4%, p=0.001). The B-PAM regimen did not show significant differences in terms of side effects compared to the PAM and PBMT regimens. Additionally, symptoms of nausea and vomiting were less frequent in the B-PAM group compared to the PBMT group (p=0.007).
Conclusions: A B-PAM regimen could be recommended as an initial treatment for *Helicobacter pylori* infections that are resistant to clarithromycin.

Conflict of Interest
S. Jee: None. J. Moon: None. M. Koh: None. C. Choi: None. D. Ryu: None. S. Yu: None. S. Kim: None. K. Jung: None. B. Lee: None. M. Lee: None. D. Joo: None. J. Lee: None. R. Cha: None. S. Seol: None.

P04.12.

THE EFFECTIVENESS OF FIRST- AND SECOND-LINE THERAPY IN THE TREATMENT OF *HELICOBACTER PYLORI* – DATA FROM A GREEK HOSPITAL

A.D. KONTOS*, I. TZIORTZIOTIS, F. PAPAKONSTANTINOU, X. TSAMAKIDIS, D. DIMITROULOPOULOS*
Cancer Hospital "Agios Savvas", Athens, Greece

Objective: In Gastroenterology department of "Agios Savvas", the guidelines of Maastricht VI consensus are followed for the diagnosis and treatment of *Helicobacter pylori* (*H.p*) infection. *H.p* resistance to antibiotics may change over time due to factors related to antibiotic overuse or the microbe itself. For this reason, it is important to monitor antibiotic resistance from time to time and at different countries.
Materials and Methods: The purpose of this study was to evaluate the effectiveness of non-bismuth quadruple/concomitant (1st line in our country until very recently) and levofloxacin-based triple therapy (2nd line) in a sample of the Greek population. Data from 300 patients who received

treatment for *Hp* infection from 01/2022 until 05/2023 were retrospectively reviewed. In these 300 patients, the diagnosis of *Hp* infection was made by histological examination of gastric biopsies, and the effectiveness of the eradication therapy was evaluated using the Urea Breath Test. ***Results:*** Of the 300 patients, 248 (82.67%) successfully eradicated *Hp* with first-line therapy. The remaining 52 (17.33%) patients in whom the first-line therapy failed received second-line therapy, and only 5 (1.67% of the total number of patients) of these 52 patients failed to eradicate the microbe. ***Conclusions:*** In our study, the 1st line treatment did not seem to have the desired result (82.67% success). On the contrary, 2nd line treatment showed good results, and consequently, very few patients needed further examinations. Whether adaptation of different local guidelines regarding the 1st line treatment in our country is needed, remains a matter of debate.

Conflict of Interest
A.D. Kontos: None. I. Tziortziotis: None. F. Papakonstantinou: None. X. Tsamakidis: None. D. Dimitroulopoulos: None.

P04.13.

HELICOBACTER PYLORI INFECTION IN SYMPTOMATIC VIETNAMESE CHILDREN: PREVALENCE, ANTIBIOTIC RESISTANCE, AND TREATMENT IMPLICATIONS

T.C. NGUYEN[1], *D.Q. TRUONG*[1], *H.T. NGUYEN*[2], *A. ROBERT*[3], *P. BONTEMS*[4], *P.N.V. NGUYEN*[2]
[1]City Children's Hospital - Ho Chi Minh City, Ho Chi Minh City, Viet Nam
[2]Pham Ngoc Thach University of Medicine, Ho Chi Minh City, Viet Nam
[3]Université Catholique de Louvain, Brussels, Belgium
[4]Hôpital Universitaire des Enfants Reine Fabiola, Brussels, Belgium

Objective: Vietnam has a high prevalence of *Helicobacter pylori* (*H. pylori)* infection. Antibiotic resistance rates have risen significantly worldwide, affecting the success of eradication therapy. The aim of this study was to investigate the prevalence, antibiotic resistance patterns, and treatment outcomes of *H. pylori* infection in symptomatic children undergoing digestive endoscopy at a tertiary hospital in Ho Chi Minh City, Vietnam.
Patients and Methods*:* A total of 157 pediatric patients referred to digestive endoscopy at the City Children's Hospital were enrolled and performed gastric biopsies for culture, histopathology, rapid urease test, and PCR urease gene. Antibiotic susceptibility testing (AST) of clarithromycin (CLA), metronidazole (MET), amoxicillin (AMO), levofloxacin (LEV), and tetracyclin (TET) were measured using E-test. Diagnosis and treatment were conducted following ESPGHAN guidelines. Eradication status was confirmed by *H. pylori* monoclonal stool antigen test. The study was approved by the Scientific Council of Pham Ngoc Thach University of Medicine (No. 2683/QĐ-TĐHYKPNT) and the Ethics Committee of City Children's Hospital (No. 37/QĐ-BVNĐTP).
Results: The overall infection rate was 78%, with cagA strains prevalent in 75% and ulcers accounting for 21% of cases. AST-guided regimens were prescribed to 53 patients, while empiric therapy was administered to 56 patients. CLA showed the highest resistance rate at 74%, followed by LEV (55%), MET (42%), and AMO (21%), with no resistance to TET. Resistance patterns included mono (15.1%), double (28.3%), triple (24.5%), and quadruple (11.3%) resistance. Heteroresistance was detected in only two patients, both with MET. Eradication rates were 59% for empiric treatment and 63% for tailored therapy.
Conclusions: The alarmingly high antibiotic resistance, emerging heteroresistance, and low eradication rates of *H. pylori* infection highlight the urgent need for alternative treatment strategies and ongoing resistance surveillance to effectively manage the infection in Vietnamese children.

Conflict of Interest
T.C. Nguyen: None. P.N.V. Nguyen: None. D.Q. Truong: None. H.T. Nguyen: None. A. Robert: None. P. Bontems: None.

POSTER SESSION 05: HELICOBACTER 05

P05.01.

GENOMIC ANALYSIS OF SIGNALING PATHWAYS DURING MULTISTEP PROCESSES OF *HELICOBACTER PYLORI*-INDUCED GASTRIC CANCER DEVELOPMENT

S. KIM[1], *M. PARK*[1], *K. JUNG*[1], *J. HEO*[1], *S. SEOL*[2]
[1]Kosin University College of Medicine, Busan, Republic of Korea; [2]Isam Hospital, Busan, Republic of Korea

Objective: *Helicobacter pylori* (*H. pylori*) infection is a key factor causing gastric cancer. We investigated the signaling pathways regulating *H. pylori*-induced gastric cancer development using mRNA expression profiles.
Materials and Methods: The 26 tissue samples from the *H. pylori*-positive or -negative patients were analyzed by QuantSeq 3'mRNA-Seq. The expressions of a total of 25,737 genes were analyzed using ExDEGA 4.0. The number of genes that significantly changed in *H. pylori*-negative patients was higher than in *H. pylori*-positive patients. The similarity of gene expression was clustered by stage, and within it, clustering was performed into *H. pylori*-positive and *H. pylori*-negative groups.
Results: In *H. pylori*-positive patients, signal transduction and positive transcription regulation processes are dominant in the progression from gastritis to adenoma, and cell differentiation is dominant in the progression from adenoma to carcinoma. Dominant pathways in all stages of gastric cancer development were mainly pathways in cancer, cytokine-cytokine receptor interaction, and PI3k-Akt pathway. In these pathways, several genes were identified as key regulators in the multi-stages of *H. pylori*-induced gastric cancer development.
Conclusions: In summary, *H. pylori*-positive gastric cancer and *H pylori*-negative gastric cancer have different molecular mechanisms involved in each stage of gastric cancer development.

Conflict of Interest
S. Kim: None. M. Park: None. K. Jung: None. J. Heo: None. S. Seol: None.

P05.02.

EVALUATION OF THE EFFECTIVENESS AND SAFETY OF *HELICOBACTER PYLORI* EMPIRICAL ERADICATION REGIMENS IN SWITZERLAND: AN INTERIM ANALYSIS WITH DATA FROM THE EUROPEAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-EUREG)

M. DOULBERIS[1], *D. RIVA*[2], *I. LINAS*[3], *O. NYSSEN*[4], *A. CANO-CATALÀ*[5], *L. MOREIRA*[6], *P. PARRA*[4], *T. KUNTZEN*[7], *J. GISBERT*[4]
[1]Gastroklinik, Horgen, Switzerland; [2]Gastrocentro Plus, Lugano, Switzerland; [3]Gastroenterologische Gruppenpraxis Bern, Bern, Switzerland; [4]Servicio de Aparato Digestivo, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas, Madrid, Spain; [5]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Althaia Xarxa Assistencial Universitària de Manresa. Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain, Manresa, Spain; [6]Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), IDIBAPS (Institut d'Investigacions Biomèdiques August Pi i Sunyer), University of Barcelona, Barcelona, Spain; [7]Division of Gastroenterology and Hepatology, Medical University Department, Kantonsspital Aarau, Aarau, Switzerland, Aarau, Switzerland

Objective: Prevalence of *Helicobacter pylori* (*H. pylori*) infection remains high. In Switzerland, there is scarce evidence regarding effectiveness of *H. pylori* eradication treatment.

Materials and Methods: This is a sub-study of the "European Registry on *H. pylori* Management" (Hp-EuReg), which consists of an international, multicenter, prospective non-interventional registry of routine clinical practice. Infected patients were recorded (2013-2023). Swiss data were analyzed for effectiveness on a modified intention-to-treat (mITT) basis.
Results: There were 486 *H. pylori*-positive patients, of whom 428 (88%) were treatment-naïve. Two prescription regimens included >90% of the first-line cases: proton pump inhibitors (PPI)-clarithromycin-amoxicillin (49%) and PPI-single-capsule-bismuth-quadruple with metronidazole-tetracycline-bismuth (42%). The effectiveness analysis evaluated 280 naïve patients with both a post-treatment test and outcome result available. Overall, mITT effectiveness of 1st line empirical therapy was 92%. The lowest effectiveness was reported with PPI-amoxicillin-clarithromycin therapy [28/34 cases, 82% for seven days duration, and 87% overall (126/145)]. The highest effectiveness was reached with the single-capsule bismuth quadruple therapy (97%, 100/103). Regarding proton pump inhibitors (PPI), the group with low-dose (i.e. 20 mg omeprazole equivalent twice daily) PPI yielded an overall eradication success of 91%, whereas for the standard-dose (i.e. omeprazole equivalent 40 mg bid) and high-dose (i.e. omeprazole equivalent 80 mg bid) PPI inhibition raised to 100% and 96%, respectively. Regarding safety, therapy was well tolerated, and serious adverse events were reported in 16 cases (5.7%). Mild adverse effects included dysgeusia (n=1), diarrhea (n=6), nausea (n=6) and dyspepsia (n=3).
Conclusions: This interim analysis of the Swiss population suggests that bismuth quadruple therapy prescribed as single-capsule provides optimal (>90%) effectiveness and, therefore, represents a reliable option as first-line empirical therapy.

Conflict of Interest
M. Doulberis: None. D. Riva: None. I. Linas: None. O. Nyssen: None. A. Cano-Català: None. L. Moreira: None. P. Parra: None. T. Kuntzen: None. J. Gisbert: None.

P05.03.

DISTRIBUTION OF ANTIMICROBIAL MICS FOR *HELICOBACTER PYLORI* STRAINS OVER A SIX-YEAR PERIOD IN KOREAN PATIENTS FROM SEOUL, KOREA

J. KIM[1], *H. JUNG*[2], *J. AHN*[2], *J. NOH*[3], *E. GONG*[4]
[1]Hanyang University College of Medicine, Seoul, Republic of Korea; [2]University of Ulsan College of Medicine, Seoul, Republic of Korea; [3]Hallym University Sacred Heart Hospital, Seoul, Republic of Korea; [4]Hallym University College of Medicine, Seoul, Republic of Korea

Objective: The development of antibiotic resistance emerges as a significant clinical problem in the eradication of *Helicobacter pylori*. Antibiotic resistance patterns appear differently depending on the region, and the cut-off value for determining whether an antibiotic is resistant or susceptible may also be different. Because breakpoints for the antibiotic resistance cut-off value have not yet been established in Korea, we attempted to define the breakpoints by examining the minimum inhibitory concentrations (MICs) of antibiotics for *H. pylori* isolates from adults in Seoul, South Korea, over the past six years.
Materials and Methods: Approximately 5,000 *H. pylori* strains were isolated from patients before antibiotic therapy between January 2017 and December 2023 in Asan Medical Center, Seoul, Korea. The serial two-fold agar dilution method was used to determine MICs of amoxicillin, clarithromycin, metronidazole, tetracycline, levofloxacin, and rifabutin.
Results: The MICs for clarithromycin, levofloxacin, and metronidazole showed a bimodal distribution. Breakpoints between wild and resistance groups appeared at 0.5-1 μg/ml (clarithromycin), 1.0 μg/ml (levofloxacin), and 8.0 μg/ml (metronidazole). In contrast, the MIC distribution of amoxicillin and tetracycline did not show a bimodal distribution. The MICs of rifabutin showed an unimodal distribution, in which MIC values of 98% of isolates were less than 0.008 μg/ml.

Conclusions: Based on these results, it was possible to establish epidemiological reference values for clarithromycin, metronidazole, and levofloxacin for Korean *H. pylori* isolates, but those for amoxicillin, tetracycline, and rifabutin have not been determined. In the future, we will establish clinical MIC breakpoints through the Korean Committee for Antimicrobial Susceptibility Testing (K-CAST) for *H. pylori*.

Conflict of Interest
J. Kim: None. H. Jung: None. J. Ahn: None. J. Noh: None. E. Gong: None.

P05.04.

SCREENING AND ERADICATION OF *HELICOBACTER PYLORI* FOR JUNIOR HIGH SCHOOL STUDENTS IN JAPAN – A NATIONWIDE SURVEY FOR LOCAL GOVERNMENTS ON IMPLEMENTATION STATUS

M. OKUDA[1], *M. KATO*[2], *S. KIKUCHI*[3], *T. KAKIUCHI*[4], *T. LEE*[1], *H. SHIMOMURA*[1], *Y. TAKESHIMA*[1]
[1]Department of Pediatrics, Hyogo Medical University, Nishinomiya, Japan; [2]Public Interest Foundation Hokkaido Cancer Society, Sapporo, Japan; [3]Aichi Medical University, Nagakute, Japan; [4]Department of Pediatrics, Faculty of Medicine, Saga University, Nabeshima, Japan

Objective: *H. pylori* infection is acquired during childhood and leads to atrophic gastritis and gastric cancer. For preventing gastric cancer, eradication should be done before progresses to atrophic gastritis. Taipei global consensus states, "Young individuals (20~40 years old) would benefit most from H. pylori eradication because it cures *H. pylori*-related gastritis and reduces the risk of gastric cancer and transmission to their children". However, some children develop atrophic gastritis, and most of people will be parents in their 20-30s. In addition, *H. pylori* screening performed at schools is most efficient.
Subjects and Methods: We mailed a questionnaire to 1,740 local governments from November 2023 to February 2024 and collected responses. The main survey items were as follows: information on whether junior high school students are being tested for *H. pylori*, testing methods, eradication, etc.
Results: 859 out of 1,740 (49.3%) local governments responded, and 105 (12.2%) answered conducting *H. pylori* screening for students, and the target was 51,788 per year (about 5.2% of the total). As for the primary tests, urine antibody testing was the most common, with 93 local governments, followed by serum antibody testing. The secondary tests were mainly the urea breath test, followed by the stool antigen test. 79 local governments responded that after infection was confirmed, eradication (two kinds of antibiotics and PPI for 7 days) would be provided if students and parents requested it.
Conclusions: In the same survey in 2015, only 18 local governments conducted screening and eradication for students, which are now becoming widespread in Japan.

Conflict of Interest
M. Okuda: None. M. Kato: None. S. Kikuchi: None. T. Kakiuchi: None. T. Lee: None. H. Shimomura: None. Y. Takeshima: None.

P05.05.

THE SECOND IRISH *HELICOBACTER PYLORI* WORKING GROUP CONSENSUS FOR THE DIAGNOSIS AND TREATMENT OF *HELICOBACTER PYLORI* INFECTION IN ADULT PATIENTS IN IRELAND

S.M. SMITH[1], *B. BOYLE*[2], *M. BUCKLEY*[3], *C. COSTIGAN*[1,4], *M. DOYLE*[5], *R. FARRELL*[6,7], *M.S. ISMAIL*[8,9], *D. KEVANS*[1,2], *S. NUGENT*[10], *A. O'CONNOR*[1,4], *C. O'MORAIN*[1], *V. PARIHAR*[11], *C. RYAN*[1], *D. MCNAMARA*[1,4]

[1]Trinity College Dublin, Dublin, Ireland; [2]St. James's Hospital, Dublin, Ireland; [3]Mercy University Hospital, Cork, Ireland; [4]Tallaght University Hospital, Dublin, Ireland; [5]University Hospital Waterford, Waterford, Ireland; [6]Connolly Hospital, Dublin, Ireland; [7]Royal College of Surgeons Ireland, Dublin, Ireland [8]Cavan General Hospital, Cavan, Ireland; [9]Monaghan General Hospital, Monaghan, Ireland; [10]Whitfield Clinic, Waterford, Ireland; [11]Letterkenny University Hospital, Letterkenny, Ireland

Objective: There has been an increase in *Helicobacter pylori* (*H. pylori*) antimicrobial resistance nationally and internationally. Primary clarithromycin resistance and dual clarithromycin and metronidazole resistance are high in Ireland. These trends call for an evaluation of best-practice management strategies. Therefore, the aim of this study was to update the recommendations for the management of *H. pylori* infection in adult patients in the Irish healthcare setting.
Materials and Methods: The Irish *H. pylori* working group (IHPWG) was established in 2016 and reconvened in 2023 to evaluate recent relevant literature on *H. pylori* diagnosis, eradication rates and antimicrobial resistance. The "GRADE" approach was then used to rate the quality of available evidence and grade resulting recommendations.
Results: The IHPWG agreed on 14 consensus statements. Key recommendations include (i) routine antimicrobial susceptibility testing to guide therapy is no longer recommended other than for clarithromycin susceptibility testing for first-line treatment, (ii) clarithromycin triple therapy should only be prescribed as first-line therapy in cases where clarithromycin susceptibility has been confirmed, (iii) bismuth quadruple therapy [proton pump inhibitor (PPI), bismuth, metronidazole, tetracycline] is the recommended first-line therapy if clarithromycin resistance is unknown or confirmed, (iv) bismuth quadruple therapy with a PPI, levofloxacin and amoxicillin is the recommended second-line treatment, and (v) rifabutin amoxicillin triple therapy is the recommend rescue therapy.
Conclusions: These recommendations are intended to provide the most relevant current best-practice guidelines for the management of *H. pylori* infection in adults in Ireland.

Conflict of Interest
S.M. Smith: None. B. Boyle: None. M. Buckley: None. C. Costigan: None. M. Doyle: None. R. Farrell: None. M.S. Ismail: None. D. Kevans: None. S. Nugent: None. A. O'Connor: None. C. O'Morain: None. V. Parihar: None. C. Ryan: None. D. McNamara: None.

P05.06.

PRELIMINARY RESULTS OF THE FOLLOW-UP OF A GISTAR STUDY PARTICIPANT COHORT

D. RAZUKA-EBELA[1], *N. SAPUROVS*[1], *I. POLAKA*[1], *S. PARSHUTIN*[1], *I. EBELA*[2], *E. KONONOVA*[1], *D. SANTARE*[1], *J. PARK*[3], *M. LEJA*[1]

[1]Institute of Clinical and Preventive Medicine, University of Latvia, Riga, Latvia; [2]Faculty of Medicine, University of Latvia, Riga, Latvia; [3]International Agency for Research on Cancer, Lyon, France

Objective: The follow-up of GISTAR study participants in Latvia (multicentric randomized study of *H. pylori* eradication and pepsinogen testing for prevention of gastric cancer mortality) is ongoing within EUROHELICAN.

Patients and Methods: The invited participants were enrolled in GISTAR 4-11 years ago, when baseline data on sociodemographic and lifestyle factors, medical history, and anthropometric measurements were collected. The GISTAR intervention group was tested for *H. pylori*, and those positive were offered eradication therapy. The control group was not tested and received regular healthcare. During follow-up, data on the same characteristics were collected, and a urea breath test (UBT) was performed for those *H. pylori* positive at baseline.
Results: Of 2,501 participants included, 844 (33.7%) refused, and 257 (10.3%) were unreachable. After removing participants with missing data, a total of 1,305 participants were included in the analysis [median age 60 years (IQR 11), 57% female], of whom 691 (53%) were in the intervention group. Of the 687 with updated eradication data, 423 (61.6%) were *H. pylori* positive at baseline. Of these, 63 had refused eradication. For those that had completed ≥90% of treatment, 38/304 (12.5%) were *H. pylori* positive. For those that completed <90%, 7/18 (38.9%) remained *H. pylori* positive.
Conclusions: The project will provide data missing on the possible negative effects of eradication as well as the feasibility of the population-based *H. pylori* test-and-treat approach in Latvia. The study is ongoing, and after a larger number of participants will be included, baseline and follow-up data will be compared.

Funding
The EUROHELICAN project received funding from EU4Health, grant No. 101079944.

Conflict of Interest
D. Razuka-Ebela: None. N. Sapurovs: None. I. Polaka: None. S. Parshutin: None. I. Ebela: None. D. Santare: None. J. Park: None. M. Leja: None. E. Kononova: None.

P05.07.

USE OF SELF-ADMINISTERED RAPID STOOL ANTIGEN TEST FOR MONITORING AFTER *H. PYLORI* ERADICATION THERAPY

***W. LEUNG**, T. YIU*
University of Hong Kong, Hong Kong, China

Objective: The success rate of *H. pylori* eradication therapy has declined progressively due to the emergence of antimicrobial resistance. Hence, there is a mandatory clinical need to document eradication success, which will usually require additional clinic visits. We evaluated the performance of a new patient self-administered stool rapid antigen test after *H. pylori* eradication therapy.
Methods: Consecutive *H. pylori*-infected adult patients who were referred for eradication therapy were included. Patients whose consent was obtained were instructed to perform a rapid stool antigen test (UU Tube by INDICAID, Hong Kong, China), a lateral flow immunoassay, at home 6 weeks after completion of prescribed treatment for *H. pylori*. A urea breath test (UBT) was used as a reference for post-eradication status, and analysis was based on intention-to-treat.
Results: This interim analysis included 36 patients (male 30.6%, mean age 57 years) who had completed eradication therapies (1st line: 21; 2nd line or rescue: 15). Overall, 30 (83.3%) patients had negative post-treatment UBT. The stool antigen test failed in one (2.8%) patient. The concordance rate of UBT and stool test was 94.4%. The sensitivity, specificity, and positive and negative values of the self-administered rapid stool antigen test were 83.3%, 96.7%, 100%, and 96.7%, respectively.
Conclusions: The self-administered rapid stool antigen test is a simple and accurate confirmatory test for *H. pylori* eradication, which could be considered in areas with limited healthcare access or in population test-and-treat programs.

Conflict of Interest
W. Leung: None. T. Yiu: None.

P05.08.

ERADICATION OF *HELICOBACTER PYLORI* INFECTION WITH THE HELP OF AUTO PROBIOTICS

A.S. ILINA[1], E.I. ERMOLENKO[1], N.V. BARYSHNIKOVA[1,2], ***G.G. ALEKHINA***[1]*, A.N. SUVOROV[1]*
[1]Institute of Experimental Medicine, St. Petersburg, Russian Federation; [2]First St. Petersburg State Medical University, St. Petersburg, Russian Federation

Objective: It is known that *Helicobacter pylori* is an etiological factor in the development of gastric pathology. This pathogen can also negatively affect gastrointestinal tract microbiota. The aim of this study was to estimate the efficacy and safety of Indigenous (auto probiotic) enterococci against *H. pylori*.
Materials and Methods: A pure culture of auto probiotic enterococci was obtained from the feces of patients. All obtained strains were checked for the pathogenic properties. Only non-pathogenic *Enterococcus faecium* were prescribed. The effectiveness of auto probiotics in *H. pylori* eradication was evaluated based on the results of the determination of the antigen and genes of the pathogen in feces. A respiratory urease test was also used. Gut microbiota was studied by metagenome analysis.
Results: The data obtained by us on the example of 22 patients infected with *H. pylori* showed that the use of auto probiotic orally 50 ml 2 times a day for 20 days makes it possible to achieve complete relief of dyspepsia in all patients and ensure the eradication efficiency of 80% according to the results of the three methods of determination of *helicobacter* infection. Positive changes in the composition of the intestinal microbiota were also noted, in particular, normalization in the relative abundance of *Pseudomonadota* and *Bacilliota phylums*.
Conclusions: The use of auto probiotics based on Indigenous enterococci in patients infected with *H. pylori* is innovative, safe, systemic, and personalized therapy. Auto probiotics seem promising both for *H. pylori* eradication and for the correction of gastrointestinal tract functions.

Funding
Work was supported by the Ministry of Science and Higher Education of the Russian Federation Grant [No. 075-15-2022-302 (20.04.2022) FSBSI “IEM”].

Conflict of Interest
A.S. Ilina: None. E.I. Ermolenko: None. N.V. Baryshnikova: None. G.G. Alekhina: None. A.N. Suvorov: None.

P05.09.

EFFECTIVENESS OF THE FIRST-LINE ERADICATION THERAPY IN 14 CITIES IN RUSSIA: RESULTS FOR THE PERIOD 2013-2022 OF THE EUROPEAN REGISTRY ON *HELICOBACTER PYLORI* MANAGEMENT (HP-EUREG)

D.S. BORDIN[1,2,3, S.R]*. ABDULKHAKOV[4,5], D.N. ANDREEV[2], I.N. VOYNOVAN[1], I.G. BAKULIN[6], N.V. BAKULINA[6], T.A. ILCHISHINA[7], L.G. VOLOGZHANINA[8], A.S. SARSENBAEVA[9], S.A. ALEKSEENKO[10], N.N. DEKHNICH[11], M.A. LIVZAN[12], V.V. TSUKANOV[13], A. CANO-CATALÀ[14], P. PARRA[15], L. MOREIRA[16], F. MEGRAUD[17], C. O’MORAIN[18], O.P. NYSSEN[15], J.P. GISBERT[15], ON BEHALF OF THE HP-EUREG SCIENTIFIC COMMITTEE AND THE RESEARCHERS*
[1]A.S. Loginov Moscow Clinical Scientific Center, Moscow, Russian Federation; [2]Russian University of Medicine, Moscow, Russian Federation; [3]Tver State Medical University, Tver, Russian Federation; [4]Kazan Federal University, Kazan, Russian Federation; [5]Kazan State Medical University, Kazan, Russian Federation; [6]Mechnikov North-Western State Medical University, Saint Petersburg, Russian Federation; [7]Multidisciplinary Medical Holding “SM-clinic” (Medi Com LLC), Saint Petersburgh, Russian Federation [8]Vagner Perm State Medical University, Perm, Russian Federation; [9]South Ural State Medical University, Chelyabinsk, Russian Federation; [10]Far Eastern State Medical University, Khabarovsk, Russian Federation; [11]Smolensk State Medical University, Smolensk, Russian Federation; [12]Omsk State Medical University, Omsk, Russian Federation; [13]Federal Research Center “Krasnoyarsk Science Center of the Siberian Branch

of the Russian Academy of Sciences, Research Institute for Medical Problems in the North, Krasnoyarsk, Russian Federation; [14]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) Research Group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [15]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [16]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [17]INSERM U1312, Université de Bordeaux, Bordeaux, France, 18School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: Empiric therapy should be guided by local eradication rates in order to optimize treatment success.
The objective of the study was to evaluate the effectiveness of first-line empirical eradication therapy in Russia according to the data of Hp-EuReg collected by e-CRF at the AEGREDCap platform.
Materials and Methods: Effectiveness was assessed by modified intention-to-treat (mITT) analysis. Overall, 8,354 patients from Russia who had received first-line empirical eradication therapy were included.
Results: The most frequently used first-line treatments were triple (PPI, amoxicillin, clarithromycin) and triple plus bismuth therapies, accounting for more than 60% of prescriptions in all cities. Quadruple therapy with PPI, amoxicillin, clarithromycin and bismuth achieved optimal (>90%) mIIT effectiveness in Saint Petersburg, Perm, Chelyabinsk, and Khabarovsk, where it was more frequently used than in the remaining cities. The effectiveness of triple therapy varied from 62% (Novosibirsk) to 99% (Omsk), achieving over 85% across all cities. However, high eradication rates with triple therapy prescriptions were observed in the cities with a small number of patients or in those cases where histology was the unique test used to confirm eradication, possibly giving false negative results. Classic bismuth quadruple therapy (PPI, tetracycline, metronidazole, bismuth) provided optimal (>90%) mITT effectiveness in Moscow and Saint Petersburg (Table 1).
Conclusions: To date, in Russia, bismuth quadruple therapies either with classical metronidazole-tetracycline-bismuth or amoxicillin-clarithromycin-bismuth achieve optimal (>90%) results, providing significantly better rates when prescribed for 14 days.

TABLE 1. EFFECTIVENESS (%) BY MODIFIED INTENTION-TO-TREAT OF MOST COMMON FIRST-LINE EMPIRICAL THERAPY.

Eradication therapy	Moscow	St. Petersburg	Kazan	Perm	Kovrov	Chelyabinsk	Khabarovsk	Rostov-On-Don	Smolensk	Cheboksary	Omsk	Krasnoyarsk	Novosibirsk	Izhevsk	Overall
Triple therapy (PPI+A+C)	83.4%	87%	77.2%	89.2%	76.1%	96.3%	72.6%	88.3%	78%	94%	99.1%	81.7%	62%	100%	83.1%
Quadruple therapy (PPI+M+Tc+ bismuth)	92.1%	91.4%	100%	100%	80%	100%	100%	-	100%	100%	100%	-	-	-	92.9%
Quadruple therapy (PPI+A+C+ bismuth)	88.3%	93.1%	86.4%	95.2%	87.3%	100%	92.4%	100%	86.7%	96.2%	100%	-	71.4%	91.2%	92.7%

PPI – proton pump inhibitor; A – amoxicillin; C – clarithromycin; M – metronidazole; B – bismuth salts; Tc – tetracycline.

Conflict of Interest
D.S. Bordin: None. S.R. Abdulkhakov: None. D.N. Andreev: None. I.N. Voynovan: None. I.G. Bakulin: None. N.V. Bakulina: None. T.A. Ilchishina: None. L.G. Vologzhanina: None. A.S. Sarsenbaeva: None. S.A. Alekseenko: None. N.N. Dekhnich: None. M.A. Livzan: None. V.V. Tsukanov: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. F. Megraud: None. C. O'Morain: None. O.P. Nyssen: None. J.P. Gisbert: None.

P05.10.

THE POTENTIAL USE OF *HELICOBACTER PYLORI* PHAGES - WHAT DO WE KNOW SO FAR?

R. FERREIRA[1,2], M. OLEASTRO[3], J. AZEREDO[1,4], C. FIGUEIREDO[2,5,6], ***L.D. MELO***[1,4]
[1]University of Minho, Braga, Portugal; [2]i3S – Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal; [3]Infectious Diseases Department, National Institute of Health Doutor Ricardo Jorge (INSA), 1649-016, Lisbon, Portugal; [4]LABBELS – Associate Laboratory, Braga, Portugal; [5]IPATIMUP – Instituto de Patologia e Imunologia Molecular, Universidade do Porto, Porto, Portugal; [6]FMUP – Faculdade de Medicina, Universidade do Porto, Porto, Portugal

Objective: Bacteriophages infect bacteria, inducing bacterial lysis in their lytic form by encoding DNA for new viral particles. In the lysogenic cycle, viral DNA integrates into the bacterium's chromosome (prophage), replicating alongside the host. To date, only prophages for *Helicobacter pylori* have been described.
Materials and Methods: In this study, 74 Portuguese clinical strains were analyzed for their prophage content. Then, treatments with different inducing agents were performed to isolate *H. pylori* phages. Induced phages were characterized in terms of morphology, whole-genome analysis, host range, stability, and efficacy.
Results: UV light and Mitomycin C treatments released three phages. Morphological studies classified them as podovirus-like phage family members, with linear dsDNA ranging from 29,705-31,162 bp. No antibiotic-resistance genes were detected. Temperature assays revealed stability between -20 and 37°C, with all phages losing activity at 60°C. The optimal pH range was 7-11, with HPy2R and HPy3RC stable at pH 5. At pH 3, PFU counts decreased. Moreover, when submitted to an *in vitro* gastric digestion model, only a small loss in the phage titer was observed in the gastric phase. All phages demonstrated a narrow host range, but on susceptible hosts, they were proven to inhibit the growth of *H. pylori*. Finally, when subjected to phage treatment, there was a decrease in *H. pylori*-mediated interleukin-8 secretion by a human gastric cell line.
Conclusions: This study provides valuable insights into *H. pylori* prophages, suggesting potential phage use in combating *H. pylori* infections amid antibiotic resistance.

Acknowledgements
FCT: SFRH/BD/146496/2019.

Conflict of Interest
R. Ferreira: None. M. Oleastro: None. J. Azeredo: None. C. Figueiredo: None. L.D. Melo: None.

P05.11.

EFFECTIVENESS OF REBAMIPIDE-CONTAINING FIRST-LINE EMPIRICAL ERADICATION THERAPY IN RUSSIA: RESULTS FROM THE EUROPEAN REGISTRY *ON HELICOBACTER PYLORI* MANAGEMENT (HP-EUREG)

D.S. BORDIN[1,2,3]*, S.R. ABDULKHAKOV*[4,5]*, D.N. ANDREEV*[2]*, I.N. VOYNOVAN*[1]*, I.G. BAKULIN*[6]*, N.V. BAKULINA*[6]*, L.G. VOLOGZHANINA*[7]*, S.A. ALEKSEENKO*[8]*, G.N. TARASOVA*[9]*, M.A. LIVZAN*[10]*, M.F. OSIPENKO*[11]*, O.A. KOLOKOLNIKOVA*[12]*, I.V. MAEV*[2]*, A. CANO-CATALÀ*[13]*, P. PARRA*[14]*, L. MOREIRA*[15]*, F. MEGRAUD*[16]*, C. O'MORAIN*[17]*, O.P. NYSSEN*[14]*, J.P. GISBERT*[14]*, ON BEHALF OF THE HP-EUREG INVESTIGATORS*
[1]A.S. Loginov Moscow Clinical Scientific Center, Moscow, Russian Federation; [2]Russian University of Medicine, Moscow, Russian Federation; [3]Tver State Medical University, Tver, Russian Federation; [4]Kazan Federal University, Kazan, Russian Federation; [5]Kazan State Medical University, Kazan, Russian Federation; [6]Mechnikov North-Western State Medical University, Saint Petersburg, Russian Federation; [7]Vagner Perm State Medical University, Perm, Russian Federation; [8]Far Eastern State Medical University, Khabarovsk, Russian Federation; [9]Rostov State Medical University, Rostov-on-Don, Russian Federation

[10]Omsk State Medical University, Omsk, Russian Federation; [11]Novosibirsk State Medical University, Novosibirsk, Russian Federation; [12]Clinical Hospital №1 MEDSI, Moscow, Russian Federation; [13]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) Research Group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [14]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [15]Department of Gastroenterology, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [16]INSERM U1312, Université de Bordeaux, Bordeaux, France; [17]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: Russian national guidelines recommend rabamipide as a strategy to increase the effectiveness of *H. pylori* eradication therapy.
Materials and Methods: The aim of this study was to evaluate the effectiveness of rebamipide-containing first-line empirical therapy in Russia according to the data of the European Registry on *H. pylori* Management (Hp-EuReg). The effectiveness was evaluated using modified intention-to-treat (mITT) analysis.
Results: The overall mITT eradication rate using different eradication regimens was 90% for those treatments without rebamipide and 96% for rebamipide-containing regimens (p<0.001). In the case of standard- and high-dose PPIs, the overall effectiveness of rebamipide-containing regimens was 95% and 98% as compared to regimens without rebamipide, reporting 90% and 96%, respectively. The effectiveness of standard triple therapy with PPI-clarithromycin-amoxicillin, when prescribed with standard doses of PPI, increased from 77% to 91% when adding rebamipide (p<0.001) and from 99% up to 100% when high-dose PPIs prescriptions were used with the same triple therapy. Significantly (p<0.001) higher effectiveness was reported with the bismuth quadruple therapy with PPI-clarithromycin-amoxicillin-bismuth concomitantly with rebamipide (99%) *vs.* the same therapy without rebamipide (94%) (Table 1). The addition of rebamipide did not influence the overall compliance, which was 99%.
Conclusions: In Russia, effectiveness of first-line empirical triple therapy (PPI+clarithromycin+amoxicillin) is clearly suboptimal; however, when combined with rebamipide, over 90% effectiveness was reported. Also, the addition of rebamipide to bismuth-containing quadruple therapy (PPI+clarithromycin+amoxicillin+bismuth) provided significantly higher effectiveness, not influencing the compliance.

TABLE 1. EFFECTIVENESS (%) BY MODIFIED INTENTION-TO-TREAT OF MOST COMMON FIRST-LINE EMPIRICAL THERAPIES IN 14 CITIES OF RUSSIA IN 2013-2022.

	PPI+C+A		PPI+C+A+B	
PPI potency[1]	With rebamipide	Without rebamipide	With rebamipide	Without rebamipide
Low	12 (85.7%)	108 (77.1%)	37 (97.4%)	197 (92.1%)
Standard	72 (91.1%)	252 (76.8%)	251 (98.8%)	1425 (93.3%)
High	22 (100%)	108 (99.1%)	78 (100%)	368 (97.4%)
Total	106 (93.7%)*	468 (81.2%)*	366 (98.9%)*	1990 (93.9%)*

PPI – proton pump inhibitor; A – amoxicillin; C – clarithromycin; B – bismuth; *significant differences with p-value<0.001 in both therapeutic groups; [1]low dose - 4.5 to 27 mg omeprazole equivalent, twice daily; standard dose - 32 to 40 mg omeprazole equivalent, twice daily; high dose - 54 to 128 mg omeprazole equivalent, twice daily.

Conflict of Interest

D.S. Bordin: None. S.R. Abdulkhakov: None. D.N. Andreev: None. I.N. Voynovan: None. I.G. Bakulin: None. N.V. Bakulina: None. L.G. Vologzhanina: None. S.A. Alekseenko: None. G.N. Tarasova: None. M.A. Livzan: None. M.F. Osipenko: None. O.A. Kolokolnikova: None. I.V. Maev: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. F. Megraud: None. C. O'Morain: None. O.P. Nyssen: None. J.P. Gisbert: None.

P05.12.

THE YAP/TAZ-TEAD PATHWAY CONTROLS CYTOLETHAL DISTENDING TOXIN-INDUCED DNA DAMAGE AND NUCLEAR REMODELING IN INTESTINAL EPITHELIAL CELLS

***L. AZZI-MARTIN**, R. JIA, M. SARAIVA, E. SIFRÉ, P. DUBUS, C. VARON, A. MÉNARD*
Université de Bordeaux, Bordeaux, France

Objective: Humans are frequently exposed to infection with genotoxin-producing bacteria, such as the Cytolethal Distending Toxin (CDT), a prevalent heterotrimeric toxin among Gram-negative bacteria. CDTB subunit causes severe DNA damage in host cells and impairs DNA damage response, leading to genomic instability and accumulation of mutations. The Hippo pathway plays a critical role in the protection of genome stability in response to DNA damage. In the present study, we investigated the effect of the CDT of *Helicobacter hepaticus* on the Hippo and YAP/TAZ-TEAD signaling pathway.
Materials and Methods: *In vitro* experiments were performed on human intestinal and hepatic epithelial cell lines. Microarray data and western-blot analyses showed a CDTB-dependent regulation of the transcripts and proteins of the Hippo pathway, such as MST1/2 and LATS1/2 kinases, and their transcriptional coactivators, YAP and TAZ.
Results: Infection of epithelial cells with CDT-producing bacteria is associated with increased transcriptional activity of the TEAD transcription factors, the final nuclear effectors of the Hippo pathway. This effect was attributed to the CDTB subunit following its ectopic expression. Verteporfin, an inhibitor of the YAP/TAZ interaction with TEADs, reduced the CDTB-induced effects, i.e., increased TEAD transcriptional activity, nuclear remodeling, polyploidy, DNA damage, and repair. On the contrary, XMU-MP-1, an inhibitor of MST1/2, exacerbated the CDTB-induced effects, confirming the involvement of the Hippo signaling pathway in CDTB effects. In addition, colibactin, a genotoxic metabolite produced by *Escherichia coli*, induced similar effects.
Conclusions: Overall, these data show that infection with genotoxin-producing bacteria modulates the Hippo and YAP/TAZ-TEAD signaling pathway to control nuclear remodeling following DNA damage in intestinal epithelial cells.

Conflict of Interest
L. Azzi-Martin: None. R. Jia: None. M. Saraiva: None. E. Sifré: None. P. Dubus: None. C. Varon: None. A. Ménard: None.

POSTER SESSION 06: HELICOBACTER 06

P06.01.

INCREASED INFILTRATION OF CD4$^+$IL-17A$^+$FOXP3$^+$ T CELLS IN *HELICOBACTER PYLORI*-INDUCED GASTRITIS

***Y. GUO**[1], J. CHEN[1], Y. HUANG[1], S. KE[1], F. XIE[2], D. LI[2], B. LI[2], H. LU[1]*
[1]Renji Hospital, Shanghai Jiaotong University School of Medicine, Shanghai, China; [2]Department of Immunology and Microbiology, Shanghai Jiaotong University School of Medicine, Shanghai, China

Helicobacter pylori (H. pylori) is one of the main predisposing factors for gastric cancer, causing chronic inflammation and proper glands atrophy in the gastric mucosa. While *H. pylori*-induced inflammation is a key inducer of precancerous lesions in the gastric mucosa, it remains unclear which precise immune cell subsets are responsible for the progression of *H. pylori*-induced gastritis.
Here, we observed an abundance of CD4$^+$IL-17A$^+$FOXP3$^+$ T cells exhibiting a Th17-like phenotype within the microenvironment of *H. pylori*-induced gastritis. Mechanistically, *H. pylori* upregulated the expression of IL-6 in Dendritic cells and macrophages by activating NF-κB signaling through the virulence factor CagA and, thus, induced IL-17A expression in FOXP3+ T cells. Moreover, CD4+IL-17A+FOXP3+ T cells were positively associated with advanced precancerous lesions. Therefore, these findings offer essential insights into how FOXP3+ T cells sense inflammatory signals from the environment, such as IL-6, during *H. pylori* infections, thereby guiding the effector immune response and aggravating the gastritis.

Conflict of Interest
Y. Guo: None. J. Chen: None. Y. Huang: None. S. Ke: None. F. Xie: None. D. Li: None. B. Li: None. H. Lu: None.

P06.02.

HELICOBACTER PYLORI ASSOCIATED LESIONS OF THE UPPER GASTROINTESTINAL TRACT IN PATIENTS WITH ESOPHAGEAL DYSPHAGIA

*G.H. BABAYEVA[1,2], **R.A. HASANOV**[1,3], E.E. MAMMADOV[1,4], U.R. MAHMUDOV[5], F.V. GULIYEV[6], E.K. VERDIYEV[7], R.V. KHAMEDOV[2], A.I. HASANOVA[1]*

[1]Azerbaijan State Advanced Training Institute for Doctors named after A. Aliyev, Baku, Azerbaijan; [2]Memorial Hospital, Department of Gastroenterology, Baku, Azerbaijan; [3]German Hospital, Department of Gastroenterology, Baku, Azerbaijan; [4]MediLand Hospital, Department of Gastroenterology, Baku, Azerbaijan; [5]Modern Hospital, Department of Gastroenterology, Baku, Azerbaijan; [6]National Centre of Oncology, Invasive diagnostics and interventional endoscopy department, Baku, Azerbaijan; [7]Central clinical Hospital, Department of Gastroenterology, Baku, Azerbaijan

Objective: *Helicobacter Pylori* (*H. pylori*) is one of the main infectious agents, which is directly associated with lesions of the mucous membrane of the stomach and duodenum. The role of this agent in some functional diseases of the stomach and duodenum is known. There is limited data on the effect of *H. Pylori* on motor disorders of the esophagus. This study aimed to analyze the prevalence of *Helicobacter Pylori* in patients with esophageal dysphagia.

Patients and Methods*:* Between April 2023 and April 2024, 94 patients were examined with complaints characteristic of esophageal dysphagia (EsD). In 50 patients (19 men and 31 women, ages 20 to 71 years, mean age 40.7±0.8 years) with esophageal dysphagia due to additional complaints (heartburn, epigastric pain, discomfort in the stomach and duodenum, nausea, periodically observed vomiting, periumblical night pain, etc.) an endoscopic examination of the mucous membranes of the upper gastrointestinal tract was carried out with the determination of *H. pylori* using a rapid urease test and collection of biopsy material for pathomorphological examination.

Results: In all patients with EsD, endoscopic examination of the upper gastrointestinal tract revealed changes in the mucous membranes associated with *H. pylori.* The spectrum of identified mucosal lesions is presented in Figure 1.

Conclusions: Patients with dysphagia quite often experience gastroduodenal symptoms, which may be associated not only with impaired motor function but also with damage to the integrity of the mucous membranes, in particular with *H. pylori.*

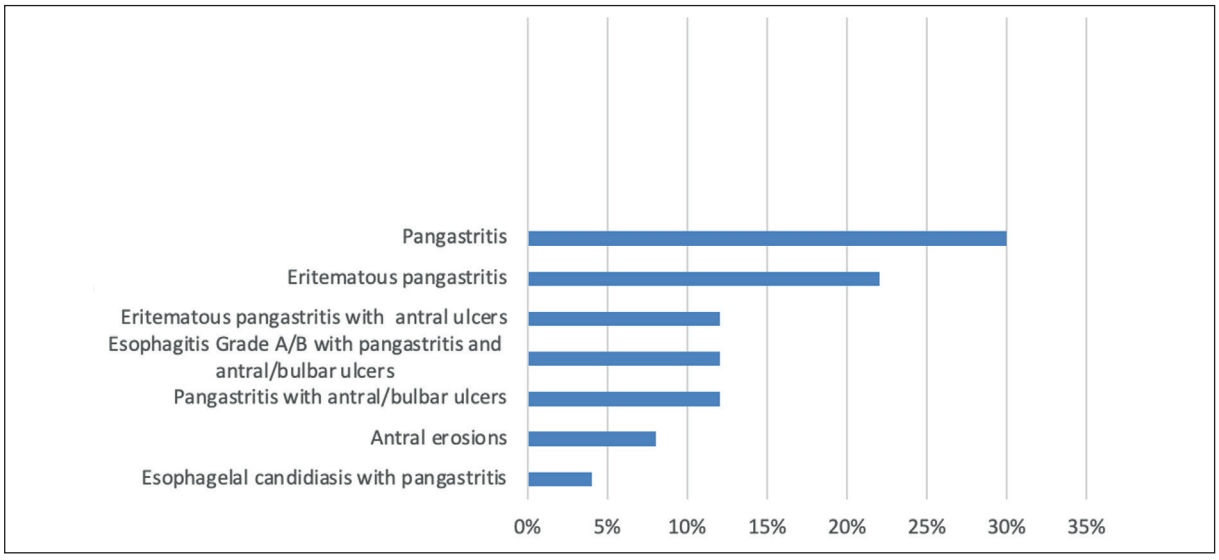

FIGURE 1. THE SPECTRUM OF LESIONS OF THE MUCOUS MEMBRANES OF THE GASTRODUODENAL REGION ASSOCIATED WITH H. PYLORI IN PATIENTS WITH ESOPHAGEAL DYSPHAGIA.

Conflict of Interest

G.H. Babayeva: None. R.A. Hasanov: None. E.E. Mammadov: None. U.R. Mahmudov: None. F.V. Guliyev: None. E.K. Verdiyev: None. R.V. Khamedov: None. A.I. Hasanova: None.

P06.03.

DIFFERENTIAL ACCURACY OF SEROLOGY TEST FOR THE DIAGNOSIS OF *H. PYLORI* ACCORDING TO AGE AND GASTRIC ATROPHY IN A LARGE-SCALE STUDY

J. LIOU[1], *M. CHEN*[1], *Y. FANG*[2], *C. CHEN*[1], *M. WU*[1]
[1]National Taiwan University Hospital, Taipei, Taiwan; [2]National Taiwan University Hospital, Yun-Lin Brance, Yun-Lin, Taiwan

Objective: We aimed to assess the accuracy of serology compared to biopsy-based tests for *H. pylori* and identify factors influencing their test performance.
Patients and Methods: Adults undergoing endoscopy were eligible. Biopsy specimens obtained during endoscopy were used for rapid urease test (RUT), histology, and culture. Blood samples were collected for serology targeting *H. pylori* IgG antibodies and serum pepsinogen I/II ratio. Diagnostic accuracy was assessed using sensitivity, specificity, accuracy, positive predictive value (LR+), negative predictive value (LR-), diagnostic odds ratio (DOR), and post-test probability.
Results: A total of 8,497 treatment-naïve adult participants were included in the analysis. The sensitivity of serology, RUT, histology, and culture was 94.5% (93.7-95.4), 88.6% (87.5-89.8), 92.3% (91.3-93.3), and 90.2% (89.1-91.3), respectively, whereas the specificity was 86.0% (85.0-87.0), 97.1% (96.6-97.6), 94.3% (93.6-95.0), and 98.2% (97.8-98.6), respectively. The sensitivity and specificity of diagnosing *H. pylori* infection were 94.5% *vs*. 86.0% for serology, 88.6% *vs*. 97.1% for RUT, 92.3% *vs*. 94.3% for histology, and 90.2% *vs*. 98.2% for culture, respectively. The specificity of serology was 62.4% (53.3-71.5%) and 87.2% (86.0-88.5) in the atrophic gastritis (AG) and non-AG group, respectively (p<0.001) (Table 1). The positive predictive value of serology was 2.59 (1.96-3.21) and 7.33 (6.61-8.04) in the AG and non-AG groups, respectively. Besides, serology demonstrated a high sensitivity of 95.2% and DOR of 268.9 among individuals aged ≤45 years, suggesting its utility for mass screening of *H. pylori* infection in the younger populations (Table 1).
Conclusions: Serology has better specificity for diagnosis of *H. pylori* infection in treatment-naïve individuals aged ≤45 years and subjects without atrophic gastritis.

TABLE 1. SENSITIVITY, SPECIFICITY, PPV, NPV, ACCURACY, LR+, LR- AND DOR WITH THEIRS 95% CONFIDENCE INTERVALS OF SEROLOGY, RAPID UREASE TEST (RUT), HISTOLOGY AND CULTURE AMONG GASTRIC ATROPHIC AND NON-ATROPHIC SUBGROUPS AND ACCORDING TO AGE.

	H. pylori infection (Reference standard)		Sensitivity (95% CI)	Specificity (95% CI)	Accuracy (95% CI)	PPV (95% CI)	NPV (95% CI)	LR+ (95% CI)	LR- (95% CI)	DOR (95% CI)
Index test	Positive	Negative	%	%	%	%	%			
SEROLOGY (REFERENCE STANDARD: ANY 2 POSITIVES OF RUT/HISTOLOGY/CULTURE)										
With atrophic gastritis: PG-I ≤ 70 and PG I/II ratio ≤ 3										
Positive	214	41	97.3	62.4	85.7	83.9	91.9	2.59	0.04	59.2
Negative	6	68	(95.1-99.4)	(53.3-71.5)	(81.9-89.5)	(79.4-88.4)	(85.7-98.1)	(1.96-3.21)	(0.01-0.08)	(24.1-145.4)
Without atrophic gastritis: P-G-I > 70 and PG I/II ratio > 3										
Positive	1461	358	93.5	87.2	89.5	80.3	96.0	7.33	0.07	98.8
Negative	101	2446	(92.3-94.8)	(86.0-88.5)	(88.6-90.4)	(78.5-82.2)	(95.3-96.8)	(6.61-8.04)	(0.06-0.09)	(78.5-124.4)
20-45 years old										
Positive	736	110	95.2	93.1	93.8	87.0	97.6	13.8	0.05	268.9
Negative	37	1487	(93.7-96.7)	(91.9-94.4)	(92.8-94.8)	(84.7-89.3)	(96.8-98.3)	(11.3-16.3)	(0.04-0.07)	(183.4-394.3)
>45 years old										
Positive	1800	534	94.2	82.3	86.9	77.1	95.8	5.32	0.07	76.1
Negative	110	2483	(93.2-95.3)	(80.9-83.7)	(86.0-87.9)	(75.4-78.8)	(95.0-96.5)	(4.91-5.73)	(0.06-0.08)	(61.4-94.2)

Continued

TABLE 1 *(CONTINUED)*. SENSITIVITY, SPECIFICITY, PPV, NPV, ACCURACY, LR+, LR- AND DOR WITH THEIRS 95% CONFIDENCE INTERVALS OF SEROLOGY, RAPID UREASE TEST (RUT), HISTOLOGY AND CULTURE AMONG GASTRIC ATROPHIC AND NON-ATROPHIC SUBGROUPS AND ACCORDING TO AGE.

	H. pylori infection (Reference standard)		Sensitivity (95% CI)	Specificity (95% CI)	Accuracy (95% CI)	PPV (95% CI)	NPV (95% CI)	LR+ (95% CI)	LR- (95% CI)	DOR (95% CI)
Index test	Positive	Negative	%	%	%	%	%			
RUT (REFERENCE STANDARD: ANY 2 POSITIVES OF SEROLOGY/HISTOLOGY/CULTURE)										
With atrophic gastritis: PG-I ≤ 70 and PG I/II ratio ≤ 3										
Positive	194	2	82.2	97.9	86.6	99.0	68.4	38.2	0.18	210.2
Negative	42	91	(77.3-87.1)	(94.9-100.8)	(83.0-90.3)	(97.6-100.4)	(60.5-76.3)	(-14.2-90.7)	(0.13-0.23)	(49.8-887.3)
Without atrophic gastritis: PG-I > 70 and PG I/II ratio > 3										
Positive	1422	95	87.7	96.5	93.2	93.7	93.0	25.3	0.13	198.3
Negative	200	2649	(86.1-89.3)	(95.9-97.2)	(92.5-94.0)	(92.5-95.0)	(92.0-93.9)	(20.3-30.3)	(0.11-0.14)	(154.0-255.2)
HISTOLOGY (REFERENCE STANDARD: ANY 2 POSITIVES OF RUT/SEROLOGY/CULTURE)										
With atrophic gastritis: PG-I ≤ 70 and PG I/II ratio > 3										
Positive	212	15	94.6	85.7	91.8	93.4	88.2	6.63	0.06	106.0
Negative	12	90	(91.7-97.6)	(79.0-92.4)	(88.8-94.8)	(90.2-96.6)	(82.0-94.5)	(3.51-9.74)	(0.03-0.10)	(47.7-235.5)
Without atrophic gastritis: PG-I > 70 and PG I/II ratio > 3										
Positive	1481	148	93.4	94.7	94.2	90.9	96.2	17.6	0.07	253.3
Negative	104	2633	(92.2-94.7)	(93.8-95.5)	(93.5-94.9)	(89.5-92.3)	(95.5-96.9)	(14.8-20.3)	(0.06-0.08)	(195.6-328.2)
CULTURE (REFERENCE STANDARD: ANY 2 POSITIVES OF RUT/HISTOLOGY/SEROLOGY)										
With atrophic gastritis: PG-I ≤ 70 and PG I/II ratio ≤ 3										
Positive	208	5	89.7	94.9	91.2	97.7	79.3	17.4	0.11	159.5
Negative	24	92	(85.7-93.6)	(90.5-99.3)	(88.1-94.3)	(95.6-99.7)	(71.9-86. 7)	(2.53-32.26)	(0.07-0.15)	(59.0-431.0)
Without atrophic gastritis: PG-I > 70 and PG I/II ratio > 3										
Positive	1462	46	90.4	98.3	95.4	97.0	94.6	54.0	0.10	554.3
Negative	155	2703	(89.0-91.9)	(97.9-98.8)	(94.8-96.0)	(96.1-97.8)	(93.8-95.4)	(38.5-69.5)	(0.08-1.12)	(396.4-774.9)

Abbreviations: PPV, positive predictive value; NPV, negative predictive value; LR+, positive likelihood ratio; LR-, positive likelihood ratio; DOR, Diagnostic odds ratio; CI, confidence intervals; RUT, rapid urease test.

Conflict of Interest

J. Liou: None. M. Chen: None. Y. Fang: None. M. Wu: None. C. Chen: None.

P06.04.

OPTIMIZATION OF MINOCYCLINE-CONTAINING BISMUTH QUADRUPLE THERAPY FOR *HELICOBACTER PYLORI* RESCUE TREATMENT: A REAL-WORLD EVIDENCE STUDY

***H. LU**, Y. HUANG, Y. GUO, W. ZHANG, X. LIANG*

Division of Gastroenterology and Hepatology, Shanghai Institute of Digestive Disease, NHC Key Laboratory of Digestive Diseases, Renji Hospital, Shanghai Jiaotong University School of Medicine, Shanghai, Shanghai, China

Objective: We aimed to evaluate the efficacy and safety of four different regimens with minocycline and metronidazole compared to classical bismuth quadruple therapy for *H. pylori* rescue treatment.

Patients and Methods: From March 2021 to March 2024, refractory *H. pylori*-infected patients who received 14-day therapy with b.i.d. proton pump inhibitor 20 mg and bismuth 220 mg, plus tetracycline 400 mg q.i.d and metronidazole 400 mg q.i.d (BQT), or minocycline 50 mg q.i.d and metronidazole 400 mg q.i.d ($PBMn_4M_{4)}$, or minocycline 50 mg t.i.d and metronidazole 400 mg t.i.d ($PBMn_3M_3$), or minocycline 50 mg b.i.d and metronidazole 400 mg q.i.d ($PBMn_2M_4$), or minocycline 50 mg b.i.d and metronidazole 400 mg t.i.d ($PBMn_2M_3$) were included. Proton pump inhibitors included esomeprazole and vonoprazan. *H. pylori* eradication was assessed by ^{13}C-urea breath test at least 6 weeks after treatment.

Results: Totally, 823 patients were enrolled: 251 with BQT, 97 with PBMn4M4, 191 with PBMn3M3, 108 with PBMn2M4, and 176 with PBMn2M3. Overall intention-to-treat and per-protocol eradication rates were 89.9% (BQT: 89.2%, PBMn4M4: 87.6%, PBMn3M3: 91.6%, PBMn2M4: 88.0%, PBMn2M3: 91.5%, *p*=0.694) and 97.4% (BQT: 97.1%, PBMn4M4: 97.5%, PBMn3M3: 97.7%, PBMn2M4: 96.8%, PBMn2M3: 97.6%, *p*=0.992), respectively. Metronidazole resistance did not affect the efficacy of all groups. PBMn2M3 group achieved the greatest compliance and the fewest moderate and severe adverse events.
Conclusions: The novel bismuth-containing quadruple therapy with a low dose of minocycline and metronidazole is an alternative to classical bismuth quadruple therapy for *H. pylori* rescue treatment with superior safety and compliance.

Conflict of Interest
H. Lu: None. Y. Huang: None. Y. Guo: None. W. Zhang: None. X. Liang: None.

P06.05.

IS *HELICOBACTER PYLORI* STATUS ASSOCIATED WITH METACHRONOUS GASTRIC CANCER IN ELDERLY PATIENTS AFTER ENDOSCOPIC RESECTION FOR EARLY GASTRIC CANCER?

J. LEE*, Y. KIM, Y. CHOI, C. KIM, I. CHOI*
National Cancer Center, Goyang, Republic of Korea

Objective: We investigated whether *H. pylori* (HP) status was associated with metachronous gastric cancer (MGC) in elderly patients after endoscopic resection (ER) for early gastric cancer (EGC).
Patients and Methods*:* We retrospectively reviewed the medical records of 299 patients aged ≥75 years who underwent ER for EGC with more than 1 year follow-up period at the National Cancer Center, Korea. HP status was assessed by a rapid urease test and biopsy specimen. HP treatment was provided to 74 patients (61 with initial positive infection and 13 with positive infection during follow-up) after ER. The HP-negative group (n=234) was defined as those with negative infection (n=180) or successfully eradicated infection (n=54), and the HP-positive group (n=65) as those with positive infection (n=45) or failed eradication (n=20). The primary outcome was the incidence of MGC occurred at 1 year or greater after ER.
Results: The median age of the patients was 78 years [interquartile range (IQR), 76-80 years]. During the follow-up period (median 4.3 years, IQR 2.7-5.9 years), MGC occurred in 16 patients in the HP-negative group [6.8% (16/234), 16.3 cases/1,000 person-year] and 10 patients in the HP-positive group [15.4% (10/65), 37.5 cases/1,000 person-year]. The HP-positive groups had a significantly higher incidence of MGC compared with the HP-negative group (*p*=0.037 by Log-rank test). The age- and sex-adjusted hazard ratio for the MGC in the HP-positive group was 2.30 (95% confidential interval, 1.04-5.10).
Conclusions: HP status was associated with MGC occurrence after ER in elderly EGC patients aged ≥75 years.

Conflict of Interest
J. Lee: None. Y. Kim: None. Y. Choi: None. C. Kim: None. I. Choi: None.

P06.06.

AN UPDATE OF THE *HELICOBACTER PYLORI* DIAGNOSTIC TESTS AND INDICATIONS FOR TREATMENT FROM THE LATIN AMERICAN REGISTRY ON *HELICOBACTER PYLORI* MANAGEMENT (HP-LATAMREG)

D. REYES-PLACENCIA[1], J. REMES-TROCHE[2], O. LAUDANNO[3], W. OTERO[4], A. PISCOYA[5], G. OTOYA[6], C. VON MUHLENBROCK[7], J. RAMIREZ GARCÍA[8], C. CAMPOS NUÑEZ[9], H. CEDRON[10], I. HANNA-JAIRALA[11], D. CABRERA HINOJOSA[12], C. VARGAS-ALAYZA[13], P. MEDEL-JARA[14], A. CANO-CATALÀ[15], L. MOREIRA[16], P. PARRA[17], O. P. NYSSEN[17], J. P. GISBERT[17], ***A. RIQUELME[18]****, ON BEHALF OF THE HP-LATAMREG INVESTIGATORS*
J. P. Gisbert and A. Riquelme contributed equally

[1]Pontificia Universidad Católica de Chile, Santiago, Chile; [2]Universidad Veracruzana, Veracruz, Mexico [3]Instituto Doctor Alfredo Lanari, Buenos Aires, Argentina; [4]Universidad Nacional de Colombia, Bogota, Colombia; [5]Hospital Guillermo Kaelin de la Fuente, Lima, Peru; [6]Hospital Nivel IV Guillermo Almenara Irigoyen, Lima, Peru; [7]Clínica Universidad de los Andes, Santiago, Chile; [8]Clínica Liga Contra el Cancer, Lima, Peru; [9]Hospital Clinica Biblica, San Jose, Costa Rica; [10]Clinica Anglo Americana, Lima, Peru; [11]Hospital Miguel H Alcivar, Guayaquil, Ecuador; [12]Hospital Nacional Dos de Mayo, Lima, Peru; [13]Hospital de Chulucanas, Piura, Peru; [14]Programa de Doctorado en Epidemiología, Facultad de Medicina, Pontificia Universidad Católica de Chile, Santiago, Chile; [15]GOES research group, Althaia, Xarxa Assistencial Universitària de Manresa, Manresa. Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Vic, Spain; [16]Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [17]Hospital Universitario de la Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain [18]Pontificia Universidad Católica de Chile - CECAN: Centro para la prevención y el control del cáncer, Santiago, Chile

Objective: There is limited information regarding the best approach for *Helicobacter pylori (H. pylori)* infection management in Latin America. Our aim was to describe the *H. pylori* diagnostic tests and treatment indications in Latin America.
Patients and Methods*:* A multicenter, prospective, international registry (Hp-LATAMReg; Hp-WorldReg partner) was conducted. Data were collected from seven Latin American countries from 2015 to 2024 and registered at the e-CRF AEG-REDCap platform. The most frequent indications for treatment and diagnostic tests before and after eradication treatment were evaluated.
Results: 2,497 patients were registered, of which 1,680 (67%) were female. The mean (SD) age of the patients was 53 (14) years. Most of the patients were from Mexico (n=446, 18%), Peru (n=343, 14%), and Chile (n=274, 11%). Among those, 2,186 (88%) were treatment-naïve cases. The most frequent indications for treatment were non-investigated dyspepsia (n=995, 40%) and dyspepsia with normal endoscopy (n=690, 28%). The main *H. pylori* diagnostic methods before the eradication treatment were histology (n=1,642, 66%) and rapid urease test (n=354, 14%). To assess post-treatment eradication, the most frequent *H. pylori* diagnostics tests used were stool antigen monoclonal test (n=1,016, 41%) and ^{13}C-UBT (n=635, 25%). There were statistically significant differences between the countries in the diagnostic methods used, both pre- and post-treatment (Table 1).
Conclusions: In Latin America, there is a marked heterogeneity between the countries regarding the main treatment indications and the most frequently used diagnostic tests for *H. pylori* infection.

TABLE 1. MAIN INDICATIONS OF *H. PYLORI* ERADICATION AND DIAGNOSTIC TESTS BEFORE AND AFTER THE TREATMENT IN LATIN AMERICA. THE NUMBER OF TESTS IS NOT EQUAL AS THE NUMBER OF PATIENTS BECAUSE MORE THAN ONE TEST COULD BE CONDUCTED.

Country	Argentina (n=274)	Chile (n=343)	Colombia (n=200)	Costa Rica (n=104)	Ecuador (n=43)	Mexico (n=1,087)	Peru (n=446)	Overall (n=2,497)
Indication of *Helicobacter pylori* eradication								***p*<0.001***
Non-investigated dyspepsia	27 (9.9%)	45 (4.5%)	36 (18%)	2 (1.9%)	0 (0%)	700 (65%)	185 (42%)	995 (40%)
Dyspepsia with normal endoscopy	201 (74%)	202 (58%)	16 (8%)	15 (14%)	1 (2.3%)	33 (3%)	176 (39%)	644 (26%)
Duodenal Ulcer	13 (4.8%)	8 (2.3%)	5 (2.5%)	8 (7.7%)	1 (2.3%)	45(4.1%)	9 (2%)	89 (3.6%)
Gastric Ulcer	13 (4.8%)	7 (5.1%)	13 (6.5%)	8 (7.7%)	7 (16%)	75 (6.9%)	14 (3.1%)	137 (5.5%)
Preneoplastic lesions	0 (0%)	2 (0.6%)	0 (0%)	19 (18%)	31 (67%)	67(6.1%)	33 (7.4%)	152 (6.1%)
NSAIDs or Aspirin treatment	10 (3.7%)	0 (0%)	5 (2.5%)	0 (0%)	0 (0%)	5 (0.5%)	0 (0%)	20 (0.8%)
MALT Lymphoma	1 (0.3%)	1 (0.3%)	0 (0%)	0 (0%)	0 (0%)	2 (0.4%)	0 (0%)	4 (0.2%)
First-degree relatives of patients with gastric cancer	2 (0.7%)	12 (3.5%)	9 (4.5%)	10 (9.6%)	2 (4.7%)	19 (1.8%)	16 (3.6%)	70 (2.8%)
Unexplained iron deficiency anemia	1 (0.4%)	2 (0.6%)	7 (3.5%)	0 (0%)	0 (0%)	3 (0.3%)	1 (0.2%)	14 (0.6%)
Screening to prevent gastric cancer	0 (0%)	0 (0%)	0 (0%)	1 (1%)	1 (2.3%)	17 (1.6%)	10 (2.2%)	29 (1.2%)
Other	6 (2.2%)	64 (19%)	109 (54%)	41 (39%)	0 (0%)	121 (11%)	2 (0.4%)	343 (14%)
Diagnostic test before eradication								
13C-UBT	6 (2.2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	166 (15%)	126 (28%)	298 (12%, ***p*<0.001***)
14C-UBT	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	75 (6.9%)	37 (8.3%)	112 (4.5%, ***p*<0.001***)
Serology	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (0.4%)	1 (0.2%)	5 (0.2%, *p*=0.7)
SA Monoclonal Test	10 (3.6%)	15 (4.4%)	4 (2%)	15 (14%)	6 (14%)	29 (2.7%)	0 (0%)	79 (3.2%, ***p*<0.001***)
SA Polyclonal Test	2 (0.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	18(1.7%)	0 (0%)	20 (0.8%, ***p*=0.01***)
Histology	256 (93%)	25 (7.3%)	196 (98%)	65 (63%)	37 (86%)	788 (73%)	275 (62%)	1,642 (66%, ***p*<0.001***)
RUT	0 (0%)	310 (90%)	0 (0%)	29 (28%)	0 (0%)	7 (0.6%)	8 (1.8%)	354 (14%, ***p*<0.001***)
Culture	0 (0%)	0 (0%)	0 (0%)	3(0.1%)	0 (0%)	0 (0%)	0 (0%)	3 (0.1%, ***p*<0.001***)
Stool PCR test	0 (0%)	0 (0%)	0 (0%)	2 (1.9%)	0 (0%)	0 (0%)	0 (0%)	2 (0.1%, ***p*<0.001***)
Diagnostic test after eradication								
13C-UBT	83 (30%)	69 (20%)	0 (0%)	0 (0%)	0 (0%)	307 (28%)	176 (40%)	635 (25%, ***p*<0.001***)
14C-UBT	4 (1.5%)	1 (0.3%)	0 (0%)	0 (0%)	0 (0%)	262 (24%)	249 (56%)	516 (21%, ***p*<0.001***)
Serology	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2.3%)	0 (0%)	0 (0%)	1 (0.1%, ***p*<0.001***)
SA Monoclonal Test	178 (65%)	207 (60%)	198 (99%)	96 (92%)	43 (100%)	292 (27%)	2 (0.4%)	1,016 (41%, ***p*<0.001***)
SA Polyclonal Test	5 (1.8%)	4 (1.2%)	0 (0%)	0 (0%)	0 (0%)	139 (13%)	0 (0%)	148 (5.9%, ***p*<0.001***)
Histology	8 (2.9%)	16 (4.7%)	2 (1%)	6 (5.8%)	0 (0%)	68 (6.3%)	12 (2.7%)	112 (4.5%, ***p*<0.001***)
RUT	0 (0%)	46 (13%)	0 (0%)	2 (1.9%)	0 (0%)	0 (0%)	1 (0.2%)	49 (2%, ***p*<0.001***)
Stool PCR test	0 (0%)	1 (0.3%)	0 (0%)	3 (2.9%)	0 (0%)	0 (0%)	0 (0%)	4 (0.2%, ***p*<0.001***)

*Chi-square test. MALT = mucosa-assisted lymphoid tissue; UBT = Urea Breath Test; SA= Stool Antigen; RUT= Rapid Urease Test.

Conflict of Interest

D. Reyes-Placencia: None. J. Remes-Troche: None. O. Laudanno: None. W. Otero: None. A. Piscoya: None. G. Otoya: None. C. Von Muhlenbrock: None. J. Ramirez García: None. C. Campos Nuñez: None. H. Cedron: None. I. Hanna-Jairala: None. D. Cabrera Hinojosa: None. C. Vargas-Alayza: None. P. Medel-Jara: None. A. Cano-Català: None. L. Moreira: None. P. Parra: None. O. P. Nyssen: None. J. P. Gisbert: None. A. Riquelme: None.

P06.07.

INTERPLAY OF C-TERMINAL EPIYA-REPEATS AND NIKS-MEDIATED POST-TRANSCRIPTIONAL REGULATION OF CAGA MRNA

F.F.B. LEMOS[1], K.N. TEIXEIRA[2], D.M.M. QUEIROZ[3], ***F.F. DE MELO[1]***
[1]Federal University of Bahia, Vitória da Conquista, Brazil; [2]Federal University of Paraná, Toledo, Brazil; [3]Federal University of Minas Gerais, Belo Horizonte, Brazil

Objective: Nickel-regulated small regulatory RNA (NikS) was recently described as a major regulator of *Helicobacter pylori* virulence factors, including CagA. However, the post-transcriptional regulation process of the CagA encoding mRNA has not been fully elucidated. Here, we aim to explore the reported binding sequences of NikS to the CagA mRNA.
Materials and Methods: Nucleotide sequences encoding the CagA were retrieved from the GenBank database and subjected to global alignment using ClustalX2 software to identify consensus sequences capable of binding to NikS. Furthermore, multiple primary sequences of CagA obtained from gastric cancer biopsies were analyzed to determine the location, pattern, and number of EPIYA-repeat regions and their interaction with the NikS through multiple sequence alignment using BioEdit and ClustalW.
Results: Our investigation confirmed that NikS binding regions at positions +2838, +2940, +3042, and +3144 are exclusively conserved in CagA mRNA sequences containing three EPIYA-C and refer to the CMw. In CagA sequences with a single EPIYA-C, a consistent binding pattern is observed at the first two reported positions, flanking the EPIYA-C coding sequence. For CagA sequences with two EPIYA-C, a consistent pattern is observed at the first three reported positions, with a binding site upstream of the EPIYA-C and EPIYA-CC coding region, as well as one downstream of EPIYA-CC. Finally, in CagA sequences with three EPIYA-C, there is a consistent pattern upstream of EPIYA-C, EPIYA-CC, and EPIYA-CCC, and one downstream of EPIYA-CCC.
Conclusions: The number of EPIYA-C sites determines the NikS binding pattern on CagA, potentially affecting the post-transcriptional regulation of the oncoprotein.

Conflict of Interest
F.F.B. Lemos: None. K.N. Teixeira: None. D.M.M. Queiroz: None. F.F. de Melo: None.

P06.08.

STOOL ANTIGEN TEST FOR *HELICOBACTER PYLORI* INFECTION IN ADULTS: A META-ANALYSIS OF DIAGNOSTIC TEST ACCURACY

M.S. LUZ[1], F.F.B. LEMOS[1], C.T. DE CASTRO[1], D.M.M. QUEIROZ[2], ***F.F. DE MELO[1]***
[1]Federal University of Bahia, Vitória da Conquista, Brazil
[2]Federal University of Minas Gerais, Belo Horizonte, Brazil

Objective: The stool antigen test (SAT) is a convenient non-invasive option for the diagnosis of *Helicobacter pylori* infection. However, despite having been previously evaluated, there is currently a lack of evidence regarding the comparative accuracy of conventional and rapid SATs utilizing monoclonal or polyclonal antibodies in adults. Here, we perform a thorough statistical synthesis to determine and compare the diagnostic accuracy of conventional and rapid SATs for the diagnosis of *H. pylori* infection in adults.
Materials and Methods: We conducted independent searches through July 25, 2023, for studies evaluating the accuracy of SAT against a reference standard. We assessed methodological quality using QUADAS-2 and calculated overall accuracy measures using the bivariate random-effects model. We also conducted subgroup analyses based on model and assessment technique, and Spearman correlation analysis to investigate a possible threshold effect. We generated SROC curves to assess heterogeneity and evaluated publication bias.

Results: Conventional SAT demonstrated superior sensitivity (92.19% *vs*. 85.79%), specificity (92.93% *vs*. 91.18%), likelihood ratios (LR+ 9.68 *vs*. 8.16; LR- 0.10 *vs*. 0.15), and area under the curve (AUC) (0.958 *vs*. 0.940) compared to rapid SAT. Notably, the DOR for conventional SAT (114.70) significantly outperformed rapid SAT (DOR 57.72). Correlation analysis revealed no threshold effect, and SROC curves showed consistent accuracy for both tests.
Conclusions: Our study establishes evidence of the superior diagnostic accuracy of conventional stool antigen tests over rapid SATs for detecting *H. pylori* infection in adults. Also, we provide valuable insights into the impact of using monoclonal or polyclonal antibodies and different assessment techniques on diagnostic accuracy measures.

Conflict of Interest
M.S. Luz: None. F.F.B. Lemos: None. C.T. de Castro: None. D.M.M. Queiroz: None. F. Freire de Melo: None.

P06.09.

MOST FREQUENT *HELICOBACTER PYLORI* FIRST-LINE EMPIRICAL ERADICATION THERAPIES: DATA FROM THE LATIN AMERICAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-LATAMREG)

D. REYES-PLACENCIA[1], J. REMES-TROCHE[2], O. LAUDANNO[3], W. OTERO[4], A. PISCOYA[5], G. OTOYA[6], C. VON MUHLENBROCK[7], J. RAMÍREZ GARCÍA[8], C. CAMPOS NUÑEZ[9], H. CEDRON[10], I. HANNA-JAIRALA[11], D. CABRERA HINOJOSA[12], C. VARGAS-ALAYZA[13], P. MEDEL-JARA[14], A. CANO-CATALÀ[15], L. MOREIRA[16], P. PARRA[17], O.P. NYSSEN[17], J. P. GISBERT[17], ***A. RIQUELME****[18], ON BEHALF OF THE HP-LATAMREG INVESTIGATORS,*
J. P. Gisbert and A. Riquelme contributed equally
[1]Pontificia Universidad Católica de Chile, Santiago, Chile; [2]Universidad Veracruzana, Veracruz, Mexico [3]Instituto Doctor Alfredo Lanari, Buenos Aires, Argentina; [4]Universidad Nacional de Colombia, Bogota, Colombia; [5]Hospital Guillermo Kaelin de la Fuente, Lima, Peru; [6]Hospital Nivel IV Guillermo Almenara Irigoyen, Lima, Peru; [7]Clinica Universidad de Los Andes, Santiago, Chile; [8]Clinica Liga contra el Cáncer, Lima, Peru; [9]Hospital Clinica Biblica, San Jose, Costa Rica; [10]Clinica Anglo Americana, Lima, Peru; [11]Hospital Miguel H Alcivar, Guayaquil, Ecuador; [12]Hospital Nacional Dos de Mayo, Lima, Peru; [13]Hospital de Chulucanas, Piura, Peru; [14]Programa de Doctorado en Epidemiología, Facultad de Medicina, Pontificia Universidad Católica de Chile, Santiago, Chile; [15]GOES Research Group, Althaia, Xarxa Assistencial Universitària de Manresa, Manresa. Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Vic, Spain; [16]Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), IDIBAPS (Institut d'Investigacions Biomèdiques August Pi i Sunyer), University of Barcelona, Barcelona, Spain; [17]Hospital Universitario de la Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain [18]Pontificia Universidad Católica de Chile - CECAN: Centro para la prevención y el control del cáncer, Santiago, Chile

Objective: *Helicobacter pylori* infection is a public health problem in Latin America. Our aim was to describe the most frequent eradication therapies, their effectiveness, adherence, and safety.
Materials and Methods: A multicenter, prospective, international registry (Hp-LATAMReg; Hp-WorldReg partner) was conducted. Therapies used in seven countries of Latin America from 2015 to 2024 were registered at e-CRF AEG-REDCap platform. The modified intention-to-treat (mITT) effectiveness, safety, adherence, length of treatment, and the proton pump inhibitor (PPI) dose prescribed were analyzed for the first-line regimens.

Results: 2,511 patients were registered, of which 2,323 (93%) were treatment-naïve. The most commonly prescribed first-line therapies (n=2,216, 88%) were PPI-amoxicillin-clarithromycin (n=801, 30%) and PPI-clarithromycin-amoxicillin-metronidazole (n=369, 14%). Most of these regimens (n=2,055, 93%) were prescribed for 14 days, and almost 50% of the patients were administered high-dose PPIs (54 to 128 mg omeprazole equivalents b.i.d.) (n=967, 46%) with significant differences between treatment schemes (p<0.01). The first-line mITT overall effectiveness ranged from 74% to 95%, wit the PPI-amoxicillin-metronidazole-bismuth the only therapy achieving optimal (90%) cure rates. However, when therapies were optimized (i.e. 14 days and high-dose PPIs), other quadruple therapies, such as the PPI-amoxicillin-clarithromycin-metronidazole and the PPI-metronidazole+tetracyclin+bismuth, also provided optimal (>90%) effectiveness. Good adherence, defined as >90% of drug intake, was observed in 98% (n=2,163) of cases (Table 1).

Conclusions: In Latin America, bismuth quadruple therapy with PPI-amoxicillin-metronidazole-bismuth and optimized (14-day and high-dose PPIs) non-bismuth concomitant quadruple with PPI-amoxicillin-clarithromycin-metronidazole and bismuth quadruple with PPI-metronidazole-tetracycline-bismuth provided optimal (>90%) effectiveness.

TABLE 1. EFFECTIVENESS BY MODIFIED INTENTION-TO-TREAT, SAFETY, AND COMPLIANCE OF FIRST-LINE EMPIRICAL THERAPY IN LATIN AMERICA.

	PPI-C-A (27%, n=801)	PPI-C-A-M (15%, n=366)	PPI-A (11%, n=274)	PPI-M-Tc-B (7.3%, n=185)	PPI-C-A-B (4.2%, n=118)	PPI-A-M-B (6.7%, n=156)	PPI-A-L (3.7%, n=109)	PPI-M-D-B (7.9%, n=201)
mITT eradication rate (%, n) (***p*<0.01***)	75%, n=595	89%, n=327	88%, n=241	87%, n=160	79%, n=93	95%, n=148	74%, n=81	87%, n=172
Side effects rate (%, n) (***p*<0.01***)	35%, n=281	41%, n=151	7.3%, n=20	12%, n=23	18%, n=21	47%, n=72	20%, n=22	48%, n=97
Adherence rate (%, n) (***p*<0.01***)	98%, n=779	99%, n=363	98%, n=269	97%, n=181	98%, n=117	97%, n=152	99%, n=109	96%, n=193
High-dose PPIs use (%, n) (***p*<0.01***)	25%, n=192	31%, n=105	98%, n=267	73%, n=132	22%, n=25	65%, n=100	43%, n=44	52%, n=102
High-dose PPIs mITT cure rate (%, n) (***p*<0.01***)	69%, n=131	85%, n=88	88%, n=236	93%, n=123	72%, n=18	97%, n=97	77%, n=34	83%, n=85
14 days use (%, n) (***p*<0.01***)	89%, n=697	98%, n=358	99%, n=273	99%, n=184	95%, n=105	100%, n=156	90%, n=99	97%, n=195
14-days mITT cure rate (%, n) (***p*<0.01***)	77%, n=530	91%, n=322	88%, n=241	87%, n=159	78%, n=81	95%, n=148	77%, n=75	88%, n=171
14-days and high-dose PPIs use (%, n) (***p*<0.01***)	23%, n=185	26%, n=96	99%, n=266	71%, n=131	21%, n=25	64%, n=100	37%, n=40	49%, n=98
14-days and high-dose PPIs mITT cure rates (%, n) (***p*<0.01***)	74%, n=115	90%, n=84	89%, n=236	93%, n=122	72%, n=18	97%, n=97	80%, n=32	85%, n=83

*Chi-square test. mITT = modified intention to treat; PPI = Proton pump inhibitor; C = clarithromycin; A = amoxicillin; B = bismuth salts; M = metronidazole; L = levofloxacin; Tc= tetracycline; D = doxycycline; high-dose PPIs (54 to 128 mg omeprazole equivalents b.i.d.).

Conflict of Interest

D. Reyes-Placencia: None. J. Remes-Troche: None. O. Laudanno: None. W. Otero: None. A. Piscoya: None. G. Otoya: None. C. Von Muhlenbrock: None. J. Ramírez García: None. C. Campos Nuñez: None. H. Cedron: None. I. Hanna-Jairala: None. D. Cabrera Hinojosa: None. C. Vargas-Alayza: None. P. Medel-Jara: None. A. Cano-Català: None. L. Moreira: None. P. Parra: None. O. P. Nyssen: None. J. P. Gisbert: None. A. Riquelme: None.

P06.10.

GASTROPROTECTIVE AND CYTOTOXIC EFFECTS OF DIACETYLCURCUMIN AND ITS METALLIC DERIVATIVES

A. AGABO-MARTÍNEZ[1], *E. GOMEZ-CHANG*[1], *W. MEZA MORALES*[2], *R. G. ENRÍQUEZ*[2], *I. ROMERO*[1]

[1]Deptartamento de Bioquímica, Facultad de Medicina, Universidad Nacional Autónoma de México, Ciudad de Mexico, Mexico 2Instituto de Química, Universidad Nacional Autónoma de México, Ciudad de Mexico, Mexico

Objective: *Helicobacter pylori* is the causative agent of gastritis, peptic ulcers, and gastric cancer, with a worldwide prevalence of around 50%. Therapies are available for eradicating *H. pylori*, but their effectiveness has decreased mainly due to antibiotic resistance. Consequently, the need for new treatments has arisen.

Plants have served as the foundation for obtaining many drugs, and it is within them that alternative solutions can be discovered. Curcumin obtained from *Curcuma longa* has multiple therapeutic properties, but it is an unstable compound, slightly soluble in water, poorly absorbed, and rapidly metabolized. In response to this problem, metal complexes were synthesized from diacetylated curcumin (DAC). Recently, we demonstrated that these metal derivatives exhibit anti-*H. pylori* activity. Thus, the objective of this work was to determine whether these curcuminoids have a gastroprotective effect and if they have a cytotoxic effect on gastric adenocarcinoma cells.

Materials and Methods: The gastroprotective effect was determined using an acute-ethanol-induced ulcer model. The cytotoxic effect was determined using the MTT method.

Results: The metal complexes DAC_2-Zn and DAC_2-Cu were the most effective in protecting the gastric mucosa; meanwhile, the metal complex DAC_2-Zn exerted a mild cytotoxic effect.

Conclusions: These data will help to determine whether these compounds may be used as alternative therapies for bacteria infections and related illnesses.

Acknowledgments

To DGAPA-PAPIIT-UNAM-IN207622, CONAHCyT-FOINS-PRONACES-307152. AAM* is a PhD student of PDCB, UNAM and receives a grant from CONAHCyT-1246957.

Conflict of Interest

A. Agabo-Martínez: None. E. Gomez-Chang: None. W. Meza Morales: None. R. G. Enríquez: None. I. Romero: None.

P06.11.

WORLD'S FIRST ISOLATION CULTURE AND ERADICATION THERAPY OF *HELICOBACTER AILUROGASTRICUS* IN HUMAN PATIENTS

M. SANO[1]*, E. RIMBARA*[2]*, M. SUZUKI*[2]*, H. MATSUI*[2]*, H. SUZUKI*[1]
[1]Tokai university school of medicine, Kanagawa, Japan; [2]National Institute of Infectious Diseases, Tokyo, Japan

Objective: Non-*Helicobacter pylori Helicobacter* (NHPH), which is not considered to be natural human flora, can infect the human gastric mucosa and cause gastric mucosal diseases. In this study, we examined patients with MALT lymphoma and refractory gastric ulcers with gastric mucosal lesions not caused by *H. pylori* infection.
We aimed to determine if NHPH could be identified as a cause of these diseases and if bacterial eradication leads to the regression of pathology.
Patients and Methods*:* Patients with gastric MALT lymphoma or refractory gastric ulcer confirmed *H. pylori*-negative by serum antibody test, stool antigen test, and bacterial cultivation. Attempts were made to directly culture NHPH using a newly developed NHPH transporter and to detect NHPH DNA in gastric fluid using polymerase chain reaction (PCR). Eradication based on drug susceptibility results was performed.
Results: Among the 20 patients enrolled, NHPH was successfully detected in only one case. In this case, with refractory gastric ulcer, *Helicobacter ailurogastricus* was identified *via* PCR in gastric fluid, and successful direct isolation and culture from the human stomach were achieved. Drug susceptibility testing revealed that this human-derived strain was resistant to fluoroquinolones. Based on the results of drug susceptibility testing, eradication was successfully achieved using a regimen like that used for *H. pylori* eradication, consisting of vonoprazan, amoxicillin, and clarithromycin administered for 7 days. Approximately six months after eradication, no ulcer recurrence was observed.
Conclusions: In this study, we succeeded for the first time in directly isolating and culturing *H. ailurogastricus* from the human stomach and achieved pathological remission after eradication treatment.

Conflict of Interest
M. Sano: None. E. Rimbara: None. M. Suzuki: None. H. Matsui: None. H. Suzuki: None.

P06.12.

REAL-WORLD DATA AT A HIGH-VOLUME CENTER IN THE REPUBLIC OF KOREA: THE 1ST-LINE REGIMENS FOR THE ERADICATION OF *HELICOBACTER PYLORI*

S. SHIN*, D. PARK, D. JUNG, G. KIM, J. PARK, S. LEE, Y. LEE*
Yonsei University, College of Medicine, Seoul, Republic of Korea

Objective: Even though the resistance rate of clarithromycin exceeds 15% in Korea, the Korean guidelines persist in recommending clarithromycin-based triple therapy as the primary regimen. This study aims to assess the real-world effectiveness of first-line treatments for *H. pylori* based on actual clinical data.
Patients and Methods*:* Between January 2019 and December 2022, we conducted a retrospective analysis of *H. pylori*-infected patients who underwent treatments in our hospital. Patients received one of three regimens: PAC [proton pump inhibitors (PPI), amoxicillin, clarithromycin), PACM (PPI, amoxicillin, clarithromycin, metronidazole), or PBMT (PPI, bismuth, metronidazole, tetracycline). The primary endpoint was the eradication rate determined by intention-to-treat (ITT) analysis with a urea breath test.

Results: A total of 3,011 patients received first-line treatments, with 61.4% receiving PAC regimen (n=1,850), 24.5% PACM regimen (n=739), and 14.0% PBMT regimen (n=422), relatively. The ITT analysis revealed eradication rates of 81.7% (1,511/1,850) in the PAC group, 94.0% (695/739) in the PACM group, and 100% (422/422) in the PBMT group (p<0.001). In cases where first-line treatment failed, patients were subsequently treated with either PACM (n=6, 1.5%) or PBMT (n=381, 98.4%). The eradication rates for subsequent treatments were 100% (6/6) in the PACM group and 94% (358/381) in the PBMT group (p=0.535). Only 23 (0.76%) out of 3,011 patients failed eradication despite both first and subsequent treatments. In real-world scenarios, the PAC regimen, commonly utilized in our hospital, demonstrated an acceptable eradication rate. However, the PACM regimen also exhibited a relatively high success rate.
Conclusions: Considering the current prominence of the PBMT regimen as the last option for rescue in Korea, PACM regimen may serve as an effective first-line alternative for eradication.

Conflict of Interest
S. Shin: None. D. Park: None. D. Jung: None. G. Kim: None. J. Park: None. S. Lee: None. Y. Lee: None.

POSTER SESSION 07: HELICOBACTER 07

P07.01.

DIFFERENCES BETWEEN JAPAN AND LITHUANIA IN GASTRIC MUCOSAL DAMAGE AND GASTRIC CANCER PROFILE ASSOCIATED WITH *H. PYLORI* INFECTION: A LITHUANIA-JAPAN INTERNATIONAL COLLABORATIVE STUDY

H. MORI[1], *V. PETKEVICIUS*[2], *M. SANO*[3], *J. SKIECEVICIENE*[2], *T. KANAI*[1], *J. KUPCINSKAS*[2], *H. SUZUKI*[3]
[1]Keio University School of Medicine, Tokyo, Japan; [2]Lithuanian University of Health Sciences, Kaunas, Lithuania; [3]Tokai University School of Medicine, Isehara, Japan

Objective: *H. pylori* infection and gastric cancer are global diseases, but there is a wide disparity in infection and carcinogenesis rates among regions. In this study, we examined the differences in gastric mucosal damage due to *H. pylori* infection and gastric cancer profiles in Japan and Lithuania.
Patients and Methods*:* Between June 2022 and December 2023, *H. pylori* uninfected/infected cases and gastric cancer cases were enrolled in Japan and Lithuania, respectively. Gastric mucosal disorders were evaluated using the Kimura-Takemoto classification, Kyoto classification score, OLGA, and OLGIM, and ANCOVA analysis was performed with age as a covariate. Gastric cancer locations were compared by chi-square test.
Results: A total of 178 cases were registered. For *H. pylori* infection cases, the OLGIM showed significant differences in age and age-country interaction (p=0.001, p=0.008, respectively), and the difference between countries was almost significant (p=0.052). The Kimura-Takemoto classification showed no differences between countries (p=0.133) but significant differences in age and age-country interaction (p=0.022, p=0.016, respectively). These trends in OLGIM and endoscopic gastric mucosal atrophy are due to the fact that atrophy tends to progress with age in Japan, whereas in Lithuania, atrophy and intestinal metaplasia do not progress in a certain number of elderly patients. The location of gastric cancer was 36% lower, 18% middle, and 32% upper in Japan, and 46% lower, 30% middle, and 15% upper in Lithuania (p=0.259).
Conclusions: Differences in gastric mucosal atrophy and intestinal metaplasia due to *H. pylori* infection between Japan and Lithuania were demonstrated.

Conflict of Interest
H. Mori: None. V. Petkevicius: None. M. Sano: None. J. Skieceviciene: None. T. Kanai: None. J. Kupcinskas: None. H. Suzuki: None.

P07.02.

VALIDATION OF A NEARLY COMMERCIALLY AVAILABLE IN-HOUSE SELECTIVE MEDIUM FOR THE ISOLATION OF *HELICOBACTER PYLORI* FROM GASTRIC BIOPSIES

N. BEN AISSA[1], C. MOENS[1], B. GHISLAIN[1], A. PERNET[1], A. DEBYTTERE[1], S. MOHAMED[1], K. MUYLDERMANS[2], M. HING[1], D. MARTINY[1], ***V.Y. MIENDJE DEYI[1,3]***

[1]LHUB-ULB Laboratoire Hospitalier, Universitaire de Bruxelles, Brussels, Belgium; [2]BioTrading BV, Zedelgem, Belgium; [3]Belgian Helicobacter pylori and Microbiota Study Group (BHMSG), Brussels, Belgium

Objective: The Laboratoire Hospitalier Universitaire de Bruxelles, Universitair Laboratorium Brussel (LHUB-ULB) has a large culture activity for the diagnosis of *Helicobacter pylori* infection. Occasionally the main manufacturers leading the commercialization of selective *H. pylori* media experience technical problems leading to interruptions. The aim of this work is to validate an in-house agar medium in collaboration with Biotrading Benelux B.V. in order to make it commercially available.
Materials and Methods: From March to April 2024, 300 gastric biopsies were plated in parallel on our routine media [BD™ *Helicobacter* agar, Modified (Becton Dickinson)] and on the in-house selective media (*H. pylori* Selective Agar) produced by Biotrading. Plates were incubated in a microaerophilic atmosphere for 3 to 10 days. Isolation rate, percentage growth after 3 days and contamination rates were compared using Pearson's Chi-squared test. Colony recognition was also compared.
Results: This study showed that the in-house medium (*H. pylori* Selective Agar) facilitated the growth of *H. pylori*, similar to BD™ *Helicobacter* Agar, Modified. Interestingly, our observations suggest that the new medium is statistically significantly less contaminated ($p<0.05$) and the colony recognition is easier due to the presence of triphenyltetrazolium chloride, resulting in specific pigmented golden colonies (Table 1).
Conclusions: These preliminary results demonstrate the potential of our in-house "*H. pylori* Selective Agar" as a diagnostic tool for *H. pylori* infection, which should encourage Biotrading to pursue global commercialization.

TABLE 1. COMPARATIVE EVALUATION OF A NEAR-COMMERCIAL AVAILABLE IN-HOUSE MEDIUM WITH BD *HELICOBACTER* AGAR.

	BD™ *Helicobacter* Agar, Modified	In-house (*H. pylori* Selective Agar)	*p*-value (Significant differences when $p<0.05$)
Gastric biopsies (n)	300	300	-
Positive rate	28.3 %	28.3 %	0.28
Growth after 3 days	70.6%	68.2%	0.89
Contamination rate	29.0%	6.3%	<0.05
Colony recognition	Easy	Easier (golden colonies)	-

Conflict of Interest

N. Ben Aissa: None. C. Moens: None. B. Ghislain: None. A. Pernet: None. A. Debyttere: None. S. Mohamed: None. K. Muyldermans: None. M. Hing: None. D. Martiny: None. V.Y. Miendje deyi: None.

P07.04.

PCR-GUIDED TAILORED THERAPY IN THE ERADICATION OF *HELICOBACTER PYLORI*: EXPERIENCE FROM THE EUROPEAN REGISTRY ON H. PYLORI MANAGEMENT (HP-EUREG)

V. MILIVOJEVIC[1], *D. KEKIC*[2], *T. MILOSAVLJEVIC*[3], *I. BABIC*[4], *A. CANO-CATALÀ*[5], *P. PARRA*[6], *L. MOREIRA RUIZ*[7], *O. PEREZ NYSSEN*[6], *F. MÉGRAUD*[8], *C. O'MORAIN*[9], *J.P. GISBERT*[6]

[1]Clinic for Gastroenterology and Hepatology University Clinical Centre of Serbia, Belgrade, Serbia; [2]Institute of Microbiology and Immunology University of Belgrade, Belgrade, Serbia; [3]Euromedic General Hospital, Belgrade, Serbia; [4]Clinic for Endocrinology, Diabetes and Metabolic diseases University Clinical Centre of Serbia, Belgrade, Serbia; [5]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) Research Group, Althaia Xarxa Assistencial Universitària de Manresa. Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [6]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [7]Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [8]INSERM U1312, Université de Bordeaux, Bordeaux, France; [9]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: Various factors continuously challenge the successful eradication of *Helicobacter pylori* (*H. pylori*). Tailored therapy may be an answer to this ongoing problem. Our aim was to evaluate the effectiveness of polymerase chain reaction (PCR)-tailored therapy in *H. pylori* eradication in both treatment-naive and rescue lines.

Patients and Methods*:* Data was obtained from the prospective, multicenter registry that consists of detected patterns in the *H. pylori* management by European gastroenterologists (Hp-EuReg). PCR-tested patients were included. Demographics, outcomes, and adverse effects were evaluated.

Results: Overall, 265 patients from 20 countries were evaluated, 130 treatment-naive and 135 patients with previous eradication attempts. First-line PCR-tailored therapy effectiveness was 96%, while the effectiveness in the rescue line (2^{nd}-6^{th}) was 86%. Most prescribed first-line regimens were quadruple clarithromycin+amoxicilin+metronidazole (C+A+M) and single capsule bismuth+tetracycline+metronidazole (B+T+M), with effectiveness of 95% and 97%, respectively. Patients were predominantly treated with a 14-day therapy regimen (52%), while high-dose proton pump inhibitors (PPIs) were prescribed in 31% of patients. In the rescue line, the most frequent regimens were single capsule B+T+M, quadruple C+A+M, triple metronidazole-amoxicillin (M+A), and triple levofloxacin-amoxicillin (L+A), with respective effectiveness of 87%, 94%, 93%, and 91%. Treatment duration was 14 days for most patients (55%), while 61% of patients were treated with high-dose PPIs. The most common adverse event was mild nausea (13%), and overall compliance was 96%.

Conclusions: PCR-tailored therapy showed optimal results in all therapy lines. CLA-based therapy regimen can still be a good first-line treatment option in regions with high CLA resistance only if pretreatment antibiotic sensitivity is assessed.

Conflict of Interest

V. Milivojevic: None. D. Kekic: None. T. Milosavljevic: None. I. Babic: None. A. Cano-Català: None. P. Parra: None. L. Moreira Ruiz: None. O. Perez Nyssen: None. F. Mégraud: None. C. O'Morain: None. J. P. Gisbert: None.

P07.05.

MOLECULAR RESISTANCE OF *HELICOBACTER PYLORI* TO CLARITHROMYCIN AND LEVOFLOXACIN IN NAIVE PATIENTS IN MOSCOW

L. TSAPKOVA[1], *V. POLYAKOVA*[1], *N. BODUNOVA*[1], *D. BORDIN*[1,2,3], *K. NIKOLSKAYA*[1], *M. CHEBOTAREVA*[1], *N. NEYASOVA*[1], *I. VOYNOVAN*[1], *I. KHATKOV*[1,2]

[1]Loginov Moscow Clinical Scientific Center, Moscow, Russian Federation; [2]Russian University of Medicine, Moscow, Russian Federation; [3]Tver State Medical University, Moscow, Russian Federation

Objective: Empiric eradication therapies should be guided by local resistance patterns assessed by susceptibility testing (molecular or culture) and eradication rates in order to optimize treatment success. Our aim was to study the molecular resistance to clarithromycin and levofloxacin in *H. pylori*-positive naive patients in Moscow.

Materials and Methods: Under a grant from the Moscow Center for Innovative Technologies in Healthcare (0903-1/22), we studied the genetic features of *H. pylori* resistance to clarithromycin and levofloxacin in Moscow. Sanger sequencing was performed on gastric mucosa samples obtained during esophagogastroduodenoscopy (EGD). These samples were from *H. pylori*-positive, treatment-naive patients. Before EGD, patients underwent a C13-urea breath test. Participants ranged in age from 18 to 80 years. A total of 112 *H. pylori*-positive naive patients participated in the study.

Results: Mutations in the *23S rRNA* resistance gene clarithromycin were found in 27 (24%) samples, and mutations in the levofloxacin resistance gene *gyrA* were found in 26 (23%) samples. While dual resistance was detected in 16 (14%) samples, 59 (52%) of the samples tested did not have corresponding mutations in the clarithromycin and levofloxacin resistance genes.

Conclusions: A high level of detection of *H. pylori* resistance to clarithromycin and levofloxacin in Moscow, comparable to recent studies conducted in Europe, has been demonstrated.

Conflict of Interest

L. Tsapkova: B. Research Grant (principal investigator, collaborator, or consultant and pending grants as well as grants already received); Modest; Moscow Center for Innovative Technologies in Healthcare. V. Polyakova: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Moscow Center for Innovative Technologies in Healthcare. N. Bodunova: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Moscow Center for Innovative Technologies in Healthcare. D. Bordin: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Moscow Center for Innovative Technologies in Healthcare. K. Nikolskaya: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Moscow Center for Innovative Technologies in Healthcare. M. Chebotareva: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Moscow Center for Innovative Technologies in Healthcare. N. Neyasova: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Moscow Center for Innovative Technologies in Healthcare. I. Voynovan: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Moscow Center for Innovative Technologies in Healthcare. I. Khatkov: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Moscow Center for Innovative Technologies in Healthcare.

P07.06.

ANTIBIOTIC RESISTANCE EVALUATION AMONG PCR-TESTED *HELICOBACTER PYLORI* POSITIVE PATIENTS: RESULTS FROM THE EUROPEAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-EUREG)

V. MILIVOJEVIC[1], *D. KEKIC*[2], *T. MILOSAVLJEVIC*[3], *I. BABIC*[4], *A. CANO-CATALÀ*[5], *P. PARRA*[6], *L. MOREIRA RUIZ*[7], *O. PEREZ NYSSEN*[6], *F. MÉGRAUD*[8], *C. O'MORAIN*[9], *J.P. GISBERT*[6]

[1]Clinic for Gastroenterology and Hepatology University Clinical Centre of Serbia, Belgrade, Serbia; [2]Institute of Microbiology and Immunology University of Belgrade, Belgrade, Serbia; [3]Euromedic General Hospital, Belgrade, Serbia; [4]Clinic for Endocrinology, Diabetes and Metabolic diseases University Clinical Centre of Serbia, Belgrade, Serbia; [5]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) Research Group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [6]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [7]Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [8]INSERM U1312, Université de Bordeaux, Bordeaux, France; [9]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: Growing antibiotic resistance remains the leading cause of *Helicobacter pylori* (*H. pylori*) eradication failure. Our aim was to assess *H. pylori* resistance patterns through polymerase chain reaction (PCR) testing.

Patients and Methods*:* PCR-tested patients from an ongoing, multicenter, registry consisting of clinical practice in *H. pylori* management from European gastroenterologists (Hp-EuReg), were included in the study.

Results: In total, 265 patients from 20 European countries were evaluated, of which 130 were treatment-naive while 135 had received previous eradication attempts. First-line pretreatment resistance rates for clarithromycin (CLA), fluoroquinolone (FLQ), and metronidazole (MET) were 31%, 33%, and 14%, respectively. The highest CLA-R was reported in Eastern Europe (41%), while the lowest CLA-R was noted in Southwestern Europe (7%). Highest FLQ-R and MET-R were reported in South-central Europe (59% and 46%, respectively). There was no significant difference in resistance rates according to gender or age distribution. In the rescue line, CLA-R, FLQ-R, and MET-R were 62%, 53%, and 7%, respectively. Overall antibiotic resistance was significantly higher in those with more than one eradication failure (2nd-4th therapy line, 67% *vs*. 94% *vs*. 100%, p=0.001). There was a significant, progressive increase of CLA-R in relation to the number of previous eradication attempts (2nd-4th therapy line, 53% *vs*. 80% *vs*. 100%, p=0.001). No statistical difference was noted in the rate of FLQ-R and MET-R, respecting the number of therapy lines.

Conclusions: PCR-tailored therapy allows for an individual approach in treatment modeling. More careful antibiotic stewardship would be mandatory in order to further optimize therapies and achieve optimal (>90%) treatment success by minimizing the eradication attempts.

Conflict of Interest

V. Milivojevic: None. D. Kekic: None. T. Milosavljevic: None. I. Babic: None. A. Cano-Català: None. P. Parra: None. L. Moreira Ruiz: None. O. Perez Nyssen: None. F. Mégraud: None. C. O'Morain: None. J. P. Gisbert: None.

P07.07.

DESIGNER NON-ANTIBIOTIC DRUG TO COMBAT *HELICOBACTER PYLORI* IN THE AGE OF ANTIBIOTIC RESISTANCE

N.L. JONES[1], *M. CAPURRO*[1], *D. ORY*[2], *J. GARCIA FORTANET*[2], *L. MURPHY*[2]
[1]Hospital for Sick Children, Toronto, ON, Canada
[2]Casma Therapeutics, Boston, MA, USA

Objective: *H. pylori* treatment is suboptimal due to antibiotic resistance, leading the World Health Organization (WHO) to consider *H. pylori* a priority for new therapies. We have shown that Vacuolating cytotoxin A (VacA) promotes survival of *H. pylori* within parietal cells by preventing activation of the lysosomal calcium channel Transient Receptor Potential Mucolipin 1 (TRPML1), thereby disrupting the bacterial killing machinery and promoting escape from antibiotic eradication therapy. We hypothesized that activation of TRPML1 could serve as a novel adjunct to eradication therapy.
Materials and Methods: Gastric cell lines were employed to select small molecule TRPML1 agonists that prevented VacA-mediated vacuolation and resulted in intracellular bacterial killing. Systemic and gut-restricted versions were developed for *in vivo* use. Toxicity assays were performed in mice. Wildtype and TRPML1-/- mice were infected with SS1 wildtype or genetically engineered s1, m1 VacA+ SS1 *H. pylori* and treated with standard triple therapy or standard therapy plus TRPML1 agonist for 7 days. The level of bacterial colonization was evaluated by counting colony-forming units (CFU) and through histological examination at 1 and 8 weeks after the treatment.
Results: Standard therapy successfully eradicated *H. pylori* in SS1-infected mice, but eradication failed in VacA+ SS1-infected wildtype or TRPML1-/- mice. However, eradication was achieved in all VacA+ SS1-infected mice treated with TRPML1 agonist plus standard therapy. Notably, the addition of the TRPML1 agonist did not result in eradication in TRPML1-/- mice, confirming target specificity.
Conclusions: We provide the first preclinical evidence that activation of TRPML1 with a small molecule agonist result in the successful eradication of *H. pylori in vivo*. We suggest that activation of TRPML1 is a promising non-antibiotic treatment for *H. pylori*.

Conflict of Interest
N.L. Jones: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Casma Therapeutics. M. Capurro: None. D. Ory: A. Employment (full or part-time); Significant; Casma Therapeutics. J. Garcia Fortanet: A. Employment (full or part-time); Significant; Casma Therapeutics. L. Murphy: A. Employment (full or part-time); Significant; Casma Therapeutics.

P07.08.

EFFECT OF *HELICOBACTER PYLORI* TREATMENT ON CLINICAL OUTCOMES IN PATIENTS WITH GASTROINTESTINAL BLEEDING WITHIN 12 MONTHS AFTER PERCUTANEOUS CORONARY INTERVENTION - A NATIONWIDE POPULATION-BASED STUDY

B. KIM[1], *D. LEE*[2], *Y. KIM*[3]
[1]Chung-Ang University Hospital, Seoul, Republic of Korea; [2]NICE Hospital, Gwangju-si, Korea, Republic of Korea; [3]National Cancer Center, Goyang-si, Republic of Korea

Objective: Little is known about the role of *H. pylori* treatment (HPT) for peptic ulcer bleeding in patients taking dual antiplatelet therapy (DAPT) after percutaneous coronary intervention (PCI). Therefore, we evaluated the effect of HPT after PCI on the occurrence of gastrointestinal bleeding (GIB) and major adverse cardiovascular events (MACE).
Patients and Methods*:* Patients who underwent PCI from January 1, 2002, to December 31, 2018, were searched through disease classification code analysis from the National Health Insurance Service claims data, and antiplatelet drugs administered with aspirin were investigated by searching Drug claims data. Among them, patients who underwent endoscopic hemostasis for GIB within 12 months after PCI were investigated to see if HPT was related to GIB and MACE.

Results: A total of 12,247 patients were extracted from the cohort. Among them, 10,529 patients took DAPT within 12 months after PCI. A total of 918 patients (8.7%) experienced GIB, of which 570 (62.0%) underwent endoscopic hemostasis. After endoscopic hemostasis, 254 patients (44.5%) received HPT. The incidence of GIB after taking DAPT increased significantly from 6 months after the start of DAPT medication. In addition, the occurrence of GIB was significantly higher at 12 months of medication than at 6 months of medication. The 6-month DAPT group had significantly higher all-cause mortality and cardiovascular mortality than the 12-month DAPT group. The HPT group had a significantly lower GI rebleeding rate than the non-HPT group. In particular, GI rebleeding decreased significantly after 3 months of the treatment.
Conclusions: In patients taking DAPT after PCI, 'test-and-treat' for *H. pylori* will help prevent GIB.

Conflict of Interest
B. Kim: None. D. Lee: None. Y. Kim: None.

P07.09.

COST-EFFECTIVENESS ANALYSIS OF SCREENING AND TREATMENT *HELICOBACTER PYLORI* STRATEGY FOR PREVENTING GASTRIC CANCER IN GERMANY

T. SONG*, R. VASAPOLLI, L. MACKE, P. MALFERTHEINER, C. SCHULZ*
University of Munich, Munich, Germany

Objective: Gastric cancer remains a significant global health issue, with around 90% of cases linked to Helicobacter pylori. Despite its declining prevalence, Germany still reports 15,000 annual cases of gastric cancer and faces economic costs exceeding 800 million euros annually, with survival rates of only 30%-35%. Our study aims to simulate stepwise screening and treatment for Helicobacter pylori in asymptomatic individuals in Germany and to determine the cost-effectiveness of the screening and treatment decisions in preventing gastric cancer.
Patients and Methods*:* We utilized a Markov model to simulate stepwise Helicobacter pylori screening and treatment in asymptomatic individuals in Germany, comparing a screening strategy involving IgG and UBT tests followed by eradication treatment against a no-screening approach. We evaluated their impact on gastric cancer reduction, cost, effectiveness, and incremental cost-effectiveness ratio at various time points. Sensitivity and probabilistic analyses using Monte Carlo simulations were also conducted to assess the influence of different parameters.
Results: Our Markov model indicates that initiating a *Helicobacter pylori* screening and treatment strategy at age 20 for individuals in Germany gained 1,144.45 QALYs, an incremental cost-effectiveness ratio of 71,956.26 per QALYs. Screening strategy prevents 7.2% (1,657 cases) of gastric cancer cases and averts 852 deaths due to gastric cancer. Sensitivity analysis and Monte Carlo simulations confirm the model's robustness, highlighting that screening from age 20 to 60 is the most cost-effective approach.
Conclusions: Screening and treatment for *Helicobacter pylori* in asymptomatic individuals in Germany are cost-effective strategies for preventing gastric cancer incidence compared to no screening strategy.

Conflict of Interest
T. Song: None. R. Vasapolli: None. L. Macke: None. P. Malfertheiner: None. C. Schulz: None.

P07.10.

EXCELLENT ERADICATION RATE OF ONCE-DAILY VONOPRAZAN, LEVOFLOXACIN, CLARITHROMYCIN-MR, AND BISMUTH FOR *H. PYLORI* INFECTION IN HIGH CLARITHROMYCIN AND METRONIDAZOLE RESISTANCE AREA: A PROSPECTIVE RANDOMIZED STUDY (ONCE-VONO TRIAL)

S. SUKKAMOLSANTIPORN, N. AUMPAN, V. MAHACHAI, ***R. VILAICHONE***
Thammasat University, Pathumthani, Thailand

Objective: Vonoprazan is a novel potent acid inhibitor that has recently been introduced into the *H. pylori* treatment regimen. This is a pioneer study aiming to evaluate the efficacy of 7-day and 14-day once-daily vonoprazan, levofloxacin, clarithromycin-MR, and bismuth for *H. pylori* eradication in a high clarithromycin and metronidazole resistance area.
Patients and Methods*:* Dyspeptic patients were enrolled between November 2022 and October 2023. *H. pylori*-positive patients were randomized into 7-day and 14-day once-daily regimens composed of vonoprazan 40 mg, clarithromycin-MR 1 g, levofloxacin 500 mg, and bismuth subsalicylate 1,048 mg. CYP3A4/5 polymorphisms and antibiotic susceptibility tests were also performed.
Results: Of 312 dyspeptic patients undergoing upper gastrointestinal (GI) endoscopy, 102 (32.7%) had *H. pylori* infection and were enrolled in this study. All *H. pylori*-positive patients (41 men and 61 women, mean age 57.2±11.6 years) were randomized to receive a 7-day (51 patients) or a 14-day regimen (51 patients). Eradication rates of the 7-day regimen were 88.2% and 90% (p=0.78) by intention-to-treat (ITT) and per-protocol (PP) analyses, respectively, while eradication rates by ITT and PP analyses of 14-day regimens were 88.2% and 93.6 (p=0.36), respectively. Antibiotic resistance rates were 22.6% for clarithromycin and 26.4% for levofloxacin. For clarithromycin-resistant strains, eradication rates were 37.5% and 75% for 7-day and 14-day regimens, respectively. No serious adverse event was reported in either group.
Conclusions: Once-daily 14-day vonoprazan, levofloxacin, clarithromycin-MR, and bismuth regimens provided excellent eradication rates irrespective of CYP3A4/5 genotype. These regimens could be safely used as an alternative first-line treatment for *H. pylori* infection, especially in areas with high clarithromycin and metronidazole resistance.

Trial Registration Number: TCTR20240809001.

Conflict of Interest
S. Sukkamolsantiporn: None. V. Mahachai: None. R. Vilaichone: None. N. Aumpan: None.

P07.12.

THE ROLE OF PARAOXONASE 1 IN *HELICOBACTER* INDUCED GASTRITIS

S. KIM[1]*, J. KIM*[2]*, S. PARK*[3]

[1]Uijongbu St. Mary's Hospital, The Catholic University of Korea, Uijongbu, Republic of Korea; [2]Eunpyeong St. Mary's Hospital, The Catholic University of Korea, Seoul, Republic of Korea; [3]Yeouido St. Mary's Hospital, The Catholic University of Korea, Seoul, Republic of Korea

Objective: High doses and/or inadequate removal of reactive oxygen species result in oxidative stress, which may cause severe metabolic malfunctions and damage to biological molecules including tissue DNA. An elevated oxidative status has been found in many types of cancer cells and *Helicobacter* infections. Paraoxonase 1 is one of the endogenous free radical scavenging systems in the human and is believed to be involved in the protection against oxidative stress. However, there was no study about differential paraoxonase 1 expression in *H. pylori* infection. In this study, we investigated the changes in paraoxonase-1 expression in the *H. pylori* infection.

***Patients and Methods**:* To investigate the effect of *Helicobacter pylori* infection on the expression of paraoxonase 1, the gastric tissues from eighteen patients with *Helicobacter pylori* infection were used before and after eradication. The degree of oxidative stress in the tissues was evaluated by malondialdehyde. Expression of paraoxonase 1 and malondialdehyde were assessed by immunohistochemistry.
Results: The intensity of immunohistochemical stain on malondialdehyde and paraoxonase 1 was significantly elevated in the pre-eradication state compared to post-eradication (1.77 *vs*. 1.05 and 1.83 *vs*. 1.11, $p<0.05$, respectively). The expression of paraoxonase 1 and malondialdehyde in *H. pylori* infection was a statistically significant correlation (r=0.586, $p=0.001$).
Conclusions: Paraoxonase 1 must be the antioxidant enzyme in *Helicobacter*-induced gastritis.

Conflict of Interest
S. Kim: None. J. Kim: None. S. Park: None.

POSTER SESSION 08: HELICOBACTER 08

P08.01.

USEFULNESS OF *HELICOBACTER PYLORI* SALIVARY ANTIGEN TEST

A. Lee, S. Kim, S. Jung
Korea University, Ansan-si, Republic of Korea

Objective: The *Helicobacter pylori* (*H. pylori*) salivary antigen (Ag) test is recently introduced as one of several diagnostic methods for diagnosing *H. pylori*. The aim of this study is to determine whether the *H. pylori* salivary Ag test is useful as a test to predict *H. pylori* infection of the gastric mucosa.
***Patients and Methods**:* In a single-center prospective cohort study, 145 patients who underwent the *H. pylori* salivary Ag test among those who received gastric ESD for gastric neoplasm were analyzed. The gold standard for *H. pylori* positivity was defined as Giemsa stain or rapid urease test positive.
Results: The *H. pylori* positivity rate among all study subjects was 31%. The sensitivity of the *H. pylori* Ag test was calculated as 62.2%, specificity 48.0%, positive predictive value 65.0%, and negative predictive value 73.8%. Of the fifty *H. pylori*-positive patients, 12 patients completed eradication, and there was no effect of Ag positivity on the eradication success rate ($p=0.267$).
Conclusions: The *H. pylori* salivary Ag test is still insufficient to be used as an effective diagnostic tool. However, it can be selected as an option when invasive testing is difficult. Additional research is needed on this.

Conflict of Interest
A. Lee: None. S. Kim: None. S. Jung: None.

P08.03.

FIRST-LINE EMPIRICAL THERAPY IN THE UK: INTERIM ANALYSIS FROM DATA OF THE EUROPE AN REGISTRY ON *HELICOBACTER PYLORI* MANAGEMENT (HP-EUREG)

P. PHULL[1], *I. BEALES*[2], *J. BORNSCHEIN*[3], *O. P. NYSSEN*[4], *A. CANO-CATALA*[5], *L. MOREIRA*[6], *P. PARRA*[4], *F. MÉGRAUD*[7], *C. O'MORAIN*[8], *J. P. GISBERT*[4]

[1]Department of Digestive Disorders, Aberdeen Royal Infirmary, Aberdeen, United Kingdom; [2]Department of Gastroenterology, Norfolk and Norwich University Hospital, Norwich, United Kingdom; [3]Medical Research Council, Translational Immune Discovery Unit, MRC Weatherall Institute of Molecular Medicine, University of Oxford, Oxford, United Kingdom; [4]Gastroenterology Unit, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM), Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [5]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [6]Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [7]INSERM U1312, Université de Bordeaux, Bordeaux, France; [8]School of Medicine, Trinity College, Dublin, Ireland

Objective: Knowledge of the effectiveness of locally prescribed therapies is important to guide treatment of Helicobacter pylori. Our aim was to evaluate first-line empirical therapy effectiveness in the UK.

Materials and Methods: Sub-study of the multicenter, prospective registry evaluating the decisions and outcomes of H. pylori management by European gastroenterologists (Hp-EuReg). Data were registered at AEG-REDCap e-CRF 2013-2023. Modified intention-to-treat (mITT) and per protocol (PP) analyses were performed.

Results: There were 386 first-line empirical prescriptions (mean age: 54 years, SD 16; 53% females). Treatment indications were: non-investigated dyspepsia (46%), dyspepsia with normal endoscopy (22%), duodenal ulcer (11%), gastric ulcer (7.2%), unexplained iron deficiency anaemia (8.8%), and other indications (5.1%). Endoscopy was performed in 52% of the cases; no pre-treatment resistance test was performed. Eradication was confirmed by: 13C-urea breath test (36%), 14C-urea breath test (0.5%), stool antigen monoclonal test (38%), stool antigen polyclonal test (1.3%), histology (8.8%), rapid urease test (4.1%), and culture (1%). The most common treatments were triple therapies (97% of the patients): PPI-amoxicillin-clarithromycin regimen in 75%, PPI-amoxicillin-metronidazole in 44%, and PPI-clarithromycin-metronidazole in 9.9%. Most of the prescriptions were of 7 days (93%) and used low-dose (20 mg omeprazole equivalent twice daily) PPIs (75%). The overall effectiveness in treatment-naïve patients was 73% by mITT and 74% by PP analyses; mITT cure rates were 82% for PPI-amoxicillin-clarithromycin, and 47% for PPI-amoxicillin-metronidazole. Overall, 29% of patients reported at least one adverse event. Compliance was 99%.

Conclusions: In the UK, cure rates for first-line empirical treatment with triple therapy are suboptimal.

Conflict of Interest

P. Phull: None. I. Beales: None. J. Bornschein: None. O.P. Nyssen: Other; Significant; Mayoly, Allergan/Abbvie, Richen, Juvisé and Biocodex. A. Cano-Catala: None. L. Moreira: None. P. Parra: None. F. Mégraud: None. C. O'Morain: None. J.P. Gisbert: Other; Significant; Mayoly, Allergan/Abbvie, Diasorin, Richen, Juvisé and Biocodex.

P08.05.

EPITHELIAL BMP SIGNALING CONTROLS TISSUE RESPONSE TO *HELICOBACTER PYLORI* INFECTION

G. BECCACECI[1,2], *M. LIN*[1,2], *H. MOLLENKOPF*[3], *M. SIGAL*[1,2]
[1]Charité Universitätsmedizin, Berlin, Germany; [2]BIMSB, Max Delbrück Center for Molecular Medicine, Berlin, Germany; [3]Max Plank Institute for Infection Biology, Berlin, Germany

Objective: *Helicobacter pylori* (*H. pylori*) infection induces gland hyperplasia and chronic inflammation while causing alterations of signaling pathways that regulate epithelial cells' identity. In homeostasis, Bmp signaling is active in the pit region of gastric glands and is downregulated upon infection. Exploiting an *in vivo* murine model as well as *in vitro* assays, we aim to investigate how the downregulation of Bmp signaling affects mucosal homeostasis.
Materials and Methods: Conditional knockout mice (Axin2CreERT2-Bmpr1afl/fl or Bmpr1aKO) either uninfected or infected with *H. pylori* PMSS1 were analyzed *via* immunofluorescence, *in situ* hybridization and gene expression analysis [quantitative polymerase chain reaction (qPCR), whole transcriptome]. 3D gastric organoids were used to explore the role of BMP in epithelial responses to *H. pylori.*
Results: Spatial analysis of antral gastric tissue upon *H. pylori* infection shows that the influx of immune cells coincides with the downregulation of BMP signaling and hyperplasia. In uninfected conditions, epithelial Bmp loss (Bmpr1aKO) leads to gland hyperplasia and enhances inflammation, specifically at the top of the gland, where it is absent in mice with functional BMP signaling. Exploiting 3D organoids, we find that Bmp signaling activation inhibits the expression of proinflammatory chemokines. When infected, Bmpr1aKO mice show lower CFU compared to their WT counterpart, likely because the lack of Bmp signaling boosters the inflammatory response.
Conclusions: Chronic *H. pylori* infection induces loss of BMP signaling, which reduces tissue tolerance and puts the mucosa into an alert state. While this is important to fight *H. pylori*, it is linked to the development of chronic inflammation and hyperplasia and may increase the risk for mucosal transformation.

Conflict of Interest
G. Beccaceci: None. M. Lin: None. H. Mollenkopf: None. M. Sigal: None.

P08.06.

HYDROGEN SULFIDE DONOR DIMINISHES THE *HELICOBACTER PYLORI*-INDUCED GASTRIC FIBROBLAST ACTIVATION, REDUCING THE RISK OF GASTRIC CANCER DEVELOPMENT

G. KRZYSIEK-MACZKA*, A. TARGOSZ, P. BRONOWICKA-ADAMSKA, M. WIERDAK, M. STRZALKA, U. SZCZYRK, T. BRZOZOWSKI, J. CZYZ, A. PTAK-BELOWSKA*
Jagiellonian University Medical College, Krakow, Poland

Objective: The high incidence rate of gastric cancer (GC) has been associated with *Helicobacter pylori* (Hp) infection. When penetrating deeper layers of the mucosa, Hp can also interact with non-glandular cells, including fibroblasts. We showed that Hp infection of rat gastric fibroblasts induced their activation toward cancer-associated fibroblasts (CAFs) causing procarcinogenic reprogramming of normal cells. Since hydrogen sulfide (H_2S) is an important regulator of immune and inflammatory responses, we assessed the effect of slow-releasing H_2S donor NaHS on CAFs involving the NF-κB/STAT3 pathway.
Materials and Methods: Fibroblasts isolated from human gastric biopsy were infected with Hp ($cagA^+vacA^+$) for 120 h, and a fast-releasing H2S donor, NaHS, was added every 24 h at non-toxic doses of 50 µM and 400 µM. Activation markers and signaling factors were determined by reverse transcription polymerase chain reaction (qRT-PCR), Western Blot, and immunofluorescence. H2S release and enzyme activity of H2S biosynthesis were analyzed by spectrophotometry and commercial tests.

Results: Hp-infection increased the gene expression of TLR2, TLR4, STAT3, and NF-κB, confirming the Snail+Twist+ phenotype, and these effects were significantly inhibited by NaHS. Hp-infection strongly reduced the activity of H2S enzymes cystathionine β-synthase (CBS), 3-mercaptopurine sulfurtransferase (MPST), thiosulfate sulfurtransferase (TST), and the co-incubation with NaHS restored the CBS, MPST, and TST, indicating a partial restoration of normal H2S metabolism in CAFs.
Conclusions: Hp-induced CAFs involve the NF-κB/STAT3 pathway, which can be blocked by H2S donors. Thus, H2S-donating agents appear to be promising anti-inflammatory drugs to reduce fibroblast activation and possibly limit Hp-induced GC development when combined with Hp-eradication therapies.

Funding
This study was funded by statutory grant N41/DBS/000875 from Jagiellonian University Medical College.

Conflict of Interest
G. Krzysiek-Maczka: None. A. Targosz: None. M. Wierdak: None. M. Strzalka: None. U. Szczyrk: None. J. Czyz: None. A. Ptak-Belowska: None. T. Brzozowski: None. P. Bronowicka-Adamska: None.

P08.07.

THE INFLUENCE OF MACROLIDE EXPOSURE ON TAILORED *HELICOBACTER PYLORI* ERADICATION THERAPY AND ANTIBIOTIC RESISTANCE PROFILES: A PROSPECTIVE STUDY USING THE DRUG UTILIZATION REVIEW SYSTEM

K. CHOI*, J. NOH, J. AHN, J. LEE, K. JUNG, D. KIM, H. SONG, G. LEE, H. JUNG*
Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea

Objective: We evaluated macrolide exposure using the Korean drug utilization review (DUR) system. We aimed to analyze the impact of past macrolide use on antibiotic resistance profiles and compare the eradication rate between tailored therapy based on macrolide exposure history and empirical therapy.
Patients and Methods*:* Patients with confirmed *Helicobacter pylori* (*H. pylori*) infection who agreed to access the DUR system were enrolled. They received tailored therapy: clarithromycin (CLR)-based triple therapy in cases without macrolide exposure and bismuth quadruple (BQ) therapy in cases with macrolide exposure. The empirical therapy group was prospectively recruited at the same time.
Results: A total of 418 patients, including tailored therapy group (n=57) and empirical therapy group (n=361), were finally analyzed. Among the tailored therapy group, 24.6% of patients (14 of 57) were verified to have taken macrolide antibiotics. As a result of antimicrobial susceptibility tests, the CLR resistance rates were significantly higher in patients with previous macrolide use than without macrolide use (66.7% *vs.* 7.5%, $p<0.001$). The eradication rates of the tailored therapy group based on macrolide exposure were 86.0%, 94.2%, and 94.2% for intention-to-treat (ITT), modified intention-to-treat (MITT), and per-protocol (PP) analyses, respectively. These rates were higher than those of the empirical therapy group, which were 75.6%, 80.3%, and 85.1% for ITT, MITT, and PP analyses, respectively.
Conclusions: Previous macrolide exposure identified using the DUR system was significantly associated with a higher rate of CLR resistance. Tailored therapy based on macrolide exposure history led to significantly higher eradication rates compared to empirical therapy.

Conflict of Interest
K. Choi: None. J. Noh: None. J. Ahn: None. J. Lee: None. K. Jung: None. D. Kim: None. H. Song: None. G. Lee: None. H. Jung: None.

P08.08.

THE MAJORITY OF COMPLICATED PEPTIC ULCERS ARE *HELICOBACTER PYLORI*-ASSOCIATED, AMONG WHICH CLARITHROMYCIN-RESISTANT INFECTION IS LESS PREVALENT

V. PAPP[1], I. SZIRTES[2], T. BARBAI[2], E. RÁSÓ[2], A. BIRÓ[2], Á. JAKAB[2], F. ELAMIN[2], T. VASS[2], A. SZIJÁRTÓ[2], A. KISS[2], É. KOCSMÁR[2], ***G. LOTZ***[2]

[1]Department of Surgery, Transplantation and Gastroenterology, Semmelweis University, Budapest, Hungary; [2]Department of Pathology, Forensic and Insurance Medicine, Semmelweis University, Budapest, Hungary

Objective: Early eradication treatment after diagnosis of *Helicobacter pylori* (Hp)-associated peptic ulcer can reduce the risk of recurrent disease, especially in the case of complicated (e.g. bleeding, perforated) ulcers, where the prevention of further serious consequences is of particular clinical importance.
Materials and Methods: DNA was extracted from gastroduodenal biopsy specimens of 119 patients undergoing emergency intervention and sampling for gastroduodenal bleeding and/or perforated peptic ulcer using the Qiagen DNA Mini kit. A primer pair designed for the HP DNA sequence encoding the 23S rRNA was used for polymerase chain reaction (PCR) in parallel with positive/negative controls. Amplification of the β-actin housekeeping gene was used to confirm the presence of DNA of sufficient integrity. Samples showing amplified PCR products were further tested for detection of the bacterium and the presence of clarithromycin resistance mutations by bidirectional Sanger sequencing.
Results: Out of 119 cases, one was unsuitable for PCR (low DNA content), and one was positive for *Campylobacter sp*. Of the remaining 117 cases, 68 were Hp-PCR positive, and 49 were negative. From the 68 Hp-PCR positive cases, 6 (9%) were found to be clarithromycin-resistant (4xA2143G, 1xA2142G, 1xA2144G) and 62 clarithromycin-susceptible by sequencing, and 22 (32%) were negative by histological examination.
Conclusions: In Hungary, the rate of clarithromycin resistance is high among HP infections (17-23%, according to our previous data). The majority of complicated (bleeding/perforated) peptic ulcers are *Helicobacter*-associated, with a much lower rate of clarithromycin resistance; therefore, clarithromycin-based eradication is typically suitable as an early/rapid therapeutic protocol, for which PCR-based HP diagnostics are optimal.

Funding
K_22 142604, ÚNKP-23-4-II-SE-24, 2023-2.1.2-KDP-2023-00016.

Conflict of Interest
V. Papp: None. I. Szirtes: None. T. Barbai: None. E. Rásó: None. A. Biró: None. Á. Jakab: None. F. Elamin: None. T. Vass: None. A. Szijártó: None. A. Kiss: None. É. Kocsmár: None. G. Lotz: None.

P08.09.

VALIDATION OF AN IN-HOUSE QUANTITATIVE REAL-TIME PCR DESIGNED FOR DETECTION OF *HELICOBACTER PYLORI* AND ITS CLARITHROMYCIN RESISTANCE FROM FORMALIN-FIXED, PARAFFIN-EMBEDDED GASTRIC BIOPSY SAMPLES

A. BIRÓ[1], *A. KURUCZ[1], Á. JAKAB[1], I. SZIRTES[1], F. ELAMIN[1], G. M. BUZÁS[2], V. PAPP[3], A. SZIJÁRTÓ[3], A. KISS[1], É. KOCSMÁR[1], G. LOTZ[1]*

[1]Department of Pathology, Forensic and Insurance Medicine, Semmelweis University, Budapest, Hungary; [2]Department of Gastroenterology, Ferencváros Health Centre, Budapest, Hungary; [3]Department of Surgery, Transplantation and Gastroenterology, Semmelweis University, Budapest, Hungary

Objective: The diagnostic accuracy of detecting *Helicobacter pylori* (HP) and its clarithromycin susceptibility (Cla-susc) from gastric biopsies by immunohistochemistry (IHC) and fluorescence-*in-situ* hybridization (FISH) compared to isolated DNA-based polymerase chain reaction (PCR) methods are still controversial and need to be investigated.

Patients and Methods: Formalin-fixed paraffin-embedded (FFPE) gastric tissue samples from 209 patients were collected. Tissue sections were stained by *Helicobacter*-IHC and Cla-susc FISH. DNA was isolated, and bacterial 23SrRNA gene sequences were amplified by FRET-based quantitative-PCR (qPCR) using a conventional primer pair (HPY-267 bp) and another (HPJ-122 bp) designed specifically for FFPE samples.
Results: 108/209 specimens were *HP*-positive by IHC/FISH, and 101 were *HP*-negative. Quantitative-PCR detected the bacterium from 89/108 (HPY) and 102/108 (HPJ) IHC/FISH-*HP*-positive cases, moreover from 12/101 (HPY) and 25/101 (HPJ) IHC/FISH-*HP*-negative cases (Table I).
Conclusions: The qPCR performed better with the HPJ primer pair and correctly detected both *HP* and its clarithromycin susceptibility status in IHC/FISH-positive cases. However, it is noteworthy that a significant proportion (25%) of IHC/FISH-negative cases were detected as *HP*-positive by qPCR. Owing to the discontinuous mucosal appearance of *Helicobacter*, it cannot be detected histopathologically in certain biopsy specimens, only by soluble DNA-based PCR, which is therefore recommended in IHC-negative cases.

TABLE 1. CLA-SUSCEPTIBILITY RESULTS.

Cla-susc FISH	Susceptible 42	Heteroresistant 33	Homoresistant 33	Susceptible 42	Heteroresistant 33	Homoresistant 33
qPCR	HPY	HPY	HPY	HPJ	HPJ	HPJ
Cla-susceptible	13	1	0	34	4	0
Cla-heteroresistant	20	13	0	5	19	2
Cla-homoresistant	4	15	23	1	8	29
negative	5	4	10	2	2	2

Fluorescence-*in-situ* hybridization (FISH); quantitative-polymerase chain reaction (PCR).

Funding
K_22 142604 of the National Research, Development and Innovation Office; New National Excellence Program (ÚNKP-23-4-II-SE-24) and KDP-2023 Funding Scheme (2023-2.1.2-KDP-2023-00016) of the Ministry for Culture and Innovation (from the National Research, Development and Innovation Fund).

Conflict of Interest
A. Biró: None. A. Kurucz: None. Á. Jakab: None. I. Szirtes: None. F. Elamin: None. G.M. Buzás: None. V. Papp: None. A. Szijártó: None. A. Kiss: None. É. Kocsmár: None. G. Lotz: None.

P08.10.

DIFFERENCES IN SUCCESS RATE OF *HELICOBACTER PYLORI* ERADICATION ACCORDING TO METRONIDAZOLE DOSE AND DURATION OF USE

***S. BYUN**, J. AHN, K. CHOI, D. KIM, J. LEE, H. JUNG*
Asan Medical Center, Seoul, Republic of Korea

Objective: Metronidazole is commonly used for eradication therapy; however, limited studies on its effective dosage and duration exist. The aim of this study is to evaluate the eradication rates according to metronidazole dose and duration, including antibiotic-resistant results.
Materials and Methods: A total of 799 patients who received quadruple therapies containing metronidazole were retrospectively reviewed and included cases of antibiotic susceptibility testing. Success rates of *H. pylori* eradication were analyzed according to the dose (1,000 and 1,500 mg/day) and the duration (7, 10, and 14 days).

Results: The success rates of *H. pylori* eradication in the 1,000 mg/day group were 80.3%, 92.7%, and 88.4% in 7, 10, and 14 days, respectively, and in 1,500 mg/day group were 72.7%, 82.2%, and 84.9% in 7, 10, and 14 days, respectively. There were no statistical significances according to the dose of metronidazole. Regardless of resistance, 10 to 14 days groups showed a higher success rate compared to 7 days (90.5 *vs*. 80.3% in 1,000 mg/day, p=0.034 and 84.6% *vs*. 72.7% in 1,500 mg/day, p=0.006). In metronidazole-resistant cases, 10 to 14 days groups showed a higher success rate compared to 7 days in both 1,000 mg and 1,500 mg/day; however, in susceptible cases, there were no significant differences between 7 days and 10 to 14 days groups in both 1,000mg and 1,500mg/day.
Conclusions: There were no differences in success rates between doses of 1,000 mg/day and 1,500 mg/day groups. Without resistance data, using 10 to 14 days of metronidazole was better than 7 days; however, in susceptible cases, in susceptible cases, only 7 days with 1,000/day can show effective results.

Conflict of Interest
S. Byun: None. J. Ahn: None. K. Choi: None. D. Kim: None. J. Lee: None. H. Jung: None.

P08.11.

THE FACTORS FOR SPONTANEOUS CLEARANCE OF *HELICOBACTER PYLORI* AFTER SUBTOTAL GASTRECTOMY

***S. BYUN**, J. AHN, D. KIM, J. LEE, K. CHOI, H. JUNG*
Asan Medical Center, Seoul, Republic of Korea

Objective: *Helicobacter pylori* eradication was recommended after gastrectomy. However, no specific criteria for eradication treatment have been reported yet. The aim of this study was to evaluate the degree of spontaneous clearance and what factors affected it.
Patients and Methods: Patients who underwent subtotal gastrectomy at Asan Medical Center in Seoul and had positive *H. pylori* status at the time of gastric cancer diagnosis were prospectively enrolled in this study. *H. pylori* status and histologic status, such as monocyte, neutrophil, atrophy, and intestinal metaplasia, were evaluated pre- and postoperatively in different locations of the stomach.
Results: 16 patients positive for *H. pylori* by both CLO and biopsy underwent subtotal gastrectomy. During the follow-up, 13 out of 16 patients (81.3%) experienced spontaneous clearance at least once. Among them, 61.8% showed negative conversion within six months after the surgery. There was no significant difference between spontaneous clearance and the persistently positive group according to histologic status, such as monocyte, neutrophil, atrophy, and intestinal metaplasia. The spontaneous clearance rates of *H. pylori* were 71.4% on cardio, 43.7% on the fundus, 37.5% on the lesser curvature of the mid-body, and 37.5% on the greater curvature of the mid-body, which were not significantly different (p=0.445).
Conclusions: Spontaneous clearance of *H. pylori* after gastrectomy appeared in a high percentage of patients. Regardless of histological status and locations, it is better to consider retesting for *H. pylori* before postoperative eradication treatment.

Conflict of Interest
S. Byun: None. J. Ahn: None. D. Kim: None. J. Lee: None. K. Choi: None. H. Jung: None.

POSTER SESSION 09: HELICOBACTER 09

P09.01.

HELICOBACTER PYLORI CARRYING PROPHAGES: WINNERS IN FITNESS AND VIRULENCE?

J.S. VITAL[1,2], *A.T. MARQUES*[1,2], *L. TANOEIRO*[1,2], *C. DOMINGOS*[3], *A. SEQUEIRA*[1,2], *S.S. COSTA*[4], *M. OLEASTRO*[3], *F.F. VALE*[1,2]

[1]Pathogen Genomics and Translational Microbiology Lab, BioISI – Instituto de Biosistemas e Ciências Integrativas, Faculdade de Ciências, Universidade de Lisboa, Lisboa, Portugal; [2]Research Institute for Medicines (iMed-ULisboa), Faculty of Pharmacy, Universidade de Lisboa, Lisboa, Portugal; [3]Department of Infectious Diseases, National Reference Laboratory for Gastrointestinal Infections, National Institute of Health Dr. Ricardo Jorge, Lisboa, Portugal; [4]Global Health and Tropical Medicine, Instituto de Higiene e Medicina Tropical, Universidade NOVA de Lisboa, Lisboa, Portugal

Objective: Approximately 30% of *Helicobacter pylori* strains carry prophages, yet their impact on strain fitness and virulence remains uncertain. This study aimed to assess this impact using phage mutants targeting crucial phage proteins (POR009Δportal and ALG001ΔIntegrase) in competition, biofilm, and *Galleria mellonella* larvae infection assays.
Materials and Methods: Competition assays compared the fitness of wild-type and mutant strains fitness. The strains were co-incubated at a 1:1 ratio for 48h, and their relative abundance was quantified by quantitative-polymerase chain reaction (qPCR). Biofilm formation was assessed by incubating strains at an OD of 0.15 for 5 days, followed by crystal violet staining and absorbance measurement at 595 nm. Strains virulence was assessed by injecting *G. mellonella* larvae with bacterial suspensions and monitoring survival for 5 days.
Results: On growth competition assays, ALG001 wild-type relative level (70%) was higher than ALG001Δintegrase (30%), while POR009 wild-type had 15%, lower than POR009Δportal (85%). POR009Δportal and wild-type were good biofilm producers (OD595=0.35 and 0.43), while ALG001 wild-type and ALG001Δintegrase mutant had poor biofilm production (OD595=0.11 and 0.05). *G. mellonella* larvae survival rates were poorer after mutants' infection (ALG001Δintegrase: 30%; ALG001 wild-type: 60%; POR009Δportal: 20%; POR009 wild-type: 55%).
Conclusions: Integrase gene deletion reduced competitiveness, suggesting increased prophage induction into lytic-cycle, resulting in decreased fitness compared to the wild-type. Conversely, deletion of the portal gene increased fitness by enhancing strain survival, as it is crucial for lytic phage assembly. Biofilm formation seems more strain-dependent than influenced by prophage integrity, while *G. mellonella* infection assays showed less disparity between mutants and wild-type strains, indicating a nuanced impact on virulence.

Conflict of Interest
F.F. Vale: None. J.S. Vital: None. A.T. Marques: None. L. Tanoeiro: None. C. Domingos: None. A. Sequeira: None. S.S. Costa: None. M. Oleastro: None.

P09.02.

HELICOBACTER AND *CAMPYLOBACTER* SPECIES COMMONLY COLONIZE THE INTESTINES OF SWINE

Z. SHEN, *Y. FENG, A. MANNION, J.G. FOX*
Massachusetts Institute of Technology, Cambridge, MA, United States

Objective: Swine have proven to be particularly effective for surgery models in biomedical research as well as translational studies due to their anatomical and physiological similarities to humans. *Helicobacter* spp. and *Campylobacter* spp. have been identified in swine gastrointestinal tracts. Identifying *Helicobacter* and *Campylobacter* spp. in animal hosts can help define their zoonotic potential.

Materials and Methods: *Helicobacter* spp. and *Campylobacter* spp. screens were conducted on the feces of 44 swine used for biomedical research and housed in two different U.S. institutes and for 21 swine large intestinal samples purchased at 3 retail stores. Bacterial culture, polymerase chain reaction (PCR), and sequencing analysis were performed to identify the species.
Results: All the fecal samples were positive for *Helicobacter* and *Campylobacter* spp. by PCR using the genus-specific primers. *Helicobacter* spp. were isolated from 41% of the fecal samples. *H. canadensis*, *H. equorum,* and a novel species closely related to *H. marmotae* were identified by biochemical testing, 16S rRNA, and whole genomic sequence analysis. *Campylobacter* spp. were isolated from 100% of fecal samples. *C. coli*, *C. hyointestinalis*, *C. jejuni,* and *C. lanienae* were identified by 16S rRNA analysis. *Helicobacter* spp. and *Campylobacter* spp. were also identified in 100% of swine intestinal tissues purchased from the retail stores. *Helicobacter* spp. list above, as well as *C. coli* and *C. jejuni,* were identified by PCR and 16S rRNA sequencing.
Conclusions: Swine used in biomedical research obtained from different sources and swine intestines purchased from retail stores have a high prevalence of *Helicobacter* spp. and *Campylobacter* spp., which may pose a risk of zoonotic transmission.

Conflict of Interest
Z. Shen: None. Y. Feng: None. A. Mannion: None. J.G. Fox: None.

P09.03.

ARE THEY JUMPING? DETECTING SPONTANEOUS PROPHAGEINDUCTION IN *HELICOBACTER PYLORI* STRAINS

L. TANOEIRO[1,2]*, M. OLEASTRO*[3]*, J.M.B. VÍTOR*[2]*, L. DEBARBIEUX*[4]*, F.F. VALE*[1,2]
[1]Pathogen Genomics and Translational Microbiology Lab, BioISI – Instituto de Biosistemas e Ciências Integrativas, Faculdade de Ciências, Universidade de Lisboa, Lisboa, Portugal; [2]Research Institute for Medicines (iMed-ULisboa), Faculty of Pharmacy, Universidade de Lisboa, Lisboa, Portugal; [3]Department of Infectious Diseases, National Reference Laboratory for Gastrointestinal Infections, National Institute of Health Dr. Ricardo Jorge, Lisboa, Portugal; [4]Institut Pasteur, Université Paris Cité, CNRS UMR6047, Bacteriophage Bacterium Host, Paris, France

Objective: Prophage induction is commonly observed in the human gastrointestinal tract. Prophage-like sequences are present in 30% of *H. pylori* genomes and can be classified into four major populations - hpAfrica1, hpEastAsia, hpNEurope and hpSWEurope - according to phylogeographical distribution. Despite this noteworthy prevalence, *H. pylori* prophage induction has rarely been reported. Here, we present a molecular approach to detect prophage induction and evaluate its efficacy with a representative set of lysogenic strains.
Materials and Methods: A representative set of strains with potentially functional prophages of the four populations was selected (n=13) for evaluation of spontaneous prophage induction, along with the strains J99 and 26695 as negative controls. A duplex PCR targeting bacterial (*23S rDNA*) and phage (portal protein) genes were designed and applied to supernatants from overnight cultures after DNase I digestion to degrade non-encapsidated DNA.
Results: Prophage gene amplicons from DNase-treated supernatants were obtained for several strains, suggesting that some prophages are spontaneously induced. We also observed that DNAse treatment was not totally effective and could be optimized to strengthen our preliminary results.
Conclusions: We detected spontaneous induction of several *H. pylori* prophages of the different populations. Additional assays using inducing cues, such as UV-light or drugs, should be performed to eventually induce more prophages. Since traditional methods such as observation of phage particles by electron microscopy or plaque assays seem to be often unsuccessful in detecting *H. pylori* prophage induction, our molecular method based on targeted polymerase chain reaction (PCR) represents a solid alternative to identifying active (inducible) prophages in *H. pylori* genomes.

Conflict of Interest
L. Tanoeiro: None. M. Oleastro: None. J.M.B. Vítor: None. L. Debarbieux: None. F.F. Vale: None.

P09.04.

ONLY IN A MINORITY OF PATIENTS WITH AUTOIMMUNE ATROPHIC GASTRITIS, *HELICOBACTER PYLORI*-SPECIFIC GENES ARE DETECTABLE IN GASTRIC BIOPSIES

L. BELLONI[1], S. CINGOLANI[1], G. STENDARDO[1], G. COZZA[1], M. VAVALLO[1], L. DOTTORI[1], J. BUTT[2], F. SCHIAVONE[1], T. WATERBOER[3], B. ANNIBALE[1], ***E. LAHNER[1]***

[1]Sapienza University of Roma, Rome, Italy; [2]Infection and Cancer Epidemiology, Division of Molecular Diagnostics of Oncogenic Infections, German Cancer Research Center (DKFZ), Heidelberg, Germany; [3]Infection and Cancer Epidemiology, Division of Molecular Diagnostics of Oncogenic Infections, German Cancer Research Center (DKFZ), Heidelberg, Germany

Objective: Responsible mechanisms for the induction of autoimmune atrophic gastritis (AAG) are not clearly defined. *Helicobacter pylori* (Hp) infection may induce and drive the autoimmune process that causes gastric corpus atrophy. This study aimed to assess the presence of Hp-related genes in corpus mucosa biopsies of AAG patients, using real-time polymerase chain reaction (PCR) technique.
Patients and Methods: This is single center study on 55 adults with histological AAG diagnosis [52 pts Hp-negative, 3 Hp-positive at histology, 96.2% parietal cell (PCA), 44.2% intrinsic factor antibodies (IFA)-positive]. Hp-serology (ELISA or multiplex) was available for all patients. DNA was extracted from formalin-fixed, paraffin-embedded (FFPE) tissue sections of corpus mucosa biopsies, and real-time PCR was performed using specific probes (UreA, UreC, and CagA).
Results: In 4/7.7% of the 52 histologically Hp-negative AAG patients, Hp-related genes were detected. All 4 had positive Hp serology and PCA, and one was IFA-positive. Hp-serology was positive in all 4 histologically Hp-negative UreC-positive AAG pts compared to 5/10.4% UreC-negatives (p<0.0001), indicating previous exposure. In 2/66.7% pts with histologically Hp-positive AAG, Hp-related genes were detected, in the remaining patient, nor UreA, UreC neither CagA gene was found (PCA-IFA-Hp serology positive).
Conclusions: In >90% of histologically Hp-negative and PCA- or IFA-positive AAG pts, Hp-related genes cannot be retrieved in the gastric mucosa. Hp-related genes can be detected in gastric biopsies in <10% of histologically Hp-negative AAG patients and positive Hp-serology further confirms the role of Hp in this group. These findings show that primary, Hp-naive AAG is the more common type, but in a subset of pts, AAG seems to be secondary to Hp infection.

Conflict of Interest
L. Belloni: None. S. Cingolani: None. G. Stendardo: None. G. Cozza: None. M. Vavallo: None. L. Dottori: None. J. Butt: None. F. Schiavone: None. T. Waterboer: None. B. Annibale: None. E. Lahner: None.

P09.05.

A DISCORDANCE IN THE PREVALENCE OF *H. PYLORI* INFECTION IN BILE BETWEEN *H. PYLORI*-SPECIFIC-STOOL-ANTIGEN TEST AND PCR

Y. FUKUDA[1], *T. SAKAMOTO[1], Y. SHOUJI[1], N. MORIYAMA[1], K. NAKAMICHI[1], S. MATSUBAYASHI[2], Y. NAKAGAWA[3], K. SAKAMOTO[3], K. HAMAHATA[3], R. NAKAMURA[3], K. KOMIYA[3], K. KOMIYA[3], H. URESHINO[3], F. ISHII[3], S. ITO[3], M. MORIMOTO[3], Y. YOSHIDA[3], T. NORITOMI[3]*

[1]Department of Gastroenterology, Fukuoka-Tokushukai-Medical Center, Fukuoka, Japan; [2]Department of Psychosomatic Medicine, Fukuoka-Tokushukai-Medical Center, Fukuoka, Japan; [3]Department of Surgery, Fukuoka-Tokushukai-Medical Center, Fukuoka, Japan

Objective: There has been a lack of information regarding the prevalence of *H. pylori* (Hp) infection in current Japanese bile. At the EHMSG Workshop 2023, we reported that Hp was positive with the Hp-specific-antigen test (HpSA) in 16 (53%) of a total of 30 Japanese bile samples.
Patients and Methods: The objective of this study was to verify the previously estimated prevalence of Hp infection in bile by HpSA. Bile samples were obtained from 30 consecutive patients undergoing cholecystectomy in our hospital between November 2022 and February 2023 and screened with HpSA

(Testmate Rapid Pylori Antigen®; Wakamoto Pharmaceutical Co., Ltd). In addition to the previous HpSA analysis, we tested bile samples with PCR using the Hp urease A gene primer in this study.
Results: Hp was detected by PCR method in 2 (6.6 %) of a total of 30 Japanese bile samples. The concordance rate of Hp detection in bile between HpSA and PCR was as follows: positive agreement rate at 6.2% (1/16); overall match rate at 46.6% (14/30).
Conclusions: The Hp positivity in bile by PCR method was extremely lower than expected and was also inconsistent with the Hp positivity in bile by HpSA. There were doubts about the reliability of the PCR or HpSA for the detection of Hp in bile, so further investigations are needed.

Conflict of Interest
Y. Fukuda: None. T. Sakamoto: None. Y. Shouji: None. N. Moriyama: None. K. Nakamichi: None. S. Matsubayashi: None. Y. Nakagawa: None. K. Sakamoto: None. K. Hamahata: None. R. Nakamura: None. K. Komiya: None. K. Komiya: None. H. Ureshino: None. F. Ishii: None. S. Ito: None. M. Morimoto: None. Y. Yoshida: None. T. Noritomi: None.

P09.06.

FIRST-LINE *HELICOBACTER PYLORI* EMPIRICAL TREATMENT IN THE CZECH REPUBLIC (2019-2024): INITIAL INSIGHTS FROM THE EUROPEAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-EUREG)

J. Krivinka[1], *L. Kunovsky[1,2,3], J. Vaculova[4], J. Kral[5,6], S. Hruba[7,8], I. Tacheci[9], P. Cavajdova[9], A. Vasura[10], P. Konarikova[11], J. Langner[12], N. Friedova[13], D. Pridal[14], A. Cano-Catala[15], L. Moreira[16], P. Parra[17], F. Megraud[18], C. O'Morain[19], O.P. Nyssen[17], J.P. Gisbert[17]*
[1]2nd Department of Internal Medicine, Gastroenterology and Geriatrics, Faculty of Medicine and Dentistry, University Hospital Olomouc, Palacky University Olomouc, Olomouc, Czech Republic; [2]Department of Surgery, Faculty of Medicine, University Hospital Brno, Masaryk University, Brno, Czech Republic; [3]Department of Gastroenterology and Digestive Endoscopy, Masaryk Memorial Cancer Institute, Brno, Czech Republic 4Department of Gastroenterology and Internal Medicine, Faculty of Medicine, University Hospital Brno, Masaryk University, Brno, Czech Republic; [5]Department of Hepatogastroenterology, Institute for Clinical and Experimental Medicine, Prague, Czech Republic; [6]Department of Internal Medicine, Second Faculty of Medicine, Charles University, Prague, Czech Republic; [7]Department of Gastroenterology and Hepatology, Faculty of Medicine in Pilsen, 1st Internal Clinic, University Hospital in Pilsen, Charles University, Pilsen, Czech Republic; [8]Hospital Horovice, Horovice, Czech Republic; [9]2nd Department of Internal Medicine and Gastroenterology, Faculty of Medicine in Hradec Kralove, University Hospital and Charles University, Hradec Kralove, Czech Republic; [10]Department of Gastroenterology, Faculty of Medicine, Hepatology and Pancreatology, Internal and Cardiologic Clinic, University Hospital Ostrava, University Ostrava, Ostrava, Czech Republic; [11]Tomas Bata Regional Hospital, Zlin, Czech Republic; [12]Hospital Frydek-Mistek, Frydek-Mistek, Czech Republic; [13]Department of Internal Medicine, 3rd Faculty of Medicine, Charles University and Thomayer University Hospital, Prague, Czech Republic;
[14]Gastroenterology SPEA Olomouc, Olomouc, Czech Republic; [15]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) Research Group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [16]Department of Gastroenterology, Hospital Clínic Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBEREHD), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Barcelona, Spain; [17]Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Universidad Autónoma de Madrid (UAM) and Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [18]Laboratoire de Bactériologie, Hôpital Pellegrin, Bordeaux, France; [19]Faculty of Health Sciences, Trinity College Dublin, Trinity College Dublin, IE, Dublin, Ireland

Objective: *H. pylori* infection remains a significant public health concern worldwide. Our aim was to evaluate the current first-line treatment approaches for *H. pylori* infection in the Czech Republic.

Materials and Methods: Data were collected at an e-CRFAEGREDCap platform from the European Registry on *H. pylori* Management (Hp-EuReg). *H. pylori*-positive and treatment-naïve patients were considered. Effectiveness was assessed by modified intention-to-treat (mITT) analysis.
Results: 546 patients who received first-line treatment were analyzed. Low-dose (i.e., 20 mg omeprazole equivalent twice daily) proton pump inhibitors (PPIs) and 14-day prescriptions were most commonly used (89% and 40% of cases, respectively). The overall empiric first-line therapy effectiveness was 85%, varying according to the different prescriptions: 86% with low-dose PPIs, 82% with standard dose (40 mg omeprazole twice daily), and 86% with high-dose (80 mg omeprazole twice daily) PPIs (p<0.05). The effectiveness was also reported different according to the treatment duration, that is, 83%, 86%, and 86% for 7, 10, and 14 days, respectively. Triple therapy with PPI-amoxicillin-clarithromycin was the most frequent (64% of cases) first-line treatment, achieving an 85% effectiveness. Effectiveness with 10-day sequential and 14-day non-bismuth quadruple concomitant therapy (both including PPI-amoxicillin-clarithromycin-metronidazole) obtained the highest cure rates: 96% and 97%, respectively. At least one adverse event was reported in 4.7% of cases, and overall compliance was 98%.
Conclusions: In the Czech Republic, overall, first-line empirical effectiveness was suboptimal (<90%); however, 10-day non-bismuth quadruple sequential and 14-day concomitant therapies, both encompassing PPI-amoxicillin-clarithromycin-metronidazole, achieved over 90% cure rates.

Conflict of Interest
J. Krivinka: None. L. Kunovsky: None. J. Vaculova: None. J. Kral: None. S. Hruba: None. I. Tacheci: None. P. Cavajdova: None. A. Vasura: None. P. Konarikova: None. J. Langner: None. N. Friedova: None. D. Pridal: None. A. Cano-Catala: None. L. Moreira: None. P. Parra: None. F. Megraud: None. C. O'Morain: None. O.P. Nyssen: None. J.P. Gisbert: None.

P09.07.

USING AN IL-10$^{-/-}$-B6.129 MOUSE MODEL TO STUDY *HELICOBACTER* CINAEDI-INDUCED CELLULITIS AND BACTEREMIA

Z. SHEN*, A.M. HAYWARD, S. MUTHUPALANI, N.S. TAYLOR, J. G. FOX*
Massachusetts Institute of Technology, Cambridge, MA, United States

Objective: *Helicobacter cinaedi* has been isolated from many different species of hosts, including humans. *H. cinaedi* bacteremia and tissue infections have been commonly reported in Japan especially after orthopedic surgery. We used a mouse surgery model to mimic clinical *H. cinaedi* reports in humans.
Materials and Methods: Male and female 6-8-week-old IL-10$^{-/-}$-B6.129 mice were divided into four groups: *H. cinaedi* oral dose only; *H. cinaedi* oral dose followed with surgery two weeks later (pin placement in tibia); surgery same time with intraperitoneal (IP) injection of *H. cinaedi*; surgery only. Mice were necropsied at 2 weeks and 4 weeks post-surgery. *H. cinaedi* DNA was detected by polymerase chain reaction (PCR). Histopathological evaluations were performed on the surgical sites of all the mice.
Results: All fecal samples from *H. cinaedi* infected mice were positive for *Helicobacter* by PCR; 40% of orally dosed mice had *Helicobacter* detected at surgical sites, and 10-20% of IP injected mice had *Helicobacter* detected at surgical sites. *H. cinaedi* was not detected in the blood by culture and PCR. At two weeks post-surgery, the muscle atrophy score was significantly higher in the group orally dosed with *H. cinaedi*. At four weeks post-surgery, the combined pathological changes from skin, muscle, bone, medulla, and cartilage in orally dosed *H. cinaedi* mice were significantly higher compared to that of the only group and mice that had IP injection of H. cinaedi at the time of surgery.
Conclusions: Orally dosed *H. cinaedi* with tibial surgery in IL10-/- mice induced more severe damage in tissue injury and delayed wound healing and tissue repair compared to control mice with surgery only.

Conflict of Interest
Z. Shen: None. A.M. Hayward: None. S. Muthupalani: None. N.S. Taylor: None. J.G. Fox: None.

P09.08.

THE CAP-INDEPENDENT TRANSLATION OF SURVIVIN 5' UNTRANSLATED REGION (5'UTR) AND VIRAL IRES SEQUENCES INHIBITED BY *H. PYLORI* INFECTION IN GASTRIC CELLS

M. A. Valenzuela Valderrama[1], M. Garrido[2], A. Palavecino[1], R. Brito[1,3], A. Quest[2], E. Palacios[1], J. Villena[4]
[1]Universidad Central de Chile, santiago, Chile; [2]Universidad de Chile, santiago, Chile; [3]Centro de Estudios Avanzados en Enfermedades Cronicas (ACCDiS), Facultad de Medicina, Universidad de Chile, Santiago, Chile; [4]Universidad de Valparaíso, Valparaíso, Chile

Objective: Survivin is an anti-apoptotic protein ubiquitously expressed during embryonic development but absent in adult tissues, with some exceptions, such as the gastrointestinal epithelium. Interestingly, Survivin protein levels in the gastric epithelium are reduced in *H. pylori*-infected patients; however, the mechanism responsible has not been fully elucidated. This study's aim was to evaluate the role of cap-independent translation driven by Survivin 5'UTRs in response to *H. pylori* infection *in vitro*.
Materials and Methods: This study employed different human cell lines in culture (AGS, GES-1, HeLa, HEK293T), as well as a number of different techniques, including bicistronic/monocistronic (FLuc/RLuc) reporter constructs for the analysis of the Survivin 5'UTR and viral internal ribosome entry site (IRES) [human Immunodeficiency virus (HIV) and encephalomyocarditis virus (EMCV)] sequences, *in vitro* transcription and translation, quantification of mRNA levels by reverse transcription polymerase chain reaction (qRT-PCR), agarose gel electrophoresis analysis, Western blotting, *in vitro* coupled/uncoupled translation and siRNA silencing.
Results: Bicistronic and monocistronic analysis revealed that a short variant of the Survivin 5'UTR sustains cap-independent translation, as is observed for viral HIV IRES. Additionally, reporter assays showed that *H. pylori* infection reduced this cap-independent translation driven by the Survivin 5'UTR and viral IRES sequences in gastric cells.
Conclusions: These data demonstrate cap-independent activity in the Survivin 5'UTR, which is inhibited by *H. pylori* infection. These results could help to understand how Survivin and other cellular proteins whose translation is mediated by cap-independent (or IRES) mechanisms are downregulated by *H. pylori* infection in the gastric epithelium.

Funding
This work was supported by the grants ANID #11711715 and #1230590 (MAV), CONICYT-FONDAP [15130011], and FONDAP Continuation project #1523A0008 (AFGQ).

Conflict of Interest
M.A. Valenzuela Valderrama: None. M. Garrido: None. A. Palavecino: None. R. Brito: None. A. Quest: None. E. Palacios: None. J. Villena: None.

P09.09.

A BLIND RANDOMIZED CONTROLLED CLINICAL TRIAL ON THE EFFICACY AND SAFETY OF *HELICOBACTER PYLORI* ERADICATION THERAPY IN A SOUTH EUROPEAN COUNTRY

E. GRAVITO-SOARES[1], *N. ALMEIDA*[1], *M. GRAVITO-SOARES*[1], *B. ROCHA*[2], *P. N. FIGUEIREDO*[1]

[1]Gastroenterology Department, Faculty of Medicine, University of Coimbra, Centro Hospitalar e Universitário de Coimbra, Unidade Local de Saúde de Coimbra, Coimbra, Portugal; [2]Faculty of Pharmacy, University of Coimbra, Center for Neuroscience and Celular Biology, Coimbra, Portugal

Objective: *Helicobacter pylori* (*H. pylori*) infection remains a major public health problem. Given the high resistance to antibiotics, the different treatment strategies must be validated in each specific country. The study aimed to comparatively evaluate various quadruple therapies currently recommended for *H. pylori* eradication through a blind, randomized clinical trial.
Patients and Methods*:* Consecutive patients with infection by *H. pylori* were randomized into 5 groups (A: concomitant with metronidazole 500 mg tid, 14 days; B: concomitant with metronidazole 500 mg bid, 14 days; C: quadruple with bismuth, 10 days; D: sequential, 14 days; E: hybrid, 14 days). Esomeprazole was used in all patients. Efficacy and safety rates at 1-2 months were evaluated.

Results: A total of 193 patients (male sex 52.8%; mean age of 57.2±16.3 years) concluded the protocol study (A-38; B-39; C-38; D-41; E-37). Overall efficacy rate of quadruple therapy regimens was 95.9% (n=185): Group A-100%; Group B-92.3%; Group C-97.3%; Group D-97.6%; Group E-91.9% (p=0.431). Overall adverse events rate of quadruple therapy regimens was 53.9% (n=104), with diarrhea (27.5%) and nausea (26.9%) as the most common. Major symptoms (need for therapy interruption or impairment of daily life activities) occurred in 8.3%. Adverse events/Major adverse events rates for the different groups were: A-50.0%/5.3%; B- 69.2%/15.4%; C-48.6%/7.9%; D-48.8%/4.9%; E- 54.0%/8.1% (p=0.287/p=0.451).
Conclusions: In Portugal, all quadruple therapy regimens with or without bismuth are very effective for *H. pylori* eradication, with a non-significant advantage for concomitant with metronidazole tid. Interestingly, the concomitant therapy with metronidazole bid seems to have a higher rate of adverse events, including major adverse ones.

Conflict of Interest
E. Gravito-Soares: None. N. Almeida: None. M. Gravito-Soares: None. B. Rocha: None. P.N. Figueiredo: None.

P09.10.

MANAGEMENT OF *HELICOBACTER PYLORI* INFECTION IN SPAIN BEYOND THE EUROPEAN REGISTRY: RESULTS OF A NATIONWIDE SURVEY

L. HERNÁNDEZ[1], B. GÓMEZ RODRÍGUEZ[2], R. PAJARES VILLAROYA[3], J.M. HUGUET[4], J.D. FERNÁNDEZ-DE-CASTRO[5], P. PAZO MEJIDE[6], M. SÁNCHEZ ALONSO[7], S. MORÁN SÁNCHEZ[8], S.J. MARTÍNEZ-DOMÍNGUEZ[9,10,11], P. MATA-ROMERO[12], J. TEJEDOR-TEJADA[13], E. ALBÉNIZ[14,15], A. CUADRADO[16,17], M. FRAILE GONZÁLEZ[18], A. CANO-CATALÀ[19,20,21], P. PARRA[22,23,24,25], L. MOREIRA[26,27,28,29], ***O.P. NYSSEN****[22,23,24,25], J.P. GISBERT[22,23,24,25]*

[1]Hospital Santos Reyes, Aranda de Duero, Spain; [2]Hospital Universitario Virgen Macarena, Sevilla, Spain [3]Hospital Universitario Infanta Sofía, San Sebastián de los Reyes, Spain; [4]Hospital General Universitario de Valencia, Valencia, Spain; [5]Complexo Hospitalario Universitario de Ourense, Ourense, Spain; [6]Hospital de Cruces, Barakaldo, Spain; [7]Hospital Universitario Santa Bárbara, Puertollano, Spain; [8]Servicio Murciano de Salud, Cartagena, Spain; [9]Hospital Clínico Universitario "Lozano Blesa, Zaragoza, Spain; [10]Instituto de Investigación Sanitaria de Aragón (IIS Aragón), Zaragoza, Spain; [11]Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Zaragoza, Spain; [12]Hospital Universitario de Cáceres, Cáceres, Spain; [13]Hospital Universitario de Cabueñes, Gijón, Spain; [14]Hospital Universitario de Navarra, Pamplona, Spain; [15]Navarrabiomed Biomedical Research Center, Pamplona, Spain; [16]Marqués de Valdecilla University Hospital, Santander, Spain; [17]Clinical and Translational Research in Digestive Diseases, Valdecilla Research Institute (IDIVAL), Santander, Spain; [18]Hospital San Pedro, Logroño, Spain; [19]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) research group, Manresa, Spain; [20]Althaia Xarxa Assistencial Universitària de Manresa, Manresa, Spain; [21]Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain [22]Hospital Universitario de La Princesa, Madrid, Spain; [23]Instituto de Investigación Sanitaria Princesa (IIS-Princesa), Madrid, Spain; [24]Universidad Autónoma de Madrid (UAM), Madrid, Spain; [25]Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [26]Hospital Clínic de Barcelona, Barcelona, Spain; [27]Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Barcelona, Spain; [28]Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), Barcelona, Spain; [29]University of Barcelona, Barcelona, Spain

Objective: The diagnostic and therapeutic procedures in the management of *H. pylori* infection may vary geographically.
Subjects and Methods: Spanish gastroenterologists were surveyed to investigate factors of the clinical practice such as the diagnostic methods, indication of treatment, culture performance, and antibiotic resistance, among others, that are not currently collected in the European Registry on *H. pylori* Management (Hp-EuReg).

Results: 131 gastroenterologists from all Spanish regions participated (78% from centers enrolling patients in the Hp-EuReg). Most participants (66%) reported having at least five different diagnostic methods available. *H. pylori* culture was usually performed after second-line failure. About 18% of gastroenterologists did not investigate *H. pylori* infection in patients admitted for gastrointestinal bleeding and 37% did not treat the infection immediately. Further 95% did not test for the infection in cohabitants, and 34% in gastric cancer relatives. The test-and-treat strategy was used in 84% of patients under 55 years of age without alarm symptoms, and in 15% of patients over 55. The majority (72%) did not confirm penicillin allergy, and 25% knew the local clarithromycin resistance rate. Additionally, 37% periodically evaluated the efficacy of the eradication treatments prescribed. There were no significant differences between the investigators of the Hp-EuReg and the rest of survey respondents. Finally, 83% followed the Spanish Consensus and up to 35% also followed the Maastricht VI recommendation guidelines.
Conclusions: The management of *H. pylori* infection is suboptimal, even among gastroenterologists involved in the Hp-EuReg. We need to optimize *H. pylori* management by implementing educational measures adapted to each setting.

Conflict of Interest
L. Hernández: None. O.P. Nyssen: None. B. Gómez Rodríguez: None. R. Pajares Villaroya: None. J.M. Huguet: None. J.D. Fernández-de-Castro: None. P. Pazo Mejide: None. M. Sánchez Alonso: None. S. Morán *Sánchez: None. S.J. Martínez-Domínguez: None. P. Mata-Romero: None. J.* Tejedor-Tejada: None. E. Albéniz: None. A. Cuadrado: None. M. Fraile González: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. J.P. Gisbert: None.

P09.11.

NOVEL INSIGHTS INTO THE PH-GATING MECHANISM OF THE INNER MEMBRANE UREA CHANNEL HPUREI FROM *HELICOBACTER PYLORI*

S. SHOJAEI, A. STOIB, X. FISCHER, S. POSCH, T. PUTZ, ***A. HORNER***
Institute of Biophysics, Linz, Austria

Objective: A hexameric inner membrane channel is crucial for the survival of *Helicobacter pylori* in the acidic environment of the human stomach. *Hp*UreI channels urea in a pH-dependent manner from the periplasm into the cytoplasm, where urea is hydrolyzed into ammonia and carbon dioxide, increasing internal pH. Despite *in vivo* studies and high-resolution structures in the open and closed states, *Hp*UreIs gating mechanism is still elusive.
Materials and Methods: We systematically tested point mutations of protonatable residues located at the periplasmic and cytoplasmic sides of *Hp*UreI, as well as homologous channels from *Helicobacter hepaticus* and *Streptococcus salivarius* utilizing yeast complementation assays. Relative urea and ammonia permeabilities are compared to the wild-type protein in the physiologically relevant pH range of 4.0-7.0. Our yeast experiments are verified by *in vitro* measurements with overexpressed, purified, and reconstituted UreI channels.
Results: UreI gating involves an intricate network of residues on both sides of the membrane. In contrast to the literature, *Ss*UreI shows similar pH-dependence as *Hp*UreI, despite lacking extensive periplasmic loops. These results challenge the notion of periplasmic histidine residues constituting the sole pH sensor of *Hp*UreI.
Conclusions: Our findings are crucial for understanding the molecular pH-gating mechanism of bacterial urea channels. Eventually, this could lead to an alternative therapeutic strategy against *H. pylori*. In terms of the acid acclimation strategy of *S. salivarius*, our results suggest that the rate of urea hydrolysis depends not only on the pH-dependent expression level of cytoplasmic urease but also on the pH-dependent diffusion of urea through UreI.

Conflict of Interest
A. Horner: None. S. Shojaei: None. A. Stoib: None. X. Fischer: None. S. Posch: None. T. Putz: None.

P09.12.

HELICOBACTER PYLORI BASE-EXCISION RESTRICTION ENZYME IN GASTRIC CANCER

M. FUKUYO[1], *N. TAKAHASHI*[2,3,4], *K. HANADA*[5], *K. ISHIKAWA*[6], *K. YAHARA*[7], *&. VENCLOVAS*[8], *H. YONEZAWA*[2,9], *T. TERABAYASHI*[5], *Y. KATSURA*[10], *A. KANEDA*[1,11], *I. UCHIYAMA*[12], *N. OSADA*[13], *T. OSAKI*[2], *$. HPGP RESEARCH NETWORK*[14], *I. KOBAYASHI*[3,4,12,15]

[1]School of Medicine, Chiba University, Chiba, Japan; [2]Department of Infectious Diseases, Kyorin University School of Medicine, Tokyo, Japan; [3]Department of Computational Biology and Medical Sciences, Graduate School of Frontier Sciences, University of Tokyo, Tokyo, Japan; [4]Institute of Medical Science, University of Tokyo, Tokyo, Japan; [5]Faculty of Medicine, Oita University, Oita, Japan; [6]Department of Cell Biology, Institute of Life Science, Kurume University, Kurume, Japan; [7]Antimicrobial Resistance Research Center, National Institute of Infectious Diseases, Tokyo, Japan; [8]Institute of Biotechnology, Vilnius University, Vilnius, Lithuania; [9]Tokyo Dental College, Tokyo, Japan; [10]Primate Research Institute, Kyoto University, Inuyama, Japan; [11]Health and Disease Omics Center, Chiba University, Chiba, Japan; [12]Laboratory of Genome Informatics, National Institute for Basic Biology, Okazaki, Japan; [13]Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Japan; [14](Constanza Camargo; Charles Rabkin), National Cancer Institute, MD, USA; [15]Research Institute for Micro-nano Technology, Hosei University, Tokyo, Japan

Helicobacter pylori has been recognized as a major risk factor for stomach (gastric) cancer, but how it changes the human genome to cause cancer remains unknown. In this and related bacteria, recent works identified a family of restriction enzymes that excise a base from its recognition sequence. At the resulting abasic site, its own endonuclease activity or a separate endonuclease activity may generate an atypical strand break that is not repairable by ligation.
For involvement of this toxic restriction enzyme in stomach carcinogenesis, we present here multiple lines of evidence.

1. Its gene is associated with stomach cancer according to the data from *Helicobacter pylori* Genome Project.
2. K-mer signature analysis revealed that its recognition sequence is frequently mutated in the gastric cancer genomes and *H. pylori* genomes.
3. It causes chromosomal double-strand breakage in human cells in infection and gene transfer.
4. It promotes mutagenesis in bacterial reporters.

We expect that the involvement of a bacterial restriction enzyme in oncogenesis would deepen our understanding of host-microbiome relations and impact medicine.

Conflict of Interest
M. Fukuyo: None. N. Takahashi: None. K. Hanada: None. K. Ishikawa: None. K. Yahara: None. &. Venclovas: None. H. Yonezawa: None. T. Terabayashi: None. Y. Katsura: None. A. Kaneda: None. I. Uchiyama: None. N. Osada: None. T. Osaki: None. I. Kobayashi: None. $. HpGP Research Network: None.

POSTER SESSION 10: HELICOBACTER 10

P10.01.

NOVEL *LIGILACTOBACILLUS SALIVARIUS* STRAINS AS POTENTIAL PROBIOTICS IN *HELICOBACTER PYLORI* ERADICATION

K. ROOTS[1,2], L. VENTSEL[1], I. KANISTIK[3], I. SARAND[1], K. SUURMAA[4], ***P. SPUUL[1]***
[1]Tallinn University of Technology, Tallinn, Estonia; [2]North Estonia Medical Centre, Tallinn, Estonia; [3]Gustav Adolf Grammar School, Tallinn, Estonia; [4]Department of Endoscopy, West Tallinn Central Hospital, Tallinn, Estonia

Objective: *Ligilactobacillus salivarius* (*L. salivarius*) is one of the few bacterial species capable of surviving in the hostile environment of the human stomach. Probiotic lactobacilli, including *L. salivarius*, have been suggested to suppress the colonization and inflammation caused by the human pathogen *Helicobacter pylori* (*H. pylori*).
Materials and Methods: Two novel *L. salivarius* strains were isolated while cultivating *H. pylori* on Columbia blood agar supplemented with vancomycin, trimethoprim, cefsulodin, and amphotericin B from stomach biopsy samples. The new strains have been characterized: whole genome sequencing was done on the PacBio Sequel II platform, their growth was followed in three conditions, and their pH and bile salt tolerance were tested. In the case of one strain, its effect on *H. pylori* was analyzed.
Results: Novel strain B is similar to the UCC118 strain carrying the megaplasmid similar to Ren pR1 while strain A is rather different from other strains carrying the megaplasmid similar to UCC118 pMP118. *L. salivarius* strains A and B grow the best in microaerobic conditions, they tolerate low pH (2.5) recovering after 5h and they are resistant to 0.3% bile salts. *L. salivarius* strain A suppresses but does not entirely inhibit the growth of *H. pylori*. The presence of A reduces the inflammatory response (IL-8 secretion) of AGS cells upon *H. pylori* infection.
Conclusions: We have isolated two novel *L. salivarius* strains having genetic elements that could confer probiotic effects. Both strains tolerate low pH and bile salts. One of the strains suppresses the growth and inflammation caused by *H. pylori.*

Conflict of Interest
P. Spuul: None. L. Ventsel: None. K. Roots: None. I. Sarand: None. K. Suurmaa: None. I. Kanistik: None.

P10.02.

HELICOBACTER PYLORI TREATMENT IN PAKISTAN: DATA FROM THE PAKISTAN REGISTRY ON *H. PYLORI* MANAGEMENT (HP-PAKISTANREG)

L. KAMANI[1]*, A. CANO-CATALÀ[2], P. PARRA[3], L. MOREIRA[4], O.P. NYSSEN[3], F. MÉGRAUD[5], C. O'MORAIN[6], J.P. GISBERT[3]*
[1]Department of Gastroenterology, Liaqat National Hospital, Karachi, Pakistan; [2]Gastrointestinal Oncology, Endoscopy and Surgery (GOES) Research Group, Althaia Xarxa Assistencial Universitària de Manresa, Institut de Recerca i Innovació en Ciències de la Vida i de la Salut de la Catalunya Central (IRIS-CC), Manresa, Spain; [3]Department of Gastroenterology, Universidad Autónoma de Madrid (UAM), Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa, Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBERehd), Madrid, Spain; [4]Department of Gastroenterology, University of Barcelona, Hospital Clínic de Barcelona, Centro de Investigación Biomédica en Red en Enfermedades Hepáticas y Digestivas (CIBERehd), Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), Barcelona, Spain; [5]INSERM U1312, Université de Bordeaux, Bordeaux, France; [6]School of Medicine, Trinity College Dublin, Dublin, Ireland

Objective: In Pakistan, there are several treatment options for *H. pylori* treatment. These include a combination of various antibiotics with proton pump inhibitors. The aim of this study was to investigate the effectiveness of first-line empirical treatment of *H. pylori* in Pakistan.

Patients and Methods: Treatment-naïve patients from Hp-PakistanRegin 2021-2023 were analyzed *via* modified intention-to-treat (MITT) and per-protocol (PP) for effectiveness.
Results: 123 patients were analyzed. Male (62%) and female (38%) patients were enrolled in the study. 79% of patients were treatment naïve, and 99% did not show any type of allergy. 24% received a concurrent treatment (11% proton pump inhibitors). Diagnosis involved multiple tests, including serology, urea breath test, stool antigen tests, histology, rapid urease test, culture, and stool polymerase chain reaction (PCR), along with endoscopic confirmation as needed. Treatment regimens varied, with triple therapy being the most common (42%), followed by dual (7.2%), quadruple (3.1%), and hybrid therapy (1.0%). Duration was typically 10 (70%) or 14 days (24%). 13% of prescriptions included probiotics, whereas no patient was found to be on prebiotics. 96% of patients were adherent to therapy. Antibiotic resistance to clarithromycin, nitroimidazole, quinolone, amoxicillin, and tetracycline was not observed in any of the patients. According to PP analysis, the overall first-line therapy effectiveness was 91% in 2022 and 80% in 2023. According to mITT, in 2022, it was reported as 91%, and in 2023, it was 76%.
Conclusions: Our study sheds light on *H. pylori* management in Pakistan, highlighting effective strategies for treatment-naïve patients. Despite adherence and no bacterial resistance, declining efficacy underscores the need for ongoing monitoring and protocol adjustments.

Conflict of Interest
L. Kamani: None. A. Cano-Català: None. P. Parra: None. L. Moreira: None. O.P. Nyssen: Other; Significant; Mayoly, Allergan/Abbvie, Richen, Juvisé and Biocodex. F. Mégraud: None. C. O'Morain: None. J.P. Gisbert: Other; Significant; Mayoly, Allergan/Abbvie, Diasorin, Richen, Juvisé and Biocodex.

P10.03.

STUDY OF NEUTROPHIL RESPONSES IN *HELICOBACTER PYLORI* INFECTION

A. PETRIS[1,2], *E. PETROU*[1], *E. MICHAILOU*[1,2], *B. MARTINEZ-GONZALEZ*[1], *Y. KARAYIANNIS*[1], *S. NAOUM*[2], *K. KAMBAS*[2], *D. N. SGOURAS*[1]
[1]Laboratory of Medical Microbiology, Hellenic Pasteur Institute, Athens, Greece; [2]Laboratory of Molecular Genetics, Hellenic Pasteur Institute, Athens, Greece

Objective: *Helicobacter pylori* (Hp) is a pathogen colonizing the human gastric mucosa in early childhood, thus increasing the lifelong risk of gastric cancer development. Although neutrophil infiltration in the lamina propria is the hallmark of Hp infection and considering their capacity to exert a multitude of antimicrobial responses, neutrophils fail to clear the infection.
Materials and Methods: We investigated the interactions of freshly isolated human peripheral blood neutrophils with Hp clinical isolates and laboratory-adapted strains *in vitro*, in terms of their ability to phagocytose and release neutrophil extracellular traps (NETs), visualized by confocal microscopy, while reactive oxygen species (ROS) generation was detected by flow cytometry.
Results: Neutrophils effectively phagocytosed all *Hp* strains, irrespective of CagA EPIYA phosphorylation status and produced ROS, at significantly lower levels than those observed when phagocytosing control Gram-negative *E. coli*. Interestingly, Hp-induced NETs appeared to be degraded and demonstrated only faint presence of NET-related proteins compared to *E. coli* controls or strong sterile stimulus induced by ionomycin. To visualize and further validate these degradation processes, a live imaging protocol was carried out on Hp-infected neutrophils, using SYTOX-GREEN and Hoechst 33342 stains, observed by confocal microscopy. Images were captured every 3 minutes and demonstrated progressive reduction of extracellular staining in Hp-induced NETs, compared to those released by sterile stimulus, suggesting a degradation process due to Hp presence.
Conclusions: These findings indicate that Hp infection induces neutrophil activation, yet a progressively degraded NET release points towards a possible immune-evasion strategy to host a neutrophilic response.

Conflict of Interest
D.N. Sgouras: None. A. Petris: None. E. Petrou: None. E. Michailou: None. B. Martinez-Gonzalez: None. Y. Karayiannis: None. S. Naoum: None. K. Kambas: None.

P10.04.

THE CASE OF GASTRIC METAPLASIA-INDUCED DUODENAL ULCER WITH *H. PYLORI* INFECTION, ULTIMATELY LEADING TO DEATH

***J. HUH**, J. KIM*
Seoul National University College of Medicine, Seoul Metropolitan Government Boramae Medical Center, Seoul, Republic of Korea

Background: Korea has a high prevalence of *H. pylori* infection, exceeding 50%. Association between gastric metaplasia, duodenal ulcers, and *H. pylori* has long been recognized. Gastric metaplasia, which can secrete gastric acid, contributes to the development of duodenal ulcers, and *H. pylori* infection also helps increase gastric secretion. This case involves a Korean woman who died from gastrointestinal bleeding caused by a duodenal ulcer with *H. pylori* infection leading to gastric metaplasia.
Case Report: We conducted a review of the medical records of a 97-year-old Korean female presented at Boramae Medical Center with melena for 3 days. Laboratory findings revealed Hb 9. An emergent esophagogastroduodenoscopy was performed, revealing a huge active ulcer crater measuring 1.5 cm in the duodenal bulb, classified as Forrest IIc, with no evidence of active bleeding. Irregular margins were accompanied, so a biopsy was performed to rule out duodenal cancer. Intravenous proton pump inhibitor therapy was initiated. Biopsy results confirmed gastric metaplasia, with a positive for *Helicobacter pylori* on Giemsa staining. Considering the patient's condition and old age, immediate *H. pylori* eradication was deemed difficult. The patient's hemoglobin drops to 6.4, accompanied by decreased consciousness. Although there was a high suspicion of ongoing ulcer bleeding, the old age, poor condition, and her will to avoid aggressive interventions led to the decision to create a Physician Orders for Life-Sustaining Treatment form. The patient eventually passed away.
Conclusions: This study emphasizes the necessity of eradicating *H. pylori* to lower the rate of gastric metaplasia-induced duodenal ulcer and, ultimately, to lower the severe complications.

Conflict of Interest
J. Huh: None. J. Kim: None.

P10.05.

EXPLORING GENERAL PRACTITIONERS' PRACTICES AND PERCEPTIONS OF *HELICOBACTER PYLORI* INFECTION

***C. DEANE**[1,2,3], O. KELLY[2,3], C. O'MORAIN[1,4]*
[1]Beacon Hospital Research Institute, Dublin, Ireland; [2]Connolly Hospital, Dublin, Ireland; [3]Royal College of Surgeons, Ireland, Dublin, Ireland; [4]Trinity College, Dublin, Ireland

Objective: *Helicobacter pylori (H. pylori)* infection continues to pose a significant clinical burden with both acute and long-term complications. General practitioners (GPs) represent the first point of contact in the community and frequently play a crucial role in the diagnosis and treatment of *H. pylori.* We aimed to identify the current approach of GPs to the investigation and management of *H. pylori* infection and knowledge of disease association.
Subjects and Methods: A survey was conducted among GPs attending an educational study day in January 2024. 69 GPs attended the event in person, n=40 complete survey responses were analyzed.
Results: Results showed diverse approaches to diagnosis, with endoscopy (35%), stool antigen tests (30%), and urea breath tests (20%) being selected as the first line investigation of choice. 93% consulted guidelines prior to treatment, 75% consulted national community guidelines, 2% the national *H. pylori* working group statement, and 2% the Maastricht VI/Florence consensus guidelines. Despite >15% resistance rates, 98% prescribed triple therapy as their first-line treatment, with 83% of regimens including clarithromycin and/or metronidazole. Only 22% advocated routine retesting for eradication, with 40% retesting only if symptoms persisted. Of those who retested, 96% did so appropriately, while

98% recognized H. pylori's association with peptic ulcer disease awareness varied for its association with conditions such as gastric cancer (65%), iron deficiency anemia (28%) and MALT-lymphoma (15%). 23% of those diagnosed with *H. pylori* encourage first-degree relatives to be screened, and only 2% screen patients before starting long-term aspirin.
Conclusions: A significant knowledge gap exists in the diagnosis, management and awareness of complications of *H. pylori* infection. A more concerted effort should be made to ensure GPs are educated on the management of this important infection.

Conflict of Interest
C. Deane: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; EU4Health grant. O. Kelly: None. C. O'Morain: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; Eu$Health grant - PI.

P10.07.

UNVEILING THE IMPACT OF CHRONIC GASTRIC *HELICOBACTER* INFECTION ON MOUSE HEPATIC HEALTH

S. KHALID[1], *L. SEENEEVASSEN*[2], *E. SIFRE*[2], *C. VARON*[2], *P. SPUUL*[1]
[1]Tallinn University of Technology, Tallinn, Estonia; [2]University of Bordeaux, Bordeaux, France

Objective: *Helicobacter pylori*, a major gastric pathogen, is linked to chronic gastritis, ulcers, and gastric cancer. Its association with liver diseases like non-alcoholic fatty liver disease (NAFLD), hepatitis, and hepatocellular carcinoma (HCC) is increasingly recognized. Studies show higher prevalence in chronic hepatitis C virus (HCV) patients, correlating with worse outcomes. Evidence suggests *H. pylori* may independently contribute to hepatic lesions and HCC development. Mice studies exhibit hepatocellular carcinoma post-infection. Our study investigates pathophysiological changes induced by different *H. pylori* strains and IQGAP1's role in liver homeostasis.
Materials and Methods: In this study, both wild-type (WT) and IQGAP1-deleted transgenic mice were subjected to infection with two distinct strains of *H. pylori* – HPARE and SS1 – as well as with *Helicobacter* species *H. felis*, over durations of 6, 12, and 15 months. Uninfected mice served as controls.
Results: Liver sections embedded in paraffin underwent comprehensive analysis utilizing histochemical and immunohistochemical staining techniques. Various immunohistopathological parameters were assessed, including H&E and Giemsa staining, alongside the visualization of specific cellular markers. Pathological changes were evaluated using a specialized grading system. Detection of *H. pylori* was done by anti-*H. pylori* immunohistochemical staining and quantitative polymerase chain reaction (qPCR) analysis.
Conclusions: Our research indicates *H. pylori's* involvement in liver diseases like NAFLD, fibrosis, and HCC, along with impaired liver regeneration, regardless of strain severity. *H. pylori* was found to colonize the liver at a rate of 35.9%. *H. felis* induced more severe inflammatory lesions than strains HPARE and SS1. These findings emphasize *H. pylori's* potential role in liver pathogenesis, urging further exploration of its mechanisms and implications.

Conflict of Interest
S. Khalid: None. L. Seeneevassen: None. E. Sifre: None. C. Varon: None. P. Spuul: None.

P10.08.

EXPLORING CHOLESTEROL-LIKE LIPIDS AS BACTERICIDAL DECOYS IN THE FIGHT AGAINST *HELICOBACTER PYLORI*

A. PINHO[1,2,3], *V. LEIRO*[1,2], *M. C. L. MARTINS*[1,2,3], *P. PARREIRA*[1,2]
[1]i3S - Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal; [2]INEB – Instituto de Engenharia Biomédica, Universidade do Porto, Porto, Portugal; [3]ICBAS – Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto, Porto, Portugal

Objective: *Helicobacter pylori* (*Hp*) infects the stomach of 50% of the worldwide population, causing several disorders, including gastric cancer. Current antibiotic-based therapy fails in up to 40% of patients due to antibiotic resistance and drug bioavailability in gastric settings. Therefore, there is a need for new bioengineered therapies to overcome these drawbacks. *Hp* depends on cholesterol for its survival and has positive chemotaxis towards it. Based on these key features, we aim to investigate if cholesterol-like compounds (CA) are recognized in a similar manner to cholesterol and can be modified for the design of advanced nanoengineered therapies.
Materials and Methods: The effect of two CA (ergosterol and stigmasterol) on *Hp* growth was evaluated in the presence/absence of fetal bovine serum (FBS; cholesterol source) supplementation of the culture medium. Ergosterol was functionalized with a thiol-PEG by a two-step procedure: 1) formation of succinyl sterol (intermediate product) and 2) subsequent PEGylation (final product). The succinyl sterol was purified by chromatography (silica gel) and the final product (ergosterol-PEG-thiol) by precipitation. Both products were characterized by nuclear magnetic resonance spectroscopy (NMR).
Results: *Hp* growth in the presence of ergosterol and stigmasterol in the media was similar to media supplemented with FBS. Also, in the presence of FBS, ergosterol (100-800 µg/mL) enhanced *Hp* growth (>1 $\log_{10}$). PEGylated ergosterol was successfully synthesized.
Conclusions: Cholesterol analogues are not only promising compounds for the development of bioengineered therapies but can also be explored as media supplements for *Hp* growth.

Acknowledgments
FCT for funding (2022.12580.BD; CEECIND/01210/2018;2021.00472.CEECIND). European Union's Horizon 2020 (grant No. 951723).

Conflict of Interest
A. Pinho: None. V. Leiro: None. M.C.L. Martins: None. P. Parreira: None.

P10.09.

FEMALE SEX IS ASSOCIATED WITH *HELICOBACTER PYLORI* CLARITHROMYCIN RESISTANCE AND TREATMENT FAILURE

T.J. BUTLER[1], *S.D. MOLLOY*[1], *C. COSTIGAN*[1,2], *V. PARIHAR*[3], *K. VAN DER MERWE*[3], *S. SEMENOV*[4], *D. MCNAMARA*[1,2], *S.M. SMITH*[1]
[1]Trinity Academic Gastroenterology Group (TAGG) Research Centre, Trinity College Dublin, Dublin, Ireland; [2]Department of Gastroenterology, Tallaght University Hospital, Dublin, Ireland; [3]Department of Gastroenterology, Letterkenny University Hospital, Donegal, Ireland; [4]Department of Gastroenterology, Mayo University Hospital, Mayo, Ireland

Objective: Increased national and worldwide *H. pylori* antimicrobial resistance (AMR) has been observed, with AMR being one of the main reasons for treatment failure. The aim of this study was to evaluate sex as a risk factor for *H. pylori* AMR and treatment failure in patients in Ireland.
Materials and Methods: Following ethical approval and informed consent, *H. pylori* was cultured from the corpus and antral biopsies of patients attending routine gastroscopies at Tallaght, Letterkenny, and Mayo University Hospitals. Antimicrobial susceptibility testing was performed *via* E-test (Biomerieux), and resistance was classified according to the European Committee on Antimicrobial Susceptibility

Testing minimum inhibitory concentration breakpoints. First-line treatment outcomes of patients attending for post-eradication ^{13}C-urea breath test (UBT) at Tallaght University Hospital were retrospectively identified between 2019 and 2022. Chi-square tests were used to evaluate the association between sex and resistance or treatment failure.
Results: 115 isolates were cultured from treatment-naive patients (mean age 49.6±16.3 years, 55.6% male). High rates of primary resistance were observed for clarithromycin (36.5%), metronidazole (44.3%) and levofloxacin (18.3%). Strains isolated from females compared to males were more likely to be clarithromycin resistant (50.9% *vs.* 25%, respectively; $\chi 2=8.26$; $p<0.001$). 438 patients (mean age 49.6±15.3 years, 47.7% male) treated with clarithromycin-amoxicillin triple therapy (CTT) were identified following post-eradication UBT. The overall treatment failure rate was 23.5%. Females were more likely to fail therapy compared to males (27.5% *vs.* 19.1%, respectively; $\chi 2=4.26$; $p=0.04$).
Conclusions: Females were more likely to harbor clarithromycin-resistant *H. pylori* and to fail CTT. This warrants further investigations into the mechanisms of AMR in females and factors contributing to increased treatment failure.

Conflict of Interest
T.J. Butler: None. S.M. Smith: None. S.D. Molloy: None. C. Costigan: None. V. Parihar: None. K. Van Der Merwe: None. S. Semenov: None. D. McNamara: None.

P10.10.

EFFICACY OF MODIFIED LEVOFLOXACIN-BASED REGIMEN FOLLOWING BISMUTH QUADRUPLE THERAPY FAILURE FOR *HELICOBACTER PYLORI* ERADICATION IN KOREA

A. LEE*, S. KIM, S. JUNG*
Korea University, Ansan, Republic of Korea

Objective: The Korean guideline for *Helicobacter pylori* (*H. pylori*) eradication recommends levofloxacin-based therapy as a third-line option following failure of bismuth quadruple therapy, with levofloxacin dosages of 500 mg once daily or 250 mg twice daily. We aimed to assess the efficacy of modified levofloxacin-based third-line therapy after bismuth quadruple therapy failure.
Methods: We analyzed the efficacy of levofloxacin-based therapy administered to patients who failed to eradicate *H. pylori* with bismuth quadruple therapy from January 2022 to February 2024. Levofloxacin-based therapy included the B-PAL regimen (levofloxacin 250 mg + amoxicillin 1 g + standard dose PPI + bismuth subsalicylate 240 mg twice daily) or the high-dose PAL regimen (levofloxacin 500 mg + amoxicillin 1 g + standard dose PPI twice daily).
Results: Among 43 patients who failed *H. pylori* eradication with bismuth quadruple therapy, 25 received high-dose PAL therapy, and 18 received B-PAL therapy. Per-protocol analysis showed eradication rates of 82.6% (19/23) and 60% (9/15) for the high-dose PAL and B-PAL regimens, respectively. No serious adverse events were reported in either group.
Conclusions: In cases of bismuth quadruple therapy failure, increasing the dosage of levofloxacin in levofloxacin-based treatment demonstrates relatively acceptable efficacy for *H. pylori* eradication, warranting further evaluation.

Conflict of Interest
S. Kim: None. A. Lee: None. S. Jung: None.

P10.11.

ANTIMICROBIAL RESISTANCE IN *HELICOBACTER PYLORI* ISOLATES: THE CURRENT SITUATION IN GREECE

B. MARTINEZ-GONZALEZ[1], *S. GEORGOPOULOS*[2], *S. MICHOPOULOS*[3], *Y. KARAYIANNIS*[1], *C. LIATSOS*[4], *E. XIROUCHAKIS*[2], *A.F. MENTIS*[5], *D.N. SGOURAS*[1]

[1]Lab of Medical Microbiology, Hellenic Pasteur Institute, Athens, Greece; [2]Gastroenterology and Hepatology Department, Athens Medical, P. Faliron General Hospital, Athens, Greece; [3]Gastroenterology Unit, Alexandra Hospital, Athens, Greece; [4]Gastroenterology Department, 401 Army General Hospital of Athens, Athens, Greece; [5]IASO General Clinic, Lab Medical Services, Athens, Greece, Athens, Greece

Objective: Resistance to antibiotics among *Helicobacter pylori* (*Hp)* isolates is a matter of concern worldwide due to substantial repercussions in treatment failures. The aim of this study was to re-access levels of primary antimicrobial susceptibility of *Hp* isolates to clarithromycin (CLA), metronidazole (MET), levofloxacin (LEV), amoxicillin (AMO) and tetracycline (TET) in Greece.
Materials and Methods: A total of 230 *Hp* strains isolated between 2018-2021 from gastric biopsies of Greek adult patients, not previously exposed to *Hp* eradication, were included. Antibiotic susceptibility was assessed by E-test according to EUCAST cut-off points.
Results: Resistant rates determined were for MET (34.8%, n=80), CLA (28.3%, n=65), and LEV (8.3%, n=19). These also included cases of dual MET-CLA (11.3%, n=26), CLA-LEV (2.2%, n=5), MET-LEV (1.3%, n=3) and triple MET-CLA-LEV (1.3%, n=3) resistance. No resistance was observed for AMO and TET. CLA resistance levels were significantly higher (p=0.0020) when compared to those reported in Glupczynski 2001 (10.2%, n=6/59), but not when compared to those in 2008 (24.7%, n=25/101; Megraud 2012) and in 2018 (30.0%, n=15/50; Megraud 2021). Resistance rates to MET are the same as those observed in the European region, whereas LEV resistance still remains <10%.
Conclusions: In Greece, we have observed a steady increase in CLA resistance over the last two decades, which affects the efficiency of the CLA-based triple therapy schemes. Resistance to MET and LEV remains relatively stable. Systematic local antimicrobial surveillance programs are indispensable to assist professionals in the selection of the appropriate antibiotics for empirical treatment to combat HP resistance.

Conflict of Interest
B. Martinez-Gonzalez: None. S. Georgopoulos: None. S. Michopoulos: None. Y. Karayiannis: None. C. Liatsos: None. E. Xirouchakis: None. A.F. Mentis: None. D.N. Sgouras: None.

P10.12.

IN VITRO EVALUATION OF ANTIMICROBIAL ACTIVITY AGAINST *HELICOBACTER PYLORI* AND GASTRIC CYTOTOXICITY OF LIPID NANOPARTICLES COATED WITH CHITOSAN

B. ALMEIDA FURQUIM DE CAMARGO[1,2,3], *R. CHITAS*[2,3,4], *A. PINHO*[2,3], *T. BAUAB*[1], *P. PARREIRA*[2,3], *M. LOPES MARTINS*[2,3,4], *M. CHORILLI*[1]

[1]School of Pharmaceutical Sciences, São Paulo University (UNESP), Araraquara, Brazil; [2]INEB-Instituto de Engenharia Biomédica, Universidade do Porto, Porto, Portugal; [3]i3S-Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal; [4]ICBAS-Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto, Porto, Portugal

Objective: *Helicobacter pylori* infection is a significant public health concern. It infects 50% of the world's population, leading to various gastric disorders, and its high antibiotic resistance often results in treatment failure. Bioengineered strategies, such as nanostructured lipid carriers (NLC) with bactericidal potential against this pathogen, are promising approaches.

Materials and Methods: Beeswax, castor oil, Tween®80, Span®60, and Milli-Q® water were used to obtain NLC by the emulsification-sonication method. Another type of nanoparticles was created by coating the designed NLC with 0.1% chitosan (low Mw, ≥75% deacetylation) (NLC-Ch) by immersion. Characterization was done by dynamic light scattering, nanoparticle tracking analysis, and transmission electron microscopy. Antibacterial activity was evaluated against *H. pylori* J99 (ATCC TM700824) strain, and cytotoxicity was tested on two human gastric adenocarcinoma cell lines [AGS (ATCC®CRL-173); MKN-74 (ATCC®CRL-2947)]. Furthermore, the ability of NLC and NLC-Ch to prevent *H. pylori* adhesion to MKN-74 cells was evaluated.
Results: Batches of spherical and monodisperse NLC (zeta potential -22 mV; 82 nm; 8.6 x 1014 particles/mL) and NLC-Ch (zeta potential +29 mV; 129 nm; 6.4x1013 particles/mL) were obtained. The minimum inhibitory concentration (MIC) for NLC was 1010 particles/mL and NLC-Ch was 109 particles/mL, while the minimum bactericidal concentration (MBC) for NLC was 1011 particles/mL and for NLC-Ch was 1010 particles/mL. Both types of nanoparticles eradicated *H. pylori* after 12 hours and were not cytotoxic. NLC-Ch also had a superior performance in inhibiting *H. pylori* adhesion to gastric cell lines.
Conclusions: New bactericidal NLC and NLC-Ch against *H. pylori* were designed, and NLC-Ch showed increased activity against this pathogen.

Conflict of Interest
B. Almeida Furquim de Camargo: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Fundação de Amparo à Pesquisa do Estado de São Paulo - FAPESP (Processes: 2019/25056-5 and 2022/15987-4. Research Grant (principal researcher, collaborator or consultant and pending grants as well as grants already received). R. Chitas: None. A. Pinho: None. T. Bauab: None. P. Parreira: would like to thank FCT for CEECIND/01210/2018. M. Chorilli: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Fundação de Amparo à Pesquisa do Estado de São Paulo - FAPESP (Processes: 2019/25056-5 and 2022/15987-4. Research Grant (principal researcher, collaborator or consultant and pending grants as well as grants already received). M. Lopes Martins: None.

POSTER SESSION 11: HELICOBACTER 11

P11.01.

GLYCOSYLATION LANDSCAPE OF GASTRIC PATIENT-DERIVED ORGANOIDS AS A MODEL TO STUDY THE ROLE OF *HELICOBACTER PYLORI* BINDING

L. SANTOS-FERREIRA[1,2,3], *H. DUARTE*[1,2], *E. MOIA*[1,2], *R. BARROS*[1,2,4], *F. SOUSA*[4,5], *F. CASANOVA-GONÇALVES*[4,5], *J. BARBOSA*[4,5], *H. SANTOS-SOUSA*[1,4,5], *S. BARTFELD*[6,7,8], *A. MAGALHÃES*[1,2,3], *F. CARNEIRO*[1,2,4,5], *C. REIS*[1,2,3,5], *F. PINTO*[1,2]
[1]i3S - Instituto de Investigação e Inovação em Saúde, Porto, Portugal; [2]IPATIMUP – Instituto de Patologia e Imunologia Molecular da Universidade do Porto, Porto, Portugal; [3]ICBAS – Instituto de Ciências Biomédicas Abel Salazar da Universidade do Porto, Porto, Portugal; [4]Centro Hospitalar Universitário de São João (CHUSJ), Porto, Portugal; [5]Faculdade de Medicina, Universidade do Porto, Porto, Portugal [6]Research Centre for Infectious Diseases, Julius Maximilians University of Würzburg, Würzburg, Germany; [7]Si-M/Der SimulierteMensh, Technische Universität Berlin and Charité-Uniersitatsmedizin Berlin, Berlin, Germany; [8]Institute of Biotechnology, Technische Universität Berlin, Berlin, Germany

Objective: Glycosylation is a key component associated with stomach inflammation triggered by *Helicobacter pylori* and the development of gastric cancer (GC). Patient-derived organoids (PDO) are promising *ex vivo* models for the study of human gastric disorders. Despite their potential, little is known about their potential use in studying the interplay between glycosylation and *H. pylori* binding. Therefore, we aim to evaluate how the PDO glycosylation landscape modulates *H. pylori* binding according to their pathogenicity.

Materials and Methods: We established PDOs from fresh gastric mucosa and adjacent tumor mucosa derived from obese and gastric cancer (GC) patients, respectively. The Lewis antigen glycophenotype of organoids and respective *in vivo* tissues was assessed by immunostaining. Two *H. pylori* isogenic strains (BabA+/SabA—and BabA-/SabA+) were used to assess their binding capacity upon modulation of the gastric mucosa PDO glycan landscape.
Results: Our results demonstrate that the glycosylation profile of organoids influences *H. pylori* binding mimicking the *in vivo* conditions. Additionally, Lewis type I and Lewis type II antigens can be modulated according to PDOs differentiation status, and align with *H. pylori*'s binding to specific Lewis antigens, mirroring *in vivo* tissue interactions.
Conclusions: These findings highlight PDOs as valuable tools to explore the interplay between glycosylation and *H. pylori* infection.

Funding
This work was funded by FCT under the project EXPL/BTM-ORG/1450/2021. L.S-F. acknowledges FCT PhD fellowship 2021.05495.BD. F.P. acknowledges the FCT assistance researcher position 2022.02109. CEECIND.

Conflict of Interest
L. Santos-Ferreira: None. H. Duarte: None. E. Moia: None. R. Barros: None. F. Sousa: None. F. Casanova-Gonçalves: None. J. Barbosa: None. S. Bartfeld: None. A. Magalhães: None. F. Carneiro: None. C. Reis: None. F. Pinto: None. H. Santos-Sousa: None.

P11.02.

TARGETING THE UREASE ACTIVITY TO ASSIST IN THE PREVENTION OF *H. PYLORI* INFECTIONS

***R. KUMAR**, M.C.L. MARTINS, H.S. AZEVEDO*
Instituto de Investigação e Inovação em Saúde da Universidade do Porto, Porto, Portugal

Objective: *Helicobacter pylori* is a gram-negative, pathogenic bacterium which specifically colonizes the human gastric mucosa, being implicated in the development of a range of gastrointestinal diseases, including gastritis, peptic ulcer, and gastric cancer. The bacterium has a number of unique adaptations, such as flagella motility and urease activity that allow it to move and survive in the harsh stomach environment, enabling its adhesion and consequent damage to the gastric epithelium. One adaptation is the production of urease, an enzyme that converts urea into ammonia and carbon dioxide. The formation of ammonia helps neutralize the acidic environment around the bacterium, enabling the bacterium to survive and colonize the stomach lining. These factors have been recognized as potential therapeutic targets for *H. pylori* infection prevention using non-antibiotic therapies. Present therapies include high dosages of mixed antibiotics, including bismuth-based quadruple therapy (BiQT), which are not well tolerated by patients, leading to non-compliance.
Materials and Methods: We have designed a peptide combining the sequence GLPLGNN, targeting *H. pylori* surface epitopes, and YDFYWW, a urease inhibitor peptide. Both sequences were identified by phage display, and the peptides were synthesized using solid-phase peptide synthesis. Urease inhibition is assessed by incubating *H. pylori* urease with peptide inhibitors.
Conclusions: Our research presents a modular peptide system integrating dual functionality, selectivity for *H. pylori* and inhibition of urease activity to decrease bacteria survival in the acidic stomach environment. By targeting *H. pylori* urease activity, our approach can contribute as a promising alternative to conventional antibiotic therapies, potentially improving patient outcomes and compliance.

Conflict of Interest
R. Kumar: None. M.C.L. Martins: None. H.S. Azevedo: None.

P11.03.

ONE WEEK *VS.* TWO WEEKS VONOPRAZAN-BASED TRIPLE REGIMEN FOR ERADICATION OF *H. PYLORI*: A RANDOMIZED NON-INFERIORITY PLACEBO CONTROLLED TRIAL

S. ABID[1], *C. QASIM*[1], *Z. KARIM*[1], *N. BUTT*[1,2], *L. KAMANI*[1,3], *S. AWAN*[1]
[1]Aga Khan University, Karachi, Pakistan; [2]Jinnah Postgraduate Medical Center, Karachi, Pakistan; [3]Liaquat National Hospital, Karachi, Pakistan

Objective: This study aims to compare the efficacy of one-week *vs.* two-week vonoprazan-based triple therapy in treatment-naïve patients.
Patients and Methods*:* This study was a double-blind, randomized-controlled, non-inferiority trial. Patients aged ≥18 with a positive urea breath test, *H. pylori* stool antigen test, or urease rapid test on gastric biopsy were included. The intervention group was assigned vonoprazan 20 mg twice daily, amoxicillin 1,000 mg twice daily, and levofloxacin 500 mg once daily for two weeks, and the control group with vonoprazan 20 mg twice daily, amoxicillin 1,000 mg twice daily, and levofloxacin 500 mg once daily for 1-week and 1-week placebo. The subjects were randomized in a 1:1 ratio. The primary outcome was *H. pylori* eradication, determined by a urea breath test after 6 weeks. The secondary outcome was patient quality of life before and after the intervention, which was assessed using the QOLRAD questionnaire pre- (week 0) and post-treatment (week 11).
Results: We included 246 patients with a mean age of 41.6±14.4 years, amongst whom 49.3% were males. The *Hp* eradication rate was 62.1% for the intervention group and 53.2% for the control group (p=0.373). There was a significant difference in pre-treatment and post-treatment QOLRAD scores for both the control and intervention groups (p<0.001). However, there was no difference in the post-treatment QOLRAD scores between the control and intervention groups (p=0.586).
Conclusions: This study demonstrated a low eradication rate of HP infection after a vonoprazan-based triple therapy regimen. Study warrants an urgent need to determine the antibiotic resistance to *H. pylori* in this part of the world.

Conflict of Interest
S. Abid: None. C. Qasim: None. Z. Karim: None. N. Butt: None. L. Kamani: None. S. Awan: None.

P11.04.

USE OF PREVIOUSLY CRYOPRESERVED, CLINICALLY NORMAL, GPTDELTA MICE ABLATES NATURAL AND EXPERIMENTAL TYPHLOCOLITIS NOTED WITH *H. MASTOMYRINUS* INFECTION IN GPTDELTA MICE WITH APPARENT IMMUNODEFICIENCY

A. ARMIJO[1], *S.E. CARRASCO*[2], *J.G. FOX*[1]
[1]MIT - Division of Comparative Medicine, Cambridge, MA, USA; [2]Memorial Sloan Kettering Cancer Center, New York, NY, USA

Objective: Murine enterohepatic *Helicobacter* species are opportunistic bacteria that have the potential to cause hepatitis, typhlocolitis, and malignancy in susceptible strains. An outbreak of *H. mastomyrinus* was identified in a colony of *gpt*α C57BL/6J transgenic mice (*gpt*α). Our aim was to evaluate the host-pathogen interaction and elucidate the mechanism of immune deficiency.
Patients and Methods*:* Immunophenotyping of naïve *gpt*α and wild-type (WT) C57BL/6J mice was performed by flow cytometry. Embryos from the original *gpt*α colony were rederived (Re-*gpt*α). *H. mastomyrinus* was isolated from naturally infected animals and used for experimental infection of age-matched *gpt*α, Re-*gpt*α mice, and WT mice. Histological analysis of the liver and gastrointestinal tract was performed.

Results: Flow cytometric analysis revealed a ~50% decrease in the $CD3^+$ and CD^{4+}, $CD25^+$, $CD127^{low}$-T cell populations in the *gpt*α mice relative to WT controls, despite no changes in the ratio of CD4:CD8 T cells. Experimental infection of *H. mastomyrinus* resulted in significant typhlocolitis in the *gpt*α mice as early as 6 weeks post-infection. Histological analysis revealed a significant increase in colonic hyperplasia of infected *gpt*α mice compared to infected WT mice. *H. mastomyrinus* colonized both WT and Re-*gpt*α mice, but typhlocolitis was not observed grossly. Histological analysis of the Re-*gpt*α mice is pending

Conclusions: Our results indicate that the *gpt*α colony acquired an immunodeficiency, particularly in the $CD3^+$ and Treg cell populations, thus making them susceptible to opportunistic infections, including *H. mastomyrinus*. Further investigation, including whole genome sequencing, is warranted to determine the etiology of the acquired immunodeficiency in this transgenic colony.

Conflict of Interest

A. Armijo: None. J.G. Fox: None. S.E. Carrasco: None.

P11.05.

IMMUNOLOGICAL CHANGES DETERMINED BY BISMUTH QUADRUPLE THERAPY IN PATIENTS WITH *HELICOBACTER PYLORI* INFECTION

E. GRAVITO-SOARES[1], *N. ALMEIDA*[1], *M. GRAVITO-SOARES*[1], *B. ROCHA*[2], *P.N. FIGUEIREDO*[1]

[1]Faculty of Medicine, University of Coimbra, Centro Hospitalar e Universitário de Coimbra, Unidade Local de Saúde de Coimbra, Coimbra, Portugal; [2]Faculty of Pharmacy, University of Coimbra; Center for Neuroscience and Celular Biology, University of Coimbra, Coimbra, Portugal

Objective: *Helicobacter pylori* (*H. pylori*) infection remains a major public health problem. Given the high resistance to antibiotics worldwide, bismuth quadruple therapy has emerged as a major therapeutic option. The aim of the study was to evaluate if bismuth quadruple therapy determined major changes in the immunological profile of patients submitted to *H. pylori* eradication.

Patients and Methods*:* All patients submitted to eradication treatment with bismuth quadruple therapy in a blind, randomized trial were included. Esomeprazole was the proton pump-inhibitor of choice. Efficacy and safety rates at 2 months after treatment were evaluated. Analysis of immunological changes included the study of cell populations by flow cytometry ($CD4^+$, $CD8^+$, B-cell, T-cell, natural killer cells and CD4+/CD8+ cells ratio).

Results: Thirty-eight patients (male sex 42.1%; mean age of 57.0±16.5 years) completed the protocol. Overall efficacy and adverse event rates were 97.3% and 48.6%, respectively. After treatment, seven patients (18.4%) presented other infectious diseases. Mean pre- and post-therapy $CD4^+$, $CD8^+$, B-cell, T-cell, natural killer cells counts and CD4+/CD8+ cells ratio were: 48±30 and 853±316 (p<0.001); 404±192 and 472±237 (p=0.085); 331±566 and 299±388 (p=0.504); 1298±505 and 1379±461 (p=0.122); 188±86 and 186±85 (p=0.879); 2.0±0.9 and 2.0±0.9 (p=0.864).

Conclusions: Bismuth quadruple therapy is highly effective in eradicating *H. pylori* gastric infection. However, this therapy is associated with adverse events in around half of patients, with post-treatment infections occurring in one-fifth of them. There is a clear increase in $CD4^+$ cells after treatment.

Conflict of Interest

E. Gravito-Soares: None. N. Almeida: None. M. Gravito-Soares: None. B. Rocha: None. P.N. Figueiredo: None.

P11.06.

INVESTIGATING THE ROLE OF EFFLUX PUMP GENE EXPRESSION IN ANTIMICROBIAL-RESISTANT *HELICOBACTER PYLORI*

S.D. MOLLOY[1], *T.J. BUTLER*[1], *C. COSTIGAN*[2], *J. O'CONNELL*[2], *D. MCNAMARA*[2], *S. M. SMITH*[1]
[1]Trinity College Dublin, Dublin, Ireland; [2]Tallaght University Hospital, Dublin, Ireland

Objective: Antibiotic resistance in *Helicobacter pylori* (*H. pylori*) is typically associated with DNA mutations. The role of efflux pumps remains less characterized. The aim of the study was to determine (i) the antimicrobial resistance profiles and (ii) baseline expression levels of four efflux pump genes in clinical *H. pylori* isolates.
Materials and Methods: *H. pylori* was cultured from the corpus and antral biopsies and underwent antimicrobial susceptibility testing by ETEST (bioMérieux). Resistance was determined according to EUCAST 2023 guidelines. RNA was extracted from isolates using the Qiagen AllPrep kit. Reverse transcription-quantitative PCR was performed on efflux genes *hp0939*, *hp0471*, *hp0605* and *hp0497* using the RevertAid kit (ThermoScientific) and PowerUp SYBR Green Mastermix (ThermoScientific). Gene expression relative to strain 60190 was performed using the delta-delta cycle threshold method.
Results: Isolates from 25 patients [52% female (N=13); mean age 50±18.7 years] were analyzed. Resistance to clarithromycin was 32% (N=8), metronidazole was 40% (N=10) and levofloxacin was 20% (N=5). 28% (N=7) of isolates were resistant to 1 antimicrobial, 44% (N=11) to 2 antimicrobials and 12% (N=3) were multidrug resistant. 20% (N=5) were sensitive to all six antimicrobials tested. Efflux gene expression varied across isolates. For *hp0939*, the highest level of expression was in a multidrug-resistant isolate, and the lowest level was seen in an isolate susceptible to all six antibiotics. There was no statistical difference in mean expression levels between sensitive isolates and those that were antimicrobial resistant across the four efflux genes.
Conclusions: Efflux pump expression varies across isolates. Further analysis with an increased sample size is necessary to determine a significant association with antimicrobial resistance.

Conflict of Interest
S.D. Molloy: None. T.J. Butler: None. C. Costigan: None. J. O'Connell: None. D. McNamara: None. S.M. Smith: None.

P11.07.

TWO BIRDS, ONE SET OF BIOPSIES: THE USE OF PCR FOR THE DIAGNOSIS OF *HELICOBACTER PYLORI* AND DETECTION OF RESISTANCE USING BIOPSIES FROM BEDSIDE RAPID UREASE TESTS

S.D. MOLLOY[1], *M. DUNNE*[1], *T.J. BUTLER*[1], *C. COSTIGAN*[2], *J. O'CONNELL*[2], *D. MCNAMARA*[2], *S.M. SMITH*
[1]Trinity College Dublin, Dublin, Ireland; [2]Tallaght University Hospital, Dublin, Ireland

Objective: *H. pylori* is diagnosed invasively using the rapid urease test (RUT), histology and/or culture. Molecular methods offer a rapid alternative to culture for diagnosis and antimicrobial susceptibility testing (AST) and are usually performed using designated fresh biopsy samples. The aim of this study was to determine if biopsies from the RUT can be re-used in PCR for *H. pylori* diagnosis and AST.
Materials and Methods: Ethical approval was granted by the Research Ethics Committee of Tallaght University Hospital. During routine gastroscopy, 1 antrum and 1 corpus biopsy were taken for RUT (Biohit Healthcare). DNA was extracted from RUT biopsies (QiaAmp DNA Mini kit, Qiagen) and 16S rRNA PCR was performed for the detection of *H. pylori*. PCR-positive samples underwent clarithromycin (CAM) and fluoroquinolone (FQ) AST using the HelicoDR kit (Hain Lifesciences).

Results: RUT samples from 71 patients (mean age: 57 years, 52% female) were analyzed. The average DNA concentration was 139.61±64.89 ng/µL, and the average ratio of 260 nm and 280 nm absorbances was 1.84±0.04. The rate of detection of *H. pylori* by 16S rRNA PCR and histology was 15% (N=11/71) and 8% (N=6/71) by RUT. The agreement between PCR and histology results was 94% (N=67/71), and between PCR and RUT results, it was 89% (N=63/71). The HelicoDR assay confirmed *H. pylori* in all 11 samples deemed positive by 16S rRNA PCR. 54.5% of samples (N=6/11) were CAM resistant, while 5 (83.3%) and 1 (16.7%) had the A2147G and A2146G mutations, respectively. FQ resistance was not detected.
Conclusions: RUT biopsies could be re-used for the isolation of high-quality DNA for *H. pylori* detection and AST.

Conflict of Interest
S.D. Molloy: None. M. Dunne: None. T.J. Butler: None. C. Costigan: None. J. O'Connell: None. D. McNamara: None. S.M. Smith: None.

P11.08.

HELICOBACTER PYLORI RNA METABOLISM: IDENTIFYING VULNERABILITIES FOR NOVEL ANTIMICROBIAL DRUG DISCOVERY TO COMBAT DRUG-RESISTANT INFECTIONS

J. SKIBINSKI[1,2], *Y. LAVRYNCHUK*[1,2], *P. PŁOCIŃSKI*[1], *U. ZARZECKA*[3], *J. SKÓRKO-GLONEK*[3], *M. CHMIELA*[1]
[1]Department of Immunology and Infectious Biology, Faculty of Biology and Environmental Protection, University of Lodz, Lodz, Poland; [2]BioMedChem Doctoral School of the UL and Lodz Institutes of the Polish Academy of Science, University of Lodz, Lodz, Poland; [3]Department of General and Medical Biochemistry, Faculty of Biology, University of Gdansk, Gdansk, Poland

Objective: The increasing resistance of *Helicobacter pylori* (*Hp*) to current antibiotics necessitates the search for new antimicrobials. Scientists are exploring novel molecular targets to identify vulnerabilities in microbial metabolism. RNA degradation and metabolism are promising yet under-researched targets in many bacterial species, including *Hp*. Limited evidence exists regarding RNA degradation pathways in *Hp*. Genome sequencing has revealed that *Hp* possesses a single RNA helicase, RhpA, from the DEAD-box family. Unlike other bacteria, RhpA does not interact with the core RNA degradosome protein, polynucleotide phosphorylase (PNP). Evidence suggests that inhibiting PNP activity can alter antibiotic resistance and aid in eradicating pathogens.
Materials and Methods: Recombinant proteins were produced in *E. coli* expression system and purified using chromatography techniques. Bacterial mutants were generated by allelic exchange with flanked out-of-frame gene fragments containing inserted Kanamycin resistance cassettes. PNP inhibitors were screened in vitro against MedChemExpress compound library in enzymatic assays.
Results: We generated viable PNP and RhpA deletion mutants. We purified recombinant proteins RhpA and PNP and excluded interaction between the two using Microscale Thermophoresis. The transcriptomic analysis of the deletion mutants showed extensive changes in the bacterial transcriptomic profile of RhpA but limited changes for PNP. We identified 402 chemical compounds inhibiting PNP activity at 100 µM and tested them against live *Hp*.
Conclusions: We identified chemical compounds inhibiting PNP that are active against live *Hp*, thus providing a promising starting point for developing new antimicrobial therapies. These findings underscore the potential of targeting RNA metabolism as a novel approach to combat antibiotic-resistant *Hp* infections.

Conflict of Interest
J. Skibinski: None. Y. Lavrynchuk: None. P. Płociński: None. U. Zarzecka: None. J. Skórko-Glonek: None. M. Chmiela: None.

POSTER SESSION 12: MICROBIOTA 01

P12.01.

BACTERIA-DERIVED EXTRACELLULAR VESICLES IN LIQUID BIOPSY: POTENTIAL BIOMARKERS FOR GASTRIC CANCER DETECTION

H. YOU[1], J. PARK[1], B. KIM[1], H. SEO[1], T. SHIN[2], ***J. KIM****[1]*
[1]Chung-Ang University College of Medicine, Seoul, Republic of Korea; [2]Institute of APITech Inc., Seoul, Republic of Korea

Objective: The potential role of bacteria-derived extracellular vesicles (EVs) in gastric cancer (GC) development is poorly understood. We aimed to determine their potential use as biomarkers for GC diagnosis.
Materials and Methods: We collected gastric juice, saliva, serum, and urine samples from 9 controls and 132 subjects in different stages of gastric carcinogenesis, including 58 low-grade dysplasia, 33 high-grade dysplasia, and 41 GC. Bacterial EVs were isolated from the samples, and microbial genomic DNA was extracted and processed for microbiome analysis using 16S rRNA gene profiling. Alpha and beta diversity were analyzed among the groups, as well as differences in microbiome compositions. Bacteria with differential abundance among the groups were identified along with quantitative assessments.
Results: Although the alpha diversity revealed little variation, the beta diversity demonstrated significant differences across all sample types during carcinogenesis (p<0.05). In all four sample types, *Pseudomonas yamanorum* seemed to demonstrate increased relative abundance in disease groups *vs.* controls; however, it showed no significant difference after age and sex matching. In the disease group, compared to controls, gastric juice samples exhibited elevated *Cutibacterium acnes* and *Streptococcus oralis*. Saliva samples showed increased *Pseudomonas antarctica* and *Ralstonia insidiosa* levels. Serum samples revealed higher *P. yamanorum, C. acnes, R. insidiosa,* and *P. antarctica* levels. Urine samples also displayed elevated *C. acnes, R. insidiosa,* and *P. antarctica* levels.
Conclusions: We demonstrated significant differences in microbial compositions among groups during gastric carcinogenesis. Additionally, distinct microbial signatures were identified, suggesting bacteria-derived EVs in liquid biopsies as potential GC biomarkers.

Conflict of Interest
H. You: None. J. Park: None. B. Kim: None. H. Seo: None. T. Shin: None. J. Kim: None.

P12.02.

A MICROBIOME TESTING-BASED PERSONALIZED APPROACH TO TREAT POST-INFECTIOUS IRRITABLE BOWEL SYNDROME: A PILOT STUDY

W. FUSCO*, E. TOHUMCU, F. OCARINO, F. DE MAIO, T. ROZERA, S. PORCARI, M. FIORANI, A. SEVERINO, D. RONDINELLA, F. PELLICCIA, L. MASUCCI, B. POSTERARO, M. SANGUINETTI, G. CAMMAROTA, A. GASBARRINI, G. IANIRO*
Policlinico Universitario A. Gemelli, Rome, Italy

Objective: Gut microbiome alterations are known to be one of the pathogenic pathways of post-infectious IBS (PI-IBS). To date, untargeted therapeutic approaches have obtained conflicting results in those patients. Gut microbiome testing is emerging as a promising diagnostic tool and offers a personalized therapeutic strategy to target microbiota, but its real value is still unknown. The study aimed to evaluate whether a personalized approach based on gut microbiome testing is an effective strategy for PI-IBS.
Patients and Methods*:* All patients underwent stool 16S-rRNA gene microbiome testing. Then, based on the results, patients received targeted therapy with non-adsorbable antibiotics, prebiotics, and probiotics. Patients were followed up to 12 weeks after the end of the therapy. Symptoms were assessed with the GSRS. The primary outcome was the resolution of at least one symptom at 12 weeks.
Results: 13 patients were enrolled. At the gut microbiome testing, we observed: low alpha diversity in 23% of patients, high abundance of Proteobacteria in 23%, high abundance of Firmicutes in 38%. Moreover, 54% presented low abundance of SCFA-producing bacteria, 62% of Ak-

kermansia and 69% of Bifidobacteria. Antibiotics: Rifaximin 69%, Paromomicin 31. Probiotics: multispecies probiotics and Bifidobacterium-based probiotics in 38%, Lactobacillus-based probiotics in 54%, Escherichia coli Nissle 1917 in 15%. Prebiotics: inulin and psyllium, used in 69%. At 12-week follow-up, 93% had an improvement in at least one symptom; 38% had a total remission.
Conclusions: A precision medicine approach, based on gut microbiome testing has shown promising preliminary results in patients with PI-IBS. Well designed, larger and randomized trials are necessary to confirm our preliminary findings.

Conflict of Interest
W. Fusco: None. E. Tohumcu: None. F. Ocarino: None. F. De Maio: None. T. Rozera: None. S. Porcari: None. M. Fiorani: None. A. Severino: None. D. Rondinella: None. F. Pelliccia: None. L. Masucci: None. B. Posteraro: None. M. Sanguinetti: None. G. Cammarota: None. A. Gasbarrini: Other; Modest; Personal fees for consultancy from Eisai Srl, 3PSolutions, Real Time Meeting, Fondazione Istituto Danone, SinergieSrl, Board MRGE and Sanofi SpA personal fees for acting as a speaker for Takeda SpA. G. Ianiro: Other; Modest; Personal fees for acting as speaker for Biocodex, Danone, Sofar, Malesci, Metagenics and Tillotts Pharma, and acting as consultant and/or advisor for Ferring Therapeutics, Giuliani, Malesci, Tillotts.

P12.03.

ACTIVE BACTERIAL ASSEMBLAGES THROUGHOUT THE GASTROINTESTINAL TRACT IN PATIENTS WITH DEMENTIA

K. SCHÜTTE[1,2], *C. SCHULZ*[3], *N. KOCH*[3], *R. VILCHEZ-VARGAS*[3], *R. VASAPOLLI*[3], *D. SCHOMBURG*[4], *P. MALFERTHEINER*[3,5]
[1]Niels-Stensen-Kliniken Marienhospital Osnabrück, Osnabrück, Germany; [2]Medizinische Hochschule Hannover, Hannover, Germany; [3]Department of Internal Medicine 2, University Hospital, Munich, Germany, Munich, Germany; [4]Institute of Biometry and Medical Informatics, Otto-von-Guericke University Magdeburg, Magdeburg, Germany; [5]Department of Gastroenterology, Hepatology and Infectious Diseases, Otto-von-Guericke University Magdeburg, Magdeburg, Germany

Objective: The microbiota-gut-brain-axis is hypothesized to be implicated in neurodegenerative disease development. While most research focuses on fecal microbiota, mucosal samples are understudied. This study compares gut microbiota at different gastrointestinal sites in dementia patients *vs.* healthy controls.
Material and methods: Patients and healthy individuals were recruited within the prospective study DRKS00009737. Samples from saliva, feces, and stomach, duodenal, and colonic biopsies were collected. V1-V2 16S RNA Illumina sequencing was performed with RNA as starting material. Bacterial assemblages were compared between dementia patients and age, sex, and BMI-matched controls.
Results: Thirteen dementia patients (mean age: 70.6; 5 females, 8 males) and 13 controls (mean age: 70.4; 5 females, 8 males) were analyzed. Significant differences in upper and lower GI tract communities were found *via* PCoA. However, no significant differences in phylotype or genus levels were observed between groups at any site.
Conclusions: In this cohort, no discernible differences in bacterial communities between groups were detected, likely due to high inter-individual variation. Ongoing investigations are exploring the potential role of fungal communities in the microbiota-gut-brain-axis.

Funding
This study was conducted as part of the EMGASTA project (DRKS00009737) by the research group “Autonomie im Alter” of Saxony-Anhalt, Germany. Funding was provided by the European Commission’s “Europäischer Fond für regionale Entwicklung” (EFRE) and the regional Ministry of Economy, Science, and Digitalization. Additional support came from the Helmholtz Association’s Initiatives on Personalized Medicine (iMed) and Aging and Metabolic Programming (AMPro).

Conflict of Interest
K. Schütte: None. C. Schulz: None. N. Koch: None. R. Vilchez-Vargas: None. R. Vasapolli: None. D. Schomburg: None. P. Malfertheiner: None.

P12.04.

FECAL MICROBIOTA TRANSPLANTATION IN IRRITABLE BOWEL SYNDROME: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS AND PROSPECTIVE COHORT STUDIES

S. PIWCHAN, N. AUMPAN, P. WANAMONGKOL, V. MAHACHAI, ***R. VILAICHONE***
Thammasat University, Pathumthani, Thailand

Objective: Irritable Bowel Syndrome (IBS) stands out as leading global gastrointestinal disorder. As a potential remedy, Fecal Microbiota Transplantation (FMT) has been proposed, offering a promising option for addressing the challenges. We, thereby, assessed the pooled efficacy of FMT for IBS patients.
Materials and Methods: We searched medical literature databases from January 2015 to October 2023 for RCTs assessing efficacy of FMT in patients with IBS. Mean difference (MD) and 95% confidence intervals (CIs) between baseline and end-of-intervention were utilized to analyze continuous data comparing FMT and placebo. We looked for clinically significant parameters and organized findings into early (4 weeks) and late (12 weeks) outcomes. Primary outcome was mean change in IBS-SSS (IBS Severity Scoring System), and secondary outcome was mean change in IBS-QoL score.
Results: We identified 9 eligible published RCTs and 1 abstract presentation involving 558 participants. FMT demonstrated significant improvement in IBS-SSS score at 1-month (MD -59.42, 95% CI: -96.10, -22.74), modest improvement at 3-month (MD -49.17, 95% CI: -109.18, 10.84), and notably, evinced no additional advancement at 6-month follow-up (MD 20.10, 95% CI: -41.19, 81.38). In the evaluation of IBS-QoL score, FMT failed to exhibit any perceptible amelioration at both the 1-month (MD 3.39, 95% CI: -1.17, 7.95) and 3-month (MD 6.95, 95% CI: -5.97, 19.87) follow-up time points. FMT did not result in increasing serious adverse events.
Conclusions: FMT emerges as both efficacious and well-tolerated in the context of IBS treatment, especially in improving IBS-SSS scores observed at the 1- and 3-month follow-up intervals. Long-term use of FMT in IBS need well-designed RCT and further investigations.

Conflict of Interest
R. Vilaichone: None. S. Piwchan: None. V. Mahachai: None. N. Aumpan: None. P. Wanamongkol: None.

P12.05.

COMPARISON OF DIFFERENT MICROBIOME ANALYSIS PIPELINES AND THEIR REPRODUCIBILITY IN THE DETERMINATION OF THE COMPOSITION OF THE MICROBIOME OF THE GASTRIC MUCOSA.

K. LEHR[1], *B. OOSTERLINCK*[2], *C. THEN*[3,4], *M. GEMMELL*[5], *R. GEDGAUDAS*[6], *J. BORNSCHEIN*[7], *J. KUPCINSKAS*[6], *A. SMET*[2], *G. HOLD*[8], *A. LINK1, ON BEHALF OF ENIGMA*
K. Lehr, B. Oosterlinck, C. Then, M. Gemmell, and R. Gedgaudas contributed equally
[1]Department of Gastroenterology, Hepatology and Infectious Diseases, Otto-von-Guericke University, Magdeburg, Germany; [2]Laboratory of Experimental Medicine and Pediatrics, Faculty of Medicine and Health Sciences, University of Antwerp, Antwerp, Belgium; [3]MRC Oxford Institute for Radiation Oncology, Department of Oncology, University of Oxford, Oxford, United Kingdom; [4]Department of Radiation Oncology, Shuang Ho Hospital, Taipei Medical University, New Taipei City, Taiwan; [5]Centre for Genomic Research, University of Liverpool, Liverpool, United Kingdom; [6]Institute for Digestive Research, Lithuanian University of Health Sciences, Kaunas, Lithuania; [7]MRC Translational Immune Discovery Unit, MRC Weatherall Institute of Molecular Medicine, John Radcliffe Hospital, University of Oxford, Oxford, United Kingdom; [8]UNSW Microbiome Research Centre, University of New South Wales, Sydney, Australia

Objective: Microbiome analysis has great potential to translate results from basic research into clinical practice. However, there is an ongoing controversy about the comparability of different bioinformatic analysis platforms. This lack of recognized standards affects the translation process of results. In this study, we investigated how the performance of different microbiome analysis platforms affects the microbial structure of gastric mucosal biopsies.
Material and Methods: Gastric biopsy samples were collected from clinically well-defined gastric cancer patients [n=40; with and without *Helicobacter pylori* (*H. pylori*) infection] and controls (n=39, with and without *H. pylori* infection). The 16S rRNA gene (V1-V2) was sequenced and the generated fastQ files were sent to five experienced research groups and analyzed independently. Three different commonly used bioinformatics pipelines for microbiome analysis (DADA2, MOTHUR and QIIME2) were used.
Results: The generated fastQ files showed no platform-based clustering, indicating comparability of sequences. *H. pylori* status, microbial diversity, and relative bacterial abundance were reproducible across all platforms regardless of the protocol used. Minor differences in performance were detected and evaluated, but similarity analysis and evaluation of bacterial enrichment also produced comparable results.
Conclusions: Taken together, our results clearly show that independent research groups can produce comparable results from the same data set even when using different microbiome analysis approaches.

Conflict of Interest
K. Lehr: None. B. Oosterlinck: None. C. Then: None. M. Gemmell: None. R. Gedgaudas: None. J. Bornschein: None. J. Kupcinskas: None. A. Smet: None. G. Hold: None. A. Link: None.

P12.06.

HEALTHY REFERENCE RANGE IN MICROBIOME DIAGNOSTICS

C. CASÉN*, T.Z. HANSEN*
Genetic Analysis AS, Oslo, Norway

Objective: With the evolving development in microbiome diagnostics, and its course into routine clinical laboratory practices, the need for a healthy reference range has become crucial. Genetic Analysis, Oslo, Norway, has developed and launched the GA-map® Dysbiosis Test1, a CE-IVD approved microbiota measurement platform that automatically compares the test results to a clinically validated, healthy microbiota reference range.
Material and Methods: The GA-map® test utilizes a pre-selected target approach and the 16S rRNA gene to determine a bacterial profile and a dysbiosis index (DI, non-dysbiosis 1-2, dysbiosis 3-5), by utilizing 48 bacteria markers, at different taxonomic levels (phyla, class, genus, species), covering the major commensal core bacteria and other bacteria distinguishing the microbiota profile of dysbiotic IBS or IBD patients from healthy ones. The GA-map® healthy reference range was built and validated by analysis of 894 samples collected from clinically documented non-symptomatic individuals from Scandinavia, other European countries, the USA, and Canada.
Results: The mean DI score for the healthy individuals was 1.25. Specificity, based on these data, was 78%, which means that 78% of the healthy individuals will have DI score of less than 2. The diversity index, according to the GA-map® criteria, should be higher than 2.5 in healthy individuals, and of all healthy individuals, 93% had a diversity index higher than 2.5.
Conclusions: The DI variability between the cohorts was small. Concentrating on the core bacteria seems to be the preferred source for establishing a healthy microbiota reference range. Over time, cohorts from more countries, e.g., Asian countries will be validated.

Conflict of Interest
C. Casén: A. Employment (full or part-time); Significant; Genetic Analysis AS. E. Ownership Interest (stock, stock options, patent or other intellectual property); Significant; Genetic Analysis AS. T.Z. Hansen: A. Employment (full or part-time); Significant; Genetic Analysis AS.

P12.07.

SECOND GENERATION ANTIPSYCHOTICS INDUCED WEIGHT GAIN ASSOCIATED WITH MICROBIOME CHANGES IN CHILDREN AND YOUNG ADULTS

A.E. OROS[1], *M. LABO*[1], *D.C. ONIT*[1], *O. SABIN*[1], *E.L. POPOVICI*[2]
[1]"Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania
[2]County Emergency Hospital, Bacau, Romania

Objective: Children and young adults' microbiome are under continuing development and external factors influence. Second-generation antipsychotic drugs (SGAs), with lower extrapyramidal side effects, are well known for inducing weight gain and leading to obesity. Increasing evidence suggests the influence of microbiome and gut-brain axis interactions with SGAs regarding weight gain. This review aims to raise awareness on the microbiome changes and its effects on young patients undergoing SGAs treatment.
Materials and Methods: This review brings together the results of 9 studies from PubMed, conducted between 2017 and 2023, enrolling 461 patients treated with SGAs. The inclusion criteria were: SGAs treated patients; age 8-25; weight gain and microbiome changes during SGAs treatment. The exclusion criteria were: patients using antibiotic, probiotic, prebiotic or symbiotic treatments 2 months prior; weight gain risk associated treatments; patients with other gastrointestinal diseases.
Results: The studies revealed that SGAs treatments is associated with: decreased gut microbiome diversity and microbiota imbalance by increasing Firmicutes to Bacteroides ratio; increased cytokine level, permeability of the gut barrier and energy homeostasis changes, connected to weight gain; increased *Bifidobacterium* spp. as compensatory response, during 24-week risperidone treatment, to prevent weight gain and reduce inflammatory status; probiotics and dietary fiber leading to increased Bacteroides and weight loss.
Conclusions: Antipsychotics may alter the microbiome balance, leading to inflammation and energy dysfunction associated with weight gain. Any dysbiosis at young ages is significant considering the life-long implications and that overweight children tend to become obese adults with serious health complications.

Conflict of Interest
A.E. Oros: None. M. Labo: None. D.C. Onit: None. O. Sabin: None. E.L. Popovici: None.

P12.08.

EFFICACY AND SAFETY OF FECAL MICROBIOTA TRANSPLANTATION FOR THE TREATMENT OF SEVERE AND SEVERE-COMPLICATED *CLOSTRIDIOIDES DIFFICILE* INFECTION: REPORT FROM A LARGE-VOLUME FMT CENTER

G. IANIRO[1], *L. MASUCCI*[2], ***A. SEVERINO***[1], *M. FIORANI*[1], *G. CATASSI*[1,3], *S. VARCA*[1], *S. PORCARI*[1], *S. BIBBÒ*[1], *G. QUARANTA*[2], *D. RONDINELLA*[1], *I. VENTURINI*[1], *W. FUSCO*[1], *T. ROZERA*[1], *M. SANGUINETTI*[2], *A. GASBARRINI*[1], *G. CAMMAROTA*[1]
[1]Digestive Disease Center, Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome, Italy, Rome, Italy; [2]Microbiology Unit, Fondazione Policlinico Universitario "A. Gemelli" IRCCS, Università Cattolica del Sacro Cuore, Rome, Italy, Rome, Italy; [3]Pediatric Gastroenterology and Liver Unit, Sapienza University of Rome, Umberto I Hospital, Rome, Italy

Objective: *Clostridioides difficile* infection (CDI) includes severe clinical pictures of disease. Fecal microbiota transplantation (FMT) is an established treatment for recurrent CDI, but its role in severe clinical pictures is still not well defined. Our aim is to report efficacy and safety of FMT in a large cohort of patients with severe and severe-complicated CDI.
Patients and Methods*:* We included patients with severe CDI treated with FMT at our center from June 2013 to January 2023. Severe and severe-complicated CDI were defined according to international guidelines. Enrolled patients were followed-up at 12 weeks after the last FMT. The primary outcome was the clinical resolution of CDI at 8 weeks after FMT, while the secondary outcomes were the overall survival at 90 days and the safety of FMT. Donor stools were screened following international guidelines. FMT procedures were carried out by colonoscopy, using a single-donor solution.

Results: 85 patients were enrolled. 71 had severe CDI and 14 had severe-complicated CDI. 44 patients received sequential FMT, for a total of 158 FMT procedures. Overall, 76 patients experienced resolution of CDI (65 with severe CDI and 11 with severe-complicated CDI). 15 patients died within the follow-up period. No deaths were attributable to FMT. At multiple linear regression, enticement was associated with lower CDI cure (p=0.0026) and higher risk of death (p=0.0013). Severe adverse events occurred in 4 patients.
Conclusions: In our cohort of patients, FMT was a highly effective and safe treatment for severe and severe-complicated CDI. Enticement was identified as a risk factor for FMT failure and death.

Conflict of Interest
G. Ianiro: None. L. Masucci: None. A. Severino: None. M. Fiorani: None. G. Catassi: None. S. Varca: None. S. Porcari: None. S. Bibbò: None. G. Quaranta: None. D. Rondinella: None. I. Venturini: None. W. Fusco: None. T. Rozera: None. M. Sanguinetti: None. A. Gasbarrini: None. G. Cammarota: None.

P12.09.

CLINICAL RELEVANCE OF POSITIVE MOLECULAR STOOL TESTING FOR INTESTINAL PATHOGENS IN DIFFERENT GASTROINTESTINAL DISORDERS

P. FRASCA[1], *T. ROZERA*[1], *R. MARESCA*[1], *S. PORCARI*[1], *M. FIORANI*[1], *A. SEVERINO*[1], *W. FUSCO*[1], *I. VENTURINI*[1], *D. RONDINELLA*[1], *F. KAITSAS*[1], *G. QUARANTA*[2], *L. MASUCCI*[2], *M. SANGUINETTI*[2], *B. POSTERARO*[2], *F. SCALDAFERRI*[3], *G. CAMMAROTA*[3], *L. LATERZA*[3], *G. IANIRO*[3]
[1]Università Cattolica del Sacro Cuore, Digestive Disease Center, Roma, Italy; [2]Università Cattolica del Sacro Cuore, Microbiology, Roma, Italy; [3]Fondazione Policlinico Universitario A. Gemelli IRCCS, Digestive Disease Center, Roma, Italy

Objective: Gut pathogens play a relevant role in shaping the natural history of noncommunicable chronic gastrointestinal (GI) disorders, as they are not only a risk factor for the development of irritable bowel syndrome (IBS) and inflammatory bowel diseases (IBD), but can also trigger a clinical relapse of these conditions. Molecular testing for quick pathogen detection have been made available in recent years, but their sensitivity may result in clinically insignificant positive findings, as gut pathogens may be also present at low counts in clinically healthy individuals. Their use is also recommended in stool donor screening flow-chart to minimize the risk of transmission of infectious diseases during fecal microbiota transplantation (FMT).
Materials and Methods: Our aim was to evaluate whether the presence of gut pathogens, assessed by a direct molecular stool testing, differs in different GI disorders and healthy individuals. In this retrospective study, we evaluated the results of a commercially available, RT-PCR-based molecular stool testing for the detection and identification of 25 common gut pathogens (RT-PCR Allplex™ Gastrointestinal Panel Assays, Seegene, Seoul, Korea) in three different cohorts: patients with IBD; patients with IBS; candidate stool donors of our FMT centre. We collected the following data of recruited individuals: age, gender, presence of GI symptoms (assessed with the GSRS) and disease activity (assessed with PMS, HBI).
Results: Overall, 403 stool tests were retrospectively analyzed. Of them, 177 came from 46 healthy donors (n= 89 tests of females, mean age 44; range: 21-69; SD 12.5); 183 from 146 patients with IBD (n=100 tests of females, mean age 40.4; range: 16-82; SD 16.2), and 27 from 26 patients with IBS (n= 12 tests of females, mean age 39; range: 16-68; SD 17.1). Among healthy donors, 60 (34%) tests were positive, 15 (8%) for multiple species. *Enteropathogenic Escherichia coli* (EPEC) was the most frequently isolated strain (n=23; 13%). In the IBD cohort, 155 tests were collected in patients with active disease, and among them 59 (38%) tests turned out to be positive, 18 (12%) for multiple species, with EPEC being the most common strain (n=15; 10%), followed by *Aeromonas spp* (n=13; 8%), *Blastocystis hominis* (n=11; 7%) and *Clostridium difficile* (n= 10; 6%). In this cohort, 28 tests were also requested to patients under quiescent disease, and 10 (36%) were positive. In patients with IBS, all tests were conducted during active, symptomatic phases of disease (IBS-D: n=19, 68%; IBS-C: n=8; 30%), with 13 (48%) positive testing, mainly due to *Blastocystis hominis* (n=5; 19%), followed by *Dientamoeba* (n=3; 11%), and by multiple species in 11% of patients (n=3).

Conclusions: In our cohort, the positivity rates of gut pathogens at direct molecular stool testing were similar among healthy donors (34%), patients with active (38%) and quiescent (36%) IBD, being slightly higher in patients with active IBS (48%). Based on these preliminary findings, direct molecular stool testing is associated with asymptomatic colonization from gut pathogens, rather than with clinically relevant infections, both in healthy controls and in patients with noncommunicable chronic GI disorders.

Conflict of Interest
P. Frasca: None. T. Rozera: None. R. Maresca: None. S. Porcari: None. M. Fiorani: None. A. Severino: None. W. Fusco: None. I. Venturini: None. D. Rondinella: None. F. Kaitsas: None. G. Quaranta: None. L. Masucci: None. M. Sanguinetti: None. B. Posteraro: None. F. Scaldaferri: None. G. Cammarota: None. L. Laterza: None. G. Ianiro: None.

P12.10.

CLOSTRIDIOIDES DIFFICILE INFECTION IN OUR PATIENTS WITH INFLAMMATORY BOWEL DISEASE

M. TELAKU[1], E. PUCA[2], J. BYTYÇI[3], Q. ZENELAJ[3], ***S. TELAKU[4]***
[1]QSUT, Tirane, Albania; [2]QSUT, Tirana, Albania; [3]CUCK, Prishtina, Republic of Kosovo; [4]UBT, Prishtina, Republic of Kosovo

Objective: Due to frequent hospitalizations, use of immunomodulators, and antibiotics, patients with inflammatory bowel disease (IBD) are at increased risk of *Clostridioides difficile* infection (CDI). CDI is associated with elevated rates of hospitalizations, surgical interventions, and mortality. ***Materials and Methods:*** The study aimed to investigate the prevalence of *C. difficile* toxins A and B among IBD patients with moderate to severe activity and explore associated risk factors. At the same time, we assessed the effect of therapies on treating CDI and IBD in our patients. The study used descriptive and comparative methods to interpret the collected data. Data were collected from patients treated at the Gastroenterology Clinic, University Clinical Center of Kosovo, from October 14, 2021, to July 14, 2023. The study involved 89 patients with IBD (52 males, 37 females; 47 with Crohn's disease and 42 with ulcerative colitis). Stool samples were analyzed using enzyme immunoassay. Statistical analysis was performed using IBM SPSS Statistics 29 (IBM Corp., Armonk, NY, USA). A *p*-value less than 0.05 was considered statistically significant.
Results: Nineteen out of 89 patients (21.3%) tested positive for *C. difficile* toxins A and B. Risk factors for CDI among IBD patients included female gender, ulcerative colitis, therapy with azathioprine/mesalazine, and location L3 of Crohn's disease.
Conclusions: *C. difficile* toxins A and B among our patients with IBD were found in significantly higher values than those reported in the literature for normal populations and patients with IBD.

Conflict of Interest
M. Telaku: None. J. Bytyçi: None. Q. Zenelaj: None. S. Telaku: None. E. Puca: None.

POSTER SESSION 13: MICROBIOTA 02

P13.01.

ORAL, FECAL AND BLOOD MICROBIAL SIGNATURE IN ESOPHAGEAL CANCER

H. LEE[1]*, C. SHIN[1] H. LEE[2], Y. JUN[1], Y. CHOI[1], H. YOON[1], Y. PARK[1], N. KIM[1], D. LEE[1], K. PARK[3]*
[1]Department of Internal Medicine, Seoul National University Bundang Hospital, Seongnam-si, Republic of Korea; [2]Section of Dentistry Medicine, Department of Periodontology, Seoul National University Bundang Hospital, Seongnam-si, Republic of Korea; [3]Department of Laboratory Medicine, Seoul National University Bundang Hospital, Seongnam-si, Korea, Republic of Korea

Objective: To identify differences in oral, fecal, blood microbial profile in esophageal cancer (EC), and its association with periodontal disease.

Patients and Method: A total of 44 EC patients, and 126 healthy controls (HC) were recruited for study. At the time of enrollment, dental examination was conducted. Microbial composition of saliva, fecal and blood samples was characterized by Illumina MiSeq platform targeting 16S ribosomal DNA.
Results: Oral microbiome of EC patients showed increased phylogenetic diversity (PD) with distinct microbial distribution compared to HC. β-diversity analysis showed distinct microbial distribution between the two groups. LEfSe analysis revealed increased abundance of Streptococcaceae, *Streptococcus*, *Parvimonas, Eubacterium_brachygroup, Filifactor* and decreased abundance of Lachnospiraceae, *Orbibacterium, Granulicatella* in EC patients. Fecal microbiome of EC showed decreased PD, distinct microbial composition compared to HC. Fecal microbiome of EC patients showed increased abundance of *Akkermansia,* Akkermansiaceae, and decreased abundance of *Rumminococcus_torques, Fusicatenibacter, Phascolarctobagerium* and Acidaminococcaceae. On contrary, blood microbiome of EC patients showed decreased PD with distinct blood microbial composition compared to HC. Blood microbiome of EC patients had increased abundance of *Actinobacteria,* Micrococcaceae, *Rothia*, and decreased abundance of *Streptococcus,* Streptococcaceae. Moreover, patients with severe periodontal disease showed increased PD, with increased abundance of Streptococcoceae and *Streptococcus*. Patients with more than 5 teeth loss also showed increased abundance of Lactobacillales, Streptococcaceae and *Streptococcus*.
Conclusions: EC patients exhibit distinct oral, fecal, and blood microbiome signatures. Oral microbiome composition of EC patients may resemble that of patients with severe periodontal disease (Research grant from the National Research Foundation of Korea, r2023R1A2C2002783).

Conflict of Interest
H. Lee: None. C. Shin: None. H. Lee: None. Y. Jun: None. Y. Choi: None. H. Yoon: None. Y. Park: None. N. Kim: None. D. Lee: None. K. Park: None.

P13.02.

PHAGEOME PROFILING IN HUMAN SAMPLES WITH LOW MICROBIAL BIOMASS

J. PEREIRA-MARQUES[1,2], *R. FERREIRA*[1,3], *R.M. FERREIRA*[1,2], *L.D.R. MELO*[3,4], *C. FIGUEIREDO*[1,2,5]
[1]i3S – Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal; [2]IPATIMUP – Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal; [3]CEB – Centre of Biological Engineering, University of Minho, Braga, Portugal; [4]LABBELS – Associate Laboratory, Braga, Guimaraes, Portugal; [5]FMUP – Faculty of Medicine of the University of Porto, Porto, Portugal

Objective: Bacteriophages have an important role in microbial community dynamics. However, these bacterial viruses remain among the least explored microbiome members, especially in the challenging setting of human tissues with low microbial biomass. Our aim was to establish a metagenomics approach to efficiently characterize the phageome in low microbial biomass samples.
Materials and Methods: To implement the metagenomics workflow, we experimentally generated phageome standards. A mock community comprising a mixture of DNAs from genetically distinct phages was created. Synthetic samples mimicking different types of human tissue specimens were prepared by spiking the mock with increasing levels of human DNA. Sequencing was conducted on the Illumina NovaSeq. Raw data were pre-processed to remove low-quality reads, human viruses, and human sequences. Taxonomic profiling was performed using the high-sensitive classifier Kraken2/Bracken with a custom database containing human, viral, and bacterial genomes. Putative microbial contaminants were removed *in silico* using a set of negative controls.
Results: We successfully developed and validated a novel mock phage community. The taxonomic profile of the mock was accurately reconstituted using our metagenomics workflow. When extending the analysis to low microbial biomass samples, this strategy effectively identified the phages of the mock with few false-positives, and produced phage abundances close to the expected values.
Conclusions: We implemented a tailored metagenomics workflow for efficient profiling of the phageome in low microbial biomass samples using well-characterized standards. This strategy will now be applied to the metagenomes of human tissue specimens.

Acknowledgements
RF and JP-M contributed equally; FCT/SFRH/BD/146496/2019.

Conflict of Interest
J. Pereira-Marques: None. R. Ferreira: None. R.M. Ferreira: None. L.D.R. Melo: None. C. Figueiredo: None.

P13.03.

SKELETAL MUSCLE-GUT AXIS: EMERGING MOLECULAR AND MICROBIAL MECHANISMS OF SARCOPENIA IN EXPERIMENTAL MODELS OF INFLAMMATORY BOWEL DISEASE

S. TROISI[1,2], *V. PETITO*[1], *L. MASI*[1], *V. EMOLI*[1], *C. PANE*[1,2], *F. DI VINCENZO*[3,4], *P. PUCA*[3,4], *I. CAPOBIANCO*[3,4], *L. LOPETUSO*[2,3,5], *A. GASBARRINI*[1,3,4], *F. SCALDAFERRI*[1,3,4]

[1]CeMAD Translational Research Laboratory, Digestive Disease center, Department of Medical and Surgical Sciences, Fondazione Policlinico Universitario "A. Gemelli"; IRCCS, Roma, Italy; [2]Center for Advanced Studies and Technology (CAST), 'G. D'Annunzio', University of Chieti-Pescara, Chieti, Italy; [3]IBD Unit, Digestive Disease center, Department of Medical and Surgical Sciences, Fondazione Policlinico Universitario "A. Gemelli" IRCCS, Roma, Italy; [4]Department of Translational Medicine and Surgery, Catholic University of the Sacred Heart, Rome, Italy; [5]Department of Medicine and Ageing Sciences, 'G. d'Annunzio' University of Chieti-Pescara, Chieti, Italy

Objective: Sarcopenia involves the progressive reduction of skeletal muscle mass, with primary sarcopenia associated with aging and secondary sarcopenia linked to conditions like inflammatory bowel disease (IBD). The interplay of inflammation, intestinal dysbiosis, and malnutrition causing muscle degeneration in IBD patients defines the gut-muscle axis. However, the molecular and microbial mechanisms of sarcopenia in IBD remain insufficiently explored.
Materials and Methods: In order to identify the mechanisms that are potentially involved in the onset of sarcopenia, a DSS-induced colitis mouse model has been created. To ensure that the model developed sarcopenia, physical performance assessment on the rotarod was conducted. In this well-characterized model, muscle analysis via immunohistochemistry, fiber count per field, and cross-sectional area were performed. Next, gut microbiota and serum LPS detection were evaluated.
Results: The mouse model exhibited decreased body weight and muscle function alongside elevated expression of muscle atrophy markers (myostatin and Murf-1) in colitic mouse muscle. Furthermore, there was an upregulation of the STAT3-pSTAT3 pathway linked to muscle wasting and a decrease in pAKT, a pathway associated with muscle growth. Surprisingly, DSS-induced colitis in mice resulted in intestinal dysbiosis, characterized by reduced *Roseburia* genus and increased *Sutterella*, *Turicibacter*, and *Bacteroides* in the DSS group.
Conclusions: These findings suggest potential research avenues for the gut-muscle axis in managing sarcopenia in IBD. Therefore, investigating the microbiota's role in sarcopenia pathogenesis in IBD is crucial, as it is implicated in inflammatory processes that contribute to muscle wasting and loss of muscle mass.

Conflict of Interest
S. Troisi: None. V. Petito: None. L. Masi: None. V. Emoli: None. C. Pane: None. F. Di Vincenzo: None. P. Puca: None. I. Capobianco: None. A. Gasbarrini: None. F. Scaldaferri: None. L. Lopetuso: None.

P13.04.

SARCOPENIA AND IBD: EXPLORING MOLECULAR MECHANISMS AND POTENTIAL PHARMACOLOGICAL AND MICROBIAL MODULATORS IN *IN VITRO* MODELS OF INFLAMMATORY BOWEL DISEASE

S. TROISI[1,2], *V. PETITO*[1], *L. MASI*[1], *V. EMOLI*[1], *B. RONDINONE*[3], *C. PANE*[1,2], *L. LOPETUSO*[2,4,5], *A. GASBARRINI*[1,4,6], *F. SCALDAFERRI*[1,4,6]

[1]CeMAD Translational Research Laboratory, Digestive Disease center, Department of Medical and Surgical Sciences, Fondazione Policlinico Universitario "A. Gemelli"; IRCCS, Roma, Italy; [2]Center for Advanced Studies and Technology (CAST), 'G. D'Annunzio', University of Chieti-Pescara, Chieti, Italy; [3]Department of Chemistry, Life Sciences and Environmental Sustainability, University of Parma, Parma, Italy; [4]IBD unit, Digestive Disease center, Department of Medical and Surgical Sciences, Fondazione Policlinico Universitario "A. Gemelli" IRCCS, Roma, Italy; [5]Department of Medicine and Ageing Sciences, 'G. d'Annunzio' University of Chieti-Pescara, Chieti, Italy; [6]Department of Translational Medicine and Surgery, Catholic University of the Sacred Heart, Roma, Italy

Objective: Sarcopenia, the progressive loss of skeletal muscle mass, occurs with aging and conditions like inflammatory bowel disease (IBD). The gut-muscle axis explains how inflammation, dysbiosis, and malnutrition cause muscle degeneration in IBD. However, the molecular and microbial mechanisms of sarcopenia in IBD remain unclear. In particular, probiotics, modulating microbiota, might offer new therapeutic avenues.
Materials and Methods: To explore the mechanisms leading to sarcopenia, a DSS-induced colitis mouse model was previously established. This model revealed muscle atrophy markers, highlighting dysbiosis and an elevation of LPS in the serum. Subsequently, an *in vitro* intestinal inflammation model using C2C12 cells was created. Treatments included exposure to pro-inflammatory cytokines (TNF-α, IFN-γ, IL-6), lipopolysaccharides (LPS), drugs (Infliximab, Upadacitinib, Tofacitinib), and supernatant probiotics (*L. Plantarum, L. rhamnosus*). The goal is to assess the cellular response to drugs and investigate whether the same response can also be modulated by probiotics.
Results: *In vitro*, Upadacitinib and Tofacitinib in the presence of inflammatory cytokines reduce muscle atrophy-related pathways (STAT3, pSTAT3, NFkB) and increase pAKT expression, promoting muscle synthesis. When cells were treated with LPS, NFkB expression did not decrease with drug addition, suggesting that LPS is able to activate NFkB independently of the JAK/STAT pathway. Probiotic treatment reduced NFkB and pSTAT3 signals, indicating a potential positive effect across all probiotics. Conversely, it seems that probiotics may not impact pAKT activity.
Conclusions: The gut-muscle axis is a promising approach to address sarcopenia in IBD. Thus, investigating the microbiota's role in sarcopenia development, especially given the potential benefits of probiotics, is worth considering.

Conflict of Interest
S. Troisi: None. V. Petito: None. L. Masi: None. V. Emoli: None. B. Rondinone: None. C. Pane: None. L. Lopetuso: None. A. Gasbarrini: None. F. Scaldaferri: None.

P13.05.

TARGETING GUT MICROBIOME TO TREAT RECURRENT URINARY-TRACT INFECTIONS FROM GUT PATHOBIONTS: A PILOT STUDY

T. ROZERA*, E. TOHUMCU, F. OCARINO, D. FLAVIO, S. PORCARI, M. FIORANI, A. SEVERINO, W. FUSCO, D. RONDINELLA, F. PELLICCIA, M. INGROSSO, L. MASUCCI, B. POSTERARO, M. SANGUINETTI, A. GASBARRINI, G. CAMMAROTA, G. IANIRO*
Fondazione Universitaria Policlinico Agostino Gemelli, Roma, Italy

Objective: Recurrent urinary tract infections (rUTIs) affect up to 25% of women worldwide, with a significant burden due to the antibiotic-related side effects and multi-drug resistance. Gut microbiome imbalance has recently appeared as a main pathogenic pathway of UTIs. Probiotic therapies have provided conflicting results in this setting.
Materials and Methods: We included only patients with rUTIs caused by gut bacteria. All patients underwent a commercially available stool microbiome testing. Then, patients received a targeted therapy based on results of the gut microbiome testing and followed up for 8 weeks. The primary outcome was the recurrence of UTI, and secondary outcome were gastrointestinal symptoms, at 8-week follow-up.
Results: 12 patients were enrolled in the study period (n= 11 females). Of them, 11 (92%) presented with GI symptoms. Gut microbiome testing results are shown in Table 1. Therapies administered are shown in Table 2. At a median time of 145,7 days of follow-up, 3 patients (25%) experienced a recurrence of UTI, and 8 patients (73%) experienced a significant amelioration of GI symptoms.
Conclusions: A precision medicine strategy based on gut microbiome testing may be a promising approach to treat.

TABLE 1. MAIN ALTERATIONS AT GUT MICROBIOME ANALYSIS.

↓Alpha diversity	2 (17%)
↓Verrucomicrobia	8 (67%)
↓Firmicutes	2 (17%)
↑Proteobacteria	6 (50%)
↑Bacteroidetes	4 (33%)

TABLE 2. THERAPIES ADMINISTERED.

Non-adsorbable antibiotics	**Rifaximin: 10 patients (83%)** **Paromomycin: 2 patients (17%)**		
Probiotics	EcN 191 7: 7 patients (58%)		Bifidobacterium aoimalis subsp. lactis BB12 + Enterococcus faecium L3 in 5 patients
		Plus	
	Multi-strains Bifidobacterium and Lactobacillus based probiotics: 7 patients (58%)		Lactobacillus crispatus M24 7 in 1 patient Both of the previous in 1 patient
Prebiotics	7 patients (58%)		

Conflict of Interest

T. Rozera: None. E. Tohumcu: None. F. Ocarino: None. D. Flavio: None. S. Porcari: None. M. Fiorani: None. A. Severino: None. W. Fusco: None. D. Rondinella: None. F. Pelliccia: None. M. Ingrosso: None. L. Masucci: None. B. Posteraro: None. M. Sanguinetti: None. A. Gasbarrini: None. G. Cammarota: None. G. Ianiro: None.

P13.06.

OPTIMIZATION OF A METAGENOMICS PROTOCOL TO ANALYZE MICROBIAL SIGNATURES IN CELL-FREE DNA

M. MENDES-ROCHA[1,2], *J. PEREIRA-MARQUES*[1,3], *M. TAVARES*[1,3], *R. M. FERREIRA*[1,3], *C. FIGUEIREDO*[1,3,2]

[1]i3S – Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal; [2]FMUP – Faculty of Medicine of the University of Porto, Porto, Portugal; [3]IPATIMUP – Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal

Objective: Recent data suggest that circulating microbial signatures can be used to detect cancer and to discriminate between cancer types. However, the clinical use of cfDNA to detect microbiome signatures requires sensitive and efficient computational workflows capable of distinguishing between true microbes from contaminants. Our aim is to establish a metagenomics sequencing strategy to analyze microbial signatures in cfDNA.

Materials and Methods: Synthetic cfDNA samples with decreasing levels of bacterial DNA were generated by spiking DNA of a mock bacterial community with human DNA. To mimic fragmentation patterns of cDNA, mock and human DNAs were fragmented with restriction enzymes before spiking. Whole-metagenome sequencing was performed at high-depth. Low-quality reads, human viruses, and human sequences were removed from the raw data. Taxonomic classification of the remaining bacterial reads was conducted using Kraken2/Bracken and potential microbial contaminations were filtered using decontam.

Results: A significant negative correlation was observed between the number of bacterial reads and increasing host DNA levels (r=-0.99, p<0.0001). After successful microbial contaminants removal, which represented 2% of the total relative abundance, the metagenomics approach allowed efficient detection of the 20 bacterial species of the mock community in all synthetic samples, even in those with only 0.5% of bacterial content. Moreover, there was a low number of false positives with a mean relative abundance of 1%.
Conclusions: Our method showed high sensitivity for assessing microbial signatures in synthetic cfDNA samples and will be further applied to cfDNA samples from cancer patients and healthy individuals.

Acknowledgements
FCT PTDC/BTM-TEC/0367/2021; 2021.06828.BD.

Conflict of Interest
C. Figueiredo: None. M. Mendes-Rocha: None. J. Pereira-Marques: None. M. Tavares: None. R.M. Ferreira: None.

P13.07.

A MACHINE LEARNING ALGORITHM TO IDENTIFY HIDDEN MICROBIOME METABOLITES IN THE STOMACH

L. PORTELA[1,2], *J. SOUSA*[1,3], *F. CARNEIRO*[1,3,4,4], *C. FIGUEIREDO*[1,4,3], *R. M. FERREIRA*[1,4]
[1]i3S – Instituto de Investigação e Inovação em Saúde, University of Porto, Porto, Portugal; [2]FCUP – Faculty of Sciences of the University of Porto, Porto, Portugal; [3]FMUP – Faculty of Medicine of the University of Porto, Porto, Portugal; [4]Ipatimup – Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal

Objective: The microbiome has been implicated in the initiation and progression of several diseases, namely in cancer. Therefore, molecular characteristics of the microbiome can be considered as potential disease biomarkers. However, information on the metabolic capabilities of the microbiome is largely unknown. Furthermore, distinguishing between metabolites produced by the host from those synthesized by the microbiome is challenging. Our main goal is to develop a novel bioinformatics framework for identifying microbiome metabolites composition in the human stomach.
Materials and Methods: Using gastric cancer as a model, pairs of metabolomics and metatranscriptomics data from 12 Portuguese patients were used to train the machine learning (ML) algorithm. The metatranscriptomics data were processed using our published bioinformatics pipeline and applying customized in-house Python scripts. The ML model was trained using Melonnpan, which applies elastic net regularization.
Results: The trained model successfully identified 72 microbiome metabolites in gastric cancer with a positive correlation between predicted and observed values. Most of the metabolites could be classified into six chemical classes including carboxylic acids and derivatives, purine nucleosides, organooxygen compounds, imidazopyrimidines, diazines, and indoles and derivatives.
Conclusions: The trained ML model shows good potential for broader application to larger datasets. Future re-training of the model with additional pairs of metabolomics and metatranscriptomics data will improve its robustness for predicting microbiome metabolites in tissues.

Acknowledgments
FCT – 2022.02141.PTDC.

Conflict of Interest
L. Portela: None. J. Sousa: None. C. Figueiredo: None. R.M. Ferreira: None. F. Carneiro: None.

P13.08.

EFFICACY AND SAFETY OF FECAL MICROBIOTA TRANSPLANTATION FOR THE TREATMENT OF *CLOSTRIDIOIDES DIFFICILE* INFECTION: A 10-YEAR EXPERIENCE OF A LARGE-VOLUME FMT CENTER

*G. IANIRO[1], L. MASUCCI[2], A. SEVERINO[1], **M. FIORANI**[1], S. VARCA[1], S. PORCARI[1], S. BIBBÒ[1], G. QUARANTA[2], D. RONDINELLA[1], F. PELLICCIA[1], G. ALTIERI[1], S. RUGGIERO[1], W. FUSCO[1], T. ROZERA[1], M. INGROSSO[1], G. FANCELLO[2], M. SANGUINETTI[2], A. GASBARRINI[1], G. CAMMAROTA[1]*
[1]Fondazione Policlinico Universitario "A. Gemelli" IRCCS, Catholic University of Rome, Digestive Disease Center, Rome, Italy; [2]Microbiology Unit, Fondazione Policlinico Universitario "A. Gemelli" IRCCS, Catholic University of Rome, Rome, Italy

Objective: Fecal microbiota transplantation (FMT) is a highly effective and safe treatment for recurrent *Clostridioides difficile* infection (CDI), and our center has been providing a FMT program since 2013. Our aim is to evaluate efficacy and safety of FMT in patients with CDI since the start of our FMT program.
Materials and Methods: We included all patients treated with FMT for CDI from June 2013 to January 2023. The primary outcome was the clinical resolution of CDI at 8 weeks after FMT, while the secondary outcomes were the identification of risk factors for FMT failure and safety. FMT procedures were carried out by colonoscopy, using a single-donor solution of at least 50 grams of fresh or frozen feces.
Results: In the study period we performed 465 FMT procedures in 328 patients. 315 patients were finally included in the analysis. 71 patients had severe CDI (22.5%), and 14 patients had fulminant CDI. At 8-week follow-up after FMT, cure of CDI was observed in 95.7% of patients. Twenty-two patients (7%) died during the 90-day follow-up period. No death was attributable to FMT. Severe CDI was significantly associated with an increased risk of death. Serious adverse events occurred in 14 patients, and 9 were potentially associated with FMT and/or failure to cure CDI.
Conclusions: In the 10-year experience of our large-volume FMT center, FMT was highly effective and safe.

Conflict of Interest
M. Fiorani: None. G. Ianiro: None. L. Masucci: None. A. Severino: None. S. Varca: None. S. Porcari: None. S. Bibbò: None. G. Quaranta: None. D. Rondinella: None. G. Altieri: None. S. Ruggiero: None. W. Fusco: None. T. Rozera: None. M. Ingrosso: None. G. Fancello: None. M. Sanguinetti: None. A. Gasbarrini: None. G. Cammarota: None. F. Pelliccia: None.

P13.09.

EVALUATION OF EPITHELIAL CELL RESPONSE TO COMMENSAL BACTERIA IN THE INTESTINAL ORGANOID MODEL OF ULCERATIVE COLITIS PATIENTS

*R. INCIURAITE, R. STEPONAITIENE, D. TILINDE, V. SALTENIENE, R. LUKOSEVICIUS, G. KIUDELIS, L. V. JONAITIS, R. GEDGAUDAS, V. KIUDELIS, J. KUPCINSKAS, **J. SKIECEVICIENE***
Lithuanian University of Health Sciences, Kaunas, Lithuania

Objective: Ulcerative colitis (UC) is characterized by disrupted mucosal barrier and microbial composition. Yet, it remains uncertain if commensal gut bacteria can influence the maintenance of the colon's protective lining. Therefore, we aimed to assess how colonic epithelial cells from UC patients respond to commensal bacteria.
Materials and Methods: Co-culture model of colonic epithelial organoid-derived monolayers of UC patients (n=9) and non-IBD controls (n=8) and *Escherichia coli* (ATCC25922) and *Phocaeicola vulgatus* (ATCC8482) bacteria type strains were used for evaluation of epithelial barrier integrity (ZO1), pathogen recognition (TLR4) and stress induction (HSPA1A, HSPB1) gene expression, as well as miRNA (miR-183-5p, miR-135b-5p, miR-146a-5p) expression in host epithelial cells and extracellular vesicles (EVs).

Results: *E. coli* and *P. vulgatus* did not trigger pathogen-pattern recognition or stress responses in colonic epithelial cells but showed a tendency to increase ZO1 expression in non-IBD cells (FC = 3.59 and FC = 2.27, respectively, $p \geq 0.05$), while decreasing it in UC cells (FC = 0.67 and FC = 0.75, respectively, $p \geq 0.05$). The studied miRNAs – miR-183-5p, miR-135b-5p, miR-146a-5p – tended to increase in the EVs of UC colonic epithelial cells after *E. coli* stimulation (FC=1.32, FC=1.32, and FC=2.07, respectively, $p \geq 0.05$). Conversely, cultivation with *P. vulgatus* tended to decrease miR-183-5p (FC=0.70, FC=0.59, respectively, $p \geq 0.05$) and miR-135b-5p (FC=0.73, FC=0.51, respectively, $p \geq 0.05$) expression in both UC and non-IBD groups.
Conclusions: *E. coli* and *P. vulgatus* contibute in compromising mucosal barrier integrity and influencing miRNA expression in extracellular vesicles.

Conflict of Interest
J. Skieceviciene: None. R. Inciuraite: None. R. Steponaitiene: None. D. Tilinde: None. V. Salteniene: None. R. Lukosevicius: None. G. Kiudelis: None. L.V. Jonaitis: None. R. Gedgaudas: None. V. Kiudelis: None. J. Kupcinskas: None.

P13.10.

PERSONALIZED AUTOPROBIOTIC SUPPLEMENTS IMPROVE THE SERUM METABOLOME AND GUT MICROBIOME IN PATIENTS WITH IRRITABLE BOWEL SYNDROME

*E. ERMOLENKO[1], S. SITKIN[1,2], O. SOLOVYEVA[2], **G. ALEKHINA**[1], A. KARASEVA[1], M. KOTYLEVA[1], N. NOVIKOVA[1], D. AZAROV[1], E. DEMYANOVA[1,3], T. VAKHITOV[1], A. SUVOROV[1]*
[1]Institute of Experimental Medicine, Saint Petersburg, Russian Federation; [2]North-Western State Medical University Named after I.I. Mechnikov, Saint Petersburg, Russian Federation; [3]Innova Plus LLC, Saint Petersburg, Russian Federation

Objective: Gut microbiota dysbiosis is associated with irritable bowel syndrome (IBS), contributing to its pathogenesis. Probiotics, including autoprobiotics, are considered an effective approach to restoring disrupted microbiota.
Materials and Methods: This study aimed to investigate the effects of autoprobiotic *Bifidobacterium* and *Enterococcus* strains, isolated from feces and cultured in artificial media, and used as personalized dietary supplements in IBS patients. The study included 22 IBS patients with diarrhea (IBS-D) and 10 age-/sex-matched healthy volunteers. Gas chromatography-mass spectrometry analysis was performed to study the serum metabolome. Fecal microbiota analysis was performed on Illumina MiSeq by prokaryotic 16S rRNA sequencing of amplicons.
Results: A metabolome study showed a significant increase in serum oxalic acid levels and a decrease in dodecanoic and lauric acid levels after autoprobiotic therapy. We considered these changes to be potentially beneficial. An increase in the relative abundance of beneficial *Coprococcus* and *Blautia*, which produce short-chain fatty acids, and a decrease in the relative abundance of potentially proinflammatory succinate-producing *Paraprevotella* was observed after the autoprobiotic course. The clinical improvement after autoprobiotics correlated with beneficial changes in fecal microbiota and serum metabolome in IBS-D patients.
Conclusions: Autoprobiotics may be clinically effective in patients with IBS-D by restoring altered gut microbiota and improving the serum metabolome. The significant correlations between some bacterial taxa and serum metabolites provide new tools for assessing clinically significant disease-related changes in dynamics and, hopefully, will allow for personalized microbial therapy in patients with IBS.

Funding
Supported by the Ministry of Science and Higher Education of the Russian Federation, Agreement No. 075-15-2022-302 (20.04.2022).

Conflict of Interest
E. Ermolenko: None. S. Sitkin: None. O. Solovyeva: None. G. Alekhina: None. A. Karaseva: None. M. Kotyleva: None. N. Novikova: None. D. Azarov: None. E. Demyanova: None. T. Vakhitov: None. A. Suvorov: None.

POSTER SESSION 14: MICROBIOTA 03

P14.01.

BUTYRIC ACID COUNTERACTS *H. PYLORI* ERADICATION-INDUCED GUT MICROBIOTA CHANGES

*S. ABDULKHAKOV[1,2], **M. MARKELOVA**[1], D. SAFINA[1], M. SINIAGINA[1], D. KHUSNUTDINOVA[1], R. ABDULKHAKOV[2], T. GRIGORYEVA[1]*
[1]Kazan Federal University, Kazan, Russian Federation; [2]Kazan State Medical University, Kazan, Russian Federation

Objective: *H. pylori* eradication therapy can disrupt gut microbiota, raising concerns about its impact. The aim of the study was to investigate whether supplementation with butyric acid+inulin could mitigate negative effects of *H. pylori* eradication therapy on gut microbiota changes (including gut microbiota taxonomic composition, functional potential, and gut resistome).
Materials and Methods: Twenty-two *H. pylori*-positive patients were randomized into two regimens: ECAB-14 (esomeprazole, clarithromycin, amoxicillin, and bismuthate) and ECAB-Z-14 (same regimen plus butyric acid+inulin). Stool samples were collected at three-time points: before therapy (I), immediately after therapy (II), and one-month post-therapy (III).
Results: Alpha diversity (Shannon Index): Both ECAB-14 and ECAB-Z-14 groups experienced decreased alpha diversity after *H. pylori* eradication therapy compared to baseline. In ECAB-Z-14 group, the diversity was restored to baseline levels after one month, while in case of ECAB-14 group it remained lower [(3.27 ± 0.39) *vs.* (3.75 ± 0.342), p = 0.019]. Functional potential alterations: ECAB-Z-14 had fewer changes in gut microbiota functional potential (72 metabolic pathways altered immediately after eradication therapy, including genes associated with butyrate production), while in case of ECAB-14, 112 signaling pathways were impacted, however, the number of genes involved in butyrate biosynthesis remained unchanged. Antibiotic resistance genes: Both groups showed increased antibiotic resistance genes post-eradication. ECAB-14 exhibited more severe changes (73 genes), while in case of ECAB-Z-14 group only 50 genes were affected immediately after therapy.
Conclusions: *H. pylori* eradication therapy significantly affects gut microbiota, however, adding butyric acid+inulin supplements may minimize these effects.

Conflict of Interest
S. Abdulkhakov: None. M. Markelova: None. D. Safina: None. M. Siniagina: None. D. Khusnutdinova: None. R. Abdulkhakov: None. T. Grigoryeva: None.

P14.02.

INFLUENCE OF PROBIOTICS ON GUT MICROBIOTA IN GENETIC MICE MODEL OF METABOLIC SYNDROME

*N.S. NOVIKOVA[1], E.I. ERMOLENKO[1], V.O. MUROVETS[2], **G.G. ALEKHINA**[1], V.A. ZOLOTAREV[2]*
[1]Federal State Budgetary Scientific Institution 'Institute of Experimental Medicine', Saint-Petersburg, Russian Federation; [2]Federal state budgetary institution of science Pavlov Institute of Physiology, Russian Academy of Sciences, Saint-Petersburg, Russian Federation

Objective: The aim of the study was to investigate the effect of probiotic *Enterococcus faecium* and *Hafnia alvei* on microbiota and manifestations of metabolic syndrome (MS) in model of inbred mice with spontaneous type 2 diabetes mellitus (T2DM).
Materials and Methods: Studies were conducted on males mice of KK.Cg-a/a inbred strain, which are carriers of genes provoked TD2T when animals are kept on a normocaloric diet. Suspensions of *H. alvei* HA4597® (*H.a.*) or *E. faecium* L3 (*E.f.*) were injected intragastrically for 21 days, daily. Morphometry, glucose tolerance test, indirect calorimetry analysis using Promethean Core measuring complex were performed. Feces samples were obtained from animals before and after 21-days course of probiotics for investigation of gut microbiota by metagenome analysis (16S rRNA).

Results: A decrease in abdominal fat mass and an increase of glucose tolerance were present after administration of both probiotics, but to a greater extent after *H.a.* action. *H.a.* stimulated blood glucose clearance and whole-body fat oxidation, and decreased carbohydrate oxidation. *E.f.* had a similar but less pronounced effect. *E.f.* increased the relative abundance (RA) of *Oscillospiraceae* family and decreased of *Pseudomonadota* phylum. *H.a.* caused an increase in RA of *Ligilactobacillus*, *Roseburia genera*, *Lachnospiraceae*, *Anaerovoraceae* families and decrease in the *Bacteroidota* phylum and *Blautia* spp.
Conclusions: The use of both probiotics leads to positive changes in the parameters of MS symptoms. Apparently, in many ways, the differences in the probiotics effect on the manifestation of MS symptoms are influenced by their specific effect on gut microbiota.

Funding
The work was supported by the Pavlov Center of Integrative Physiology Grant No. 075-15-2020-921, 13.11. 2020, Russia.

Conflict of Interest
N.S. Novikova: None. E.I. Ermolenko: None. V.O. Murovets: None. G.G. Alekhina: None. V.A. Zolotarev: None.

P14.03.

COMPOSITION OF INTESTINAL MICROBIOCENOSIS IN CHILDREN WITH CAMPYLOBACTERIOSIS

*K. ERMOLENKO[1], **G. ALEHINA**[2], E. ERMOLENKO[2]*
[1]Pediatric Research and Clinical Center for Infectious Diseases, Saint-Petersburg, Russian Federation; [2]FSBSI "IEM", Saint-Petersburg, Russian Federation

Objective: *Campylobacte*r spp. are most common causes of diarrhea. Intestinal microbiocenosis can play a decisive role in the severity disease. The aim of the study is to assess the composition of the intestinal microbiocenosis in children with campylobacteriosis depending on the severity of the disease.
Materials and Methods: The study included 28 patients who were treated between 2023 and 2024. To study the composition of the microbiota, amplicon sequencing of the marker variable region V3-V4 of bacterial 16S rRNA genes was used. The composition of the intestinal microbiota is assessed upon admission to the hospital and at 14 days of illness. The severity of campylobacteriosis was measured using the Clark scale.
Results: The average age of the children was 2.7±0.4 years. In 6 children, severe campylobacteriosis was diagnosed, and in 14, it was of moderate severity. In children with moderate campylobacteriosis, the phyla *Firmicutes* and *Proteobacteria* were represented to a greater extent than with the disease; *Actinobacteria, Verrucomicrobia* and *Bacteroidetes* were found in a lower percentage. Principal components analysis showed that with a milder course of campylobacteriosis, pronounced clustering was observed at the level of the phylum *Proteobacteria*, with a more severe course in the zones corresponding to representatives of *Verrucomicrobia* and *Bacteroidetes*. There was a strong inverse correlation [r=-0.67 (-0.62; -0.72); *p*=0.021] between the severity of campylobacteriosis according to the Clark scale and alpha diversity levels. Thus, severe forms of campylobacteriosis are characterized by a decrease in the Shannon alpha diversity index, a decrease in the proportion of phyla *Firmicutes, Proteobacteria* and a transition to the phyla *Actinobacteria, Verrucomicrobia* and *Bacteroidetes*.
Conclusions: Significant changes in the intestinal microbiota in children with campylobacteriosis were revealed. The development and increase in the severity of dysbiosis in campylobacteriosis can aggravate and lengthen its course and increase the likelihood of significant functional changes in the gastrointestinal tract.

Conflict of Interest
K. Ermolenko: None. E. Ermolenko: None. G. Alehina: None.

P14.04.

AUTOPROBIOTICS IN TREATMENT OF METABOLIC SYNDROME

*E.I. ERMOLENKO[1], L. ALFEROVA[1], A. CHERNIKOVA[2], N. NOVIKOVA[1], **G. ALEKHINA**[1], N. GLADYSHEV[1], A. SIMANENKOVA[2], P. POPOVA[2], T. KARONOVA[2], A. SUVOROV[1]*
[1]Institute of Experimental Medicine, Saint-Petersburg, Russian Federation; [2]Almazov National Medical Research Centre, Saint-Petersburg, Russian Federation

Objective: The study aimed to evaluate the effectiveness of autoprobiotics (indigenous un-pathogenic bacteria) treating early stages of metabolic syndrome (MS) associated with initial carbohydrate metabolism disorders.
Materials and Methods: Anthropometric parameters and carbohydrate metabolism indicators were analyzed in 24 obese patients without such disorders (control group) and 31 patients with impaired glucose tolerance (IGT).
Results: These patients were randomly assigned to receive autoprobiotic enterococci (un-pathogenic Enterococcus faecium) in two 20-day courses (AP+ group) or a placebo (Pl group). The AP+ group, unlike the Pl group, showed reductions in body weight, body mass index, glucose levels, and HbA1c, along with a decline in populations of streptococci, *Roseburia, Eubacterium, Prevotella, and Ruminococcus* genera. Additionally, significant microbiota composition differences were noted between IGT patients and healthy individuals *via* 16S rRNA sequencing. The alpha diversity index, chao1, significantly exceeded that of healthy controls, with notable increases in the relative abundance of *Bilophila, Roseburia, Acidaminococcus,* and *Blautia* genera. LDL cholesterol, BMI, and glucose levels significantly decreased in the AP+ group compared to the placebo group.
Conclusions: Correlations between *Bacteroides* spp. and levels of glycated hemoglobin and insulin were statistically significant. The results confirm the efficacy of autoprobiotic enterococci in managing obesity and IGT, suggesting their use as a promising component in preventing and treating metabolic syndrome, type 2 diabetes, and obesity, warranting further investigation into their action mechanisms.

Funding
The work was supported by the Ministry of Science and Higher Education of the Russian Federation No. 075-15-2022-302 (20.04.2022).

Conflict of Interest
E.I. Ermolenko: None. L. Alferova: None. A. Chernikova: None. N. Novikova: None. G. Alekhina: None. N. Gladyshev: None. A. Simanenkova: None. P. Popova: None. T. Karonova: None. A. Suvorov: None.

P14.05.

THERAPEUTIC MODULATION OF GUT MICROBIOME TO TREAT IMMUNE-CHECKPOINT INHIBITORS-RELATED DIARRHEA AND COLITIS: EXPERIENCE OF A MICROBIOME CLINIC

***S. PORCARI**[1], W. FUSCO[1], M. FIORANI[1], A. OCCHIONERO[1], T. ROZERA[1], A. SEVERINO[1], D. RONDINELLA[1], I. VENTURINI[1], A. DI SABATINO[2], M. LENTI[2], A. GASBARRINI[1], G. CAMMAROTA[1], G. IANIRO[1]*
[1]Catholic University, Roma, Italy; [2]Pavia University, Pavia, Italy

Introduction: Microbiome manipulation may represent a promising strategy for diarrhea and colitis associated with cancer therapies, but it is rarely applied in clinical practice.
Materials and Methods: From January 2023 to January 2024, we evaluated the efficacy of microbiome-modulating therapeutics in cancer patients referred to our Microbiome Clinic for ICI-related diarrhea/colitis. We collected age, gender, type of cancer, oncological therapy and its suspension, severity of diarrhea (graded *via* CTCAE) and its onset. Patients received a microbiome-modulating therapy and were followed up to at least 4 weeks.

Results: Nineteen patients were enrolled (6 males, mean age 54 years). Ten (53%) had breast cancer, 3 lung cancer, 2 non-melanoma skin cancer, 2 kidney cancer, 1 melanoma, and 1 cervix cancer. All patients were treated with ICI (12 pembrolizumab, 2 atezolizumab, 1 trastuzumab, 1 nivolumab, 1 mogamulizumab, 1 cemiplimab, 1 ipilimumab). Four patients had a G1 diarrhea (21%), seven (37%) G2, and eight (42%) G3, and 12 (60%) had to interrupt ICI due to diarrhea. Multi-species probiotics were given in 10 (59%) patients, while rifaximin in 6 (35%). Systemic steroids and mesalamine were necessary only in 10 patients (59%). At 4-week follow-up, 16 patients (94%) resolved diarrhea (G0), and 50% of the patients who had interrupted ICI were then able to keep therapy back. Two patients, referred from another Centre (Pavia) for ICI-related colitis refractory to steroids and biologics; they were successfully treated with FMT and were able to continue ICI.
Conclusions: Our preliminary data suggest that gut microbiome modulation might be an effective strategy for ICI-related diarrhea and colitis, and might help avoiding steroids

Conflict of Interest
S. Porcari: None. W. Fusco: None. M. Fiorani: None. A. Occhionero: None. T. Rozera: None. A. Severino: None. D. Rondinella: None. I. Venturini: None. A. Di Sabatino: None. M. Lenti: None. A. Gasbarrini: None. G. Cammarota: None. G. Ianiro: None.

P14.06.

CLOSTRIDIUM DIFFICILE IN ELDERLY: CHALLENGING TOPIC

R. RAGOZZINO
Università Cattolica del Sacro Cuore, Roma, Italy

Background: An 88-year-old female patient was admitted to the Geriatric Department of the University Hospital Agostino Gemelli in Rome for asthenia, dyselectrolythemia, and diffuse colicky abdominal pain. Her symptoms gradually worsened over the preceding two weeks and were accompanied by appetite loss and a 6 kg weight loss.
Case report: She had long-standing history for displaced fracture of the humerus and osteosynthesis with plates and screws of the right wrist, fracture of the distal metaphysis of the radius which occurred following an accidental fall. Before this admission the patient was immunocompetent. After hospital stay she was discharged to a rehabilitation facility where she underwent multiple *Clostridium difficile* infections. Laboratory data showed mild leukocytosis (14.000/mmc) with neutrophilia, elevated C-reactive protein at 15-fold increase above the upper limit of normal (75 mg/dL, normal value < 5 mg/dL), ipokalemia (2.3 mmol/L), and after few days of diarrhea enzyme immunoassays for toxins A and glutamate dehydrogenase (GDH) for the detection of CD infection (CDI) came back positive.
Conclusions: The patient was prescribed oral vancomycin at a dosage of 125 mg every six hours, along with intravenous rehydration therapy using 1000 mL of 0.9% sodium chloride solution. Additionally, the patient received intravenous paracetamol, 1000 mg/2 mL, administered twice daily for pain management. Response to treatment failed, and the patient rapidly turned into sepsis. Laboratory findings include leukocytosis and high C-reactive protein (CRP) level (150 mg/dL), elevated serum lactate (16 mg/dl), and procalcitonin (PCT) (8 mg/dl); she suddenly developed ipotension and anemia with no response to crystalloid rehydration therapy with and blood transfusions.

Conflict of Interest
R. Ragozzino: None.

Informed Consent
Informed consent statement was obtained for this study.

P14.07.

RESULTS OF A REGIONAL OBSERVATIONAL RETROSPECTIVE STUDIES OF THE PREVALENCE OF SMALL INTESTINAL BACTERIAL OVERGROWTH IN PATIENTS WITH DIGESTIVE DISEASES

I. KLIARITSKAIA, T. TSAPYAK, ***V. KRYVY,*** *Y. MOSHKO*
Medical Academy named after S.I. Georgievsky CFU, Simferopol, Russian Federation

Objective: We retrospectively reviewed the medical documentation of 126 patients (80 women and 46 men, average age 47.31±1.31 years) with hydrogen-methane breath test (HMBT) from 2021 to 2023.
Patients and Methods*:* Positive HMBT was found in 73 (57.9%) patients [51(63.75%) women, 22 (47.8%) men]. 48 patients had a predominance of hydrogen (H2)-producing flora, 23 of them predominance of methane (CH4)-producing flora, and two had combination of H2- and CH4-producing flora. Patients with a predominance of CH4-producing flora were significantly older (p=0.008). The main complaints of patients were bloating (53 patients), constipation (29 patients), diarrhea and rumbling in the stomach (in 39 and 19 patients, respectively).
Results: Among patients with HMBT(+), the most common complaints were bloating (45.2%) and diarrhea (27.4%). Among patients with bloating, 44 (83%) patients had a positive HMBT, of which 31 (70.5%) patients had a predominance of H2-producing flora, 12 (27.3%) had a predominance of CH4-producing flora, 1 (2.2%) patient with a combination of CH4- and H2-producing flora. Complaints of bloating were associated with SIBO (OR: 1.19; 95% CI: 0.4-2.8), and the majority of patients were female (84%).
Conclusions: In patients with constipation (7 men, 22 women, mean age 46.37±2.86 years), HMBT(+) was in 19 cases (65.5%, OR: 1.51; 95% CI: 0.6-3.5), with a predominance of CH4-producing flora [10 (52.6%) patients]. In the cohort of study patients, 39 patients [22 (56.4%) women and 17 (43.65%) men, mean age 48.12±2.59 years] complained of frequent loose stools. Of these, 19 were HMBT(-), 15 were HMBT(+) with a predominance of hydrogen-producing flora, 5 were HMBT(+) with a predominance of methane-producing flora, and the presence of SIBO did not significantly affect the occurrence of diarrhea (OR: 0.67; 95% CI: 0.3-1.4).

Conflict of Interest
V. Kryvy: None. I. Kliaritskaia: None. T. Tsapyak: None. Y. Moshko: None.

POSTER SESSION 15: CANCER 01

P15.01.

EXPLAINABLE GASTRIC CANCER RISK PREDICTION OF MACHINE LEARNING BASED MODELS TRAINED ON DATA FROM REGULAR HEALTH CHECK-UP PROGRAMS OF SCREENING POPULATION

J. SONG[1]*, S. WANG*[2]*, Y. KIM*[1]*, S. YANG*[1]*, H. KANG*[1]*, S. KIM*[1]*, M. KURBAN*[2]*, S. LIM*[2]*, J. YIM*[1]
[1]Seoul National University Hospital, Gangnam Center, Seoul, Republic of Korea; [2]Enolink Inc., Cambridge, MA, USA

Objective: Since early diagnosis and treatment of gastric cancer increases the survival rate, regular gastric cancer screening is recommended for the high-risk group of gastric cancer. There have been few studies that comprehensively assess individual gastric cancer risk by considering these diverse risk factors collectively. Using annual medical check-up data, we aim to develop machine learning-based risk stratification models for gastric cancer.
Materials and Methods: Comprehensive medical annual check-up data, including endoscopic findings and blood test results, were collected from 129,223 patients who visited a medical screening facilities in South Korea. We trained the models using several survival-based machine learning algorithms (e.g.,

Extreme Gradient Boosting Survival (XGBS), Deep learning-based model (DeepSurv), Random Survival Forest) as well as a conventional Cox Proportional Hazards regression. Our model performance was also compared to previous works' benchmark models and features. We also used Shapley Additive Explanation (SHAP) analysis to explain the model's predictions.
Results: The XGBS model with sixteen features achieved the best performance (avg. c-index: 0.78). Among others, *Helicobacter pylori* infection, chronic atrophic gastritis, and intestinal metaplasia are the most significant risk factors contributing to cancer development. Furthermore, our results highlight interplay of individualized risk factors, underscoring the importance of personalized clinical assessments.
Conclusions: *Helicobacter pylori* infection, chronic atrophic gastritis, and intestinal metaplasia are the most significant risk factors contributing to cancer development. Applying this research model will provide individualized risk of gastric cancer, which can serve as basic data to adjust the screening interval of gastroscopy according to risk.

Conflict of Interest
J. Song: None. S. Wang: A. Employment (full or part-time); Significant; Enolink Inc. Y. Kim: None. S. Yang: None. H. Kang: None. S. Kim: None. M. Kurban: A. Employment (full or part-time); Significant; Enolink Inc. S. Lim: A. Employment (full or part-time); Significant; Enolink Inc. J. Yim: None.

P15.03.

THE FEASIBILITY OF DIAGNOSTIC ENDOSCOPIC RESECTION FOR GRADE 1-2 GASTRIC NEUROENDOCRINE TUMORS: A SINGLE-INSTITUTIONAL RETROSPECTIVE ANALYSIS

C. CHOI*, W. JANG, W. KIM, J. JANG*
Pusan National University Yangsan Hospital, Yangsan, Korea, Republic of Korea

Objective: The management of G-NET has been controversial between radical surgical resection and local excision including endoscopic resection. As todays, endoscopic resection has been recommended limitedly for G-NETs < 10-20 mm. In light of recent advancement in therapeutic endoscopic procedures, we evaluated the feasibility of diagnostic endoscopic resection for G-NETs.
Patients and Methods*:* Retrospectively analysis was performed on 31 patients who diagnosed G-NETs grade 1 or 2 in a single tertiary referral center between January 2009 and December 2023. The outcomes including histopathology, complete resection and metastasis rate were analyzed.
Results: The mean follow-up period was 38.9 ± 38.4 months. The mean size of G-NET was 4.9 ± 3.4 mm and most patients' NETs were less than 10 mm (87.1%). Maximal NET diameter was 16 mm. During the study period, most NETs were grade 1 (type 1: 90.9 % and type 3: 85.0 %). R1 resection patients (19.4%) showed no evidence of metastasis during follow up without additional surgical management. All enrolled patients showed no evidence of lymph node metastasis and local recurrence during follow-up. Recurrent or multiple G-NETs were noted only in the patients with type 1 NETs (27.2%, 3/11). Modified EMR or ESD showed 100% complete resection rate.
Conclusions: We found that small sized gastric 1 and 2 NETs had no lymph node metastasis and distant metastasis. Diagnostic endoscopic resection could be recommended for gastric SETs < 16 mm with grade 1 or 2, firstly. Modified EMR or ESD are preferred to conventional EMR.

Conflict of Interest
C. Choi: None. W. Jang: None. W. Kim: None. J. jang: None.

P15.04.

THE ROLE OF GLYCOSYLATION IN GASTRIC CARCINOGENESIS AND TUMOR PROGRESSION

H.O. DUARTE[1,2], Á. MARTINS[1,3], L. FERREIRA[1,3], R. ABRANTES[1,3], I. MESQUITA[1,3,4], D. FREITAS[1,2], F. PINTO[1,2], C. GOMES[1,2], J. GOMES[1,2], A. MAGALHÃES[1,3,2], ***C.A. REIS***[1,2,3,5]

[1]i3S - Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal; [2]Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal; [3]Instituto de Ciências Biomédicas Abel Salazar (ICBAS), Porto, Portugal; [4]Centro Hospitalar Universitário de Santo António, Porto, Portugal; [5]Faculty of Medicine of University of Porto, Porto, Portugal

Glycans are key components of biological systems, underlying a variety of essential structural and functional roles. Glycans expressed by gastric epithelial cells mediate adhesion of *Helicobacter pylori*. Alterations of glycosylation are common features occurring in the process of gastric carcinogenesis, particularly in chronic gastritis and in intestinal metaplasia. This presentation will discuss the fundamental changes in glycosylation that occur following chronic *H. pylori* infection, along the gastric carcinogenesis cascade and within the landscape of gastric tumor progression. Notably, recent glycomic and glycoproteomic data have disclosed significant alterations in the glycosylation profile of the oncogenic receptor HER2 in gastric carcinoma, as well as the biological impact of HER2 site-specific glycosylation patterns on the sensitivity of gastric carcinoma cells to therapeutic monoclonal antibodies used in the clinics. In addition, the functional roles of glycans expressed in extracellular vesicles derived from gastric cancer cells and the associated proteomic cargo will be discussed in light of their potential application as prognostic biomarkers in clinical settings.

Conflict of Interest

C.A. Reis: None. H.O. Duarte: None. Á. Martins: None. L. Ferreira: None. R. Abrantes: None. I. Mesquita: None. D. Freitas: None. F. Pinto: None. C. Gomes: None. J. Gomes: None. A. Magalhães: None.

P15.05.

INFLAMMATORY MARKERS AND RECURRENCE OF METACHRONOUS TUMORS AFTER CURATIVE RESECTION OF EARLY GASTRIC CANCER

J. PARK[1], ***M. JOO***[1]*, B. LEE[1], S. KIM[1], W. KIM[1], J. KIM[1], C. KWON[1], S. LEE[1], J. KANG[1], M. KANG[1], S. KIM[1], H. CHUN[2]*

[1]Korea University Guro Hospital, Korea University College of Medicine, Seoul, Republic of Korea
[2]Korea University Anam Hospital, Korea University College of Medicine, Seoul, Republic of Korea

Objective: We investigated the predictive value of inflammatory markers for occurrence of metachronous cancers among patients who underwent endoscopic submucosal dissection (ESD) for early gastric cancer (EGC) and are judged as curative resection (CR).
Patients and Methods: We enrolled patients who were diagnosed as EGC and underwent ESD during 2006 and 2020. We retrospective collected data of inflammatory indexes, such as neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR) and erythrocyte sediment ratio (ESR).
Results: A total of 1,011 patients underwent ESD for EGC, achieved CR and were followed up more than 12 months. Among them, 86 patients had metachronous cancers (85/1011, 8.4%) during 53.4 months of follow-up. Compared with patients without metachronous cancers, those with metachronous cancers were significantly older (66.9 *vs.* 63.8 years, p=0.004) and had higher NLR (2.1 *vs.* 1.8, p=0.002), however, other inflammatory indexes such as PLR and ESR were not significantly different between two groups. Kaplan-Meier analysis showed that patients with NLR ≥ 2.0 had significantly higher possibility of metachronous cancer compared with patients with NLR < 2.0 (p=0.049 by log rank test). After adjusting age, atrophy and *Helicobacter pylori* status, NLR was the only significant risk factor for metachronous cancer (odds ratio: 1.33, 95% confidence interval: 1.007-1.665, p=0.011).
Conclusions: NLR may have a predictive value for the occurrence of metachronous cancer after CR of EGC by ESD. Further thorough investigation is necessary to validate this outcome.

Conflict of Interest

J. Park: None. M. Joo: None. B. Lee: None. S. Kim: None. W. Kim: None. J. Kim: None. C. Kwon: None. S. Lee: None. J. Kang: None. M. Kang: None. S. Kim: None. H. Chun: None.

P15.08.

KEY INDICATORS FOR GLOBAL GASTRIC CANCER ENDOSCOPIC SCREENING PROGRAMS: A SYSTEMATIC REVIEW AND META-ANALYSIS

***J. WANG**, X. ZHOU, Y. DU*
Changhai Hospital, Naval Medical University, Shanghai, China

Objective: Discrepancies in gastric cancer (GC) mortality reduction are evident across global GC screening programs. Despite research indicating that screening methods and public health awareness may influence screening efficiency, no study summarized and compared the outcomes of available screening programs and identified factors potentially influencing the cancer-preventive effects.
Materials and Methods: Databases were searched for relevant articles. Original articles providing enough information to calculate three key indicators throughout screening process, including endoscopic compliance rate, GC detection rate, and early-diagnosis rate were included. Pooled random effect estimates of the indicators were computed, and subgroup analysis was conducted.
Results: 90 studies were included. Overall, the rates of endoscopic compliance, GC detection, and early-diagnosis were 46.94% (95%CI: 41.35-52.53%), 0.62% (95%CI: 0.46-0.80%), and 61.41% (95%CI: 51.42-71.40%), respectively. Subgroup analysis demonstrated a gradual increase in endoscopic compliance and a counterintuitive decline in GC detection over time. Stratified by countries, three indicators in Japan and Korea were significantly higher in China. The highest endoscopic compliance and GC detection rate were reported in hospital, while GC early-diagnosis rate was higher in community and health checkup. Screening programs with 2-3 years intervals, public health campaigns, higher education levels and socioeconomic status showed higher compliance. Screening programs based on new endoscopic techniques reported higher GC detection and early-diagnosis rates.
Conclusions: Among GC high-incidence countries, China lags behind Japan and Korea regarding endoscopic compliance rate, GC detection rate, and early-diagnosis rate. Screening settings, intervals, campaigns, education, and socioeconomic stratum may affect endoscopic compliance, while GC detection and early-diagnosis are mainly influenced by screening settings and endoscopic techniques.

Conflict of Interest
J. Wang: None. X. Zhou: None. Y. Du: None.

P15.09.

POLYMORPHISM OF APOPTOSIS MARKER GENES IN THE BLOOD OF INDIGENOUS PEOPLE WITH GASTRIC CANCER IN THE REPUBLIC OF TYVA

***V.V. TSUKANOV**[1], A.V. VASYUTIN[1], M.V. SMOLNIKOVA[1], S.K. HIRLIG-OOL[2], J.L. TONKIKH[1]*

[1]Federal State Budget Scientific Institution "Federal Research Center "Krasnoyarsk Science Center" of the Siberian Branch of the Russian Academy of Sciences", "Scientific Research Institute of Medical Problems of the North", Krasnoyarsk, Russian Federation; [2]State Budgetary Healthcare Institution of the Republic of Tyva "Republican Oncology Dispensary", Kyzyl, Russian Federation

Objective: In the Republic of Tyva, the incidence of gastric cancer according to data for 2022 is abnormally high and amounts to 24.6 per 100,000 population.
Material and Methods: 107 Tuvinians were examined (47 patients with non-cardiac gastric cancer and 60 practically healthy people aged 18 to 60 years). The diagnosis of gastric cancer was established on the basis of a comprehensive examination by oncologists at the oncology dispensary. Genotyping of polymorphisms *CASP9* rs1052576, *FAS/APO-1* rs2234767 and *TP53* rs1042522 was performed in DNA samples isolated from venous blood in all 47 patients with gastric cancer and in 60 practically healthy individuals by Real-Time Polymerase Chain Reaction using a Rotor Gene Q amplifier (QIAGEN, Germany).

Results: Mutant allele G (44.7% *vs.* 27.5%; p=0.01) and homozygous genotype GG (23.4% *vs.* 6.7%; p=0.03) of the *TP53* rs1042522 polymorphism, as well as mutant allele A (57.4% *vs.* 32.5%; p<0.001) and homozygous genotype AA (31.9% *vs.*15.0%; p=0.05) of the *FAS/APO-1* rs2234767 polymorphism were more often registered in patients with gastric cancer in comparison with healthy individuals among the indigenous inhabitants of the Republic of Tyva.
Conclusions: The A allele of *FAS/APO-1* rs2234767 polymorphism and the impairment of the anti-oncogenic function of the p53 protein produced by the G allele of *TP53* rs1042522 polymorphism are associated with pathology and can be used as markers to determine the increased risk of gastric cancer in the population of indigenous people of the Republic of Tyva.

Conflict of Interest
V.V. Tsukanov: None. A.V. Vasyutin: None. M.V. Smolnikova: None. S.K. Hirlig-ool: None. J.L. Tonkikh: None.

P15.10.

INDEX OF GASTRIC EPITHELIOCYTES PROLIFERATION IN *HELICOBACTER PYLORI*-POSITIVE PATIENTS WITH ATROPHIC GASTRITIS DEPENDING ON THE PRESENCE OF HIGH OR LOW DEGREE DYSPLASIA

V.V. TSUKANOV[1], *R.V. RYABOKON*[1,2], *V.A. KHORZHEVSKIY*[2], *A.V. VASYUTIN*[1], *J.L. TONKIKH*[1]
[1]Federal State Budget Scientific Institution "Federal Research Center "Krasnoyarsk Science Center" of the Siberian Branch of the Russian Academy of Sciences", "Scientific Research Institute of Medical Problems of the North", Krasnoyarsk, Russian Federation; [2]Krasnoyarsk Regional Pathological and anatomical bureau, Krasnoyarsk, Russian Federation

Objective: The degree of dysplasia is important for predicting the risk of malignant transformation and determining patient management tactics, but the pathogenesis of its development needs further study.
Material and Methods: The study included 20 patients with non-atrophic gastritis (group A), 20 patients with atrophic gastritis and low-grade dysplasia (group B), and 20 patients with atrophic gastritis and high-grade dysplasia (group C). The study included only patients with *Helicobacter pylori* infection. Biopsy sampling was carried out according to the OLGA system. Diagnosis of gastric mucosa dysplasia was performed according to the WHO classification guidelines. Proliferation activity was studied by immunohistochemistry on the nuclear protein Ki67 expression. The study was performed within the framework of the state assignment of the Federal Research Center "Krasnoyarsk Science Center" of the Siberian Branch of the RAS, state registration number FWES-2024-0035.
Results: The total Ki67 expression index in gastric epitheliocytes was 26.8% (24.0-29.8%) in group A, in the gastric mucosa without dysplasia foci in group B and C was 31.4% (26.0-34.6%) (p_{A-B}=0.048) and 34.5% [28.3-38.2%] (p_{A-C}=0.03; p_{B-C}=0.1), respectively. The proliferation index was significantly higher in foci of low-grade [53.8% (44.7-58.1%); p<0.001] and high-grade [91.3% (90.1-94.9%); p<0.001; p_{B-C}<0.001] dysplasia compared with the indicators in epitheliocytes without dysplasia.
Conclusions: We found a significant increase of the proliferation index in foci of dysplasia compared with indicators in gastric mucosa without dysplasia foci, which demonstrates an increased risk of carcinogenesis.

Conflict of Interest
V.V. Tsukanov: None. R.V. Ryabokon: None. V.A. Khorzhevskiy: None. A.V. Vasyutin: None. J.L. Tonkikh: None.

P15.11.

HIGHER FREQUENCY OF GASTRIC NEOPLASIA IN ADVANCED CHRONIC LIVER DISEASE PATIENTS IN COMPARISON TO A HEALTHY POPULATION: IMPACT OF SCREENING ENDOSCOPY IN AN INTERMEDIATE RISK COUNTRY

M. MARTINS[1], *R. MORAIS*[1], *J. MOREIRA*[2], *R. GASPAR*[1], *J. SANTOS-ANTUNES*[1], *M. MARQUES*[1], *R. COELHO*[1], *R. ALVES*[3], *J. FERREIRA-SILVA*[1], *E. DIAS*[1], *P. PEREIRA*[1], *S. LOPES*[1], *H. CARDOSO*[1], *B. SOUSA-PINTO*[4], *I. FARIA-RAMOS*[5], *I. GULLO*[6], *F. CARNEIRO*[6], *R. LIBERAL*[1], *G. MACEDO*[1]

[1]Gastroenterology Department, São João University Hospital, Porto, Portugal; [2]Faculty of Medicine of University of Porto, Porto, Portugal; [3]Internal Medicine Department, Centro Hospitalar Barreiro Montijo, Montijo, Portugal; [4]Department of Community Medicine, Information and Health Decision Sciences, Faculty of Medicine of University of Porto, Porto, Portugal; [5]São João University Hospital, Porto, Portugal; [6]Pathology Department, São João University Hospital, Porto, Portugal

Objective: The Baveno VII guidelines were proposed to identify which patients could safely avoid screening esophagogastroduodenoscopy (EGD) for gastroesophageal varices. We aimed to evaluate the frequency of gastric neoplasia in compensated advanced chronic liver disease (cACLD) patients who underwent EGD for screening of gastroesophageal varices (GOEV) compared to a healthy population.
Patients and Methods: This retrospective study enrolled all cACLD patients who underwent EGD for GOEV screening (January 2008-June 2018) in a tertiary reference center. cACLD patients were compared with asymptomatic healthy individuals who underwent EGD in a private hospital setting (April 2017-March 2018).
Results: We evaluated 1,845 patients (481 cACLD patients, 1,364 healthy individuals). A significantly higher frequency of gastric neoplasia was observed in patients with cACLD compared to healthy individuals (4.0% *vs.* 1.0%; $p<0.001$). Rare histopathological subtypes (WHO Classification) accounted for 28.7% of gastric carcinoma cases in the cACLD cohort. Seven cases of gastric neoplasia (36.8% of gastric neoplasia cases in the cACLD patients) were diagnosed in patients who, according to the Baveno VII criteria, would have not been submitted to EGD.
Conclusions: We found an increased frequency of gastric neoplasia in patients with cACLD in comparison with healthy individuals. In countries with intermediate-high risk for GC, continuing to perform EGD could be beneficial.

Conflict of Interest
M. Martins: None. R. Morais: None. J. Moreira: None. R. Gaspar: None. J. Santos-Antunes: None. M. Marques: None. R. Coelho: None. R. Alves: None. J. Ferreira-Silva: None. E. Dias: None. P. Pereira: None. S. Lopes: None. H. Cardoso: None. B. Sousa-Pinto: None. I. Faria-Ramos: None. I. Gullo: None. F. Carneiro: None. R. Liberal: None. G. Macedo: None.

P15.12.

BIOPSIES SAMPLING IN *HELICOBACTER PYLORI* NEGATIVE PATIENTS: IS IT STILL WORTHY?

G. FIORINI[1], ***M. PAVONI***[2], *A. D'ERRICO*[3], *A. ZULLO*[4], *D. VAIRA*[5,1]

[1]IRCCS Azienda Ospedaliero-Universitaria di Bologna, Cardiovascular Medicine Unit, Heart, Chest and Vascular Department, Bologna, Italy; [2]Department of Medical and Surgical Sciences, University of Bologna, Bologna, Italy; [3]Pathology Unit, IRCCS Azienda Ospedaliero-Universitaria di Sant'Orsola, Bologna, Italy; [4]Nuovo Regina Margherita Hospital, Gastroenterology and Digestive Endoscopy, Nuovo Regina Margherita Hospital, Bologna, Italy; [5]Hypertension and Cardiovascular Risk Research Center, Medical and Surgical Sciences Department, Alma Mater Studiorum University of Bologna, Bologna, Italy

Objective: Intestinal type gastric carcinoma occurs from long-term atrophic/metaplastic pangastritis. *H. pylori* infection remains the main risk factor for gastric cancer. The study aimed to assess prevalence of pangastritis and its distribution between *H. pylori* infected and uninfected dyspeptic patients who consecutively underwent upper endoscopy.

Patients and Methods: The diagnosis of *H. pylori* infection was performed by the Composite Reference Method (^{13}C Urea Breath Test, Rapid Urease Test, histological and culture analysis). Histopathological analysis was performed by gastric mapping (antrum, incisura angularis and gastric body) and OLGA (Operative link on gastritis assessment)/OLGIM (Operative link on gastric intestinal metaplasia) staging.
Results: The study enrolled 1,543 dyspeptic patients (Mean age: 55.1; M/F: 561/982), including 446 with and 1097 without *H. pylori* infection. Overall, atrophic or metaplastic pangastritis (OLGA/OLGIM: 3-4) was detected in 4 patients (0.3%). The distribution pangastritis among infected and uninfected shows a statistically significant difference (p<0.0001), also at a histological level the difference between the two groups is statistically significant, an OLGA stage grater or equal than 1 was observed in 69 cases among Hp positive patients and in 6 among Hp negative patients. No case of dysplasia was detected.
Conclusions: These results show the low probability of finding atrophy (metaplasic and non-metaplasic), in patients without *H. pylori* infection, thus laying the groundwork to start thinking about avoiding gastric mapping in this group of patients.

Conflict of Interest
G. Fiorini: None. M. Pavoni: None. A. D'Errico: None. A. Zullo: None. D. Vaira: None.

POSTER SESSION 16: CANCER 02

P16.01.

GASTRIC ADENOCARCINOMA RECURRENCE AFTER ENDOSCOPIC SUBMUCOSAL DISSECTION FOR EARLY GASTRIC CANCER

J. MOON[1], *S. YU*[1], *S. JEE*[1], *S. SEOL*[2], *I. KIM*[3]
[1]Inje University Busan Paik Hospital, Busan, Korea, Republic of Korea; [2]Isam Hospital, Busan, Korea, Republic of Korea; [3]Seoul St. Mary's Hospital, The Catholic University of Korea, Seoul, Korea, Republic of Korea

Objective: Gastric adenocarcinoma recurrence after endoscopic submucosal dissection (ESD) presents significant management challenges. We analyzed the characteristics, recurrence patterns, and outcomes of adenocarcinoma cases after ESD in a single center.
Materials and Methods: A retrospective review was done on 163 gastric adenocarcinoma cases treated with ESD at Seoul Paik Hospital, Seoul, South Korea, from January 2015 to June 2023.
Results: The mean age of patients was 70.7 years, with a male predominance (79.1%). Hypertension (49.1%), diabetes mellitus (25.2%), and dyslipidemia (14.7%) were common comorbidities. Most carcinomas were in the antrum (52.1%) and body (33.7%). In the pathological findings, Lauren classification showed 84.7% intestinal type, 2.5% diffuse type, and 12.9% mixed type. Most tumors were staged as pT1a (80.4%), with an R0 resection rate of 74.2%. Recurrence was observed in 11% of cases, with synchronous (4.9%) and metachronous (6.1%) patterns. Synchronous recurrences were detected on average at 140.3 days, with half treated by additional ESD and half by operative gastrectomy. Metachronous recurrences, detected on average at 1,056.5 days, were primarily managed with operative gastrectomy (70%).
Conclusions: This study shows the complexity of gastric adenocarcinoma management post-ESD, highlighting the importance of monitoring recurrences. The diversity in recurrence patterns and pathology necessitates personalized treatment and follow-up strategies, emphasizing the role of tailored post-ESD care in optimizing patient outcomes.

Conflict of Interest
J. Moon: None. S. Jee: None. S. Seol: None. I. Kim: None. S. Yu: None.

P16.02.

GASTRIC CANCER TREATMENT TARGET IDENTIFIED FROM AN ACCELERATED *HELICOBACTER*-INDUCED GASTRIC CANCER MOUSE MODEL

E.M. KURSTJENS[1], *K. COX*[1], *S. AMIRFAKHRI*[1], *P. BALI*[1], *J. HERNANDEZ*[1], *I. LOZANO-POPE*[1], *K. KELLY*[2], *C. BENNER*[1], *M. BOUVET*[1], *M. OBONYO*[1]
[1]University of California – San Diego, La Jolla, CA, USA; [2]University of Wisconsin, Madison, WI, USA

Objective: It is accepted that *H. pylori* infection and consequent inflammation leads to gastric cancer. Despite the prevalence of this bacterium and availability of genomic data, targeted therapies for gastric cancer are still early in development.
Materials and Methods: To address this gap, we used our accelerated *Helicobacter*-induced gastric cancer mouse model to identify several differentially expressed genes (DEGs) associated with severe disease pathology that progressed to precancerous lesions. We found that the same DEGs were elevated in patient gastric cancer biopsy samples. One such DEG is called proteasome subunit beta type 8 (PSMB8), which encodes part of an immunoproteasome crucial for maintenance of cellular protein homeostasis. A search of pharmaceutical databases identified carfilzomib as a potential drug target for PSMB8. To test its efficacy against gastric cancer, nude mice were subcutaneously implanted with human cell line (MKN-45) derived tumors and treated with either carfilzomib, the standard of care drug, 5-fluorouracil (5-FU), or a combination of the two drugs.
Results: Response to treatment was quantified *via* measurement of tumor growth, cell proliferation, and apoptosis. Mice treated with carfilzomib showed a significant reduction in tumor growth rate compared to the standard of care drug (5-FU, $p < 0.05$). Cell proliferation analysis by immunohistochemistry showed significantly less cell proliferation in carfilzomib treated group compared to the other treatment groups. Apoptosis levels were increased in nude mice treated with carfilzomib compared to other treatment groups.
Conclusions: These results strongly suggest that carfilzomib is a potential targeted therapy for treating gastric cancer.

Conflict of Interest
E.M. Kurstjens: None. K. Cox: None. S. Amirfakhri: None. P. Bali: None. J. Hernandez: None. I. Lozano-Pope: None. K. Kelly: None. C. Benner: None. M. Bouvet: None. M. Obonyo: None.

P16.03.

THE ROLE OF MUC13 IN GASTRIC CANCER CELL DEATH INHIBITION AND DYSBIOSIS

B. OOSTERLINCK[1,2], *W. ARRAS*[1,2], *J. G. DE MAN*[1,2], *B. Y. DE WINTER*[1,3,2], *A. SMET*[1,2]
[1]University of Antwerp, Antwerp, Belgium; [2]Infla-Med Research Consortium of Excellence, Wilrijk, Belgium; [3]Antwerp University Hospital, Wilrijk, Belgium

Objective: We aimed to identify the role of MUC13 in the inhibition of different cell death pathways in gastric cancer and further elucidate the effect on the gastric microbiome.
Materials and Methods: We performed an *in vitro* experiment using MKN-7 cells of the intestinal-type which were transfected to achieve MUC13 knock-down. Cell viability was assessed together with changes in the transcriptome through bulk RNA sequencing. Results were validated in an *in vivo* model in which Muc13-deficient and wild type mice were infected with *Helicobacter* and subsequently received the co-carcinogen MNU. From both the corpus and antrum, the transcriptome and microbiome were investigated through bulk RNA sequencing and 16S rRNA sequencing, respectively.
Results: MUC13 increases cell viability of gastric cancer cells upon inflammation while remarkably the opposite was seen in uninflamed cells. This was achieved through repression of the epithelial-mesenchymal transition pathway and activation of both the xenobiotic metabolism and interferon signaling. These findings were validated in the mouse model with Muc13$^{-/-}$ mice upon MNU-treatment/*Helicobacter*-infection. Additionally, Muc13$^{-/-}$ mice were more susceptible to *Helicobacter* colonization. In control animals, however, a trend for a higher microbial diversity was noted in the absence of Muc13, with the phylum Proteobacteria being enriched in the stomach of the MNU-treated/*H. felis* CS1 infected Muc13$^{-/-}$ mice.

Conclusions: Our results emphasize a key role for MUC13 in promoting gastric cancer cell survival and in shaping the gastric microbiome.

Conflict of Interest
B. Oosterlinck: None. W. Arras: None. J.G. De Man: None. B.Y. De Winter: None. A. Smet: None.

P16.04.

GASTRIC CANCER RISK ACCORDING TO OLGA AND OLGIM STAGES IN THE FAMILY MEMBERS OF GASTRIC CANCER PATIENTS

Y. KIM, M. KOOK, Y. CHOI, J. LEE, C. KIM, ***I. CHOI***
National Cancer Center, Goyang, Korea, Republic of Korea

Objective: The Operative Link for Gastritis Assessment (OLGA) and Operative Link on Gastric Intestinal Metaplasia Assessment (OLGIM) stages have been suggested to assess gastric cancer (GC) risk. This study evaluated GC (high-grade dysplasia and intestinal-type cancer) risk according to OLGA and OLGIM stage in family members of GC patients.
Patients and Methods: In this study, 3,002 healthy first-degree family members of GC patients enrolled in a prospective randomized controlled trial from 2004 to 2011. OLGA and OLGIM stages were determined using scores of antra and corpus lesser curvature biopsy samples assessed by the updated Sydney system.
Results: Of the 3,002 participants, 22 (0.7%) had GC at initial assessment (15 intestinal-type cancers and 7 high-grade dysplasia). In univariate logistic regression analyses, age [odds ratio (OR): 1.09; p=0.005] and male sex (OR: 3.72; p=0.010) were associated with GC. Compared to stage 0, there were increasing trends of ORs for GC according to OLGA (1.98 in stage I, 2.70 in stage II, 6.76 in stage III, and 4.59 in stage IV; p_{trend}<0.014) and OLGIM stages (1.86 in stage I, 6.53 in stage II, 5.88 in stage III and 2.96 in stage IV; p_{trend}<0.029). Based on these analyses, high-risk group included participants with OLGA or OLGIM stages II-IV. In multivariate analyses by adjusting age and sex, high-risk OLGIM group was significantly associated with GC (adjusted OR: 2.88; p=0.019) whereas high-risk OLGA group was not (adjusted OR: 2.29; p=0.122).
Conclusions: In the family members of gastric cancer patients, high-risk OLGIM stages might be a useful tool for the assessment of gastric cancer risk.

Conflict of Interest
Y. Kim: None. M. Kook: None. Y. Choi: None. J. Lee: None. C. Kim: None. I. Choi: None.

P16.05.

SIZE DOES MATTER: THE CHOICE OF TREATMENT MODALITY FOR SUPERFICIAL ESOPHAGEAL CANCER

J. YOON[1], *J. BAE*[1], *G. KIM*[1], *D. JUNG*[1], *J. PARK*[1], *S. LEE*[1], *Y. LEE*[1], *B. PARK*[2], *D. KIM*[2], *S. SHIN*[1]
[1]Institute of Gastroenterology, Department of Internal Medicine, Severance Hospital, Yonsei University College of Medicine, Seoul, Republic of Korea; [2]Department of Thoracic and Cardiovascular Surgery, Severance Hospital, Yonsei University College of Medicine, Seoul, Republic of Korea

Objective: Endoscopic resection (ER) and surgery are considered treatments modalities for superficial esophageal cancer, but it is often difficult to choose based on initial information at diagnosis. We aimed to determine whether lesion size could help with this decision.
Patients and Methods: We retrospectively analyzed 668 cases of superficial esophageal cancer with T1 stage in the final pathologic report. It included 244 ER, 424 esophagectomy cases (January 2006 to October 2023) at 1 center. To determine the risk factors associated with exceeding the indication for ER, we performed a multivariable logistic regression analysis. Of total cases, the mean age was 64.1 and 606 (90.72%) cases were male.

Results: 380 (56.89%) cases exceeded the ER indication. As shown in the table, the multivariable analysis showed that lesion size (the longest diameter in the pathologic report) greater than 20 mm, 30 mm, and 40 mm were significant independent risk factors. 320 (47.90%), 205 (30.69%), and 112 (16.77%) cases were larger than 20 mm, 30 mm, and 40 mm, respectively.
Conclusions: This study suggests that lesion size can be used as an independent factor in determining treatment modality for superficial esophageal cancer. However, due to the shrinkage of living tissue when retrieval, the actual size of cancer would be larger than the specimen size. Given this discrepancy and the trend of increasing odds ratios from the 40 mm cutoff in this study, we suggest that ER can be preferred to esophagectomy for superficial esophageal cancer with endoscopic size ≤30 mm.

TABLE 1. MULTIVARIABLE ANALYSIS OF POSSIBLE PREDICTOR FOR EXCEEDING THE ESD INDICATION.

	Univariable analysis			Multivariable analysis		
Predicting factor	**OR**	**[95% CI]**	***p*-value**	**OR**	**[95% CI]**	***p*-value**
Age	0.979	[0.961-0.998]	0.032			
Size						
≥ 20 mm	2.330	[1.701-3.192]	0.000	1.853	[1.278-2.687]	0.001
≥ 30 mm	2.065	[1.459-2.922]	0.000	1.825	[1.220-2.730]	0.003
≥ 40 mm	2.635	[1.665-4.170]	0.000	2.448	[1.445-4.147]	0.001
Morphology						
Flat type						
Elevated type	6.789	[4.399-10.476]	0.000			
Depressed type	1.391	[0.881-2.196]	0.156			
Cell type						
SCC, WD (or in situ)						
SCC, MD	6.398	[4.359-9.391]	0.000			
SCC, PD	19.627	[9.889-38.957]	0.000			

Conflict of Interest
J. Yoon: None. J. Bae: None. G. Kim: None. D. Jung: None. J. Park: None. S. Lee: None. Y. Lee: None. B. Park: None. D. Kim: None. S. Shin: None.

P16.07.

GASTRIC CANCER RISK AMONG IMMIGRANT AND SOCIOECONOMIC GROUPS IN THE NETHERLANDS

D.T. MÜLDER[1], *H.J. VAN DE SCHOOTBRUGGE-VANDERMEER*[1], *J.F. O'MAHONY*[1,2], *D. SUN*[1], *W. HAN*[1], *R.H.A. VERHOEVEN*[3,4,5], *M. VAN LOO*[6], *W. VAN DE VEERDONK*[6], *M.C. W. SPAANDER*[1], *I. LANSDORP-VOGELAAR*[1]
[1]Erasmus MC, Rotterdam, Netherlands; [2]University College Dublin, Dublin, Ireland; [3]Amsterdam UMC Location University of Amsterdam, Amsterdam, Netherlands; [4]Cancer Center Amsterdam, Cancer Treatment and Quality of Life, Amsterdam, Netherlands; [5]Netherlands Comprehensive Cancer Organization, Utrecht, Netherlands; [6]Thomas More University of Applied Sciences, Antwerp, Belgium

Objective: Identification of groups at a high-risk of gastric cancer (GC) could increase understanding of gastric carcinogenesis and facilitate targeted *H. pylori* screening in countries with a low GC incidence. Our aim was to identify such high-risk groups, based on individual-level population data on migration status and socioeconomic status (SES).

Materials and Methods: Patient data from the Netherlands cancer registry were linked to demographic data of Statistics Netherlands in the period between 2010-2022. GC incidence rates in the 14 largest immigrant populations were compared to those born in the Netherlands. Odds ratios (ORs) were computed per birthplace and corrected for age, sex, and SES. Additionally, we investigated GC risk among second-generation immigrants and by SES.
Results: Immigrant populations at a significantly higher GC risk compared to the general population were identified. These include people born in Bosnia-Herzegovina (OR: 2.42), Turkey (OR: 2.22), and China (OR: 1.92). Low SES increased the odds of developing GC. Still, first-generation immigrants remained at a higher risk when adjusting for SES. Second-generation immigrants did not have a significantly higher risk of developing GC.
Conclusions: Individuals born in countries with a high *H. pylori* prevalence remain at an elevated risk of GC despite migration to a low-risk region, likely due to prior infection. Potential benefits of targeted *H. pylori* test-and-treat in immigrant populations should be explored in clinical and modelling studies. Primary caregivers should be cognizant of high-risk immigrant and socioeconomic groups, facilitating effective *H. pylori* detection and treatment.

Conflict of Interest
D.T. Mülder: None. H.J. van de Schootbrugge - Vandermeer: None. J.F. O'Mahony: None. D. Sun: None. W. Han: None. R.H.A. Verhoeven: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Bristol Meyers Squibb, Daiichi Sankyo. M. van Loo: None. W. van de Veerdonk: None. M.C.W. Spaander: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Modest; Medtronic, Sysmex, Sentinel. I. Lansdorp-Vogelaar: None.

P16.08.

CELL EXTRUSION SIGNATURES IN THE GASTRIC EPITHELIUM: A CROSSTALK BETWEEN E-CADHERIN AND FILAMIN A

S. MELO[1,2,3], *L. CARVALHO*[1,2,4], *J. PEREIRA*[1,2,4], *J.M. SANCHES*[3], *J.C. MACHADO*[1,2,4], *R. SERUCA*[1,2,4], *J. FIGUEIREDO*[1,2,4]
[1]i3S – Instituto de Investigação e Inovação em Saúde, Porto, Portugal; [2]IPATIMUP – Institute of Pathology and Molecular Immunology of the University of Porto, Porto, Portugal; [3]Institute for Systems and Robotics, Instituto Superior Técnico, Lisboa, Portugal, 4Medical Faculty of the University of Porto, Porto, Portugal

Objective: E-cadherin germline variants are causative events of Hereditary Diffuse Gastric Cancer (HDGC), a highly invasive cancer syndrome with a lethal outcome. In HDGC, abnormal E-cadherin cells spread beneath wild-type cells, representing the first step of invasion and the result of a switch from apical to basal extrusion. However, the molecular mechanisms that enable E-cadherin dysfunctional cells to invade rather than being eliminated are still unknown.
Material and Methods: We have transfected AGS gastric cells with wild-type and E-cadherin mutants affecting distinct protein domains, subsequently creating a monolayer system where labelled mutant cells were mixed with non-labelled wild-type counterparts to investigate the fate of mutant cells through confocal microscopy. Structural organization, protrusion formation, and cell spreading were also assessed in a 3D culture system. A comprehensive analysis was performed to evaluate distribution patterns of integrins and cytoskeletal components.
Results: Variants disrupting the juxtamembrane and intracellular regions exhibited higher basal extrusion rates, when compared to those affecting the extracellular domain. Interestingly, the R749W juxtamembrane and V832M intracellular variants induce decreased filamin A activity, leading to actin remodeling and aberrant integrin-cytoskeleton interactions. The role of filamin A in cell extrusive potential was further confirmed by its inhibition in wild-type cells. Accordingly, the downregulation of filamin A resulted in extensive changes in cytoskeletal networks, basal position of nuclei, and increased migration capacity.

Conclusions: Our data suggest that E-cadherin and filamin A act in a pathway crucial for cell extrusion phenotypes, unveiling potential therapeutic avenues for E-cadherin mediated gastric cancer.

Conflict of Interest
S. Melo: None. L. Carvalho: None. J. Pereira: None. J.M. Sanches: None. J.C. Machado: None. R. Seruca: None. J. Figueiredo: None.

P16.09.

E-CADHERIN DYSFUNCTION MODULATES STRUCTURAL PROPERTIES OF NUCLEI IN GASTRIC CANCER CELLS

J.P. SANTOS[1,2,3], *J. PEREIRA*[1,2,3], *J.M. SANCHES*[4], *J.C. MACHADO*[1,2,3], *J. FIGUEIREDO*[1,2,3]
[1]i3S, Porto, Portugal; [2]IPATIMUP – Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal; [3]Faculty of Medicine, University of Porto, Porto, Portugal, 4Instituto Superior Técnico, Lisboa, Portugal

Objective: E-cadherin is a pivotal molecule for cell-cell adhesion and maintenance of polarized and differentiated epithelia. In gastric carcinomas, approximately 60% of cases exhibit genetic and epigenetic alterations of E-cadherin, resulting in increased cell invasion and metastasis. How E-cadherin loss endows increased cell motile properties remains to be fully elucidated. We hypothesize that loss of E-cadherin disrupts epithelial tensional homeostasis, remodeling the actin cytoskeleton and the structure of cellular organelles towards the cell's adaptability to microenvironment.
Material and Methods: Herein, we have established an *in vitro* model of a cancer cell line expressing a novel E-cadherin missense variant identified in diffuse gastric cancer patients. Specifically, we transfected a cadherin-negative cell line with vectors encoding the Y755C E-cadherin mutant or the wild-type protein, as a control. Morphological features of the different conditions were then evaluated through transmission electron microscopy (TEM) coupled with advanced bioimaging techniques.
Results: We verified that Y755C E-cadherin mutant cells display an abnormal nuclear morphology, when compared with those expressing the wild-type protein. In particular, quantitative analysis of TEM images revealed that the nuclei of E-cadherin mutant cells have significantly higher area and perimeter than those from wild-type counterparts. Moreover, the Y755C mutant presents an irregular nuclear structure with modified chromatin distribution patterns, in contrast with more circular shapes and compact chromatin exhibited by wild-type cells.
Conclusions: This work demonstrates that loss of E-cadherin impacts nuclear architectural properties and chromatin packaging, corroborating the activation of transcriptional programs driving cancer invasion and progression.

Conflict of Interest
J.P. Santos: None. J. Pereira: None. J.M. Sanches: None. J.C. Machado: None. J. Figueiredo: None.

P16.10.

CLINICAL SIGNIFICANCE OF BLOOD UREA NITROGEN AS A PREDICTOR OF DELAYED BLEEDING AFTER ENDOSCOPIC SUBMUCOSAL DISSECTION FOR GASTRIC NEOPLASM

B. KIM*, J. PARK, J. KIM*
Chung-Ang University Hospital, Seoul, Korea, Republic of Korea

Objective: Endoscopic submucosal dissection (ESD) is a widely accepted treatment modality for early gastric cancers and adenomas but is often accompanied by post-ESD bleeding. Herein, we evaluated the predictive value of elevated blood urea nitrogen (BUN) levels at 24 hours after surgery for delayed bleeding. Further, we assessed whether an increase in BUN level is predictive of an artificial gastric ulcer of high-risk Forrest classification during second-look endoscopy after ESD.

Materials and Methods: We analyzed the data of patients who underwent ESD for early gastric cancer or gastric adenoma at our institution between January 2017 and December 2019. The baseline characteristics, endoscopic findings, and blood test results were assessed for each patient.
Results: A total of 424 patients were assessed. Second-look endoscopy (SLE) performed one day after ESD revealed 44 and 385 post-ESD lesions with a high and low risk of bleeding, respectively, according to the Forrest classification. Artificial gastric ulcers of high-risk Forrest classification were associated with a significantly higher rate of post-ESD bleeding. An elevated BUN level 24 hours after endoscopic submucosal dissection was significantly associated with an artificial gastric ulcer of high-risk Forrest classification during second-look endoscopy (p=0.003).
Conclusions: The results of this study indicate that changes in BUN may have predictive utility in post-ESD bleeding.

Conflict of Interest
B. Kim: None. J. Park: None. J. Kim: None.

P16.11.

OPTIMIZED ENDOSCOPIC SURVEILLANCE INTERVALS FOR DETECTING PROGRESSION OF INTESTINAL METAPLASIA (IM): A LARGE POPULATION-BASED STUDY FROM LOW PREVALENCE AREA OF GASTRIC CANCER (IM-SURVEILLANCE TRIAL)

N. AUMPAN, V. MAHACHAI, ***R. VILAICHONE***
Thammasat University, Pathumthani, Thailand

Objective: Gastric intestinal metaplasia (IM) is a precancerous lesion that may lead to gastric cancer. This study aimed to determine risk factors associated with progression of IM and proper surveillance interval to guide management and prevent this fatal cancer.
Patients and Methods*:* 2,700 dyspeptic patients undergoing upper gastrointestinal endoscopy in Thammasat University Hospital, Thailand were enrolled between September 2017 and January 2023. Patients' data from medical database were extensively reviewed.
Results: 2,700 patients had mean age of 61years and 44.5% of them were males. *H. pylori* prevalence was 38%. There were 2,151 (79.7%) patients with chronic gastritis, while 376 (13.9%) had IM as demonstrated in Table 1. Age >50 years, current *H. pylori* infection, and hypertension were significantly associated with development of IM with OR: 1.63 (95%CI: 1.15-2.31, p=0.006), OR: 3.82 (95%CI: 3.03-4.82, p<0.001), and OR: 1.37 (95%CI: 1.07-1.74, p=0.011), respectively. IM was categorized into 2 subtypes: complete IM (90.2%) and incomplete IM (9.8%). Classified by extent of IM, 84.8% had limited IM, while 15.2% had extensive IM. From patients with IM, 232 had endoscopic surveillance. Regression, persistence, and progression of IM were demonstrated in 23.3%, 65.9%, and 10.8% of patients, respectively. Patients with persistent *H. pylori* infection significantly had more IM progression than group without persistent infection (22.9% *vs.* 4%; OR: 7.26, 95%CI: 2.61-20.17, p<0.001). Extensive IM was significantly associated with IM progression than limited IM (23.2% *vs.* 5.5%; OR: 4.27, 95%CI: 1.69-10.77, p=0.002).
Conclusions: Early surveillance of IM might be appropriate for providing additional detection of histologic progression especially in extensive IM. Extensive IM could be important predictors for IM progression. Successful *H. pylori* eradication is also an effective way to prevent IM progression to dysplasia and gastric cancer.

Conflict of Interest
R. Vilaichone: None. N. Aumpan: None. V. Mahachai: None.

POSTER SESSION 17: CANCER 03

P17.02.

TARGETING THE PI3K AKT MTORC1 SIGNALING PATHWAY IN GASTRIC CANCER STEM CELLS

T. NGUYEN, L. SEENEEVASSEN, A. ZAAFOUR, C. GENEVOIS, ***C. VARON***
University of Bordeaux, Bordeaux, France

Objective: Gastric cancer (GC) is the fourth leading cause of cancer death worldwide. Our team has identified and characterized cancer stem cells (CSCs) underlying tumorigenesis and chemoresistance in the GC, including a CD44v3+ mesenchymal subpopulation of CSCs detected as circulating and metastatic tumor cells. The PI3K/AKT/mTORC1 signaling pathway is an important signaling pathway that plays a major role in cell growth, proliferation and survival, especially in cancer. We have identified an activation of this pathway in our transcriptomic and proteomic data from CSC and invasive CSC populations. The objective of this project is to confirm the role of the PI3K/AKT/mTORC1 signaling pathway in the tumorigenic and invasive characteristics of GCs *in vitro* and *in vivo* using the combination of the two inhibitors of this pathway.
Materials and Methods: Various *in vitro* experiments were performed such as tumorsphere assay and flow cytometry to evaluate the effect of PI3K/AKT/mTORC1 inhibition on CSCs properties and phenotype. It was also assessed whether the observed effects could involve the EMT process by performing Boyden's chamber assay, immunofluorescence, and western blot.
Results: The results obtained showed that BKM-120 (PI3K inhibitor) and Rapamycin (mTORC1 inhibitor) alone or in combination are able to inhibit tumor growth and the dissemination of gastric CSCs in vitro, the combination of both being most efficient than each inhibitor alone. In vivo experiments are ongoing.
Conclusions: This study suggest that the combination of both PI3K and mTORC1 inhibitors could be an efficient strategy to target gastric CSC and inhibit tumor growth and progression.

Conflict of Interest
T. Nguyen: None. L. Seeneevassen: None. A. Zaafour: None. C. Varon: None. C. Genevois: None.

P17.03.

DISCOVERY AND VALIDATION OF PREDICTIVE MARKERS FOR METACHRONOUS GASTRIC CANCER DEVELOPMENT AFTER ENDOSCOPIC RESECTION OF EARLY GASTRIC CANCER

B. KIM[1]*, H. CHUN*[2]*, J. LEE*[2]*, M. PARK*[3]*, Y. KWAK*[3]*, J. KIM*[4]*, S. KIM*[3]*, J. CHOI*[2]*, S. CHO*[3]
[1]Seoul Metropolitan Government Seoul National University Boramae Medical Center, Seoul, Republic of Korea; [2]Korea University College of Medicine, Seoul, Republic of Korea; [3]Seoul National University Hospital, Seoul National University College of Medicine, Seoul, Republic of Korea; [4]Hanyang University College of Medicine, Seoul, Republic of Korea

Objective: We aimed to identify predictive markers for metachronous gastric cancer (MGC) in early gastric cancer (EGC) patients treated with endoscopic submucosal dissection (ESD).
Materials and Methods: From EGC patients who underwent ESD, bulk RNA sequencing was performed on non-cancerous gastric mucosa samples at the time of initial EGC diagnosis. This included 23 patients who developed MGC, and 23 controls without additional gastric neoplasms for over 3 years (1:1 matched by age, sex, and *Helicobacter pylori* infection state). Candidate differentially expressed genes were identified, from which biomarkers were selected using Real-Time Quantitative Polymerase Chain Reaction and cell viability assays using gastric cell lines. An independent validation cohort of 55 MGC patients and 125 controls was used for marker validation. We also examined the severity of gastric intestinal metaplasia, a known premalignant condition, at initial diagnosis.

Results: From the discovery cohort, 98 candidate genes were identified of which *KDF1* and *CDK1* were selected as markers for MGC, which were confirmed in the validation cohort. *CERB5* and *AKT2* isoform were identified as markers related to intestinal metaplasia and were also highly expressed in MGC patients compared to controls (p<0.01). Combining these markers with clinical data (age, sex, *H. pylori* and severity of intestinal metaplasia) yielded an area under the curve (AUC) of 0.91 (95% CI, 0.85-0.97) for MGC prediction.
Conclusions: Assessing biomarkers in non-cancerous gastric mucosa may be a useful method for predicting MGC in EGC patients and identifying patients with a higher risk of developing MGC, who can benefit from rigorous surveillance.

Conflict of Interest
B. Kim: None. H. Chun: None. J. Lee: None. M. Park: None. Y. Kwak: None. J. Kim: None. S. Kim: None. J. Choi: None. S. Cho: None.

P17.04.

MICROBIOME-DERIVED KYNURENINE IS A NEW PLAYER IN GASTRIC CANCER

I. CASTRO[1,2], *J. SOUSA*[1,2], *L. PORTELA*[1,3], *M. MENDES-ROCHA*[1,2], *F. CARNEIRO*[1,4,2], *C. FIGUEIREDO*[1,4,2], *R. M. FERREIRA*[1,4]
[1]i3S – Instituto de Investigação e Inovação em Saúde, University of Porto, Porto, Portugal; [2]FMUP – Faculty of Medicine of the University of Porto, Porto, Portugal; [3]FCUP – Faculty of Sciences of the University of Porto, Porto, Portugal; [4]Ipatimup – Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal

Objective: The development of gastric cancer is influenced by the microbiome. Our hypothesis is that the gastric microbiome has a metabolic program that produces metabolites that promote cancer development. The aim of this study is to identify oncometabolites that contribute to gastric cancer.
Materials and Methods: Untargeted metabolomics was performed in 30 patients, including 60 samples of tumors and paired normal tissues. The carcinogenic potential of metabolites overrepresented in tumors was assessed by extensive searches. The effects of the selected metabolite on cell viability and on the expression of genes of interest were evaluated in *in vitro* using a gastric cancer cell line.
Results: Differential abundance analysis revealed an enrichment of 41 metabolites in tumor tissues. Based on information retrieved from the literature and chemical databases, kynurenine (Kyn) was selected for further analysis. Analysis of the gastric cancer RNA-seq data from The Cancer Genome Atlas revealed 15 bacterial enzymes encoded by 720 bacterial genes involved in the metabolism of Kyn. In time course experiments, Kyn significantly and consistently increased cancer cell viability after 5h of treatment. Kyn treatment led to concomitant increases in the expression of its transporter SCL7A5 and of the aryl hydrocarbon receptor (AhR). Additionally, Kyn treatment resulted in the activation of the AhR transcription factor, leading to the expression of matrix metalloproteinase-1 (MMP1).
Conclusions: Kyn, a metabolite produced by the microbiome, showed to induce pro-oncogenic functions by influencing cell proliferation and activating the AhR signaling pathway.

Acknowledgments
FCT – 2022.02141.PTDC.

Conflict of Interest
I. Castro: None. J. Sousa: None. L. Portela: None. C. Figueiredo: None. R.M. Ferreira: None. F. Carneiro: None. M. Mendes-Rocha: None.

P17.05.

COLORECTAL CANCER AND GUT MICROBIOTA: POSSIBILITIES OF AUTOPROBIOTICS IN COMPLEX TREATMENT

E.I. ERMOLENKO[1], N.V. BARYSHNIKOVA[2,1,3], A.S. ILINA[1], G.G. ***ALEKHINA***[1]*, A.N. SUVOROV[1]*
[1]Institute of Experimental Medicine, St-Petersburg, Russian Federation; [2]First St. Petersburg State Medical University, St-Petersburg, Russian Federation; [3]Pediatric State Medical University, St-Petersburg, Russian Federation

Objective: The aim of the study was to estimate the efficacy and safety of autoprobiotics (indigenous enterococci) in complex treatment in patients with colorectal cancer (CRC) in the early postoperative period.
Materials and Methods: 24 patients diagnosed with CRC were observed. All patients received autoprobiotic (indigenous *Enterococcus faecium* or *Enterococcus hirae*) in the early postoperative period. Feces samples were obtained from all patients before and after 10-days course of autoprobiotics (50 ml 2 times a day) for investigation of the gut microbiota [bacteriological study, quantitative polymerase chain reaction (qPCR), metagenome analysis (16SrRNA)].
Results: After autoprobiotics intake we revealed a statistically significant positive changes in intestinal microbiota. Bacteriological analysis shown an increase of typical *E. coli*, non-pathogenic *E. faecium* or *E. hirae* content, a decrease of atypical (lactase-negative, hemolytic, sucrose-positive) *E. coli* content. An elevation of *Lactobacillus* spp. and *E. faecium*, a decline of *Akkermansia muciniphyla*, *C. perfringens*, and cancer marker bacteria Parvimonas micra populations were revealed by qPCR. Using metagenome analysis after treatment with auto probiotics, we found statistically significant alpha biodiversity at the class level (p=0.023).
Conclusions: The use of autoprobiotics led to positive changes in the gut microbiota content and can lowering the risk of CRC relapse by decreasing pro-carcinogenic inflammation in the colon associated with gut dysbiosis. Future studies will need to the discovery of additional fine mechanisms of autoprobiotic therapy in complex treatment of CRC patients.

Funding
Work was supported by the Ministry of Science and Higher Education of the Russian Federation Grant No. 075-15-2022-302 (20.04.2022) FSBSI “IEM”.

Conflict of Interest
E.I. Ermolenko: None. N.V. Baryshnikova: None. A.S. Ilina: None. G.G. Alekhina: None. A.N. Suvorov: None.

P17.06.

THE ROLE OF *HELICOBACTER PYLORI*, CYTOTOXIN-ASSOCIATED GENE A CAGA IN AUTOPHAGIC PATHWAYS OF GASTRIC EPITHELIAL CELLS

Y. LEE*, B. HWANG, S. LEE, B. YU*
Yonsei University Health System, Seoul, Republic of Korea

Objective: *H. pylori* is a major cause of gastric diseases including peptic ulcer, MALTOMA and gastric cancer. Autophagy plays a crucial role in infection, inflammation and cellular function. When *H. pylori* infects gastric epithelium, the epithelial cell undergoes autophagy. However, the role of cytotoxin-associated gene A (CagA) in autophagic signaling has not been well identified. This study aimed to study the functional role of CagA in H. pylori induced autophagy.
Materials and Methods: *H. pylori* 60190 along with isogenic mutant strains ΔCagA (CagA-, vacA+) and ΔVacA (CagA+, vacA-) were used. A human gastric epithelial cell line, AGS was used for the infection experiment. Autophagic flux was measured by LCIII immunoblotting. The autophagy inhibitors (wortmannin, cycloheximide, bafilomycin a1, chloroquine) and rapamycin (autophagy induction; mTOR inhibitor) were used to examine the mechanism of CagA driven autophagic degradation. The gastric epithelial cells were transfected by siATG5, siATG4 and siLAMP1. mCherry (mRFP-GFP-LC3) plasmid transfection to study the association between CagA and the flux formation of autophagy.

Results: During the *H. pylori* 60190 (CagA+) infection, a high level of autophagic activation occurred in AGS cells in CagA dependent manner. AGS infected with H. pylori strains showed that intracellular CagA level was decreased, and increasing LC3-I conversion into LC3-II were noted. CagA affected the autophagic regulation in lysosomal fusion preocess.
Conclusions: The autophagic regulation in H. pylori infection will allow for identifying the novel biomarker for target therapy and prevention strategy in gastric cancer.

Conflict of Interest
G. Varkalaite: None. M. Forster: None. R. Gudaityte: None. J. Kupcinskas: None. J. Skieceviciene: None.

P17.07.

BLOOD PLASMA CELL-FREE DNA MOLECULAR LANDSCAPE IN GASTRIC CANCER

G. VARKALAITE[1], *M. FORSTER*[2], *R. GUDAITYTE*[1], *J. KUPCINSKAS*[1], *J. SKIECEVICIENE*[1]
[1]Lithuanian University of Health Sciences, Kaunas, Lithuania; [2]Institute of Clinical Molecular Biology, Kiel, Germany

Objective: Gastric cancer (GC) is a leading cause of mortality globally, underscoring the urgent need for innovative non-invasive monitoring tools. Molecular profiling indicates that liquid biopsy assays could address many diagnostic and prognostic challenges associated with GC.
Materials and Methods: Blood samples from 13 control subjects (CON), 13 atrophic gastritis (AG) patients, and 33 GC patients were collected, with multiple samples from GC patients taken at different time points. Total cfDNA was isolated and very deep targeted sequencing was performed (NovaSeq 6000, Illumina).
Results: In the CON, 53.8% of subjects had detectable genetic variants in APC, ERBB2, FAT1, and MUC16 genes, mainly low (60%) or moderate (30%) impact. In the AG, 23.1% had detectable genetic variants in APC, ERBB4, FAT1, KMT2C, MUC16, PIK3CA, and TRRAP genes, most moderate (20.0%) or modifier (53.3%) impact. In the GC, 51.5% of patients had detectable genetic variants in APC, CDH1, EGFR, ERBB2, ERBB4, FAT1, FAT4, KMT2C, KRAS, MUC16, PIK3CA, PTEN, SPEN, TRRAP genes, with high (4.0%), moderate (37.4%), and modifier (58.6%) impact. Mutational cfDNA profiles overlapped by different proportions in GC group comparing the time points: before *vs.* after the operation – 50.0%, before the operation *vs.* control visit – 12.5%, after the operation *vs.* control visit – 12.0%, and all three time points – 12.5%. Detection of somatic plasma cfDNA variants was significantly associated with tumor size (48.3% *vs.* 82.1%, T1-T2 *vs.* T3-T4 respectively, $p = 0.007$).
Conclusions: This study illuminates plasma cfDNA dynamics from health to malignancy and links cfDNA mutational profiles with diverse clinical characteristics.

Conflict of Interest
G. Varkalaite: None. M. Forster: None. R. Gudaityte: None. J. Kupcinskas: None. J. Skieceviciene: None.

P17.08.

ELEVATED BACTERIAL LOAD AND ATTENUATED IMMUNE RESPONSE OBSERVED IN TNFSF14-DEFICIENT MICE UPON *HELICOBACTER PYLORI* INFECTION

A. MÜHLBAUER, *A. GONZÁLEZ, R. MEJÍAS-LUQUE*
Technical University of Munich, Munich, Germany

Objective: *Helicobacter pylori* infection causes severe inflammation in the gastric mucosa, characterized by increase presence of neutrophils, monocytes and lymphocytes. Chronic infection can lead to gastric cancer (GC) development. Upon *H. pylori* infection, activation of the non-canonical arm of NF-κB signaling occurs through the interaction between lymphotoxin α1β2 (LT) and LTβR. However, studies have also shown an upregulation of LIGHT (*TNFSF14*), a ligand that triggers both canonical and non-canonical NF-κB depending on receptor engagement. Thus, interaction with HVEM leads to canonical NF-kB activation, while its binding to LTbR results in the induction of non-canonical NF-kB signaling.

Materials and Methods: In order to elucidate the role of LIGHT in *H. pylori*-driven pathology, LIGHT-deficient mice (Tnfsf14-/-) were infected with the *H. pylori* strain PMSS1 and we assessed gastric bacterial colonization as well as gastric immune responses *via* IHC, flow cytometry, and mRNA expression levels of chemo/cytokines.
Results: Increased bacterial load was observed in Tnfsf14-/- mice compared to wild type mice, along with changes in the immune cell infiltration within the stomach. Thus, decreased numbers of proinflammatory lymphocytes and increased recruitment of regulatory T cells infiltrating the gastric mucosa were observed in Tnfsf14-/- mice compared to wild type mice. Moreover, expression levels of non-canonical NF-κB target genes CXCL10 and CXCL13 were elevated in LIGHT-deficient mice while CCL2 and IFNγ levels declined.
Conclusions: Our current findings suggest that the absence of LIGHT during *H. pylori* infection has important effects on the inflammatory response elicited by the bacterium that need to be further explored.

Conflict of Interest
A. Mühlbauer: None. A. González: None. R. Mejías-Luque: None.

P17.09.

TARGETED SCREENING FOR GASTRIC CANCER – A COMBINED APPROACH

C. DEANE[1,2,3], *R. CONNAUGHTON*[2], *O. KELLY*[2,3], *C. O'MORAIN*[1,4]
[1]Beacon Hospital Research Institute, Dublin, Ireland; [2]Connolly Hospital, Dublin, Ireland, [3]Royal College of Surgeons, Ireland, Dublin, Ireland, 4Trinity College, Dublin, Ireland

Objective: *Helicobacter pylori (H. pylori)* infection stands as the primary causative factor of gastric cancer (GC). Early detection and treatment of *H. pylori* infection can reduce GC cases, constituting primary prevention. Secondary preventative strategies include the identification of precancerous changes on gastroscopy with appropriately tailored surveillance or endoscopic intervention. The Maastricht VI/Florence consensus report, suggests integrating colorectal cancer screening modalities with GC screening for a more cost-effective approach to GC screening. We aimed to determine the prevalence of a) *H. pylori* infection and b) preneoplastic and neoplastic lesions in those who underwent gastroscopy at the time of screening colonoscopy.
Patients and Methods*:* We conducted an audit of findings on gastroscopy of those who underwent concurrent colorectal cancer screening. Participants with red flag symptoms, a family history of GC, Barrett's, intestinal metaplasia (IM), and dysplasia were excluded.
Results: 101 patients (median age: 59; 38% male) were included, indications for gastroscopy included abdominal pain (45%), chronic reflux (37%) and other (16%). 93% had macroscopic findings on gastroscopy, including gastritis (60%), hiatus hernia (50%), esophagitis (28%), duodenitis (24%), gastric body polyps (10%), benign ulceration (9%), Schatzki ring (4%), erosions (4%), candidiasis (1%) and varices (1%). *H. pylori* infection was detected on histology in 15% of patients, and 7% had intestinal metaplasia (IM). No atrophy, dysplasia or cancer was found. Additional pathologies on histology included antral and body gastritis (56%), reflux esophagitis (21%), Barrett's without dysplasia (4%) and eosinophilic esophagitis (1%). Preneoplastic changes were not associated with age (p<0.82) or gender (p<0.32).
Conclusions: 11% of individuals exhibited a pre-neoplastic condition on gastroscopy at the time of screening colonoscopy and 15% were diagnosed with *H. pylori* infection. Our findings support the support the feasibility of combined screening strategies.

Conflict of Interest
C. Deane: B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; EU4Health grant - researcher on TOGAS study. R. Connaughton: None. O. Kelly: None. C. O'Morain: B.

Funding
Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Significant; EU4Health grant – PI.

P17.10.

HOW WELL OLGA AND OLGIM STAGES CAN PREDICT GASTRIC CANCER?

P. NAĻIVAIKO[1], *I. BOGDANOVA*[1,2], *I. LIEPNIECE-KARELE*[2], *I. POĻAKA*[1,3], *E. SYUNDYUKOV*[4], *I. TOLMANIS*[5], *Y. TARASENKO*[6], *L. MOROZOVA*[7], *S. ABDELMASSI*[8], *M. LEJA*[1,5]

[1]Institute of Clinical and Preventive Medicine and Faculty of Medicine, University of Latvia, Riga, Latvia; [2]Academic Histology Laboratory, Riga, Latvia; [3]Riga Technical University, Riga, Latvia; [4]Longenesis, Ltd., Riga, Latvia; [5]Digestive Diseases Centre GASTRO, Riga, Latvia; [6]Jiann-Ping Hsu College of Public Health, Georgia Southern University, Statesboro, GA, United States; [7]Hospital Jurmala, Jurmala, Latvia; [8]Riga 1st Hospital, Riga, Latvia

Objective: Only OLGA/OLGIM stages III-IV are considered high-risk lesions with a significant potential of progressing towards gastric cancer.
Materials and Methods: We conducted a retrospective cohort study by matching gastric adenocarcinoma cases registered in the Latvian Cancer Registry to the records in the pathology data base.
Results: Altogether 54 patients were available for the analysis; 38.9% were male. The mean age at the time gastric cancer detection 69.2 years, range 40-90. The median time between the index endoscopy and gastric cancer diagnosis was 1,403.5 days (IQR: 826.5-2793.3). Altogether 16 patients (29.6%) had dysplasia reported at one of the preceding endoscopies, of those 14 were low grade, and 2 high grade. Only 11 (20.4%) patients with gastric cancer had OLGA III-IV stages and 10 (18.5%) had OLGIM III-IV stages at the time of the index endoscopy. The majority of patients with gastric cancer had low-risk OLGA and OLGIM stages at their index endoscopy: 7 (13.0%) had OLGA 0, 17 (31.5%) had OLGA I, and 19 (35.2%) had OLGA II; while 12 (22.2%) had OLGIM 0, 15 (27.8%) OLGIM I, and 17 (31.5%) OLGIM II. Excluding cases with dysplasia reported during any of the preceding endoscopies did not make a substantial change in the OLGA and OLGIM stage distribution at the index endoscopy.
Conclusions: The majority of patients having undergone upper endoscopy before the diagnosis of gastric cancer were in low OLGA and OLGIM stages. The current study demonstrates that the assessment should not be solely based on OLGA or OLGIM staging.

Conflict of Interest
P. Naļivaiko: None. I. Bogdanova: None. I. Liepniece-Karele: None. I. Poļaka: None. E. Syundyukov: None. I. Tolmanis: None. Y. Tarasenko: None. L. Morozova: None. S. Abdelmassi: None. M. Leja: None.

P17.11.

HELICOBACTER PYLORI INFECTION INDUCES GASTRIC PRECANCEROUS LESIONS AND PERSISTENT EXPRESSION OF ANGPT2, VEGF-A AND TNF-A IN A MOUSE MODEL

W. MALESPÍN-BENDAÑA[1,2], *W. ALPÍZAR-ALPÍZAR*[3,4], *S. MOLINA-CASTRO*[1,4], *C. UNE*[1], *V. RAMÍREZ-MAYORGA*[1,5]

[1]Institute for Health Research (INISA), University of Costa Rica, San José, Costa Rica; [2]School of Biology, University of Costa Rica, San José, Costa Rica; [3]Centre for Research on Microscopic Structures (CIEMic), University of Costa Rica, San José, Costa Rica; [4]Department of Biochemistry, School of Medicine, University of Costa Rica, San José, Costa Rica; [5]Department Public Nutrition, School of Nutrition, University of Costa Rica, San José, Costa Rica

Objective: *Helicobacter pylori* colonizes the gastric mucosa and induces chronic inflammation. The infection can alter the gastric vasculature by the deregulation of angiogenic factors. This could be of pivotal importance during gastric cancer initiation and development. However, the molecules and mechanisms by which the bacteria induce early neovascularization in gastric mucosa, and how this influences the precancerous series of events that precede gastric cancer is not completely understood.

Materials and Methods: Female C57BL/6N mice were challenged with *H. pylori* SS1 strain, and euthanized after 5-, 10-, 20-, 30-, 40- and 50- weeks post infection. mRNA and protein expression, and immunohistochemical detection of Angpt1, Angpt2, VegfA, Tnf-a, bacterial colonization, inflammatory response, and gastric lesions were evaluated.
Results: A robust bacterial colonization was observed in 30 to 50 weeks-infected mice, which was accompanied by immune cell infiltration in the gastric mucosa. Compared to non-infected animals, *H. pylori*-colonized animals showed a concomitant upregulation in the expression of *Tnf-A*, Angpt2, and VegfA expression at the mRNA and protein levels. In contrast, Angpt1 mRNA and protein expression was downregulated in *H. pylori*-colonized mice.
Conclusions: Our data show that *H. pylori* infection induces the expression of Angpt2, *Tnf-A*, and Vegf-A in murine gastric epithelium. This may contribute to the pathogenesis of *H. pylori* associated gastritis, however the significance of this should be further addressed.

Conflict of Interest
W. Malespín-Bendaña: None. W. Alpízar-Alpízar: None. S. Molina-Castro: None. C. Une: None. V. Ramírez-Mayorga: None.

P17.12.

MYCOBIOME PROFILE ALTERATIONS IN GASTRIC TISSUE OF GASTRIC CANCER PATIENTS

D. NIKITINA[1], *K. LEHR*[2], *A. LINK*[2], *J. KUPCINSKAS*[1], *J. SKIECEVICIENE*[1]
[1]Lithuanian University of Health Sciences, Kaunas, Lithuania; [2]Otto-von-Guericke University Hospital, Magdeburg, Germany

Objective: Over the past decades, bacterial microbiome studies have become increasingly popular. Recently, studies of the human fungal mycobiome profile have been investigated. It has been shown that fungal profiles also vary according to human health status. The current study aimed to perform a mycobiome analysis of gastric cancer (GC) patients.
Materials and Methods: The study included 64 GC patients from whom both tumor and tumor-adjacent gastric tissue biopsies were obtained. DNA was extracted from the samples and the fungus-specific region of ITS2 was amplified and sequenced using the MiSeq platform. Bioinformatic and statistical analysis was performed to reveal the mycobiome profile alpha- and beta-diversity alterations between tumor and tumor-adjacent groups as well as according to patients' clinical data and previously analyzed microbiome profile.
Results: Global structures showed no significant differences between tumor and tumor-adjacent groups. No significant differences were found between the groups according to alpha diversity. However, comparative analysis revealed seven fungi at different taxonomic levels that differed significantly between groups. Only *Helotiales* was more enriched in tumor-adjacent tissues, while the other six fungal taxa (*Saccharomycetes, Saccharomycetales, Saccharomycetales fam Incertae sedis, Filobasidiales, Filobasidiaceae,* and *Candida albicans*) were more enriched in tumor tissues. Furthermore, the analysis revealed a correlation between certain parts of the myco- and microbiome and the association between the listed fungi and clinical data.
Conclusions: The mycobiome profile of GC patients differs depending on the presence of the tumor and its histological classification. There is a correlation between the myco- and microbiome composition of gastric tissue.

Conflict of Interest
D. Nikitina: None. K. Lehr: None. J. Kupcinskas: None. A. Link: None. J. Skieceviciene: None.

AUTHOR INDEX

L

M

N

KEYWORD INDEX

Helicobacter Test INFAI®

One of the most used ^{13}C-urea breath tests for the diagnosis of Hp-infections worldwide

- First approved Hp breath test at EMA in all EU countries (adults & children)
- More than 7.5 million Helicobacter Test INFAI performed worldwide
- Meanwhile registered in more than 40 countries worldwide
- Modified Hp breath test for patients taking PPIs (Refex)
- Modified Hp breath test for patients with atrophic gastritis (Refex)
- Serialization according the EU's Falsified Medicines Directive
- Cost-effective CliniPac Basic (50 patients) for hospital and GPs use

www.infai1.com

European Helicobacter & Microbiota Study Group

RICHEN MEDICAL SCIENCE

Lactotracker One H2 Breath test

The Lactotracker H2 Breath test102 has been developed to provide quick and reliable diagnosis of gastro-intestinal disorders measuring carbohydrate breakdown deficiencies and/or malabsorption. Particularly efficient for lactose intolerance screening, the Lactotest 102 also gives good indication of small intestinal bacterial overgrowth and evaluates intestinal transit time. The electrochemical H2 sensor with thermal compensation delivers a reliable, rapid and inexpensive system of measurement.

Lactotracker Plus H2 /CO2/CH4 Breath test

Hydrogen, methane and carbon dioxide breath test monitor

The Lactotracker Plus has been developed to provide quick and reliable diagnosis of gastro-intestinal disorders measuring carbohydrate breakdown deficiencies and/or malabsorption. Particularly efficient for lactose intolerance screening, the Lactotracker Plus also gives good indication of small intestinal bacterial overgrowth (SIBO) and evaluates intestinal transit time. The Lactotracker Plus range is composed of:

Lactotracker Plus (H2 + CO2 + CH4)

The electrochemical sensor with thermal compensation for H2 and infra-red analyzers for CH4 and CO2 deliver an accurate test measurement in less than one minute.

RICHEN MEDICAL SCIENCE 4A, Dian Tong Creative Square, No.7 Jiuxianqiao North Street Chaoyang District, Beijing, China