2° Tecnofarma Adium 2023 Summit

Tecnofarma Perú

Sobrecrecimiento bacteriano Del intestino delgado

William Otero R MD, FAGA, FASGE, FACP
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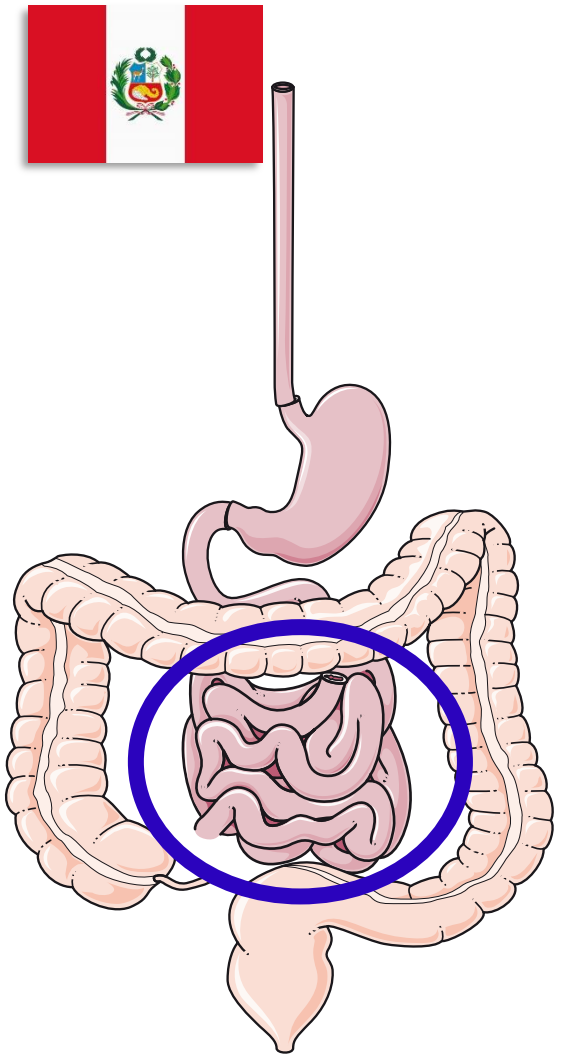
Universidad Nacional de Colombia
Hospital Universitario Nacional de Colombia



Gran impacto
Subdiagnosticado

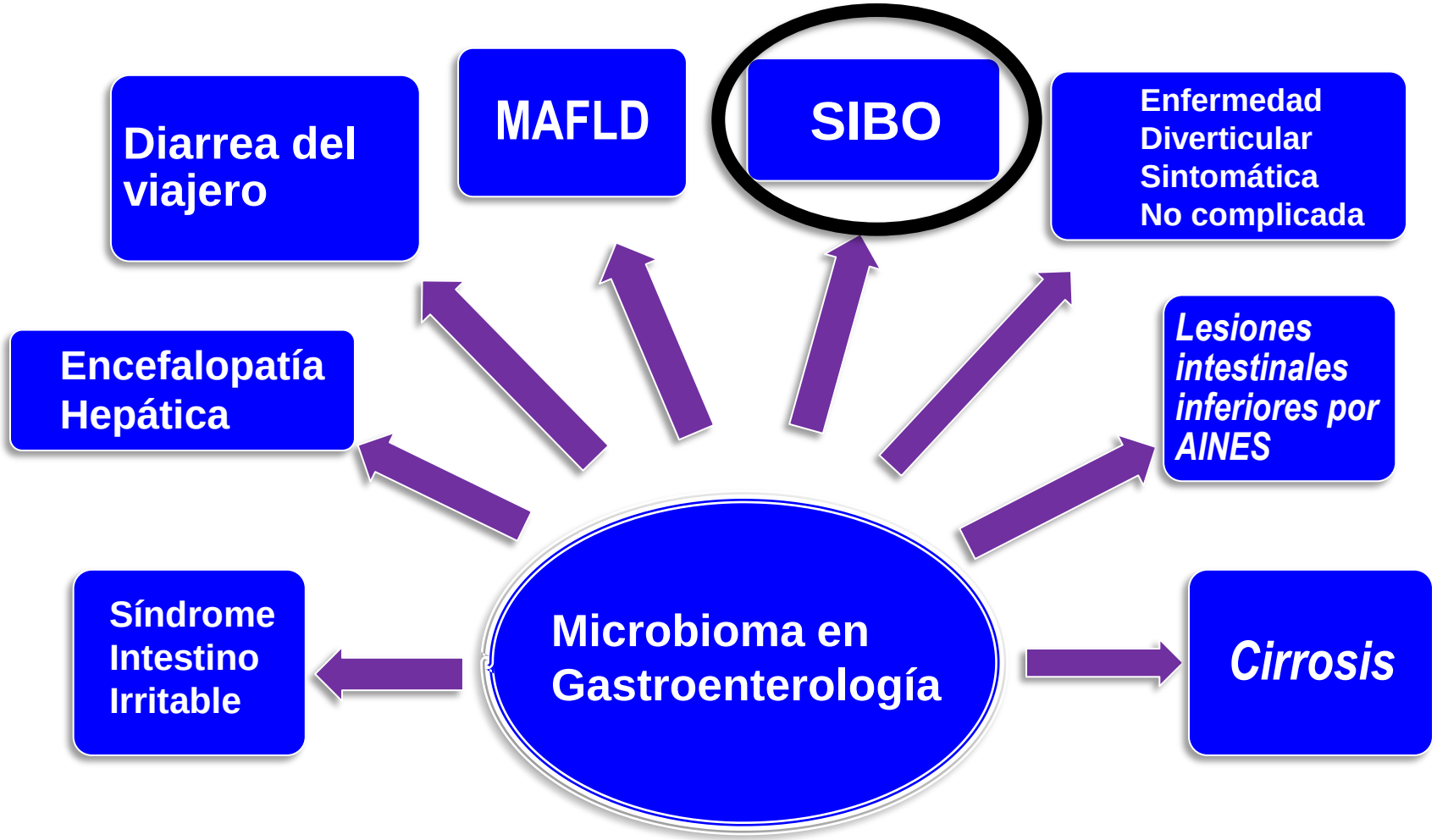
Conflicto de intereses
Conferencista, Bristol
Takeda, Abbott, Tecnoquimica
Tecnofarma, Menarini, Procaps

Esta actividad es asuspiciada por
Tecnofarma sin injerencia en su contenido

SIBO

1897, Faber
“Síndrome de asa ciega”

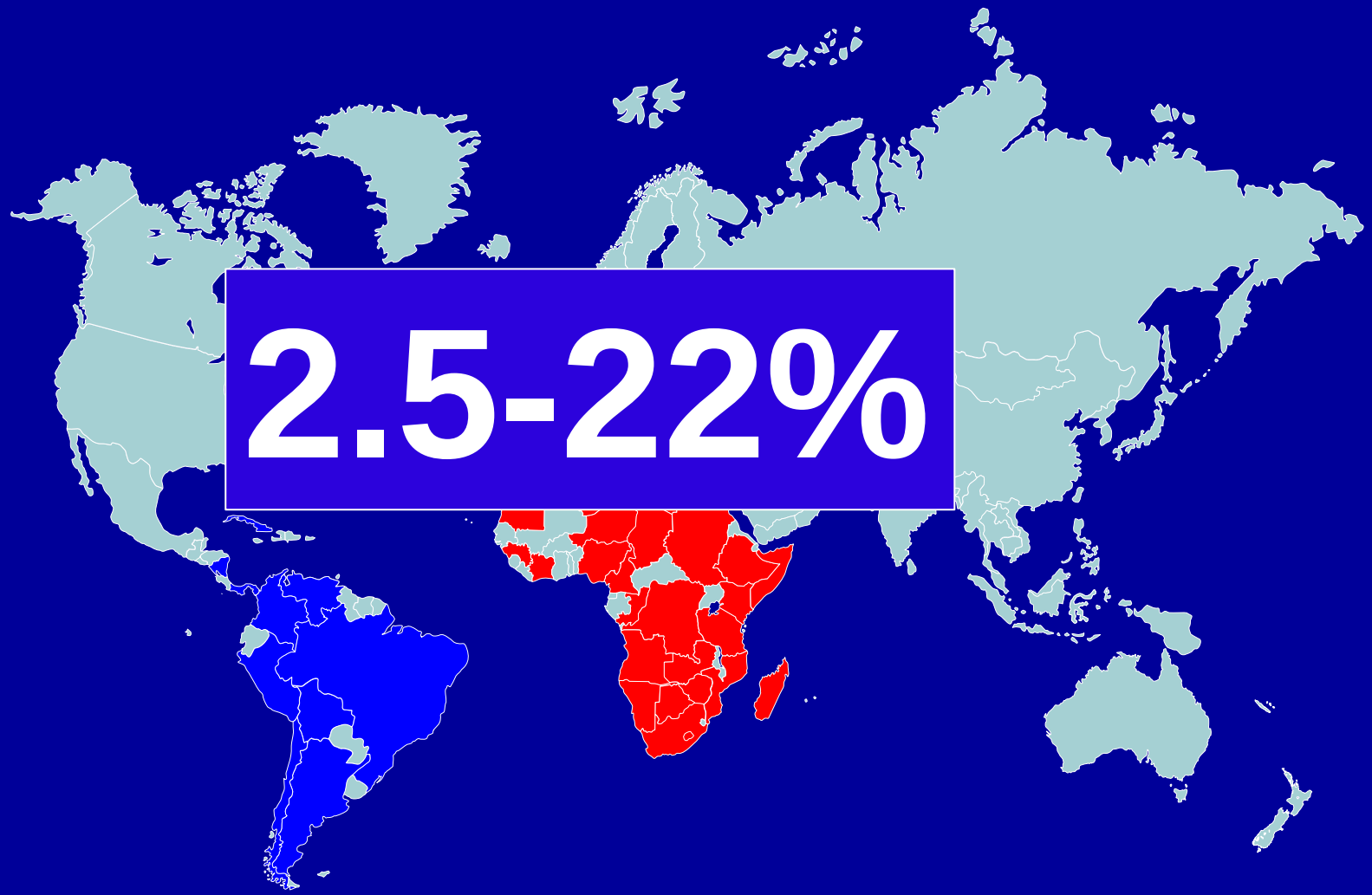
Barrett CR., Et al. Am. J. Med. 1966;41:629-37.
Neale G. et al. Am. J. Clin. Nutr. 1972;25:1409-17



Otero W, Otero L, Antibióticos intraluminales en Gastroenterología. McGrawHill 2016

Pimentel M, Am J Gastroenterol 2020;115;165-78
Liu J, Am J Gastroenterol 2022;117:1390-3

SIBO



Achufusi, TGO, et al. Cureus 2020;12:e8860
Grace, E, et al. Aliment. Pharmacol. Ther 2013;38:674-88.

M-SIBO asociado a CH4

IMO

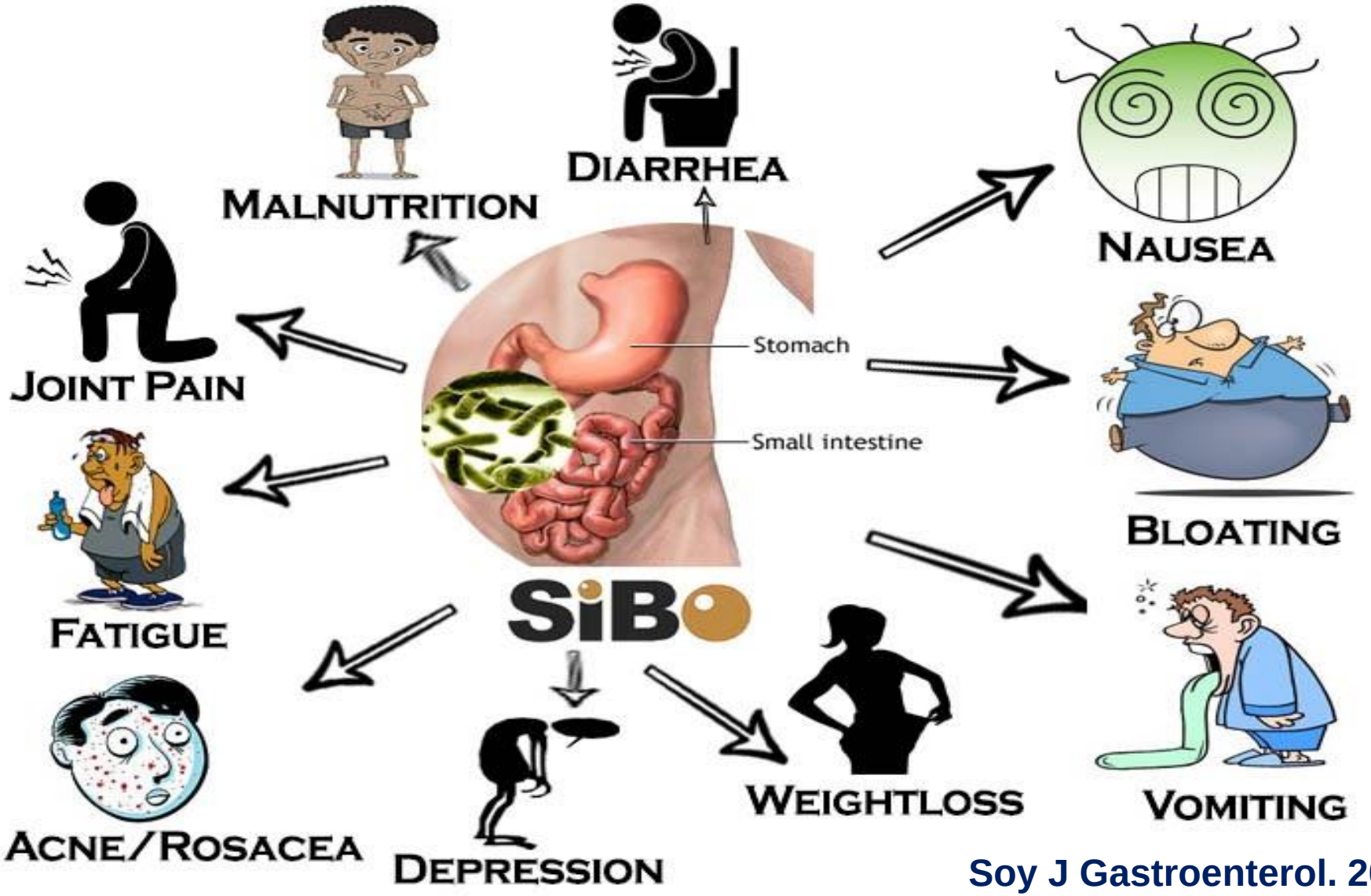
Methanosphaera stadtmaniae
Methanobrevibacter smithii

Estreñimiento

Neurotransmisor anticolinérgico Sistema nerviosos entérico

Pimentel M, Am J Physiol Gastrointest Liver Physiol 2006;290:G1089-95
Park YM, Neurogastroenterol Motil 2017;29:e113077
Suri J, Med (Baltimore) 2018;97:10554

Manifestaciones Clínicas

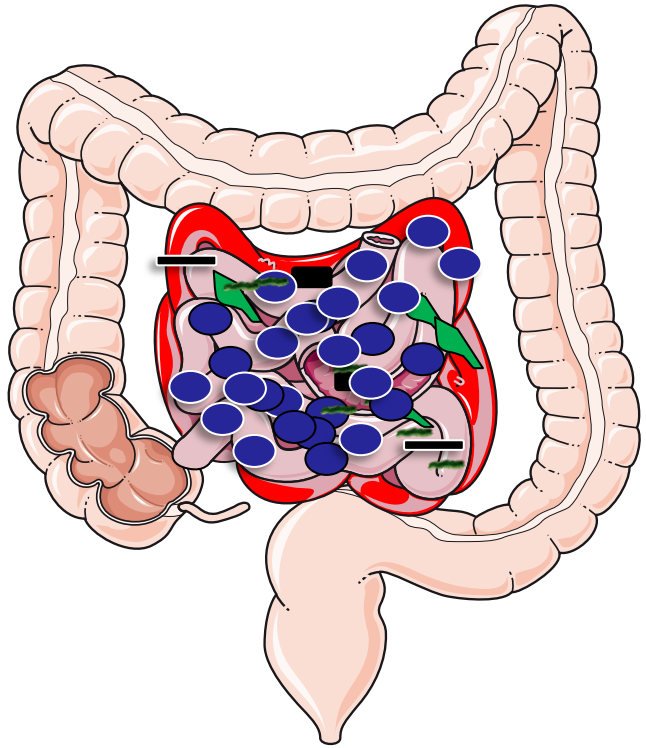


Soy J Gastroenterol. 2020; 115: 165-178.

Sobre-crecimiento bacteriano del ID (SIBO)

- Diarrea
- Mala digestión
- Esteatorrea
- **Severos**
  Mala absorción
  A,D,E, hierro, B12,
  Acido fólico, K
- Enteropatía proteínas

Aeróbicas
Anaeróbicas

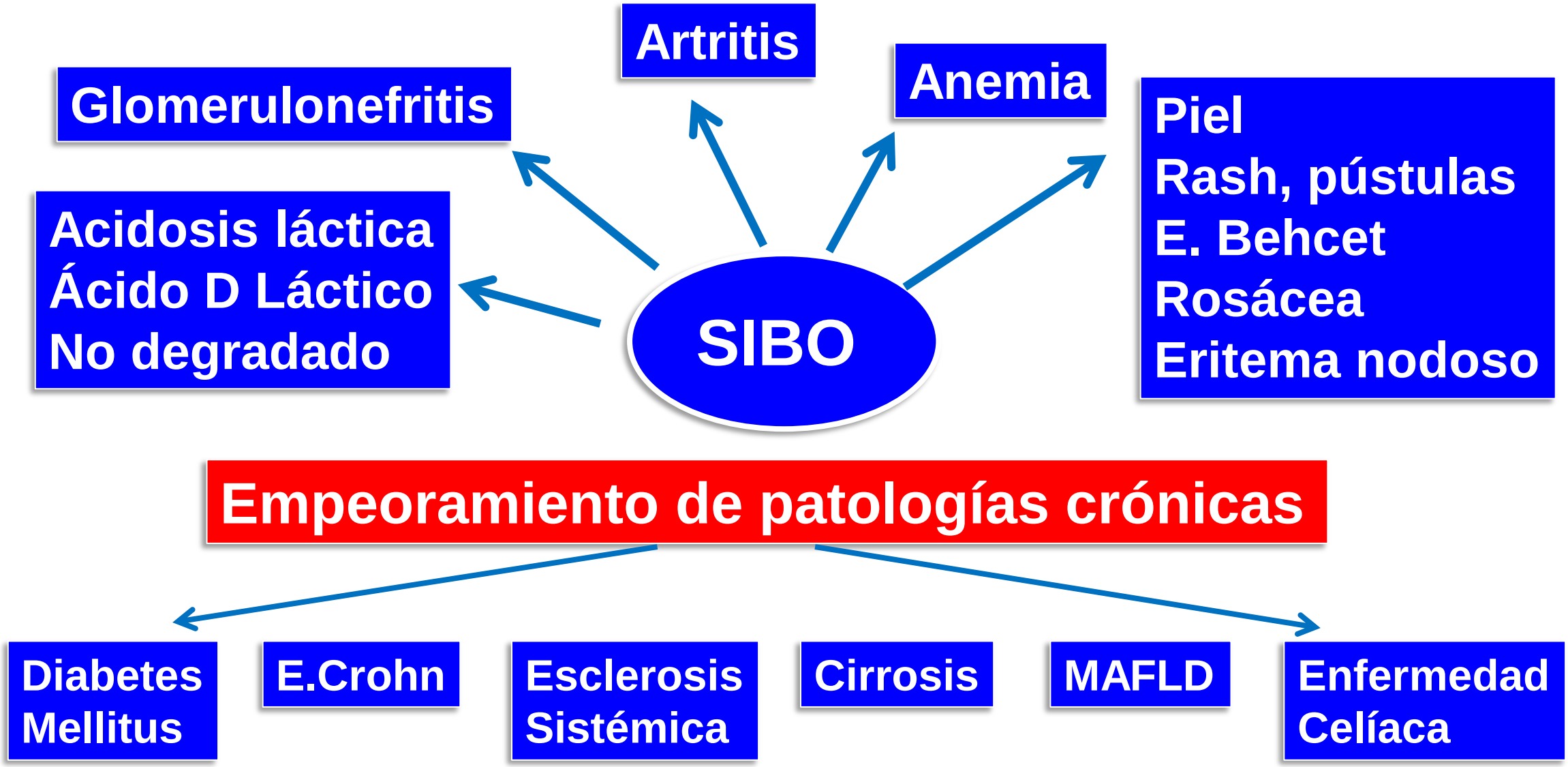


- Dolor abdominal
- Bloating
- Sensación llenura
- Diarrea, estreñimiento
- Flatulencia
- Debilidad

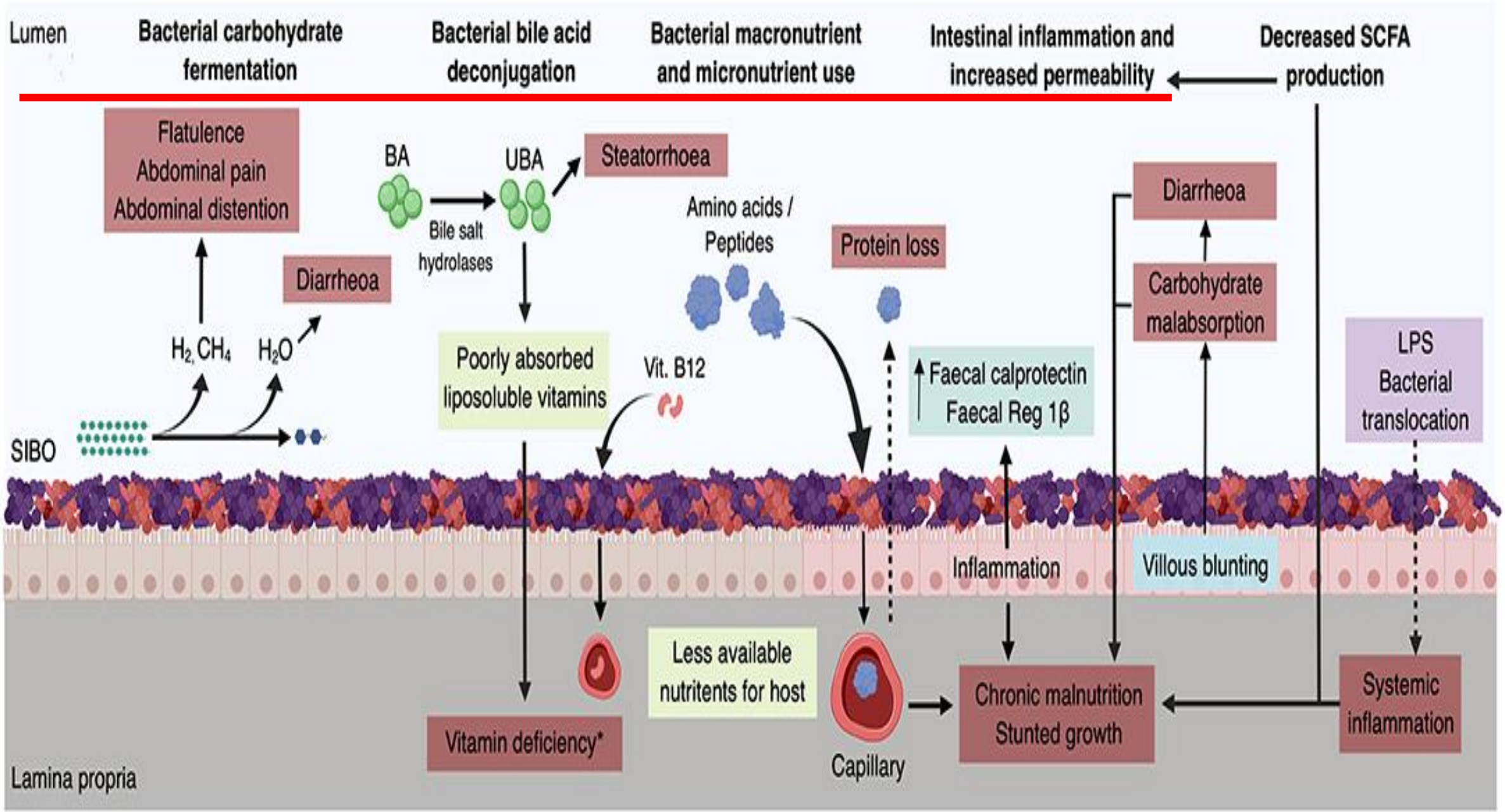
73%

- No mala-absorción
- Inducir,
  Exacerbar
  Enfermedades
  Subyacentes

Bushyhead D, Gastroenterology 2022;163:593–607
Skrzydło-Radomanska B, J Clin Med 2022;11:6017



Otero W, Otero L, Enfermedades Digestivas, McGrawHill México 2016
Rezaie A, Curr Gastroenterol Rep 2016;18:8



Soy J Gastroenterol. 2020; 115: 165-178.

Condiciones Asociadas con Sobrecrecimiento Intestinal

Category	Specific condition
Mechanical causes	Small bowel tumor Volvulus Intussusception Postsurgical causes
Systemic disease	Diabetes Scleroderma Amyloidosis
Motility	IBS Pseudo-obstruction Visceral myopathies Mitochondrial diseases
Medications	Opiates Potent antisecretory agents
Malabsorptive conditions	Pancreatic insufficiency Cirrhosis (altered bile acid composition) Other malabsorptive conditions
Immune-related	Human immunodeficiency virus Combined variable immunodeficiency IgA deficiency
Other	Aging (the elderly) Small bowel diverticulosis

PimentelM, Am J Gastroenterol 2020;115:165-78.

SIBO: Afecta la salud pública!

Entidades	%
Síndrome de Intestino irritable	30-85%
Enfermedad celíaca	9-55%
E. De Crohn	25%
MAFLD/NASH	>50%
Esclerodermia	90%
Diabetes mellitus	60%
Cirrosis	60%
Fibromialgia	100%
Pancreatitis crónica Obesidad EII	92% 60% 22%

Otero W, Otero L. McGraw Hill México 2016
Forsmark CE. Curr Treat Options Gastroenterol. 2018;16:306–15

Systematic review and meta-analysis: the prevalence of small intestinal bacterial overgrowth in inflammatory bowel disease

Ayesha Shah[1,2,3] | Mark Morrison[4] | Daniel Burger[1,2] | Neal Martin[1,2] | Justin Rich[1,2] | Mike Jones[5] | Natasha Koloski[2,4] | Marjorie M. Walker[6] | Nicholas J. Talley[6] | Gerald J. Holtmann[1,2,3]

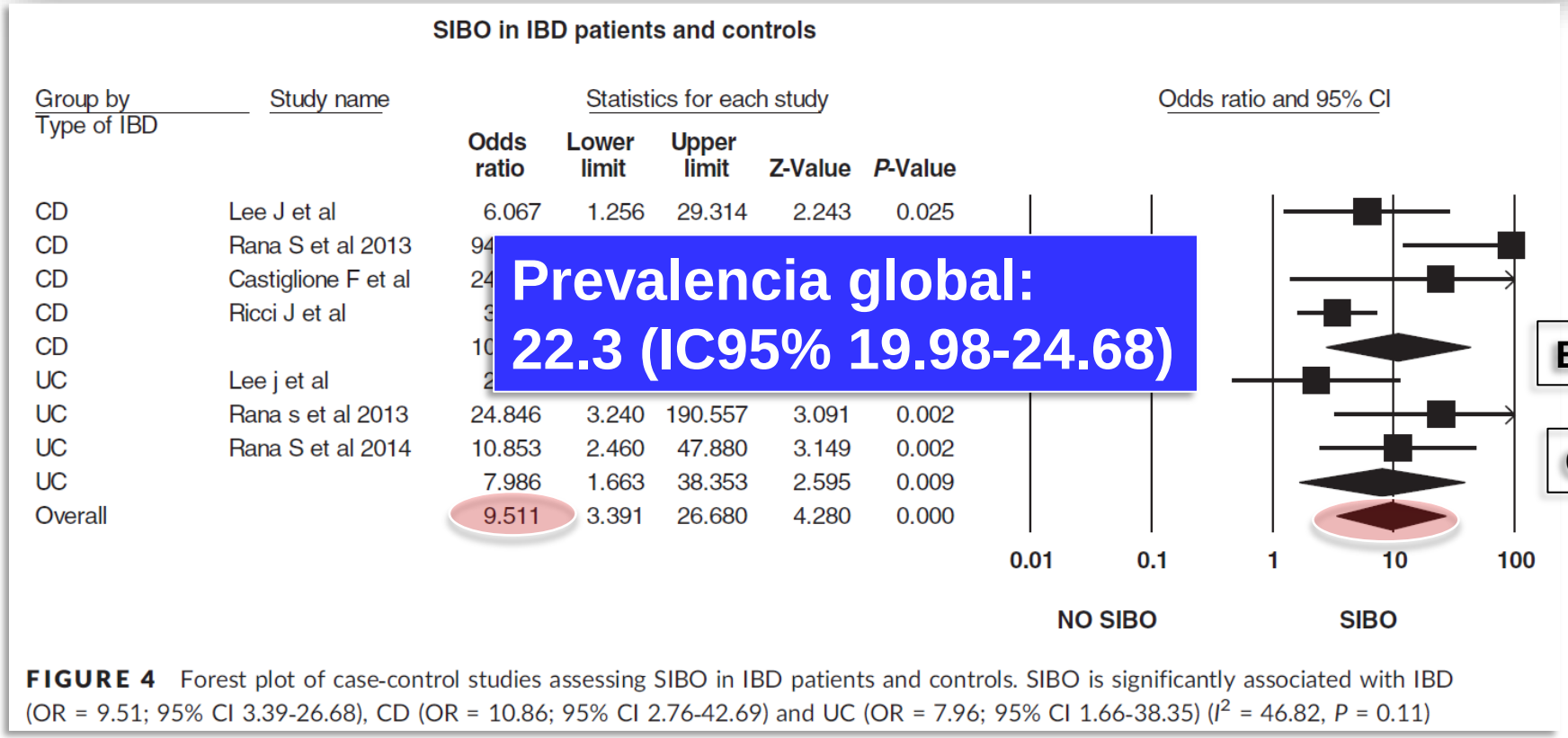
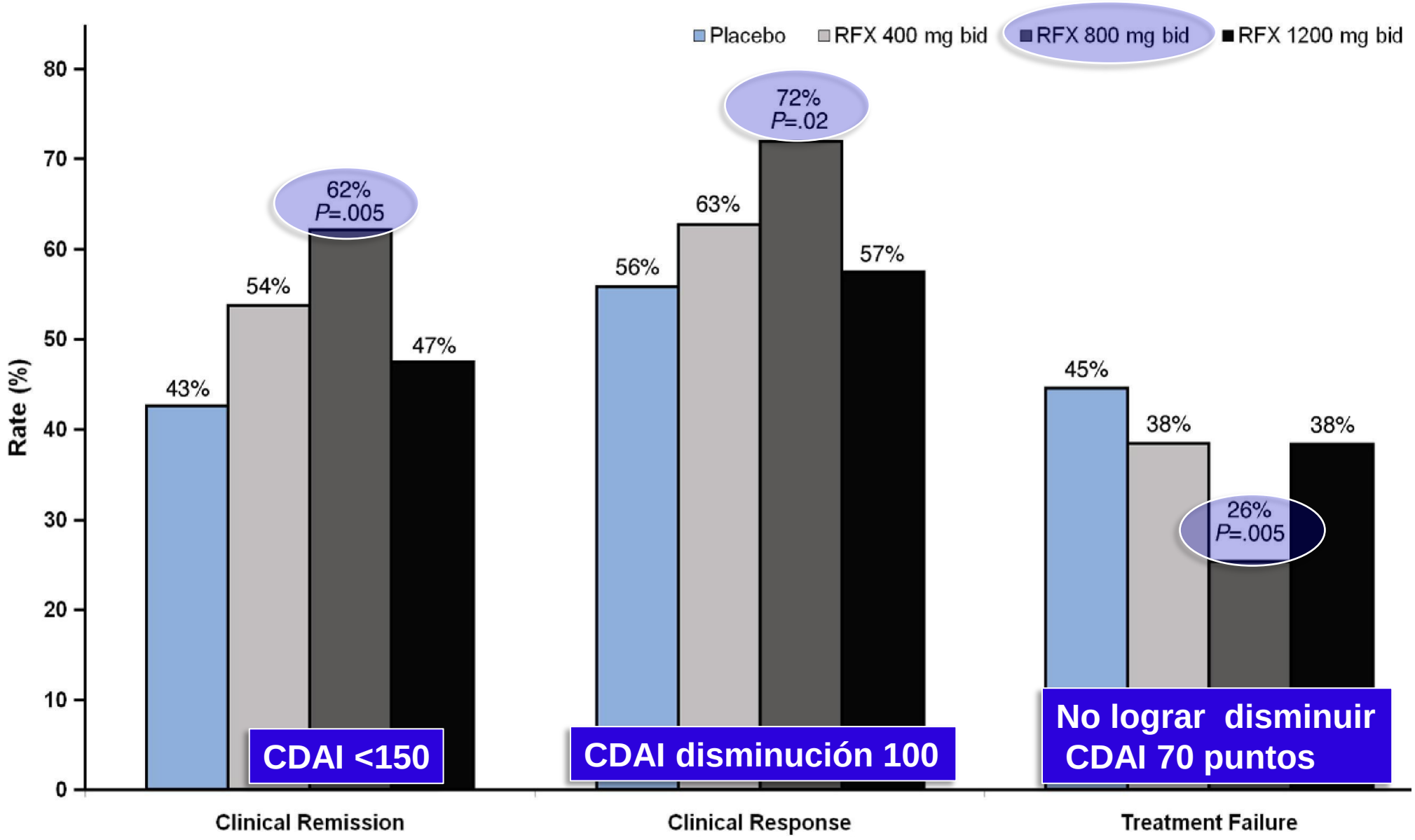


FIGURE 4 Forest plot of case-control studies assessing SIBO in IBD patients and controls. SIBO is significantly associated with IBD (OR = 9.51; 95% CI 3.39-26.68), CD (OR = 10.86; 95% CI 2.76-42.69) and UC (OR = 7.96; 95% CI 1.66-38.35) (I^2 = 46.82, P = 0.11)

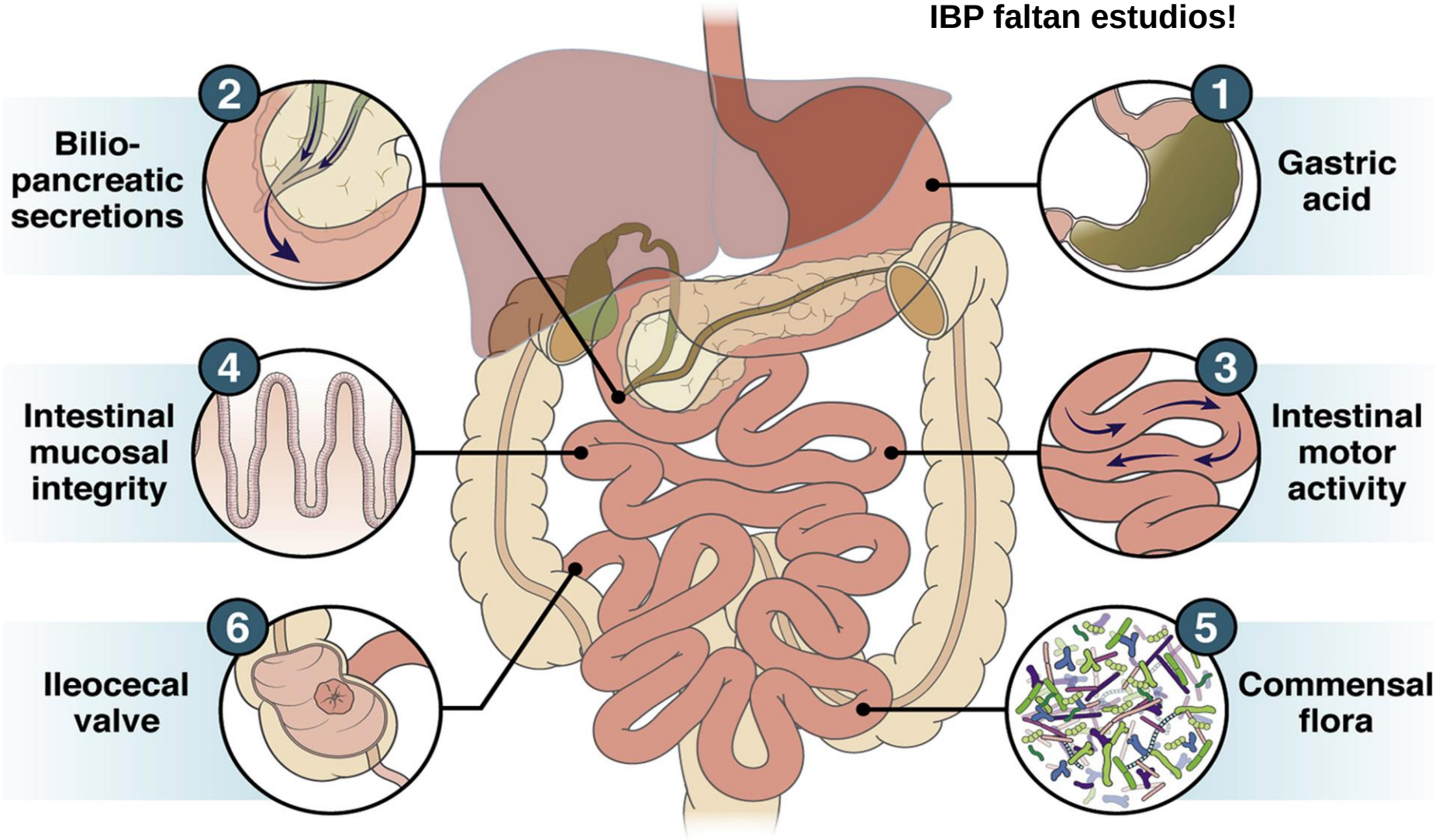
Shah A, Aliment Pharmacol Ther. 2019;49:624-635



Prantera C, Gastroenterology 2012;142:473-81

Factores protectores para SIBO

Su T, J Gastroenterology 2018;8:53:27-36
IBP faltan estudios!



Bushyhead D, Gastroenterology 2022;163:593–607

SIBO

Estasis del Intestino delgado

Causas anatómicas
Diverticulosis ID
Asas ciegas QX
Estenosis: cirugía
Crohn, radioterapia
Motilidad Alterada
Diabetes mellitus
Esclerodermia
Crohn radioterapia

Comunicación anormal GI superior-GI inferior

Fístulas
Gastro-cólica
Yeyuno-cólica
Resección válvula ileocecal

Roland BC, Dig Dis Sci 2014;59:1269-75
Bures J, World J Gastroenterol 2010;16:2978-86
Miazga A, Adv Med sci 2015:60:118-24

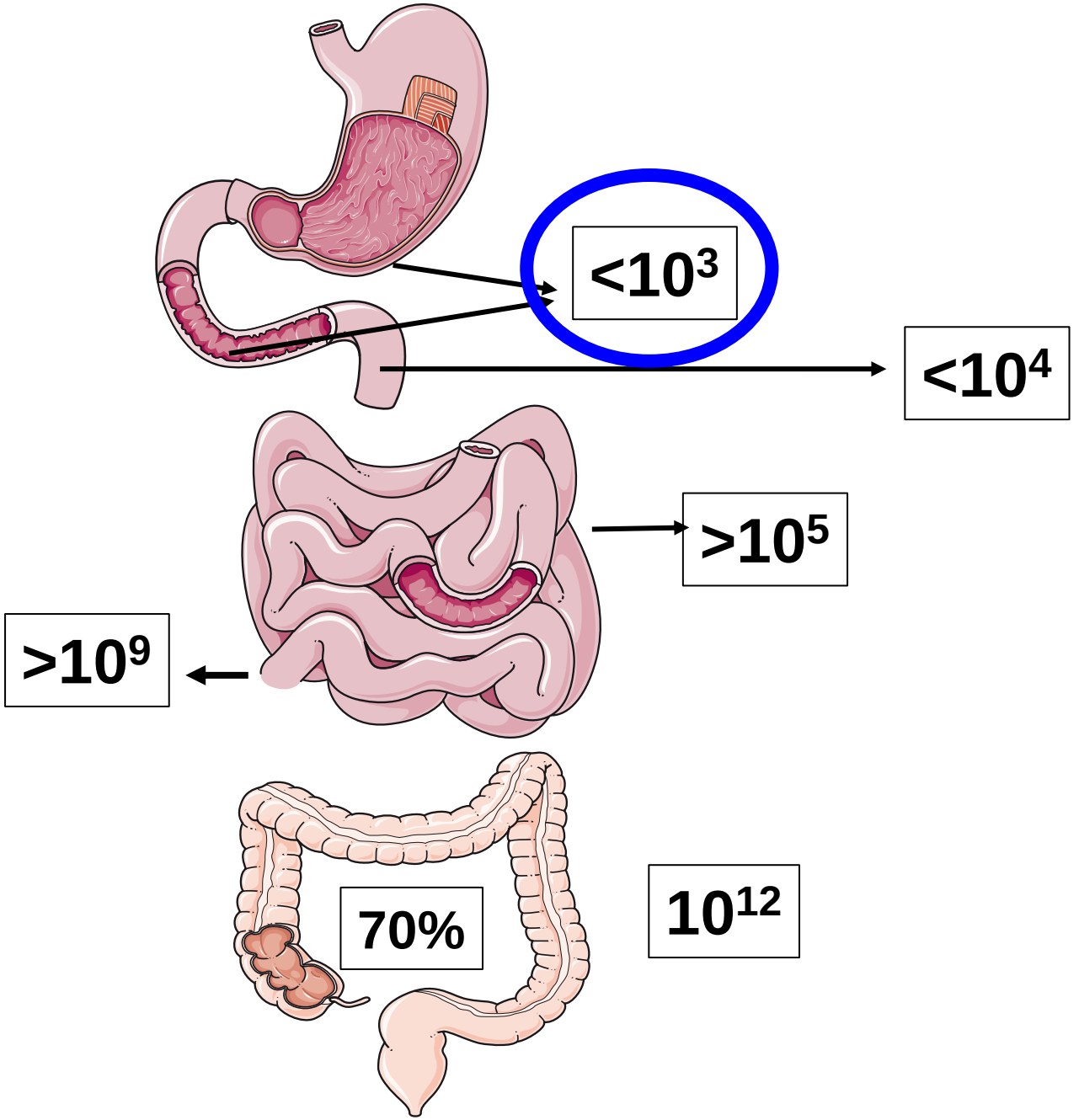
SIBO Diagnóstico

Diagnóstico

Cultivo aspirado de Intestino delgado

Test respiratorio de hidrogeno espirado (TRHE)

Prueba Terapéutica



Ginnebaugh B, Gastroenterol Clin N Am 2020;49:571–587

$>10^3$

Rao SSC, Clin Trans Gastroenterol 2019;10:e00078
Ginnebaugh B, Gastroenterol Clin N Am 2020;49:571–587

SIBO: diagnóstico

Cultivo de aspirado de yeyuno

>10^3 bacterias /mL, Antes 10^5

Cuestionado

Endoscopia alta

Técnicas microbiológicas estrictas, falsos (+)

El sobrecrecimiento es en parches, falsos (-)

Pobre reproductibilidad

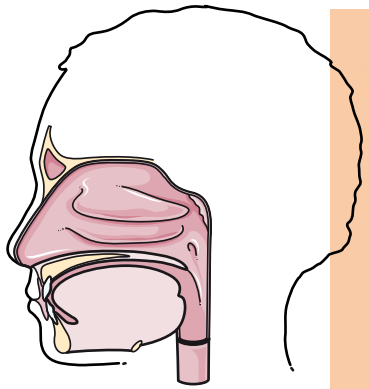
Test respiratorio de H_2, CH_4

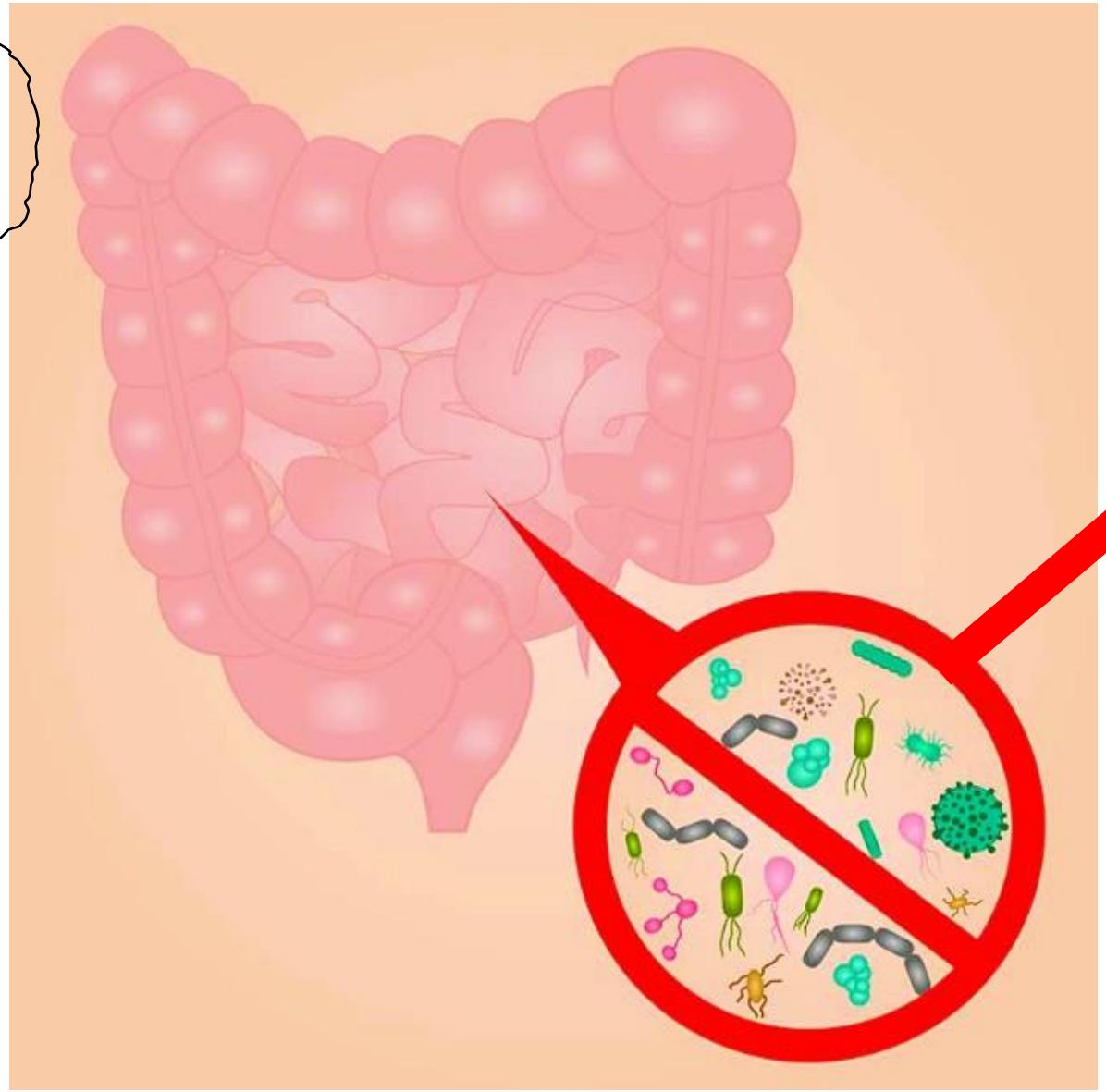
Yamini D, J Clin Gastroenterol 2010;44:672-5

Baker JC, Am J Gastroenterol 2015;110:S1004

Erdogan A, Neurogastroenterol Motil 2015;27:481-9

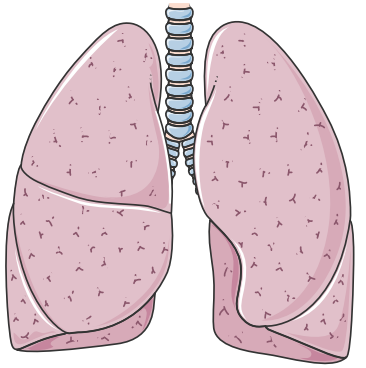
Carbohidratos





9-16% población asintomática

H_2, CH_4

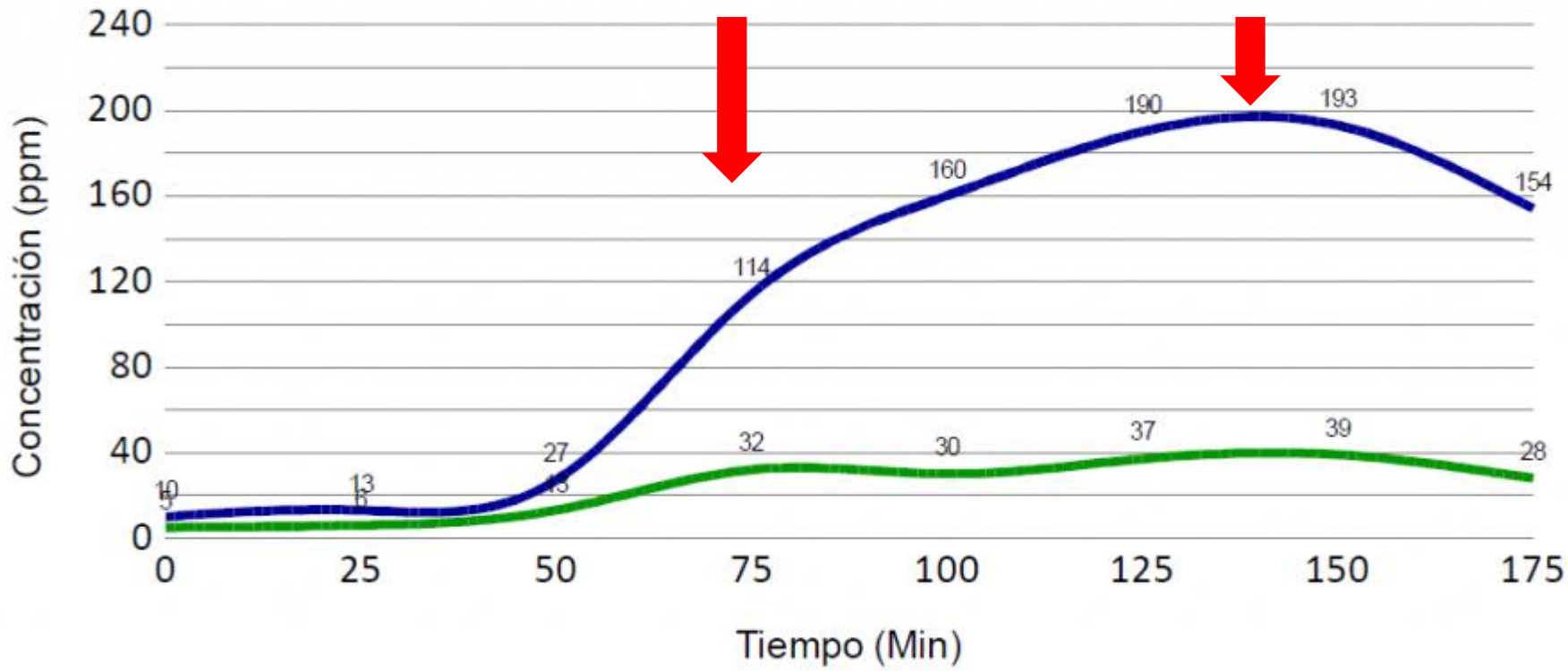


H_2S

Hylemon PB, FEBS Lett 2018;592:2070–82
Takakura W, et al. Front Psychiatry 2020:11.

Test de aliento

H_2 y CH_4 en función del tiempo



H2 >20 ppm

CH4 >10 ppm

H2S

Pimentel M, Am J Gastroenterol. 2020;115:165-178.

Table 1. Recommended preparation for breath testing.

Period before the Breath Test	Drugs/Activities to Be Avoided
4 weeks	Oral or intravenous antibiotics Prokinetic agents
2 weeks	Probiotics
1 week	Proton pump inhibitors
48 h	Motility regulators: loperamide, metoclopramide, trimebutine
24 h	Alcohol Fiber (particularly non-soluble fiber)
12 h	Oral food intake (only water is allowed)
The morning on the day of the test	Smoking Physical exertion Food Regularly used medications are allowed

Massey, BT. Dig Dis. Sci 2021;66: 338-47.
Camilleri M, et al. Dig. Dis. Sci 2021:66:331-33

Rendimiento

Diagnostic tests for SIBO	Reference standard	Sensitivity/specificity	Limitations
Small bowel culture	Not established	Not established	Specimen contamination by oropharyngeal flora Invasive Cost False negative from patchy distribution of SIBO Lack of standardized methodology
Glucose hydrogen breath test	Small bowel culture	20%–93%/30%–86%	Need for strict dietary modification False positive from glucose malabsorption
Lactulose hydrogen breath test	Small bowel culture	31%–68%/30%–86%	Need for strict dietary modification False positive from accelerated orocecal transit time

Bushyhead D, Gastroenterology 2022;163:593–607

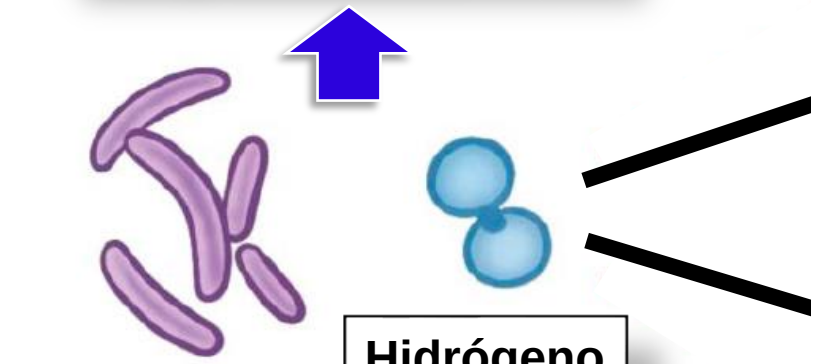
Test de aliento

	%SE	%ESP	VPP	VPN	Precisión Diagnostica %
Glucosa	**62.5**	**81.8**	**80.0**	**65.5**	**71.7**
Lactulosa	**52.4**	**85.7**	**61.5**	**53.6**	**55.3**

Pimentel M, Am J Gastroenterol. 2020;115:165-78.

Dinàmica incompleta de la Fermentaciòn intestinal

No correlación entre H2 y Síntomas



Hidrógeno H2

Productoras Hidrógeno

Pimentel M, Am J Gastroenterol 2020;115:165-78

No FDA

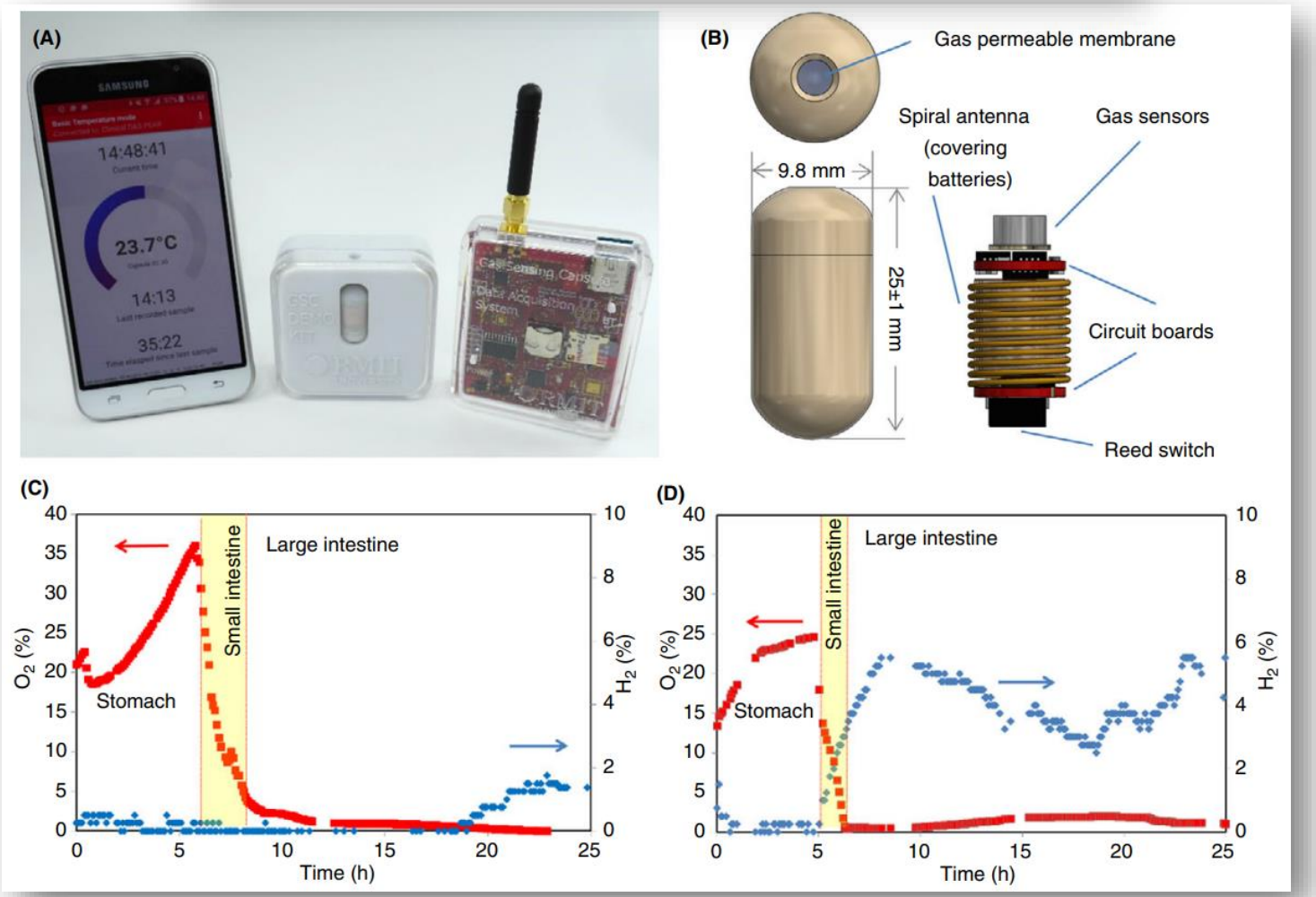
Table 2. Comparison of commercial entity diagnostic criteria for the positive diagnosis of intestinal overgrowth[a]

	Commercial diagnostic cutoffs for intestinal overgrowth	Cutoffs in concordance with the ACG guidelines?	Length of test and other notes	Out-of-pocket cost[b]
Aerodiagnostics	H_2: Change from baseline ≥20 CH_4: Rise ≥12 ppm $H_2 + CH_4$: Level ≥15 ppm "may be suggestive" of SIBO	No	180 min (CH_4 level ≥3 ppm with presence of constipation suggestive of SIBO)	$209.74 (continental US) $260.00 (outside continental US)
Commonwealth Diagnostics International, Inc.	H_2: Change from baseline ≥20 ppm CH_4: ≥10 ppm at 90 min $H_2 + CH_4$: Change from baseline ≥15 ppm	No	135 min	$175.00
Gemelli (trio-smart)	H_2: Change from baseline ≥20 ppm CH_4: Level ≥10 ppm at any time H_2S: ≥3 ppm at any time	Yes	120 min Offers telehealth service to guide use	$289.00
Genova Diagnostics	H_2: Change from baseline ≥20 ppm CH_4: Level ≥10 ppm	Yes	120 or 180 min Lists $H_2 + CH_4$ level, but this is not a diagnostic criterion	$235.00 (listed on third-party site)
Metabolic Solutions, Inc.	H_2: Change from baseline ≥20 ppm CH_4: Change from baseline ≥10 ppm	No	90 min glucose BT only	$159.00
QuinTron	H_2: Change from baseline ≥20 ppm CH4: Level ≥12 ppm $H_2 + CH_4$ ≥ 15 ppm (12) "may suggest the presence" of SIBO	No	180 min Glucose BT only Portable analyzer available for purchase	$215.00

Liu JJ, Am J Gastroenterol 2022;117:1390-93.

The safety and sensitivity of a telemetric capsule to monitor gastrointestinal hydrogen production in vivo in healthy subjects: a pilot trial comparison to concurrent breath analysis

Kyle J. Berean[1] | Nam Ha[1] | Jian Zhen Ou[1] | Adam F. Chrimes[1] | Danilla Grando[2] | Chu K. Yao[3] | Jane G. Muir[3] | Stephanie A. Ward[4] | Rebecca E. Burgell[3] | Peter R. Gibson[3] | Kourosh Kalantar-Zadeh[1,5]



Aliment Pharmacol Ther. 2018;48:646–654

SIBO en el Mundo real

Síntomas
Bloating Diarrea
Dolor abdominal,
Perdida de peso

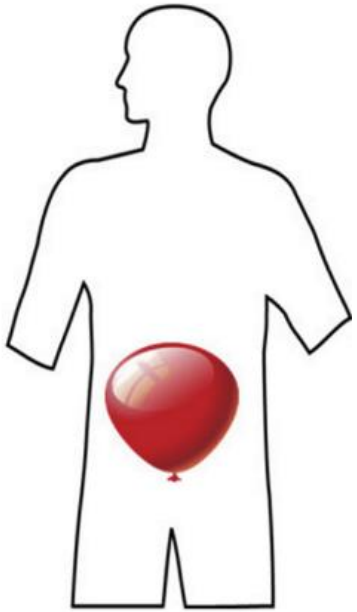
+

Condiciones Predisponentes

Tratamiento Antibióticos

Piedra angular

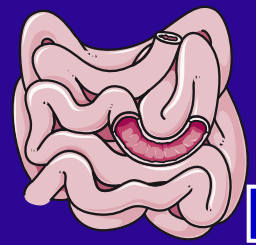
Surgimiento resistencia Bacteriana, *C. difficle*



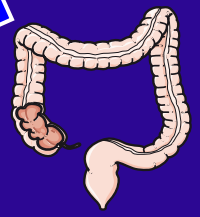
Yamini D, J Clin Gastroenterol 2010;44:672-5
Baker JC, Am J Gastroenterol 2015;110:S1004
Rezaíe A, Curr Gastroenterol Rep 2016;18:8

Rifaximina

Antibiótico acción tópica.



550 mg cada 8 horas/14 días



Microbioma

SIBO

G (+)
G (-)
Aerobios
Anaerobios

Ford AC, et al, Am J Gastroenterol 2018;113:1-18.
Rezaie A, Am J Gastroenterol 2019;114:1886–1893
Black CJ, et al, Gut 2019;0:1–9
Pimentel M, et al, N Engl J Med 2011;364:22-32.

Rifaximina

Mùtiples efectos biològicos

Actúa tópicamente
Reduce virulencia ciertas bacteria
Reduce unión bacteria-mucosa
Eubiótico
>>> *Lactobacilo*
>>> *Bifidobacterium*
>>> *Faecalobacterium prausnitzii*

Chey WD, Therap Adv Gastroenterol 2020;13:1756284819897531
Ponziani FR, Dig Dis 2016;34:269-78
Ponziani FT, *World J Gastroenterol* 2017; 23: 4491-4499

Rifaximina, "eubiótico"

<<<Roseburia
<<<Haemophilus
<<<Veillonela
<<<Streptococcus

Ponziani FR, World J Gastroenterol 2017;23:4491-9

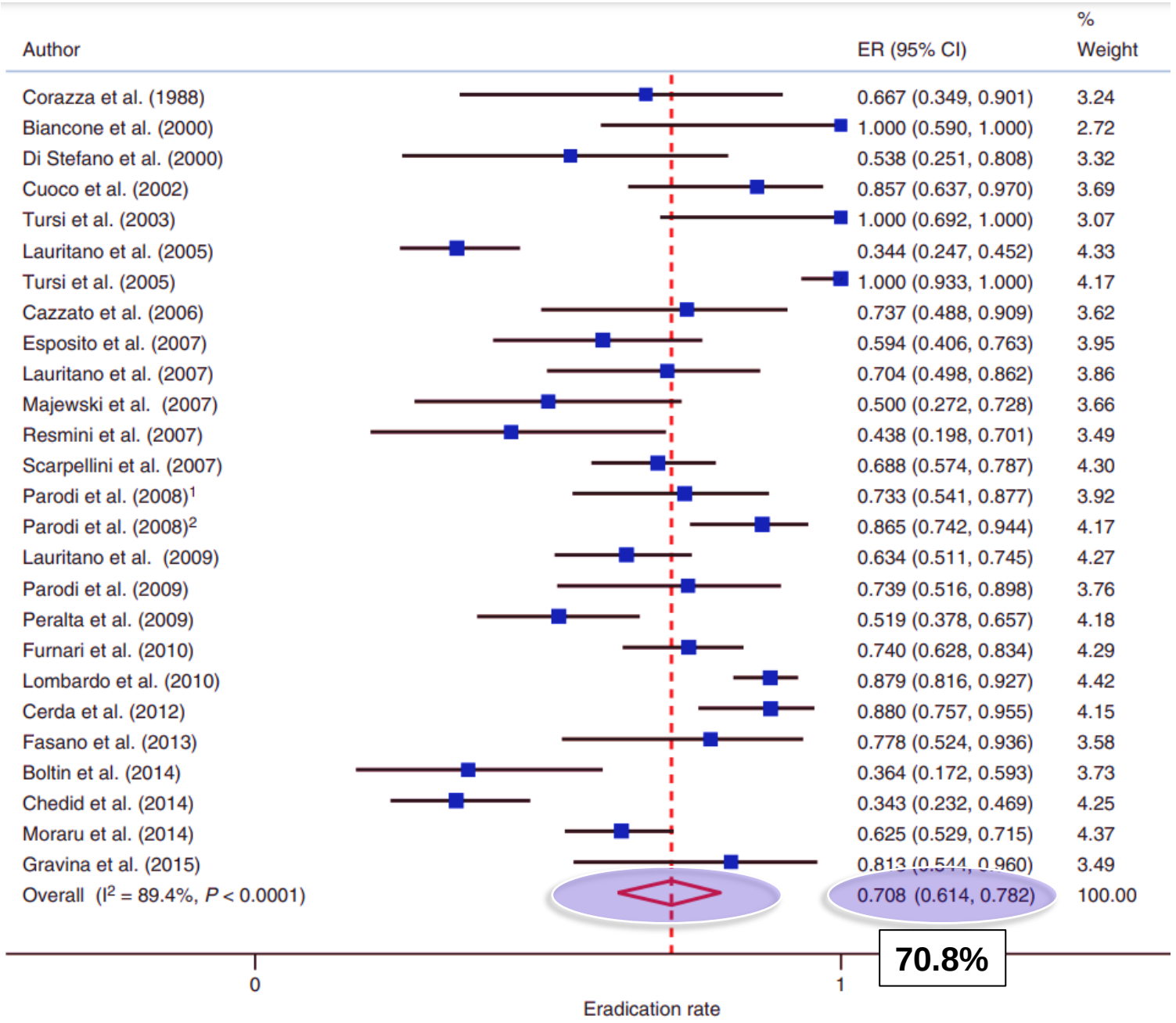
AP&T Alimentary Pharmacology and Therapeutics

Systematic review with meta-analysis: rifaximin is effective and safe for the treatment of small intestine bacterial overgrowth

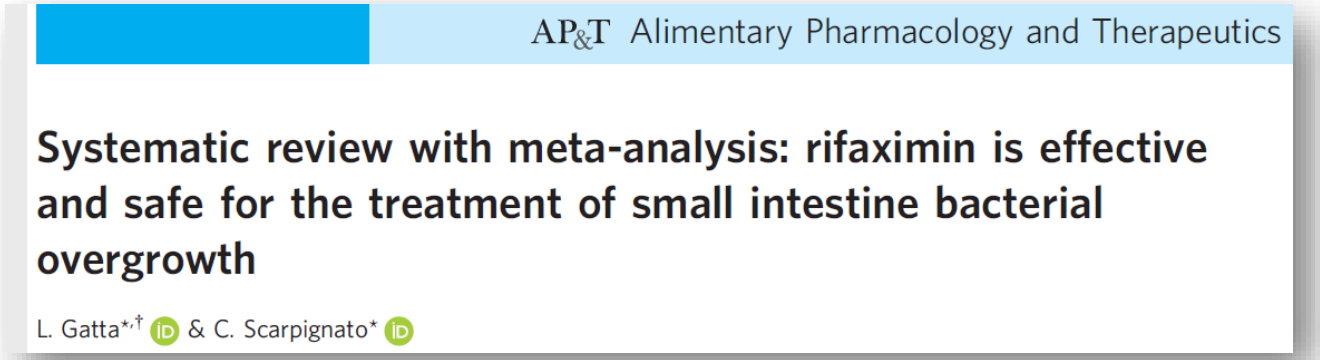
L. Gatta*,† & C. Scarpignato*

Gatta L, Aliment Pharmacol Ther 2017; 45: 604-16

Rifaximina, SIBO-ITT



Gatta L, Aliment Pharmacol Ther 2017; 45: 604-16



Rifaximina 1200 mg 7 días

Clortetraciclina 350 mg 3v/d 7d
Metronidazol 750mg/d 7d

61% (IC95% 51-71.6)

24%

37.6% (IC21.1-55.6)

RR 1.50 (IC95%1.11-2.04)

Gatta L, Aliment Pharmacol Ther 2017; 45: 604–616

Rifaximina

	Treatment Efficacy, %	Adverse Events, %
Total daily dosage, mg		
600	16.7	10
800	50–100	3–13
1200	34–87	2–8
1600	80	15
Duration of therapy, d		
5	66.7	Not reported
7	16–80	8.8–13.0
10	33–100	3.5
14	87	2–4.7
28	34	3.6–9.0

Ginnebaugh B, Gastroenterol Clin N Am 2020;49:571–587

SIBO

Antibióticos, 7-10 días.
Amoxicilina/clavulanato 30 mg/kg/día
Ciprofolxacina
Norfloxacina 800 mg/día
Metronidazol 20 mg/kg/dia +
Cefalexina/TMT-SP
Prebióticos Probióticos, : Faltan estudios

Pimentel M, Up To date 2019.
Rezaie A, Curr Gastroenterol Rep 2016;18:8

Brain fogginess, gas and bloating: a link between SIBO, probiotics and metabolic acidosis

Satish S. C. Rao, MD, PhD, FRCP (LON)[1], Abdul Rehman, MD[1], Siegfried Yu, MD[1] and Nicole Martinez de Andino, ARNP[1]

Background: D-lactic acidosis is characterized by brain fogginess (BF) and elevated D-lactate and occurs in short bowel syndrome. Whether it occurs in patients with an intact gut and unexplained gas and bloating is unknown. We aimed to determine if BF, gas and bloating is associated with D-lactic acidosis and small intestinal bacterial overgrowth (SIBO).

Methods: Patients with gas, bloating, BF, intact gut, and negative endoscopic and radiological tests, and those without BF were evaluated. SIBO was assessed with glucose breath test (GBT) and duodenal aspiration/culture. Metabolic assessments included urinary D-lactic acid and rblood L-lactic acid, and ammonia levels. Bowel symptoms, and gastrointestinal transit were assessed.

Results: Thirty patients with BF and 8 without BF were evaluated. Abdominal bloating, pain, distension and gas were the most severe symptoms and their prevalence was similar between groups. In BF group, all consumed probiotics. SIBO was more prevalent in BF than non-BF group (68 vs. 28%, $p = 0.05$). D-lactic acidosis was more prevalent in BF compared to non-BF group (77 vs. 25%, $p = 0.006$). BF was reproduced in 20/30 (66%) patients. Gastrointestinal transit was slow in 10/30 (33%) patients with BF and 2/8 (25%) without. Other metabolic tests were unremarkable. After discontinuation of probiotics and a course of antibiotics, BF resolved and gastrointestinal symptoms improved significantly ($p = 0.005$) in 23/30 (77%).

Conclusions: We describe a syndrome of BF, gas and bloating, possibly related to probiotic use, SIBO, and D-lactic acidosis in a cohort without short bowel. Patients with BF exhibited higher prevalence of SIBO and D-lactic acidosis. Symptoms improved with antibiotics and stopping probiotics. Clinicians should recognize and treat this condition.

Rao S, et al. Clin Transl Gastroenterol 2018; 9:162

CLINICAL GUIDELINES

ACG Clinical Guideline: Small Intestinal Bacterial Overgrowth

Mark Pimentel, MD, FRCP(C), FACG[1], Richard J. Saad, MD, FACG[2], Millie D. Long, MD, MPH, FACG (GRADE Methodologist)[3] and Satish S. C. Rao, MD, PhD, FRCP, FACG[4]

Test respiratorio CH4 positivo

↓

IMO

↓

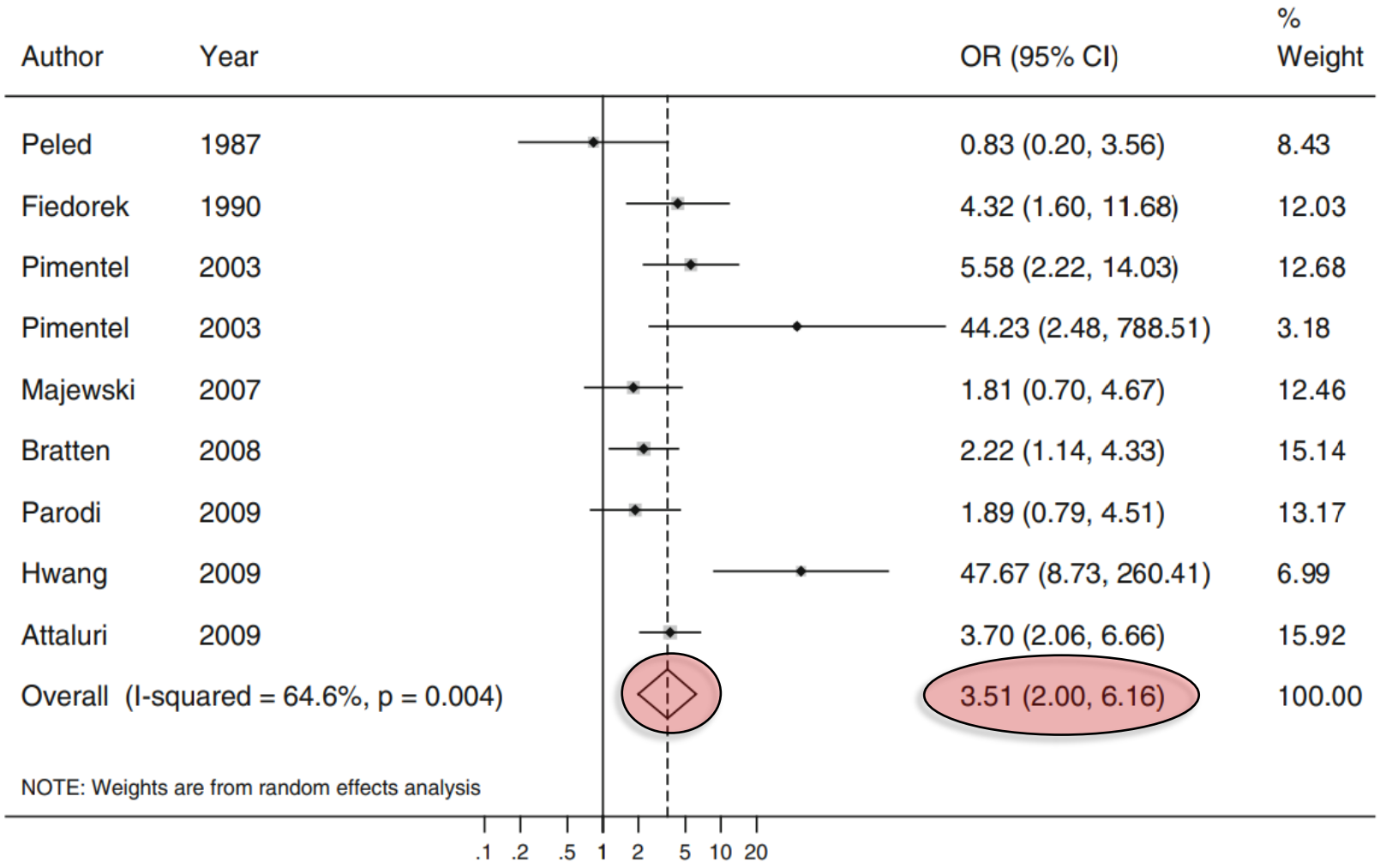
No limitado al intestino delgado

Estreñimiento

Pimentel M, Am J Gastroenterol 2020;115:165–178

Methane on Breath Testing Is Associated with Constipation: A Systematic Review and Meta-analysis

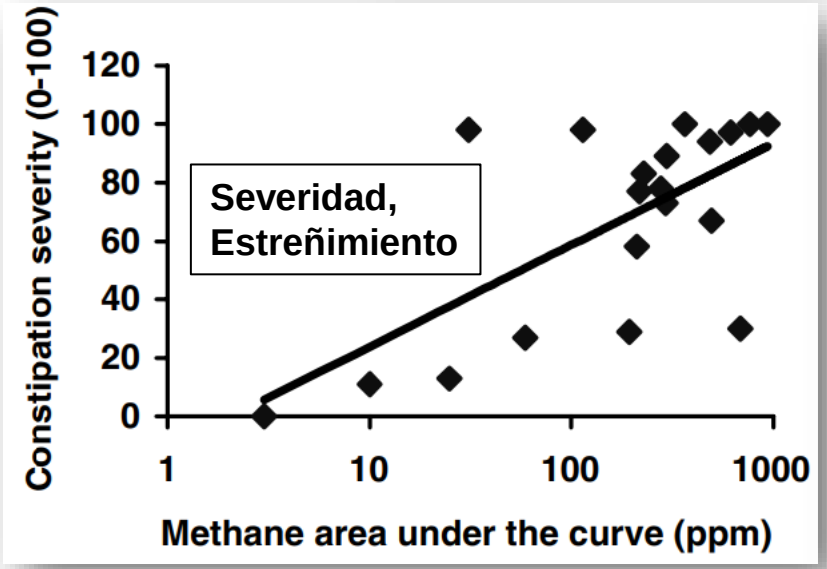
David Kunkel · Robert J. Basseri · Marc D. Makhani · Kelly Chong · Christopher Chang · Mark Pimentel

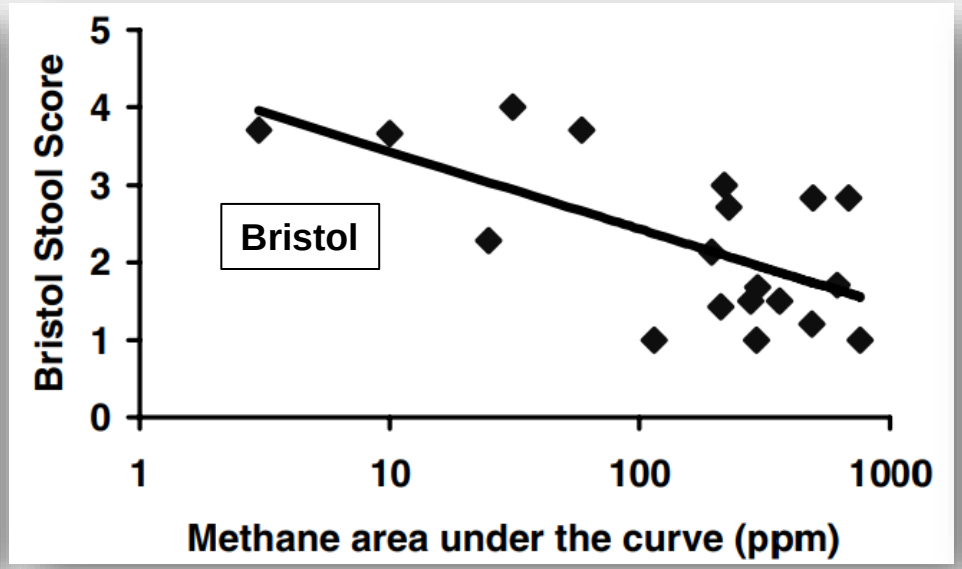


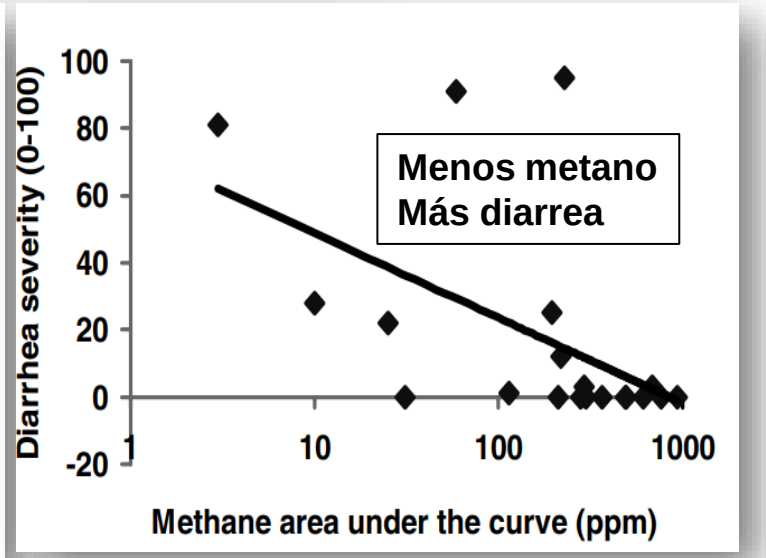
Kunkel D, Dig Dis Sci 2011;56:1612-18

The Degree of Breath Methane Production in IBS Correlates With the Severity of Constipation

Soumya Chatterjee, M.B.B.S., Sandy Park, B.A., Kimberly Low, B.A., Yuthana Kong, M.P.H., and Mark Pimentel, M.D., F.R.C.P.(C)
Cedars-Sinai Medical Center, Burns and Allen Research Institute, Los Angeles, California



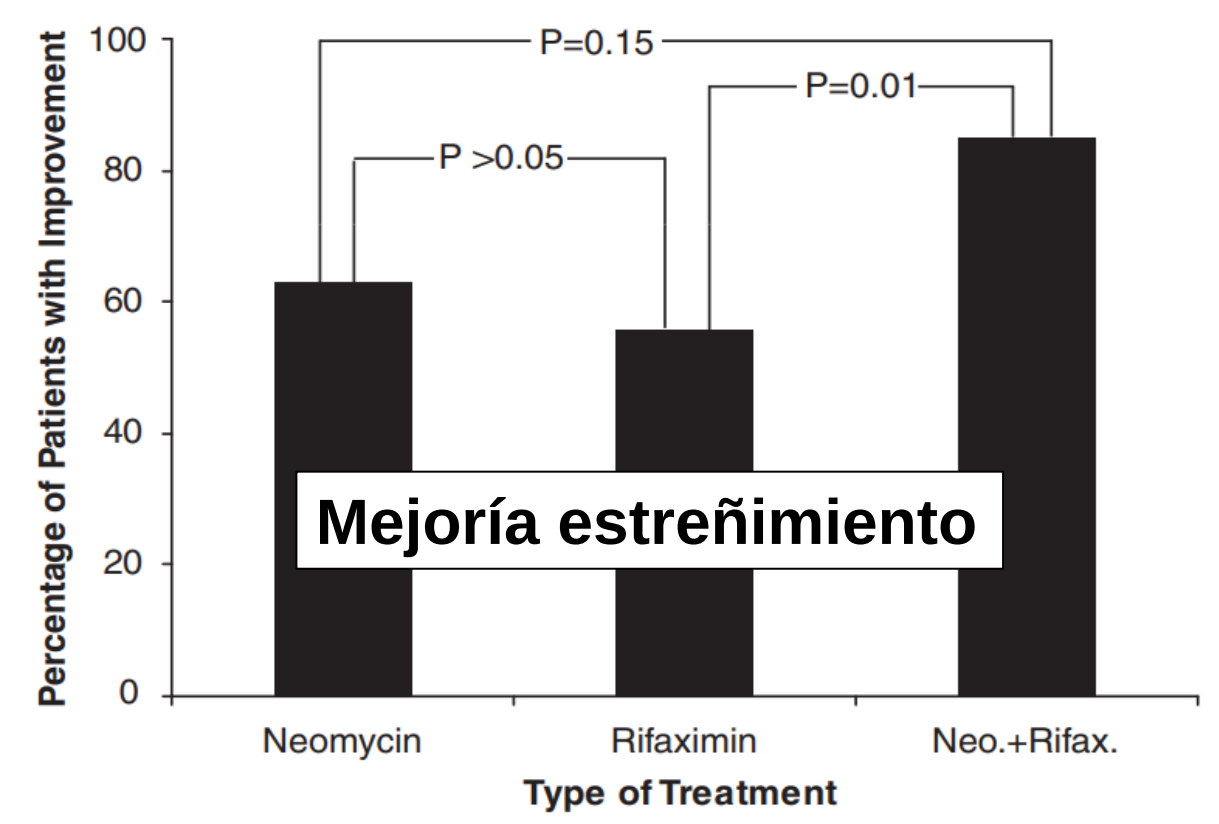


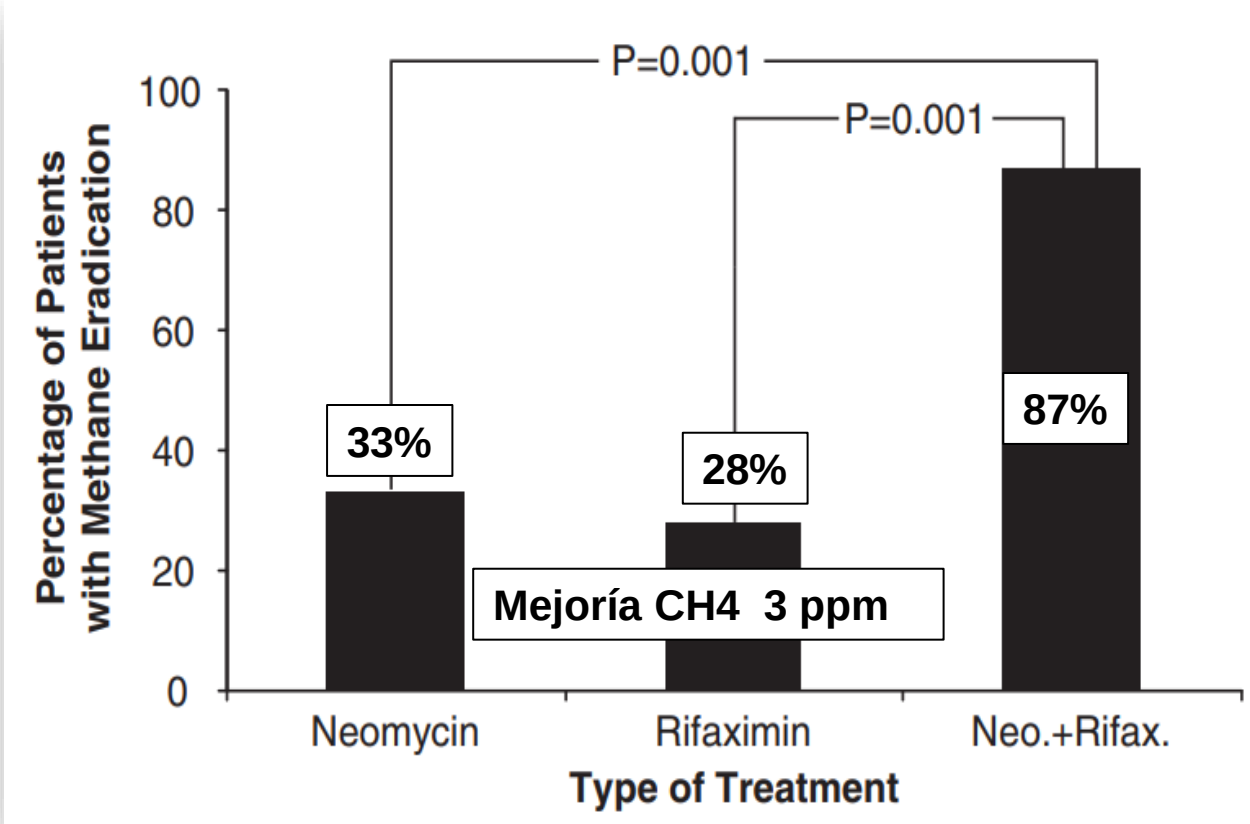


(Am J Gastroenterol 2007;102:837-41

A Combination of Rifaximin and Neomycin Is Most Effective in Treating Irritable Bowel Syndrome Patients With Methane on Lactulose Breath Test

Kimberly Low, BA, Laura Hwang, BS, Johnson Hua, MD, Amy Zhu, MD, Walter Morales, BS, and Mark Pimentel, MD





Low K et al. J Clin Gastroenterol 2010;44:547–550

A randomized double-blind placebo-controlled trial showing to improve constipation by reducing methane production and accelerating colon transit: A pilot study

Uday C. Ghoshal [1] · Deepakshi Srivastava [1] · Asha Misra [1]

Estreñimiento crónico >> CH4 controles
Rifaximina 400 g 3v/d 14 días << CH4 vs placebo
TT colónico Mejoró Rifaximina vs placebo
> Deposiciones Rifaximina vs placebo

Hoshal UC, et al. Indian J Gastroenterol. 2018;37:416-423.

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SIBO en estreñimiento refractario

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Poster of Distinction AGA

SMALL INTESTINAL BACTERIAL OVERGROWTH IN REFRACTORY CONSTIPATION IS ASSOCIATED WITH DELAYED COLONIC TRANSIT, BUT NOT DYSSYNERGIC DEFECATION

Estreñimiento refractario tránsito lento
61% M-SIBO ➡ CH4,
Defecación disinérgica NO M-SIBO

Colorectal Diseases
Constipation and Other Functional Colonic Syndromes
Presented on Saturday, May 2, 2020 12:30 PM

Author(s): Samuel Tanner[1], Ahson Chaudhry[1], Navneet Goraya[1], Rohan Badlani[1], Asad

[1] Temple University Hospital, Philadelphia, Pennsylvania, United States

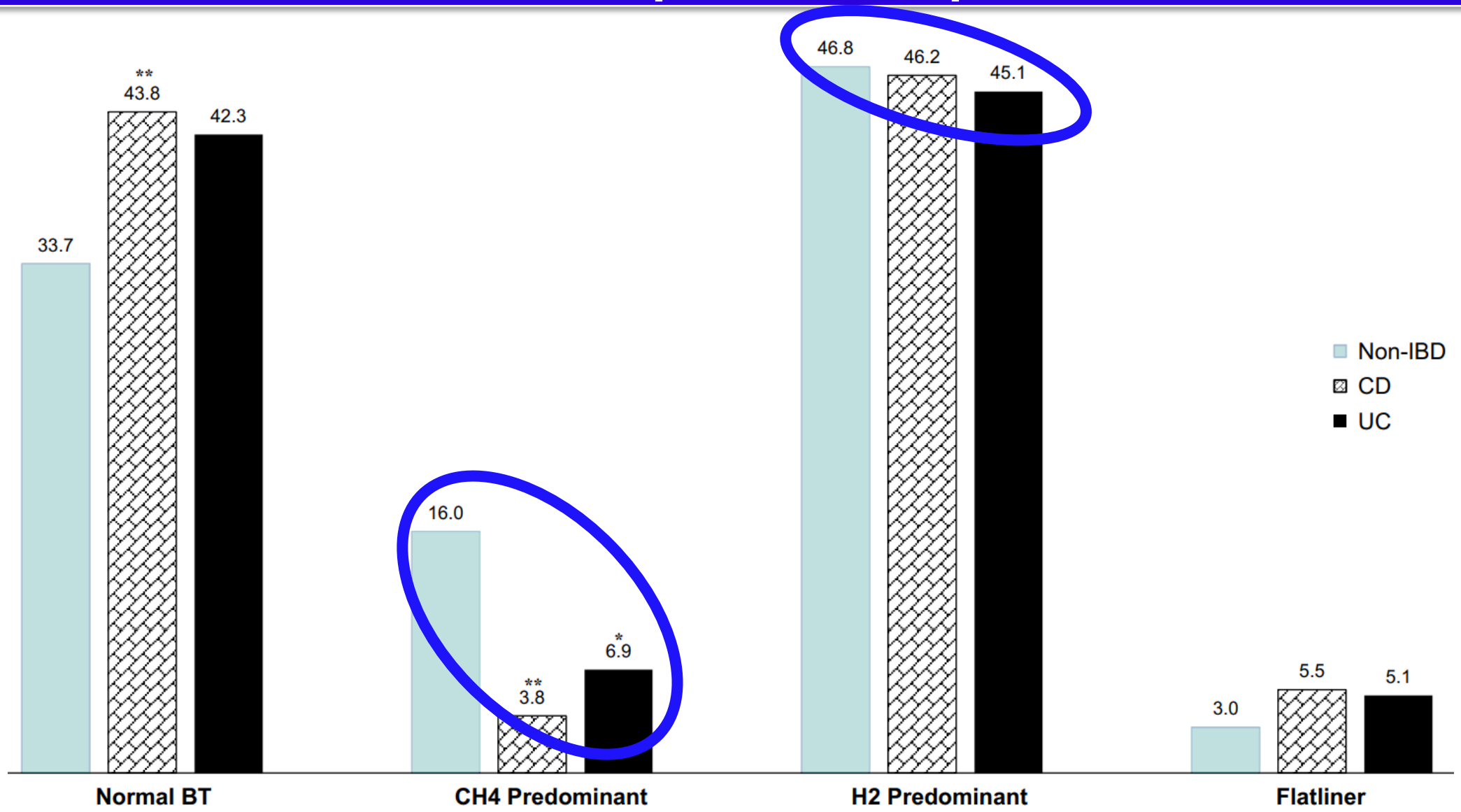
Introduction: Small intestinal bacterial overgrowth (SIBO) is known to cause symptoms such as abdominal bloating, distension, and gas. SIBO has also been associated with diarrhea and constipation, although the exact pathophysiology is less clear. In this study, we correlate both the presence and subtypes of SIBO to whole gut transit (gastric emptying (GE), small bowel transit (SBT), and colonic transit (CT)) and anorectal function in patients referred to a tertiary motility center with refractory constipation. **Methods:** Lactulose breath testing (LBT), whole gut transit scintigraphy (WGTS), and high resolution anorectal manometry (HR-ARM) of consecutive patients being evaluated for refractory constipation between 6/2016 and 11/2019 were included. LBT was performed using the BreathTracker Analyzer (QuinTron Instruments). SIBO by hydrogen (H-SIBO) was defined as a rise of 20 ppm in hydrogen from baseline within the first 90 minutes of testing. SIBO by methane (M-SIBO) was defined as a peak value of >10ppm. CT was assessed by WGTS using the geometric center of radioactivity from cecum/ascending colon (region 1) to rectosigmoid (region 6) and excreted stool (region 7). HR-ARM was performed using ManoScan™ and analyzed using ManoView™ software (Medtronic). **Results:** 222 patients with refractory constipation completed LBT and WGTS. Of these patients, 201 also completed HR-ARM. SIBO was diagnosed in 137 patients (61%). This comprised of 53 patients with H-SIBO, 47 with M-SIBO, and 37 with both H-SIBO & M-SIBO. ***Colonic Transit:*** Patients with SIBO had slower CT at 48 h and 72 h (Table 1, both $p<0.01$), but no significant difference in GE, SBT, or CT at 24 h. M-SIBO, in particular, had slower CT at 48 h and 72 h compared to H-SIBO and H-SIBO & M-SIBO ($p=0.02$ and $p=0.01$, respectively). Baseline methane level was negatively correlated to CT at 72 h ($r=-0.36$, $p<0.001$). This correlation was stronger in patients with M-SIBO vs. M-SIBO & H-SIBO ($r=-0.49$, $p<0.01$ vs. $r=-0.12$, $p=0.48$). ***Anorectal Function:*** Patients with SIBO had a lower mean anal sphincter pressure (62.5±2.3 vs. 73.7±2.2 mm Hg, $p<0.001$). Lower mean anal sphincter pressure was seen in H-SIBO and M-SIBO, but not combined M-SIBO and H-SIBO ($p=0.03$). Otherwise, the presence of SIBO was not associated with differences in dyssynergic defecation or abnormal balloon expulsion testing and there were no statistically significant differences among SIBO subtypes (although sample size is small). **Conclusions:** SIBO is common in patients with refractory constipation. It was found in 61% of patients referred to our center. SIBO, and in particular M-SIBO, is associated with delayed CT, but not dyssynergic defecation. Baseline methane level correlates with CT. This suggests that methane in particular may play a role in the pathophysiology of delayed CT.

Breath Test Gas Patterns in Inflammatory Bowel Disease with Concomitant Irritable Bowel Syndrome-Like Symptoms: A Controlled Large-Scale Database Linkage Analysis

Phillip Gu[1] · Devin Patel[2] · Krutika Lakhoo[2] · Jeffrey Ko[2] · Xiaochen Liu[3] · Bianca Chang[4] · Dana Pan[5] · Greg Lentz[6] · Matthew Sonesen[6] · Renier Estiandan[6] · Eugenia Lin[3] · Mark Pimentel[3] · Ali Rezaie[3]

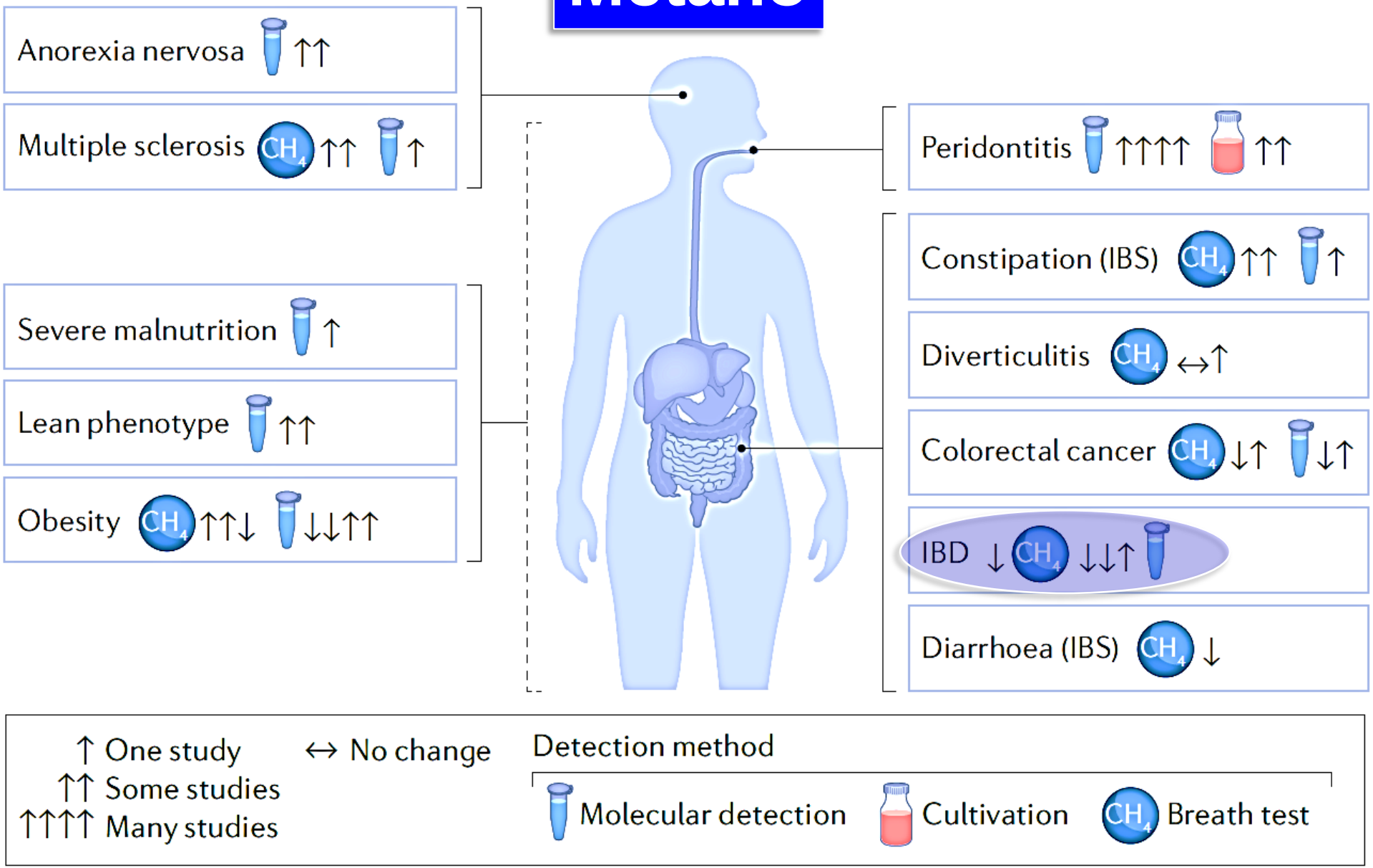
Gu P, Dig Dis Sci. 2020;65:2388-2396

Patrones de pruebas respiratorias

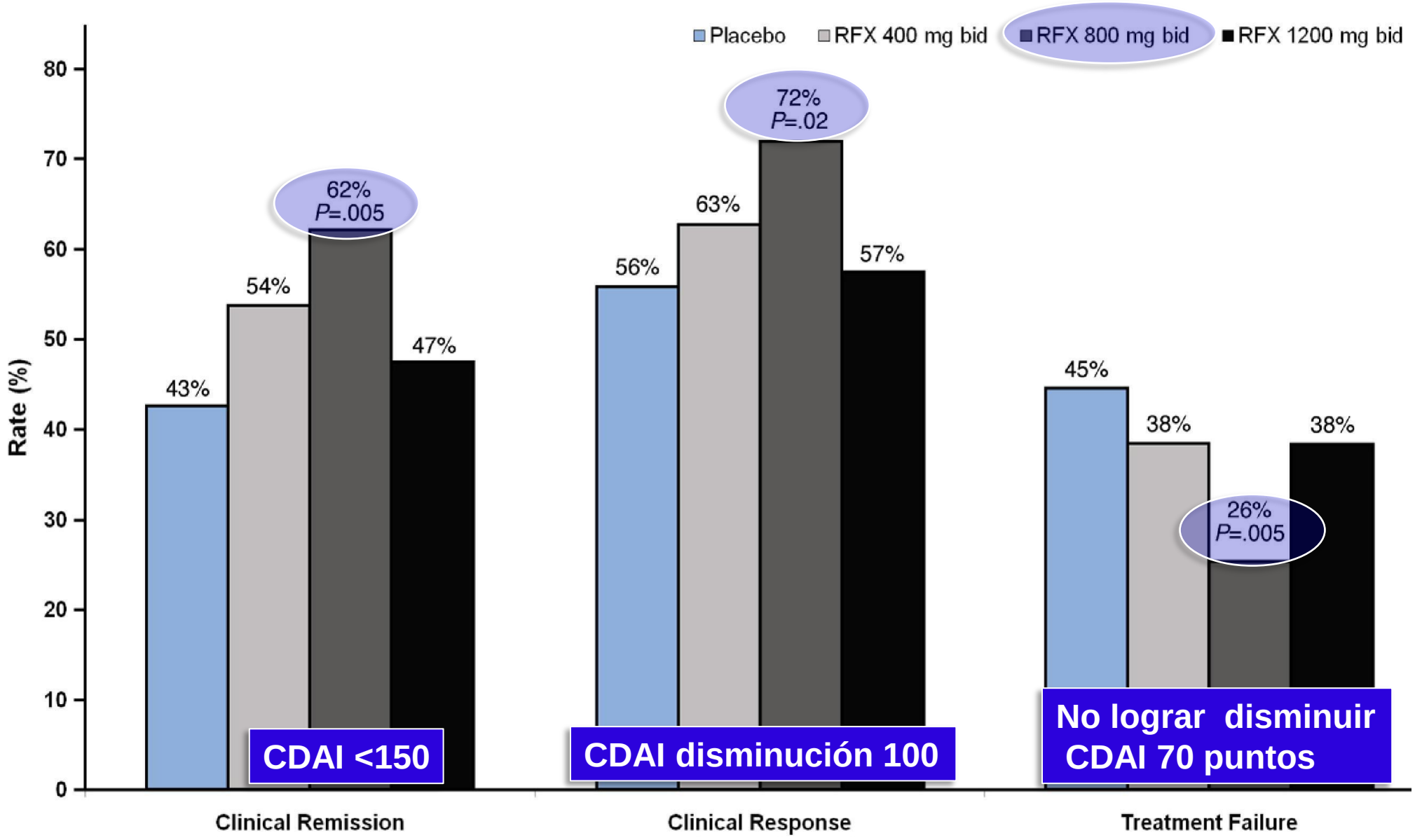


Gu P, Dig Dis Sci. 2020;65:2388-2396

Metano

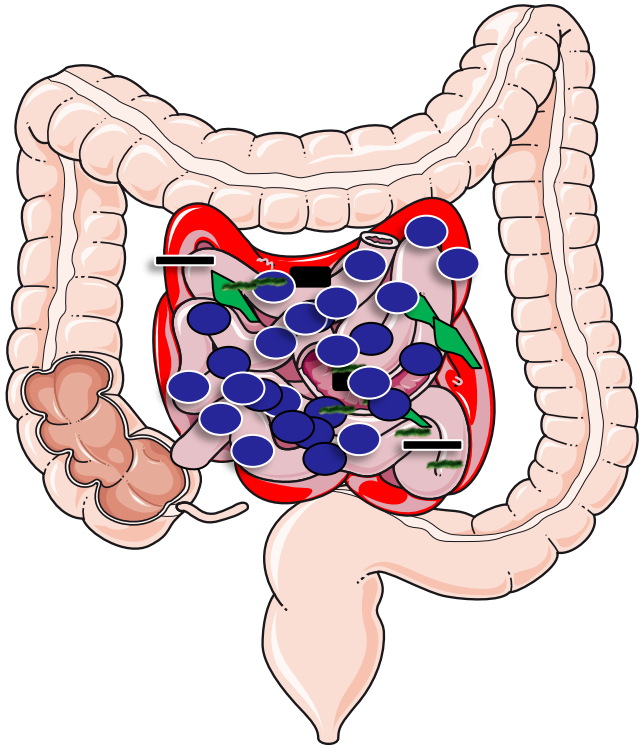


Hoegenauer C, Nat Rev Gastroenterol Hepatol. 2022 Sep 1.



Prantera C, Gastroenterology 2012;142:473-81

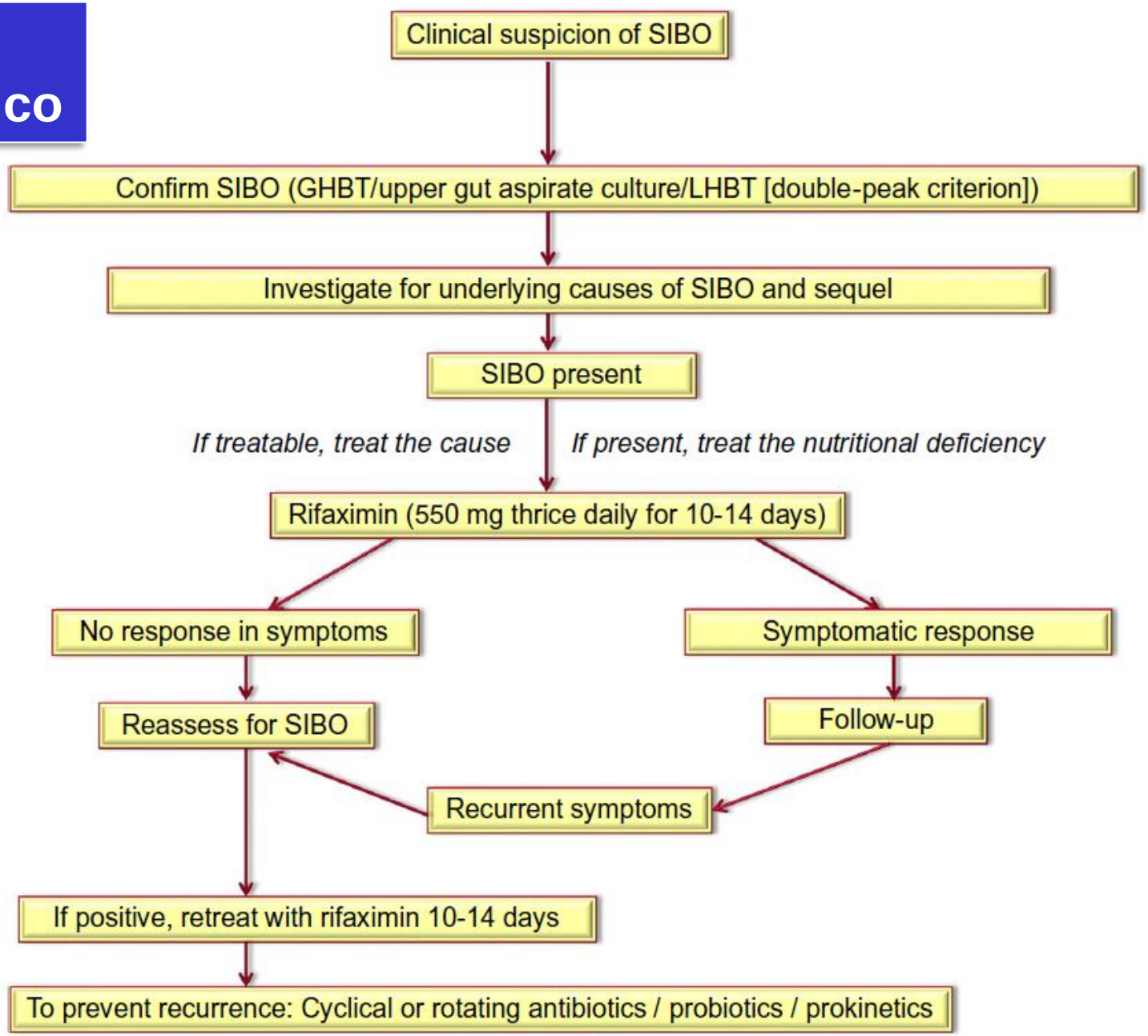
Tratamiento de SIBO



- Disminuir los síntomas
- Adicional Corregir deficiencias
- Evitar recurrencias 44%

Bushyhead D, Gastroenterology 2022;163:593–607
Skrzydło-Radomanska B, J Clin Med 2022;11:6017

SIBO, 2022
Consenso Pacífico-Asiático



Ghosal UC, et al. Ind J Gastroenterol 2022 On line agosto 25

Mensajes para la casa

Microbioma es fundamental en gastroenterología
SIBO Produce síntomas severidad variable
Exacerba patologías pre existentes
Tiene alta prevalencia en patologías comunes
Subdiagnosticado
Culrivo y Pruebas respiratorias imperfectos
Mundo real tratarse cuadro clínico predisponentes
Rifaximina es un excelente 550 mg 2-3v/día-14 dìas

2° Tecnofarma Adium 2023 Summit

Muchas gracias!

Tecnofarma Perú

Muchas gracias!

Queridos colegas de Perú

A Colombia, Un País hermano !!!