

Inhibidores de bomba de protones: Actualización 2023



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**Primeros cinco más vendidos
USA, 2009:7 billones
Mundo, 13 billones**

**Más prescrito en
Gastroenterología**

IBP

**“Medicamentos
Esenciales” OMS**

**Eficacia
Demostrada**

**Disminución hospitalización
Mortalidad Úlcera péptica**

**Mossner J, Dtsch Arztebl Int 2016;113:477-83
Targownik L, Am J Gastroenterol 2018;113:519-28
Otero W, “El estómago” Aristizabal G (edit):2022:20-98**

IBP

Piedra angular

En su manejo

Indicaciones correctas de los IBPs



Por períodos
Cortos <12 semanas

Erradicación *H.pylori*
Úlceras pépticas
Úlcera péptica sangrante
Profilaxis úlceras estrés
Dispepsia funcional (“**Gastritis**”)
Esofagitis eosinofílica sin
respuesta



Por períodos
Indefinidos

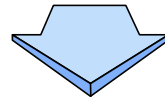
Esofagitis C y D
Esófago de Barrett
Úlcera péptica idiopática
Profilaxis AINES
Profilaxis antiplaquetarios
Esofagitis eosinofílica (+)
Fibrosis Pulmonar
Zollinger Ellison

Herszényi L, Dig Dis 2020;38:104-11

Targownik LE, Gastroenterology 2022;162:1334-42

63% Wang J, Hepatol Int. 2020; 14:385-98

IBP no indicados




Pancreatitis aguda o crónica
Cirrosis Descompensada
Hospitalizados en sala general
“Polimedicados”
Reflujo Faringo-laríngeo

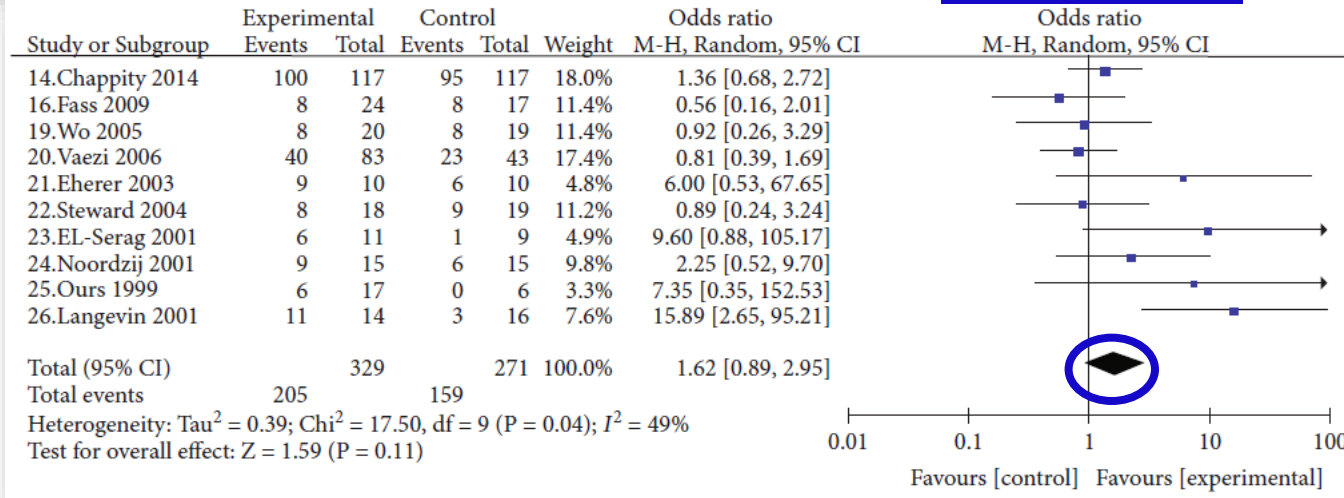
Herszényi L, Dig Dis 2020;38:104-11

Targownik LE, Gastroenterology 2022;162:1334-42

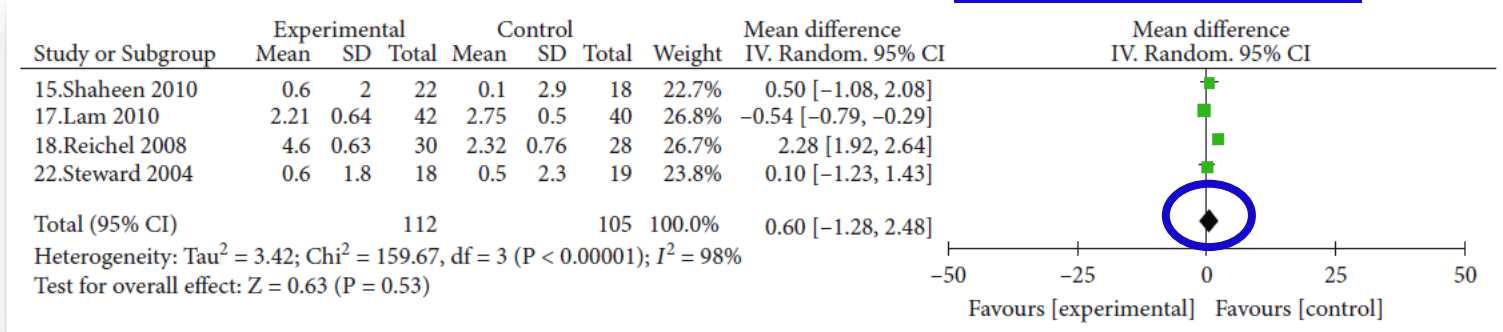
Meta-analysis of Proton Pump Inhibitors in the Treatment of Pharyngeal Reflux Disease

Xiulin Jin, Xufeng Zhou, Zongxian Fan, Yingchun Qin, and Junjie Zhan 

Eficacia global



Puntaje sintomas

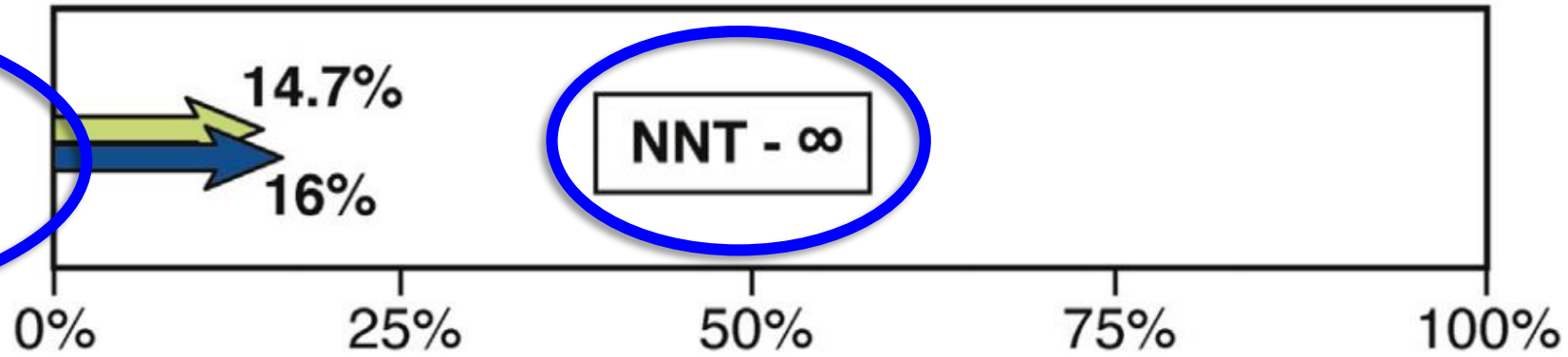


Síntomas extraesofágicos

C

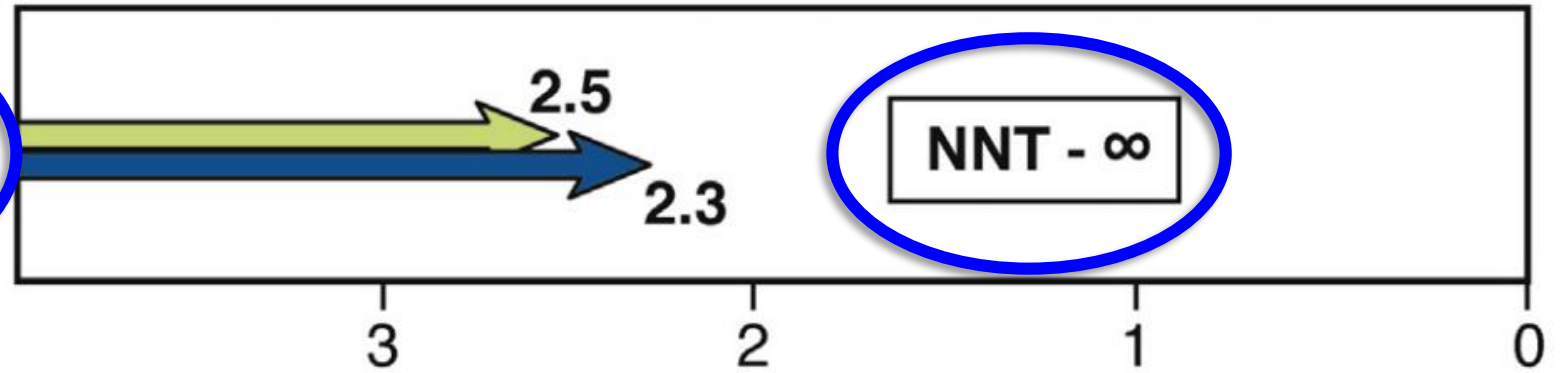
Reflux laryngitis⁴⁸

*No frequent heartburn-
complete resolution*



Poorly controlled asthma⁴⁹

*Without frequent heartburn
Exacerbations per year*



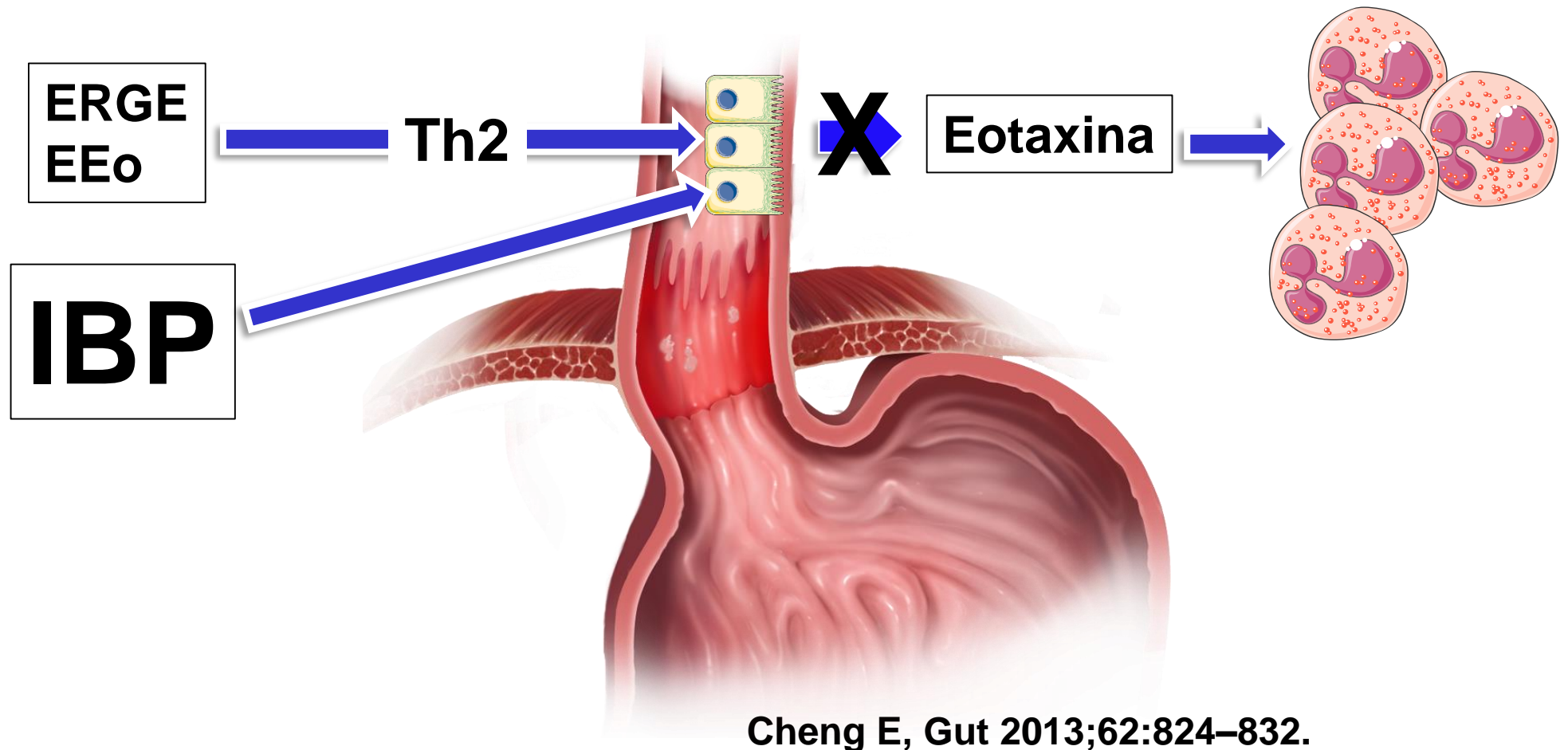
Katzka DA, Clin Gastroenterol Hepatol 2020;18:767-76

IBP

**Efectos sistémicos
anti inflamatorios**

Omeprazole blocks eotaxin-3 expression by oesophageal squamous cells from patients with eosinophilic oesophagitis and GORD

Edaire Cheng,¹ Xi Zhang,² Xiaofang Huo,² Chunhua Yu,² Qiuyang Zhang,² David H Wang,² Stuart Jon Spechler,² Rhonda F Souza²



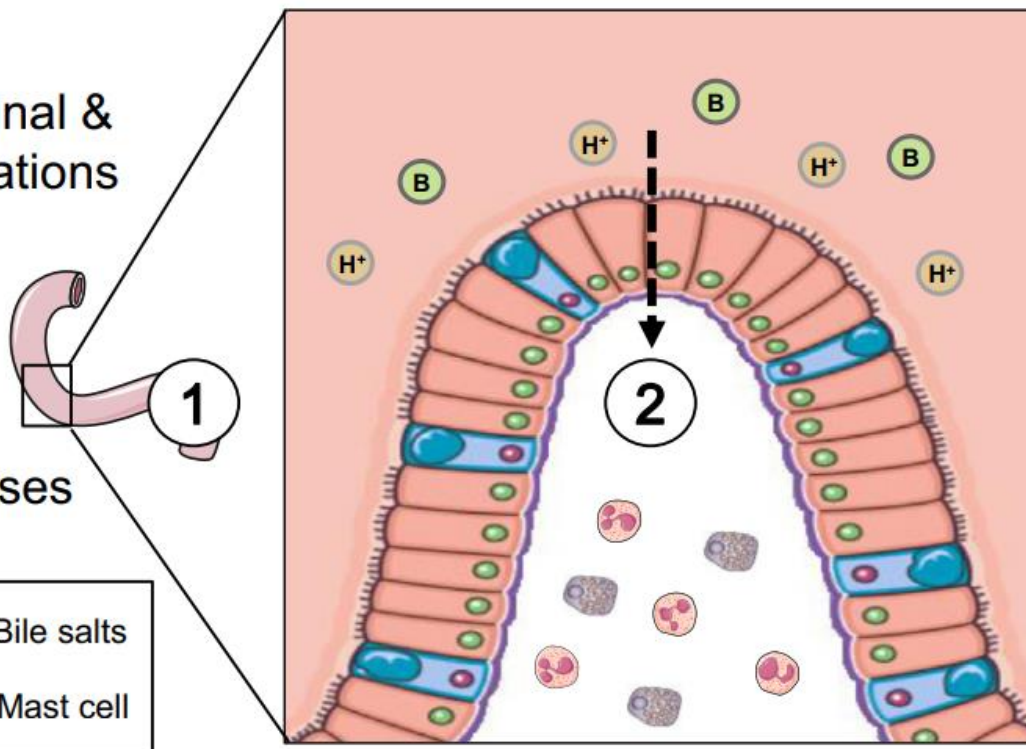
IBP y Dispepsia Funcional

Off-PPI:

duodenal luminal & mucosal alterations

systemic & stress responses

H^+ Acid (pH) B Bile salts
Eosinophil Mast cell

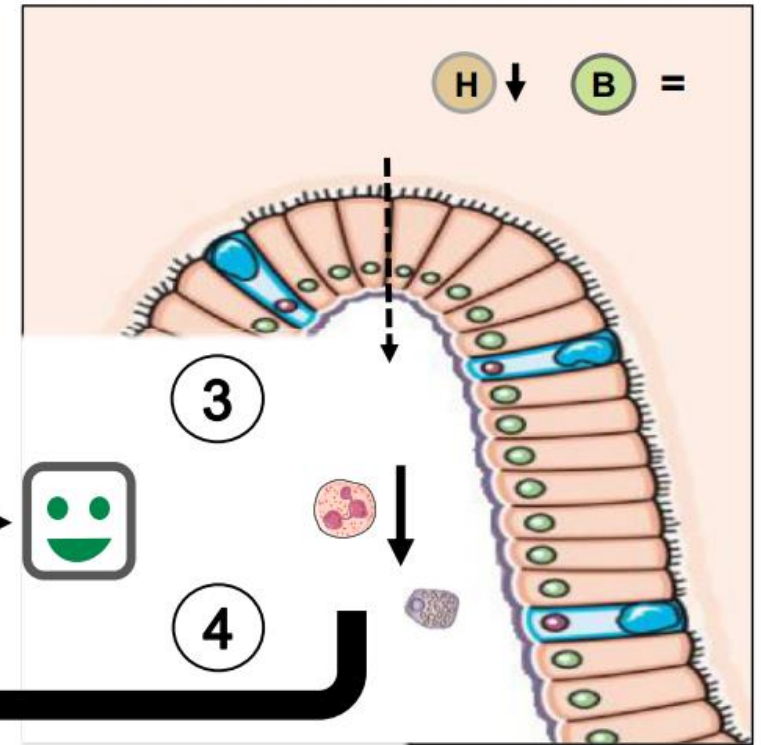


On-PPI:

↓ symptoms

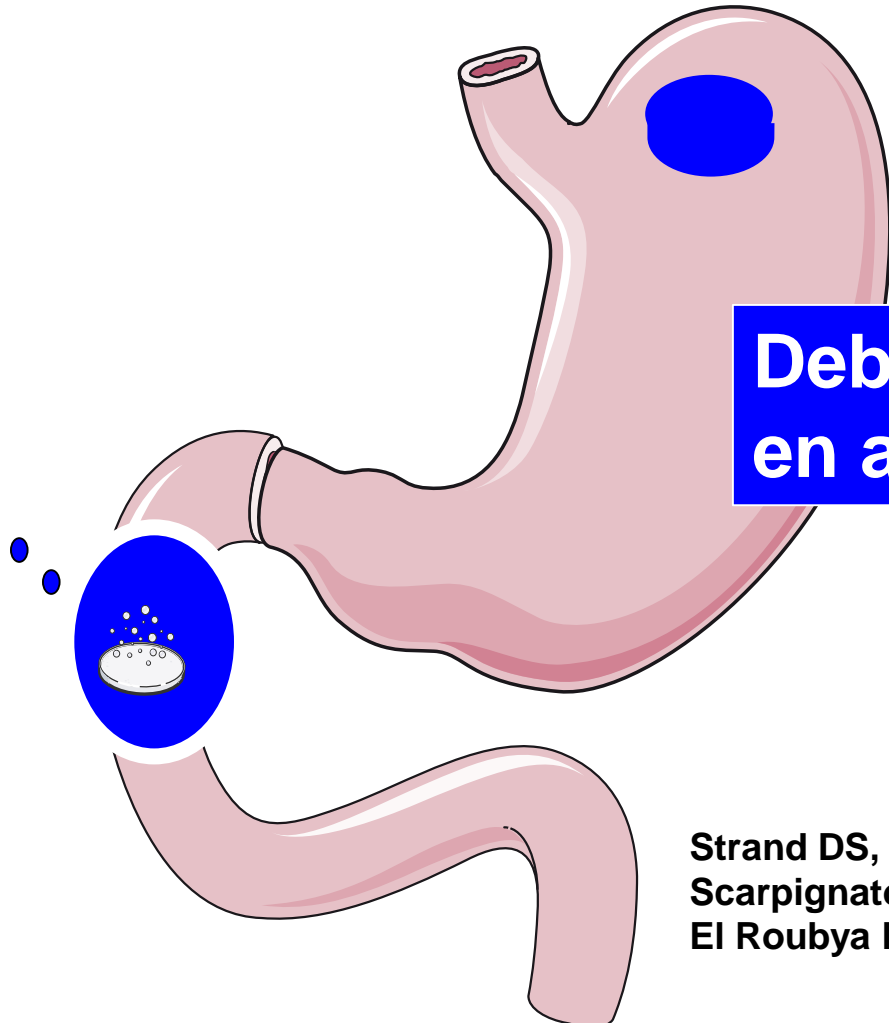
= stress

↓ cortisol



IBPs convencionales 1era y 2da Generación

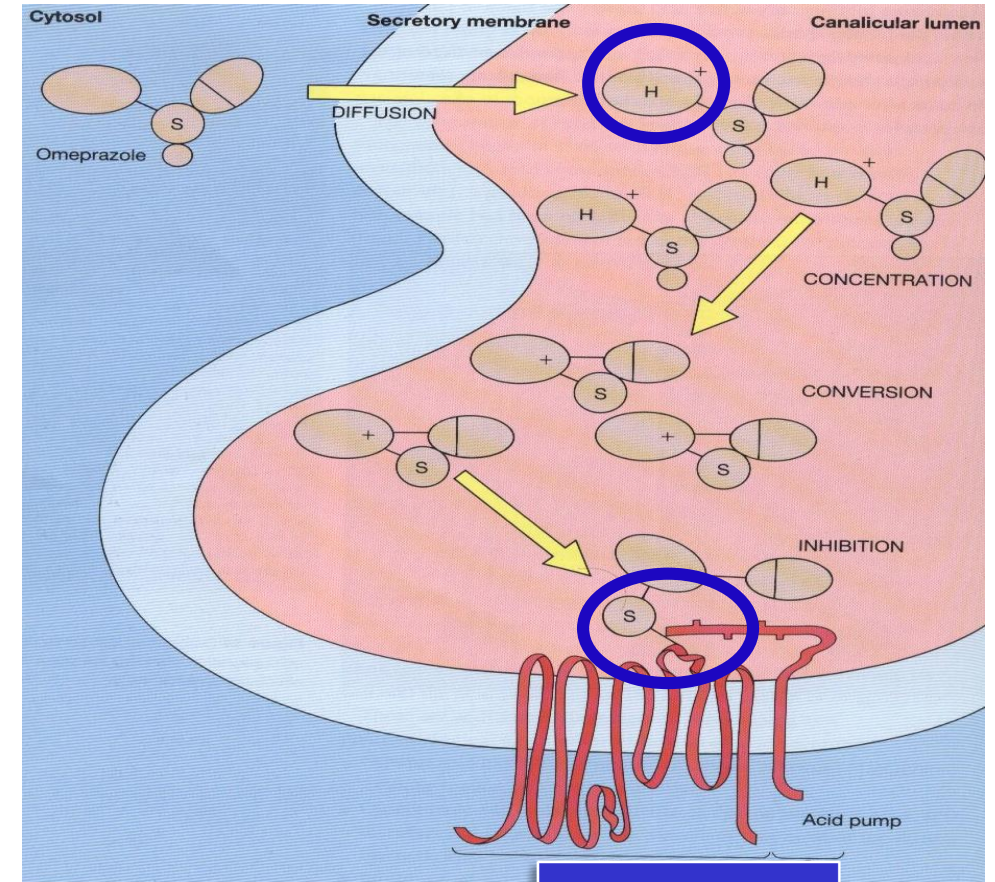
Liberación Retardada



Deben darse en ayunas

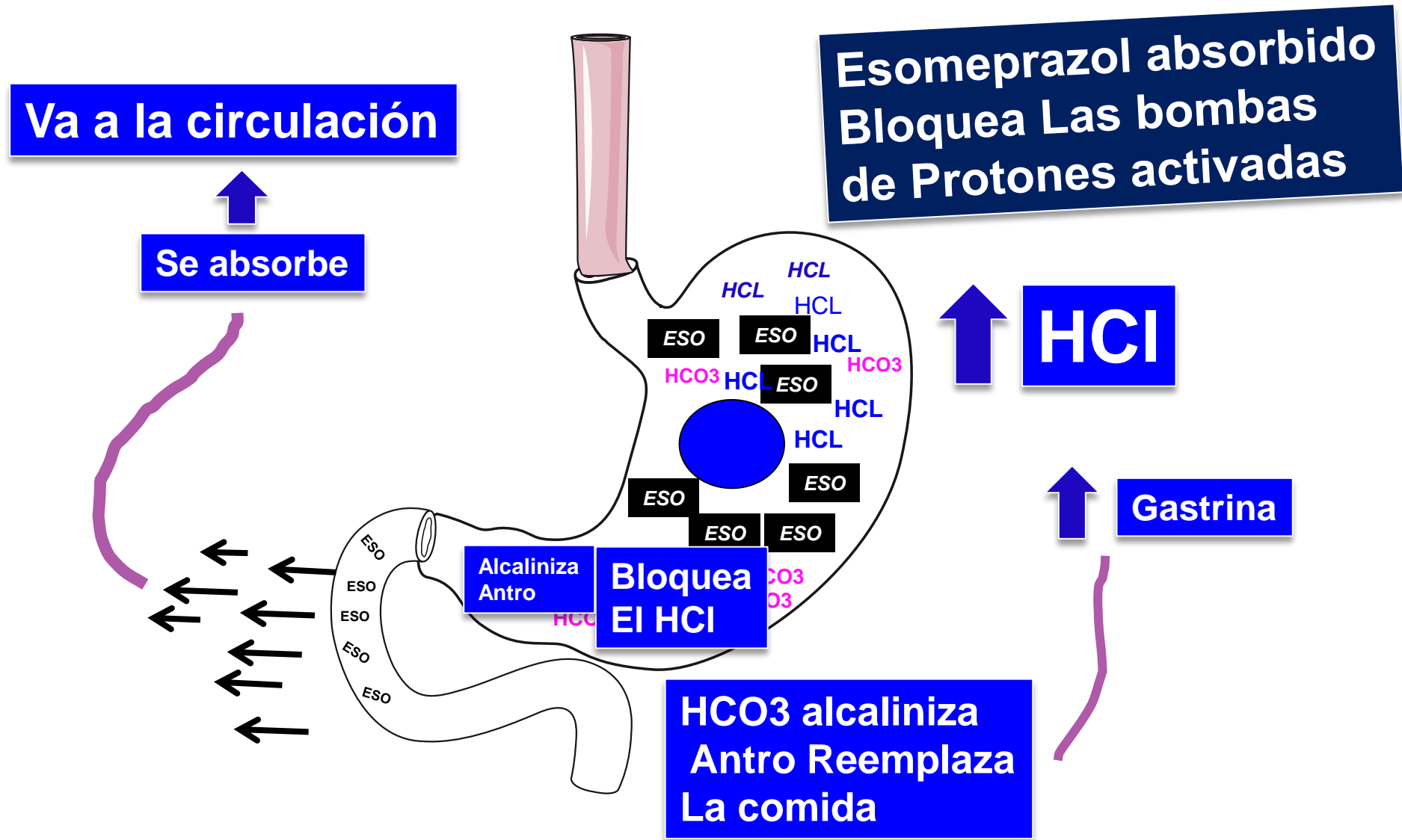
Strand DS, Gut Liver 2017;11:27-37
Scarpignato C, Curr Opin Pharmacol 2008;;8:677-84
El Roubya N, Exp Opin Drug Met Toxicol 2018;14:447-60

Activación

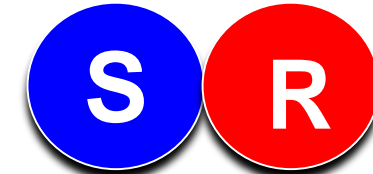


Bloqueo Irreversible
54 hrs

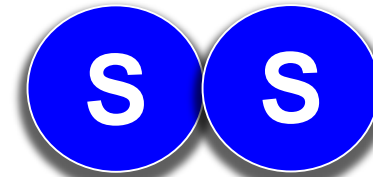
IBP Liberación Inmediata: envoltura ácido-sensible



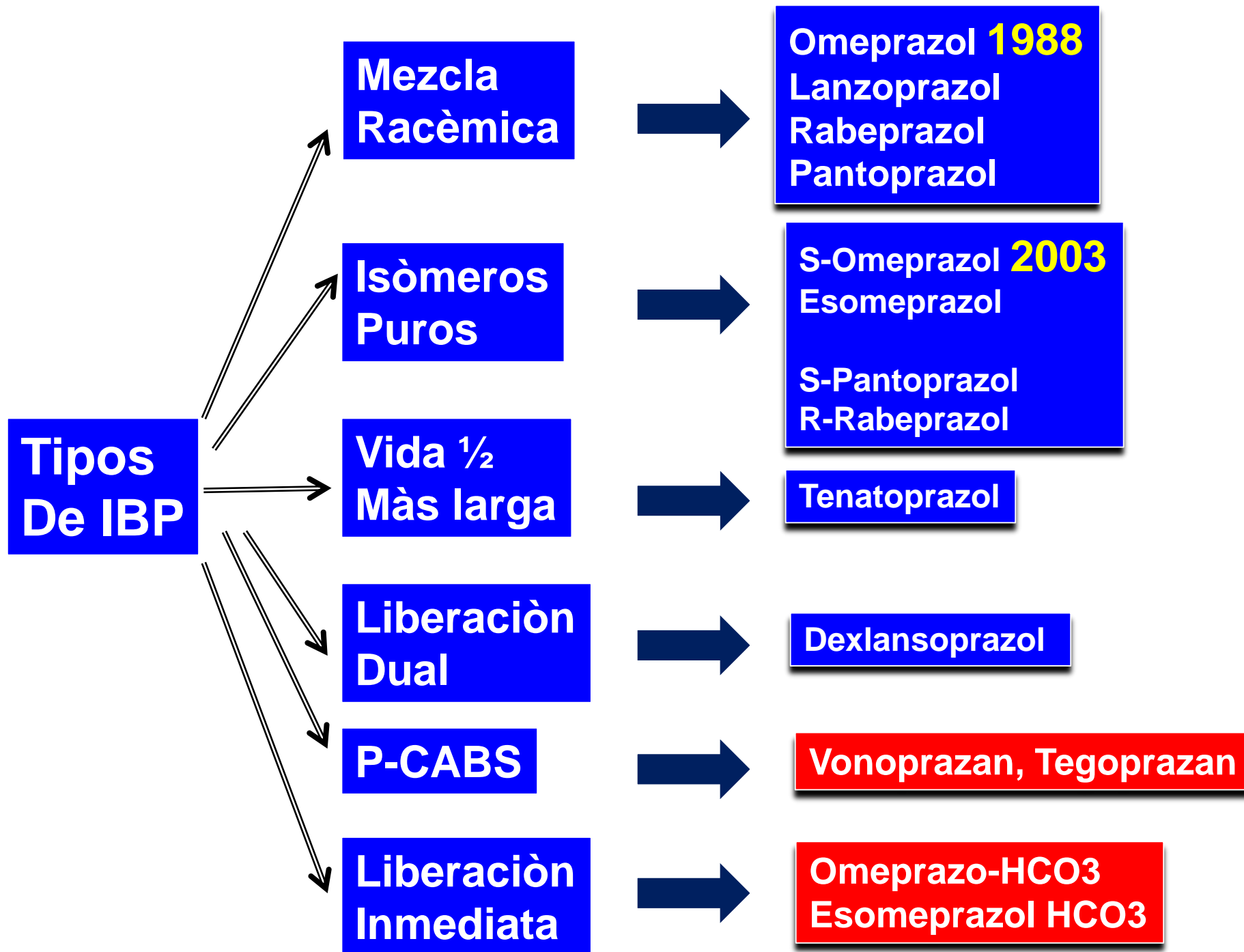
Omeprazol 1988



Esomeprazol 2003



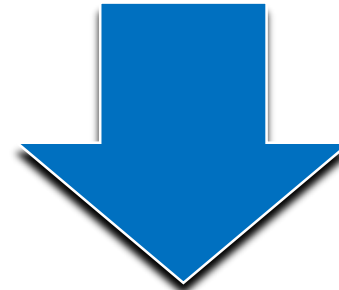
Scarpignato C, Curr Opin Pharmacol 2008;8:677-84



IBP No son iguales



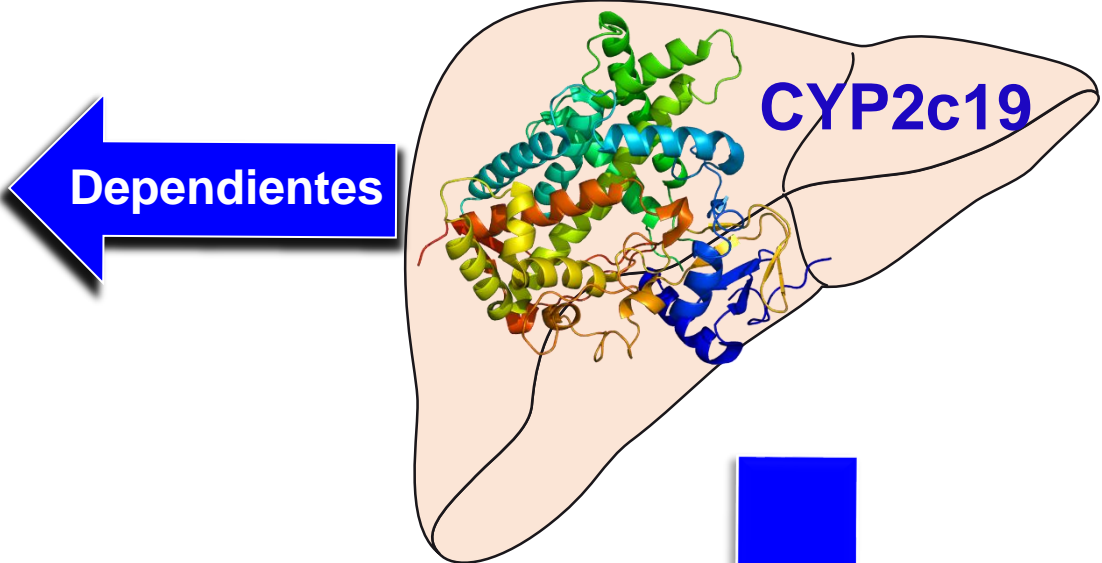
Potencia



Farmacognètica

Farmacogenética

Primera Generación
Omeprazol
Lansoprazol
Pantoprazol



Menos dependientes

Segunda Generación
Esomeprazol
Rabeprazol



Cyp2C19

**Rápido,
Ultrarrápido
80-84%**

***Esomeprazol* Rabeprazol
menos Influidos por el CYP
70% vs 90% OME**

Isaza C, BMC Clin Pharmacol. 2007;7:6.

Arévalo A, Tresplacios A, Otero W, Helicobacter 2019;24:e12574

Arevalo A, Otero W PLoS One. 2021;16:e0245401

Impacto de la Farmacogenética

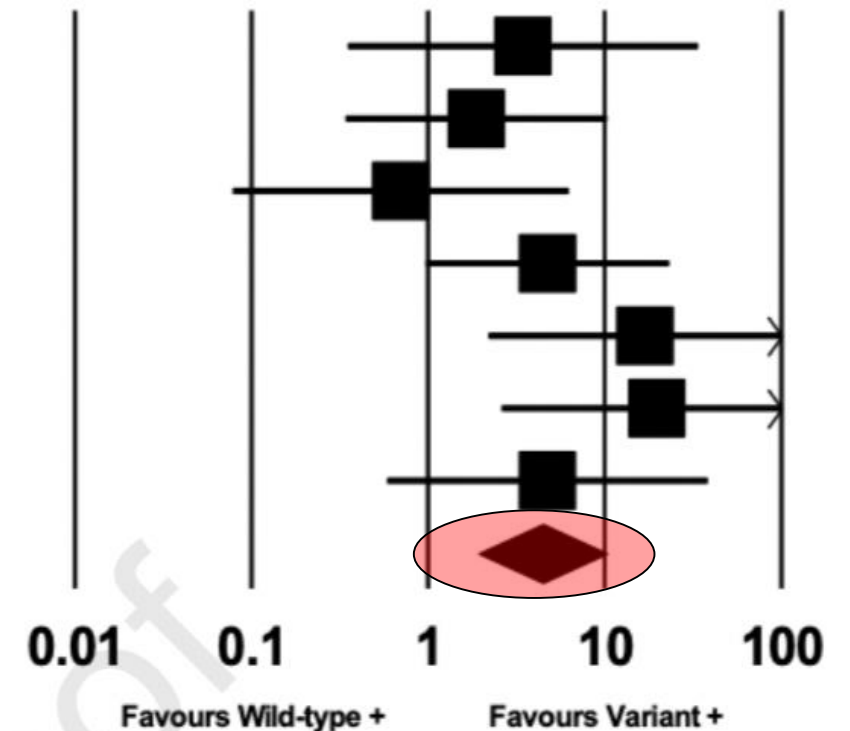
***Hpylori* sensible a claritromicina o resistencia < 15% IBP
Primera Generaciòn Lansoprazol, Omeprazol Pantoprazol
Metabolizadores ràpidos**

Study name

Statistics for each study

Odds ratio and 95% CI

	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Isomoto, 2003	3.438	0.352	33.612	1.061	0.289
Kawabata, 2004	1.875	0.342	10.269	0.725	0.469
Miki, 2003	0.700	0.079	6.224	-0.320	0.749
Sheu, 2005	4.742	0.975	23.062	1.929	0.054
Furuta, 2001	16.875	2.202	129.312	2.720	0.007
Furuta, 2004	19.753	2.617	149.103	2.893	0.004
Kang, 2008	4.738	0.589	38.140	1.462	0.144
	4.443	1.944	10.157	3.535	0.000



**Riesgo de
Falla terapèutica**

Ràpids versus Pobres metabolizadors

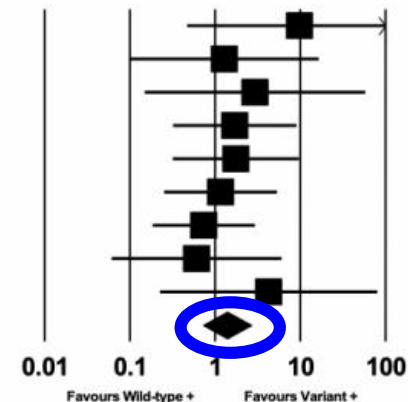
**Esomeprazol
9 estudis**

**Rabeprazol
18 estudis**

2B. Study name

Study name	Statistics for each study				
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Pan, 2010	9.783	0.473	202.374	1.475	0.140
Pan*, 2010	1.286	0.101	16.340	0.194	0.846
Miehlke, 2008	2.941	0.150	57.555	0.711	0.477
Sheu, 2005	1.705	0.323	9.007	0.628	0.530
Wu, 2011	1.750	0.321	9.554	0.646	0.518
Song, 2016	1.159	0.253	5.304	0.191	0.849
Okimoto, 2016	0.735	0.186	2.908	-0.438	0.661
Liou, 2011	0.606	0.061	5.985	-0.429	0.668
Kang, 2008	4.248	0.227	79.518	0.968	0.333
	1.387	0.723	2.662	0.984	0.325

Odds ratio and 95% CI



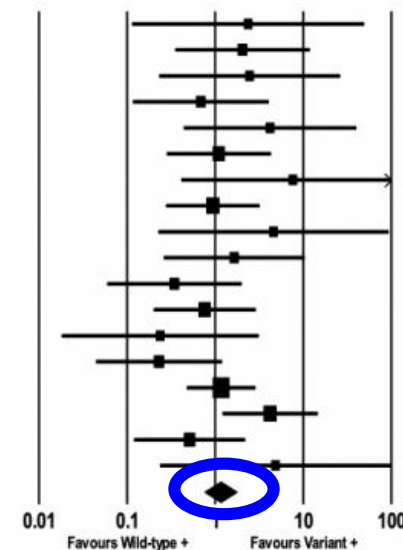
2C.

Study name

Statistics for each study

Study name	Statistics for each study				
	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
Isomoto*, 2003 - 7 days	2.368	0.114	49.041	0.558	0.577
Isomoto*, 2003 - 14 days	2.045	0.354	11.820	0.800	0.424
Yang, 2009	2.462	0.232	26.114	0.748	0.455
Pan, 2010	0.688	0.117	4.056	-0.414	0.679
Inaba, 2002	4.200	0.442	39.943	1.249	0.212
Miyoshi, 2001	1.100	0.283	4.282	0.137	0.891
Lay, 2010	7.638	0.414	140.829	1.367	0.172
Okimoto, 2016	0.942	0.278	3.189	-0.096	0.924
Lin, 2017	4.600	0.227	93.032	0.995	0.320
Dojo, 2001	1.647	0.262	10.359	0.532	0.595
Miki, 2003	0.345	0.060	1.993	-1.190	0.234
Lee, 2003	0.762	0.201	2.884	-0.400	0.689
Phiphatpatthamaamphan, 2016	0.238	0.018	3.121	-1.093	0.274
Kawabata, 2003	0.231	0.045	1.197	-1.746	0.081
Lee, 2010*	1.169	0.478	2.862	0.343	0.732
Kuwayama, 2007	4.211	1.216	14.585	2.268	0.023
Hokari, 2001	0.513	0.120	2.190	-0.902	0.367
Jiang, 2005	4.846	0.237	98.960	1.025	0.305
	1.153	0.761	1.748	0.674	0.501

Odds ratio and 95% CI



CLINICAL PRACTICE UPDATE

AGA Clinical Practice Update on the Management of Refractory *Helicobacter pylori* Infection: Expert Review



Shailja C. Shah,^{1,2,3} Prasad G. Iyer,⁴ and Steven F. Moss⁵

Best Practice Advice 7: Inadequate acid suppression is associated with *H pylori* eradication failure. The use of high-dose and more potent PPIs, PPIs not metabolized by *CYP2C19*, or potassium-competitive acid blockers, if available, should be considered in cases of refractory *H pylori* infection.

**Opció Rabeprazol, Esomeprazol, Vonoprazan, Tegoprazan
o aumentar dosis de IBP 1era generaci3n**

Optimizació IBP en ERGE

IBP 1v/D
Medidas
Generales


IBP en ayunas
IBP 2v/D?

Otro IBP
Esomeprazol
Rabeprazol
Vonoprazan

IBP
Liberació
Inmediata

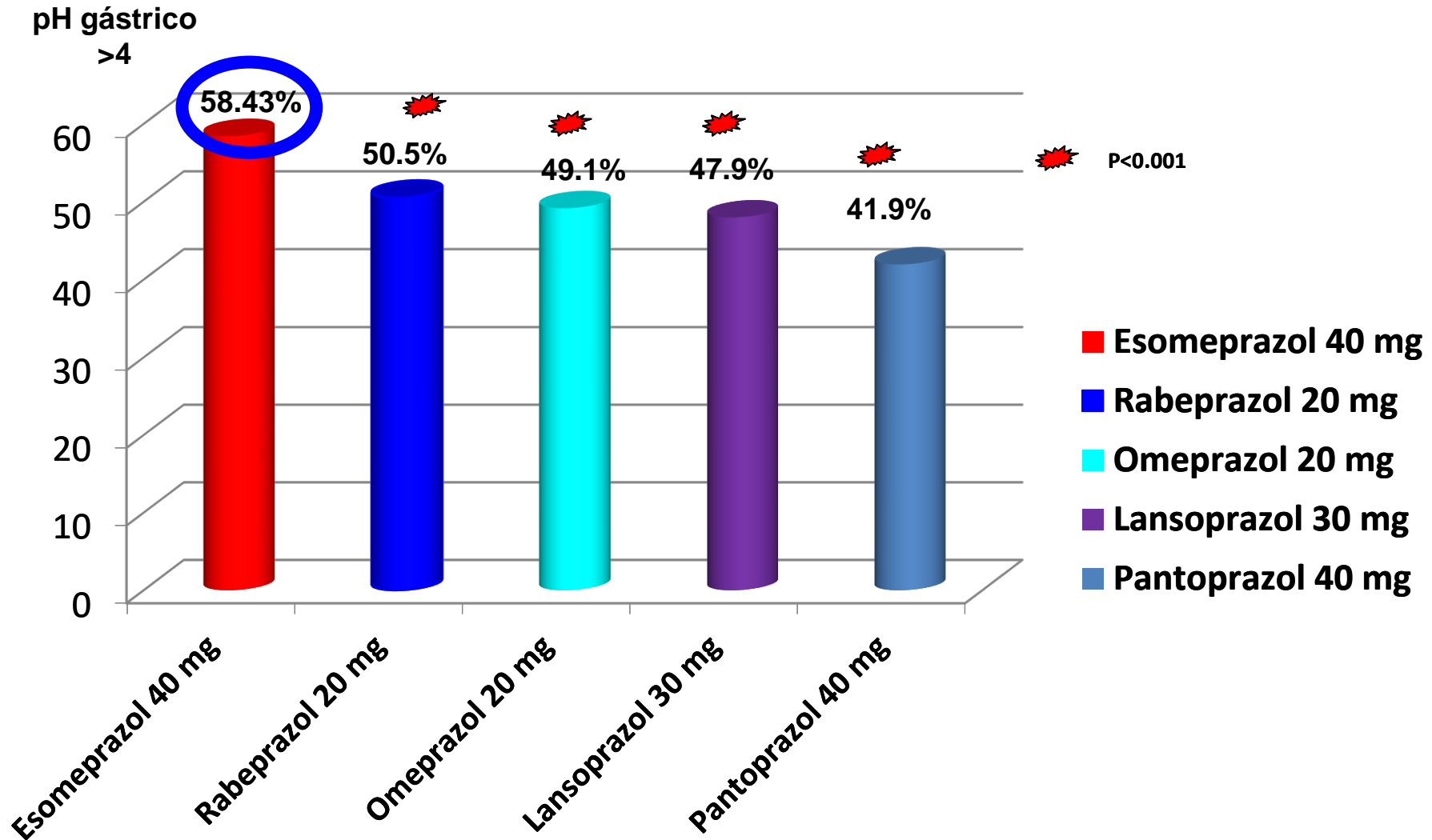
Hungin APS Aliment Pharmacol Ther 2022;55;1492
Katz PO, Am J Gastroenterol. 2022;117:27-56

Potencia de los IBPs comparados con omeprazol

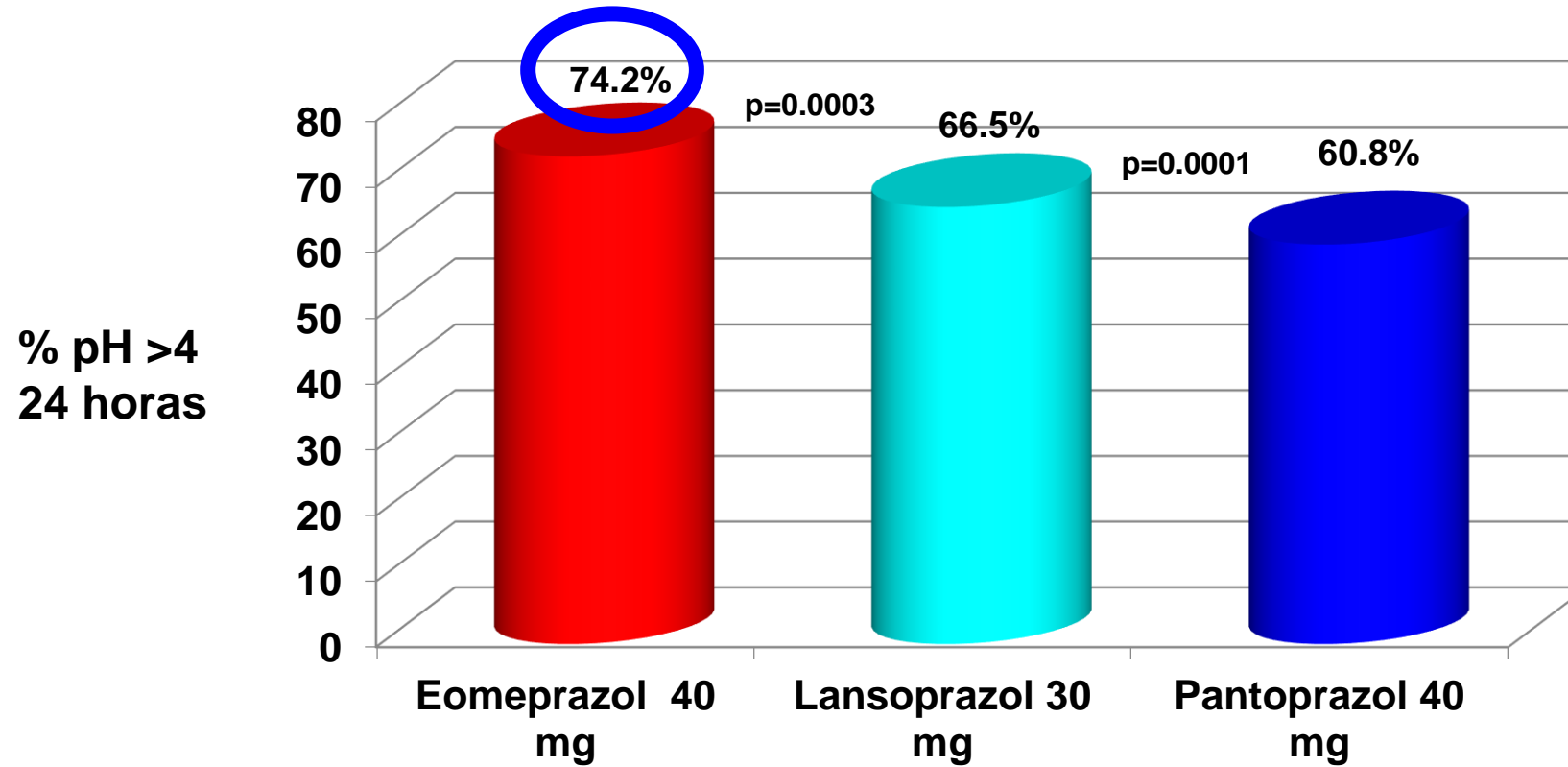
Diferentes IBPs	Omeprazol mg	
Rabeprazol 20 mg	36 mg	Más potente
Esomeprazol 20 mg	32 mg <u>1.6 veces</u>	
Omeprazol 20 mg	20 mg	
Lansoprazol 20 mg	18 mg	
Pantoprazol 20 mg		

Gastric Acid Control With Esomeprazole, Lansoprazole, Omeprazole, Pantoprazole, and Rabeprazole: A Five-Way Crossover Study

Philip Miner, Jr., M.D., Philip O. Katz, M.D., Yusong Chen, Ph.D., and Mark Sostek, M.D.



pH intragástrico > 4 consumidores AINES



Godstein JL, Aliment Pharmacol Ther 2006;23:1189-96

En indicaciones correctas
Para cada enfermedad un objetivo de pH



**Úlcera no
Sangrante >3**



ERGE: > 4



**Úlcera
Sangrante > 6**



***H.pylori* > 6**

P-CABs

Vonoprazan

**Japón
Filipinas
Singapur
Tailandia
Malasia**

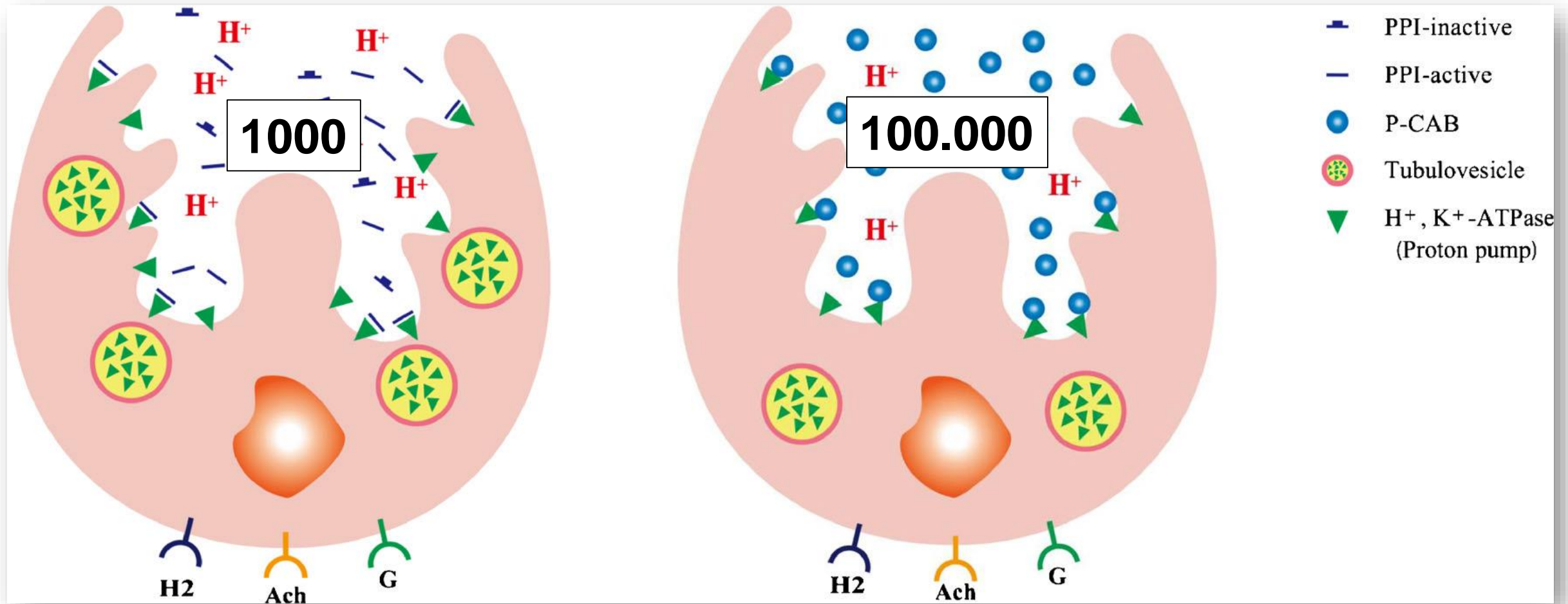
Tegoprazan

**Corea del
Sur**

**Estudio USA Europa
2021-2023**

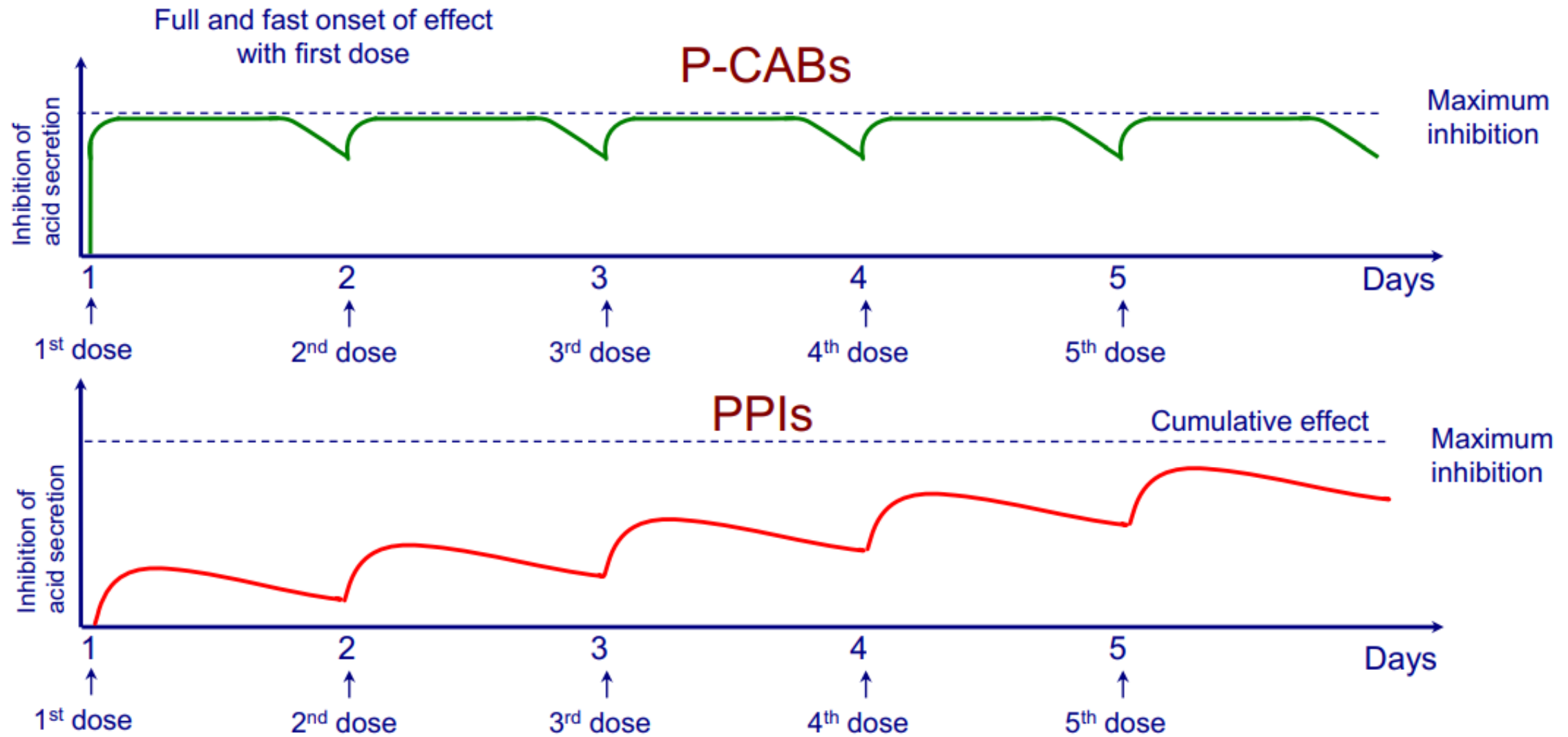
Oshima T, *J Neurogastroenterol Motil.* 2018;24:334–44.
Scarpignato C, *Aliment Pharmacol Ther.* 2019;50:960–62.

IBP 3^a Generación competitivos de K: *P-CABs*



Shibli F, Curr Gastroenterol Rep 2020; 22:16

Hunt RH, Curr Opt Treat Gastroenterol 2018;16:57-90



P-CABs

Acts directly (after protonation) on the H^+,K^+ -ATPase enzyme

Super-concentrates in parietal cell acid space (100,000-fold higher than in plasma)

P-CABs binds competitively to the K^+ binding site to H^+,K^+ -ATPase

Reversible binding to the proton pump

Duration of effect related to half-life of drug in plasma

Full effect from the first dose

PPIs

Requires transformation to the active form, sulfenamide

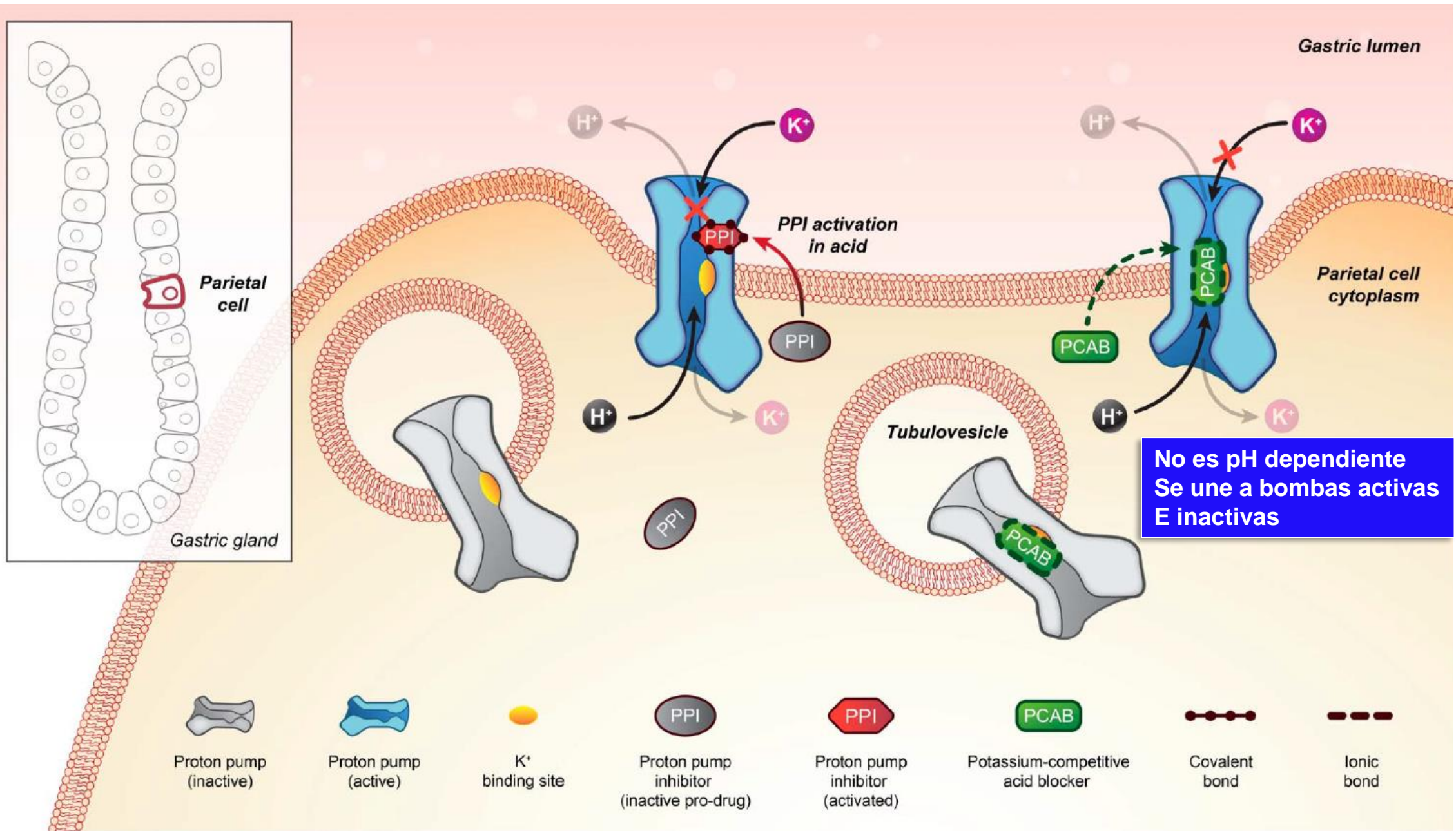
Concentrate in parietal cell acid space (1000-fold higher than in plasma)

Sulfenamide binds covalently to H^+,K^+ -ATPase

Irreversible binding to the proton pump

Duration of effect related to half-life of the sulfenamide-enzyme complex

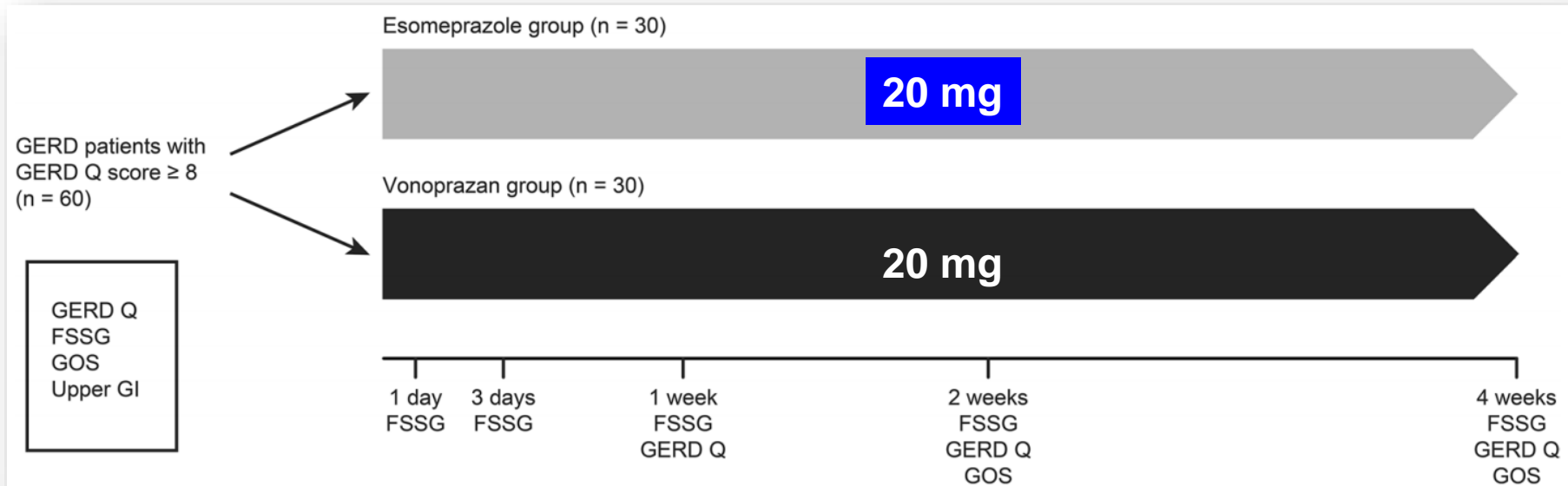
Full effect after repeated doses

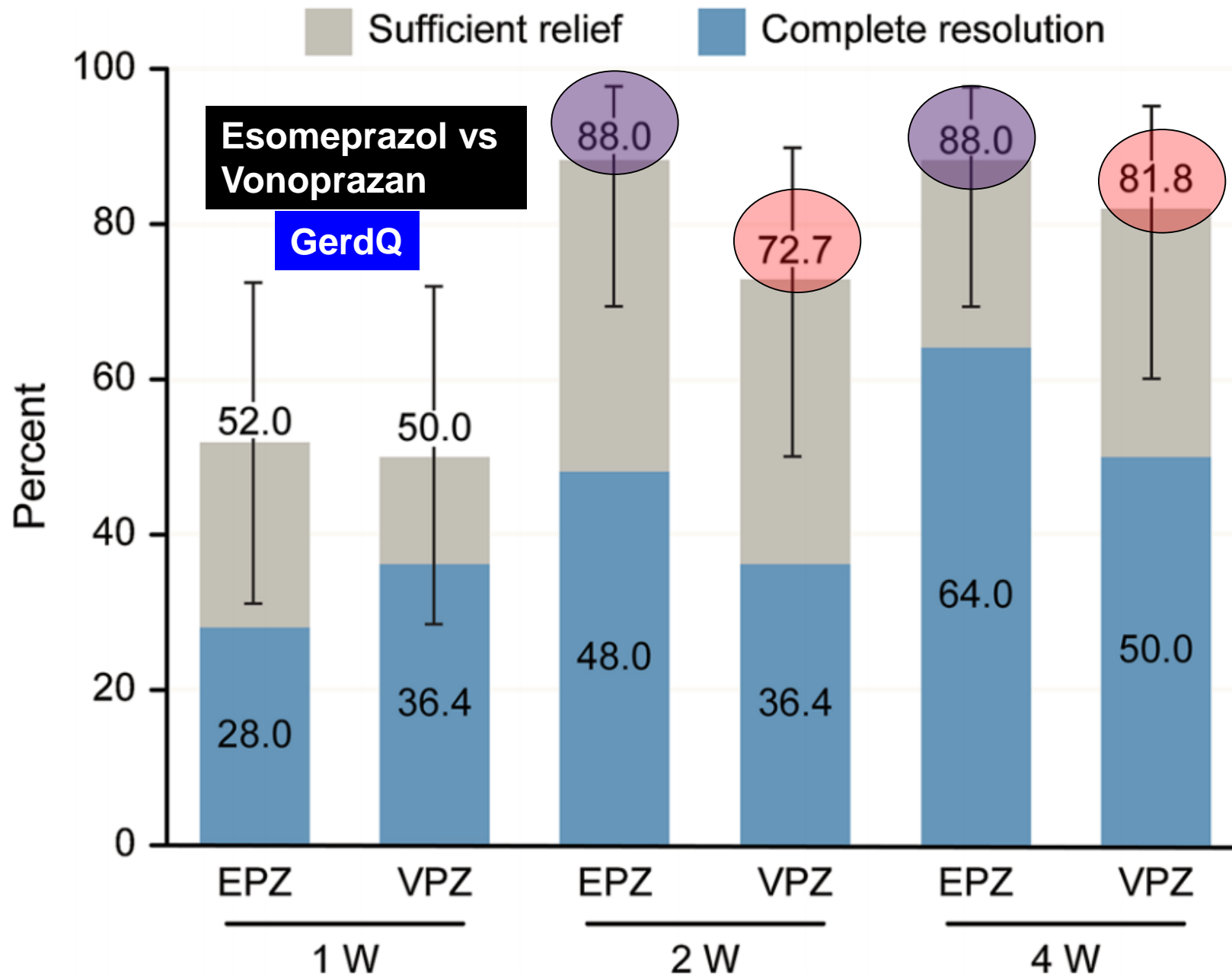


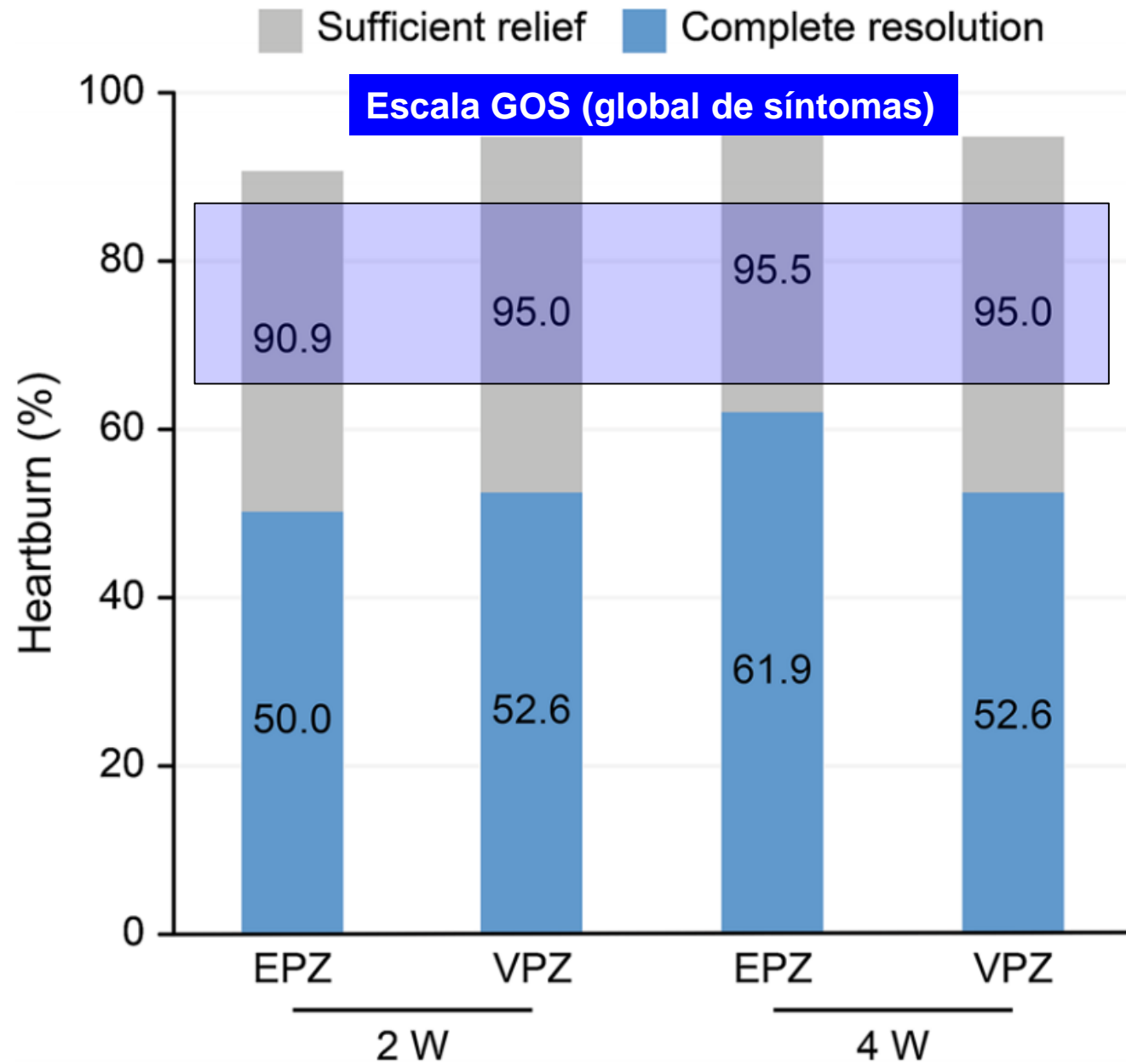
ORIGINAL ARTICLE

Short-Term Symptomatic Relief in Gastroesophageal Reflux Disease: A Comparative Study of Esomeprazole and Vonoprazan

Kouichi Sakurai¹ · Hiroko Suda¹ · Satomi Fujie¹ · Takayuki Takeichi¹ · Ayako Okuda¹ · Tetsuya Murao¹ · Kiwamu Hasuda¹ · Masahiro Hirano² · Kiyoharu Ito³ · Katsuie Tsuruta⁴ · Masahiro Hattori¹







Randomized clinical trial: A double-blind, proof-of-concept, phase 2 study evaluating the efficacy and safety of vonoprazan 20 or 40 mg versus esomeprazole 40 mg in patients with symptomatic gastro-esophageal reflux disease and partial response to a healing dose of a proton-pump inhibitor

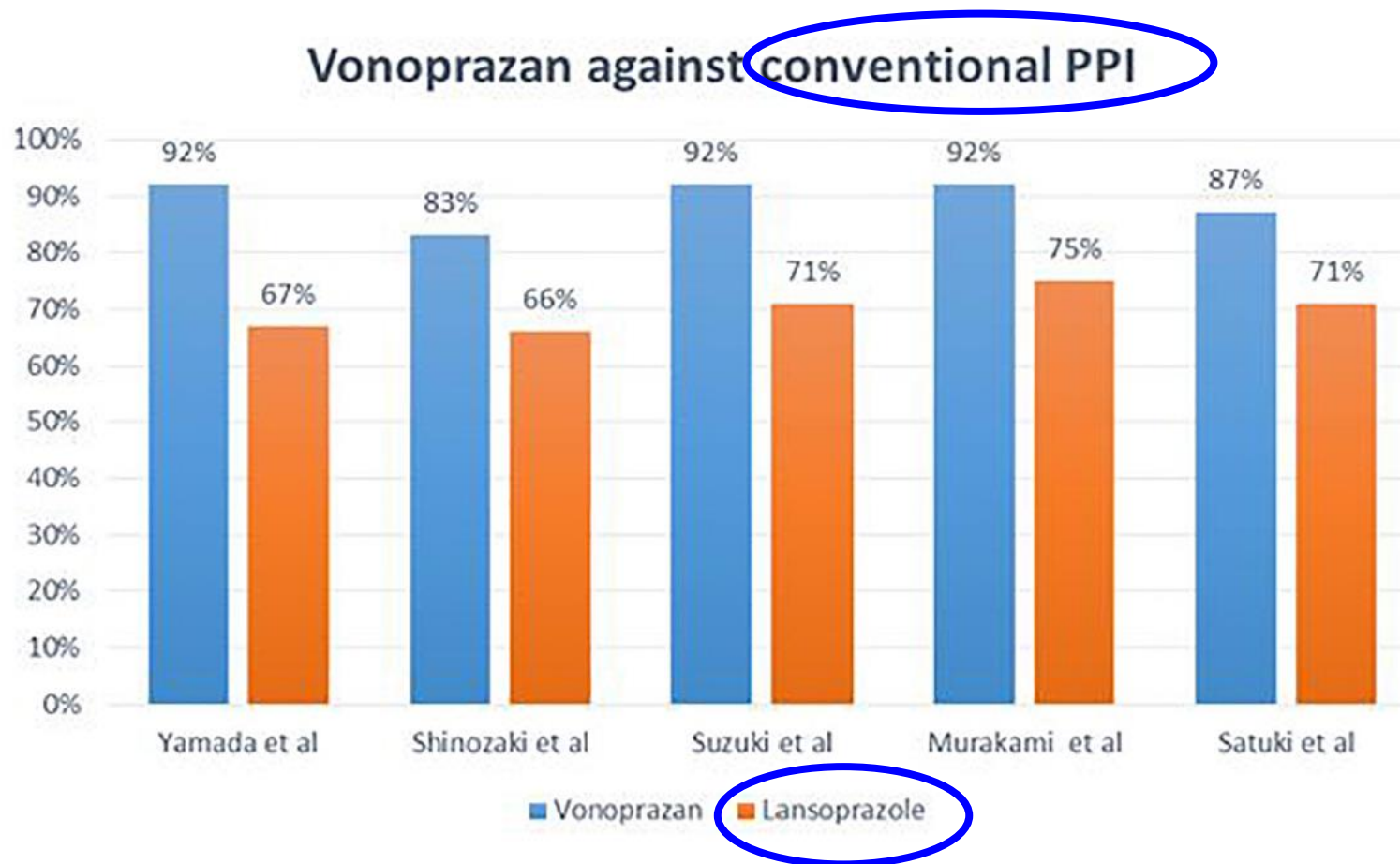
Jan Tack¹ | Borislav Vladimirov² | Ivo Horny³ | Chui Fung Chong⁴ | Jessica Eisner⁵ | Richard Czerniak⁶ | Yohei Takanami⁶

Conclusions: No statistically significant difference in efficacy and safety was observed among treatment groups, and vonoprazan was well tolerated. The trial is registered with the National Board of Health (EudraCT: 2015-001154-14) database.

Vonoprazan en tratamiento de *H.pylori*

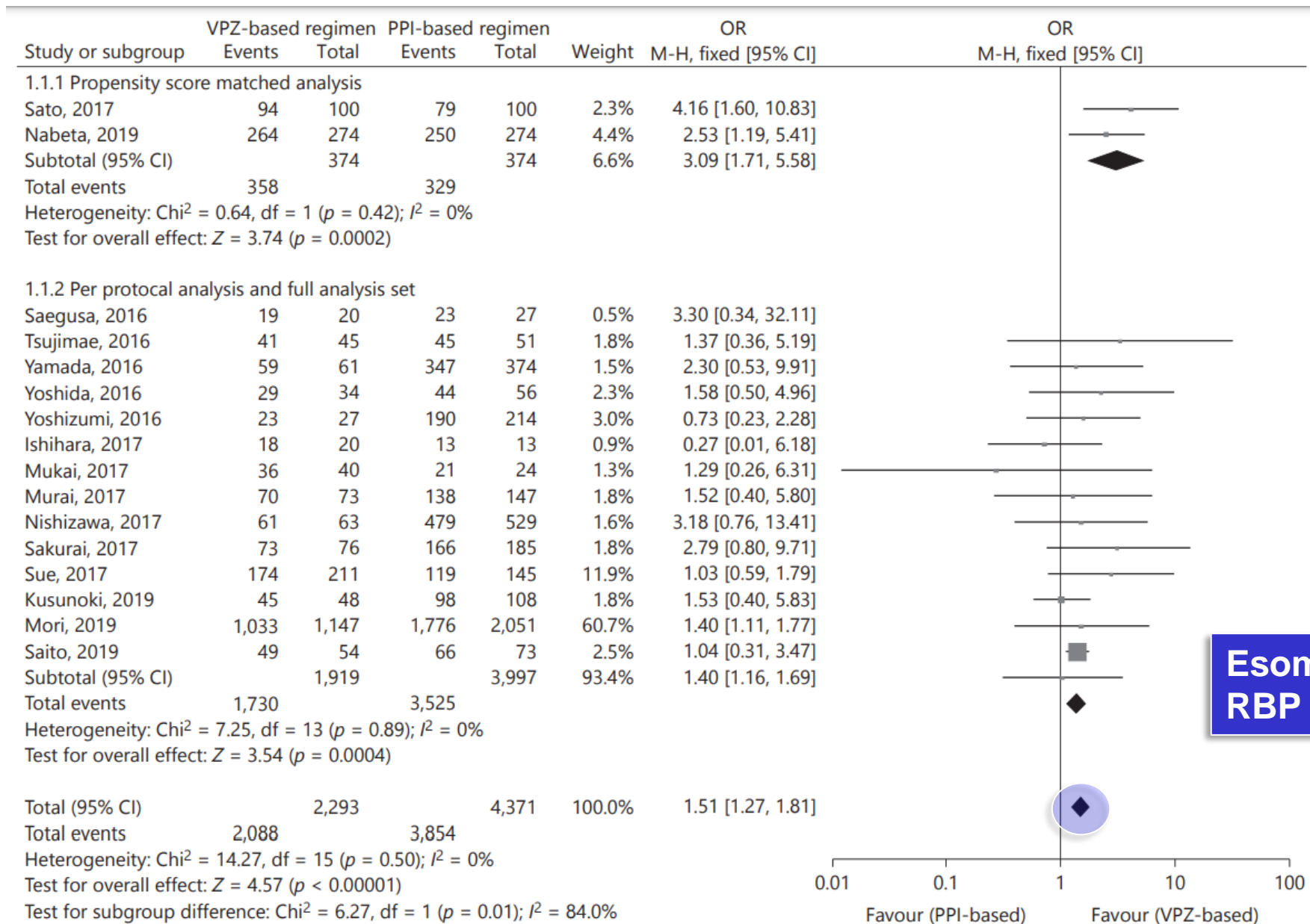
Vonoprazan and *Helicobacter pylori* Treatment: A Lesson From Japan or a Limited Geographic Phenomenon?

Amin Talebi Bezmin Abadi^{1*} and Enzo Ierardi²



**Effectiveness and Safety of Vonoprazan
versus Proton Pump Inhibitors for Second-Line
Helicobacter pylori Eradication Therapy:
Systematic Review and Meta-Analysis**

Satoshi Shinozaki^{a, b} Yasutoshi Kobayashi^b Hiroyuki Osawa^b
Hirotsugu Sakamoto^b Yoshikazu Hayashi^b Alan Kawarai Lefor^c
Hironori Yamamoto^b



**Esomeprazol 20 mg
RBP 10 mg**

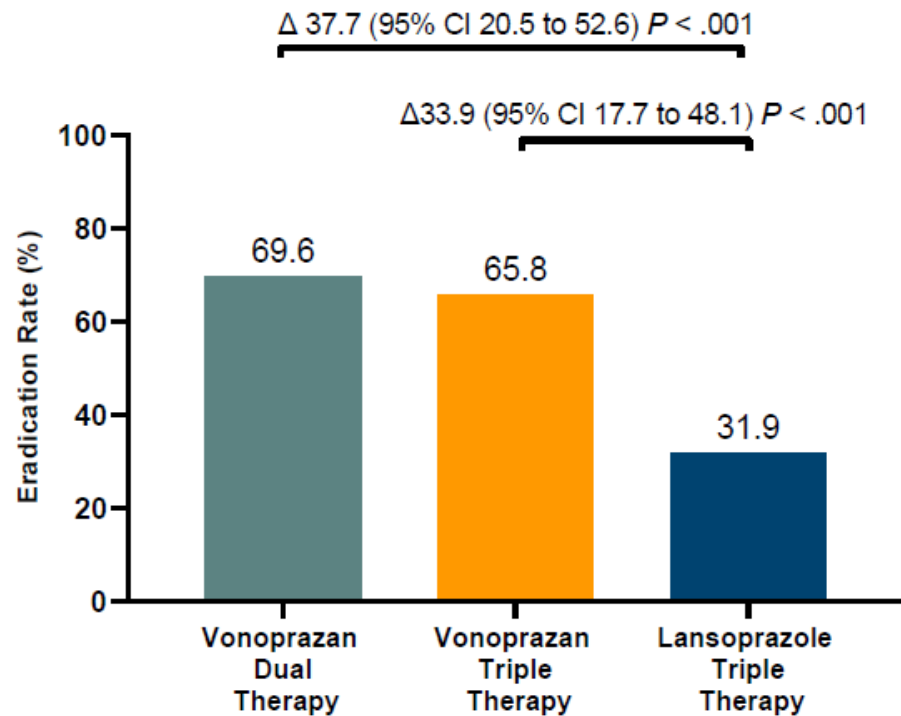
HELICOBACTER PYLORI

Vonoprazan Triple and Dual Therapy for *Helicobacter pylori* Infection in the United States and Europe: Randomized Clinical Trial

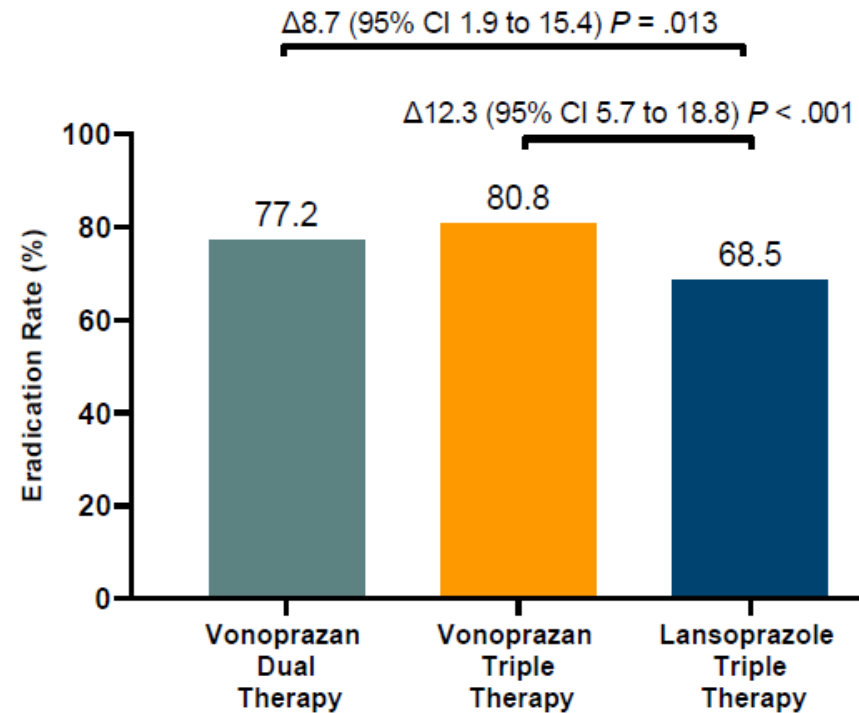


William D. Chey,¹ Francis Mégraud,² Loren Laine,^{3,4} Luis J. López,⁵ Barbara J. Hunt,⁶ and Colin W. Howden⁷

Patients with Clarithromycin-Resistant Strains



All patients



Efectos adversos



IBP



Daño ?



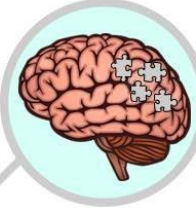
OMEPRAZOL

y riesgos que genera para la salud.

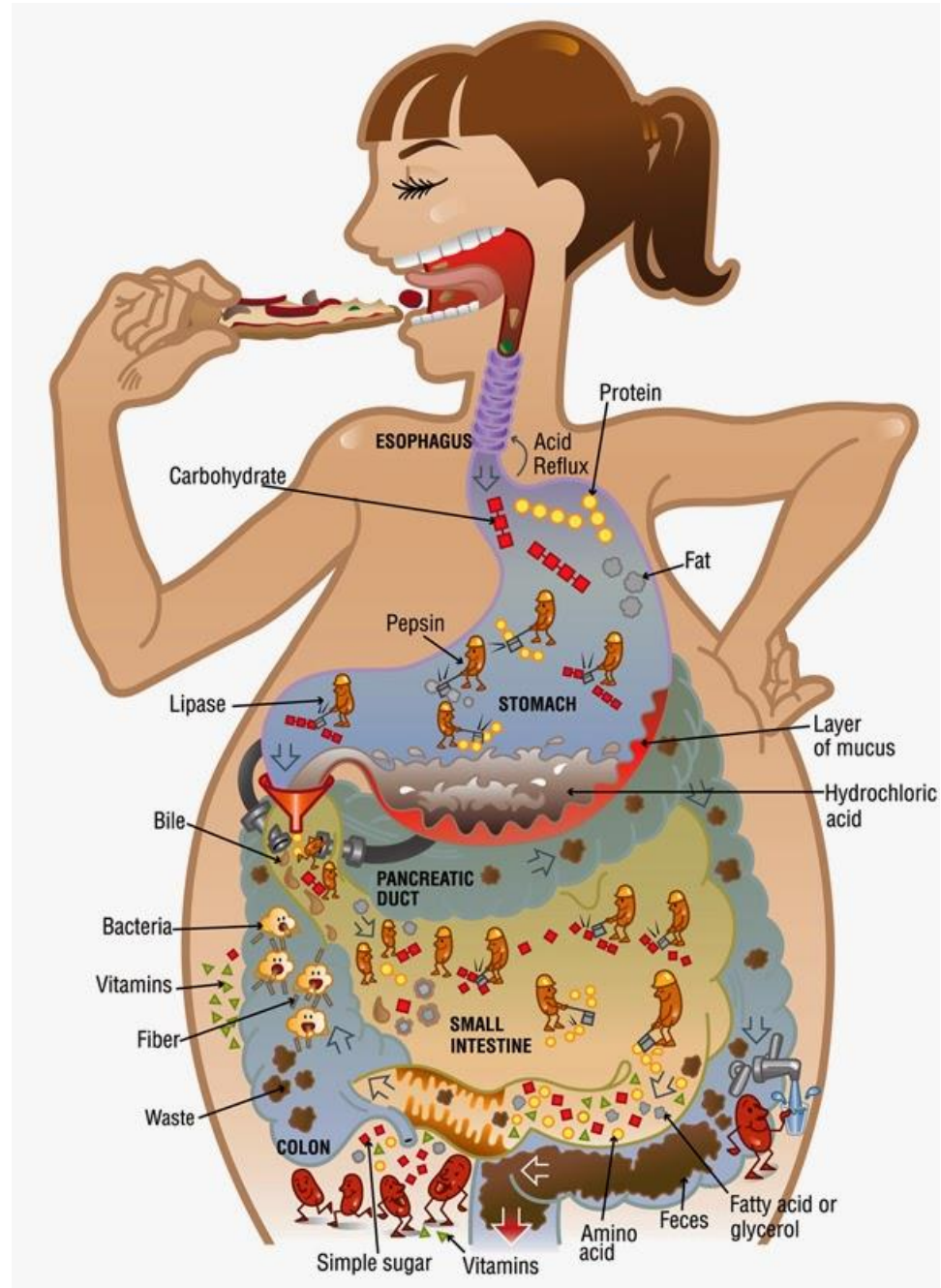
Daño Neurológico



Aparece Demencia



Genera Anemia

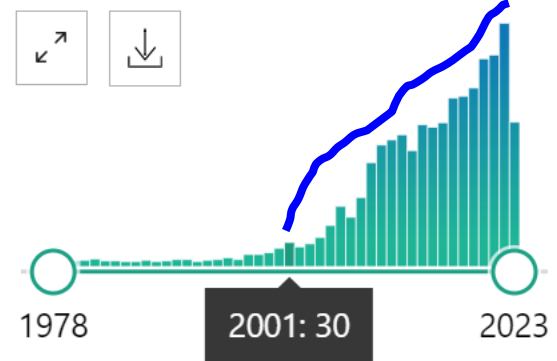


MY NCBI FILTERS

3,539 results

Sept 1, 2023

RESULTS BY YEAR



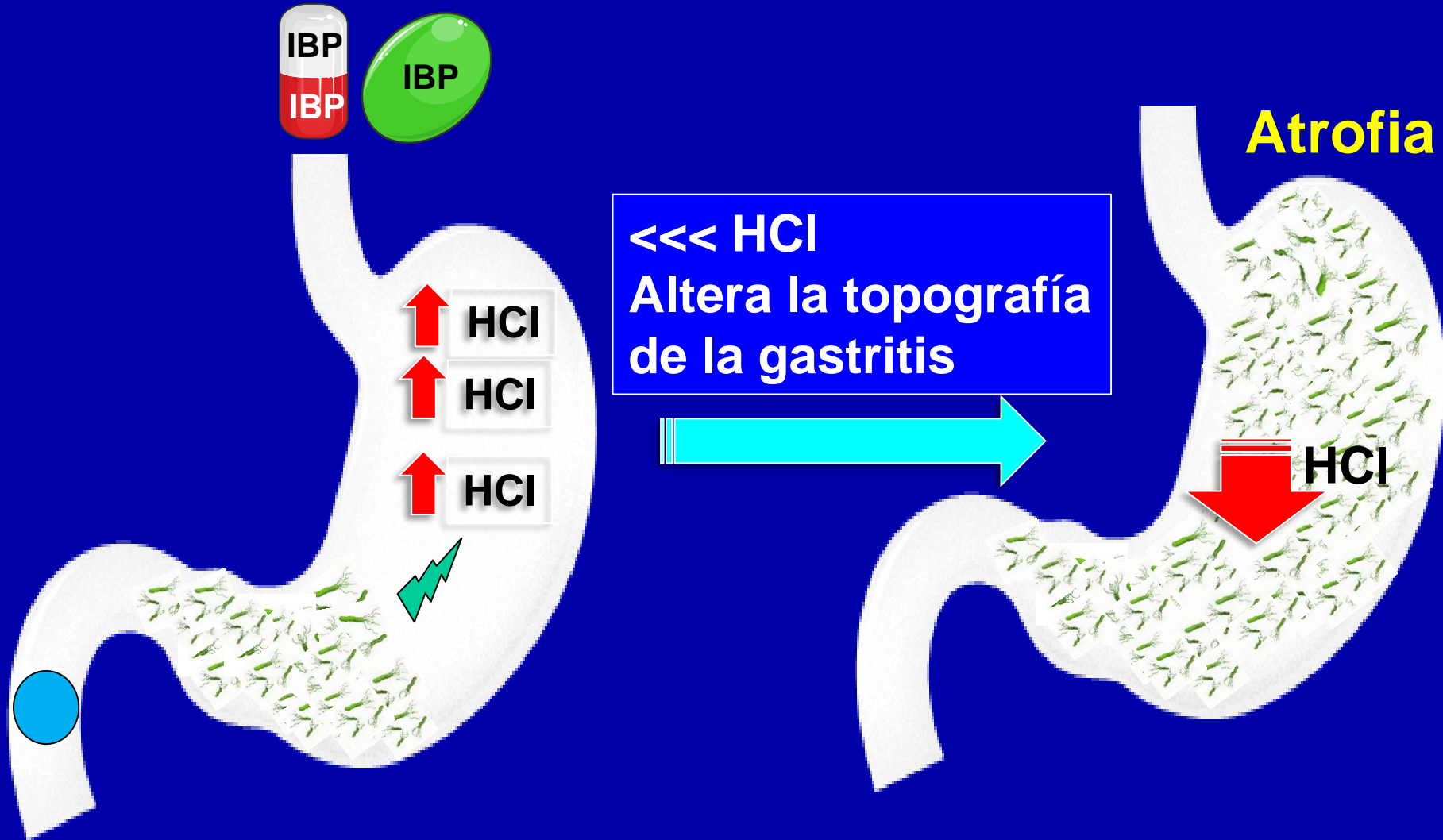
- 1 Proton pump inhibitors in critically ill mechanically ventilated patients with COVID-19: protocol for a substudy of the Re-Evaluating the Inhibition of Stress Erosions (REVISE) Trial.
Dennis BB, Thabane L, Heels-Ansdell D, Dionne JC, Binnie A, Tsang J, Guyatt G, Ahmed A, Lauzier F, Deane A, Arabi Y, Marshall J, Zytaruk N, Saunders L, Finfer S, Myburgh J, Muscedere J, English S, Ostermann M, Hardie M, Knowles S, Cook D; REVISE Investigators the Canadian Critical Care Trials Group. *Trials*. 2023 Aug 30;24(1):561. doi: 10.1186/s13063-023-07589-2. PMID: 37644556 **Free PMC article.**
Despite widespread use in the intensive care unit (ICU), observational data suggest that PPIs may be associated with **adverse** outcomes in patients with COVID-19 infection. This preplanned study is nes within a large randomized trial evaluating pantoprazole versus placebo ...

TEXT AVAILABILITY

Abstract

IBP realidades


IBP y Hpylori














Kuipers EJ, Am J Gastroenterol 1995;90:1401-6
Kuipers EJ, N Engl J Med 1996;334:1018-22
Lundell L, Alim Pharmacol Ther 2006;23:639-47

Fifth Chinese National Consensus Report on the management of *Helicobacter pylori* infection

Helicobacter 2018;23:e12475

Wen Zhong Liu¹ | Yong Xie² | Hong Lu¹ | Hong Cheng³ | Zhi Rong Zeng⁴ | Li Ya Zhou⁵ | Ye Chen⁶ | Jiang Bin Wang⁷ | Yi Qi Du⁸ | Nong Hua Lu²  | on behalf of Chinese Society of Gastroenterology, Chinese Study Group on *Helicobacter pylori* and Peptic Ulcer

Management of *Helicobacter pylori* infection: the Maastricht VI/Florence consensus report

Peter Malfertheiner ,^{1,2} Francis Megraud ,³ Theodore Rokkas ,^{4,5} Javier P Gisbert ,^{6,7} Jyh-Ming Liou ,⁸ Christian Schulz ,^{1,9} Antonio Gasbarrini,¹⁰ Richard H Hunt,^{11,12} Marcis Leja ,^{13,14} Colm O'Morain,¹⁵ Massimo Rugge ,^{16,17} Sebastian Suerbaum,^{9,18} Herbert Tilg ,¹⁹ Kentaro Sugano ,²⁰ Emad M El-Omar ,^{21,22} On behalf of the European *Helicobacter* and Microbiota Study group

Gut 2022 online agosto 8

Statement 11: Long-term treatment with PPIs alters the topography of *H. pylori* gastritis.

Agreement 94%

Grade A1

Statement 12: *H. pylori* eradication improves gastritis in long-term PPI users.

Agreement 97%

Grade A1

IBP largos
Períodos

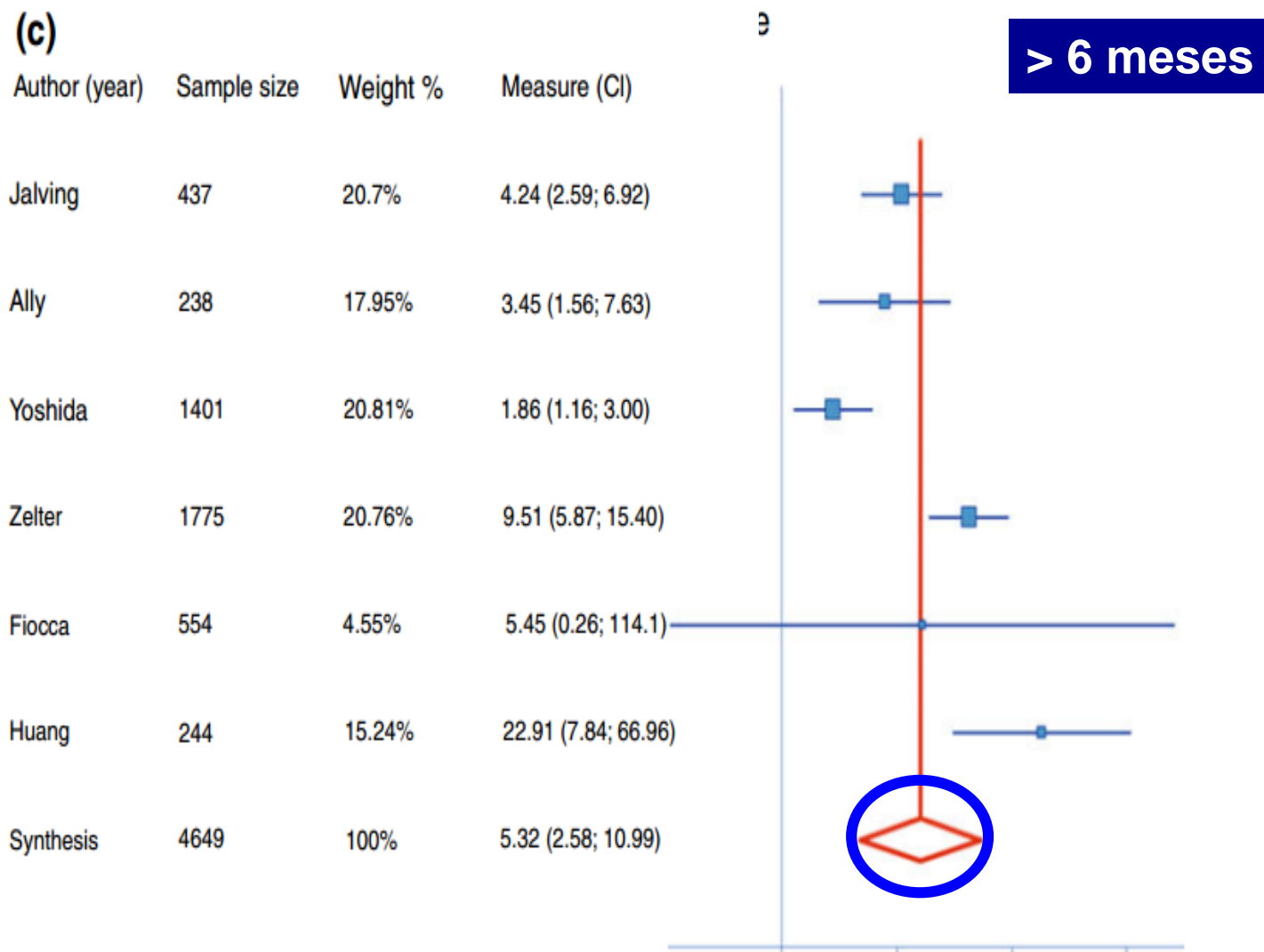


Erradicación
H.pylori

Systematic review with meta-analysis: fundic gland polyps and proton pump inhibitors

Aliment Pharmacol Ther 2016, Online Sept 21

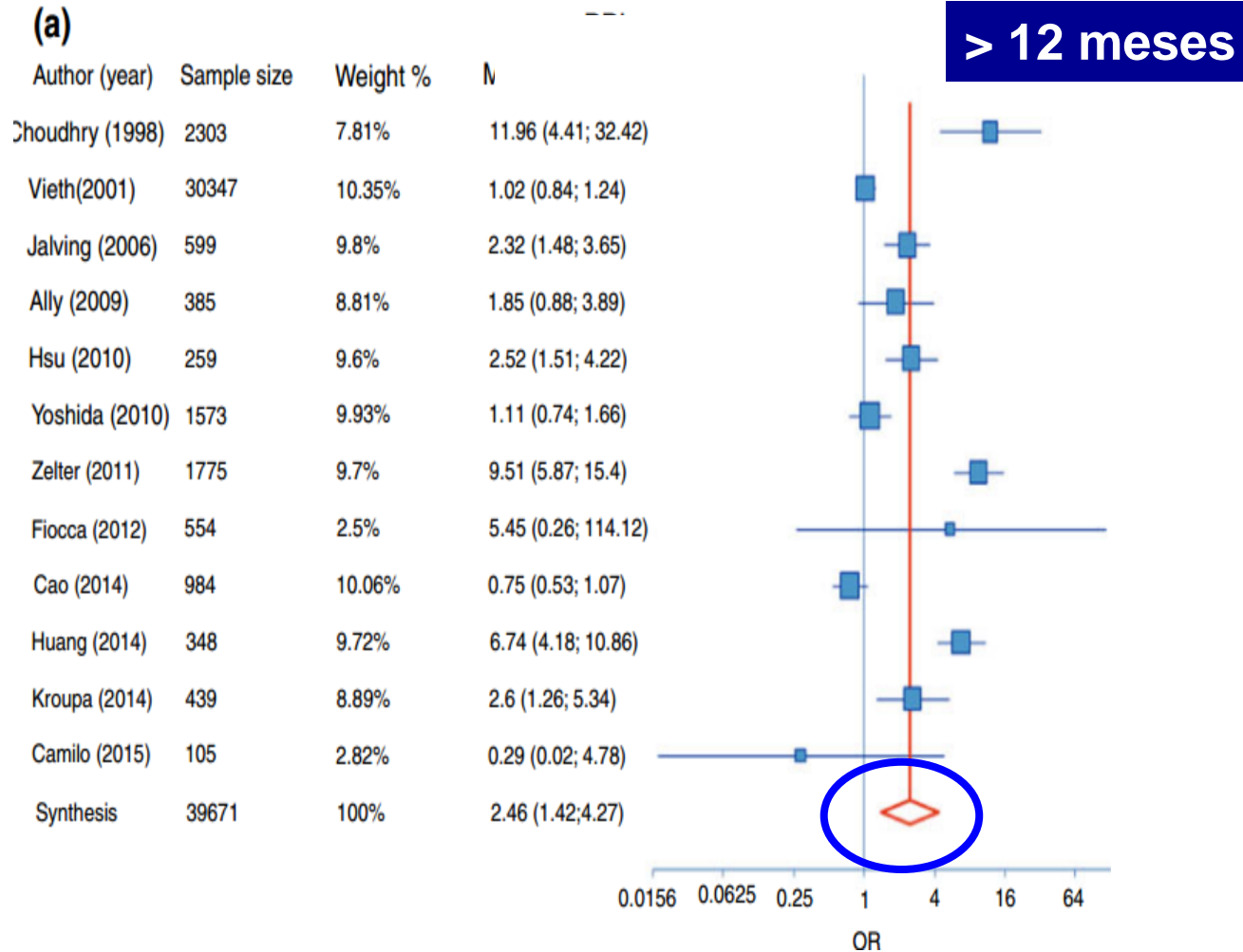
F. C. Martin*, G. Chenevix-Trench† & N. D. Yeomans *†‡



Systematic review with meta-analysis: fundic gland polyps and proton pump inhibitors

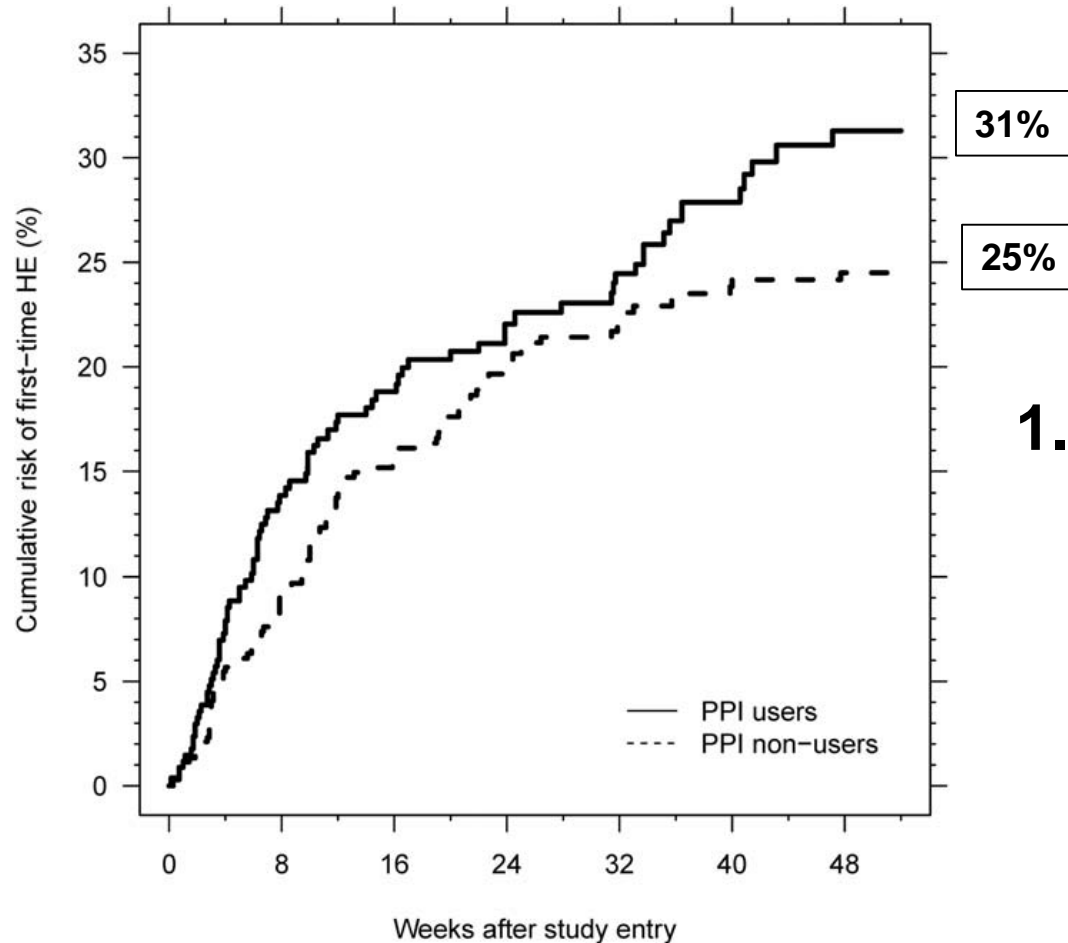
Aliment Pharmacol Ther 2016,Online Sept 21

F. C. Martin*, G. Chenevix-Trench[†] & N. D. Yeomans ^{*,‡}



Proton Pump Inhibitors as a Risk Factor for Hepatic Encephalopathy and Spontaneous Bacterial Peritonitis in Patients With Cirrhosis With Ascites

Gitte Dam,¹ Hendrik Vilstrup,¹ Hugh Watson,² and Peter Jepsen^{1,3}

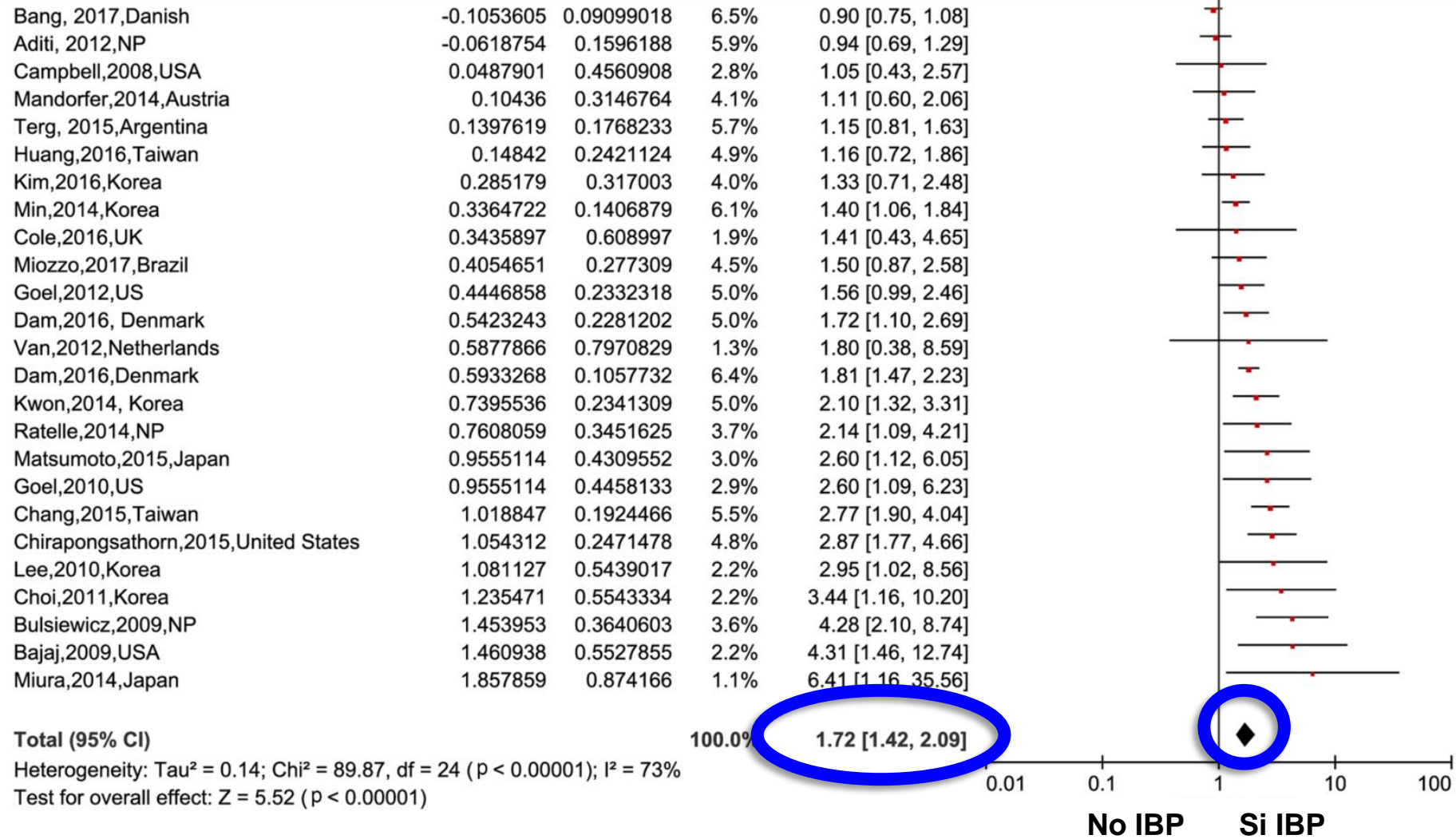


1.72 (IC 95% 1.10-2.69).

Adverse outcomes of proton pump inhibitors in chronic liver disease: a systematic review and meta-analysis

Junna Wang^{1,2} · Yangpeng Wu³ · Qiu Bi⁴ · Xianglong Zheng⁵ · Jingtao Zhang⁶ · Wenxiang Huang⁵

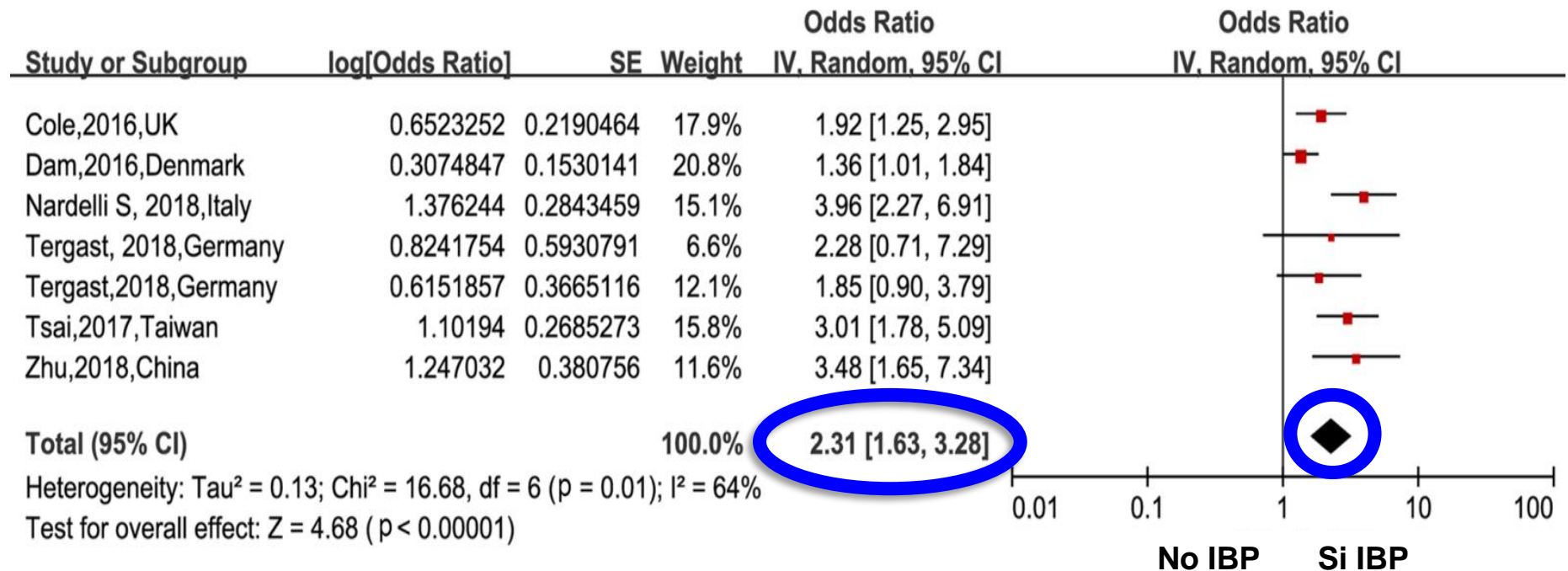
Peritonitis Bacteriana Espontánea



Adverse outcomes of proton pump inhibitors in chronic liver disease: a systematic review and meta-analysis

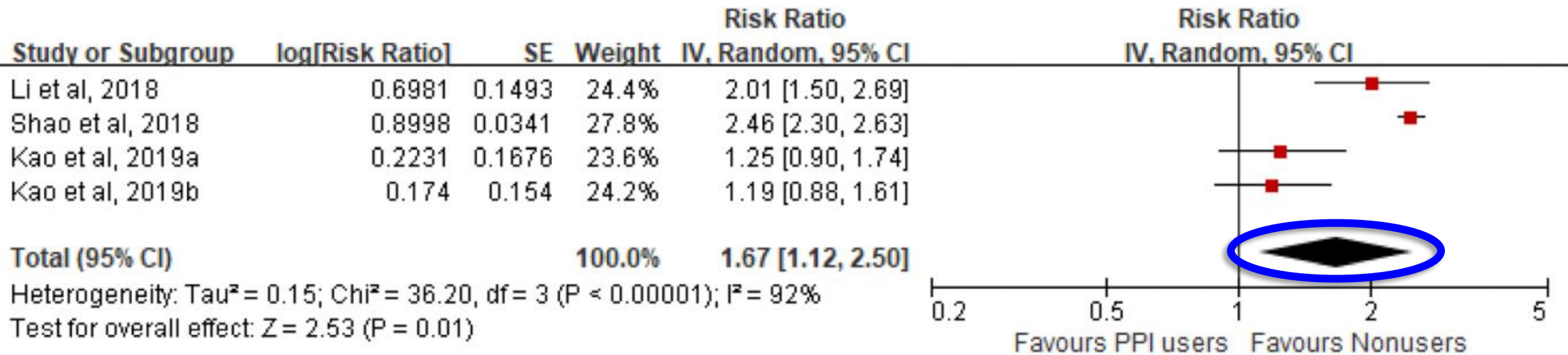
Junna Wang^{1,2} · Yangpeng Wu³ · Qiu Bi⁴ · Xianglong Zheng⁵ · Jingtao Zhang⁶ · Wenxiang Huang⁵

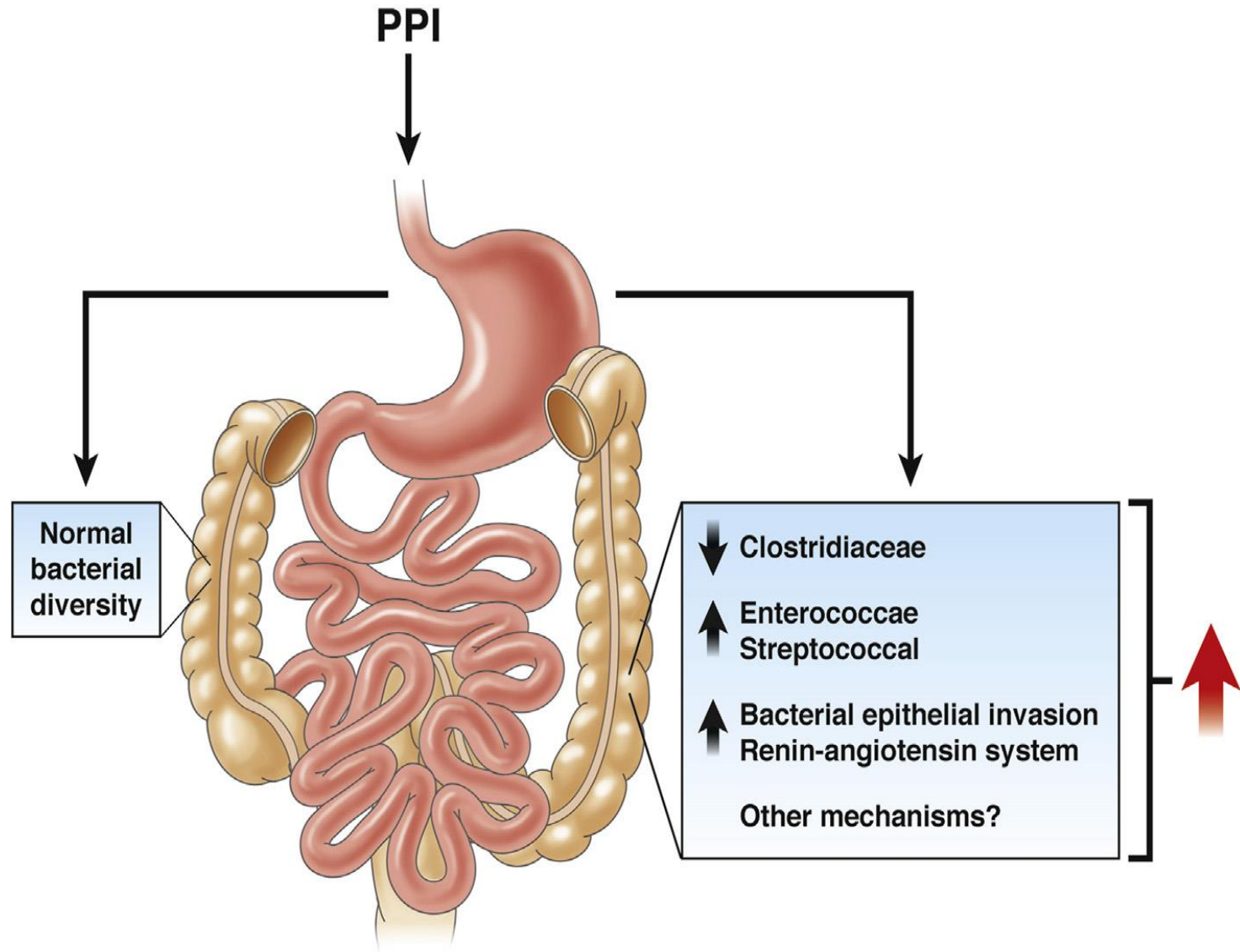
Encefalopatía



Proton pump inhibitors and risk of liver cancer and mortality in patients with chronic liver disease: a systematic review and meta-analysis

Hyun Jin Song^{1,2}  · Xinyi Jiang¹ · Linda Henry¹ · Mindie H. Nguyen³ · Haesuk Park¹ 





Melgar S, Gastroenterology 2015;149:848–863

ORIGINAL ARTICLE

Imhann F, et al. Gut 2016;65:740–748

Proton pump inhibitors affect the gut microbiome

Floris Imhann,¹ Marc Jan Bonder,² Arnau Vich Vila,¹ Jingyuan Fu,² Zlatan Mujagic,³ Lisa Vork,³ Etti F Tigchelaar,² Soesma A Jankipersadsing,² Maria Carmen Cenit,² Hermie J M Harmsen,⁴ Gerard Dijkstra,¹ Lude Franke,² Ramnik J Xavier,⁵ Daisy Jonkers,³ Cisca Wijmenga,² Rinse K Weersma,¹ Alexandra Zhernakova²

ORIGINAL ARTICLE

Jackson MA, et al. Gut 2016;65:749–75

Proton pump inhibitors alter the composition of the gut microbiota

Matthew A Jackson,¹ Julia K Goodrich,^{2,3} Maria-Emanuela Maxan,⁴ Daniel E Freedberg,⁵ Julian A Abrams,⁵ Angela C Poole,^{2,3} Jessica L Sutter,^{2,3} Daphne Welter,^{2,3} Ruth E Ley,^{2,3} Jordana T Bell,¹ Tim D Spector,¹ Claire J Steves¹

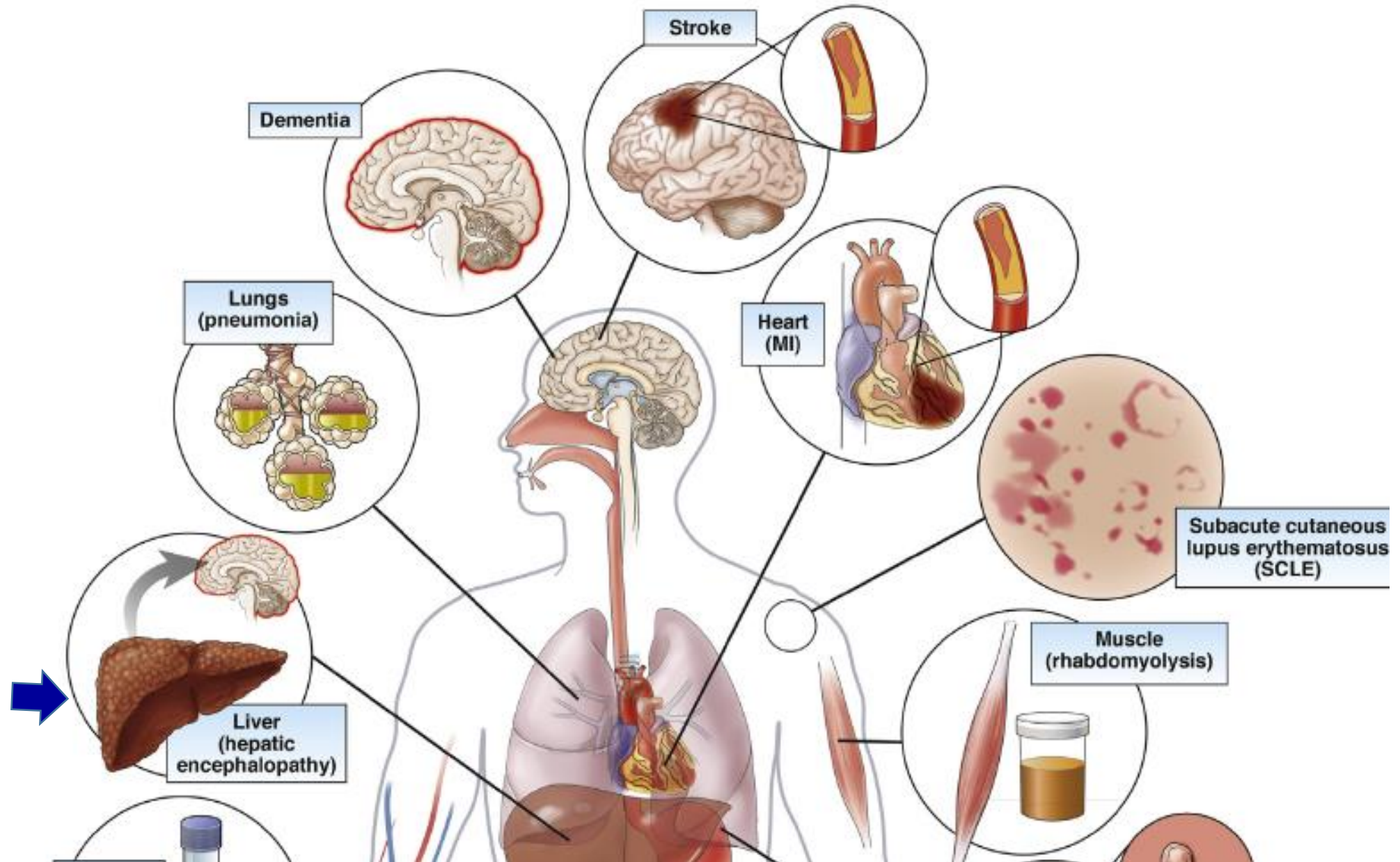
Proton Pump Inhibitors Alter Specific Taxa in the Human Gastrointestinal Microbiome: A Crossover Trial

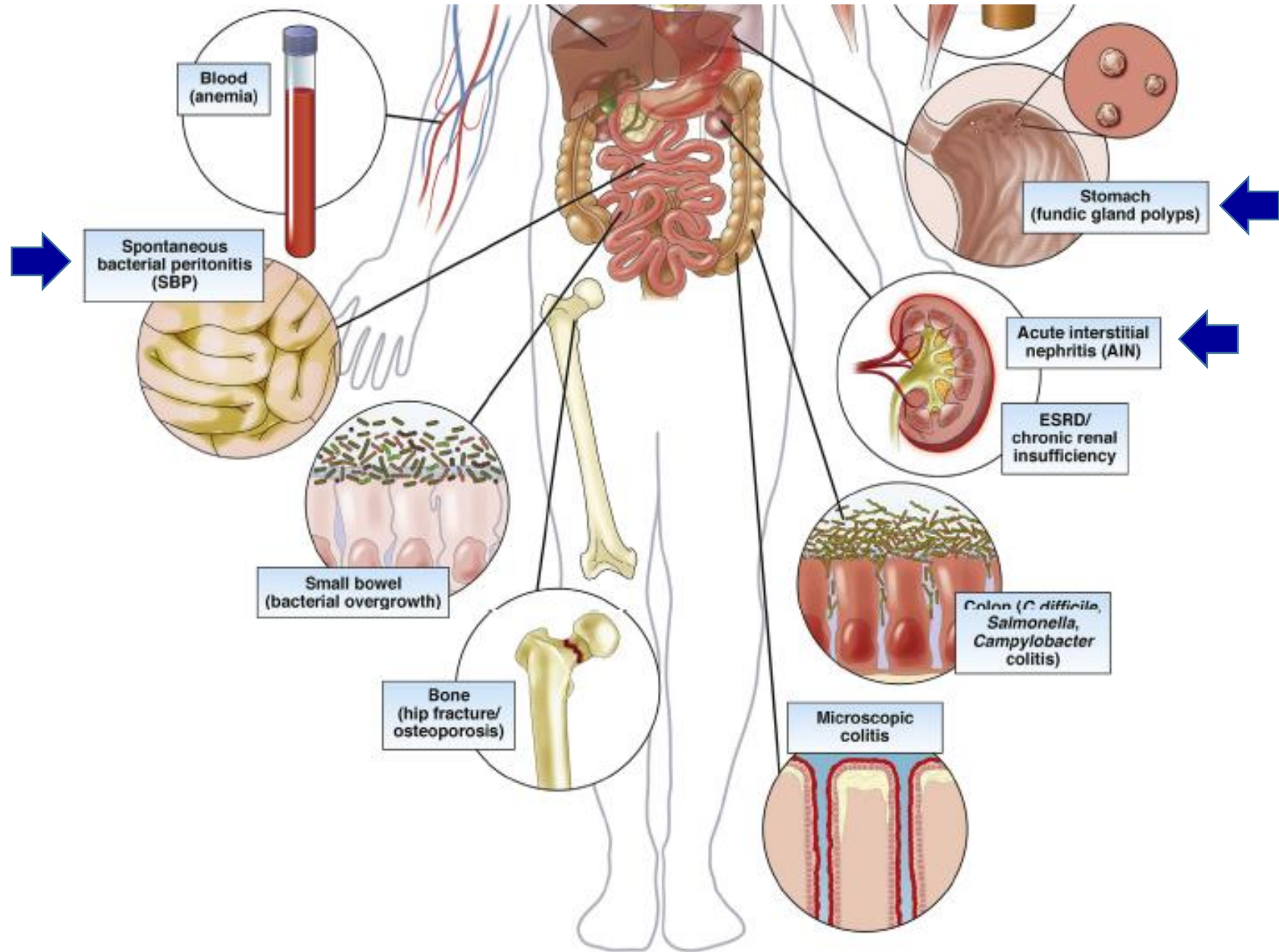


Daniel E. Freedberg,¹ Nora C. Toussaint,² Sway P. Chen,³ Adam J. Ratner,⁴ Susan Whittier,⁵ Timothy C. Wang,¹ Harris H. Wang,^{5,6,§} and Julian A. Abrams^{1,§}

Gastroenterology 2015;149:883–885

**Efectos colaterales
serios**





Proton Pump Inhibitor Use and Risk of Gastric, Colorectal, Liver, and Pancreatic Cancers in a Community-Based Population

Jeffrey K. Lee, MD, MPH^{1,2}, Sophie A. Merchant, MPH², Jennifer L. Schneider, MPH², Christopher D. Jensen, PhD, MPH², Bruce H. Fireman, MA², Charles P. Quesenberry, PhD² and Douglas A. Corley, MD, PhD^{1,2}

IBP 2 o màs años





Càncer Gàstrico
OR 1.07 (IC95%0.8-1.1)

Càncer Colo-Rectal
OR 1.05 (IC95%0.99-1.12)

Càncer Hígado
OR 1.14 (IC95%0.91-1.43)

Càncer Pàncreas
OR 1.22 (IC95%0.89-1.67)

Meta-analysis: Use of proton pump inhibitors and risk of gastric cancer in patients requiring gastric acid suppression

Daniele Piovani^{1,2}  | Andreas G. Tsantes^{3,4}  | Holger J. Schünemann^{1,5,6}  |
Stefanos Bonovas^{1,2} 

Results: Of 8375 records, 12 NRS (>6 million patients; 11,554 gastric cancers) and two randomised clinical trials (498 patients; 1 gastric cancer) fulfilled the eligibility criteria. Randomised evidence was very imprecise and provided very-low certainty evidence. Meta-analysis of six NRS providing a comprehensive adjustment for confounding (2.5 million patients; 7372 gastric cancers) did not show any association between PPIs and gastric cancer ($RR_{\text{random}} = 1.07, 0.97-1.19$; $RR_{\text{fixed}} = 1.05, 0.98-1.12$). The certainty of the evidence was low. No convincing evidence of dose-response, or increased risk with long-term use, was found. Lack of or minimal adjustment for confounding was associated with larger effect sizes.

Conclusions: We found no association between PPIs and gastric cancer in NRS having adequately controlled for confounding. Published studies may suffer residual

Association of Proton Pump Inhibitor Use With Incident Dementia and Cognitive Decline in Older Adults: A Prospective Cohort Study



Raaj S. Mehta,¹ Bharati Kochar,¹ Zhen Zhou,² Jonathan C. Broder,³ Paget Chung,¹ Keming Yang,¹ Jessica Lockery,³ Michelle Fravel,^{4,5} Joanne Ryan,³ Suzanne Mahady,³ Suzanne G. Orchard,³ John J. McNeil,³ Anne Murray,³ Robyn L. Woods,³ Michael E. Ernst,^{4,5} and Andrew T. Chan^{1,6}

ASPIrin in Reducing Events in the Elderly

ASPREE



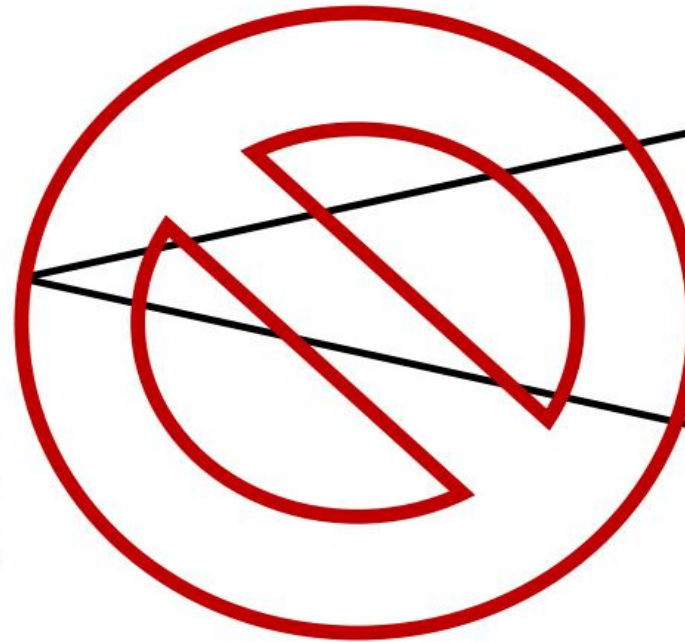
18,934 adults ≥ 65 years in Australia & United States without dementia, disability & CV disease

Baseline

PPI



H2RA



Primary outcome: dementia





Secondary outcomes:

1. cognitive impairment
2. Δ cognitive test scores

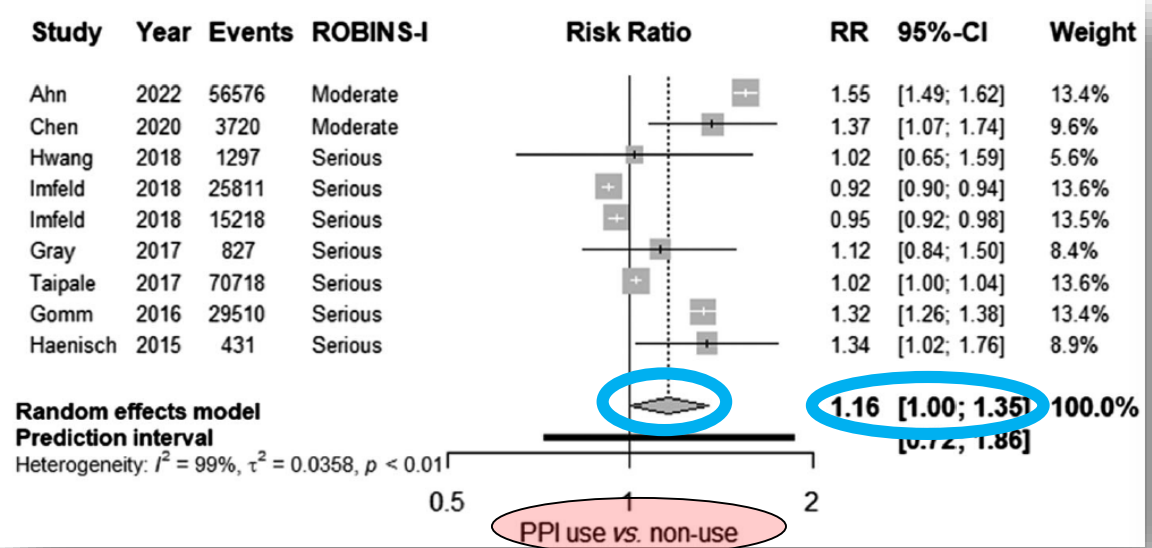


Do proton pump inhibitors increase the risk of dementia? A systematic review, meta-analysis and bias analysis

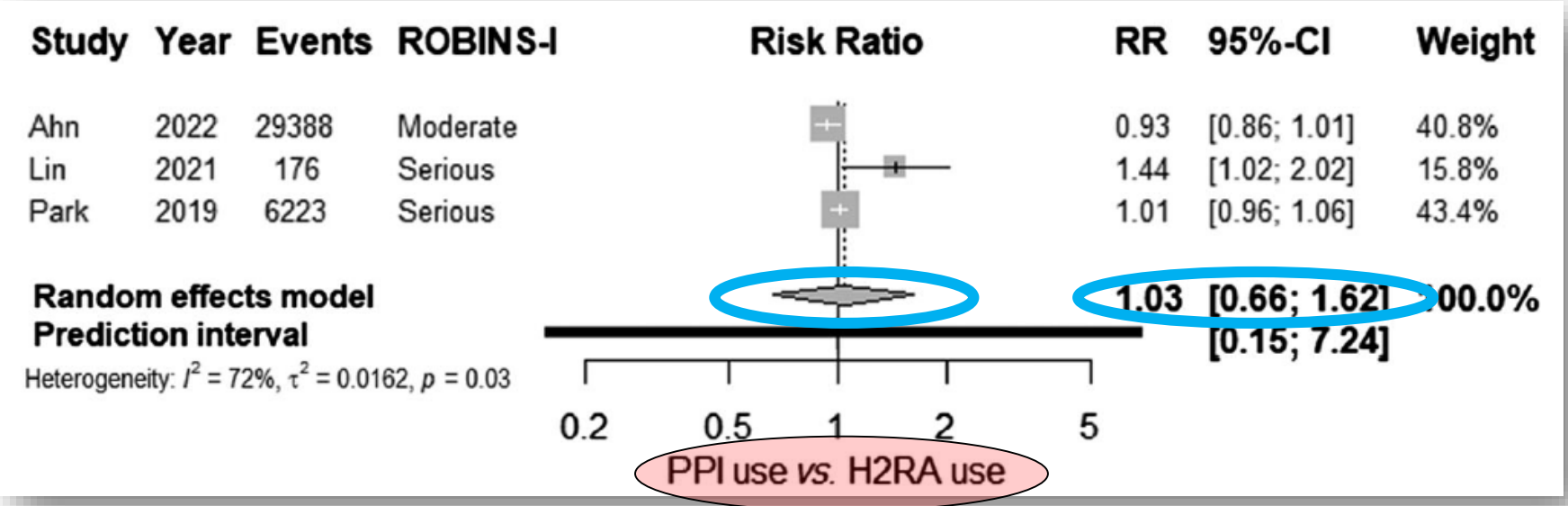
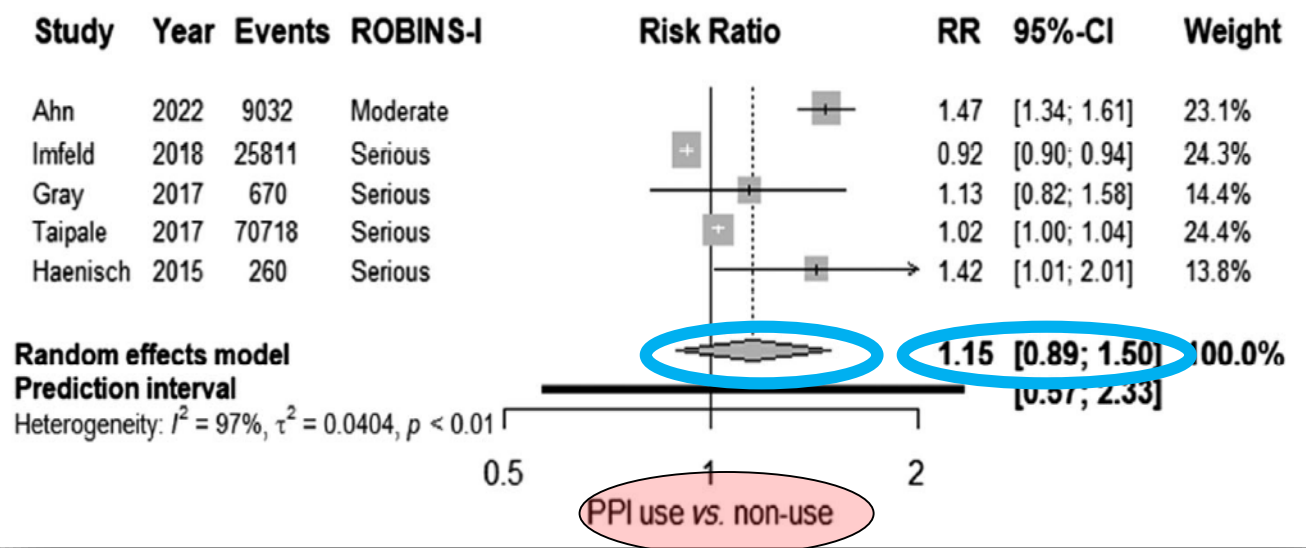
Nayeon Ahn^{1,2}  | Michael Nolde^{1,2}  | Evamaria Krause³ | Florian Güntner⁴ |
Alexander Günter⁴ | Martin Tauscher⁵ | Roman Gerlach⁵ | Christa Meisinger² |
Jakob Linseisen^{1,2} | Sebastian-Edgar Baumeister⁶ | Ina-Maria Rückert-Eheberg^{1,2}

Ahn N, Br J Clin Pharmacol. 2023;89:602-16.

Demencia



Demencia-Alzheimer



Nefritis Intersticial Aguda



1/12.500 pacientes/año

Simpson IJMM, Nephrology 2006;11:381-5

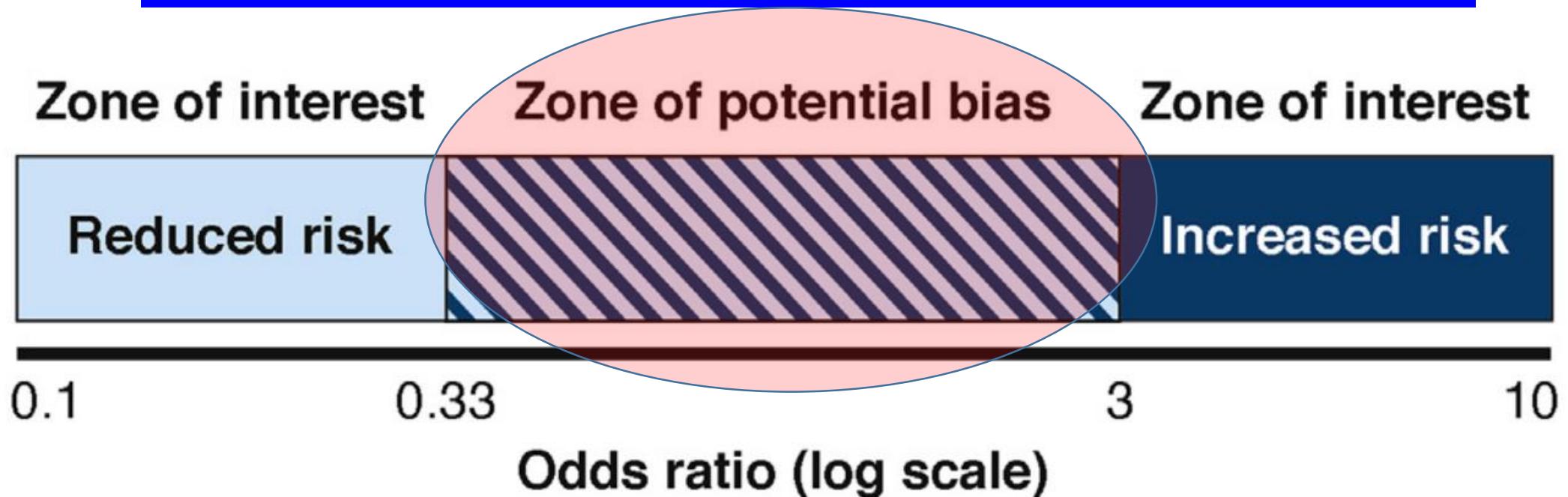
Risk of bias in non-randomized observational studies assessing the relationship between proton-pump inhibitors and adverse kidney outcomes: a systematic review

Pradeep Rajan, Kristy Iglay, Thomas Rhodes, Cynthia J. Girman, Dimitri Bennett 
and Kamyar Kalantar-Zadeh

Conclusion: Using ROBINS-I, we found that non-randomized observational studies suggesting kidney harm by PPIs have moderate to serious risk of bias, making it challenging to establish causality. Additional high-quality, real-world evidence among generalizable populations are needed to better understand the relation between PPI treatment and acute and chronic kidney outcomes, accounting for the effects of varying durations of PPI treatment, self-treatment with over-the-counter PPIs, and potential critical confounders.

IBP y efectos adversos serios

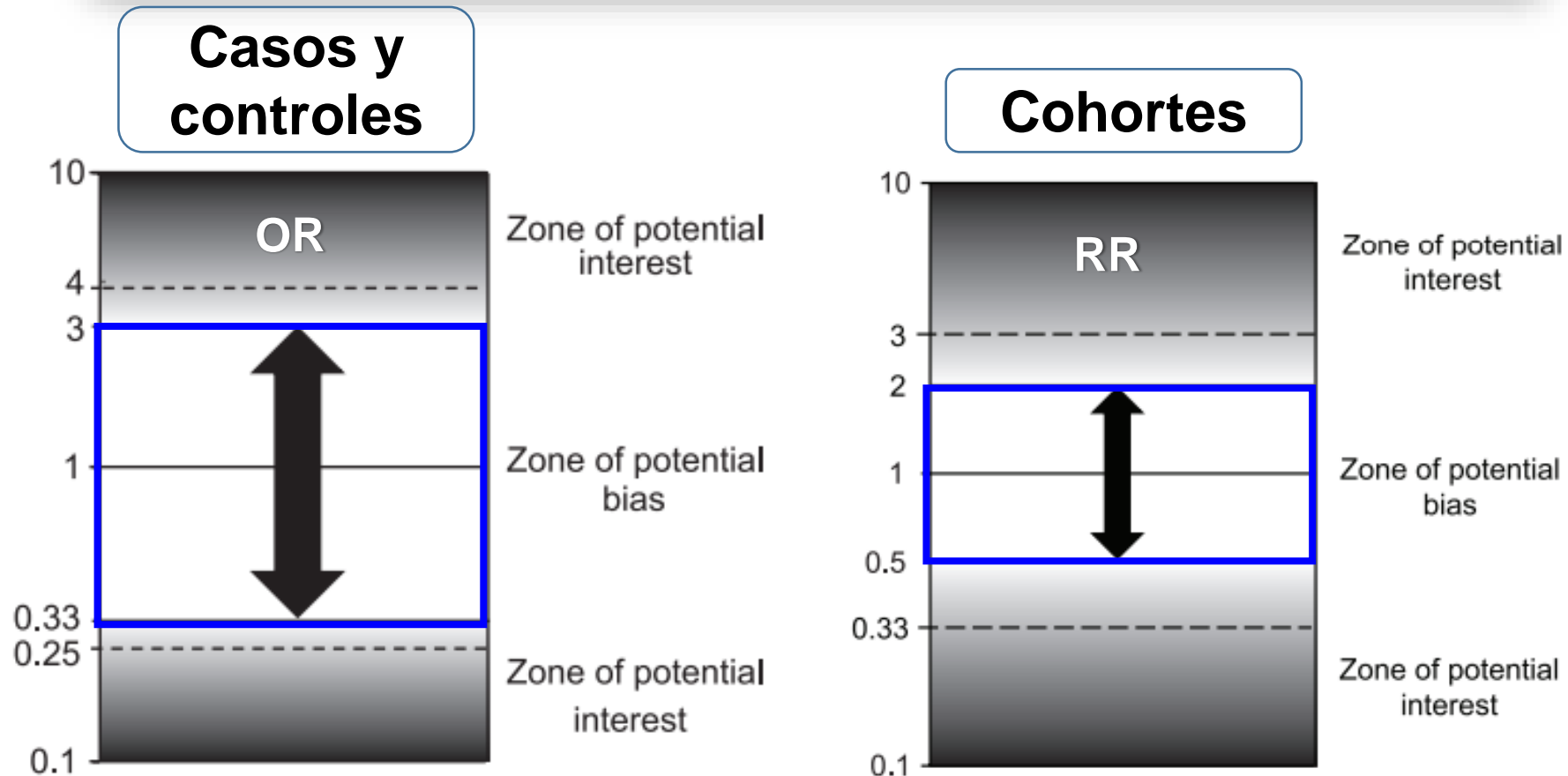
Los estudios OBSERVACIONALES, tienen alto riesgo de variables no controladas



False Alarms and Pseudo-Epidemics

The Limitations of Observational Epidemiology

David A. Grimes, MD, and Kenneth F. Schulz, PhD, MBA



Estudios observacionales

No todo lo que parece ser es!



OR y RR bajos menor de 3
Muchas variables de confusión

Mensajes para la casa

Los IBPs Tienen indicaciones concretas
IBPs pro-drogas antes de comidas
Prescripciones incorrectas son la mayoría
Efectos adversos temidos no hay evidencia
Asociación menor a 3 no es causalidad
P-CABs superiores a IBP primera generación

Muchas gracias!

