

HARM (Cohort) MODULE

Association of Proton Pump Inhibitor (PPI) Use with risk of Dementia

Objectives:

In this session, the learner will:

1. Assess the validity of a harm (cohort) paper.
2. Determine the clinical importance of the results of a valid harm paper.
3. Address how valid and important results from a harm paper can be applied to our patient.

Clinical Scenario:

Ms. PM, a 76 yo female, presents to her primary care doctor for follow up. She has a past medical history of chronic diastolic congestive heart failure, esophageal reflux, osteoporosis, chronic kidney disease stage 3. She also sustained right hip fracture 2 years ago status post repair. She takes 4 medicines - furosemide 40 mg daily, lisinopril 5 mg daily, omeprazole 40 mg daily (has taken for 5 years), vitamin D 800 IU daily, and alendronate 70 mg daily. She has a family history significant for hip fracture and Alzheimer's disease in her mother. She smoked 1 ppd for 30 years before quitting 10 years ago. She is widowed and has one daughter. She currently lives independently.

Her physical exam is unremarkable. Her labs (CBC and vitamin D) are normal or unchanged. eGFR is 55 ml. You refill her medicines, discuss yearly flu shots and order one to be given today, and also tell her that she does not need any more mammograms or colonoscopies. She seems pleased with that suggestion. As you close the visit with "What questions do you have for me?", she says, "**I heard that my omeprazole can cause dementia ...**". You are not sure how to address the question credibly, and you're also out of time, so you assure her that you will call her later in the day.

You've read the NY Times article talking about it, but never found the time to appraise the evidence yourself. You decide to search the evidence to answer your question: *In older adults, is there an association between prolonged use of PPI (omeprazole) and subsequent development of dementia?*

Search Strategy:

You start your search with PubMed Clinical Queries with the terms "PPI dementia" under Etiology and narrow and find several citations, the top 5 as listed below.

- Risk of dementia from proton pump inhibitor use in Asian population: A nationwide cohort study in Taiwan. *Tai SY, Chien CY, Wu DC, Lin KD, Ho BL, Chang YH, Chang YP. PLoS One. 2017 Feb 15; 12(2):e0171006. Epub 2017 Feb 15.*
- PROTON PUMP INHIBITORS: RISKS OF LONG-TERM USE. *Eusebi LH, Rabitti S, Artesiani ML, Gelli D, Montagnani M, Zagari RM, Bazzoli F. J Gastroenterol Hepatol. 2017 Jan 16; . Epub 2017 Jan 16.*
- Risk of seizure associated with use of acid-suppressive drugs: An observational cohort study. *Sáez ME, González-Pérez A, Gaist D, Johansson S, Nagy P, García Rodríguez LA. Epilepsy Behav. 2016 Sep; 62:72-80. Epub 2016 Jul 21.*
- Association of Proton Pump Inhibitors With Risk of Dementia: A Pharmacoepidemiological Claims Data Analysis. *Gomm W, von Holt K, Thomé F, Broich K, Maier W, Fink A, Doblhammer G, Haenisch B. JAMA Neurol. 2016 Apr; 73(4):410-6.*

- Risk of dementia in elderly patients with the use of proton pump inhibitors. *Haenisch B, von Holt K, Wiese B, Prokein J, Lange C, Ernst A, Brettschneider C, König HH, Werle J, Weyerer S, et al. Eur Arch Psychiatry Clin Neurosci. 2015 Aug; 265(5):419-28. Epub 2014 Oct 24.*

Upon closer review of the abstracts, you think the article by Gomm et al. in JAMA Neurology appears most interesting. You decide to appraise this article.

Assignment:

Review the enclosed paper and discuss:

1. Are the results of this harm article valid?
2. Are the results of this harm study important?
3. Can we apply this valid, important evidence in caring for our patient?

Enclosed Materials:

1. Guyatt GH, Rennie D, Made MO, Cook DJ, Editors. JAMAevidence User's Guides to the Medical Literature: A Manual for Evidence Based Clinical Practice, 3rd Edition, New York, NY: The McGraw-Hill Companies, Inc. 2014. (Chapter 14, Harm (Observational Studies), pages 301-314)
2. Worksheet for the evaluation of a Harm (cohort) article.
3. Gomm W, von Holt K, Thomé F, Broich K, Maier W, Fink A, Doblhammer G, Haenisch B. Association of Proton Pump Inhibitors With Risk of DementiaA Pharmacoepidemiological Claims Data Analysis. *JAMA Neurol.* 2016; 73(4):410-416. doi:10.1001/jamaneurol.2015.4791.