

## **APPRAISING AN ARTICLE ABOUT HARM MODULE**

### **Resolving the Case of an Elevated TSH**

#### **Objectives:**

1. To apply key appraisal concepts about harm to this article from primary literature
2. To explore the relative strengths and weaknesses of study designs from which we gather evidence about potential harm
3. To contrast risk ratios and odds ratios as estimates of the strength of association
4. To discuss how best to frame evidence about a potential harm for patients

#### **Assignment:**

- Review the clinical scenario, reflect on the predicament, and focus an answerable clinical question
- Digest the chapter on Harm from the Users' Guides
- Read the enclosed article about levothyroxine and fracture risk
- Make notations about your assessment of the article on the attached appraisal worksheet for articles reporting harm

#### **Clinical Scenario:**

Mr. Meyers is a 67 y/o retired truck driver presenting for a follow-up visit after establishing general medical care with you 2 weeks ago. At that time you learned that his past history was significant for DM, CAD (h/o anterior MI & s/p CABG 2009), hypothyroidism, and repair of a hip fracture (2010) after which he was found to have osteoporosis. The purpose of today's visit is to solidify care plans and review recent fasting blood work.

Periodically he has tried to start a regular walking habit, but so far has failed. Similarly he has had no success stopping smoking. Overall, he doesn't feel sad or depressed, but overall he reports low energy. Current Meds include:

- Metoprolol 100 qd
- ASA qd
- Simvastatin 20mg qd
- Metformin 500 bid
- Levothyroxine 100mcg qd
- Alendronate each week

You share with him that two aspects of his lab work merit more attention. First his LDL is 155 and his TSH is 27. You inquire about how often he misses a dose of the statin and levothyroxine to explore his medication adherence. He replies that he has a robust

routine to take his medications consistently as prescribed ... except for the T4 which he only takes on MWF. This is because he heard that thyroid medicine can cause fractures. He is terrified of another hip fracture (“Recovering from the hip surgery was much worse than after the bypass”).

You state that his hypothyroid state can contribute to his poor lipid control and his general lack of energy to be more physically active. You admit awareness that over-replacement with T4 can cause problems, but he is currently very under-treated and you offer to closely follow him to prevent any over treatment. He is not swayed by your rationale and mentions that he left his last physician because of arguments over T4 dosing.

You close this visit by thanking him for his candor and that you would like to review the best research evidence about the impact of T4 on risk of fractures before his next appointment. He likes this plan, it feels reasonable, and further he agrees to your referral for him to enroll into a cardiac rehabilitation program.

At the end of the clinic session, you look over your pocket card where you jotted down important knowledge gap issues for follow-up. Regarding the issue of Mr. Meyers and his T4 beliefs, you mainly recall that excessive T4 supplementation is associated with A.fib and osteoporosis, but you don't recall anything about T4 and fractures. You reflect on feeling a bit miffed by his insistence to take T4 on his own irrational schedule, but now choose to channel your affective response into a cognitive response by focusing a clinical question to direct your search for best evidence.

**Enclosed Materials:**

1. Guyatt G, Drummond R. *User's Guides to the Medical Literature: A Manual for Evidence Based Clinical Practice*, 3<sup>rd</sup> Edition (JAMA). New York, NY: The McGraw-Hill Companies, Inc, 2015. 14. Harm
2. Turner MR, Camacho X, Fischer HD, et al. Levothyroxine dose and risk of fractures in older adults: nested case-control study. *BMJ* 2011; 342.
3. Appraisal worksheet to evaluate an article on harm