Purpose of positive predictive value table

I am baffled by **Table 1** (cancer symptom positive predictive values [PPVs]) in the Oncology Briefs article by Dr Wilkinson in the April issue of *Canadian Family Physician*.[1]

All physicians are trained to investigate new-onset constipation, rectal bleeding, cough, and other "red flags" in patients older than 50 years of age. So, I am unsure of the purpose of **Table 1**. Is there a cutoff below which investigation is unwarranted?

For example, I investigate patients older than 50 with a new unremitting cough (PPV = 0.40) more than I would investigate those with new nocturia (PPV = 2.2). Even new hematuria alarms me more than new nocturia.

Dyspnea only has a PPV of 0.66, but I pull out all the stops for patients with new dyspnea.

Perhaps the author could explain the purpose of including **Table 1** in this article.

I now spend about a third of my time in home-based palliative care. Many of my dying patients feel guilty (if they believe they have neglected early symptoms) or have anger toward their family physicians (if they believe their family physicians neglected early symptoms). Retrospectively, it is easy to recall early symptoms that "should have" prompted investigation. However, my office practice is swamped with a plethora of vague symptoms, and I am always concerned about balancing underinvestigation with overinvestigation.

I suppose I would like **Table 1** to be more helpful in showing "where to draw the line." Thank you.

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Competing interests
None declared

Reference

1. Wilkinson AN. Cancer diagnosis in primary care. Six steps to reducing the diagnostic interval. *Can Fam Physician* 2021;67:265-8 (Eng), e99-103 (Fr).

Can Fam Physician 2021;67:398. DOI: 10.46747/cfp.6706398

Response

I thank Dr DiTommaso for his letter and for the opportunity to further explain the relevance of the positive predictive values (PPVs) presented in **Table 1**.[1]

I would absolutely endorse that physicians continue to investigate red flag symptoms. A workup of a patient with softer "low risk, but not no risk" symptoms is difficult for a physician. How does a physician identify the one patient who has cancer among the many who do not, all while preserving the patient-physician relationship when it is needed most? This is especially true given that many patients who develop cancer never display a clear high-risk symptom.

The PPVs were presented in part to show that studies have validated these "softer" symptoms. Hamilton et al clearly show that although individual symptoms might not strongly predict a cancer diagnosis, what is most important is the presence of multiple symptoms or nonresolving symptoms with multiple presentations, which together can result in a PPV risk of up to 20 times normal of developing a cancer.[2]

To appreciate why a symptom such as dyspnea has a PPV of only 0.66, it must be understood that dyspnea might be a symptom of other, more frequent nonmalignant causes such as congestive heart failure or chronic obstructive pulmonary disease. If a patient presents multiple times with dyspnea, the PPV for lung cancer rises to 0.80, and continues to increase as it is combined with other symptoms: dyspnea and hemoptysis, PPV of 4.90; dyspnea and weight loss, PPV of 2.00; and dyspnea and loss of appetite, PPV of 2.00 (please see Figure 2 in Hamilton et al for more information).[2]

Unfortunately, there is no table that can definitively tell you which of your patients to work up for cancer and who to merely reassure. However, there is a recent study that shows that the PPV of a physician's gut feeling for the diagnosis of cancer is 9.80.[3] Perhaps your gut, and a combination of experience, clinical, and contextual knowledge, continues to be the best way to "draw the line."

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Competing interests
None declared

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2. Hamilton W. The CAPER studies: five case-control studies aimed at identifying and quantifying the risk of cancer in symptomatic primary care patients. *Br J Cancer* 2009;101(Suppl 2):S80-6.
3. Smith CF, Drew S, Ziebland S, Nicholson BD. Understanding the role of GPs' gut feelings in diagnosing cancer in primary care: a systematic review and meta-analysis of existing evidence. *Br J Gen Pract* 2020;70(698):e612-21.

Can Fam Physician 2021;67:398. DOI: 10.46747/cfp.6706398_1