

# Abnormal uterine bleeding in premenopausal women and the role of body mass index



**TO THE EDITORS:** We read with great interest the article by Wise et al<sup>1</sup> comparing the incidence of complex endometrial hyperplasia (EH) or cancer in premenopausal women with abnormal uterine bleeding and body mass index (BMI)  $\geq 30$  vs  $< 30$  kg/m<sup>2</sup>. They showed that a BMI  $\geq 30$  strongly associated with EH or cancer, and concluded that “BMI should be the first stratification in the decision to perform endometrial biopsy.”<sup>1</sup>

Although the study is very interesting, from a diagnostic point of view there are some considerations to make about the authors’ conclusions. Given the low disease prevalence of the studied outcome (4.9%), the likelihood ratio (LR) can provide the best clinical implications. An optimal diagnostic test should have LR+  $> 10$  and LR-  $< 0.1$ .<sup>2</sup> Based on the authors’ conclusions, if we use a BMI  $\geq 30$  as clinical triage for further investigation, we have a LR+ of 1.58 and a LR- of 0.47 for EH or cancer (based on Table 3). Now, a LR+ of 1.58 means that, when we have the presence of a BMI  $\geq 30$ , it is unlikely that there is an EH or cancer (false-positives). A LR- of 0.47 means that, even if a BMI  $\geq 30$  is not present (ie, BMI  $< 30$ ), the probability of having an EH or cancer is still high (false-negatives). To better understand the contents, considering the disease prevalence as the pretest probability for EH or cancer (4.9%), the LR can be used to calculate the posttest odds from the pretest odds of disease: posttest odds = pretest odds  $\times$  LR. The relation between odds and probability is: odds =  $P/(1 - P)$  and  $P = \text{odds}/(1 + \text{odds})$ . Using these equations, we could calculate the posttest probability of disease from the pretest probability of disease.<sup>3</sup> Limited to this scenario, we have a pretest probability for EH or cancer of 4.9% that would result in a posttest probability of 7.4% with a BMI  $\geq 30$ . Conversely, we would have a posttest probability for EH or cancer of 2.3% with a BMI  $< 30$ . In both cases the percentage gain is very poor. So, based on this analysis, it is very difficult to accept that “BMI should be the first stratification in the decision to perform endometrial biopsy.”<sup>1</sup>

In a very recent systematic literature review, Pennant et al<sup>4</sup> showed that the risk of cancer or atypical EH in premenopausal women with abnormal uterine bleeding is very low (1.31%), and rarely requires biopsy. They stated that medical management should be the first choice for these women.<sup>4</sup> ■

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The authors report no conflict of interest.

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## REPLY



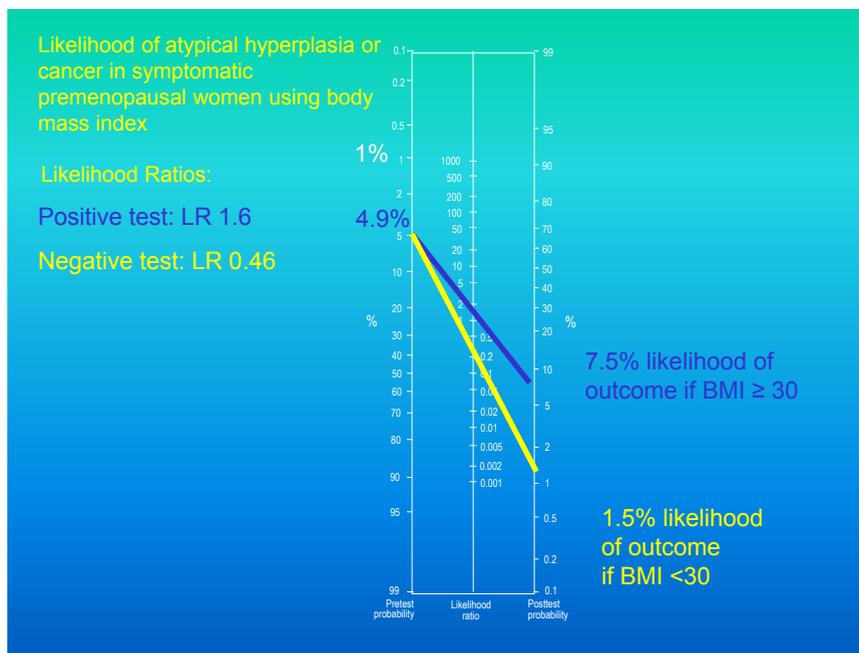
Thank you for raising these comments in your letter to the editor.<sup>1</sup>

Although likelihood ratios (LRs) are usually calculated based on the qualities of a diagnostic test and used when deciding whether to order one,<sup>2</sup> we understand the temptation to extrapolate the idea of LRs to decision making around risk factors. We accept that LR of 1-2 for body mass index  $\geq 30$  kg/m<sup>2</sup> only minimally increases the likelihood of having endometrial hyperplasia or cancer in this population (Figure). However, risk factors currently used in the decision to perform endometrial biopsy in premenopausal women with abnormal uterine bleeding include age, irregular menstrual cycle, and infertility; using our data, LRs for these factors are similarly low. We challenge other researchers in this area to continue to develop a greater understanding of risk factors in premenopausal women, to better target invasive diagnostic testing.

With respect to the comment that the risk of atypical hyperplasia is very low (1.3%) and rarely requires biopsy, we note that the population included in that review<sup>3</sup> was premenopausal women with abnormal bleeding. This is very helpful for primary care practitioners, and fills a gap in the literature. However, in our population of women seen in

## FIGURE

## Using likelihood ratios to modulate risk of disease



Wise and Farquhar. Limits to likelihood ratios. *Am J Obstet Gynecol* 2017.

secondary care, 36% were already taking hormonal medical therapy; the prevalence of disease was 4.9%, and these women at higher risk warrant invasive testing. ■

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## Regarding “Toward normal birth—but at what cost?”



TO THE EDITORS: Thank you for your article, “Toward normal birth—but at what cost?”<sup>1</sup> I have always looked forward to reading the *American Journal of Obstetrics and Gynecology*, especially over the past 1-2 years because the Journal seems to be one of the only authoritative sources willing to question the wisdom and safety of decreasing the cesarean delivery (CD) rate and other practices recently recommended.<sup>2-4</sup>

I have been practicing obstetrics and gynecology for 35 years. The delivery of safe and effective care to our patients is one of the most important goals of our discipline.

However, despite this, certain medical and governmental institutions want to reduce the CD rate without any studies demonstrating the safety of new CD guidelines, and even in the face of past and current studies that have shown their increased dangers. The move to revive the use of procedures such as instrumental vaginal deliveries and vaginal breech deliveries, which have generally been abandoned, and rightly so, expose the front-line obstetrician as well as mother and baby to increased risks due to lack of training in these areas.