Cytopathology in focus: Exchange of views—HPV screening policies in Australia

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May 2019—In the November-December 2018 issue of the *Journal of the American Society of Cytopathology* is a fascinating analysis of human papillomavirus screening policies in Australia by researchers from New Zealand, a rebuttal by members of an Australian Cervical Cancer Screening Guidelines Working Party, and a thoughtful editorial by cervical cancer screening experts from the United States and England.

A new Australian cervical cancer screening policy replaced two-year cytology screening with five-year HPV screening and does not allow for cytology and HPV co-testing. The change of policy was based on modeling studies predicting a significant long-term decline in cervical cancer by this new screening policy. The analysis of this HPV screening policy by Cox and Sneyd predicts a 121 percent (95 percent confidence interval: 73 percent–169 percent) increase in annual incidence of cervical cancer compared with current incidence after 10 years. An additional 222 women are predicted to develop cervical cancer each year starting 10 years after the adoption of this new policy.

The authors discuss various biases introduced by modeling studies that look predominantly at the sensitivity of each test to detect high-grade cervical intraepithelial lesions (CIN). They argue that the Australian simulation model appears to be dependent on an assumption that high-grade CIN detection sensitivity by HPV and cytology also represents each test's screening sensitivity. They define cancer screening sensitivity as the probability of detecting that subgroup of high-grade abnormalities that will progress to invasive cancer. The authors discuss concerns about overdiagnosis of precursors detected by HPV testing, many of which will regress, and suggest a more cautious approach to screening policy changes.

Working group members from Australia wrote a rebuttal in the form of a letter to the editor criticizing the assumptions Cox and Sneyd made in their analysis. They emphasize that HPV screening can detect precursors earlier than cytology and that treatment will prevent the progression to invasive cancer.

In their editorial, Austin and Herbert discuss the challenges of understanding meta-analysis and biases that screening model predictions may introduce. They discuss concerns related to HPV-negative cancers that will not be detected by primary HPV screening. High-grade CIN is the preferred target for treatment and prevention of invasive cervical cancer and has been commonly used as a surrogate for cancer in most screening trials worldwide. However, the effectiveness of any cancer screening program is best documented through long-term observational studies, which find a decrease in both invasive cancer incidence and mortality in a screened population. Cervical cytology, which is historically the most successful cancer screening test, provides the only data thus far to demonstrate a decrease in cervical cancer mortality. Countries that have already switched to HPV screening will accrue data with time.

1. Cox B, Sneyd MJ. HPV screening, invasive cervical cancer and screening policy in Australia. *J Am Soc Cytopathol.* 2018;7(6):292–299.
2. Smith MA, Brotherton JML, Hammond IG, et al. Inaccurate and fundamentally flawed analysis risks undermining confidence in cervical screening programs [Letters to the Editor]. *J Am Soc Cytopathol.* 2018;7(6):336–338.
3. Cox B, Sneyd MJ. Response to Smith et al. [Letters to the

Editor]. *J Am Soc Cytopathol.* 2018;7(6):338.
4. Austin MR, Herbert A. Whose cervical cancer screening model predictions will prove to be correct? *J Am Soc Cytopathol.* 2018;7(6):289–291.

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