Intention of women to receive cervical cancer screening in the era of human papillomavirus testing

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Abstract: Cervical cancer screening and prevention has been one of the great success stories in public health, but is at a critical juncture. Awareness of the essential role of HPV infection in the genesis of cervical cancer, coupled with knowledge of the limitations of cytology has led to a re-visioning of the screening paradigm, towards the use of primary hr-HPV testing for cervical cancer screening instead of cytology. Use of HPV testing could result in significant changes for screening programs including a later start to screening, extended screening intervals, and use of a test for a sexually acquired infection. These changes may have unintended consequences on a woman's willingness to participate in cervical cancer screening. In this dissertation, we explore the potential impact of use of HPV testing for primary screening on women's intentions to be screened for cervical cancer, and outline a plan to guide the change from cytology to HPV testing, using findings from the analyses.

Methods: At study exit, a sample of participants from a randomized trial of primary hr-HPV testing in Canada were invited via email to complete an electronic questionnaire based in *Theory of Planned Behaviour,* which determined women's intentions to be screened for cervical cancer if: a) hr-HPV was used instead of Pap smears b) HPV based cervical cancer screening was offered only every 4 years and c) HPV based cervical cancer screening started after 25 years of age. Demographic data, sexual history and smoking rates were assessed, and scales for attitudes about hr-HPV testing, perceived behavioural control and direct and indirect subjective norms were created.

Item correlation for scales was calculated to determine item agreement. Univariate analyses compared demographics and scale responses of women who intended to be screened for cervical cancer with HPV to those who did not. All demographic data and scales that were significantly different ($p<0.1$) were included in a stepwise logistic regression model to determine predictors of intention to be screened for cervical cancer with HPV.

Results: 2016 email invites were sent to women and 981 completed the entire survey for a response rate of 48.7%. There were no demographic and risk behavior differences between survey respondents and non-respondents. Eighty-four percent of women (826/981) responded that they intended to attend for HPV-CCS which decreased to 54.2% with an extended screening interval, and decreased further to 51.4% with a delayed start of age 25. There were not significant differences in demographics, sexual or smoking histories between women who intended to be screened for cervical cancer with HPV and those who did not intend. Women who intended to be screened with HPV were significantly more likely to report positive attitudes toward HPV testing, report positive perceived behavioural control, describe positive influence of direct and indirect subjective norms, and express confidence in their decisions and abilities to communicate their HPV status with partners. In logistic regression modeling, predictors of intentions to undergo screening were attitudes (OR 1.22; 95%CI 1.15, 1.30), indirect subjective norms (OR 1.02; 95%CI 1.01, 1.03) and perceived behavioural controls (OR 1.16; 95% CI 1.10; 1.22).

Discussion: Although women expressed intentions to be screened for cervical cancer with HPV, intentions decreased substantially when coupled with the extended screening interval and delayed screening start. Use of primary HPV testing may optimize the screening paradigm, but programs must anticipate women's potential responses and concerns with program changes, such as extended intervals and delayed program starts, and should ensure robust planning and education to mitigate any negative impact on screening attendance rates.

Using Kotter's eight step model and integrating key findings from this study, essential elements to successfully implement this change are outlined.

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