COMMENTARY

Starting cervical cancer screening at 25 years of age: the time has come

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In 2013, the Canadian Task Force on Preventive Health Care updated its recommendations for cervical cancer screening, which included increasing the age to start screening to 25 years.[1] Six years on, with only 2 provinces updating their guidelines accordingly, it is timely to review the relevance of these recommendations, as incidence of cervical cancer in women under 25 years of age continues to be low and vaccination levels for human papillomavirus (HPV) are relatively high.

For decades, Canadian guidelines recommended that screening should begin at the onset of sexual activity or by age 18 years, whichever was earlier. The 2013 task force recommendations gave a strong recommendation against screening for cervical cancer in women under the age of 20 years and a weak recommendation against screening in women 20 to 24 years of age, based on low rates of cervical cancer in women under 24 years of age and potential exposure to harms.[1] Harms may include anxiety, overtreatment of reversible lesions and reproductive implications.[2]

There has been no increase in incidence of cervical cancer in Canadian women who are 20 to 24 years or 25 to 29 years of age since 2013.[3] Although some countries that started screening at age 25 years have noted an increase in the incidence of cervical cancer in women who are in their 20s, the increase is not believed to be related to screening start age but to factors such as smoking, higher-risk sexual behaviour and pathology interpretation.[4] As young Canadian women who received HPV vaccination enter their 20s, a similar high-risk cohort effect should be mitigated here. Thus, we should ask whether continued screening of such young vaccinated women would consume excessive health care resources and possibly contribute to harm.

Indeed, an important consideration in adopting the 2013 task force recommendations is the successful implementation of the 2007 federal HPV vaccination strategy. More than 10 years have passed since the provinces and territories started their respective HPV vaccination programs, and the first cohort of girls who were vaccinated will be 25 years old in 2019. The effect of vaccination is evident from data collected by provincial screening programs for all women screened, regardless of age, including those younger than 21 years of age. For example, data from Alberta have shown a significant reduction in high-grade cervical abnormalities in women who were vaccinated in the public program compared with those who were not vaccinated (odds ratio [OR] 0.29, 95% confidence interval [CI] 0.09–0.93 for at least 1 dose of vaccine;[5] OR 0.50, 95% CI 0.30–0.85 for 3 doses).[6]

Key points

- In 2013, the Canadian Task Force on Preventive Health Care recommended increasing the age to start screening for cervical cancer to 25 years; however, only 2 provinces have updated their guidelines to reflect this change.
- Since the task force's recommendation, there has been no increase in the incidence of cervical cancer among young women.
- Vaccination against human papillomavirus has led to a substantial decrease in high-grade cervical lesions among young women, even with moderate vaccination levels.
- Screening younger women is costly and has the potential to harm.
- It is reasonable for Canadian provinces and territories to advise that women now begin screening at age 25 years.

Similarly, an ecological analysis of data from British Columbia for 2004–2012 showed that after the introduction of HPV vaccination, the age-adjusted incidence rate ratios for cervical intraepithelial neoplasia 2+ for girls 15 to 17 years of age decreased significantly from 0.91 (95% CI 0.86–0.98) to 0.36 (95% CI 0.18–0.73).[7] During this same time period, no similar reduction was found in women 18 to 22 years of age who had not been eligible for HPV vaccination by age. What is most striking is that these results were achieved with only moderate vaccination levels (about 65%).[7]

These Canadian findings parallel those seen internationally. In Australia, the largest reductions in high-grade lesions were in the younger age group of women who were vaccinated. Prevalence of high-grade lesions in women under the age of 20 years declined from 10.9/1000 women who were screened to 5.0/1000 over a 10-year period.[8] The prevalence in women aged 20 to 24 years decreased from 21.5/1000 women who were screened to 13.5/1000 over a similar time period. Scotland and Denmark have seen comparable declines.[8] Vaccination appears to be highly effective even with moderate coverage: substantial reduction of the prevalence of high-risk genotypes among young women was achieved with modest coverage in the United States after the introduction of vaccination,[9] and herd immunity is suggested to

be good at coverage rates as low as 50%.[10] Thus, rates of HPV vaccination for school-based programs in Canada, which ranged from 55.6% in the Northwest Territories to 93.0% in Newfoundland and Labrador, with 7 of 10 provinces reporting vaccination rates above 74% in 2015/2016,[11] along with the recent introduction of vaccination in boys in some provinces, support adoption of screening initiation at 25 years.

The Canadian Partnership Against Cancer, in collaboration with Statistics Canada, has developed the OncoSim model (previously called the Cancer Risk Management Model), which provides policy-makers with a tool for decision-making about cancer control. A module for HPV transmission and cervical cancer (OncoSim HPV-Cervix) has been used to evaluate the projected effect of varying screening intervals, intensity, participant age and vaccination strategies on health and economic outcomes such as projected cases of cervical cancer, deaths, colposcopies, treatments, follow-up protocols and costs.[12]

Using the most recent national screening data, OncoSim HPV-Cervix was used to estimate the costs of continued screening in women under 25 years of age. Based on reported screening participation rates and assuming no HPV vaccination (to isolate the effects of screening), the estimated cost of providing and processing Papanicolaou smears in 2012 for women who were 21 to 24 years of age would have been $22.7 million (in 2016 dollars). The cost of downstream follow-up and treatment in women with abnormal results would have been $132.5 million (OncoSim version 2.6; unpublished data, 2017).

In a study published in 2016, the OncoSim HPV-Cervix model was used to evaluate the cumulative costs and health effects of using Pap smears to screen women at age 21 versus 25 years as a cohort of women (70% of whom were vaccinated) proceeded through their lifespan.[13] The projected difference in cost for the years 2016–2046 was an estimated average of $29.1 million per year, when adjusted to 2016 dollars. In addition, starting screening at age 21 years was associated with 15 000 more colposcopies and 163 000 more screens per year. Thus, it is clear that delaying the onset of screening until age 25 years will result in cost savings.

It is reasonable for Canadian provinces and territories to advise that women now begin screening at age 25 years. Over 10 years of successful public HPV vaccination and over 5 years for evaluation, education and preparation should be enough lead time for such a change.

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