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Changes to cervical screening in Australia: A strategy for a vaccinated population

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The Australian National Cervical Cancer Screening Program commenced in 1982 and reduced the incidence of cervical cancer from 20 to 9 per 100,000 women by 2010. Since then the rate of reduction of cancers leveled off and remained relatively unchanged. In 2007, a National HPV Vaccine program for girls and young women using quadri-valent vaccine commenced and in 2009 became school-based and expanded to include boys. The nono-valent vaccine will be launched in 2018. Up-take of vaccination is above 80% and the incidence of HPV-related high-grade lesions has fallen in the vaccinated population. A smaller reduction in high-grade lesions in older women suggests a herd-immunity effect. With the reduced incidence of cervical lesions in the population, the low sensitivity of Papanicolaou smears will likely decline. In the HPV vaccine era, the need for a more sensitive and specific test with a high negative predictive value predicated on a change to HPV DNA testing. Numerous international studies show that HPV DNA testing with partial genotyping confers the most costeffective and effective means of population-based cervical screening. The Renewed HPV DNA Screening Program commenced in December 2017. A new National Cancer Screening Register will change the way women are invited to screening and are recalled for follow-up, aiming to reduce under-screening. Further, a new self-sample HPV DNA test to screen women who, for cultural or other reasons have not been screened, will enhance the efficacy of the program. A further reduction of the incidence of cervical cancer in Australia is anticipated.

Along with the reduction in human papillomavirus (HPV) infection and cervical abnormalities as a result of the successful HPV vaccination program, Australia is adopting a new screening strategy. This involves a new paradigm moving from cervical cytological screening to molecular nucleic acid technology (NAT), Australia is leading globally the acceptance of prophylactic human papillomavirus (HPV) vaccination, with the implementation of a national government-funded, gender-neutral approach, and vaccinating all girls and boys 12–13 years of age, as an ongoing school-based program 1. The program has been embraced by the community and by clinicians. This has translated into reductions in HPV vaccine-related genotype infections of ~86% in comparison with those prior to the vaccination program With major advances in understanding the infectious etiology of cervical cancer, preventive medicine has obtained highly promising new tools. Human papillomavirus (HPV) vaccines, together with a growing arsenal of HPV-based screening tests, have the potential to radically change public health but require diligent, large-scale implementation to reach the final goal: the elimination of cervical cancer. We reflect here upon the state of cervical cancer prevention globally as there have been several recent developments that will inform this implementation process.

Australia's National Cervical Screening Program currently recommends cytological screening every 2 years for women aged 18–69 years. Human papillomavirus (HPV) vaccination was implemented in 2007 with high population coverage, and falls in high-grade lesions in young women have been reported extensively. This decline prompted a major review of the National Cervical Screening Program and new clinical management guidelines, for which we undertook this analysis. Methods: We did effectiveness modelling and an economic assessment of potential new screening strategies, using a model of HPV transmission, vaccination, natural history, and cervical screening. First, we evaluated 132 screening strategies, including those based on cytology and primary HPV testing. Second, after a recommendation was made to adopt primary HPV screening with partial genotyping and direct referral to colposcopy of women positive for HPV16/18, we evaluated the final effect of HPV screening after incorporating new clinical guidelines for women positive for HPV. Both evaluations considered both unvaccinated and vaccinated cohorts. Findings: Strategies entailing HPV testing every 5 years and either partial genotyping for HPV16/18 or cytological co-testing were the most effective. One of the most effective and cost-effective strategies comprised primary HPV screening with referral of women positive for oncogenic HPV16/18 direct to colposcopy, with reflex cytological triage for women with other oncogenic types and direct referral for those in this group with high-grade cytological findings. After incorporating detailed clinical guidelines recommendations, this strategy is predicted to reduce cervical cancer incidence and mortality by 31% and 36%, respectively, in unvaccinated cohorts, and by 24% and 29%, respectively, in cohorts offered vaccination. Australia’s National Cervical Screening Program (NCSP) currently recommends 2-year cytology in women aged 18–69 years. Following a review of the NCSP prompted by the implementation of human papillomavirus (HPV) vaccination, the programme will transition in 2017 to 5-year primary HPV screening with partial genotyping for HPV16/18 in women aged 25–74 years. Compass is a sentinel experience for the renewed NCSP and the first prospectively randomised trial of primary HPV screening compared with cytology to be

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conducted in a population with high uptake of HPV vaccinationTo identify and critique interventions to improve vaccination uptake in Australia. Methods: Peer-reviewed and grey literature from 1997 to May 2011 was searched to identify evaluations of one or more interventions to improve vaccination uptake among any target group in Australia. Studies were categorised by intervention type and target group. Recommended tools for assessing quality in public health interventions were used in the methodological critique of included studies. Results: Forty-nine studies met the inclusion criteria, two-thirds of which were published in peer-reviewed journals. Evidence for strategies that increase community demand for vaccination was most common. Multi-component strategies, patient and provider reminders, plans for catch-up vaccination and accelerated schedules were identified as most effective. There was a lack of evidence for strategies to improve coverage in Aboriginal and Torres Strait Islander peoples, behaviourally at-risk groups and pregnant women. Major limitations of identified studies were the lack of baseline coverage for comparison, limited use of controlled designs and measurement biases. Conclusion: The evidence, while limited, suggests that the most effective strategies are those which increase community demand for and enhance access to vaccines. Strategies to increase vaccination uptake are infrequently and often inadequately evaluated, despite the need for evidence to support their use. Implications: The results of this review, used in conjunction with international evidence, can guide those desiring to improve the performance of vaccination programs and suggest priorities for future evaluation of strategies to improve vaccination uptake.