Abstract

The National Cervical Screening Program in Australia has been stable and successful for more than two decades. Nevertheless, the environment in which the program operates has been profoundly disrupted by the introduction of the equally successful National Human Papilloma Virus (HPV) Vaccination Program. The ‘Renewal’ (or review) of cervical screening is designed to ensure that the success of the screening program continues and that all Australian women, HPV vaccinated and unvaccinated, have access to a cervical screening program that is based on current evidence and best practice. Renewal has involved an assessment of the evidence for the benefits and harms of various screening pathways and a modelled assessment to inform the likely efficacy of the various proposed screening pathways in vaccinated populations. The findings indicated that the effectiveness of the program could be increased, while the expenditure could be decreased, if HPV tests were used in place of cytology. In April 2014, the Medical Services Advisory Committee recommended that Australia move to a five yearly screening program using an HPV test with partial genotyping for HPV16/18 as the primary screening test, commencing at age 25 and with an exit test between the age of 70 and 74. At a research level, a major trial, Compass, designed to evaluate primary HPV screening in a partially vaccinated population, will generate empirical evidence against which to test the modelled predictions of the Renewal. Together, the evidence review, modelling and ongoing research provide a framework for continuous improvement of the cervical screening program and the potential for further declines in cervical cancer in Australian women.

Cervical screening in Australia has been remarkably successful since the introduction of the Organised Approach to Screening in 1991, later renamed the National Cervical Screening Program (NCSP). There have been substantial reductions in the incidence and mortality from cervical cancer since the inception of the program (figures 1 and 2).

Impetus for change

Despite the incontrovertible success of the NCSP, there have been challenges with the declining trend in incidence and mortality having plateaued somewhat in recent years. Additionally, there have been challenges in reducing the incidence of adenocarcinoma. The age standardised rate of cervical adenocarcinoma has been essentially stable over the last several decades (figure 3). Most importantly, cervical cancer disproportionately affects Aboriginal and Torres Strait Islander women, with the incidence of cancer being approximately 2.6 times that of other Australian women and the mortality 5.6 times greater than other Australian women (figures 4 and 5).

Figure 1: Incidence of cervical cancer in women aged 20-69, by year, 1982 to 2009.

![Figure 1](image1)

Figure 2: Mortality from cervical cancer, women aged 20-69, 1982 to 2010.

![Figure 2](image2)

Notes:
2. Bars on columns represent 95% confidence intervals.
Source: AIHW analysis of National Mortality Database.
Cervical cancer also disproportionately affects economically disadvantaged women in Australia, with mortality being higher among women living in the most disadvantaged quintile (2.4 per 100,000 women) compared with women living in the least disadvantaged quintile (1.1 per 100,000 women).¹

Overall however, the NCSP has been stable and successful for more than two decades. Nevertheless, the environment in which the program operates is in the process of being profoundly disrupted by the introduction of the equally successful National HPV Vaccination Program. This is because the National HPV Vaccination Program is already leading to substantial declines in the prevalence of cervical cancer precursors (CIN 2/3 and AIS), the targets of cervical screening. These declines will reduce the average risk of developing invasive cancer and consequently the cost effectiveness of the NCSP will be reduced. More importantly, it is anticipated that test performance characteristics of cytology, particularly the predictive values, will rapidly decline, notwithstanding the expertise and attention to quality seen in most Australian laboratories.²

Australian governments have initiated a process, the ‘Renewal’,³ designed to ensure that the success of the NCSP continues and that all Australian women, irrespective of whether they are HPV vaccinated, have access to a cervical screening program that is based on current evidence and best practice. Phase one of the Renewal involved an assessment of the evidence for the benefits and harms of various screening pathways, including evidence regarding the screening test, the interval and the age range of screening.

Following the evidence review, a modelled assessment was undertaken to inform the likely efficacy of the various proposed screening pathways in vaccinated populations and also to take account of more recently available updated HPV testing technology that had not yet been assessed in clinical trials. Modelling was also undertaken to understand the likely cost effectiveness of the various proposed pathways. The findings of the Renewal indicated that the effectiveness of the NCSP could be increased (in terms of cervical cancer prevention), while the expenditure could be decreased if HPV tests were used in place of cytology, as the primary screening test as compared with the current practice.

In April 2014, on the basis of the findings of phase one of the Renewal, the Medical Services Advisory Committee recommended that Australia move to a five yearly screening program using an HPV test, with partial genotyping as the primary screening test, commencing at age 25 and with an exit test between the age of 70 and 74. The new proposed ‘preferred pathway’ is shown in figure 6, but this is yet to be underpinned by a formal process of clinical guidelines development, which will be initiated in the next phase.
These recommendations are currently under consideration and it is anticipated that the Australian Health Ministers’ Advisory Committee will endorse them later this year. Pending this endorsement, phase two of the Renewal will be initiated. This phase will examine national data collection systems and registry functions. It will also review quality frameworks and assess the feasibility and acceptability of the renewed NCSP to women and to practitioners.

At a research level, Australian investigators have initiated the Compass trial. This trial is designed to evaluate primary HPV screening in a partially vaccinated population using updated HPV testing technology that enables partial genotyping. It therefore aims to generate empirical evidence against which to test the modelled predictions of the Renewal. The trial will also focus on the downstream management of women whose HPV screening test is positive. Compass is designed as an effectiveness trial and, as such, is being positioned as a sentinel experience of the renewed NCSP. Safety monitoring of women with a negative HPV test results is a key feature of the trial. A randomly selected sample of 5% of women with negative HPV results will be recalled at 30 months for cytology, in the expectation that the CIN3+ rate will be very low. Of course, this will be monitored by an independent data and safety monitoring committee, empowered to stop the trial and recall remaining women for earlier testing if necessary. In addition to managing the safety of women participating in the trial, this approach also provides a potential model for ongoing safety monitoring of the various HPV tests accepted for use within the renewed NCSP.

At the time of writing, recruitment of 5000 women into a pilot of the Compass trial had been completed and planning for the main trial, involving just over 100,000 women, was well advanced. It is anticipated that recruitment into the main Compass trial will commence in December 2014, and it is hoped that it can be completed in 18 to 24 months, before the roll out of the renewed NCSP.

Cervical cancer prevention in Australia has been very successful for a number of decades. The introduction of the HPV vaccine and the availability of new generation HPV tests are providing exciting opportunities to build on these earlier successes. The HPV vaccine and a screening program based on HPV testing together have the potential to at last reduce the incidence of adenocarcinoma of the cervix. The National HPV Vaccination Program, delivered in schools, is already showing signs of being equitable and it is to be hoped that in decades to come, the impact of this cancer on the most disadvantaged women in Australian society will be reduced as a consequence.

With these opportunities for improvement come the challenges of understanding the complex evidence and dealing with evidence gaps. Together, the evidence review, modelling and ongoing research provide a framework for continuous improvement of the NCSP and the potential for further declines in the impact of cervical cancer on Australian women.

References