

SCHOOL-BASED VACCINATIONS DELIVERED BY GENERAL PRACTICE IN RURAL NORTH QUEENSLAND: AN EVALUATION OF A NEW HUMAN PAPILLOMA VIRUS VACCINATION PROGRAM

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Abstract

A local general practice was contracted to provide the school-based immunisation program over two years in Mount Isa, Queensland. The schedule was for female Year 10, 11 and 12 students to receive three doses of human papilloma virus (HPV) vaccination (Gardasil). This was provided as part of the broader immunisation program that involved providing Year 8 students with two doses of hepatitis B vaccination and one dose of varicella-zoster, and Year 10 students with one dose of diphtheria-tetanus-pertussis (DTPa). Data were collected on the number of consent forms returned and how many declined vaccination, how many students were vaccinated and those requiring catch-up vaccinations, as well as the total number completing the full course of immunisations. Adverse events were also recorded. The total cohort of girls eligible for HPV vaccination was 304 (consented to vaccination – 275 (90%), declined vaccination – 13 (4%), coverage for first HPV dose – 89%, coverage for second HPV dose – 88%, coverage for third HPV dose – 79%). When compared with other adolescent vaccinations given concurrently as part of the broader vaccination program, HPV coverage was higher. There were only three significant adverse events. Three girls fainted at the time of immunisation but recovered immediately. The HPV immunisation had a good uptake and was well tolerated. Integrating school immunisation provision with general practice provides continuity with preschool immunisations and provides a convenient location for parents to bring children who have missed out on immunisations or would like to discuss the immunisation program further. *Commun Dis Intell* 2008;32:94–98.

Keywords: human papilloma virus, vaccination, school-based immunisation, consent, immunisation coverage

Introduction

Worldwide, cervical cancer is the second most common cancer in women. Human papilloma virus (HPV) DNA is found in virtually all invasive cervical cancers.¹ There are over 100 HPV subtypes and at least 15 (HPV) types are human carcinogens that play a role in the pathogenesis of cervical and other cancers.²

Although the incidence of cervical cancer in Australia is low, the incidence of psychological and physical morbidity due to precancerous lesions is high.³ Every year in Australia, pap screening detects about 100,000 abnormal smears and about 15,000 women undergo treatment for high-grade lesions.^{4,5} Therefore the prophylactic prevention of HPV-related dysplasia and cancer would save lives, and reduce the need for colposcopy and other procedures.

The quadrivalent vaccine Gardasil (Merck) was developed in Australia and was approved in August 2006 for use in young females aged 9–25 years. If administered prior to sexual activity, Gardasil provides 90%–100% protection against persistent infection and cervical/genital disease due to HPV types 16 and 18 which cause 70% of cervical cancer cases and 50% of high grade cervical abnormalities, and HPV types 6 and 11,^{6,7} which are associated with 90% of cases of genital warts and approximately 10% of low grade cervical abnormalities.³

Though Gardasil is very effective in providing protection against HPV infection it is not a treatment and consequently has no effect in women with infection prior to vaccination. However, clinical trials have found that many women are only infected with one type of the virus so sexually active women are still likely to benefit from vaccination.⁷

In November 2006 the Australian Government announced that a national school-based HPV immunisation program would be funded from April 2007. The program has two phases delivered in schools (Box):

- a two year catch-up for girls aged 13–18 years provided in schools;
- from 2009, an on-going program for girls aged 12–13 years.

A further catch-up program for women up to and including 26 years will be funded for two years from 2007 and is to be delivered through general practice.

This paper presents data regarding the implementation of the HPV vaccination program in Mount Isa, a rural north Queensland city with two high schools and an Indigenous population of 19% based on census figures.⁸

Method

In Mount Isa, the school-based vaccination program was tendered out to a local general practice. The program was carried out in the two local high schools. The practice manager, administration staff and practice nurse organised the program and nurse immunisers were employed on a casual basis to provide the immunisations in the schools.

Consent forms were delivered to the schools by the immunisation team and sent home to parents with the students for signing. The immunisation team then collected them from the school office.

An immunisation day was allocated for each age group and the team vaccinated all students with signed consent forms. Follow-up days were allocated to provide vaccinations for students who were absent on the initial day of immunisation. In addition, students who missed out on immunisation at school could be brought in by their parents to the general practice providing the school-based program.

Data were collected on the number of consent forms returned, the number declined, the number of students actually vaccinated and the number requiring catch-up vaccination. Also recorded were minor and significant adverse events.

These data were entered into the Queensland Health MS Excel datasheet provided as part of the contract. The rates of consent form return and immunisation coverage were calculated automatically using the total cohort of students as the denominator. The data presented in this paper are from the first six months of the program, July–December 2007.

Results

Human papilloma virus consent

The total cohort of girls eligible for HPV vaccination was 304, of which:

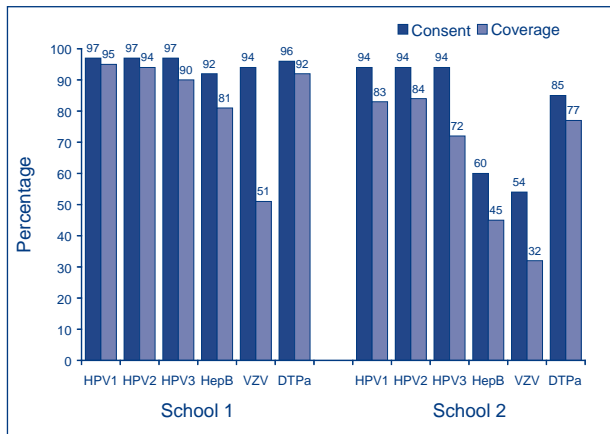
- 285 (94%) returned consent forms;
- 275 (90%) consented to vaccination; and
- 13 (4.3%) declined vaccination.

Table. Schedule for the Queensland school-based vaccination program

HPV
2007
Three doses of HPV vaccination for females in Years 10, 11 and 12 with one to two months between 1st and 2nd doses and four months for the 3rd (abbreviated catch-up schedule)
2008
Three doses of HPV vaccination for females in Years 8, 9 and 10 with one to two months between 1st and 2nd doses and six months for the 3rd
2009
HPV will form part of the ongoing school based vaccination program delivered to female Year 8 students in conjunction with hepatitis B and varicella
Hepatitis B vaccination
Two doses for Year 8 students not previously vaccinated, with an interval of four to six months.
Varicella-zoster
One dose for Year 8 students not previously infected or vaccinated, given at the same time as hepatitis B.
Diphtheria-tetanus-pertussis (DTPa)
One dose for Year 10 students with no previous booster who have had a previous primary course.

The overall rate of consent form return for HPV was 97% in School One and 94% in School Two. Consent rates of greater than 80% were achieved for HPV, hepatitis B and varicella-zoster in School One, while in School Two only the HPV vaccination achieved consent rates above 85% (Figure 1).

Figure 1. HPV consent form return rates and actual vaccination coverage compared with the other vaccinations given as part of the same vaccination program HPV coverage



- HPV Human papilloma virus.
- HepB Hepatitis B vaccine
- VZV Varicella zoster vaccine
- DTPa Diphtheria-tetanus-pertussis vaccine

One parent declined to consent to the HPV vaccination in School One.

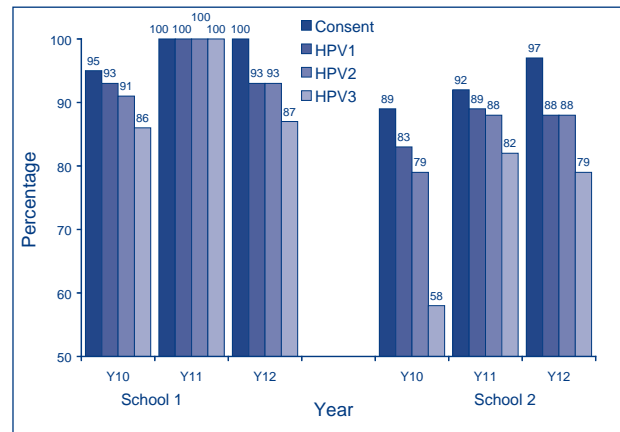
In School Two, 12 parents declined HPV vaccination for their daughters.

A combined coverage rate of 82% was achieved for both schools for the first HPV dose. After the catch-up program had been administered this rose to 89%.

Coverage rate for the second dose was 76% and was particularly low among Year 10 students in School Two, a large number of whom were absent on the day of immunisation. Coverage for the second HPV dose was 88% after parents brought their adolescents into the practice for catch-up doses. Coverage for the third dose was 72%, and 79% after the catch-up program (Figure 2).

Fifty-three adolescents had their catch-up doses through the general practice.

Figure 2. Consent and coverage rates for human papilloma virus vaccination doses administered in as part of the Mount Isa school-based vaccination program



HPV Human papilloma virus.

Adverse events

There were only three significant adverse events. Three girls fainted at the time of immunisation but recovered immediately. Quite a few girls complained of nausea and feeling dizzy but did not require any medical intervention.

Queensland immunisation coverage

The school based immunisation program commenced simultaneously across Queensland in June 2007 and was divided into Northern, Central and Southern regions.

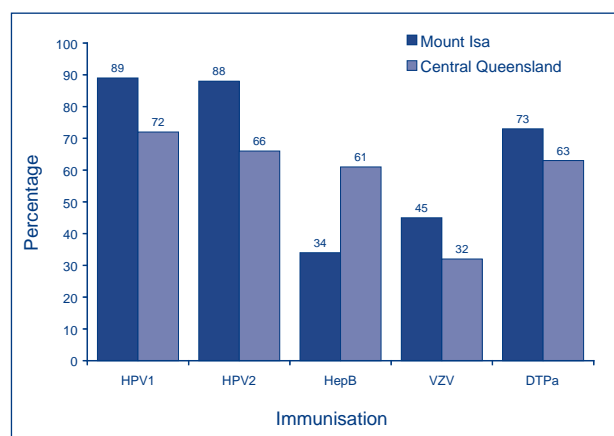
Vaccination coverage data from the Central region was provided by written communication from Queensland Health for comparative purposes. This program was delivered at the same time and using the same schedule as the Mount Isa program and involved a cohort of 39,000 students in 228 schools. Central Queensland HPV coverage rates for doses one and two were 72% and 66% respectively. Overall immunisation rates achieved in Mount Isa were higher than those in Central Queensland, although hepatitis B was lower (Figure 3).

Discussion

HPV vaccination is a new program and there are little data available on HPV immunisation coverage in Australia. In this study two comparisons were made.

The overall rate of consent form return and coverage for HPV was higher than for the other vaccinations administered as part of the broader immunisation program. Coverage decreased with subsequent

Figure 3. Comparison of immunisation coverage between Mount Isa and Central Queensland



HPV	Human papilloma virus.
HepB	Hepatitis B vaccine
VZV	Varicella zoster vaccine
DTPa	Diphtheria-tetanus-pertussis vaccine

doses of HPV. This has also been noted with school hepatitis B programs.⁹ When compared with other adolescent vaccinations given in Mount Isa, HPV coverage was the highest.

Overall North Queensland data are currently unavailable, but comparisons can be made with data from Central Queensland programs that were conducted mostly through local councils rather than general practice. Overall immunisation rates achieved in Mount Isa were higher than those in Central Queensland, although hepatitis B was lower. This is thought to be due to the fact that many children had already been immunised against hepatitis B in childhood.

High overall coverage in Mount Isa was likely to be due to the relatively small number of adolescents in the cohort. The prominent and convenient location of the practice also made it easy for parents to bring their adolescents in for catch-up doses.

Two surveys prior to the introduction of HPV predicted consent rates of 77% and 54% in spite of the fact that few participants linked HPV with cervical cancer.^{10,11} Coverage rates achieved for HPV in this study were higher than these predictions.

Importantly, significant adverse events from HPV vaccination experienced during this study were limited to vasovagal events. Anecdotally, it was noted that students complained that each subsequent dose was more painful than the first with increased stinging occurring immediately at the site of injection but resolving over several minutes.

Getting signed consent forms back from parents in a timely manner was the most challenging aspect of the program. In 2008, the HPV immunisation program will cover girls in Years 8–10 and from 2009 HPV will become part of the Year 8 schedule. This study found that the Years 8–10 students had lower consent and coverage rates, which could impact coverage levels in the future.

The other difficulty encountered was adolescents being absent from school. This was addressed, in part, by allowing parents to bring students into the practice themselves to ensure that the immunisations were administered.

Of the 53 adolescents who had their catch-up doses through the general practice, most had signed consent forms but were absent from school on the immunisation day. However, eight doses were given opportunistically to adolescents when they presented at the practice for other reasons and the parents signed their consent forms.

Australia has had immunisation programs since the 1920s. However, it wasn't until the polio campaigns of the 1950s that these programs were delivered in schools. Since then, there has been a move towards immunisation in general practice as part of the National Immunisation Strategy.¹² With more immunisations being given in childhood and the potential loss of lifetime immunity provided by the disease, boosters are now being required during adolescence and schools provide a suitable environment for their administration.

Based on this experience, we believe general practice to be an ideal provider of school based immunisation programs. Utilising a combined approach of mass school based vaccination programs and catch-up and opportunistic doses given in the general practice, very good coverage rates can be achieved.

This approach also provides good continuity with existing preschool immunisation, and HPV immunisation of women who have left school.

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