

## Medical Officer of Health Report September 2016

### Preventing Cervical and Head and Neck Cancers We have the opportunity (Why aren't we jumping at the chance?)

Public health physicians regularly refer to the sheer effectiveness of population vaccination as a community intervention. After clean water, adequate hygiene, sanitation and good nutrition this approach has probably had the greatest success in improving life expectancy and health.

The achievements are many. There are the often repeated successes of previous generations in eliminating smallpox, and massively reducing the impact of diseases such as diphtheria, and pertussis. More recently significant gains have been made around the world in reducing hepatitis B, meningitis B and C, haemophilus influenzae B meningitis, and rotavirus infections<sup>1</sup>.

One stand out story for me is the massive reduction in meningococcal infections and deaths in Africa after the introduction of a locally developed and licensed meningococcal A vaccine<sup>2</sup>. In the decade before the introduction of a vaccine, there had been over **one million** cases, 10% died. Supported by The Bill Gates Foundation, a global network of vaccine professionals, aiming for a locally affordable vaccine, developed, tested and licensed specifically for the situation in Africa. The vaccine has been remarkably effective (but then immunisations are) virtually eliminating the disease in countries where it has been used. As an example, in Burkina Faso 10.8 million people were immunised over a 10 day period in 2010 giving 96% coverage. There were no cases in 2013.

For the majority of these diseases it is the acute illness that poses the greatest health risk of death and ill health. Hepatitis B is a bit different in that immunisation also prevents the later development of liver damage and liver cancer. So the hepatitis B vaccine is both an anti - infection and an anti - cancer vaccine, but was really developed to prevent the infection.

So what is the opportunity mentioned in the title?

Well, the human papilloma virus (HPV) vaccine which was introduced in mid 2000s, (2008 in New Zealand) is the world's first vaccine specifically designed to prevent cancer, in particular cervical cancer (but as a bonus some other cancers in both men and women too).

It prevents infection with the HPV, which as the name suggests causes benign papillomas (more commonly known as warts) in people. It is an incredibly effective vaccine, pretty much guaranteeing protection from infection with the HPV types that it covers. Moreover, now that the vaccine has been in use for over 10 years in some countries, its real world impact is

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<sup>1</sup> Greenwood B. The contribution of vaccination to global health: past present and future. Phil.Trans.R.Soc.B. 2014. 369

<sup>2</sup> La Force FM, Public Health impact after introduction of a new Group A meningococcal vaccine in Africa. 2014. PHA 14<sup>th</sup> National Immunisation Conference. Melbourne.

being seen<sup>3</sup>. In Australia and Canada the incidence of genital warts in women under the age of 20 have fallen by almost a half. The vaccine also benefits others in the wider population; in Canada where boys are not offered the vaccine, genital warts in young men who have sex with women also fell by 17% (rates in men who have sex with men didn't change). Similar reductions are being reported here also.

Researchers and vaccine companies were hardly going to spend years of time and millions of dollars developing a vaccine to prevent warts – even if these can often be in fairly intimate places (around 40 HPV types tend to infect the anogenital areas). No, the key issue is that HPV also causes chronic and asymptomatic infections which over time lead directly to cervical cancer and some other cancers (anogenital and head and neck). So if you can prevent the infections, you can prevent the cancer.

HPV is sexually transmitted; once people become sexually active, the infection becomes very common. Over time most sexually active people will become infected at some point. Unsurprisingly infections are more common in the first years after onset of sexual activity. In America it is estimated that young women aged 15 to 24 have a 25% chance of an infection each year<sup>4</sup>, and by the age of 50 around 80% of women will have been infected with the higher risk types of HPV. So whilst good sexual health education and safer sexual practices are undoubtedly a good thing for many reasons, in real life they won't stop HPV at a population level.

It really is that simple. We now have a vaccine which can almost entirely prevent infection with most of the virus strains that cause cervical cancer. It is also just as safe as all of the others in our routine vaccination schedule.

Cervical cancer is the fourth most common female specific cancer in New Zealand. Around 160 cases are registered each year, 50 die<sup>5</sup>. On top of that our current best approach to reducing this burden, cervical screening, has its own costs both in terms of expense, time and discomfort; as well as in the often invasive treatments needed to treat pre-cancerous lesions found.

The current HPV vaccine can prevent, almost entirely, infections with 70% of the strains that cause cervical cancer. So if all women were immunised about 110 cervical cancers in New Zealand could be entirely prevented (along with a much greater number of precancerous lesions).

Our current uptake rate has been about 50 to 60%, so that is roughly 50 to 60 cervical cancers which will potentially **not** be prevented in 10 - 20 years' time - that's the opportunity we have been missing in the past few years.

The addition of males to the programme early next year, along with the extension of free and enhanced vaccine to slightly older (up to 26 years) people<sup>6</sup> gives us the chance to put this right.

1. We have to increase the uptake at school age, where the vaccine is at its most effective
2. The widened access gives us the chance to offer protection to young women (and now men) who have missed out at school.

Both will be a challenge, but unlike many other cancers, we know exactly how to prevent these.

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<sup>3</sup> Durand N. Enhanced HPV – related Disease and Cancer Prevention. 2016 CPHA Conference, Toronto.

<sup>4</sup> NFID. Call to action. HPV vaccination as a public health priority. 2014

<sup>5</sup> HPV Information Centre. Human Papillomavirus and Related Diseases Report: New Zealand. Barcelona 2016

<sup>6</sup> PHARMAC. Changes to the National immunisation Schedule. July 2016

Young people, and in particular, young women who missed out on the opportunity to be protected through the school programme will be reaching 26 fairly soon. So ensuring that they are aware that HPV vaccine is now free for them and ensuring that they have easy access to HPV vaccine need to be priorities now.

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