QUADRIVALENT HPV VACCINE

FREQUENTLY ASKED QUESTIONS

This fact sheet provides responses to common patient questions and concerns about human papillomavirus (HPV) and the quadrivalent HPV vaccine. More detailed information about HPV and the available vaccines can be found in the NCIRS factsheet Human papillomavirus (HPV) vaccines for Australians: information for immunisation providers.

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Questions about HPV and the HPV vaccine in general

Q1. I've read that infection with the HPV types in the vaccine is actually very rare. Is it?
No, infection with at least one of the four HPV types in the quadrivalent HPV vaccine (Gardasil®) is very common. It is estimated that approximately 80% of people will experience an HPV infection in their lifetime. Studies in young women have found a very high risk of infection over time. Among women aged 14–20 years, up to 32% will acquire HPV16 and up to 20% will acquire HPV18 infection over a 2–4-year period. Similar results have also been reported in males. Studies that have measured antibodies to HPV in the blood (which some people develop after an infection) confirm that many people have been exposed to the HPV types in the vaccine; for example, in a US study, over 15% of women and 5% of men aged 18–59 years had antibodies to HPV16. However, the true proportion is higher as some people who become infected never make an antibody response and won’t be counted in these studies.

Even though some studies have found that at a single point in time only some people had a current HPV infection with the types covered by the HPV vaccine, this doesn’t show how many people have ever been infected. It would be like measuring how many people had chickenpox at one point in time and concluding that it must be rare. What is important is the likelihood of ever being infected which, as cited above, is substantial for sexually active women and men.

References


Q2. Is the vaccine really needed if only a small proportion of HPV infections lead to cancer?
It is estimated that 3–10% of HPV infections persist for long periods which can lead to the development of pre-cancerous abnormalities. In most cases, the pre-cancerous lesions disappear on their own over time; however, in some cases they progress to cause cancer. Even though only a small proportion of HPV infections result in disease, many people still develop cellular abnormalities and cancers because HPV infections are so common in the population (see Q1).

Prior to HPV vaccination, every year Pap screening in Australia detected low-grade cervical abnormalities in about 90,000 women and high-grade cervical abnormalities in a further 15,000 women. Even though Pap screening is in place to detect these pre-cancerous lesions there are still 700 cases and 200 deaths every year due to cervical cancer. This doesn’t take into account other cancers due to HPV in women (at sites of the body other than the cervix), or cancers in men, for which there are no screening programs, such as anal, vulvar and penile cancers, and cancers of the head and neck.

The advantage of vaccination is that it prevents infections with the HPV types that are included in the vaccine and the development of the pre-cancerous lesions and cancer that these infections may cause; screening will only detect disease once it has already developed. When HPV vaccine is given prior to HPV exposure vaccination is highly effective (in males and females) at preventing persistent infection with the HPV types included in the vaccine. In only 5 years since the HPV vaccination program was introduced in Australia, reductions in lesions caused by HPV are already being recorded (see Q7 and Q9).

References
Q3. I’ve heard there are many HPV types that can infect people, but the vaccine only protects against four. Can I still get cancer caused by HPV even if I am vaccinated?

There are more than 40 HPV types which can infect the mucosal surfaces of humans and potentially cause disease. The HPV types included in the quadrivalent HPV vaccine (Gardasil®) were specifically chosen because they are the types which are most commonly associated with cancers (HPV types 16 and 18) or non-cancerous lesions such as genital warts (HPV types 6 and 11). For example, a worldwide study looking at HPV types found that, in cases of invasive cervical cancer, HPV types 16 and 18 were detected in more than 70% of the samples. In other cancers caused by HPV that occur in males and females, such as anal cancer, HPV types 16 and 18 are found in approximately 90%. HPV types 6 and 11 are not commonly detected in cancers; however, they are responsible for nearly all cases of genital warts in males and females.

Although the quadrivalent HPV vaccine protects against the HPV types which most commonly cause disease, some of the HPV types not included in the vaccine can still cause cancer. It is for this reason that it is still important that women over the age of 18 years have a Pap test every 2 years after they have commenced sexual activity.

There is some evidence from clinical trials that vaccination might result in some cross-protection against other HPV types not included in the vaccine. However, the level of protection against other HPV types is less than for vaccine HPV types and it is still not known how long cross-protection lasts.

References


Q4. Is it true that the risk of cervical cancer in Australia is really low, even without vaccination?

Due to the very successful Pap screening program in Australia, mortality due to cervical cancer is one of the lowest in the world (1.9 deaths per 100,000 women in 2010). However, the likelihood of a woman who lives up to 85 years of age dying of cervical cancer is 1 in 500. The highest mortality rate in Australia is among women who are unscreened or under-screened. Although screening prevents a large majority of cervical cancers, prior to the introduction of HPV vaccination there were still approximately 700 cases and 200 deaths due to cervical cancer every year. In addition, Pap screening identified pre-cancerous lesions in tens of thousands of women. These women then had to undergo further tests and sometimes treatment (such as surgery) to remove the lesions to prevent development of cancer.

HPV vaccination is a preventive healthcare measure to be used in conjunction with Pap screening. As vaccination prevents infection with the most common HPV types associated with cancer, it means that, for these types, the initial persistent infection, and the subsequent progression to pre-cancerous lesions and then cancer, doesn’t occur at all (see O2). As vaccination does not protect against all HPV types, Pap tests are still required for vaccinated women; however, the risk of the detection and invasive treatment of pre-cancerous lesions is much lower.

In addition to reducing the risk of cervical cancer, HPV vaccination also protects against HPV infections and associated disease in other sites, such as the anus, vulva, vagina, penis, and head and neck. There are no screening programs in place to detect cancers at these sites.

References

Q5. I thought HPV vaccine prevents against cervical cancer? Why is it now being offered to boys too?
Cervical cancer is the most common HPV-associated cancer worldwide, so the majority of HPV research has been focused on understanding the role of HPV in causing that cancer type specifically. Because HPV vaccine development was initially focused on preventing cervical cancer, the first clinical trials involved only girls and women. However, as research has continued, much more is now known about the role of HPV in causing cancers in males (such as penile cancer) and cancers that occur in both females and males (such as anal and head and neck cancers), and how the HPV vaccine can help prevent them.

A major clinical trial of the quadrivalent HPV vaccine in males 16–26 years of age showed the vaccine prevented more than 85% of persistent anogenital infections and external genital lesions (primarily genital warts) due to vaccine HPV types among participants who were yet to be exposed to those types. It also showed the vaccine was as safe for males as it was for females. Not only will HPV vaccination help prevent HPV infection and associated diseases in individual males, but research suggests vaccinating boys will contribute to increasing protection against HPV in girls due to ‘herd immunity’.

References

Q6. How do we know that other HPV types won’t replace those which we vaccinate against?
Virological studies of HPV indicate that there is very little, if any, interaction between virus types, that is, they don’t compete with each other. HPV16 appears to be unique in terms of its propensity to cause disease. Therefore, it is unlikely that other HPV viruses will replace the cancer-causing types 16 and 18 if infection with these two types is prevented through vaccination. The types of HPV infection occurring over time in Australia is being monitored.

Although it is unlikely that there will be ‘replacement disease’ following the prevention of HPV type 16 and 18 infection, we will still see disease from the remainder of the 40 or so HPV types that cause disease. This is why continuing to have Pap tests is important (see Q3).

References

Questions about HPV vaccine efficacy and impact
Q7. I’ve heard that the vaccine doesn’t work if you get it after you’ve already become sexually active. Is that true?
HPV vaccine works by stimulating the body’s immune system to produce antibodies. These antibodies prevent infection with the four HPV types targeted by the vaccine but they do not treat infection that is already there. For the vaccine to work, it must be given before you are exposed to the virus (i.e. come into contact with it).

As HPV infection is commonly transmitted during sexual activity, HPV infection rates are highest in young people. Because of this, the best time to vaccinate is in early adolescence as most young adolescents haven’t already been exposed to HPV. If the vaccine is given to people...
who are already sexually active, there is a higher chance they would have already been exposed to one (or more) of the vaccine HPV types and, in turn, the benefit of the vaccine will be reduced.

This has been demonstrated in clinical trials of HPV vaccination. In women aged 16–26 years who had not yet been infected with vaccine HPV types, vaccination prevented more than 98% of high-grade cervical lesions (CIN2 or worse) associated with those types. However, when all women enrolled in the trials were considered (including those who were already previously infected with any HPV type) protection for the whole group was lower at only 52%.

References


Q8. How do we know the vaccine will prevent cancers caused by HPV when cancer takes years to develop and the clinical trials ran for less than 5 years?
While most HPV infections are cleared by the body naturally and never result in cancer, if an HPV infection persists, the virus can eventually integrate into cells and prevent them from repairing themselves normally, causing pre-cancerous lesions. Over time, a proportion of these pre-cancerous lesions can progress into cancer. So, while not all HPV infections cause cancer, infection is the necessary first step for the development of cervical and other HPV-related cancers. Although other factors may be important in determining progression to cancer (see Q10), cancer does not occur without HPV infection.

Because of the long time it takes for cancer to develop, HPV vaccine trials needed to assess the efficacy of the HPV vaccine against the early stages of the disease process (i.e. ‘surrogate’ outcomes), rather than cancer as the end result. These surrogate outcomes included the vaccine’s ability to prevent an initial HPV infection, as well as pre-cancerous lesions.

In clinical trials, HPV vaccination has been shown to prevent cervical, penile and anal infections due to the vaccine HPV types. More importantly the vaccines were also highly effective (90 to 100%) in preventing the step closer to cancer: pre-cancerous lesions caused by HPV. This outcome is taken as the most practical measure of the success of vaccination over time. This is accepted in much the same way that detection and removal of such lesions in the cervix, through Pap screening programs, is accepted as a means to reduce cervical cancer.

Reductions in HPV infection and HPV-related genital diseases (such as warts and pre-cancerous cervical lesions) are already being recorded in Australian females, following the introduction of HPV vaccination in 2007 (see Q9).

References


Q9. Is it true that there are already reductions in HPV disease in Australia since vaccination was introduced in 2007?
Studies in Australia have already demonstrated decreases in HPV infections and associated diseases in women (who were eligible for vaccine) as well as men (due to herd immunity) in the years following the introduction of the HPV vaccination program for females in 2007.

One cross-sectional study compared the prevalence of HPV types in two groups of women 18–24 years of age, one group prior to the introduction of the HPV vaccination program and one group where vaccination had been in place for 3 years. The prevalence of the four HPV vaccine types was reduced from approximately 29% to 7%.

In addition, a study looking at new cases of genital warts diagnosed between 2004 and 2011, demonstrated a near
disappearance of genital warts among young women <21 years of age (eligible for vaccine) in the period after vaccine introduction. Another study, done 3 years after the introduction of the Australian HPV vaccination program, showed a reduction in the incidence of pre-cancerous high-grade cervical abnormalities in Victorian girls younger than 18 years.

There is also evidence of a herd immunity benefit in unvaccinated males. There has been a significant decline in new genital wart diagnoses observed in heterosexual males of the same age as the girls targeted by the HPV vaccination program. However, there has been no significant reduction in new cases of genital warts reported by men who have sex with men which suggests they get limited benefit from the female program.

As cancer can take many decades to develop after an initial HPV infection, definitive evidence of a reduction in the incidence of cervical cancer resulting from the HPV vaccination program is expected in years to come (see Q8).

References


Q10. Isn’t leading a healthy lifestyle enough to prevent cancer?
While there is evidence that a healthy diet and exercise can help protect against certain other cancers, such as bowel cancer, there is no definitive evidence that these factors will protect against cancers associated with HPV.

The only way to ensure protection from infection with HPV (which is the necessary first step in the cancer development process) is to remain completely sexually abstinent. Although the risk of acquiring HPV infection increases with the number of sexual contacts, if a person is sexually active, even with only one partner, there is no guarantee they will never be infected with HPV. Most people with a current HPV infection do not display any symptoms or signs – that is, you can’t tell if you or your partner have the virus. Similarly, if infected, there is no way to ensure or know if the body’s immune system will be able to clear the virus on its own, or if that infection is silently progressing to cancerous changes.

Factors which have been shown to increase a person’s risk of persistent HPV infection, and thus of developing related cancers, include:

- genetic factors
- smoking
- the presence of a co-infection with other sexually transmitted infections, such as herpes or chlamydia
- whether there is severe immune suppression, such as HIV infection.

Other factors that increase the risk for cervical cancer in particular include having had a very large number of births (seven or more) and long-term oral contraceptive use.

A person may be able to reduce their risk of HPV infection somewhat by consistent condom use, but it should be emphasised that HPV can be transferred via contact between genital and mucosal surfaces that are not covered by the condom.

References


International Collaboration of Epidemiological Studies of Cervical Cancer. Cervical carcinoma and reproductive factors: collaborative reanalysis of individual data on 16,563 women with cervical carcinoma and 33,542
Questions about vaccine safety

Q11. How do we know the vaccine is safe? I’ve read it was only tested in a small number of young girls and boys.

Overall, the vaccine has an excellent safety profile, similar to that for other vaccines routinely used in the National Immunisation Program. HPV vaccine trials for Gardasil® involved over 30,000 people worldwide. The data from these trials have been evaluated by many expert groups, including the Food and Drug Administration (FDA) in the USA and the Therapeutic Goods Administration (TGA) in Australia, all of which have concluded that the vaccine is safe and effective. To date, over 95 million doses have been distributed worldwide with many countries monitoring vaccine safety post-licensure (i.e. after the vaccine is in use).

In clinical studies, the main side effects of the quadrivalent vaccine are reactions at the injection site (pain, redness and swelling) which occur in about 80% of those who receive the vaccine. In some people, fainting, or related symptoms such as dizziness, can be triggered in response to painful stimuli such as vaccination; however, this can be avoided with appropriate care (see Q13). The most common symptoms reported in the week after vaccination with Gardasil® are fever (slightly more frequently than in those who received a placebo injection), headache and fatigue (however, these were no more common than in placebo recipients).

There were very few serious adverse events reported following vaccination in clinical trials and they were no more frequent in participants who received the vaccine than in participants who received a placebo. Similarly, the overall proportion of people reporting new onset autoimmune conditions was similar between the vaccine and placebo groups in the trials (see Q12).

Ongoing, in-depth follow-up in women and men vaccinated in the clinical trials is continuing, to monitor the duration of vaccine effectiveness and to confirm safety over longer periods of time. In particular, Scandinavian women originally enrolled in the Gardasil® trials are being followed using systems that can link to health registers of cancer, Pap tests and other conditions.

Post-licensure safety monitoring is ongoing, particularly through passive reporting systems which rely on healthcare professionals and members of the public to report any suspected adverse events following vaccination. In Australia, such reports are collected by the TGA and summaries are publicly available through the Database of Adverse Event Notifications (www.tga.gov.au/safety/dafen.htm). Both national and international analyses of passive reports have not identified any new vaccine-related safety signals, with well-conducted epidemiological studies confirming no association with HPV vaccination and serious adverse events, including autoimmune conditions (see Q12).

The only contraindication to vaccination with Gardasil® is known anaphylaxis (severe allergy) to yeast or severe allergy to any other vaccine ingredient(s). As with any medication, there is always a small risk of an allergic reaction (anaphylaxis) following administration. While these events are rare, all patients should be observed for 15 minutes after vaccination.

References


Q12. I’ve read that the adjuvant in the HPV vaccine causes autoimmune diseases. Is that true?

Like many other vaccines, the HPV vaccines contain an adjuvant. Adjuvants are substances added to vaccines to improve the immune response to the part of the vaccine that mimics the pathogen.
The adjuvant in the quadrivalent HPV vaccine is an aluminium adjuvant. Aluminium-containing adjuvants have been around for more than 50 years and are widely used in human vaccines. Much larger amounts of aluminium are taken into the body through other means, such as food, than through vaccines. There is no evidence that aluminium in vaccines results in any serious or long-term adverse events, including autoimmune diseases. This is supported by evidence from clinical trials and post-licensure studies of the quadrivalent HPV vaccine. An analysis of several early and pivotal trials, involving a total of more than 20,000 girls and women aged 9–26 years and about 1,350 boys aged 9–16 years, found that the overall proportion of people who reported new onset autoimmune conditions was not different between those who got the vaccine and those who got a placebo (2.4% of people in each group). Post-licensure epidemiological studies have not identified any association between HPV vaccination and autoimmune conditions including multiple sclerosis, type 1 diabetes and Guillain-Barré syndrome, among others.

The other HPV vaccine available in Australia, the bivalent HPV vaccine (Cervarix®), has a unique adjuvant, ASO4, which contains aluminium, in the form of aluminium hydroxide, combined with another compound called monophosphoryl lipid A. No association has been found between ASO4-containing vaccines (including Cervarix®) and autoimmune conditions.

**References**

**Q13. Does the vaccine cause fainting?**
Some people who receive an injection of any kind do faint or have other symptoms associated with fainting, such as headache, or feeling weak, nauseous and/or dizzy. Others may become very anxious due to fear of needles and/or the responses of others around them who are being vaccinated (e.g. in school-based clinics). These reactions are more common in adolescents and young people, independent of whether a vaccine is being given. Although sometimes distressing, these symptoms usually resolve with simple treatment such as lying down, adequate food and drink intake, and reassurance. When administering the vaccine, it is important to make sure patients have eaten properly before vaccination and are observed for 15 minutes afterwards.

Adverse events occurring around the time of vaccination in the school setting are reported and investigated as appropriate.

In May 2007, media reports publicised that a group of school girls in Melbourne became unwell after being vaccinated. All of these episodes fully resolved and were attributed by the treating medical staff to fainting and anxiety/stress reactions.

**References**

**Q14. How do we know the vaccine won’t cause cancer? Surely if HPV can, a vaccine based on it might too?**
No, neither of the HPV vaccines in use in Australia can cause cancer. The viral proteins which can disrupt normal cell growth and repair mechanisms and ultimately result in cancer are well described in the scientific literature. They are not contained in the HPV vaccines.

HPV vaccines are made using recombinant DNA technology and contain only ‘virus-like particles’ (see **Q17**). The vaccines contain only outer coat proteins of the virus, with no viral DNA. It is not a live virus, and is not infectious.

**References**


**Q15. I've heard the vaccine could cause infertility. Is that true?**

No. There is no biologically plausible way in which the vaccine could cause infertility in either women or men. HPV infection, unlike some other sexually transmitted infections such as chlamydia, is not a cause of infertility. Studies of high doses of the vaccine in female and male rats showed no effect on fertility.

Some Internet sites report disturbing claims that one ingredient of the vaccine, polysorbate 80, causes infertility in rats. This is based on one study of newborn rats (weighing 10–17 g) given extremely large doses (20–200 times the amount in Gardasil®) injected into the abdomen. However, the Therapeutic Goods Administration has reviewed available data regarding polysorbate 80 and fertility and concluded that there is no evidence that polysorbate 80 at a level of 50 µg per 0.5 mL dose of Gardasil® poses a hazard to human reproduction or fertility. Polysorbate 80 is found in numerous medications, including other vaccines, and is used as a food additive and in cosmetics.

Providers and the public should be aware that false scares about vaccines leading to infertility are sometimes used to disrupt immunisation campaigns. For example, scare campaigns in Nigeria in 2003 about the polio vaccine leading to infertility resulted in reduced vaccine uptake and consequent polio outbreaks.

**References**


**Q16. Is it safe to get the vaccine when pregnant?**

While it is recommended that vaccination be avoided during pregnancy, there is no indication that inadvertent administration of the vaccine to a pregnant woman will result in an increased risk of adverse pregnancy outcomes. Although participants were requested to avoid pregnancy, during Phase 3 trials of Gardasil® there were 1,796 pregnancies in women who received Gardasil® and 1,824 pregnancies in placebo recipients. The rate of adverse pregnancy outcomes was similar in vaccine and placebo recipients. In particular, there was no evidence of an impact on spontaneous abortion rates, foetal deaths or number of live births. Congenital anomalies were rare and the types of anomalies that occurred in both groups were consistent with those generally observed in pregnancies in women in the 16–26 years age group.

Post-licensure surveillance of HPV vaccination during pregnancy has also been reviewed using pregnancy registries established by the vaccine manufacturers. Data from the Gardasil® registry are published and do not indicate any issues or new safety signal.

Women who wish to conceive following a course of Gardasil® are able to commence trying to fall pregnant immediately following the third dose, as the vaccine is not a live virus.

For women who fall pregnant before completing the three-dose vaccine schedule, the schedule can safely be resumed following pregnancy. As with other vaccines, there is no need to recommence the vaccine schedule from the first dose but recommence with the due dose (second or third).

**References**


Q17. I’ve heard that it is a genetically modified vaccine. Should I be concerned?

No, neither of the HPV vaccines contains viral DNA and they cannot ‘interact’ with your DNA. HPV vaccines are made using recombinant DNA technology which means they contain very pure protein rather than killed or live viruses. Hepatitis B vaccine is made using similar technology.

The technique of producing the protein found in the coat of the virus, which then naturally self-assembles into ‘virus-like particles’ (VLPs), was first discovered by Professor Ian Frazer and colleagues in Brisbane. Prior to this discovery, all attempts to create a vaccine against HPV had proven unsuccessful. The genetic code (or instructions) to make the protein of the viral coat is inserted into either a yeast (for Gardasil®) or insect cell (for Cervarix®). The yeast or insect cell then makes the protein which assembles itself into VLPs which have the same shape (a sphere) as HPV but contain no viral DNA.

Reference

Other issues

Q18. Is HPV vaccination compulsory, or is consideration being given to making it compulsory in other countries?

No. Routine vaccinations are not compulsory in Australia. Vaccination is an individual choice and each person should consider the risks and benefits for themselves, in consultation with their immunisation provider. However, vaccination is widely accepted in Australia, with immunisation rates in babies of over 92%. High vaccine coverage has enabled a reduction in the morbidity and mortality from many diseases. In Australia, support for HPV vaccination is high. Because of the comprehensive national immunisation program (with free school-based vaccination) the proportion of adolescent females receiving HPV vaccine in Australia is among the highest in the world. Parents or guardians are required to complete a consent form and return it to their child’s school for the child to participate in the school-based program.

References

Q19. If all the trials were sponsored by the vaccine manufacturer, can we trust their data?

There are many processes in place to ensure the integrity of the data presented by manufacturers of vaccines. The regulatory requirements for vaccines are very stringent. Prior to undertaking vaccine trials, manufacturers consult large regulatory agencies, such as the Food and Drug Administration (FDA) in the USA, to ensure that all required information is collected and presented. Trials are conducted by academic research organisations, rather than by the sponsor company themselves, requiring approval from independent ethics committees. To reduce bias, all key trials of Gardasil® were conducted in a blinded, randomised fashion which means that neither the participant nor the doctor/study personnel knew who had received the active vaccine. In addition, trials are overseen by independent safety panels that are also blinded.

Results from clinical trials submitted to scientific journals for publication are subject to ‘peer review’. This means that the results are independently scrutinised by experts in the field prior to publication.

Before vaccines are licensed for use, regulatory authorities request specific data from the manufacturers and conduct their own analyses of the trial data. In Australia, the Therapeutic Goods Administration evaluates the safety and efficacy of the vaccine in detail before recommending that it be registered for use.

Once a vaccine is registered, the Australian Technical Advisory Group on Immunisation (ATAGI) provides independent expert advice to government regarding the potential use of the vaccine in Australia, after considering the data on the vaccine as well as information on the disease in the Australian setting. Recommendations on vaccine use in Australia are published in The Australian Immunisation Handbook endorsed by the National Health and Medical Research Council.
Q20. Why is there information on the Internet saying the vaccine is dangerous if it isn’t?

There are many competing interests and a wide range of views available on the Internet and it is often difficult to determine whose opinion it is that you are reading.

Some people who choose alternative lifestyles may reject mainstream medicine including vaccinations. While this position should be respected as their choice, it is important for others who are considering vaccination to be aware that some information provided on the Internet comes from organisations or people who are philosophically completely opposed to vaccination.

Anti-vaccination groups voice concern about most vaccines and this now includes HPV vaccines. Their perceptions can be found at websites such as those of the Australian Vaccination Network (AVN) and the National Vaccination Information Center (NVIC). Press releases from such organisations may often be alarming and controversial and thus generate considerable media interest.

It is important to take the time to talk through concerns that patients may have from reading anti-vaccination resources and direct them to credible and balanced sources of information on HPV vaccines.

References


Q21. Could receiving HPV vaccine make my daughter or son promiscuous?

No, there is no evidence that receiving HPV vaccine could lead to promiscuity. The assumption that underlies this is that adolescents will not engage in ‘risky’ sexual behaviour if they fear HPV infection and thus vaccination against HPV removes the motivation for abstinence/safe sex. However, this is not supported by evidence. A US study found that only 7% of women cited fear of sexually transmitted diseases as a main reason for not having sex.

Among the participants in the HPV vaccine trials there was no increase in number of sexual partners in those who were vaccinated compared with those who were not. In addition, surveys of young women who had received HPV vaccination have found that there is no association with HPV vaccination and risky sexual behaviours such as number of sexual partners. In addition, adolescent women who were sexually active and received HPV vaccine were more likely to always wear a condom. This has been supported by data comparing sexual activity-related healthcare outcomes among girls who had received HPV vaccine at 11–12 years of age with those who hadn’t. In this study, the risk of any pregnancy, STI testing or diagnosis, or contraceptive counselling was not increased in girls who had received HPV vaccine.

Initiation of sexual activity is influenced by many other factors such as individual psychological factors, drug and alcohol use, family communication and support, community relationships, school factors, and perceptions of peer sexual activity. There is good evidence that receiving information about sexually transmitted infections, providing condoms or discussing sex does not result in earlier or more sexual activity.

References

