Module 1783

Immunisation in adolescence and adulthood

From this module you will learn:

- Which immunisations are offered routinely on the NHS from secondary school onwards
- Which strains each vaccine protects against
- Who should and should not receive routine vaccinations
- Common post-vaccination side effects

March

Clinical:

Early childhood immunisations	March 5*
Adult immunisations	March 12
Wound management	March 26

Practice:

Medicines adherence	March 19

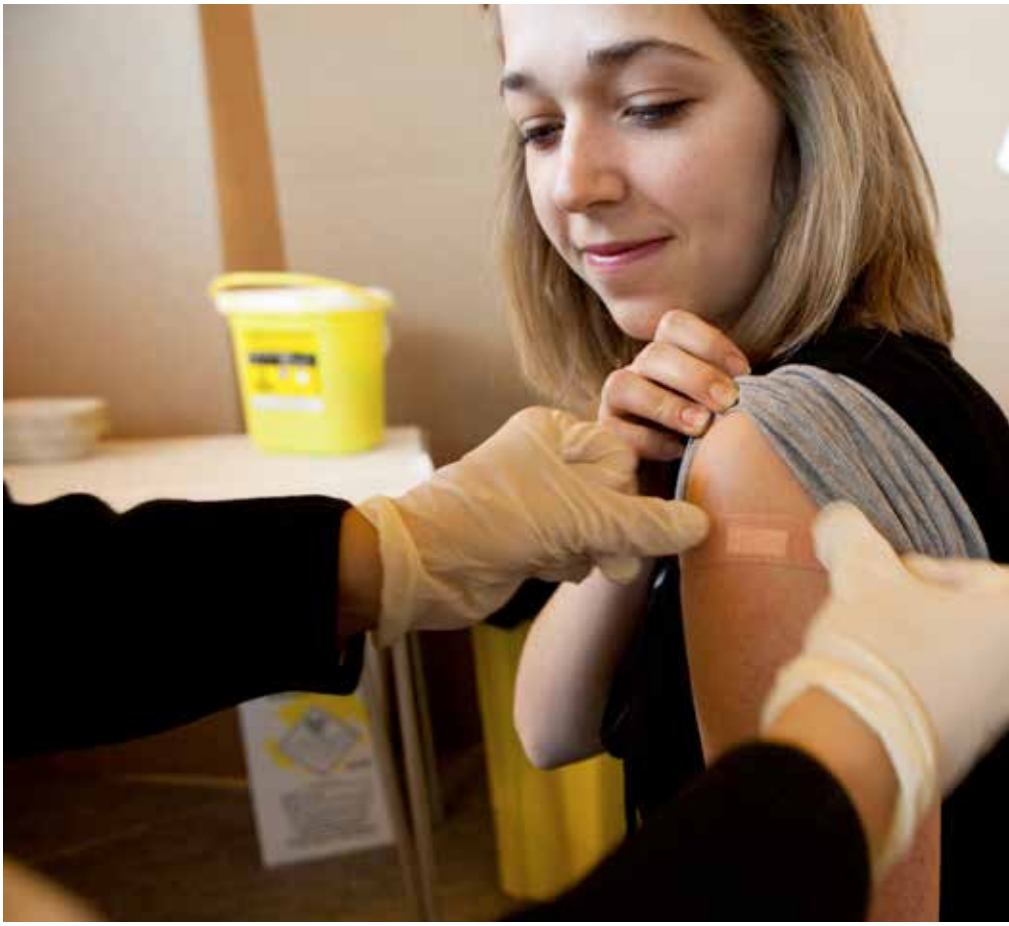
**Online-only for Update Plus subscribers*

Asha Fowells
Pharmacist and health writer

Along with clean water, there is little that has had such a profound impact on public health as vaccination. The principle that exposure to a disease protects against future infections can be traced back to the ancient Greek historian Thucydides, who noted that those who survived a smallpox plague did not suffer reinfection.

Vaccination in its modern form started in the 19th century, but it was not until the 1950s that manufacturing techniques evolved sufficiently to make it financially and technically realistic for the World Health Organisation (WHO) to set its sights on eradicating smallpox – a mission it achieved in 1980.

This is the second of two Update modules that run through the vaccines included in the NHS immunisation schedule, which can be found at tinyurl.com/adultimmune. This week's module begins where last week's online-only module left off, covering immunisations administered from secondary school onwards.



Profound impact: few clinical advancements have made as big a difference to healthcare as vaccination

HPV

The human papillomavirus (HPV) vaccine contains virus-like particles that confer immunity by mimicking the structure of the pathogen without containing any viral DNA. It protects against four types of HPV – which are spread through sexual contact – and is more than 99% effective at preventing pre-cancerous lesions associated with the virus and 99% effective at preventing genital warts. Two doses are administered intramuscularly at least six – but no more than 24 – months apart to girls aged 12 or 13. For practical reasons, the doses are usually administered around a year apart.

Since September 2012, Gardasil has been the HPV vaccine offered under the immunisation schedule. Previously, Cervarix was used; any girls who had a first dose of Cervarix but did not receive a second dose can complete their vaccination course with Gardasil.

Only a confirmed anaphylactic reaction to the vaccine or any of its components is a contraindication to vaccination, and deferral is only considered necessary in acute illnesses involving fever or systemic upset. The most common adverse effects are:

- Mild to moderate short-lasting pain and redness at the injection site
- Headache
- Myalgia
- Fatigue
- Low-grade fever.

Fainting is not uncommon, but is thought to be related to the injection process, rather than the product; it does not warrant reporting.

The HPV vaccine is regarded as safe during breastfeeding, but it is not recommended during pregnancy. This is due to an absence of data, rather than any known risk. Girls should be offered the vaccination as soon as possible after their pregnancy. If a girl is thought to be engaging in high-risk sexual activity during her pregnancy and it is uncertain whether she will seek out immunisation after giving birth, the benefit of administering the vaccine during pregnancy is considered likely to outweigh any potential risk. However, these cases are subject to surveillance reporting.

MenACWY

The MenACWY vaccination is a quadrivalent meningococcal vaccine, conferring protection to capsular groups A, C, W and Y ("capsular" refers to the antigens present on the outer surface of subgroups of various micro-organisms). It was previously confined to those making

the Hajj pilgrimage to Mecca as part of Saudi Arabia's entry requirements.

However, an increase in capsular MenW has been noted in England since 2009, with cases almost doubling in 2013 and again in 2014. This has led to the Joint Committee for Vaccination and Immunisation (JCVI) advising that the MenC dose – previously administered during adolescence – should be replaced with MenACWY.

In August 2015, a MenACWY catch-up programme was put into place for all children and adults aged 14 to 18, as well as under-25s attending university for the first time.

The MenACWY vaccine is made from

polysaccharides that have been extracted from cultures of capsular groups A, C, W and Y neisseria meningitidis, which are then joined to a carrier protein. It is worth noting that, while the response is good, it is capsular group-specific, ie it confers no protection to group B organisms.

MenACWY should be administered intramuscularly to the upper arm or thigh, ideally in a different limb – or at least a separate site – if it is being administered at the same time as the Td/IPV (tetanus, diphtheria and polio) booster.

Almost all individuals can receive the injection, with the exception of those who have had a confirmed anaphylactic reaction to a previous dose of the vaccine or any of its constituents or excipients. Immunisation may be postponed in those who are acutely unwell, to avoid confusing the illness's symptoms with any adverse effects of the vaccine. The injection may be given to both pregnant and breastfeeding women.

The most common side effect is injection site reactions, which may include pain, erythema, induration, pruritus and swelling. Mild systemic effects are relatively common. These can include:

- Headache
- Nausea
- Rash
- Drowsiness
- Irritability
- Appetite loss.

Seasonal flu

Immunisation against influenza for those in clinical risk groups (see below) has been recommended in the UK since the late 1960s, and was extended to all people over 65 in 2000.

Influenza vaccines are prepared using virus strains in line with recommendations made by the WHO. The manufacturing schedule is tight, with companies having to wait for WHO's announcement. As such, there is limited time to get the complex vaccines ready in order for people to be immunised between September and November, before the start of the flu season. This is why supplies can be unreliable.

All vaccines – except the nasal spray, which is used only for children – are inactive, meaning they cannot cause clinical influenza in those to whom they have been administered. The injectable products available until now have been trivalent, containing two subtypes of influenza A and one of influenza B. In recent years, the vaccines have closely matched the influenza A strains circulating during the winter months (with the exception of the 2014-15 season, when there was genetic variation in the genes that code for antibody-binding sites).

Mismatches between circulating influenza B strains is more common, and the JCVI is keen to see the introduction of a quadrivalent vaccine containing two B strains; this would protect adults to the same extent as children.

Any influenza strain that emerges with epidemic or pandemic potential is unlikely to be covered by the seasonal flu vaccine. In such cases – as happened in 2009 – a monovalent vaccine is developed and used.

All seasonal flu vaccines used for adults are administered intramuscularly, with the exception of one intradermal product. The brand, batch number and injection site should be noted in the patient's records.

The only contraindications are a confirmed anaphylactic reaction to a previous dose of the vaccine or any of its components. Individuals with an egg allergy should be given a vaccine containing less than 0.12µg/ml ovalbumin or, in the case of previous anaphylaxis requiring intensive care, the egg-free vaccine Optaflu.

Pain, swelling, erythema and induration at the injection site are among the most commonly reported side effects after a flu jab, as well as low-grade fever, malaise, shivering, fatigue, headache, myalgia and arthralgia. These usually resolve after a couple of days.

Within the eligible groups, clinical judgement should be applied and a vaccination offered to anyone who may suffer severely from the effects of flu itself, or from any underlying condition they may have.

The eligible groups for the seasonal flu vaccine (based on 2015-16 guidance) are:

- People aged 65 years or over
- People aged between six months and 65 years who have a serious medical condition, such as:
  1. Chronic respiratory disease, eg severe asthma
  2. Chronic heart disease, eg heart failure
  3. Chronic renal disease at stage three, four or five
  4. Chronic liver disease
  5. A learning disability or a chronic neurological disease, eg Parkinson's or motor neurone disease
  6. Diabetes
  7. Splenic dysfunction
  8. A weakened immune system, eg those who have HIV or are receiving chemotherapy
- Pregnant women
- People living in long-stay residential or other care facilities where flu is likely to spread quickly and cause high morbidity and mortality (note that prisons and university halls of residence are not considered to fall under this category)
- Carers for whom the person they look after would be vulnerable if the carer fell ill
- Individuals who have household contact with immunocompromised individuals
- Health and social care workers in patient or user-facing service roles.

The JCVI regularly reviews the list of conditions that are considered acceptable for eligibility, although it can take a while for new recommendations to be incorporated into funding arrangements. For example, people with a body mass index higher than 40, whom the JCVI recommends could benefit from flu vaccination, were not covered by last year's GP flu funding. However, many in this group would be eligible under another category, as a result of the complications of being morbidly obese.

PPV

The pneumococcal vaccine (PPV), given to all people aged 65 and over, is different to the product used as part of the childhood schedule in that it contains polysaccharides from each of the 23 capsular types responsible for 96% of serious pneumococcus infections

in the UK. Healthy adults usually develop a good antibody response within about three weeks, and overall efficacy in preventing pneumococcal bacteremia is thought to be 50-70%. It is not effective in protecting against non-bacteremic pneumococcal pneumonia, otitis media or exacerbations of chronic bronchitis, and it is relatively ineffective in patients with chronic alcoholism, multiple myeloma or lymphoma.

PPV is also recommended for patients in the clinical risk groups for seasonal flu vaccination, as well as those who have cochlear implants or cerebrospinal fluid leaks.

Only a confirmed anaphylactic reaction to a previous dose of the vaccine or any of its components is a contraindication to administration. Induration and mild soreness at the injection site are the most common adverse effects.

VZV

The varicella zoster virus (VZV) vaccine is a live, attenuated product that lowers the incidence and severity of shingles in older people. It is offered to those aged 70 and 78, although a catch-up programme means 71-, 72- and 79-year-olds are also eligible.

The vaccine should be administered subcutaneously and can be given at the same time as PPV and the seasonal flu jab. However, different sites - ideally, different limbs - should be used; injection site reactions are relatively common. If the patient has been immunised recently against yellow fever, a four-week interval should be observed.

There are several contraindications:

- Primary or acquired immunodeficiency
- Immunosuppressive or immunomodulating therapy (including certain doses of corticosteroids and methotrexate)
- Pregnancy
- Confirmed anaphylactic reaction to a previous dose of varicella-containing vaccine or any of its components, including neomycin or gelatine.

5-minute quiz

1. The human papillomavirus vaccine protects against six different types of HPV.
True/False

2. The human papillomavirus vaccine is more than 99% effective at preventing pre-cancerous lesions.
True/False

3. Two doses of the HPV vaccine, six months apart, are routinely given to girls at the age of 16.
True/False

4. The MenACWY vaccine is currently given to children aged 14 to 18 years and those aged under 25 years attending university for the first time.
True/False

5. Common side effects of the MenACWY vaccine include headache, nausea, rash, drowsiness, irritability and appetite loss.
True/False

6. The quadrivalent 2015-16 flu vaccine protects against two types of influenza A and two types of influenza B.
True/False

7. Patients with an egg allergy should be given a flu vaccine containing less than 0.12µg/ml ovalbumin.
True/False

8. People living in long stay residential or other care facilities including prisons and university halls of residence should be given the seasonal flu vaccine.
True/False

9. The pneumococcal vaccine is given to all people aged 55 years and over.
True/False

10. The VZV vaccine is currently being offered to people aged 70 and 78 years.
True/False

Further information

Each of the UK's countries deals with seasonal influenza reporting and immunisation slightly differently:

- Public Health England: tinyurl.com/adultimmune1
- Health Protection Scotland: tinyurl.com/adultimmune2
- Public Health Wales: tinyurl.com/adultimmune3
- Flu Aware NI (the public health agency that provides information for Northern Ireland): tinyurl.com/adultimmune4
- The Electronic Medicines Compendium holds up-to-date Summaries of Product Characteristics and patient information leaflets for all licensed medicines: medicines.org.uk/emc

Tips for your CPD entry on adult immunisation

Reflect **When is the HPV vaccine given? Which patient groups are eligible for the seasonal flu vaccine? Who should not be given the VZV vaccine?**

Plan **This article discusses the immunisations offered routinely on the NHS to adolescents and adults. It includes information about the strains against which each vaccine covers, who should and should not receive routine vaccinations, and common post-vaccination side effects.**

Act **Read more about the HPV vaccine on the Cancer Research UK website at** tinyurl.com/vaccination7

Find out more about the MenACWY vaccine on the NHS Choiceswebsite
tinyurl.com/vaccination8

Revise your knowledge of the seasonal flu vaccine on NHS Choices
tinyurl.com/vaccination9

Find out more about the pneumococcal vaccine on the Patient website
tinyurl.com/vaccination10

Read more about the shingles vaccination on the NHS Choices website
tinyurl.com/vaccination11

Read last week's online-only Update article about childhood immunisations if you have not already done so

Evaluate **Do you now have a good knowledge of routine vaccinations given in adolescence and adulthood? Could you give advice to patients about common post-vaccination side-effects?**