Background
As you will be aware, there has been a dramatic increase in pertussis activity in the UK starting in mid 2011. In Scotland there were 1927 and 1188 laboratory confirmed cases of pertussis in 2012 and 2013 respectively, compared with 119 and 82 confirmed cases in the whole of 2011 and 2010 respectively. The current national outbreak is the largest seen in the UK for over a decade. Whilst pertussis activity is now lower than during the peak of the outbreak it persists at raised levels compared to recent years. Immunisation of pregnant women continues to be important in the face of these persisting raised levels of pertussis, to provide protection to young infants before they are old enough to start their immunisation course at 8 weeks of age. The highest morbidity and mortality occurs in infants too young to be protected through routine vaccination. There were 14 deaths in England and Wales in 2012 due to pertussis in infants under three months of age. There were no reported deaths across Scotland in 2012 or 2013.

In response to this, Scottish Government and the Department of Health introduced a temporary programme to vaccinate pregnant women against pertussis to protect their infants. The programme began in October 2012. In Scotland, it is expected that vaccination will in most cases be provided through General Practice. Vaccination against pertussis should be provided for all pregnant women from 28 weeks onwards.

The programme has been reviewed by the Joint Committee on Vaccination and Immunisation which has recommended it continues until further notice (CMO Letter (2013): http://www.sehd.scot.nhs.uk/cmo/CMO(2013)03.pdf).

Midwives are seen as a key group of registered healthcare practitioners in communicating the benefits of the vaccine and helping to ensure that as many pregnant women as possible are immunised.

Notes continued overleaf
Vaccination against pertussis (whooping cough) - the replacement of Repevax® with Boostrix®-IPV - an update for midwives

August 2014

Notes (cont.)

Rationale of resource
This resource is designed to support midwives involved in raising the issue of vaccination against pertussis with all women in the antenatal period and providing women with evidence based information about vaccination against pertussis. This resource may also be of interest to other professional groups involved in supporting this pertussis programme.

These revised training materials (originally published October 2012) provide an update on the epidemiology of pertussis in Scotland and details the change of vaccine used in this programme from Repevax® to Boostrix®-IPV. This change will take place from June 2014.

This resource does not cover the actual administration techniques involved in vaccination against pertussis. If staff are required to deliver vaccinations they should refer to their line manager for alternative training.

Note: Pertussis is commonly known as whooping cough. For the purpose of this resource pertussis is used throughout this document.

Key Message

There is a lot of pertussis around at the moment and babies who are too young to start their vaccinations are at greatest risk

- The incidence of pertussis increased dramatically as part of a national outbreak in 2012 and 2013 and still remains well above pre-outbreak levels. During the first 12 weeks of 2014 there were 98 laboratory confirmed cases, in the whole of 2011 and 2010 there had been 119 and 82 confirmed cases respectively.

Notes
Aims of resource

- To support staff involved in discussing vaccination against pertussis with pregnant women by providing evidence based information
- To raise awareness of current pertussis epidemiology and the impact of pertussis on young infants
- To promote uptake of vaccination against pertussis through increasing awareness amongst midwives

Notes

Key roles of midwives in relation to vaccination against pertussis of pregnant women:

- Advise pregnant women (from 28 weeks gestation onwards) that it is strongly recommended that they are vaccinated against pertussis by their General Practice or as per local arrangements and that the ideal time for vaccination is between weeks 28 and 32 (inclusive).
- Explain the risks of pertussis in young infants and how the vaccination given during pregnancy may provide protection to young infants against pertussis.
- Explain which vaccine will be used, the contraindications and possible side effects to vaccination and the evidence for this new vaccination programme.
- Advise women how they can arrange for vaccination and, where appropriate, the healthcare professional could facilitate the arrangements for the vaccination appointment.
- Follow up at later antenatal appointments to establish whether the woman has had her vaccination against pertussis.
- Encourage women to ensure their babies start their primary immunisations at 8 weeks in order to achieve longer protection against pertussis and other vaccine preventable diseases.
Learning Outcomes

After completing this resource a midwives will be able to:

• Understand their role in raising the issue of vaccination against pertussis with all women in the antenatal period and providing women with evidence based information about this vaccination
• Describe the aetiology and epidemiology of pertussis
• Have an understanding of how pertussis is transmitted and the severity of it in young infants
• Discuss the important role of vaccination against pertussis during pregnancy for young infants
• Be aware of sources of additional information

Notes
Contents

1. What is pertussis?
2. Why vaccinate pregnant women against pertussis?
3. Vaccination against pertussis (whooping cough) the use of Boostrix®-IPV
4. The role of the midwives
5. Resources

Notes
What is pertussis?

Notes
What is pertussis?

- Pertussis is an acute bacterial infection caused by *Bordetella pertussis*.
- It is highly contagious and can be passed from person to person through droplets from the nose and throat of infected individuals when coughing and sneezing.
- Infants and young children are the most vulnerable group, with the highest rates of complications and mortality.

Notes

*Bordetella pertussis* is an exclusively human pathogen that can affect people of all ages, however infants and young children are the most vulnerable group with the highest rates of severe complications, hospitalisations and mortality. Adults and older children are often the source of infection for younger siblings at home.

Pertussis is a very infectious disease that is passed from one person to another. The bacteria are present in the back of the throat of an infected person and maybe spread by coughing or sneezing.
What is pertussis? (cont.)

Incubation period
• The incubation period is on average 7-10 days (range 5-21 days)

Infectious period
• Patients with pertussis are most infectious in the initial catarrhal stage and during the first three weeks after the onset of cough

Notes

A person can infect other people from 2-4 days before they start to cough to around 21 days after coughing starts.

Symptoms of pertussis usually develop 7 to 10 days after contracting the infection
Clinical presentation of pertussis

- Initial stage
  - Early symptoms:
  - are similar to those of a cold
  - can last for one to two weeks, before becoming more severe.
- Second or Paroxysmal Stage
  - Characteristic symptoms:
  - Intense bouts of coughing sometimes referred to as ‘paroxysms’ of coughing

Notes

Symptoms caused by pertussis infection tend to develop in stages, with mild symptoms occurring first, followed by a period of more severe symptoms, before improvement begins.

The initial stage /early symptoms of pertussis are often similar to those of a common cold and may include: runny or blocked nose, sneezing, watering eyes, dry irritating cough, sore throat, slightly raised temperature and feeling generally unwell. These early symptoms can last for one to two weeks before becoming more severe.

The second stage is sometimes called the paroxysmal stage and is characterised by fits of coughing which maybe followed by choking and/or vomiting. The cough often comes in short bursts (paroxysms) followed by a desperate gasp for air – when the characteristic whooping noise may be made.

Pertussis doesn’t always cause the typical symptoms of the whoop sound or vomiting after coughing, particularly in older children and adults.

Each bout of coughing usually lasts between one and two minutes, but several bouts may occur in quick succession.

These bouts of coughing may last for weeks or months. Over time the episodes of coughing become less frequent and full recovery is gradual.
Clinical presentation of pertussis (cont.)

Convalescent stage

Symptoms:
- Slowly become less severe
- Generally last 2-6 weeks but can persist for months

Notes
Clinical presentation of pertussis in infants and young children

- Infants may not make the ‘whoop’ sound after coughing, but they may start gagging or gasping and may temporarily stop breathing.
- Young children may also seem to choke or become cyanosed when they have a bout of coughing.

Notes

In young infants the typical ‘whoop’ may never develop and coughing spasms can be followed by difficulty breathing (apnoea).

Young children may also seem to choke or become blue in the face (cyanosis) when they have a bout of coughing.

The rate of hospitalisation and complications for pertussis is much higher in young infants than it is for older children and adults.
Pertussis - Possible complications of in infants and young children

Infants and young children are usually most severely affected and more likely to develop severe complications such as:

- Pneumonia
- Temporary pauses in breathing as a result of severe difficulty with breathing
- Weight loss due to excessive vomiting
- Seizures or brain damage
- Encephalitis (an acute inflammation of the brain)
- Low blood pressure, requiring medication
- Kidney failure, requiring temporary dialysis
- In severe cases pertussis can be fatal in infants and young children

Notes

Infants and young children are usually the most severely affected by pertussis and most likely to develop severe potentially life threatening complications.

Young infants are much more likely to be admitted to hospital with pertussis than other age groups.

Unfortunately some young infants have died in the UK during this outbreak.

References

**Possible complications of pertussis in older children and adults**

Complications in older children and adults are **usually much less serious** than those in infants and young children. May include:

- nosebleeds and burst blood vessels in the whites of the eye from intense bouts of coughing
- bruised ribs as a result of intense coughing
- hernia due to intense coughing
- a swollen face
- ulcers on the tongue and mouth
- ear infections such as otitis media
- ... 

**Notes**

Serious complications, such as pneumonia and convulsions, are uncommon in older age groups but can, very occasionally occur.

Sometimes the cough is severe enough to cause other problems such as fainting, muscle pain in the ribs (and occasionally fractured ribs), a hernia, or bleeding in the eye (conjunctival haemorrhage).
Why vaccinate pregnant women against pertussis?

Notes
Why vaccinate pregnant women against pertussis?

Current epidemiology of pertussis in Scotland - what does it show us?

Laboratory reports of Bordetella pertussis reported to HPS 2000-2013

Notes

In Scotland in the years from 2000 to 2011 there were between 50 and 119 laboratory confirmed cases of pertussis. Pertussis tends to have a cyclical nature with a peak in cases every two or three years, even in these peak years the number of laboratory confirmed cases has been no higher than 119.

Since 2012 there has been a very dramatic increase in the number of cases of pertussis.

There were 1927 and 1188 laboratory confirmed cases of pertussis in 2012 and 2013 respectively. These are only the laboratory confirmed cases there will be many more cases occurring that are not laboratory confirmed. In comparison there were 119 and 82 confirmed cases in the whole of 2011 and 2010 respectively. Although numbers of pertussis cases are now not as high as during the peak, pertussis diagnosis persist at raised levels compared to recent years. Immunisation of pregnant women continues to be important in the face of these persisting raised levels of pertussis.

This increase in and persistence of high levels of pertussis is not restricted to Scotland but has been seen in all parts of the UK.

Increases have also been seen in America, during the first half of 2012 increased pertussis cases or outbreaks were reported in a majority of states, as in the UK in America the highest rate is also in young infants. Similar increases in cases have also been reported in Australia, New Zealand & Canada.

References

America increase: [http://www.cdc.gov/pertussis/outbreaks.html](http://www.cdc.gov/pertussis/outbreaks.html)

Before the vaccination programme the highest rates of pertussis were among young infants

Laboratory reports of Bordetella pertussis and rate per 100,000 by age band in 2012

Notes

In 2012 there were 140 laboratory confirmed cases of pertussis in infants under one year of age. This gave a rate of 235 per 100,000 compared to a rate across all age groups of 36.8 per 100,000.

Young infants are the group who are most at risk of severe illness and complications from pertussis.

No pertussis related deaths have been reported in Scotland in 2012 and 2013, however deaths have been reported in young infants in England and Wales.

Reference

http://www.hpa.org.uk/NewsCentre/
NationalPressReleases/2012PressReleases/120928whoopvaccforpregwomenwelcome/
How can we help prevent pertussis - childhood vaccination programme?

- The main measure for reducing the impact (morbidity and mortality) from pertussis is the current childhood vaccination programme.
- What does this current vaccination programme look like?
  - Pertussis is part of the infant vaccination programme.
  - 5-in-1 vaccine (DTaP/IPV/Hib) is offered to infants at two, three and four months of age.
  - This protects against pertussis, diphtheria, tetanus, polio and *Haemophilus influenzae* type b.
  - A booster dose of pertussis containing vaccine is given when children are about three years and four months old.

Notes

The main measure for reducing the impact (morbidity and mortality) from pertussis is the current childhood vaccination programme.

Uptake rates for the completed primary course (x3 doses) of childhood pertussis vaccination in Scotland are very high (97.7% and 98.2% for children aged 12 and 24 months respectively).

Protection from vaccination against serious pertussis infection is very high for the first few years of life, when the risk of complications is greatest. Protection is extended further by the booster dose given before children go to school (usually given when children are aged about 3 years and 4 months).
Immunity against pertussis

- Vaccination against pertussis does not give life-long immunity
- Individuals who have had pertussis can become reinfected and spread infection to others
- This spread of infection is important particularly in children too young to be vaccinated

Notes

Neither protection from natural infection nor from vaccination is life long. Individuals who have had pertussis can get re-infected and spread infection to others. The same is true after pertussis vaccination, although infection in fully vaccinated individuals is normally mild. However, as vaccinated individuals can get a mild infection, particularly as immunity wanes in adolescence and adulthood, these people may spread infection to those children who are too young to be vaccinated.
How can we try to protect young children too young to be vaccinated against pertussis?

Due to the dramatic increase in cases of pertussis in the UK, the Scottish Government and the Department of Health have recommended:

- That pregnant women receive a dose of pertussis containing vaccine from 28-38 weeks, with the ideal time being 28-32 weeks gestation
- That pregnant women receive one dose of Boostrix®-IPV
- That this is considered the best way to provide protection to infants in the first weeks of life

Notes

In response to the dramatic increase in cases of pertussis in the UK, and the fact that infants are most severely infected, a decision has been made by the Departments of Health to recommend that pregnant women receive a pertussis containing vaccine. Vaccination is recommended from 28-38 weeks, with the ideal time being 28-32 weeks.

After vaccination it takes about 2 weeks for high levels of antibodies to be produced by the mother. The maximum transfer of antibodies across the placenta occurs from about 34 weeks’ gestation.

Immunisation within weeks 28 to 38 of pregnancy may ensure greater overlap between the period of maximal antibody levels in the pregnant women and the period of transplacental antibody transfer.

As mentioned above the optimal period for vaccination in pregnant women is between 28-32 weeks. This would also provide protection for preterm infants who may be particularly vulnerable to complications from pertussis infection.

**Vaccination against pertussis for pregnant women is considered the best way of providing protection to infants in the first weeks of life before they are old enough to start receiving their own primary immunisations.**

Pregnant women who are now beyond week 38 of pregnancy should also be offered immunisation up to the onset of labour so that some direct protection may still be provided to the infant.

Vaccination may be offered to new mothers who have never previously been vaccinated against pertussis, up to when their child receives their first vaccination. A single dose of Boostrix®-IPV is recommended in these circumstances and should ideally be given as soon as possible following birth.
Why vaccinate pregnant women against pertussis?

- The immunity acquired by vaccination will be passed across the placenta by antibodies and should help protect the baby in the first few weeks of life when they are at risk of serious complications if they become infected with pertussis.

Notes

As discussed previously, although many women will have had pertussis vaccination themselves when they were children or have had pertussis infection in the past, the immunity from this will now have worn off and there's little or no protection left to pass onto the unborn infant.

By offering a pertussis containing vaccine between weeks 28 to 38, with the ideal time being weeks 28 to 32 this will boost the mother’s levels of antibodies and increase the amount of antibodies that can be passed onto the infant.

Evidence suggests that pertussis antibodies can be transferred transplacentaly from mother to infant, and that some protection is provided. However the lack of serologic correlates of protection against pertussis infection makes it difficult to determine the level of protection afforded through laboratory methods. The half life of transferred maternal pertussis antibodies is approximately 6 weeks.

Once a mother has been vaccinated it takes about 2 weeks for the maximum antibody levels to be produced in the mother.

Transplacental antibody transfer begins at week 17 of gestation but remains minimal until 34 weeks gestation, it appears reasonable to assume that vaccination later in pregnancy would lead to higher levels of maternal antibodies during the period of optimal transplacental transfer i.e. around or after 34 weeks of gestation.
Quality Education for a Healthier Scotland 21

Why vaccinate pregnant women against pertussis? (cont.)

• **Helps protect the baby** – Babies born to mothers vaccinated at the recommended time during pregnancy should have higher levels of antibodies than those born to unvaccinated mothers, which should help protect the infant until they start receiving their own immunisations.

• **Helps protect the mother** – Reduces the risk of the mother catching pertussis and passing it on to the young infant.

• Programme to date has been shown to be very effective at reducing the number of cases in infants, although levels in older children and adults remain high.

Notes

The vaccination of pregnant women against pertussis in order to provide protection to the infant during the first weeks of life is also recommended in America ([http://www.cdc.gov/vaccines/vpd-vac/pertussis/tdap-pregnancy-hcp.htm](http://www.cdc.gov/vaccines/vpd-vac/pertussis/tdap-pregnancy-hcp.htm)) and (parts) of New Zealand ([http://www.immune.org.nz/taxonomy/term/8](http://www.immune.org.nz/taxonomy/term/8) and [http://www.arphs.govt.nz/Portals/0/Health%20Information/Communicable%20Disease/Pertussis/Fact%20sheets%20June%202012/Information%20Whooping%20Cough%20Immunisation%20Pregnancy%202006%202012.pdf](http://www.arphs.govt.nz/Portals/0/Health%20Information/Communicable%20Disease/Pertussis/Fact%20sheets%20June%202012/Information%20Whooping%20Cough%20Immunisation%20Pregnancy%202006%202012.pdf)).

A review of safety by the Advisory Committee on Immunisation Practices (ACIP) in America, based upon pregnancy registries, and small studies, concluded that "the available data did not suggest any elevated frequency or unusual patterns of adverse events in pregnant women who received Tdap, and that the few adverse events reported were unlikely to have been caused by the vaccine". Tetanus and diphtheria toxoid vaccines have been used extensively in pregnant women worldwide to prevent neonatal tetanus.

The vaccine available for use is Boostrix®-IPV which contains low dose diphtheria, tetanus, acellular pertussis and inactivated polio antigens (dTäP/IPV).

The Green Book states that "Pertussis-containing vaccines may be given to pregnant women when protection is required without delay. There is no evidence of risk from vaccinating pregnant women or those who are breast-feeding with inactivated viral or bacterial vaccines or toxoids (Plotkin & Orenstein 2004)"

An additional benefit of vaccinating a woman during pregnancy is she will also be protected at the time of delivery and when the infant is very young, and will be less likely to transmit pertussis to the infant.

Vaccination against pertussis (whooping cough) - the replacement of Repevax® with Boostrix®-IPV - an update for midwives

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Notes

This graph shows the very positive impact of the vaccination programme for pregnant women in reducing the number of cases in young infants.

In 2012, there were 140 laboratory confirmed cases in young infants, this declined to 19 laboratory confirmed cases in 2013.

A point of delivery audit was undertaken in January 2013 in a number of maternity units across Scotland which estimated that vaccine uptake by pregnant women was high at approximately 78%.

As pertussis is still circulating in Scotland at levels much higher than seen in the years prior to 2012, it is important for pregnant women to continue to receive the pertussis vaccine to protect their baby in the first few weeks of life.

As pertussis is very infectious, adults and older children with pertussis can pass the infection on to young infants.

Impact of the vaccination programme

Laboratory reports of Bordetella pertussis in infants under one year by year and four-week period, 2012 and 2013

Vaccination of pregnant women

Notes

This graph shows the very positive impact of the vaccination programme for pregnant women in reducing the number of cases in young infants.

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As pertussis is very infectious, adults and older children with pertussis can pass the infection on to young infants.
Vaccination against pertussis (whooping cough)

The use of Boostrix®-IPV

Notes
Why has the vaccine used changed from Repevax® to Boostrix®-IPV

- The vaccine used for pregnant women is changing from Repevax® to Boostrix®-IPV
- This change is due to a change in national procurement to replace Repevax® with Boostrix®-IPV

Notes

Vaccines are procured by the Department of Health on behalf of the UK nations. Following a tendering exercise the vaccine supplied for use in pregnant women will change from Repevax® to Boostrix®-IPV. This change has nothing to with the safety or effectiveness of Repevax®

The vaccination of pregnant women with Repevax® has been effective at protecting young infants and in reducing the incidence in disease in this age group.

As stocks of Repevax® are used up they will be replaced with Boostrix®-IPV. This will happen from June 2014. This means for a period of time some practices will still have Repevax® before they start to receive Boostrix®-IPV from the vaccine holding centres, Repevax® will continue to be used until Boostrix®-IPV is available in the practice.
Vaccination against pertussis (whooping cough) - the use of Boostrix®-IPV

**Brand name**
- Boostrix®-IPV

**Generic Name**
- Diphtheria, Tetanus, Pertussis (acellular component) and Poliomyelitis (inactivated) vaccine (dTaP/IPV)

- Marketed by GlaxoSmithKline
- Inactivated (i.e. the vaccine cannot cause pertussis)
- Licensed for use from age 4 years and above
- Presented as prefilled syringe

**Notes**

There is no single agent (monovalent) pertussis vaccines licensed in the UK. Pertussis containing vaccines are only available as combined products.

Boostrix®-IPV protects against 4 infections Diphtheria, Tetanus, Poliomyelitis and Pertussis

Boostrix®-IPV is an inactivated vaccine. It contains chemically inactivated and purified antigens – it does not contain live organisms and cannot cause the diseases against which they protect.

**Note:** Many vaccines have similar names and packaging. Colleagues are reminded that care should be taken when selecting a vaccine to ensure the correct immunisation is administered.
**Vaccination against pertussis (whooping cough) - the use of Boostrix®-IPV**

**Boostrix®-IPV composition - active ingredients**

- **Diphtheria Toxoid** not less than 2IU
- **Tetanus Toxoid** not less than 20IU
- **Pertussis antigens**
  - Pertussis Toxoid 8 micrograms
  - Filamentous Haemagglutinin 8 micrograms
  - Pertactin 2.5 micrograms
- **Poliovirus (inactivated)**
  - Type 1 40 D antigen units
  - Type 2 8 D antigen units
  - Type 3 32 D antigen units

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**Notes**

If a woman has previously had an anaphylactic reaction to latex the manufacturer of the vaccine (GSK on 0800 221 4411) should be contacted to determine the latex content of the batch of vaccine to be used.

Boostrix®-IPV is thiomersal free.

Egg allergy is not a contraindication.
Vaccination against pertussis (whooping cough) - the use of Boostrix®-IPV (cont.)

Boostrix®-IPV composition

**Adjuvant**
- Aluminium hydroxide, hydrated (0.3mg aluminium)
- Aluminium phosphate (0.2mg aluminium)

**Residual substances**
- Neomycin, polymyxin

**Excipients**
- Medium 199 (as stabilizer containing amino acids, mineral salts, vitamins and other substances)
- Sodium chloride
- Water for injection

Notes

If a woman has previously had an anaphylactic reaction to latex the manufacturer of the vaccine (GSK on 0800 221 4411) should be contacted to determine the latex content of the batch of vaccine to be used.

Boostrix®-IPV is thiomersal free.

Egg allergy is not a contraindication.
Administration of Boostrix®-IPV

Licensing

• The Green Book states that
  “Pertussis-containing vaccines may be given to pregnant women when protection is required without delay. There is no evidence of risk from vaccinating pregnant women or those who are breast-feeding with inactivated viral or bacterial vaccines or toxoids (Plotkin & Orenstein 2004)”

• The vaccine marketing authorisation holder’s Summary of Product Characteristics states that it has not been tested on pregnant women

• The advice from JCVI differs from that in the SPC and Patient Information Leaflet for Boostrix®-IPV. This statement follows the routine exclusion of pregnant women from clinical trials, and not because of any specific safety concerns or evidence of harm in pregnancy

Notes

Healthcare professionals are reminded that in some circumstances the recommendations regarding vaccines given in the Green Book chapters may differ from those in the Summary of Product Characteristics (SPC) for a particular vaccine. When this occurs, the recommendations in the Green Book are based on current expert advice received from the JCVI (Joint Committee on Vaccination and Immunisation) and should be followed. These Green Book recommendations and/or further advice from the Scottish Government should be reflected in PGDs.

1 The Green Book contains the latest information on vaccines and vaccination procedures for all the vaccine preventable infectious diseases that may occur in the United Kingdom. The Green Book can be found on the Department of Health website at: http://immunisation.dh.gov.uk/category/the-green-book/
Administration of Boostrix®-IPV (cont.)

- The advice from JCVI should be followed. There is no evidence of risk to pregnancy or the infant with inactivated vaccines such as Boostrix®-IPV.
- Use of Boostrix®-IPV is not contraindicated in pregnancy and does not affect breastfeeding.

Notes
Administration of Boostrix®-IPV

- Vaccine comes as a suspension – shake before use to obtain a homogeneous turbid white suspension
- Given by intramuscular injection into the deltoid
- Concomitant administration of Boostrix®-IPV and other vaccines or with immunoglobulins has not been studied. It is unlikely that co-administration will result in interference with the immune response

Notes

Concomitant administration of Boostrix®-IPV and other vaccines or with immunoglobulins has not been studied. It is unlikely that co-administration will result in interference with the immune response. The vaccines should be given at a separate site, preferably in a different limb. If more than one vaccine is given in the same limb, they should be given at least 2.5cm apart. The sites at which each vaccine is given should be noted in the individual’s records.

More information on immunisation by nurses and other registered healthcare practitioners is available in chapter 5 of Green Book (Immunisation against infectious disease).
Vaccination against pertussis (whooping cough) - the use of Boostrix®-IPV

Contraindications

• A confirmed anaphylactic reaction to a previous dose of diphtheria, tetanus, pertussis or poliomyelitis containing vaccine
• A confirmed anaphylactic reaction to any component of the vaccine
• If the subject has experienced an encephalopathy of unknown aetiology, occurring within 7 days following previous vaccination with pertussis-containing vaccine.
• To subjects who have experienced transient thrombocytopenia or neurological complications following an earlier immunisation against diphtheria and/or tetanus

Notes

There are very few individuals who cannot receive pertussis containing vaccines. When there is doubt specialist advice should be sought on the vaccine and the circumstances under which it could be given.

There are very few medical reasons why Boostrix®-IPV should not be given. Boostrix®-IPV should not be given to pregnant women who have had:

• a confirmed anaphylactic reaction to a previous dose of pertussis, diphtheria, tetanus or polio vaccines;
• a confirmed anaphylactic reaction to any component of the vaccine or to any substances carried over from manufacture (neomycin, polymyxin B);
• If the subject has experienced an encephalopathy of unknown aetiology, occurring within 7 days following previous vaccination with pertussis-containing vaccine;
• To subjects who have experienced transient thrombocytopenia or neurological complications following an earlier immunisation against diphtheria and/or tetanus.
Vaccination against pertussis (whooping cough) - the use of Boostrix®-IPV (cont.)

Precautions
- Acute illness
  - Defer immunisation until recovered
- Recent immunisation against pertussis, diphtheria, tetanus and/or polio
  - Ensure a gap of at least one month between immunisations
- Current neurological deterioration
  - Follow advice in Green Book
- If any of the following events are known to have occurred in temporal relation to receipt of pertussis containing vaccine, the decision to give doses of pertussis containing vaccine should be carefully considered:
  - Temperature of ≥ 40.0°C within 48 hrs of vaccination, not due to another identifiable cause
  - Collapse or shock-like state (hypotonic-hyporesponsiveness episode) within 48 hours of vaccination
  - Persistent, inconsolable crying lasting ≥ 3 hours, occurring within 48 hours of vaccination
  - Convulsions with or without fever, occurring within 3 days of vaccination

Notes

Pregnant women who have recently received immunisation against pertussis, diphtheria, tetanus and/or polio should also be offered immunisation, but with a gap of at least one month between immunisations. Although cumulative doses may increase the likelihood of injection site reactions or fever, this is outweighed by the expected benefit to the infant.

In cases of pregnant women with evidence of current neurological deterioration including poorly controlled epilepsy, immunisation should be deferred and the advice in the Green Book followed.

If the pregnant women is acutely unwell and has a fever, immunisation should be postponed until the patient has recovered. This is to avoid wrongly associating any cause of fever, or its progression, with the vaccine and to avoid increasing any pre-existing fever. Having a minor illness without a fever (e.g. a cold) is not a reason to delay immunisation.

A personal or family history of seizures is not a contraindication to immunisation.

There is no contraindication to breastfeeding after receiving Boostrix®-IPV. Insignificant antibodies are passed in breast milk to protect the baby.
Vaccination against pertussis (whooping cough) - the use of Boostrix®-IPV

Adverse reactions
- Pain, swelling or redness at injection site
- A small painless nodule may form at injection site
- Low grade fever, malaise, shivering, fatigue, headache, aching muscles and joint pain

Notes

The full list of adverse reactions associated with Boostrix®-IPV is available in the marketing authorisation holder’s Summary of Product Characteristics.

Anaphylaxis is a very rare side effect of most vaccines and facilities for its recognition and management must be available.
Vaccination against pertussis (whooping cough) - the use of Boostrix®-IPV

Reporting suspected adverse reactions

- Yellow card scheme
  - Voluntary reporting system for suspected adverse reaction to medicines/vaccines
  - Success depends on early, complete and accurate reporting
  - Report even if uncertain about whether vaccine caused condition
  - [http://yellowcard.mhra.gov.uk/](http://yellowcard.mhra.gov.uk/)
  - See chapter 8 of Green Book for details

Notes

As with all vaccines and other medicines healthcare professionals and patients are encouraged to report suspected adverse reactions to the Medicines and Healthcare products Regulatory Agency (MHRA) using the yellow card reporting scheme
Notes

Concomitant administration with influenza vaccine or anti-D treatment

Concomitant administration of Boostrix®-IPV and other vaccines or with immunoglobulins has not been studied. It is unlikely that co-administration will result in interference with the immune response. However, influenza immunisation should not be delayed until week 28 or after of pregnancy in order to give Boostrix®-IPV at the same visit. Pregnant women are at risk of severe illness at any stage of pregnancy from influenza. There are no reasons why Boostrix®-IPV cannot be administered at the same time as anti-D treatment.
Vaccination against pertussis (whooping cough) - the use of Boostrix®-IPV

Data management

- Vaccination against pertussis will be recorded in the women’s GP records and maternity records as per local arrangements
- Standard data set will be collected as per other vaccination programmes

Notes
Vaccination against pertussis (whooping cough) - the use of Boostrix®-IPV

Providing longer term protection against pertussis
- The protection the infant acquires from the mother by the transfer of antibodies across the placenta is only short term
- It is very important that parents ensure their infants start their immunisation schedule at 8 weeks to receive more long lasting protection

Notes

Parents should be encouraged to ensure their baby starts its immunisations on time.

Parents should ensure older brothers and sisters are up to date with their immunisations, in order to reduce the chance of them passing infection onto the young infant in the household.
Key role of the midwife

• To provide clear and concise information to every pregnant woman regarding vaccination against pertussis

Notes
Vaccination against pertussis (whooping cough) - the replacement of Repevax® with Boostrix®-IPV - an update for midwives
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Resources

- Patient group direction
  - [http://www.immunisationscotland.org.uk](http://www.immunisationscotland.org.uk)
  - [http://www.nhsinform.co.uk/health-library/articles/w/whooping-cough/introduction](http://www.nhsinform.co.uk/health-library/articles/w/whooping-cough/introduction)

Notes
Key Message

There is a lot of pertussis around at the moment and babies who are too young to start their vaccinations are at greatest risk

- Vaccination against pertussis for pregnant women is considered the best way of providing protection to infants in the first weeks of life before they are old enough to start their own primary immunisations

Notes