Adult immunisation update training

August 2017
What we will cover

- Whooping cough vaccine in pregnant women
- Shingles vaccine update
- MMR for adults
- Hepatitis A and B shortages
Pertussis vaccine in pregnancy

- In Oct 2012, JCVI recommended pregnant women receive one dose of pertussis containing vaccine from 28-38w
- Updated and from April 2016, vaccine now offered from week 16 of pregnancy

HSC Public Health Agency

Whooping cough
Get the vaccine to protect your baby

You can help protect your baby from whooping cough by getting vaccinated from week 16 of your pregnancy.

For more information talk to your GP or visit www.publichealth.hscni.net

Improving Your Health and Wellbeing
Why vaccinate pregnant women?

- 2012 largest pertussis outbreak for many years
- High attack rate in those < 3 months of age
- Pertussis is a serious disease particularly in babies who can become seriously unwell – many admitted to hospital, including ICU, and deaths occurred
- Only strategy to reduce this morbidity and mortality is vaccination of pregnant women
- Evaluation of programme shows its highly effective in protecting infants in first 3 months of life

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How?

- Boosts maternal pertussis antibodies in ~2 weeks
- Antibodies pass via placenta to baby (passive protection)
- Lasts weeks – months
- Baby must get routine scheduled vaccines from 2 months old
- Breast feeding does not provide sufficient antibodies
- Babies born to vaccinated mums have higher levels of antibodies than those born to unvaccinated mums
Laboratory confirmed cases of whooping cough (*bordetella pertussis*)
in Northern Ireland, by age group, 2001 - 2017*

<table>
<thead>
<tr>
<th>Year</th>
<th>NI uptake</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015/16</td>
<td>63%</td>
</tr>
<tr>
<td>2016/17</td>
<td>72%</td>
</tr>
</tbody>
</table>

*2017 data as at 19/04/2017 (data is provisional)
<table>
<thead>
<tr>
<th>Year</th>
<th>&lt;3 months</th>
<th>Mother unvaccinated</th>
<th>Proportion of cases where mother wasn’t vaccinated</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>4</td>
<td>3</td>
<td>75%</td>
</tr>
<tr>
<td>2014</td>
<td>7</td>
<td>6</td>
<td>86%</td>
</tr>
<tr>
<td>2015</td>
<td>19</td>
<td>14</td>
<td>74%</td>
</tr>
<tr>
<td>2016</td>
<td>12</td>
<td>6</td>
<td>50%</td>
</tr>
<tr>
<td>2017*</td>
<td>7</td>
<td>3</td>
<td>43%</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>17</td>
<td>66%</td>
</tr>
</tbody>
</table>
Pertussis vaccine in pregnancy

- **Recommended vaccine:** Boostrix-IPV ®
- Replaced Repevax® in 1st July 2014
- **Generic:** Diptheria, Tetanus, Pertussis (acellular component), Polio adsorbed (dTaP/IPV)
- Inactivated, acellular, adjuvanted vaccine does not contain thiomersal
- Boostrix-IPV® regardless of number of pregnancies
Vaccine safety

- Use of similar vaccines in US, Australia & New Zealand in pregnant women's programme
- MHRA have continually monitored the programme since introduction & have found no safety concerns relating to pertussis vaccination in pregnancy
- Pregnant women are excluded from vaccine trails, SPC states may be used where indicated
- JCVI and Department of Health advice should be followed and over-ride SPC guidance
Shingles vaccine update
Shingles and its complications

- Reactivation of varicella (chickenpox) infection when immune system is weakened
- Viral infection of nerve cells and surrounding skin

- Complications more likely in adults aged over 50 years
- Severity increases with age

- **Most common** complications are:
  - Post herpetic neuralgia (PHN)
  - Secondary bacterial skin infections

- Less common complications:
  - Ophthalmic Zoster
  - Peripheral motor neuropathy
  - Severe cases can lead to hospitalisation and death

*Improving Your Health and Wellbeing*
Shingles Vaccination Programme

- JCVI recommends shingles vaccination for 70 -79 year olds
- Programme began on 1\textsuperscript{st} September 2013

- **Routine cohort offered vaccine at 70 years** (defined as 70 on 1\textsuperscript{st} September)
- Catch-up vaccination for people up to and including 79 years
- **Catch-up cohort offered vaccine at 78 years**

- Continue to offer to people who missed the vaccine during the year they were eligible until they are 80 years
- Those over 80 years of age are not eligible, even if in previous years

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Why vaccinate older adults aged 70-79 year olds against shingles?

<table>
<thead>
<tr>
<th>Those over 70 years have an:</th>
<th>Estimated annual numbers in Northern Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased risk of developing shingles</td>
<td>900-1000 cases</td>
</tr>
<tr>
<td>More likely to suffer a more severe form and develop complications</td>
<td></td>
</tr>
<tr>
<td>Increased risk of PHN</td>
<td>250 cases</td>
</tr>
<tr>
<td>Increased risk of hospitalisation</td>
<td>2-3 cases</td>
</tr>
<tr>
<td>Death</td>
<td>1-2 (1 in 1000 deaths)</td>
</tr>
</tbody>
</table>

Analytical studies show that the most cost-effective age for offering vaccination to prevent and/or reduce the disease burden is for those aged 70 to 79.
From 1\textsuperscript{st} September 2017, shingles vaccine should be offered to:

- **Routine**: Patients aged 70 years on 1\textsuperscript{st} Sept 2017
- **Catch up**: Patients aged 78 years on 1\textsuperscript{st} Sept 2017

 Patients eligible for immunisation during first 4 years of programme but not vaccinated:

 Patients aged 71-74 on 1\textsuperscript{st} Sept 2017
 Patients aged 79 on 1\textsuperscript{st} Sept 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Cohort</th>
<th>Cohort definition</th>
<th>Born from date</th>
<th>Born to date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017/18</td>
<td>Routine</td>
<td>Age 70 on 1 September 2017</td>
<td>02/09/1946</td>
<td>01/09/1947</td>
</tr>
<tr>
<td>2017/18</td>
<td>Catch-up</td>
<td>Age 78 on 1 September 2017</td>
<td>02/09/1938</td>
<td>01/09/1939</td>
</tr>
</tbody>
</table>
The recommended vaccine: Zostavax®

- Live attenuated vaccine
- Only need one dose of vaccine
- Vaccine may be short dated so always check expiry date

- Clinical trials in adults aged 70 years and over showed that the vaccine reduced the incidence of shingles by 38% and provided protection for a minimum of 7 years
- For those vaccinated but who later developed shingles, the vaccine significantly reduced the burden of illness by 55% significantly reduced the incidence of PHN by 66.8%
Administration of Zostavax®

- Can be administered the same time as inactivated vaccines - influenza and 23-valent PPV and other live vaccines except Yellow Fever
- Can be administered before or after other live vaccines, except MMR
- If MMR and Zostavax® are not administered at the same time, need a four week minimum interval
- a four-week interval should be left between administration of Yellow Fever vaccine and Zostavax®
- Should not be administered to patients on or within 48 hours after oral/i.v. antivirals
- now recommended to be given IM - PGD has been changed
Contraindications

- It is critically important to check that the recipient has no contraindications to receiving a live vaccine
- The decision to administer Zostavax® to immunosuppressed individuals is based on a clinical risk assessment
- Always check medical record
- Always check Green Book (on line)
- Do not give the vaccine if you don’t have the complete medical history of an individual under highly specialist care until advice of the specialist or a local immunologist has been sought
- If primary healthcare professionals administering Zostavax® have concerns about the degree of immunosuppression, they should contact the relevant specialist for advice
Contraindications (cont’d)

Zostavax vaccine should not be given to a person who:

- is pregnant
- has had a confirmed anaphylactic reaction to a previous dose of varicella-containing vaccine
- has had a confirmed anaphylactic reaction to any component of the vaccine, including neomycin or gelatin
- is being treated with either oral or intravenous antivirals (such as acyclovir) until 48 hours after cessation of treatment (the use of topical acyclovir is not a contraindication to vaccination)

Zostavax® is not recommended for the treatment of shingles or post herpetic neuralgia (PHN). Individuals who have shingles or PHN should wait until symptoms have ceased before being considered for shingles immunisation.
Contraindications

The vaccine should NOT be given to a person who:

• has a primary or acquired immunodeficiency state

• is receiving immunosuppressive therapy (including high-dose corticosteroids)


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Conditions that cause a primary or acquired immunodeficiency state

- acute and chronic leukaemias, lymphoma (including Hodgkin’s lymphoma)
- immunosuppression due to HIV/AIDS (see later)
- cellular immune deficiencies
- those remaining under follow up for a chronic lymphoproliferative disorder including haematological malignancies such as indolent lymphoma, chronic lymphoid leukaemia, myeloma and other plasma cell dyscrasias (N.B: this list not exhaustive)
- those who have received an allogenic stem cell transplant (cells from a donor) in the past 24 months and **only** then if they are demonstrated not to have ongoing immunosuppression or graft versus host disease (GVHD).
- those who have received an autologous (using their own stem cells) haematopoietic stem cell transplant in the past 24 months and **only** then if they are in remission.

Humoral deficiencies affecting IgG or IgA antibodies are not of themselves a contraindication unless associated with T cell deficiencies. If there is any doubt (e.g. common variable immune deficiency), immunological advice should be sought prior to administration.
immunosuppressive or immunomodulating therapy

- those who are receiving or have received in the past 6 months immunosuppressive chemotherapy or radiotherapy for malignant disease or non-malignant disorders
- those who are receiving or have received in the past 6 months immunosuppressive therapy for a solid organ transplant (depending upon the type of transplant and the immune status of the patient).
- those who are receiving or have received in the past 12 months biological therapy (e.g. anti-TNF therapy such as alemtuzumab, ofatumumab and rituximab) unless otherwise directed by a specialist
- those who are receiving or have received in the past 3 months immunosuppressive therapy including
  i) short term high-dose corticosteroids (>40mg prednisolone per day for more than 1 week);
  ii) long term lower dose corticosteroids (>20mg prednisolone per day for more than 14 days)
  iii) non-biological oral immune modulating drugs e.g. methotrexate >25mg per week, azathioprine >3.0mg/kg/day or 6-mercaptopurine >1.5mg/kg/day
Individuals on low dose therapies

- Many adults with chronic inflammatory diseases are on stable long-term low dose corticosteroid therapy (either alone or in combination).
- Long-term stable low dose corticosteroid therapy +/- low dose non-biological oral immune modulating drugs are not considered sufficiently immunosuppressive and patients can receive vaccine.
- Long-term low dose corticosteroid therapy is defined as ≤20mg prednisolone per day for more than 14 days.
- Low dose non-biological oral immune modulating drugs e.g. methotrexate ≤25mg per week, azathioprine ≤3.0mg/kg/ day or 6-mercaptopurine ≤1.5mg/kg/day.
- Specialist advice should be sought for other treatment regimes.
- Zostavax® is not contraindicated for use in individuals who are receiving topical/inhaled corticosteroids or corticosteroid replacement therapy.
Patients anticipating immunosuppressive therapy

- the risk and severity of shingles is considerably higher among immunosuppressed individuals
- therefore eligible individuals anticipating immunosuppressive therapy should ideally be assessed for vaccine eligibility before starting treatment that may contraindicate future vaccination
- eligible individuals who have not received Zostavax® should receive a single dose of vaccine at the earliest opportunity and at least 14 days before starting immunosuppressive therapy, although leaving one month would be preferable if a delay is possible
Precautions

- Acute illness - defer immunisation until recovered
- Immunosuppressed patients who require protection against shingles should seek advice from a specialist
- Transmission of vaccine virus may rarely occur between recently vaccinated individuals and susceptible contacts particularly if vaccinee develops a rash. As a precaution any person who develops a rash should avoid contact with a susceptible person.
- Oral antivirals such as acyclovir are likely to attenuate response. The use of topical acyclovir is not a contraindication to vaccination.
MMR for adults
What is Measles?

- Extremely contagious viral illness caused by Morbillivirus
- In pre-vaccine era was most common in 1-4 year olds
- Spread by contact with nose and throat secretions and in airborne droplets released when an infected person sneezes or coughs
- Transmission period is from the first onset of symptoms, to 4 days after the appearance of the rash
- Incubation period ranges from 7 to 18 days
- Complications occur in approximately 30% of reported cases
Measles is an acute, highly contagious disease capable of creating epidemics. It can be contracted at any age. Infants and children are often believed to be the only age groups affected by measles, but the disease also spreads among teenagers and adults. Vaccination is the best way to protect yourself and others against measles, regardless of age. Check your vaccination status.

Data extracted from The European Surveillance System (TESSy), ECDC, Stockholm, 2017. Countries which are represented reported the majority of cases in the period 2013-2016.

Proportion of measles cases above 14 years of age, 2013-2016, EU/EEA countries

- 2013: 42%
- 2014: 64%
- 2015: 52%
- 2016: 35%
Notifications of Measles in Northern Ireland 1938-2016

1968: single measles vaccine
1988: 1st MMR vaccine
1994: catch up campaign with MR vaccine
1998: 2nd MMR
Notifications and Laboratory Confirmed Cases of Measles in Northern Ireland 2000-2016

Notifications and laboratory confirmed cases of Measles in Northern Ireland, 2000 - 2017*

(Notifications based on notification date - source HPZone)
(Confirmed cases based on specimen date - source Enhanced database)

Year

*2017 data as at 01/08/2017
The number of cases of measles is rising across the United Kingdom and Europe, including Northern Ireland.

To be protected you need to be immunised with MMR vaccine.

Remember, it is never too late to get protected against measles, and you’ll also be protecting yourself against two other diseases – mumps and rubella – that can be particularly serious in adults.

Public Health Agency
12-22 Linenhall Street, Belfast BT2 8BS,
Tel: 0300 555 0114 (local rate),
www.publichealth.hscni.net
www.nidirect.gov.uk

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MMR vaccination
It’s not just for children

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Rubella (German Measles)

- Made notifiable in 1988
- Transmitted through direct or droplet contact with NP secretions
- Incubation period is 14 – 21 days
- Infectivity period 1 week before until 5-7 days after the onset of rash
- Generally a mild viral illness, although can cause CRS in pregnancy
- Rubella immunization introduced in the UK in 1970 for pre-pubertal girls and non-immune women of childbearing age
- Universal MMR (1) in 1988, MMR (2) 1998
- Rubella now rare <1% of notifications tested confirmed
Complications of Rubella infection in pregnancy

Congenital Rubella syndrome (CRS)

- Risk of foetal damage is estimated at:
  - 90% in first 10 weeks
  - 10-20% by 16 weeks
  - Rare after 20 weeks

- Defects include cardiac, auditory, ophthalmic, neurological problems
Rubella screening in pregnancy

- Rubella susceptibility screening in pregnancy ended in England on 1\textsuperscript{st} April 2016

- Review of evidence by National Screening Committee found:
  - Rubella in UK is defined as ‘eliminated’ by WHO
  - Rubella infection in pregnancy is very rare
  - Being fully immunised is protective (i.e. 2x MMR)
  - Screening may give inaccurate results and cause unnecessary stress
  - High uptake rates for MMR in children in England (>94%)
  - Screening does not protect the baby in that pregnancy

- N. Ireland position is to continue with review in 2019

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Current issues for Rubella

- There is no specific treatment for rubella but the disease is preventable by vaccination.
- Although rubella infection is rare in the UK, there is potential for re-introduction if immunisation levels drop.
- Susceptibility and risk of infection are greater in migrant women.
- Susceptibility is better addressed through proactive vaccination of those at risk.
MMR Vaccine

- Contains live, attenuated (weakened) strains of measles, mumps and rubella viruses
- 2 vaccines available Priorix® and MMRVaxPRO®
- Should be stored at +2°C to +8°C & protected from light
- Can be given at same time as other vaccines and should ideally be given at the same time as other live vaccines
- If cannot be given at the same time as other live vaccines their should be a four week interval
MMR vaccine in teenagers and adults

- No upper age limit for vaccine, if indicated
- Give even if known to be immune to one antigen
- Decision on vaccinating adults takes into account the vac. history and risk of future exposure
- Use opportunities to assess vaccination history
- Consider travel, preconception, new entrants
# MMR for children over 10 years and adults

<table>
<thead>
<tr>
<th>Born between:</th>
<th>Recommendations</th>
</tr>
</thead>
</table>
| 1980 to 1990      | • Likely to be vaccinated against measles/rubella  
                    • May not be protected against mumps  
                    • If one, recall for 2\textsuperscript{nd} MMR  
                    • If none, two doses one month apart  
                    • Especially woman of child bearing age, migrants |
| 1970 to 1979      | • May have been vaccinated against measles  
                    • Many exposed to mumps/rubella in childhood  
                    • Still offer if feasible, especially if high risk of exposure  
                    • e.g. travel, preconception, health care workers  
                    • Two dose 1 month apart |
| Before 1970       | • Likely to have had all 3 natural infections  
                    • Offer MMR on request or if considered to be at high risk of exposure |
MMR Vaccine and healthcare workers

- All health care workers should be known to be immune to measles and rubella

- Satisfactory evidence of protection would be:
  - Having received 2 doses of MMR, or
  - Positive antibody tests for measles and rubella.
  - If not offer 2 x MMR vaccine
Contraindications

- There are very few individuals who cannot receive the MMR vaccine

- The vaccine should **not** be given to:
  - those who are immunosuppressed
  - those who have had a confirmed anaphylactic reaction to a previous dose of a measles, mumps or rubella containing vaccine
  - those who have had a confirmed anaphylactic reaction to neomycin or gelatin
  - pregnant women
Hepatitis A and B shortages
Global hepatitis A/B/combined vaccine shortage

• Worldwide shortage of hepatitis A, B and combined vaccines
• Hepatitis B particularly critical supplies in the UK
• Likely to last until end of 2017
• National temporary prioritisation recommendations have been published
• Ordering restrictions for Hepatitis B

Public Health Agency
Prioritisation guidance for HepA

Hepatitis B: temporary recommendations during supply constraints

Update on 23 August 2017

There is currently a global shortage of hepatitis B vaccine, which is impacting on the UK supply. Limitations on supply are likely to continue until early 2018.

The PHA and Department of Health are working with their equivalent organisations across the UK to ensure stock is available for those individuals at highest and most immediate risk of exposure to hepatitis B. The Chief Medical Officer HSS (MD) 12/2017 letter issued on 28 July, and updated on 18 August, details the temporary recommendations to support clinicians undertaking an individual risk assessment: www.health-ni.gov.uk/sites/default/files/publications/health/hss-md-15-2017.pdf

The situation is dynamic and likely to change frequently. On 22 August 2017, Public Health England updated the guidance referenced in the CMO letter to include information on:

- what to do if patients present with exposure incidents in sites where there is no vaccine
- advice to flag individuals in whom vaccination is deferred so they can be vaccinated at a later date.


Any future guidance published will be available here and will replace existing web links.