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Introduction

This resource pack has been developed to assist staff within Greater Glasgow and Clyde involved in immunisation within the community.

In recent years there have been a series of changes to the immunisation programmes, new evidence regarding the needle length and a review of the management of clinics.

This pack is designed to provide information and support to staff in the management of these clinics. This is not an exhaustive pack but designed to be added to by individuals and used by staff to support their continuing professional development. Sections can be removed and copied to audit practice, or filed in your personal portfolio or PDP to evidence your learning. PHPU newsletters and other updates, e.g. CMO letters, can be kept in the final section of the folder to ensure up to date information is readily available within the pack. Information changes frequently and so some internet resources are listed to provide links for further information.

More detailed general information about vaccination and individual vaccines are given in the Immunisation Against Infectious Disease (Green Book 2006) and it is strongly recommended that all staff involved in immunisation are familiar with this book and its content before undertaking immunisation clinics.

Dr Syed Ahmed
Immunisation Co-ordinator
NHS Greater Glasgow and Clyde
Section 1: Immunisations – Routine and Otherwise
1.1. Timetable of Routine Childhood Immunisations

<table>
<thead>
<tr>
<th>When to immunise</th>
<th>What is given</th>
<th>How it is given</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two months old</td>
<td>Diphtheria, tetanus, pertussis, polio and Hib (DtaP/IPV/Hib)</td>
<td>One injection</td>
</tr>
<tr>
<td></td>
<td>Pneumococcal (PCV)</td>
<td>One injection</td>
</tr>
<tr>
<td>Three months old</td>
<td>Diphtheria, tetanus, pertussis, polio and Hib (DtaP/IPV/Hib)</td>
<td>One injection</td>
</tr>
<tr>
<td></td>
<td>MenC</td>
<td>One injection</td>
</tr>
<tr>
<td>Four months old</td>
<td>Diphtheria, tetanus, pertussis, polio and Hib (DtaP/IPV/Hib)</td>
<td>One injection</td>
</tr>
<tr>
<td></td>
<td>MenC</td>
<td>One injection</td>
</tr>
<tr>
<td></td>
<td>PCV</td>
<td>One injection</td>
</tr>
<tr>
<td>12 months</td>
<td>Hib/MenC</td>
<td>One injection</td>
</tr>
<tr>
<td>Around 13 months</td>
<td>Measles, Mumps and Rubella (MMR)</td>
<td>One injection</td>
</tr>
<tr>
<td></td>
<td>PCV</td>
<td>One injection</td>
</tr>
<tr>
<td>Three years four months to three years six months (pre-school)*</td>
<td>Diphtheria, tetanus, pertussis and polio (DtaP/IPV or dTaP/IPV)*</td>
<td>One injection</td>
</tr>
<tr>
<td></td>
<td>Measles, Mumps and Rubella (MMR)</td>
<td>One injection</td>
</tr>
<tr>
<td>13 to 18 years</td>
<td>Tetanus, diphtheria and polio (Td/IPV)</td>
<td>One injection</td>
</tr>
</tbody>
</table>

*During the Hib catch-up campaign (5/11/07 to 03/03/09) the pre-school booster will contain an additional Hib component. During the course of this campaign, the age at which the pre-school immunisation is offered will be reduced to 3 years following completion of primary immunisation, i.e. normally between 3 years 4 months and 3 years 6 months of age.

Taken from Green Book 2006, chapter 11
1.2. Routine Tetanus, Diphtheria and Polio Immunisation Schedules

1. Children aged 10 years and over and adults requiring tetanus immunisation should now receive combined adsorbed tetanus/low dose diphtheria and inactivated polio vaccine (Td/IPV).

2. A full course of tetanus immunisation consists of a minimum of 5 doses of tetanus-containing vaccine at intervals as follows:

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Children &lt; 10 years</th>
<th>Adults and children &gt; 10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Course</td>
<td>3 doses of vaccine (usually as DTaP/IPV/Hib) at 2, 3 and 4 months of age</td>
<td>3 doses of vaccine (as Td/IPV) each one month apart</td>
</tr>
<tr>
<td>1st booster dose = 4th dose</td>
<td>Ideally 3 years after the primary course, usually pre-school entry (as DTaP/IPV OR dTaP/IPV) (can be given 1 after year primary course)</td>
<td>1 - 5 years after last dose should receive further dose of Td/IPV (4th dose)</td>
</tr>
<tr>
<td>2nd booster dose = 5th dose</td>
<td>Aged 13 - 18 years ideally 10 years after 1st booster (as Td/IPV) (can be given 5 years after 4th dose)</td>
<td>Ideally 5 - 10 years give 2nd booster (5th dose) (as Td/IPV)</td>
</tr>
</tbody>
</table>

3. Older adults may be unimmunised and at particular risk. Opportunities should be taken to check their immunisation status when attending surgery, for example for their influenza immunisation, and complete the recommended 5 dose schedule. Td/IPV can be given at the same time as influenza vaccine in a different arm.

4. For travellers to areas where medical attention may not be accessible should a tetanus prone injury occur and whose last dose of a tetanus containing vaccine was more than 10 years previously, a booster dose should be given prior to travelling, even if the individual has received 5 doses of vaccine previously. This is a precautionary measure in case immunoglobulin is not available to the individual should a tetanus prone injury occur. Where tetanus, diphtheria or polio protection is required and the last dose was more than 10 years before, Td/IPV should be given.
1.3. Tetanus-containing Vaccines and Human Tetanus Immunoglobulin

Tetanus as a single vaccine is no longer in use and is only available as part of a combined product. Following injury (e.g. wounds, burns, compound fractures) selection of the most appropriate tetanus-containing vaccine will depend on the age and immunisation status of the patient. This chart provides guidance on when to use tetanus-containing vaccines and human tetanus immunoglobulin, and on the selection of the most appropriate vaccine.

1. Asses immunisation status

| Immunisation status should be assessed following thorough cleaning of the wound. |
| The UK tetanus immunisation schedule consists of the following: |
| • Primary immunisation with three doses of tetanus-containing vaccine, at least 1 month apart, usually given at 2, 3 and 4 months of age |
| • 1st booster dose of tetanus-containing vaccine ideally 3 years after primary course |
| • 2nd booster dose of tetanus-containing vaccine ideally 10 years after 1st booster |

Patients should be considered fully immunised if they have received a total of 5 doses of tetanus-containing vaccine at appropriate intervals.
2. Give tetanus-containing vaccine and/or human tetanus immunoglobulin if required

<table>
<thead>
<tr>
<th>Immunisation Status</th>
<th>Vaccine</th>
<th>Human tetanus immunoglobulin²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully immunised (see definition above) or primary immunisation complete, boosters up to date</td>
<td>None required</td>
<td>Give human tetanus immunoglobulin¹ only if high risk tetanus-prone injury (see Box A)</td>
</tr>
<tr>
<td>Primary immunisation complete, boosters NOT up to date</td>
<td>Required for all injuries: Child under 10 years - give dTaP/IPV³ (Repevax) or DTaP/IPV² (Infanrix-IPV)</td>
<td>Give human tetanus immunoglobulin¹ if tetanus-prone injury (see Box A) Note: should be given in a different site from vaccine</td>
</tr>
<tr>
<td>Primary immunisation incomplete or unimmunised or immunisation status unknown / uncertain</td>
<td>Required for all injuries: Child under 10 years - give DTaP/IPV/Hib² (Pediacel)</td>
<td>Give human tetanus immunoglobulin¹ if tetanus-prone injury (see Box A) Note: should be given in a different site from vaccine</td>
</tr>
</tbody>
</table>
3. Refer (if appropriate) to GP or Public Health for completion of tetanus immunisation

<table>
<thead>
<tr>
<th>Primary immunisation now complete and boosters up to date:</th>
<th>Public health referrals should be made by fax or telephone to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No further action required</td>
<td>Public Health Protection Unit</td>
</tr>
<tr>
<td><strong>Primary immunisation incomplete or vaccination status unknown:</strong></td>
<td><strong>GGCNHS Board</strong></td>
</tr>
<tr>
<td>Refer to GP for follow-up and completion of immunisation</td>
<td>Telephone: 0141 201 4917</td>
</tr>
<tr>
<td>If GP details not available refer to Public Health (details opposite)</td>
<td>Fax: 0141 201 4950</td>
</tr>
</tbody>
</table>

Public Health referrals should be made by fax or telephone to:
- Public Health Protection Unit
- GGCNHS Board
- Telephone: 0141 201 4917
- Fax: 0141 201 4950
- Please supply patient’s name, date of birth, address, and details of vaccination given in A&E

**Box A: Tetanus-prone and high risk injuries/groups**

**a) Tetanus-prone injuries include:**
- wounds or burns requiring surgical intervention, if surgery is delayed > 6 hours
- wounds or burns that have a significant degree of devitalised tissue or are puncture-type (particularly when in contact with soil or manure)
- wounds containing foreign bodies
- compound fractures
- wounds or burns in patients who have systemic sepsis

**b) A wound or burn is considered high risk if:**
- there is heavy contamination with material likely to contain tetanus spores (e.g. soil or manure) and/or there is extensive devitalised tissue

**Injecting drug users**
Injecting drug users (IDUs) may be at risk from tetanus-contaminated illicit drugs, particularly when they have sites of focal infection, such as skin abscesses, that may promote growth of anaerobic organisms.

Every opportunity should be taken to assess the immunisation status of IDUs, and to give tetanus-containing vaccine (Revaxis) if immunisation is incomplete or status uncertain.

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1 Dosage of human tetanus immunoglobulin: 250 units by IM injection. Increase to 500 units if more than 24 hours have elapsed or there is risk of heavy contamination of following burns.

2 D=diphtheria toxoid; d=diphtheria toxoid (low-dose); T=tetanus toxoid; aP=acellular pertussis vaccine; IPV=inactivated poliomyelitis vaccine; Hib=Haemophilus influenza type b vaccine

3 If Td/IPV (Revaxis) is not available, then Td (Diftavax) can be used as alternative.
## 1.4. Children and Adults in Special Risk Groups

**LIVE** vaccines include measles, mumps and rubella (MMR), varicella, yellow fever, BCG, oral typhoid and oral cholera.

**NON-LIVE** vaccines include IPV, DTP, Hib, Men C, influenza, pneumococcal, hepatitis A, hepatitis B and PCV

<table>
<thead>
<tr>
<th>Preterm babies and small for dates babies</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children</strong></td>
<td>Routine childhood schedule should be started 2 months after birth regardless of the extent of prematurity.</td>
</tr>
<tr>
<td><strong>Evidence</strong></td>
<td>Green Book chapter 7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Down's syndrome</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children and adults</strong></td>
<td>Routine schedule.</td>
</tr>
<tr>
<td></td>
<td>Children with Down’s syndrome are a particular risk from measles infection and should be immunised with MMR vaccine.</td>
</tr>
<tr>
<td></td>
<td>As for chronic heart disease if present.</td>
</tr>
<tr>
<td><strong>Evidence</strong></td>
<td>Green Book chapter 21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chronic heart disease and chronic respiratory disease (including asthma, COPD, and cystic fibrosis)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children and adults</strong></td>
<td>Routine schedule</td>
</tr>
<tr>
<td></td>
<td>Influenza vaccine</td>
</tr>
<tr>
<td></td>
<td>Pneumococcal vaccine</td>
</tr>
<tr>
<td><strong>Evidence</strong></td>
<td>Green Book chapters 7, 19 and 25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chronic liver disease (including chronic hepatitis C and cirrhosis)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk</strong></td>
<td>At increased risk of severe illness if infected with hepatitis A and/or hepatitis B</td>
</tr>
<tr>
<td><strong>Children and adults</strong></td>
<td>Routine schedule</td>
</tr>
<tr>
<td></td>
<td>Pneumococcal vaccine</td>
</tr>
<tr>
<td></td>
<td>Influenza vaccine</td>
</tr>
<tr>
<td></td>
<td>Hepatitis A vaccine and hepatitis B vaccine</td>
</tr>
<tr>
<td><strong>Evidence</strong></td>
<td>Green Book chapters 7, 17, 18, 19 and 25</td>
</tr>
<tr>
<td></td>
<td>PHLS guideline for the control of hepatitis A virus infection 2001</td>
</tr>
<tr>
<td></td>
<td>Annual CMO letter from the Scottish Government</td>
</tr>
</tbody>
</table>
### Chronic renal disease (including nephrotic syndrome, chronic renal failure, and renal transplant)

<table>
<thead>
<tr>
<th>Children and adults</th>
<th>Routine schedule  Influenza vaccine  Pneumococcal vaccine (re-immunisation every 5 years)  Hepatitis B vaccine if need for dialysis or transplantation is anticipated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence</td>
<td>Green Book chapter 7, 18, 19, 25</td>
</tr>
</tbody>
</table>

### Persons on haemodialysis

<table>
<thead>
<tr>
<th>Risks</th>
<th>Increased risk of hepatitis B and C  Response to hepatitis B vaccine may be suboptimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children and adults</td>
<td>Routine schedule  Hepatitis B vaccination for non-immune individuals prior to starting dialysis  Subsequent annual testing of anti-HBs antibody levels and re-immunisation if fallen below 10mIU/ml</td>
</tr>
<tr>
<td>Evidence</td>
<td>Green Book chapter 7, 18</td>
</tr>
</tbody>
</table>

### Diabetes mellitus

<table>
<thead>
<tr>
<th>Children and adults</th>
<th>Routine schedule  Influenza vaccine  Pneumococcal vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence</td>
<td>Green Book 7, 19, 25</td>
</tr>
</tbody>
</table>

### Hyposplenism or absent spleen

<table>
<thead>
<tr>
<th>Definition</th>
<th>Hyposplenism includes those with homozygous sickle cell anaemia and coeliac disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk</td>
<td>Increased risk of bacterial infections, most commonly encapsulated organisms</td>
</tr>
<tr>
<td>Children and adults</td>
<td>Routine schedule  Hib vaccine, Influenza vaccine, MenC vaccine  Pneumococcal vaccine (re-immunisation every 5 years)  Prophylactic penicillin (at least until 16 years old and possibly for life)</td>
</tr>
<tr>
<td>Evidence</td>
<td>Green Book chapters 7, 16, 19, 22, 25</td>
</tr>
<tr>
<td><strong>Immunocompromised</strong></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| **Definition**         | See Green Book chapter 6 for definition of groups who are severely immunosuppressed and Royal College of Paediatrics and Child Health 2002 document on immunisation of the immunocompromised child  
*http://www.rcpch.ac.uk/doc.aspx?id_Resource=1768 |
| **Children and adults**| DTaP/IPV/Hib and MenC from routine childhood schedule  
MMR depending on severity of immunocompromise - check with hospital consultant  
Influenza vaccine  
Pneumococcal vaccine  
Consider HNIG after measles exposure and VZIG after varicella zoster exposure for non-immune individuals |
| **Contraindications**  | Live vaccines (see Green Book page 42 for groups)  
Note household contacts of an immunosuppressed person can receive MMR vaccine without any risks to the immunocompromised person |
| **Evidence**           | Green Book. RCPCH document (see above)* |

<table>
<thead>
<tr>
<th><strong>HIV infection (with or without symptoms)</strong></th>
</tr>
</thead>
</table>
| **Children and adults**                     | Usual childhood schedule **except BCG**  
Discuss MMR with consultant in charge depending on degree of immunosuppression  
Pneumococcal vaccine  
Hepatitis B is safe if indicated  
Consider HNIG after measles exposure and VZIG after varicella zoster exposure for non-immune individuals |
| **Contraindications**                       | BCG and yellow fever vaccines are contraindicated |
| **Evidence**                                | Green Book chapters 6, 32. RCPCH document (see above)* |

<table>
<thead>
<tr>
<th><strong>Recipients of cochlear implants</strong></th>
</tr>
</thead>
</table>
| **Children and adults**                      | Routine schedule  
Pneumococcal vaccine |
| **Evidence**                                | Green Book chapter 25 |
## Recipients of bone marrow transplants

<table>
<thead>
<tr>
<th>Children</th>
<th>All children who have received allogenic (i.e. someone else’s cells) or autologous (i.e. their own cells) transplants should be considered for reimmunisation programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraindications</td>
<td>Live vaccines depending on time and treatment since transplant</td>
</tr>
</tbody>
</table>
| Evidence | Green Book  
NHS Greater Glasgow and Clyde Haemopoietic Stem Cell Transplantation Services (HSCTS) vaccination policy (available on GGC staffnet site) |

### Haemophilia

<table>
<thead>
<tr>
<th>Risk</th>
<th>At increased risk of severe illness if infected with hepatitis A virus</th>
</tr>
</thead>
</table>
| Children and adults | Routine schedule  
Hepatitis A vaccine  
Hepatitis B (also applies to other persons receiving regular blood transfusions or blood products) |
| Contraindications | Haemophiliacs should be immunised subcutaneously rather than intramuscularly |
| Evidence | Green Book chapters 17 and 18  
PHLS guideline for the control of hepatitis A virus infection 2001 |

### Sex workers

<table>
<thead>
<tr>
<th>Adults</th>
<th>Hepatitis A vaccine and Hepatitis B vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence</td>
<td>Green book chapters 17 and 18</td>
</tr>
</tbody>
</table>

### Men who have sex with men

<table>
<thead>
<tr>
<th>Adults</th>
<th>Hepatitis A vaccine and Hepatitis B vaccine</th>
</tr>
</thead>
</table>
| Evidence | Green book chapters 17 and 18  
PHLS guideline for the control of hepatitis A virus infection 2001 |

### Injecting drug users

<table>
<thead>
<tr>
<th>Adults</th>
<th>Hepatitis A vaccine, Hepatitis B vaccine and tetanus.</th>
</tr>
</thead>
</table>
| Evidence | Green book chapters 17, 18 and 30  
PHLS guideline for the control of hepatitis A virus infection 2001 |
<table>
<thead>
<tr>
<th>Prisoners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
</tr>
<tr>
<td>Hepatitis A vaccine and Hepatitis B vaccine</td>
</tr>
<tr>
<td>Evidence</td>
</tr>
<tr>
<td>Green book chapters 17 and 18</td>
</tr>
<tr>
<td>Persons living in residential accommodation e.g. Care Homes</td>
</tr>
<tr>
<td>Children and adults</td>
</tr>
<tr>
<td>Influenza vaccine</td>
</tr>
<tr>
<td>Hepatitis B vaccine (only for persons with severe learning disabilities)</td>
</tr>
<tr>
<td>Consider hepatitis A vaccine (only for persons with special needs and difficulties with personal hygiene)</td>
</tr>
<tr>
<td>Evidence</td>
</tr>
<tr>
<td>Green book chapters 17, 18, 19</td>
</tr>
<tr>
<td>PHLS guideline for the control of hepatitis A virus infection 2001</td>
</tr>
<tr>
<td>Pregnancy</td>
</tr>
<tr>
<td>Adults</td>
</tr>
<tr>
<td>The Green Book states that pregnant women and those breast-feeding can be immunised when clinically indicated.</td>
</tr>
<tr>
<td>MMR vaccine after delivery for women found to be non-immune to rubella on ante-natal screening</td>
</tr>
<tr>
<td>Contraindications</td>
</tr>
<tr>
<td>Live vaccines are contraindicated during pregnancy.</td>
</tr>
<tr>
<td>The data sheets for dTaP/IPV, DTaP/IPV and Td/IPV do not recommend these vaccinations during pregnancy, whilst the SPCs for dTaP/IPV and DTaP/IPV recommend avoidance during breast-feeding but see note above.</td>
</tr>
<tr>
<td>Evidence</td>
</tr>
<tr>
<td>Green book chapters 6 and 21</td>
</tr>
</tbody>
</table>
### 1.5. Individuals with Uncertain or Incomplete Immunisation Status

<table>
<thead>
<tr>
<th>Age Group</th>
<th>DTaP/IPV/Hib* + PCV**</th>
<th>DTaP/IPV/Hib* + PCV* + MMR + MenC*</th>
<th>DTaP/IPV/Hib* + PCV* + MMR</th>
<th>Td/IPV + MenC* + MMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 - 12 months of age</td>
<td>4 week gap -</td>
<td>DTaP/IPV/Hib* + PCV* + MMR + MenC*</td>
<td>DTaP/IPV/Hib* + PCV* + MMR</td>
<td>Td/IPV + MenC* + MMR</td>
</tr>
<tr>
<td>&gt;12 months - 2 yrs</td>
<td>4 week gap -</td>
<td>DTaP/IPV/Hib* + PCV* + MMR + MenC*</td>
<td>DTaP/IPV/Hib* + PCV* + MMR</td>
<td>Td/IPV + MenC* + MMR</td>
</tr>
<tr>
<td>&gt;2yrs - 10 yrs</td>
<td>DTaP/IPV/Hib + MenC*</td>
<td>DTaP/IPV/Hib + MenC + PCV</td>
<td>DTaP/IPV/Hib + MenC + PCV</td>
<td>DTaP/IPV/Hib + MenC + PCV</td>
</tr>
<tr>
<td>10 yrs and over</td>
<td>DTaP/IPV/Hib + MenC + PCV</td>
<td>DTaP/IPV/Hib + MenC + PCV</td>
<td>DTaP/IPV/Hib + MenC + PCV</td>
<td>DTaP/IPV/Hib + MenC + PCV</td>
</tr>
</tbody>
</table>

*When Hib and/or MenC have not been given as part of a primary course give:

- 3 doses of Hib-containing vaccine at monthly intervals
- 2 doses (minimum) of MenC-containing vaccine at monthly intervals

** When PCV has not been given as part of a primary course give 2 doses at least 2 months apart (but can be given 1 month apart if necessary to ensure 2 doses before age of 12 months)

OR

- 3 doses of MenC/Hib combined vaccine

*All children require 1 dose of Hib, MenC and PCV over the age of 1 year

When PCV has not been given as part of a primary course give 2 doses at least 2 months apart (but can be given 1 month apart if necessary to ensure 2 doses before age of 12 months)

<table>
<thead>
<tr>
<th>Booster</th>
<th>Booster</th>
<th>Booster</th>
<th>Booster</th>
</tr>
</thead>
<tbody>
<tr>
<td>As per UK schedule</td>
<td>As per UK schedule</td>
<td>1st dTaP/IPV or DTaP/IPV booster can be given as early as 1 year after completion of primary course to re-establish on routine schedule</td>
<td>1st Td/IPV booster preferably 5 yrs following completion of primary course</td>
</tr>
<tr>
<td>MMR</td>
<td>MMR</td>
<td>2nd Td/IPV booster 5-10 yrs after 1st booster</td>
<td>2nd Td/IPV booster 5-10 yrs after 1st booster</td>
</tr>
</tbody>
</table>

Doses of MMR/measles given prior to 12 months of age should be discounted

For individuals <18 months of age a minimum interval of 3 months should be left between 1st and 2nd dose of MMR

For individuals >18 months of age a minimum interval of 1 month should be left between 1st and 2nd dose of MMR

2 doses of MMR should be given irrespective of history of measles, rubella or mumps infection and/or age
Note: BCG and Hep B vaccine are not included in this algorithm

**General Principles**

- Unless there is a reliable vaccine history, individuals should be assumed to be unimmunised and a full course of immunisations planned.
- Individuals coming to the UK part way through their immunisation schedule should be transferred onto the UK schedule and immunised as appropriate for age.
- If primary course has been started but not completed, continue where left off - NO NEED TO REPEAT DOSES OR RESTART COURSE.
- IPV should be used to complete a vaccination course which may have been started with OPV.
- aP should be used to complete a primary course which may have been started with whole cell pertussis vaccine.
- MenC/Hib combined vaccine can be used when Hib alone or Hib/MenC is required.
- A minimum of 1 year should be left between DTP/IPV primary course and 1st booster and a minimum of 5 years should be left between the 1st and 2nd boosters.
1.6. Hepatitis B Immunisation of 'At-risk' Infants

There are two groups of babies who are at increased risk of contracting hepatitis B infection:

- Babies of mothers who are chronically infected with hepatitis B virus
- Babies of mothers not known to be infected but who participate in high risk behaviour, e.g. injecting drug users, sex workers

Mothers are identified during pregnancy and the baby will begin a course of hepatitis B vaccine (together with hepatitis B immunoglobulin if required) at birth in the hospital.

The immunisation programme, co-ordinated by the Screening Department at Gartnavel, will issue letters to both the GP-health visitor and the parent when the subsequent doses are due (1 month of age, 2 months and 12 months). After the GP-health visitor gives a dose of vaccine and informs the Screening Department, an automatic letter will be generated when the next dose is due. The system will also generate reminder letters for the GP-health visitor if the Screening Department is not been informed that the baby has received the 2nd, 3rd or 4th doses of vaccine.

Babies born to mothers who are chronically infected with hepatitis B virus should have a blood sample taken at 12 months to check that they have not become infected with the virus. A paediatrician/GP can take this blood test if required.

Babies born to mothers who are chronically infected with hepatitis B virus also require a pre-school booster of hepatitis B vaccine. The Screening Department will send a letter to the GP/health visitor and parent about this booster.

For further information please contact PHPU, 0141 201 4917.
1.7. BCG

The programme of BCG vaccination formerly offered to all young people at school was discontinued in 2005. This is because the way TB (tuberculosis) affects the population has changed. When the school BCG programme was put in place in 1953, most cases of TB were in young people. Since that time the number of cases has fallen dramatically, and the disease now mainly affects people with specific risk factors for TB.

Groups recommended for BCG vaccination include:

- Infants and young people under 16 years whose parents or grandparents were born in a country where the annual incidence of TB is 40/100,000 or greater.

- Previously unvaccinated new immigrants under 16 years of age from countries where the annual incidence of TB is 40/100,000 or greater.

- Contacts of cases known to be suffering from active pulmonary TB.

See also Green Book chapter 32 for occupational recommendations.

‘At-risk’ babies born at the Southern General and PRM hospitals are given appointments at their hospital-based clinics. The SGH is held on the last Monday of the month and the PRM clinic monthly on a Tuesday. At both clinics a record of vaccination is made in the Child Health Record (Red Book) if available or, if not, at the back of the BCG information leaflet. Where a parent/guardian defaults twice then a letter will be sent to the GP informing them that no further appointment will be given. Should a new appointment be required the health visitor is asked to contact the PHPU (201 4518) to arrange one at the relevant community clinic. ‘At-risk’ babies born at the Queen Mother Hospital are vaccinated prior to discharge and a written record is given to parents/guardians. At-risk babies born in Clyde are identified by the health visitor and can be referred to the TB nurse specialists within Clyde who will arrange vaccination. (Inverclyde 01475 506019, Renfrewshire 01505 813119)

The school catch-up campaign organised by NHS Greater Glasgow and Clyde during 2007/08 identified unvaccinated children under 16 who required the BCG. This campaign will not be repeated. Any other children identified as requiring the BCG vaccination should be referred to one of the community clinics.

For further information please contact PHPU, 0141 201 4917.
1.8. Travel Health and Travel Clinics

Health professionals can access the TRAVAX website at www.travax.scot.nhs.uk for advice on travel health. TRAVAX has been provided as a resource by the National Health Service since 1984 to help health care professionals who are advising patients on how to avoid illness when travelling abroad. The site provides detailed information on the illnesses specific to each destination. It is accessed through a log-in address, the registration system is straightforward and the database easy to use.

The public can use the Fit for Travel section at www.fitfortravel.scot.nhs.uk which provides good and updated information and links to a number of other websites including the Foreign and Commonwealth website which gives safety recommendations for travellers.

Yellow Fever

For information and a list of clinics providing yellow fever vaccination go to www.hps.scot.nhs.uk/yellowfever/

Travel Clinics

<table>
<thead>
<tr>
<th>The Travel Clinic, Brownlee Centre, Gartnavel Hospital</th>
<th>0141 211 1074</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow Occupational Health</td>
<td>0141 211 0422</td>
</tr>
<tr>
<td>Govan Health Centre</td>
<td>0141 531 8466</td>
</tr>
<tr>
<td>Glasgow Airport</td>
<td>0141 848 4800</td>
</tr>
<tr>
<td>Parkside Clinic</td>
<td>0141 636 0054</td>
</tr>
<tr>
<td>Kinning Park</td>
<td>0141 429 0913</td>
</tr>
</tbody>
</table>
Section 2: Immunisation Management
2.1. Consent

Clinicians’ responsibilities

- To seek authorisation to proceed with immunisation from parent/patient at each episode.

- To provide the relevant verbal and written information to the parent/patient at an appropriate time to allow them to make an informed decision. This should include benefits and risks.

- To obtain consent voluntarily: this means without pressure, deceit or under influence from family, health professionals or others.

- To answer any questions the parent/patient may have about the immunisation. The Green Book provides comprehensive information on all vaccines.

- To know that there is no legal requirement for consent to be in writing. Consent may be given in writing, verbally or by co-operation.

- To communicate effectively with other members of the healthcare team any knowledge and information you may have regarding parents/patients desires relating to immunisation.

Parental responsibility

- Mothers automatically have parental responsibility. Fathers also have parental responsibility if they were married to the mother when the child was conceived or born or married to her later. An unmarried father who is the natural father can also acquire parental responsibility if named on the birth certificate (births registered on or after 4th May 2006).

- The person with parental responsibility need not to be present for immunisation and may be brought by for example by a childminder or grandparent. The clinician must be satisfied that the circumstances indicate that the person has the necessary authority i.e. the person with parental responsibility has previously indicated that they wish their child to be included in the programme and there is no indication that the parent has negative views of immunisation.
Patients' rights

- Parents or those with parental rights have the right to decide whether their child is immunised.

- Children aged 16 or over are presumed to have decision making capacity.

- Children under the age of 16 have the legal capacity to consent to immunisation where, in the opinion of the clinician, they have the capability of understanding its nature and consequences.

- Children under 16 who do not have the capability to understand, a parent or adult with parental responsibility can make the decision on their behalf.

- Children over 16 who lack the capacity to make decision regarding immunisation must be treated under Part 5 of the Adults with Incapacity (Scotland) Act 2000.

- Parents/patients have the right to receive verbal and written information on immunisation.

- Parents/patients have the right to change their mind.

For further information see 'NHS Greater Glasgow and Clyde: Consent Policy on Healthcare Assessment, Care and Treatment; January 2007’ provides a comprehensive guide to consent.

http://staffnet/Corporate+Services/Corp+Services/Clinical+Governance/Key+Information/CG_StrategiesPolicies_CM_050107.htm
2.2. SIRS

1. Why SIRS?

The Scottish Immunisation Recall System was introduced to ensure that all pre-school children are invited to receive full courses of all routine primary and booster immunisations. The main benefits are:

a) The automated call and recall of children for immunisation
b) The availability of standard reporting
c) Linkage with other CPC Systems - including CHI and CHSP P-S
d) The availability of information for statistical analysis
e) The generation of GP payment prints

2. Who uses SIRS?

The two principal groups of users are the practice staff who administer immunisations and the screening department who facilitate the call/recall process which includes the recording of the immunisation results.

3. The SIRS Child Event Cycle

This is a standard sequence of events applying to most children who are registered on SIRS from a notification of birth form.

After a child is registered on SIRS, the 'health visitor first visit report' (HVFVR) is produced with labels for the Family Health Record and the Parent Held Record, which are sent to the health visitor attached to the practice as notified by the maternity hospital.

On return of the completed HVFVR form the information is recorded onto the Child Health Surveillance System which automatically updates the mandatory SIRS data fields which includes the treatment centre number. This number is allocated to surgeries and instructs the system of the practice and location to which the child is to be scheduled to.

All consenting children are then scheduled for immunisation in accordance with a predefined timetable and available practice sessions. The timing and frequency of these sessions are determined by the practice team who are involved in immunisation and can be changed by contacting Child Health.
Children are invited using a confidential invitation (mailer) which is sent to the child's home or sent to the practice for distribution, instructing the parent/carer where, when and what immunisations to attend for. The child's treatment centre receives an immunisation schedule which gives the details of the children invited and informs them of the antigens that are to be administered.

After the immunisation clinic, the completed schedule is then returned and processed onto SIRS. The child's record is updated accordingly and the child rescheduled where appropriate to the next available session.

If a schedule is not received by the screening department 5 weeks after the date of the immunisation clinic, an overdue reminder is sent to the practice.

If a child fails to attend without a reason ('3' circled on schedule) on two occasions, recall is suspended and a defaulters report is sent to the health visitor for comment.
2.3. Patient Group Directions (PGDs)

Definition

A PGD is defined as a written instruction for the sale, supply and/or administration of named medicines in an identified clinical situation. It applies to group of patients who may not be individually identified before presenting for treatment.

Relevance to vaccines

It could be argued that patients requiring vaccines may be identified before presentation for treatment and, therefore, PGDs are not appropriate for them. NHS Greater Glasgow and Clyde has considered this position carefully and concluded that as the prescribing channels for vaccine are sometimes unclear, PGDs should be established and used to provide clarity to the authorisation process and thus protect patients and staff. This decision is in line with most other Health Boards in this regard.

The legal position

Legislation changes in the form of amendments to the Medicines Act 1968 were required to allow PGDs to be used legally. These changes came into effect in 2000.

PGDs unlike guidelines, protocols, procedures and polices are LEGAL documents and need to be considered in this way. They need to be very robust and safe documents and, therefore the process of development from first consideration to final approval can be quite lengthy. The Board has a PGD Subgroup of the Area Drug and Therapeutics Committee which considers all proposed PGDs across Greater Glasgow and Clyde and ratifies them if the correct criteria are met.

Standards and requirements for PGDs

1. A PGD is drawn up and signed by a multi-disciplinary group that must include a doctor, a pharmacist and a member of the professional group, which will be empowered by the PGD (nurses in the case of vaccine administration).

2. All professionals involved in the preparation, supply or administration of medicines under a PGD must act within their appropriate code of professional practice and conduct, having signed and agreed to work within the PGD.
3. A senior person within each local area is designated with the responsibility of ensuring that only fully competent, qualified and trained persons are authorised to operate within the PGD.

4. The use of any medicine within a PGD should be consistent with the product licence. Relevant guidance in this regard can be found in the Summary of Product Characteristics (SPC) for the product concerned.

5. Black triangle drugs and medicines used outside the terms of the SPC may be included in a PGD provided such use is exceptional, is justified by current best practice and that the direction clearly describes the status of the product.

6. The PGD must be written using the standard Greater Glasgow and Clyde template and must contain the following information:
   - The patient group, clinical condition or situation to which the direction applies.
   - A description of patients, clinical conditions or situations excluded from treatment under the PGD.
   - The vaccine which is to be administered, and specific details of:
     - the dose
     - the route/method of administration
     - the maximum number of doses that may be administered
     - warnings, cautions, and contra-indications to treatment with the vaccine
     - legal status of the vaccine
   - Instructions on the documentation required to record supply and other records to be kept for audit purposes.
   - The skills, knowledge and qualifications required by staff approved to authorise administration of vaccines under the terms of the PGD.
   - The action to be taken if an adverse drug reaction is suspected or occurs to a patient being treated under the PGD.
   - Details of any necessary follow-up action that will be taken after administration.
   - Evidence of approval by each party involved in the authorisation process.
   - The date that the PGD comes into force, and the date that it expires.

7. The Designated Nurse Lead must maintain an up-to-date record of persons approved to authorise administration of vaccines under the PGD in their area of responsibility. The record must be signed by the approved person as confirmation that he/she has read and understood the direction. The record must be held by the local area.
8. The Designated Nurse Lead must also be responsible for ensuring that within each area there is a defined system of document control to ensure that all staff involved in the operation of the PGD have access to the current version, and are aware of any changes or amendments. The system must include a record of location of all copies of the PGD, a record of review of the PGD, and a method of communication of changes and new versions to all copy holders and persons involved in the operation of the direction.

9. Details of administration of a vaccine under a PGD must be recorded on standard locally approved documentation. The record must include: -
   - The patient name and date of birth
   - The vaccine name, dose, route, time of dose(s), start date, number of doses
   - The batch number
   - The injection site
   - The date of administration
   - The signature initials of the person who administered the vaccine
   - Informed consent

Administration must be recorded on the child health record, GP record and if possible on the parent held record.

More information

For more information on PGDs please contact Jeff Roberts (211 6524) or Jane Camp (201 5312)
2.4. Operational Standards for Immunisation Clinics

Facilities and equipment

1. The facilities have adequate space to accommodate staff, patient and parent/carer.

2. The waiting area is adequate to accommodate the patients and parents waiting to be seen.

3. There is staff to manage the registering and calling of patients and parents within the clinic (as well as the nurse administering the vaccines).

4. Patient records are available and accessible for review and recording in the clinic.

5. The hand washing facilities meet infection control standards and are audited to ensure they are maintained.

6. There are relevant immunisation supplies that are stored in accessible, safe and secure environment.

7. Vaccines are stored and maintained to preserve the cold chain and regular audit takes place to ensure this is maintained according to guidelines.

8. Stock is rotated to ensure vaccines are current and expiry dates are noted and managed and there is an audit process to evidence this.

9. The facilities for drawing up and checking vaccines meet infection control standards and are audited to ensure they are maintained. (Audit tool available in chapter 2.6)

10. There is a system in place in the event of an adverse reaction and emergency drugs are available according to Anaphylaxis and CPR Guidelines.

11. Sharps disposal containers are accessible and operated according to safety standards and Prevention and Control of Infection Manual.¹

¹ NHS Greater Glasgow and Clyde, Prevention and Control of Infection Manual
Clinic processes

1. All medication administration is recorded in the GP record, Child health SIRS form, and if available the parent held record (Schools, in School Health Record and copy sent to GP for GP record).

2. Patient Group Directions are signed by an appropriate medical professional, and signed and implemented by nurses providing routine immunisation.

3. A Patient Specific Direction is utilised when there is no Patient Group Direction for a specific vaccine.

4. Access to records and review of records is conducted in the clinic setting at the time of the immunisation clinic and prior to administration of vaccine.

5. Recording of vaccine administration is accurate, timely and according to NMC guidance for administration of medicines. This should include vaccine, date, site of administration, expiry date and batch number.

6. The clinic appointments are spaced appropriately to allow enough time for the nurse to focus on the individual needs of the patient and the vaccine to be administered.

7. When nurses are working in partnership each nurse demonstrates accountability for their own practice.
2.5. Vaccine Errors and Reporting

Flow chart to be followed in the event of a single vaccine error identified in the primary care setting

- Medication error of vaccination occurs e.g. incorrect vaccine/ date expired vaccine
  - Report to line manager and GP within 24 hours of incident
  - Contact NHSGGC Public Health Protection Unit (0141-201-4917) for further advice regarding future immunisation. Document advice in the records
  - Complete IR1 form as soon as possible after the event and send copy to the Risk Department
  - Document incident in child's medical records and health visitor records
  - Team decision (i.e. line manager, GP, Senior Nurse and Nurse/HV involved) to determine who is best placed to inform the parent/guardian at the earliest opportunity
  - Submit incident summary report to line manager as soon as possible to enable advice and support to avoid future incidents
  - Inform Child Health Department by telephone
Flow chart to be followed by the Child Health Department in the event of identifying a vaccine error

Error identified by Child Health

Child Health writes to practice with copy to Public Health Protection Unit (see letter on following page)

Practice contacts Public Health Protection Unit within 14 days with information requested

Public Health Protection Unit assesses if genuine error has occurred

Yes

Public Health Protection Unit informs appropriate Line Manager and Child Health Department of error

Action then taken at local level regarding incident as per local guidelines

Document error in Child Health System

No

Advises practice and Child Health Department no further action required

Public Health Protection Unit advises on future immunisation
Dear Colleague

*Childhood Immunisations - Incorrect/expired vaccine*

Please find enclosed a photocopy of correspondence that you recently submitted to the Child Health section of the Screening Department informing us of children who have been immunised and the batch number of the vaccines used.

As part of this Department's quality assurance checks, we note that the child detailed on the enclosed correspondence appears to have been given an _incorrect/expired_ vaccine.

Please check the medical records to verify that the data is correct and then return the pro forma (contact details listed) to the Public Health Protection Unit (PHPU). It is important that you return the enclosed proforma within two weeks from date of receipt. The PHPU will then be in contact with you to follow up the individual's immunisation record.

If you require additional information please do not hesitate to contact me.

Kind regards,

*Mrs Elizabeth Rennie*
*Screening Manager - Child Health & Cervical Cytology*
Please confirm the following details and return to the address below within two weeks of receipt:

Ms Monica Maguire  
Health Protection Nurse Specialist  
Public Health Protection Unit  
Dalian House  
350 St Vincent Street  
Glasgow G3 8YU  
Email: phpu@ggc.scot.nhs.uk  
Tel: 0141 201 4917  
Fax: 0141 201 4950

### Child Details

<table>
<thead>
<tr>
<th>CHI Number</th>
<th>Name</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vaccination details</th>
<th>Details correct? (delete as appropriate)</th>
<th>If No, provide correct details:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course given</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Date administered</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Batch number</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Expiry date</td>
<td>Yes/No</td>
<td></td>
</tr>
</tbody>
</table>

Completed by (please print name):

Contact details:
### Part A: Clinic Facilities and equipment

<table>
<thead>
<tr>
<th>Clinic Facilities</th>
<th>Yes</th>
<th>No</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room has adequate space</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waiting area has adequate space</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are staff to support the clinic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient records are available and accessible to review and record in the clinic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hand washing facilities are available in the room and meet infection control standards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities for drawing up and checking vaccines meet infection control standards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is a system in place in the event of an adverse reaction</td>
<td></td>
<td></td>
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<tr>
<td>Immunisation supplies are stored in safe and secure environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccines are stored and maintained to preserve the cold chain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccine storage is monitored and records are audited</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Emergency medicines are available in accordance with Anaphylaxis/CPR guidelines</td>
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</tr>
<tr>
<td>Sharps Disposal Containers are accessible</td>
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</tr>
</tbody>
</table>
Part B: Preparation, administration and recording

1. Please indicate which systems are in place to ensure that parents are aware of screening and consenting: (please tick ✓)
   a) List of questions signed by the child’s parent
   b) Verbal screening
   c) Screening by another team member
   d) Other
   If other, please expand: ____________________________________________

2. What sites do you normally use when administering the vaccine?
   a) Arm
   b) Leg
   c) Buttock
   d) A combination (please specify ____________________________)

3. When are vaccines drawn up?
   a) At the beginning of the clinic session
   b) Periodically throughout the clinic session
   c) Immediately prior to administration

4. Which staff are involved at immunisation sessions and how many?
   a) Health visitor _____
   b) Staff nurse _____
   c) Practice nurse _____
   d) Admin staff _____
   e) Other _____
   please state other: ____________________________

5. Does the person who draws up the vaccine personally administer it?
   a) Yes, always
   b) Most of the time
   c) Only sometimes
   d) Never

6. Is there a system in place for recording the temperature of the fridge?
   Yes
   No
   If yes, please indicate who is responsible: __________________________
7. Is the fridge used solely for the storage of child health vaccines?
   Yes
   No

   If you answered no, please indicate what other vaccines are stored in the fridge
   a) Flu vaccine
   b) Travel vaccine
   c) Other
   d) Please state other: _____________________________

8. Does the person who personally administers the vaccine record that it has been given?
   a) Yes, always
   b) Most of the time
   c) Only sometimes
   d) Never

9. Are vaccines and batch numbers checked before administration?

<table>
<thead>
<tr>
<th>Vaccines</th>
<th>Batch Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Yes, always</td>
<td>a) Yes, always</td>
</tr>
<tr>
<td>b) Most of the time</td>
<td>b) Most of the time</td>
</tr>
<tr>
<td>c) Only sometimes</td>
<td>c) Only sometimes</td>
</tr>
<tr>
<td>d) Never</td>
<td>d) Never</td>
</tr>
</tbody>
</table>

10. Where do you normally record the child's immunisation? (tick all that apply)

    | GP record under:    |
    | Nursing section     |
    | Immunisation section|
    | GP section          |
    | HV record           |
    | Parent held record  |
    | GPASS               |
    | SIRS call sheet     |
    | Other (please specify) | ________________________ |
2.7. Accountability and Responsibility

The NMC Guidelines for the Administration of Medicines and Code of Professional Conduct indicate the nurse is personally accountable for his/her practice. And when administering medications the nurse must exercise his/her professional judgement and apply his/her knowledge and skill to the given situation.

Competency criteria

All staff directly employed by the NHS and subject to Agenda for Change now need to meet the requirements of the Knowledge Skills Framework (KSF) described for their post. Outlined below are how evidencing competence in different elements of immunisation may be utilised against KSF dimensions.

<table>
<thead>
<tr>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Aware of and can describe current vaccine schedule. (KSF HWB1.2)</td>
</tr>
<tr>
<td>• Reflect on your clinical decision making in relation to immunisation practice. (KSF Core 4.2/5.2)</td>
</tr>
<tr>
<td>• Work with members of the multi-disciplinary team in relation to immunisation programmes. (KSF core 1.2)</td>
</tr>
<tr>
<td>• Advise patients with uncertain immunisation history. (KSF core 1.2/HWB2.2)</td>
</tr>
<tr>
<td>• Evaluate your consultation style with patients/clients in immunisation clinics. (KSF Core 4.2/5.2)</td>
</tr>
<tr>
<td>• Reflect on own practice and identify when support from other is required. (KSF core 3.2)</td>
</tr>
<tr>
<td>• Demonstrate up to date knowledge of ordering, handling and storage of vaccines. (KSF EF1.2)</td>
</tr>
<tr>
<td>• Access literature and data about immunisations. (KSF IK3.1)</td>
</tr>
<tr>
<td>• Provide support and guidance to other professional. (KSF G1.2)</td>
</tr>
<tr>
<td>Criteria</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>• Demonstrate an understanding of the immune system and how vaccines work. (KSF HWB3.2)</td>
</tr>
<tr>
<td>• Demonstrate and understanding of the public health aspects of immunisation. (KSF core 3.2/HWB 1.2)</td>
</tr>
<tr>
<td>• Demonstrate up to date knowledge about professional accountability in relation to administration and recording of immunisations. (C2 L2)</td>
</tr>
<tr>
<td>• Demonstrate up to date knowledge of the principles of consent and recording in the records. (KSF IK3.2)</td>
</tr>
</tbody>
</table>
Section 3: Immunisation - Further Help

3.1. Frequently Asked Questions

1. Q: A child has arrived from abroad with a history of receiving single measles vaccine. Do they require MMR vaccination?
   A: Even if the child has received single measles vaccine, they should still be given MMR (depending on their age, either one now and one at pre-school age, or two doses three months apart) to maximise their protection against measles, mumps and rubella. If the child is 18 months or over, two doses can be given one month apart.

2. Q: A baby attends for polio vaccination. Should its parents be given a booster dose of polio vaccine at the same time?
   A: Unimmunised adults should be immunised at the same time as their baby. Those who started a course with oral polio can complete the course with IPV containing vaccines. However, if parents have already received a full course of polio vaccine (they should have had the opportunity for five doses of polio vaccine by this point), there is no need for further doses, even if more than 10 years has elapsed. Exceptions are travellers to certain areas and healthcare workers likely to be in contact with polio.

3. Q: A child has arrived from a country that routinely gives an extra dose of DTP (usually around the age of 18 months). Does the child require its pre-school DTaP/IPV booster in the UK?
   A: Many countries have a six dose DTP strategy (e.g. Australia 2m, 4m, 6m, 18m, 4y plus Td at school leaving age), rather than the UK five dose strategy which has been shown to provide adequate immunity in the context of our vaccination schedule and disease burden. A pre-school booster should be given as this would keep the child in line with the vaccination schedule in their own country and provide additional immunity.

4. Q: What time interval should be left between the administration of different vaccines?
   A: If it is necessary to administer more than one live vaccine at the same time, they should be given either at the same appointment time in different sites (unless a combined preparation is used) or be separated by a minimum period of 4 weeks. No interval is required between the administration of live and non-live vaccines (page 215, chapter 21, Green Book 2006). However, there should be a one month interval between administering PCV and Hib/MenC.
5. Q: A child is a household contact of someone who is immunocompromised. Can they be immunised?
A: There are no concerns now that inactivated polio vaccine (IPV) is routinely used instead of oral polio vaccine (OPV) which was a live vaccine. Live virus may be shed in the stool following OPV which could potentially infect an immunocompromised person. There is no risk of transmission of measles, mumps or rubella following MMR vaccination; therefore this vaccine should be given as usual. All other vaccines in the current UK immunisation schedule can be given. All other vaccines in the current UK immunisation schedule can be given.

6. Q: A mother is worried about Thiomersal in vaccines and requests Thiomersal-free vaccines.
A: Thiomersal was present in DTwP-Hib, DT and Td. However, the vaccines now in use are all Thiomersal free - the DTaP/IPV/Hib, dTaP/IPV and Td/IPV. Thiomersal is not added to DTaP-Hib, MMR, polio, Men C, BCG or PCV.

7. Q: A child is going abroad shortly. Can their immunisations be brought forward slightly?
A: Reducing the interval between doses by a few days is acceptable, especially if a child is going to a country where vaccine-preventable illness is a real threat. Shortening the interval by more than a few days may reduce the effectiveness of vaccines. To ensure full protection, the child may require an extra dose. Seek further advice from the PHPU (Tel: 0141 201 4917)

8. Q: What are the contraindications to immunisation?
A: General contraindications
- Minor illness without fever or systemic upset are not valid reasons to postpone immunisation. If an individual is acutely unwell, immunisation may be postponed until they have fully recovered.
- A confirmed anaphylactic reaction to a previous dose of a vaccine containing the same antigens or a confirmed anaphylactic reaction to another component contained in the relevant vaccine, e.g. neomycin, streptomycin or Polymyxin B (which may be present in trace amounts in some vaccines). (Green Book chapter 6)

The following conditions are NOT contraindications to routine immunisation (in some of these situations, additional precautions may be required, refer to Green Book chapter 6 for further information):
• Family history of any adverse reactions following immunisation
• Previous history of the disease (with the exception of BCG for people with evidence of past exposure to TB)
• Prematurity: immunisation should not be postponed
• Stable neurological conditions such as cerebral palsy and Down's syndrome.
• Contact with an infectious disease
• Asthma, eczema, hay fever or "snuffles"
• Treatment with antibiotics or locally-acting (e.g. topical or inhaled) steroids
• Child's mother, or someone in the household is pregnant
• Currently breast-feeding or being breast-fed
• History of jaundice after birth
• Under a certain weight
• Over the age recommended in the immunisation schedule
• Personal history of febrile convulsions or epilepsy
• Close family history (parent or sibling) of febrile convulsions or epilepsy
• Mild self-limiting illness without fever, e.g. runny nose
• Being a sibling or close contact of an immunosuppressed individual
• Recent or imminent elective surgery
• Unknown or inadequately documented immunisation history

9. Q: A mother/carer is asking about single antigen vaccines instead of MMR.
A: Single vaccines are not given in the UK due to:
• Increased risk of disease
• Increased risk of missing a dose completely
• Increased risk of local reactions at injection site
• Increased trauma to child

Giving the vaccines separately would mean a child needing a total of six injections to complete the course, instead of two. These children would remain unprotected and at risk of disease for longer. Six injections could also mean an increased risk of local reactions at the injection site. Control programmes would be less effective and this would lead to more cases of measles, mumps and rubella.

Drug companies do not manufacture single antigen measles or mumps vaccines that match UK licence specifications. Some of the unlicensed single antigen vaccines imported into the UK and offered in private clinics are known to be less effective, or to have a higher risk of side-effects than the MMR vaccine. See question 7 in the MMR discussion pack at the following website on NHS Health Scotland - www.healthscotland.com/immunisation/mmr/pubcontents.cfm?TxtTCode=1172&TA=index&newsnav=1&NC=2
10. Q: Is a history of egg allergy a contraindication to receiving the MMR vaccine?
A: No. There is no egg albumin in the vaccine. The measles vaccine-virus is cultured in chick embryo cells. When the vaccine was first introduced, the manufacturers wondered whether this might be a problem for children with egg allergy, but large studies have now shown that children with egg allergy are no more likely than anyone else to have a reaction to MMR. Most allergic reactions to MMR are related to other additives such as antibiotics and gelatin. Only children who have had life-threatening allergic reactions to egg should get their MMR under supervision.

11. Q: Does a child who has already had measles infection still need MMR?
A: Yes. Clinically, measles is very difficult to diagnose as it is now very rare in this country and other mild viral infections could be mistaken for measles. The only reliable means of diagnosis these days is by taking a saliva or blood sample. Even if the child has had measles, (confirmed by laboratory tests) then the vaccine is quite safe and acts as a booster to the immune system. In summary, MMR should be given irrespective of a history of measles, mumps or rubella.

12. Q: A mother wants her child tested for MMR antibodies before agreeing to the second dose. Can this be done?
A: A single dose of MMR vaccine confers protection in around 90% of children for measles and rubella. After two doses of MMR, the level of protection increases to 99%. Blood tests to check immunity before giving a second dose is not recommended as the results can be very difficult to interpret.

13. Q: I have a very difficult client group who do not always bring their children for vaccination on the scheduled day. How important is it to keep to the exact scheduled time?
A: Increasing the interval between doses of a multi-dose vaccine does not diminish the effectiveness of the vaccine. It is therefore NOT necessary to restart the series of any vaccine (except oral typhoid in some circumstances) due to extended intervals between doses. However, decreasing the recommended interval between doses of a multi-dose vaccine may interfere with antibody response and protection. Please seek further guidance from the PHPU on 0141 201 4917.
14. Q: Why does the Batch Number appearing on the outer pack of the vaccine often differ from that on the actual vial(s)/ampoules(s) and how should this be recorded?
A: Only the batch number on the original outer pack need be recorded. Manufacturers of vaccines composed of more than one component must ensure that each component is recognised by a specific batch recording. However, for the users it is the one batch number on the outer pack which should be recorded in patient records.

15. Q: What should I do if I have discarded the outer pack?
A: Note the batch numbers of all components of the vaccine and advise pharmacy who may be able to provide the details of the number to record. However, the component numbers are sufficient data for any future 'searches'.

16. Q: What is the actual expiry date of a vaccine when only a month/year system appears on the label?
A: When a manufacturer prints;
'Use before' 03/08 - the vaccine expires at the end of the previous month, i.e. Expiry is 28/2/08.

'Use by' 03/08 - the vaccine expires at the end of that month, i.e. Expiry is 31/03/08.
The preferred labelling system is to use the full date - 'expires 13/03/05' and this indicates that the vaccine expires on the end of that day and can be used on that day.

17. Q: Why do vaccines have such short shelf-lives?
A: Vaccine manufacturing involves lengthy testing at many of the processing stages which reduces the shelf-life. Global manufacturing involves more testing for UK Licensing and the shelf-life of the vaccine is determined prior to licensing. Therefore, much of a vaccines shelf-life can pass by during the 'quarantined' phases.
3.2. Immunisation e-learning

To meet the training needs following the changes in 2006 to the national immunisation schedule and help staff to address parental concerns more effectively, NHS Greater Glasgow and Clyde is encouraging all health professionals who are involved in immunisation in any context, whether administering or advising, to use a new educational resource in immunisation. This includes practice nurses, health visitors, school nurses, community nurses, specialist nurses such as TB nurses, paediatric and A&E nurses, GPs, paediatricians, pharmacists and occupational health professionals.

'Promoting Effective Immunisation Practice' is a self-directed e-learning training package for all healthcare workers who have a remit for immunisation. The programme has been developed as a result of collaboration between Health Protection Scotland (HPS) and NHS Education for Scotland (NES) and was launched in September 2006.

The programme is delivered in 12 modules which enable healthcare professionals to confidently, competently, and effectively promote and administer vaccinations. It covers topics such as national immunisation policy and schedules, the immune system and how vaccines work, legal aspects of vaccination and current issues and controversies regarding immunisation.

More information can be found at: www.immunisation-elearning.nhs.uk. If you would like to register to do the course, email Dr Gillian Penrice, consultant in public health medicine, PHPU, NHS Greater Glasgow and Clyde gillian.penrice@ggc.scot.nhs.uk. Please include your job title, place of work, CH(C)P and a password of your choice (at least 6 letters).
3.3. Internet and Reading Resources

Internet

- **Foreign language terms** - An aid to translating immunisation terms

- **Foreign country vaccination schedules and coverage information**
  www.who.int/vaccines/globalsummary/immunization/countryprofileselect.cfm

- **Vaccination of individuals with uncertain/incomplete immunisation status**
  http://www.hpa.org.uk/infections/topics_az/vaccination/vac_guidelines.htm

- **www.hps.scot.nhs.uk** - Health Protection Scotland website, current news available

- **www.dh.gov.uk** - Department of Health website, Green Book available here

- **www.healthscotland.com/immunisation** - provides up-to-date information for parents, healthcare professionals and the wider public - anyone who needs to know the facts about immunisation

- **www.show.scot.nhs.uk** - good up-to-date site with information for health professionals

- **www.immunisation.nhs.uk** - comprehensive site, up-to-date and accurate sources of information on vaccines, disease and immunisation in the UK dated regularly with relevant immunisation news

- **www.who.int/en** - global health information available in different languages including Arabic and Chinese

- **www.mrc.ac.uk** - Medical Research Council, reliable information on a searchable site

- **www.amicus-cphva.org** - Community Practitioners and Health Visitor Association site, useful for school nurses and health visitors

- **www.spmsd.co.uk** - sanofi-pasteur MSD website with info on a drug company that produces vaccines, information service and news
- [www.rcn.org.uk](http://www.rcn.org.uk) - health care professional information, Child Vaccine Factfile available as a PDF file here
- [www.uvig.org](http://www.uvig.org) - UK Vaccine Industry Group, news updates and simple factsheets
- [www.inmed.co.uk](http://www.inmed.co.uk) - useful site on meningitis
- [www.polioeradication.org/history.asp](http://www.polioeradication.org/history.asp) - background to polio vaccination worldwide
- [www.nes.scot.nhs.uk/pgds/](http://www.nes.scot.nhs.uk/pgds/) - reliable information on Patient Group Directions and a searchable archive of PGDs
- [www.fitfortravel.scot.nhs.uk](http://www.fitfortravel.scot.nhs.uk) - information on travel vaccinations for the public
- [www.travax.scot.nhs.uk](http://www.travax.scot.nhs.uk) - information for healthcare professionals, requires registration
- [www.mmrthefacts.nhs.uk](http://www.mmrthefacts.nhs.uk) - news, resources and scientific evidence specifically concerning MMR vaccination
- [www.ich.ucl.ac.uk/immunisation/](http://www.ich.ucl.ac.uk/immunisation/) - Institute for Child Health, includes a facility for asking questions and some useful links
- [www.iom.edu/](http://www.iom.edu/) - Institute of Medicine of the National Academies website (USA) with extensive unbiased vaccine study reviews and evidence-based scientific information
- [www.prevenar.co.uk](http://www.prevenar.co.uk) - Information about pneumococcal vaccine and useful immunisation training resources including best practice demonstration of how to administer 3 jabs in 1 visit.

**General books**

- *Immunisation Against Infectious Disease. (The Green Book)*
  Department of Health (2006) Also available online at: [www.dh.gov.uk/greenbook](http://www.dh.gov.uk/greenbook)
- *Vaccines* Plotkin S, Orenstein W (Eds)
- *Immunization: childhood and travel health* Kassianos G
  Royal College of Paediatrics and Child Health. WB Saunders (2nd Edition, 2001)

- Vaccination Ada G, Isaacs D.
  Allen and Unwin, St Leonards, NSW (2000)

Specialist publications

- Thiomersal and Vaccines fact sheet July 2003
  Immunisation Information

- Immunisation of the immunocompromised child. Best Practice Statement
  Royal College of Paediatrics and Child Health London: RCPCH, 2002
  http://www.rcpch.ac.uk/doc.aspx?id_Resource=1768

- Position Statement on Injection Technique March 2002
  Royal College of Paediatrics and Child Health (RCPCH)
  http://www.rcpch.ac.uk/doc.aspx?id_Resource=1895

- Centres for Disease Control and Prevention. General Recommendations on
  immunization: recommendations of the Advisory Committee on Immunization Practices
  and the American Academy of Family Physicians. MMWR 2002:51(No.RR-2)
  http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5102a1.htm
Section 4: Pharmacy

4.1. Vaccine Ordering

Childhood vaccines should be ordered from the named vaccine holding centre using the appropriate order forms provided. Selective immunisation for hepatitis B for at risk babies should also be ordered from the vaccine holding centre. Winter, travel and adult booster vaccines should be ordered from the local community pharmacy using individual prescriptions (GP10) or stock order (GP10a). The table below highlights this information.

There are four vaccine holding centres. Ensure that all staff within the practice are aware of which vaccine holding centre should be used to place vaccine orders.

<table>
<thead>
<tr>
<th>Vaccine type</th>
<th>Order from</th>
<th>Holding centre</th>
<th>Guide to geographical area covered</th>
<th>Order method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood vaccines</td>
<td>Local vaccine holding centre</td>
<td>Leverndale Hospital</td>
<td>Greater Glasgow</td>
<td>Pre-printed Order Form</td>
</tr>
<tr>
<td>(baby, pre-school and missed school</td>
<td></td>
<td>Royal Alexandra Hospital</td>
<td>Barrhead, Renfrew, Erskine,</td>
<td>Pre-printed order form</td>
</tr>
<tr>
<td>programme, hep B for IDUs, contacts of</td>
<td></td>
<td></td>
<td>Bishopton, Paisley, Lochwinnoch,</td>
<td>or pharmacy requisition*</td>
</tr>
<tr>
<td>cases and for clinical reasons)</td>
<td></td>
<td></td>
<td>Johnstone, Bridge of Weir, Houston</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inverclyde Royal Hospital</td>
<td>Greenock, Rothesay, Dunoon,</td>
<td>Pre-printed order form</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tighnabruich, Lochgoilhead, Kilmun,</td>
<td>or pharmacy requisition*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Strathcur, Port Glasgow, Gourock,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kilmacolm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vale of Leven Hospital</td>
<td>West Dunbartonshire and Argyll and</td>
<td>Pre-printed order form</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bute, including surrounding areas</td>
<td>or pharmacy requisition*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Campbeltown, Oban, Islay, Mull,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Jura, Coll)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Winter vaccines (flu, pneumococcal)</td>
<td>Local community pharmacy</td>
<td>Individual prescription</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>*n/a</td>
<td>(GP10) or stock order</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>*n/a</td>
<td>(GP10a)</td>
</tr>
<tr>
<td>Vaccine type</td>
<td>Order from</td>
<td>Holding centre</td>
<td>Guide to geographical area covered</td>
<td>Order method</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------------------------</td>
<td>----------------</td>
<td>-------------------------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Travel vaccines</td>
<td>Local community pharmacy</td>
<td>n/a</td>
<td>n/a</td>
<td>Individual prescription (GP10) or stock order (GP10a)</td>
</tr>
<tr>
<td>Adult booster vaccines (e.g. Revaxis)</td>
<td>Local community pharmacy</td>
<td>n/a</td>
<td>n/a</td>
<td>Individual prescription (GP10) or stock order (GP10a)</td>
</tr>
</tbody>
</table>

* Requisition accepted by pre-arrangement only. Pre-printed order forms list names, codes and pack sizes of vaccines to assist ordering personnel and should be used routinely by practice staff.

**Ordering - how to order**

Care must be taken in ordering vaccines, especially as certain vaccines are packaged in multiple quantities. Incorrect ordering can result in wastage and unnecessary costs to GP practices and the NHS. Vaccine stocks must be monitored to avoid over-ordering or stockpiling and should ideally be monitored by a designated person. GP practices should have no more than two to four weeks' supply of vaccines at any time. This will be sufficient for routine provision. Best practice is to order small quantities on a regular, scheduled basis.

When ordering vaccines from your local/designated vaccine holding centre, please ensure that:

- The pre-printed order forms provided by the vaccine holding centre are used and that all details are completed.
- The order is signed by the agreed authorised signatories.
- The order is faxed or posted to the local/designated pharmacy department using the information shown in the “Contact Details” in the table below. Any faxed orders subsequently posted should be clearly marked ‘confirmation of fax’.
- Arrangements for large clinics (or unscheduled/ ad hoc catch-up) should be discussed with the vaccine holding centre prior to making appointments to ensure sufficient vaccine can be made available for the required date.

There are procedural differences for placing orders with each of the vaccine holding centres. Please contact your local/designated vaccine holding centre for any further information.
<table>
<thead>
<tr>
<th>Vaccine Holding Centre</th>
<th>Ordering approach</th>
<th>Delivery Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leverndale Hospital</strong></td>
<td><strong>Ordering approach</strong></td>
<td><strong>Delivery Information</strong></td>
</tr>
<tr>
<td>Contact Details:</td>
<td>Leverndale Pharmacy receives 2 weekly SIRS summary of each GP practice’s call list.</td>
<td>Routine deliveries of vaccines are made to each area of the city one day each week, as follows: -</td>
</tr>
<tr>
<td>Pharmacy Department,</td>
<td>This information, in conjunction with details of the amount of vaccines that a practice already has in stock at the time of ordering, is used to allocate stock according to need.</td>
<td>Monday - South West</td>
</tr>
<tr>
<td>Leverndale Hospital,</td>
<td></td>
<td>Tuesday - East</td>
</tr>
<tr>
<td>510 Crookston Road</td>
<td></td>
<td>Wednesday - West</td>
</tr>
<tr>
<td>Glasgow,</td>
<td></td>
<td>Thursday - South East</td>
</tr>
<tr>
<td>G53 7TU</td>
<td></td>
<td>Friday - North</td>
</tr>
<tr>
<td>Tel 0141 211 6675</td>
<td></td>
<td>To guarantee delivery, the vaccine order must be with us 48 hours before the expected delivery day.</td>
</tr>
<tr>
<td>Fax 0141 211 6672</td>
<td></td>
<td>If you are not going to make this deadline but need the vaccine before the following scheduled delivery day, contact Leverndale pharmacy to arrange an alternative solution.</td>
</tr>
<tr>
<td><strong>Key Contact:</strong></td>
<td></td>
<td>This may for example involve someone from the practice uplifting the vaccine or in certain cases we may be able to organise delivery on a different day.</td>
</tr>
<tr>
<td>Karen Pawelczk,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccine Technician</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Royal Alexandra Hospital (RAH)</strong></td>
<td><strong>Ordering approach</strong></td>
<td><strong>Delivery Information</strong></td>
</tr>
<tr>
<td>Contact Details:</td>
<td>RAH Pharmacy makes supplies according to an “on-demand” approach.</td>
<td>Deliveries are via the normal hospital transport runs.</td>
</tr>
<tr>
<td>Pharmacy Department,</td>
<td>Practices need to ensure quantities ordered equate to vaccination requirements and that the stock remaining since the last session has been included in any order calculations.</td>
<td>If delivery is required outwith these runs please contact the RAH pharmacy department.</td>
</tr>
<tr>
<td>Royal Alexandra</td>
<td>The pharmacy department reviews order requests against SIRS data and may reduce supplies accordingly.</td>
<td></td>
</tr>
<tr>
<td>Hospital,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corsebar Road,</td>
<td></td>
<td></td>
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<tr>
<td>Paisley,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA2 9PN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tel 0141 314 6146</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fax 0141 848 7411</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Key Contact:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dorothy Culver,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manager</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccine Holding Centre</td>
<td>Ordering approach</td>
<td>Delivery information</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------</td>
<td>---------------------</td>
</tr>
</tbody>
</table>
| **Inverclyde Royal Hospital (IRH)**  
Contact Details: Pharmacy Department, Inverclyde Royal Hospital, Larkfield Road, Greenock  
PA16 OXN  
Tel: 01475 504620  
Fax: 01475 504930  
Key Contact: Gayle Ritchie, Pharmacy Technician  
| IRH Pharmacy makes supplies according to an "on-demand" approach. Practices require to ensure quantities ordered equate to vaccination requirements and that the stock remaining since the last session has been included in any order calculations.  
| Deliveries are via the normal hospital transport runs. If delivery is required outwith these runs please contact the IRH pharmacy department.  
| **Vale of Leven Hospital (VOL)**  
Contact Details: Pharmacy Department, Vale of Leven Hospital, Main Street, Alexandria  
G83 OUA  
Tel: 01389 817 540  
Fax: 01389 817 314  
Key Contact: Sharon Jordan, Pharmacy Technician  
| Vale of Leven pharmacy supplies vaccine orders according to an "on-demand" approach. Practices require to ensure quantities ordered equate to vaccination requirements and that the stock remaining since the last session has been included in any order calculations. Procedures may be introduced in future to use the SIRS summary information to review order requests. Further information will be supplied by VOL to all clinics/practices receiving vaccines from them, as appropriate.  
| Routine deliveries of vaccines are made to  
1. **Local areas** - Dumbarton, Alexandria, Helensburgh, Garelochhead, Kilcreggan, Arrochar and Lochgoilhead, Monday - Friday every week, mainly in the mornings or lunchtime. If necessary deliveries can be made Tuesday - Friday afternoons (not Mondays), Arrochar is delivered via the Oban/ Campbeltown transport (available daily except Thursdays).  
2. **Lorn & Islands** - 3 times a week Monday, Wednesday and Friday. Deliveries to Mull, Colonsay and Coll are delivered via the Oban driver on Mon and Wed only.  
3. **Kintyre & Mid-Argyll** - Twice a week on Tuesdays and Fridays. Deliveries to Islay and Jura are transported on Thursdays only. Orders must be received by Friday of the previous week to allow VOL to have their own transportation procedures in place by the Tue.  

4.2. Storage and Handling of Vaccines in Primary Care

GG&C has developed guidelines for the storage and handling of vaccines in primary care. The GG&C guidelines are available in laminate form and should be displayed prominently (preferably on the refrigerator door) within every immunisation area. A copy was issued to each GP practice in April 2007. A copy of the guidelines are included in this document. For further laminated copies of the guidelines contact the Pharmacy Public Health Team, 0141 201 4824.

Equipment information

Appropriate equipment should be used for the storage, temperature monitoring and transportation of vaccines. To support GP practices in ensuring that they use/purchase suitable equipment (fridges, thermometers, loggers and validated cool boxes), information was prepared in March 2007 on behalf of the NHS Greater Glasgow and Clyde Immunisation Liaison Group. A copy was issued to each GP practice in May 2007.

A copy of this information is included in this document. Those practices interested in purchasing any of these items can discuss their individual requirements with an experienced Public Health Pharmacist (Immunisation), tel: 0141 201 4824.

Temperature monitoring

It is important that designated members of staff are identified as responsible for monitoring the fridge temperatures every day. It is also important that arrangements are clear with regard to who should deputise in the event of holidays, sickness, absences etc.

To ensure compliance with the GG&C guidelines, refrigerator temperature readings (maximum, minimum and current) must be read and recorded twice daily every working day. Readings must be taken (and recorded) at the start and near the close of the working day. Care should be taken to ensure that the thermometer is reset after each reading. Staff should all be trained to use the equipment and respond to any abnormal readings. The vaccine holding centre must be contacted if there is doubt about any temperature variations outwith acceptable levels.

Temperature records should be retained for at least two years or until next audit to enable review.
To support GP practices in ensuring that they adopt best practice in monitoring and recording fridge temperatures, Temperature Recording Sheets (pads) and a cover sheet with Best Practice Recommendations were prepared in March 2007 on behalf of the NHS Greater Glasgow and Clyde Immunisation Liaison Group. These were issued to all GP practices in May 2007.

A copy of the Best Practice Recommendations and the Temperature Recording sheets is included in this document. For further copies of the Temperature Recording Sheets contact the Pharmacy Public Health Team on 0141 201 4824.

Handling of vaccines

Only remove the minimum vaccine required for a session from the fridge and do not remove from the fridge any earlier than necessary. Vaccines presented as solutions in multi-dose vials must be discarded after four hours, or at the end of the session, whichever is sooner.

Reconstitution of vaccines should be carried out according to the manufacturer’s instructions. The diluent should be added slowly to the vaccine since excessive pressure will cause frothing which is considered to be detrimental to the product. The vaccine solution should then be checked to ensure colour and appearance are correct.

Vaccines already in solution should be free of sedimentation or else further advice should be obtained from pharmacy.

Expiry dates and batch numbers of each vaccine (outer packaging) must be recorded in patient records. This is necessary for the incidence of product withdrawal or adverse reaction, which may be attributable to the vaccine.

Transportation of vaccines

Best practice for vaccine transportation should ensure that the vaccine is protected from light and transported within an environmental temperature maintaining the vaccine at less than 8°C without allowing it to freeze.

It is essential that an efficient "cold chain" is established for vaccine distribution to ensure that the correct temperatures are maintained throughout. Any breaks in the cold chain, may reduce the potency of vaccines and contribute to primary vaccine failure.
Within GG&C vaccines are distributed from the vaccine holding centres to health centres, clinics and surgeries using “Vaccine Porters”. The Vaccine Porters are special cool boxes which are validated to maintain the cold chain for eight hours, including allowance for multiple openings. Once received by the surgery/clinic, immediate transfer of vaccines to the vaccine fridge will ensure that the cold chain is fully maintained.

Occasionally vaccines may have to be transferred from the practices vaccine refrigerator to another clinic or for domiciliary visits. Where this occurs, validated cool boxes e.g. Vaccine Porters or Mini Vaccine Porters - must be used. Validated cool boxes, may also assist practices on occasions when alternative refrigeration is not available during cleaning/defrosting procedures.

Those practices requiring advice for the transfer/transportation of vaccines or possible purchase of vaccine porters should contact their vaccine holding centre to discuss their individual requirements.

To support GP practices in ensuring that they adopt best practice in the use and purchase of vaccine porters, guidance was prepared in March 2007 on behalf of the NHS Greater Glasgow and Clyde Immunisation Liaison Group. Prices are correct at the time of preparation. This guidance was issued to all GP practices in May 2007 and updated Oct 2007.

Disposal of vaccines

Where live vaccines are used staff should exercise due care and attention, which eliminates any risk of the hands being contaminated. Contaminated waste and spillage should be dealt with according to the GG&C Clinical Waste Policy and Decontamination Guidelines, and the Division Prevention and Control of Infection Manual respectively.

Hand washing, as outlined in Part 2, Section 1, Division Prevention and Infection Control Manual must be undertaken before and after the vaccine administration procedure for each patient.

In the event of eyes being splashed with vaccine, the eyes should be rinsed with copious amounts of Sodium Chloride 0.9% and immediate medical advice sought.

Any opened or prepared vaccines that have not been used should be destroyed and must not be flushed down the sink or toilet.
Opened vials should be placed in a sharps container for incineration. Any vaccine in an ampoule should be drawn into a syringe and the whole syringe placed in a sharps container for incineration.

Vaccine which is unfit for use through being out of date or because of storage irregularities should be returned by prior arrangement to the vaccine holding centre for ultimate destruction.
4.3. Guidelines on Storage and Handling of Vaccines in Primary Care

Specific member(s) of staff should be identified to monitor the pharmaceutical supplies refrigerator. Any temperature readings outside 2-8°C should be investigated and discussed with the vaccine holding centre.

1 The correct maintenance temperature of the vaccine refrigerator is 2-8°C.

2 Check and record the fridge temperature (maximum, minimum and current) twice daily. Suitable recording sheets have been provided. The thermometer should be re-set after each reading.

3 Store vaccines in the middle of the fridge away from elements and freezer compartments. Do not fill fridge more than two thirds full. Do not store in the fridge door, to avoid the risk of a temperature rise when door is opened.

4 Always check “Expiry Date” of vaccine following removal from the refrigerator and before dispensing. Check expiry dates and rotate stock to ensure shortest shelf life is used first. Do not keep excess stocks.

5 Refrigerate vaccine deliveries immediately. (This is the responsibility of the member of staff accepting delivery).

6 Clean and defrost vaccine fridges on a regular basis (monthly). Place vaccines in another fridge or in a validated cool box* while this takes place and until the refrigerator temperature is restored to 2-8°C.

7 Recalibrate the thermometer regularly according to manufacturer’s recommendations.

8 Protect power supply to the fridge ideally with a switchless socket and a fixed unit over the plug and socket to ensure the plug cannot be pulled out. Mark electrical socket with a cautionary notice advising staff not to switch off power.

9 Do not store foodstuffs in the vaccine fridge at any time.

10 Any vaccine unsuitable for use (e.g. expired stock or heat/cold damaged vaccines) should be clearly identified and returned for disposal. Telephone local vaccine holding centre to arrange*.

11 Vaccines should only be transported to peripheral clinics using validated cool boxes*. 
12 Only remove from fridge at any one time the minimum quantity required. Reconstituted vaccines and opened multidose vials should be disposed of at the end of an immunisation session in a sharps box. Any surplus vaccine not used during a clinic session should be returned and used first at the next session. Discard any vaccine not used during second session.

*Further advice available from:

Leverndale Hospital Pharmacy Department: Tel: 0141 211 6675
Inverclyde Hospital Pharmacy Department: Tel: 01475 504620
Royal Alexandra Hospital Pharmacy Department: Tel: 0141 314 6146
Vale of Leven Hospital Pharmacy Department: Tel: 01389 817540
Pharmaceutical Public Health Pharmacist (Immunisation) Tel: 0141 201 4824
4.4. Equipment Information

The following information has been prepared for GP surgeries on behalf of the NHS Greater Glasgow and Clyde Immunisation Liaison Group. Prices are correct at the time of going to press. Those practices interested in purchasing any of these items can discuss their individual requirements with an experienced public health pharmacist (immunisation) tel: 0141 201 4824.

Refrigerators

Domestic fridges are not suitable. Pharmaceutical fridges are available from manufacturers, such as Lec, Dometec, Swan, Labcold. Lec refrigerators include a number of useful features:

- The displayed temperatures simulate the temperature of the vaccine rather than solely the air temperature of the refrigerator
- Visual display from the microprocessor digital temperature control with min/max memory for continuous monitoring
- Forced air-cooling for temperature stability and rapid temperature recovery after door openings.
- Tangential fan for quiet technology
- Internal air temperature is maintained between 2-8°C
- Audio/visual alarm signal on temperature deviation, with remote alarm terminals providing mains failure alarm signal
- CFC free refrigeration system and insulation
- Low energy consumption
- Lockable door with 2 keys
- Automatic defrosting for efficient cooling

Dometec refrigerators include in addition:

- 2 probes. One probe monitors air temp inside the fridge. Another display probe located in propandiol indicates the storage temp of the vaccine.
- Alarm function displays the min/max temperature reached, the average temperature during the alarm period and the alarm duration.
- The fridges can fitted with a convertor to link to a DMCC monitoring software which gives real-time data and historical data
- Not all features included in all models

Please note prices are confidential NHSNSS contract prices and ex vat. Prices must not be discussed with any third party on any occasion.
LEC
Model PE 207 £343.32
Model PG 207 (glass door) £411.37
Exterior dimensions: 660mm (H) 502mm (W) 508mm (D)
Capacity: 67L 2 storage shelves

Model PE 507 £428.51
Model PG 507 (glass door) £481.83
Exterior dimensions: 863mm (H) 558mm (W) 600mm (D)
Capacity: 137L 3 storage shelves

Model PE 907 £534.50
Model PG 907 (glass door) £627.38
Exterior dimensions: 1550mm (H) 595mm (W) 600mm (D)
Capacity: 275L 5 storage shelves

Model PE 357 £802.92
Exterior dimensions: 1850mm (H) 595mm (W) 600mm (D)
Capacity: 340L 7 storage shelves

Available from: Glen Dimplex Professional Appliances (for Lec medical), Stoney Lane, Prescot, Merseyside, L35 2XW, tel 0871 222 5119, Fax 0871 222 9636

Options available such as mains failure alarms can be advised by sales staff.

Thermometers

Required if no integral digital thermometer to display current, min/max readings. Listed is the preferred digital thermometer which has a probe in solution to indicate storage temperature of the vaccines rather than air temperature of fridge.

Healthcare Logistics (US)
Traceable Memory Monitoring Refrigerator/Freezer Thermometer
Order number: FB50267
Price: £39.99 + vat
Note: This thermometer requires annual recalibration
Available from: Vicarey Davidson & Co, Surgical Instrument Makers, 30 Cumberland St, Glasgow, tel: 0141 420 1778
Temperature monitoring apparatus

Temperature “loggers” e.g. ICESPY® are available to monitor fridges for up to 30 days. Temperature information is downloaded into tailored software to allow preparation of a “24 hour temperature history” graph.

Vaccine transport

Maintenance of the cold chain is required at all times to include transport for domiciliary visits. Vaccine Porters may also assist practices during large clinic sessions within areas of no refrigerated access and on occasions when alternative refrigeration is not available during cleaning/defrosting procedures.

Clinimed UK manufacture vaccine porters which are of the required certificated standard to maintain the cold chain on condition that the specified quantity of refrigerated Medicool sachets are used.

Mini Vaccine Porters are available for transport of up to 10 vials of vaccine. These require the insertion of a cool pack which must be frozen in advance for accredited use. Larger vaccine porters, requiring only refrigerator stored cool packs, are also available.

Details available from http://www.clinimed.co.uk/cl/products/UK/Porters/vaccine-porter.htm

Ex vat prices do not include Vat/carriage. Discounts for purchases>10

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<th>Vaccine Porter</th>
<th>Order code</th>
<th>Available product space (mm)</th>
<th>Price</th>
<th>Medicool</th>
<th>Packs required each</th>
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Also available from Dometica
4.5. Fridge Temperature Monitoring Log

Best practice recommendations

- Record temperatures first thing in the morning and as last duty at end of day.
- Record an entry in each column.
- Ensure others are trained to perform the task and cover staff absences.
- Reset thermometer after every reading. The maximum temperature setting within the thermometer responds immediately to any rise in actual temperature. Therefore, even if >8°C for a few seconds the maximum temperature is recorded until the next time the thermometer is re-set.
- Following removal of vaccine from the fridge or receipt of fresh stock, read the current temperature. If it reads above 8°C record temperature, time and reason in comments column. Repeat procedure 30mins later and record results. If current temperature has not returned to normal (2-8°C) seek further advice*.

When to contact vaccine holding centres for further advice*

- A current temperature reading above 8°C which has not corrected within 1 hour.
- A maximum temperature reading above 8°C when the refrigerator has not been opened.
- Any temperature reading below 2°C.
- Any identical min/max/actual reading above 8°C (readings are sometimes identical if the fridge has not been opened but should be in the range 2-4°C). Any higher indicates that the thermostat should be lowered slightly - refer to manual.
- A temp greater than 8°C at routine monitoring at start or end of day.

Action for potentially hot/cold damaged stock

- Quarantine stock. Place the vaccine within a sealed bag labeled "DO NOT USE QUARANTINED" with date/time and transfer to a back-up fridge which has been monitored for temperature efficiency.
- Record min/max/actual readings immediately on identification of incident
- Seek further advice as soon as possible*. The vaccine holding centre will require details of recent temperature readings.
- Ensure sufficient non-quarantined vaccine remains available. Order if necessary.

*Further advice available from:
Leverndale Hospital Pharmacy Department: Tel: 0141 211 6675
Inverclyde Hospital Pharmacy Department: Tel: 01475 504620
Royal Alexandra Hospital Pharmacy Department: Tel: 0141 314 6146
Vale of Leven Hospital Pharmacy Department: Tel: 01389 817540
Pharmaceutical Public Health Pharmacist (Immunisation): Tel: 0141 201 4824
Location of fridge.................................................. Month .......... Year ..........

Any temperature reading outwith 2-8°C must be investigated and discussed with holding centre (contact numbers as shown below).

- Record Minimum, Maximum and Actual temperatures TWICE DAILY each working day

- Reset thermometer after reading

- Give full details of action taken in comments section

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<th>Time</th>
<th>Max (present)</th>
<th>Min (present)</th>
<th>✓ when thermometer reset (after each reading)</th>
<th>Initials</th>
<th>Comments when temp range exceeded</th>
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