Vaccine Administration
Objectives

• To understand how to prepare vaccines for immunisation
• To understand how to administer vaccines
• To understand what are true contraindications for vaccine administration and describe common false contraindications for vaccine administration
• To identify the correct route of administration

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Objectives

- To identify the correct site of administration of all vaccines for each age group
- To identify the correct needle length
- To understand how to position clients of different ages for safe and effective vaccination
- To learn how to prepare and dispose of vaccines and injecting equipment

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Vaccine Preparation

- Store in accordance with Cold Chain
- Reconstitute and draw up as required
Before Administration

- Examine colour and composition as per SPC
- Freeze dried vaccines come with diluent
- Must be used within specific time as per SPC

- Check
  - Is it the right vaccine?
  - What is the expiry date?
  - How vaccine is presented?
Vaccine presentation

• Pre filled syringe with needle

• Require reconstitution
  – includes 2 needles in pack (1 for drawing up and 1 for administration)
  – Vial only
    • Draw up diluent with 21G needle and add slowly
    • Use appropriate new needle to administer
Before administration

- Verify name, date of birth and previous vaccination history
- Verify age of child
- Provide information on the diseases that are being vaccinated against
- Outline the process of vaccination and how to deal with common side effects post immunisation
- Ensure informed consent.
- Ensure no contraindications.
- Double check vaccine details - check vaccine name and expiry date with the parent.
Contraindications

• Anaphylaxis to a previous vaccine or to one of its components

Precautions

• Defer if severe acute febrile illness
NOT contraindications

• Family history of any adverse reactions following immunisation
• Minor infections without fever or systemic upset
• Personal or family history of convulsions.
• History of meningitis, pertussis, measles, rubella or mumps infection
• Prematurity or low birth weight
• Stable neurological conditions such as cerebral palsy.
• Contact with an infectious disease
• Treatment with antibiotics

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NOT contraindications

- Asthma, eczema, hay fever, migraine and food allergy
- Treatment with antibiotics or locally-acting (e.g. topical or inhaled) steroids
- Child’s mother is pregnant
- Child being breast fed
- History of jaundice after birth
- Child over the age recommended in immunisation schedule
- Corticosteroid replacement therapy
- Recent or imminent surgery

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**NOT contraindications**

- Egg allergy is NOT a contraindication to MMR vaccine
Route of injection

• Not I.V.

• Give vaccines intramuscularly (I.M.)
  – Reduces chance of local reactions
  – Better immune response

• EXCEPT
  – BCG - intradermally
  – Yellow fever & varicella – subcutaneously

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Bleeding disorder

Mild
• firm pressure applied to the injection site for 2-3 minutes to reduce the risk of bleeding.

More severe
• may need to be immunised in hospital.
Injection site

- Determined by
  - Route used
  - Amount of vaccine to be used
  - Age of client
  - Size of client
## Preferred site

<table>
<thead>
<tr>
<th>Patients Age</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants (Birth to 12 Months of age)</td>
<td>Anterolateral aspect of middle or upper thigh</td>
</tr>
<tr>
<td>Toddlers (12 to 36 months)</td>
<td>Anterolateral aspect of middle or upper thigh until deltoid has developed adequate muscle mass</td>
</tr>
<tr>
<td>Children &gt; 36 months and adults</td>
<td>Most dense portion of the deltoid muscle-between acromion and muscle insertion</td>
</tr>
</tbody>
</table>
Vaccine site

• The anterolateral thigh and deltoid regions
  – avoid major nerves and blood vessels
  – Immunisations should not be given into the buttock due to
    • risk of damage to the sciatic nerve
    • risk of injecting into fat which can reduce the effectiveness of some vaccines.
Two injections in same limb

• Give at separate sites at least 2.5cm apart.

• Record exact site at which each vaccine was given to determine local side-effects of the different vaccines.
BCG Administration

• Over the insertion of the left deltoid muscle to reduce the risk of keloid formation

• Lower than that used for intramuscular injections.

• When BCG vaccine is administered, no other vaccine should be given in that arm for a period of three months.

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Vaccine site

• Clean skin does **NOT** require cleansing

• Visibly dirty skin should only be washed with soap and water

• If alcohol and other disinfecting agents are used, skin must be allowed to dry as these could inactivate live vaccines
# Needle Size

<table>
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<th>Patients Age</th>
<th>Needle size</th>
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<tbody>
<tr>
<td>Infants (Birth to 12 Months of age)*</td>
<td>25mm needle 23-25 gauge</td>
</tr>
<tr>
<td>Toddlers (12 to 36 months)</td>
<td>25 mm needle 23-25 gauge</td>
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*Note: Use a 16mm length needle in infants under 2.5-3kgs*
Needle Length

• Long enough to ensure vaccine is injected into muscle.
  – most cases a 25 mm needle
  – 16mm needle is used for those weighing 2.5-3kgs.
  – 37mm needle is used in those weighing >95-100kgs.
IM administration

• The needle should be inserted at a 90° angle to the skin

• The skin should be stretched flat (NOT bunched)

• Not necessary to aspirate the syringe after the needle is put into the muscle.
IM administration

Sit child sideways on parent’s lap

Ensure child is held securely
Post Vaccination
Recording of information

- Vaccine(s) name(s),
- Batch number,
- Manufacturer
- Expiry date
- Dose administered
- Site(s) used
- Date immunisation(s) were given
- Signature of the vaccinator
Post Vaccination Observation

• Observe for immediate adverse reactions.
• Clients should remain in the vicinity of the place of vaccination for up to 15 minutes as typically onset of anaphylaxis occurs within minutes.
• Not uncommon for a child to have a minor local reaction or mild fever or be irritable post vaccination.
• No need to rub the injection site post vaccination.

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Post Vaccination Observation

• Parents should be advised
  – to administer paracetamol or ibuprofen in accordance with manufacturers guidance if temp >39.5°C.
  – ensure that their child drinks plenty of fluids and that clothes are not rubbing against the injection site.
  – contact their general practitioner or HSE health centre if their child does not settle following these measures

• Suspected adverse drug reactions should be reported to the Irish Medicines Board using the Yellow Form available at [www.imb.ie](http://www.imb.ie)
Post Vaccination
Observation and advice

• Parents should be advised
  – to administer paracetamol or ibuprofen in accordance with manufacturers guidance.
  – ensure that their child drinks plenty of fluids and that clothes are not rubbing against the injection site.
  – contact their general practitioner or HSE health centre if their child does not settle following these measures
  – of importance of completing all vaccine visits

** Paracetamol or ibuprofen should NOT be given prior to immunisation as this may reduce the effectiveness of the immune response
Disposal of Waste

Dispose in yellow sharps bins.

- reconstituted vaccines
- opened single and multidose vials
- empty vials and ampoules
- needles and syringes

Sharps bins should be replaced when 2/3 full.
Useful resources

- Diggle L, Deeks JJ, Pollard AJ. Effect of needle size on immunogenicity and reactogenicity of vaccines in infants: randomised controlled trial. BMJ. 2006 Sep 16;333(7568):571.