

Vaccine Administration

and the role of the

Practice Nurse

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www.immunisation.ie



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Contents



- Preparation of vaccines
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- Correct needle length
- True contraindications vs myths
- Injection sites
- Positioning of patients
- Safe disposal
- Vaccination Returns
- Parents/Nurse demeanour
- Towards a standardised, research based approach



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National legislation and professional guidelines for practice.

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The five rights of medication administration (ABA,2007)

- The right medication
- The right client/service user
- The right dosage
- The right form
- The right time



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Contraindications

- Anaphylaxis to a previous vaccine or to one of its components
- Live vaccines in persons who are immunocompromised
- Person is moderately or severely unwell-defer until well
- Live vaccines and pregnancy

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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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Parental/Nurse Demeanour

- Significantly influences amount of pain/distress of child
- Humour distraction, matter of fact, supportive, non apologetic approach
- Know what you are talking about.
- Make it practical
- PHN demeanour may be different with older children



Route of injection

- Not I.V.
- Give vaccines intramuscularly (I.M.)
 - Reduces chance of local reactions
 - Greater blood supply for optimum delivery
 - Better immune response
- EXCEPT
 - BCG - intradermally
 - Yellow fever & varicella – subcutaneously

*Individuals with bleeding disorder should receive their vaccines by deep subcutaneous injection to reduce risk of bleeding



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Injection site

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



Preferred site

Patients Age	Site
Infants (Birth to 12 Months of age)	Anterolateral aspect of middle or upper thigh
Toddlers (12 to 36 months)	Anterolateral aspect of middle or upper thigh until deltoid has developed adequate muscle mass
Children > 36 months and adults	Most dense portion of the deltoid muscle-between acromion and muscle insertion



Two injections in same limb

- Common practice in US
- Infant A/L thigh can accommodate two IM injections
- Give at separate sites at least 2.5cm (1 inch) apart
- Be consistent - Record exact site at which each vaccine was given to determine local side-effects of the different vaccines

Demo at www.prevenar.co.uk



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Needle Size

Patients Age	Needle size
Infants (Birth to 12 Months)*	25 gauge (orange) 16mm or 25mm long
Toddlers (12 to 36 months)	25 gauge (orange) 25 mm long
Children > 36 months and adults	25 gauge (orange) 25 mm long 23 gauge (blue) 25 mm long 30 mm long.





**Note: Use a 16mm length needle in infants under 2.5- 3kgs*

Larger adults may need a 38mm needle > 95-100kg

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Orange and Blue Needles !

	Orange 25 gauge 16 mm long
	Orange 25 gauge 25 mm long
	Blue 23 gauge 25mm long
	Blue 23gauge 30 mm long



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Vaccine presentation/preparation

- 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
 - Change needle so appropriate for administration



Vaccine presentation/preparation

- Reconstitute vaccine as per SPC



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Before administration

- Correct child - name, age, date of birth and previous vaccination history
- 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



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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?



Preparation

- Warming prior to injection does not reduce pain
- Clean skin does **NOT** require cleansing.
- If alcohol and other disinfecting agents are used, allow skin to dry as these could inactivate live vaccines



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Aspiration

Pulling back on the syringe plunger before injection to check for blood return?

- Entrenched in nursing text books since 1930's
- No evidence to support this practice
- Aspiration not recommended

(No reports that injecting into a vein has even happened)



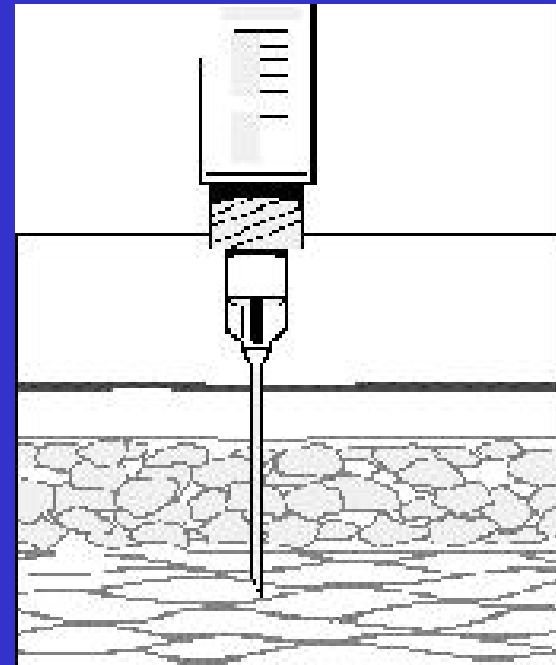
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IM administration

- The needle should be inserted at a 90° angle to the skin
- The skin should be stretched flat between thumb and index finger (NOT bunched) – this optimising insertion deep into muscle and avoids back tracking of vaccine when needle is withdraw
- 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



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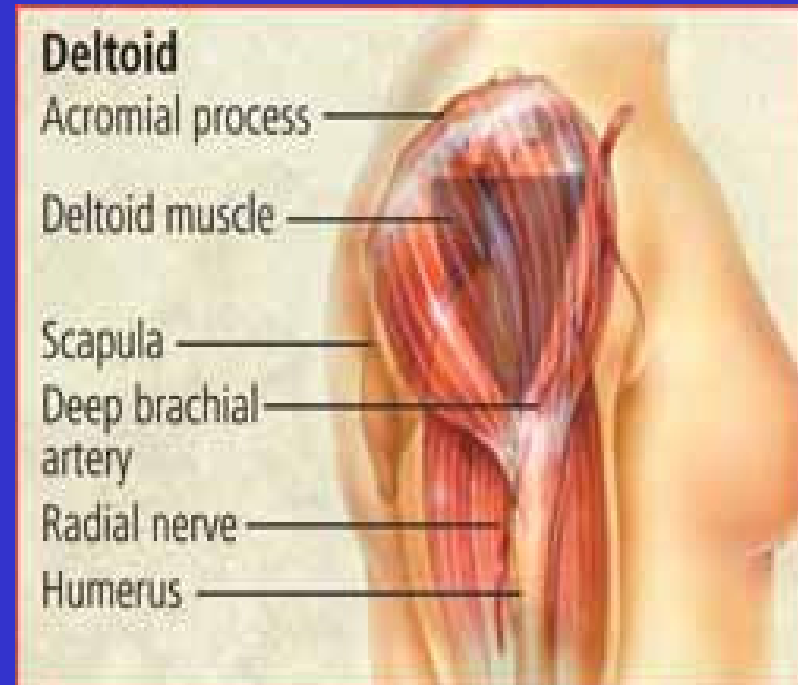
The Deltoid site.

- Used for immunisations /analgesics/antiemetics/antibiotics & antipsychotics. (McGarvey & Hooper, 2005)
- Risk of injury to brachial artery & radial nerve
- Limit volume of medication based upon size of muscle i.e. 0.5 – 2 ml/cc



Location

- Locate the acromion process landmark
- Place index & middle finger on the landmark
- Create an inverted triangle. Inject 1-2 inches below the acromion process in the centre of the triangle.
- Note injection site is above the level of the armpit



Post Vaccination Recording of information

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



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Post vaccination recording of information contd.

- Original documents maintained by G.P.
- Copy to Local Immunisation office for Database-statistical analysis and payment
- Personal child health record held by parent



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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



Post Vaccination Observation

- Parents should be advised
 - to administer paracetamol or ibuprofen in accordance with manufactures guidance
 - ensure that their child drinks plenty of fluids and that clothes are not rubbing against the injection site
 - contact their GP or Caredoc 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



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Disposal of Waste

Dispose in yellow sharps bins as per local policy

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

Sharps bins should be replaced when two thirds full



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Local Health Service Providers Policies and Protocols.

i.e.

- Infection Prevention and Control
- Sharps Policies
- Vaccine storage - cold chain policies



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Role of the Practice Nurse

Direct

- Identify the child
- Education and gain informed consent
- Reassurance
- Documentation
- Administration
- Post administration observation

Indirect

- Maintain competencies
- Stock control/rotation and ordering of vaccines
- Maintain the cold chain
- Return of forms
- Return out of date vaccines
- Follow up of defaulters / liaising with PHN



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Injection technique practical points in summary

- No need to warm, cleanse or aspirate
- Most immunisations should be IM
- Antero-lateral thigh for infants
- May use deltoid not generally used until 36 months
- Use 25mm needle for infant thigh, pre-school deltoid
- At least 25mm needle for adult deltoid
- Parental demeanour significantly reduces child's distress
- Practice should be evidence based



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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.
- **Diggle L, Deeks JJ.** Effect of needle length on incidence of local reactions to routine immunisation in infants aged 4 months: randomised controlled trial. *BMJ.* 2000 Oct 14;321(7266):931-3.
- **National Immunisation Office. Health Service Executive, Ireland.** <http://www.immunisation.ie>.
- **Royal College of Physicians of Ireland. Immunisation Guidelines for Ireland.** Available at www.hpsc.ie



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