

Vaccine Administration an Evidence Based Approach

Objectives



- Preparation of vaccines
- Injection technique
- Correct needle length
- True contraindications vs myths
- Injection sites
- Positioning of patients
- Safe disposal
- Reducing pain/distress
- Parents/Nurse demeanour
- Standardised approach
- Protocols



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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?



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
 - Change needle so appropriate for administration



Parental/Nurse Demeanour



Parental/Nurse Demeanour

- Significantly influences amount of pain/distress of child
- Excessive parental reassurance, criticism, apology, control to child
- Humour distraction, matter of fact, supportive, non apologetic approach



Reducing Pain and Distress

- Thyr et al 2007 glucose reduced mean crying time significant at 5 months 62% and 12 months 52%
- Schechter et al 2009 review supported distraction techniques
- Taddio et al 2010 sucking, distraction, positioning upright, perform injection rapidly, most painful first, tactile stimulation, combine strategies



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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



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



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



Injection site

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



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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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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 3 months



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



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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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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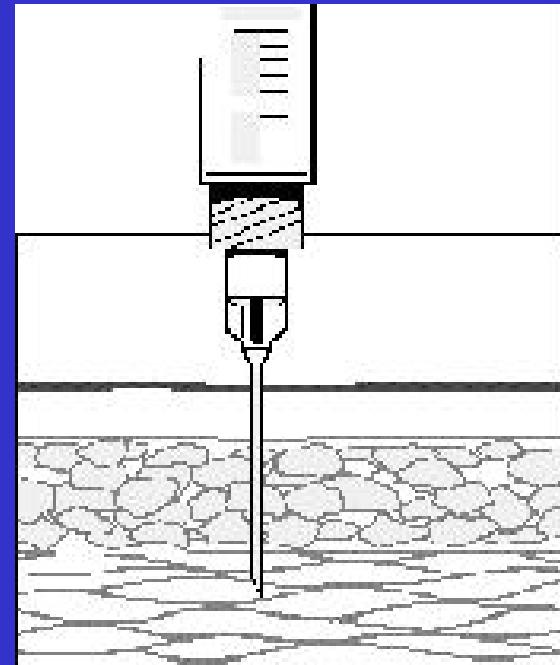


Orange and Blue Needles !

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

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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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



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Post vaccination recording of information contd.

- Original documents maintained by G.P. or School teams
- Copy of vaccination details to G.P
- Copy to Local Immunisation office for Database-statistical analysis
- 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 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



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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 two thirds full



National legislation and professional guidelines for practice.

- An Bord Altranais
- Code of Professional conduct Apr 2000
- Scope of Nursing & Midwifery Practice Framework Apr 2000
- Guidance to Nurses and Midwives on medication management June 2003
- Recording Clinical Practice, Guidance to Nurses & Midwives Nov 02
- The National Childrens Strategy-Our Children –Their lives(2000)
- The Children First Guidelines(1999)



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Local Health Service Providers Policies and Protocols.

i.e.

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



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Injection technique practical points in summary

- No need to warm, cleanse or aspirate
- Most immunizations 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 and distraction techniques significantly reduce a child's distress
- Practice should be evidence based



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>.
- Immunisation Guidelines for Ireland National Immunisation Advisory Committee



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