

# Adverse events following Immunisation and Anaphylaxis

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[www.immunisation.ie](http://www.immunisation.ie)



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# Objectives

- To define adverse events that can occur following immunisation (AEFI)
- To identify minor, rare and serious adverse reactions
- To define “anaphylaxis” and recognise signs and symptoms of anaphylaxis and appropriate management
- To outline the reporting of adverse reactions to the Irish Medicines Board



# Training in management of anaphylaxis

- Individuals giving vaccinations must receive appropriate training
- Regular updates every 2 years
- Anaphylaxis is very rare. An Irish practice nurse administering the current childhood schedule might encounter a case every 138 years.



# Adverse events following Immunisation

## Frequency of reactions classified as

- Very common  $> 1$  in 10
- Common  $> 1$  in 1,000 and  $< 1$  in 10
- Uncommon  $> 1$  in 1,000 and  $< 1$  in 100
- Rare  $> 1/10,000$  and  $< 1$  in 1,000
- Very rare  $< 1/10,000$



# WHO classification of AEFIs

- Programme related
  - Wrong vaccine/incorrect storage or administration
- Vaccine-induced
  - Direct effect of the vaccine or its component parts
- Coincidental
  - Chance event e.g. URTI post influenza vaccination
- Unknown
  - Undetermined cause



# Vaccine Induced AEFIs

- Local reactions
  - common (*redness, fever and swelling at the injection site*)
- General reactions
  - usually occur within 24-48 hours of vaccination (*fever, irritability, loss of appetite*)
- Anaphylaxis
- Later reactions
  - post MMR (“mini measles” after 7-10 days)



# Local reactions

- Not surprising
- Occur within hours of receiving the vaccine
- Usually mild and self limiting
- Reduced by using correct needle length
- **Do not contraindicate** the administration of this vaccine subsequently.



# Minor reactions following immunisation

Frequency of minor reactions			
	Local reaction	Fever	Irritability, malaise
BCG	Common	Rare	Rare
DTP/IPV	Common	Common	Common
MMR	Common	Common	Uncommon
Hib	Common	Uncommon	Uncommon
Men C	Common	Uncommon	Uncommon
Hep B	Common	Uncommon	Uncommon
Pneumococcal	Common	Uncommon	Uncommon

Source: Summary of Product Characteristics



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# Systemic reactions

Timing varies according to the type of vaccine received.

- Tetanus containing vaccines - fever within a few hours
- MMR vaccine - rash 7-10 days later.

– **Do not contraindicate** the administration of this vaccine subsequently



# Management of common reactions

- Inform parents verbally and with information leaflets
  - expected common events post-vaccination
  - how to treat them.
    - paracetamol or ibuprofen
    - no aspirin or aspirin-containing medication if under 18 years of age (Reye's syndrome).
- BCG vaccination
  - 3 – 6 weeks after vaccination, in almost all cases small red pustule (s) will appear at the site of the injection
  - remain for a number of weeks and may discharge slightly
  - normal reaction and will resolve leaving a flat scar



# Anaphylaxis

Severe systemic (whole body) allergic reaction.


The key issues in the management

- Awareness that anaphylaxis though rare can occur
- Early recognition
- Early treatment.
- Extremely rare event 1/1,000,000 doses of vaccine given
- Most vaccinators will never see an anaphylactic reaction.

BUT it can be a life threatening event  
must be diagnosed and treated appropriately.



# Signs and symptoms of anaphylaxis

Clinical Progression	Signs and Symptoms
Mild early warning signs    Life threatening symptoms	Itching of skin, rash and swelling around the injection site. Dizziness and general feeling of warmth
	Painless swelling in parts of the body e.g. face or mouth. Flushed, itchy skin, nasal congestion, sneezing tears
	Hoarseness, feeling sick ,vomiting
	Swelling in the face, difficulty breathing, abdominal pain
	Wheezy, difficulty breathing, collapse, low blood pressure, weak pulse

## Anaphylaxis and other common reactions to vaccination.

<i>Faint</i>	<i>Anxiety attack</i>	<i>Breath holding episode</i>	<i>Anaphylaxis</i>
<ul style="list-style-type: none"> <li>• Good central pulses but may be bradycardic</li> <li>• Respiration continues</li> <li>• Pallor</li> <li>• Warm skin</li> <li>• Unusual in pre-school children</li> <li>• No upper airway oedema</li> <li>• No itching</li> <li>• Patient regains consciousness when lying down</li> </ul>	<ul style="list-style-type: none"> <li>• May appear fearful</li> <li>• Usually tachypnoeic</li> <li>• Hyperventilation</li> <li>• Pallor</li> <li>• Tingling of face and extremities</li> <li>• Complains of feeling light-headed, dizzy or numb</li> </ul>	<ul style="list-style-type: none"> <li>• Mainly in young children</li> <li>• Generally distressed/ crying prior to episode</li> <li>• Facial flushing and cyanosis</li> <li>• Can briefly become unconscious during which breathing returns</li> </ul>	<ul style="list-style-type: none"> <li>• Poor central pulses, usually sinus tachycardia</li> <li>• Possible apnoea, especially in children</li> <li>• Upper airway oedema, sneezing</li> <li>• Hive like (Urticarial) lesions &amp; itching</li> <li>• Sense of impending doom</li> <li>• Flushed sweating cold skin</li> <li>• Patient does not revive when lying down</li> </ul>



# Management of anaphylaxis

- Send for additional medical assistance
- Dial 999 OR 112 and state that there is a case of anaphylaxis
- Lie patient, ideally with legs raised unless the patient has breathing difficulties
- Administer oxygen if available
- If the patient is unconscious an airway should be inserted
- If the patient stops breathing, mouth to mouth resuscitation should be performed but preferably bag valve mask ventilation should be performed



# Dose of adrenaline

**1:1000** (1mg(1000µcg)/ml) IM

Child: Dose by weight (0.01ml/kg) or age

– <6 months	0.05ml (50µcg)
– 7-18 months	0.1ml (100µcg)
– 18-36 months	0.15ml (150µcg)
– 4-7 years	0.2ml (200µcg)
– 8-10 years	0.3ml (300µcg)
– 11-12 years	0.4ml (400µcg)
– > 12 years	0.5ml (500µcg)

Adult: 0.5ml (500ucg)

Those  $\geq$  100 kgs can be given 1mg IM (use green needle, 37mm)



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# Reporting of AEFI

- Report all suspected adverse reactions to the Irish Medicines Board

Kevin O' Malley House  
Earlsfort Terrace,  
Dublin 2,

- Use the Adverse Reaction Report (Yellow) Card System
  - “Freepost” system (cards from the IMB or from [www.imb.ie](http://www.imb.ie))
  - on-line version of the report form is available from [www.imb.ie](http://www.imb.ie)
- Give as much detail as possible
- Pharmaceutical companies are obliged to also submit adverse reaction reports to the IMB.



[www.immunisation.ie](http://www.immunisation.ie)



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# Useful Resources

- American Academy of Paediatrics. 2009 Report of the Committee on Infectious Diseases – The Red Book. <http://aapredbook.aappublications.org>
- Department of Health UK. November 2006. Immunisation against infectious disease. [http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Greenbook/DH\\_4097254](http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Greenbook/DH_4097254)
- Ewan P.W. ABC of allergies: Anaphylaxis. BMJ1998 (316) 1442-1445
- Health Protection Surveillance Centre, Ireland. [www.hpsc.ie](http://www.hpsc.ie)
- Royal College of Physicians of Ireland. Immunisation Guidelines for Ireland. Available at [www.hpsc.ie](http://www.hpsc.ie)
- World Health Organisation. Adverse events following immunisation [http://www.who.int/immunization\\_safety/aefi/en/](http://www.who.int/immunization_safety/aefi/en/)
- World Health Organisation. Geneva 2000. Supplementary information on vaccine safety <http://www.who.int/vaccines-documents/DocsPDF00/www562.pdf>
- World Health Organisation. May 2007. Mass Measles Immunization Campaigns- reporting and investigating adverse events following immunization [http://www.who.int/immunization\\_safety/aefi/managing\\_AEFIs/en/index6.html](http://www.who.int/immunization_safety/aefi/managing_AEFIs/en/index6.html)



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