



Anaphylaxis and other adverse events

Aim:



To be able to manage anaphylaxis and other adverse events correctly

Learning outcomes

- Define local and systemic adverse events
- Distinguish between anaphylaxis and fainting
- Manage anaphylaxis
- Prepare and check the equipment and drugs used for managing anaphylaxis
- Define and recognise an adverse event
- Report an adverse event

Classification of Adverse Events Following Immunisation (AEFI)



- Vaccine-induced AEFI

Induced direct effects of vaccine or vaccine component and/or due to underlying medical condition or idiosyncratic response in recipient

- Programmatic errors

Incorrect doses or routes, wrong diluent

- Coincidental events

Chance happening

- Injection reaction

Result of injection itself, not the vaccine e.g. pain, anxiety

- Unknown

Cause cannot be determined

Types of adverse event

- Local Reactions

*More common with non-live vaccines containing adjuvants
(Pain, redness, swelling at injection site)*

- Systemic Reactions

Generally more common following live vaccine, but less severe with subsequent doses (Fever, headache, loss of appetite)

- Allergic Reaction

Anaphylaxis/Severe systemic allergic reaction

Systems for monitoring/reporting AEFI



- Yellow card System

Passive reporting by doctor, pharmacist, nurse, patient or parent to the Medicine and Healthcare Products Regulatory Agency (MHRA)

<http://medicines.mhra.gov.uk/>

- Immunisation programme / public health agency

- Special schemes (specific condition)

e.g.. British Paediatric Surveillance Unit (BPSU) in UK

What is anaphylaxis?

Definition of anaphylaxis

Typically rapid and unpredictable with variable severity and clinical features including cardiovascular collapse, bronchospasm, angioedema, pulmonary oedema, loss of consciousness and urticaria

- Potentially life threatening AEFI
- One of four types of hypersensitivity reactions
- Very rare - approx one per million vaccine doses

(Bohlke *et al.* Risk of Anaphylaxis After Vaccination of Children and Adolescents *Pediatrics* 2003; 112:815-820)

What happens during anaphylaxis



- Essentially an inappropriate immune response
- Occurs as a result of exposure to an allergen to which a person has been sensitised and previously made specific immunoglobulin E (IgE)
- Anaphylaxis can occur on re-exposure to the antigen when explosive amounts of histamine and other chemical mediators are released following the binding of the antigen to IgE coated mast cells.

Potential triggers

- Various common food and non food triggers

(Nuts, shellfish, dairy products, wasp or bee stings, latex, antibiotics, anti-inflammatories)

- Vaccine specific

Egg proteins (yellow fever and influenza vaccines)

Thiomersal (some flu and hep B vaccines)

Antibiotics (Neomycin streptomycin and polymixin B)

Toxoid (DTaP, Td)

Stabilisers and other vaccine components (Yeast, gelatin)



Distinguishing signs and symptoms of anaphylaxis and a faint:

In groups list the signs and symptoms of anaphylaxis and a faint

Cardiovascular system

Respiratory system

Gastrointestinal tract

Skin

Central nervous system

ABCDE



Airway – swelling of tongue , throat

Difficulty breathing

Hoarse voice , stridor

Breathing – shortness of breath

Increased respiratory rate

Wheeze

Hypoxia – confusion

Respiratory arrest

Circulation – **Signs of shock**

Pale , clammy , tachycardia , hypotension

Decreased conscious level

Cardiac arrest

Do not stand patient up

Disability – sense of impending doom

Anxiety , panic

Decreased conscious level

Exposure – skin changes in over 80%

Erythema / Urticaria

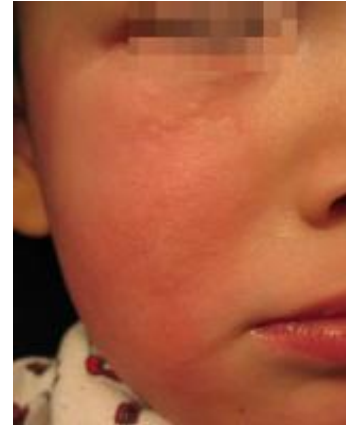
Includes mucosal changes - Angioedema

Signs & Symptoms



Mild

Flushed Appearance



Urticaria

Anxiety

Headache

Nausea

Abdominal pain



Signs & Symptoms



Moderate

Feeling of Impending Doom!

Swelling

Dyspnoea

Wheeze

Stridor

Tachycardia

Classic features of Moderate

Anaphylactic reaction

- **Swelling of lips**
- **Urticaria**



Signs & Symptoms



Severe

Angioedema (Including Pharyngeal/Laryngeal)

Hypotension

Cyanosis

Collapse

Respiratory or cardiac arrest

DEATH!!!



Management of anaphylaxis



- Call for assistance
- Lie patient down with legs raised (unless breathing difficulties)
- Where available administer oxygen (10-15 Litre/min)
- If showing clinical signs of shock, difficulty breathing or deteriorating consciousness administer intramuscular adrenaline into anterolateral aspect of thigh
- Repeat dose if no clinical improvement

Age	Dose of adrenaline 1:1000 (1mg/ml)
Less than 6 mths	0.15ml
6 months- 6 yrs	0.15ml
6-12 years	0.3ml
Over 12 years	0.5ml or 0.3ml (if small or prepubertal)



Minimum slide set created by:

**Immunisation Department,
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**to assist teaching of the *Core Curriculum for
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(see http://www.hpa.org.uk/infections/topics_az/vaccination/training_menu.htm)