University College London Hospitals NHS
NHS Foundation Trust

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Paediatric Infectious Diseases:
Top tips and hot topics

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Learning Objectives

- Diagnoses not to miss
  - Red flags
- Common presentations
  - When to refer
- Questions around vaccinations
  - Changes
  - Contraindications

Case: Megan

18 months old
9 episodes of febrile illness since 5 months old
4 courses of oral antibiotics for chest / throat infections last year
1 hospital admission with pneumonia aged 10 months
UTI 6 months ago (normal ultrasound scan)
4 year old sister
Fully vaccinated
Mother teaching assistant. Father double-glazing salesman

Weight fallen from 25th to 9th centile. Height 9th centile

Does she have immunodeficiency?

Case: Morgan

18 months old
Right middle lobe pneumonia
Previous episode of right-sided pneumonia 3 months ago
Improved with intravenous antibiotics
Intermittent cough in between.
Weight fallen from 25th to 9th centile. Height 9th centile
Fully vaccinated

Does she have immunodeficiency?
Other concerns?

When to suspect immunodeficiency

Recurrent airway/ENT infection

Rarely immunodeficiency

Asthma
Allergic rhinosinusitis
Recurrent viral infection
Cystic fibrosis

More significant
- growth faltering
- admission for IVABx

Consider antibody, MBL deficiency
Rarer complement deficiency

Transient hypogammaglobulinaemia of infancy

Case: Manuel

6 years old
Recurrent boils.
Lanced by GP previously
Others spontaneously ruptured
Healed leaving faint scars

Does he have immunodeficiency?
How to manage?

When to suspect immunodeficiency

Recurrent pyogenic infection

Skin infection only
- rarely immunodeficiency
- diabetes
- virulent *S. aureus* strain

Deep abscess
Recurrent deep infection
Recurrent bone/joint infection
- phagocyte disorders
  - CGD, hyper IgE
- antibody deficiency

Recurrent meningococcal disease
- terminal complement deficiency

Staphylococcus aureus suppression

Hibiscrub body wash - Days 1,2,3,4,5

Hibiscrub as shampoo – Days 1,3,5

Nasal mupirocin – Days 1,2,3,4,5

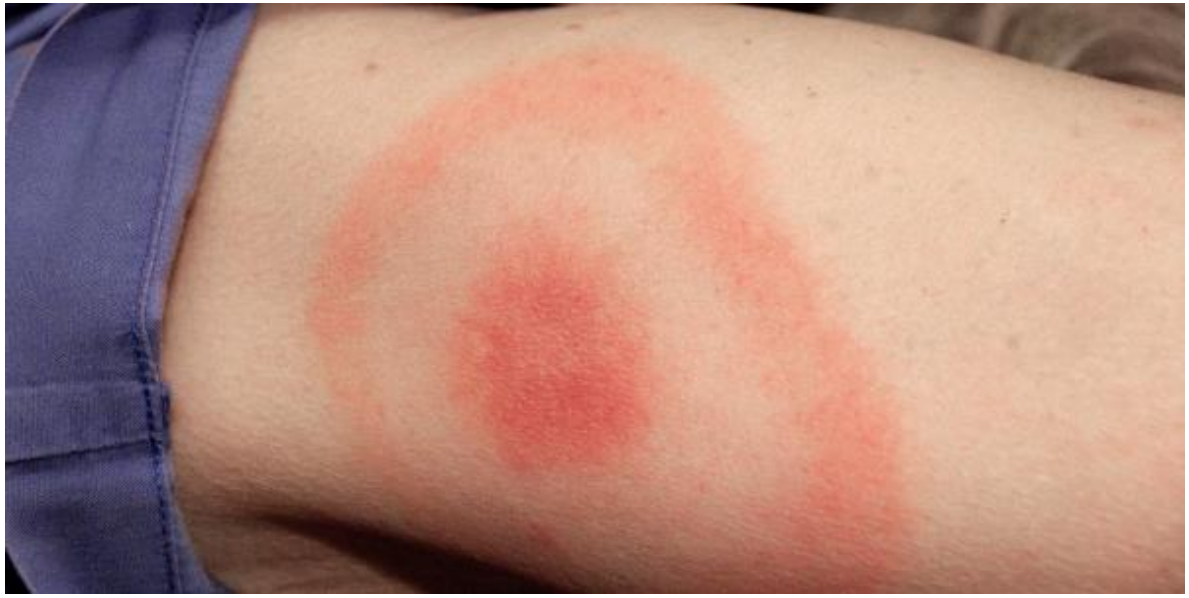
Treat patient

If recurs, treat whole family

Octenisan wash lotion for infants / eczematous skin

Case: Darcey

- 11yo girl
- Camping holiday in South Downs
- Flu-like illness last 2 days
- Lethargic
- Rash today

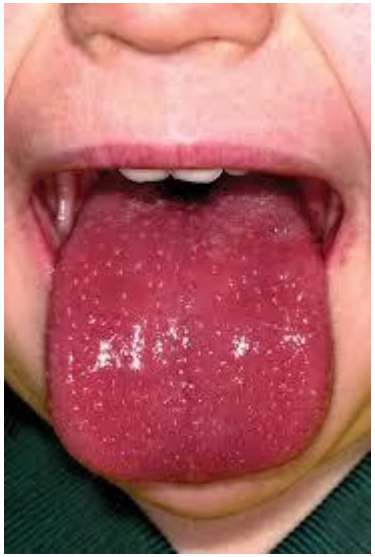


Lyme Disease

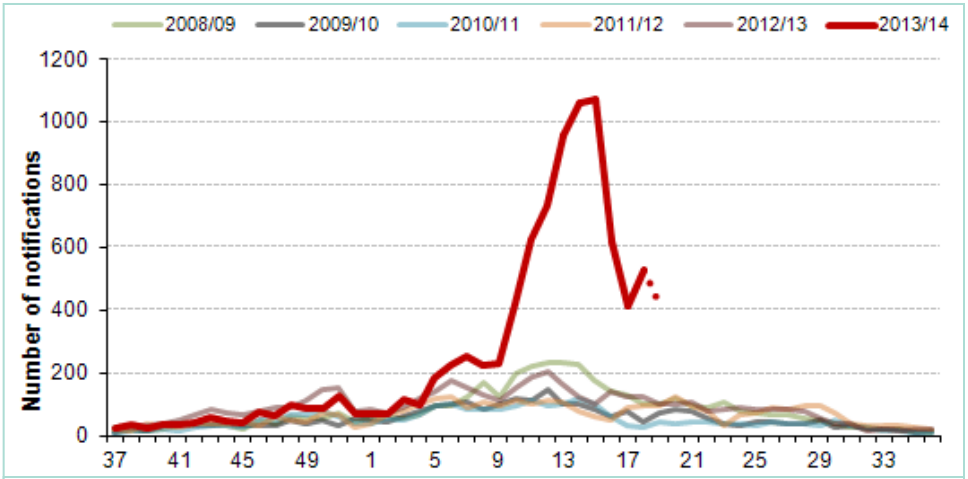
- Empiric treatment based on supportive history and erythema migrans rash
- Serology negative for up to 2 weeks
- Non-CNS: Amoxycillin for 14 days
- CNS or cardiac: Ceftriaxone 21 days
- Doxycycline only if >12yo
- Complications include facial nerve palsy

Case: Samuel

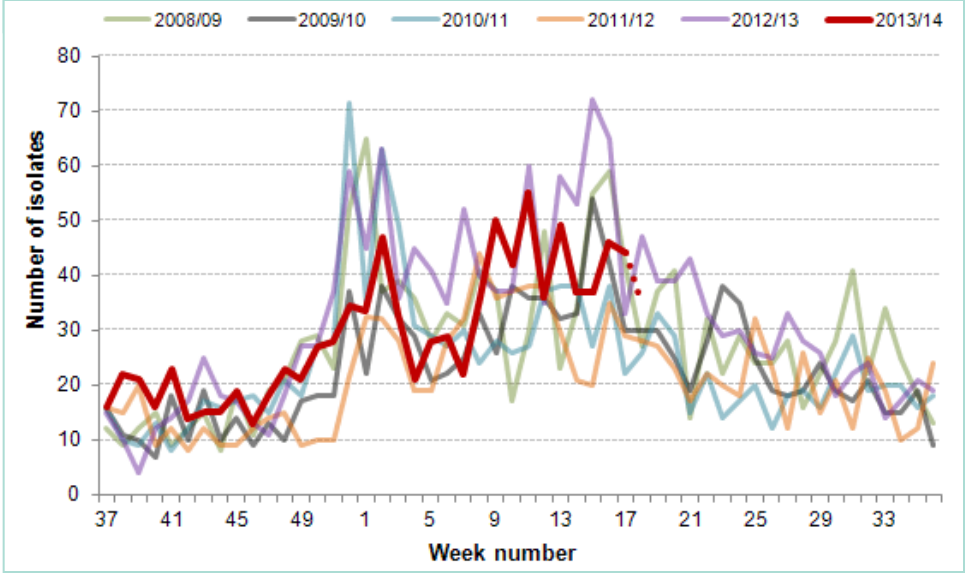
- 3yo
- Fever for 5 days
- Blanching red rash, dry lips, red tongue
- Cervical lymphadenopathy



Scarlet fever



Invasive group A streptococcus

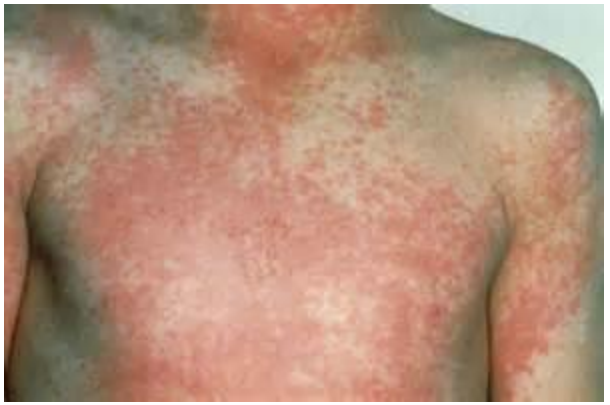


Source: HPE

Scarlet Fever

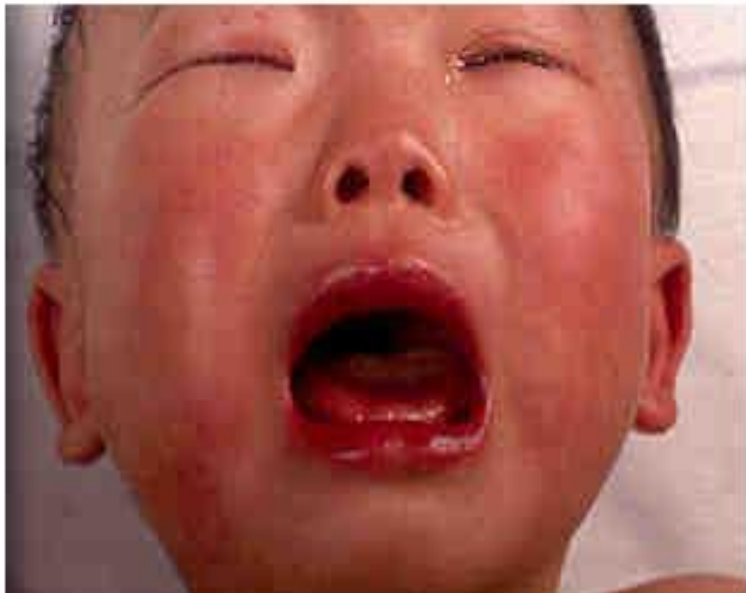
- Differential
  - Adenovirus
  - EBV
  - Kawasaki disease
  - Parvovirus – slapped cheek
- Differentiating from other conditions:
  - Sandpaper texture to rash
  - Pastia's lines: petichiae in axillary folds
  - Pharyngitis (cf to Kawasaki disease)

- Treatment
  - Penicillin V for 10 days
  - Azithromycin for 5 days



Kawasaki Disease

- Fever > 5 days + 4/5 of:
  - Conjunctivitis
  - Oral mucositis
  - Cervical lymphadenopathy
  - Rash
  - Extremity changes
- Multiple manifestations
  - BCG site inflammation
- Treatment
  - IVIG 2g/kg +
  - Aspirin 30-60 mg/kg/day
  - Consider steroids



- Complications
  - Coronary Art aneurysm

Case: Naima

- 6yo
- Wakes at night, screaming
  - ?nightmares ?night terrors
- Vaginal itching and soreness
- Worm noticed on labia minora
- GP saw photo: threadworm – Rx mebendazole
- 1 month later – returned

- Referred to paediatrician

- Paediatrician: concerned about vaginal infestation
- Referred to gynaecologist
- Referred to HTD

Threadworm

- *Enterobius vermicularis*

- Mebendazole 100mg
  - Treat whole family
  - Repeat after 2 weeks
  - Only for age >6 months

- Hygeine
  - Shower perineum on rising
  - Keep nails short and scrub clean
  - Onesies in bed

Case: Khadija

- 13yo
- Diagnosed with asthma aged 6
- Seretide 100 Accuhaler 1 puff bd
- Last admission 3 years ago
- No oral steroids past 2 years

- Cough for past 10 days
- No fever
- No benefit from salbutamol

Pertussis

- Who is at risk?
  - Youngest infants (immunise mothers)
  - Teenagers (waning immunity)
- Diagnosis
  - <14 days: pernasal swab for PCR
  - (aged 5-16, use oral fluid swab for IgG)
  - >14 days: serology
- Treatment
  - <21 days from onset: azithromycin/clarithromycin

Pertussis: chemoprophylaxis

Group 1

Individuals at increased risk of severe complications ('Vulnerable')

- Infants under 1 year who have received less than 3 doses of pertussis containing vaccine

Group 2

Individuals at increased risk of transmitting to 'vulnerable' individuals in 'group 1' who have not received a pertussis containing vaccine more than 1 week and less than 5 years ago

a) Pregnant women (> 32 weeks gestation)
b) Healthcare workers working with infants and pregnant women
c) People whose work involves regular, close or prolonged contact with infants too young to be fully vaccinated (< 4 months)
d) People who share a household with an infant too young to be fully vaccinated (< 4 months)

Only if contact <21 days

Source: HPE

Vaccines

- Recent changes
- Egg allergy and contraindications

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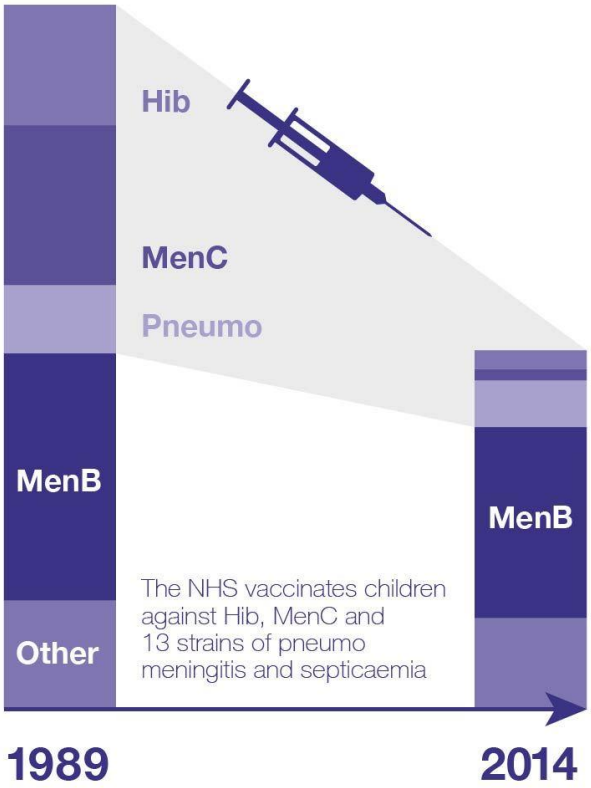

Cases of bacterial meningitis and septicaemia have halved in the past 25 years but there are still nearly 10 new cases in the UK every day

Average UK cases per year since **2000**

Anyone can get it but **young children & teenagers** are most at risk

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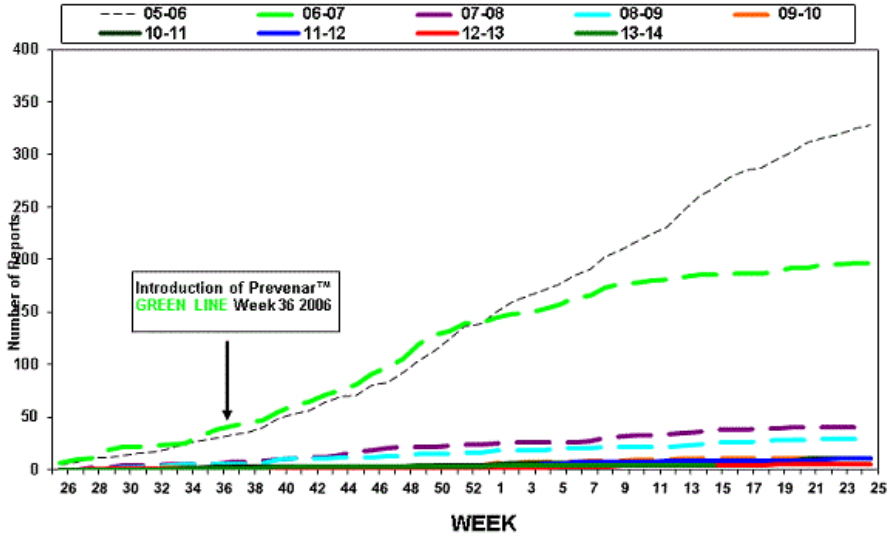
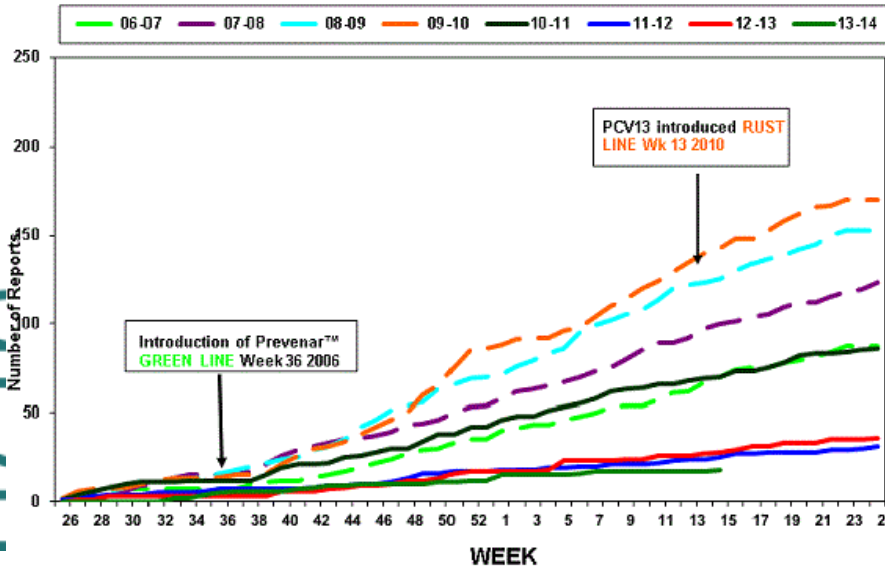
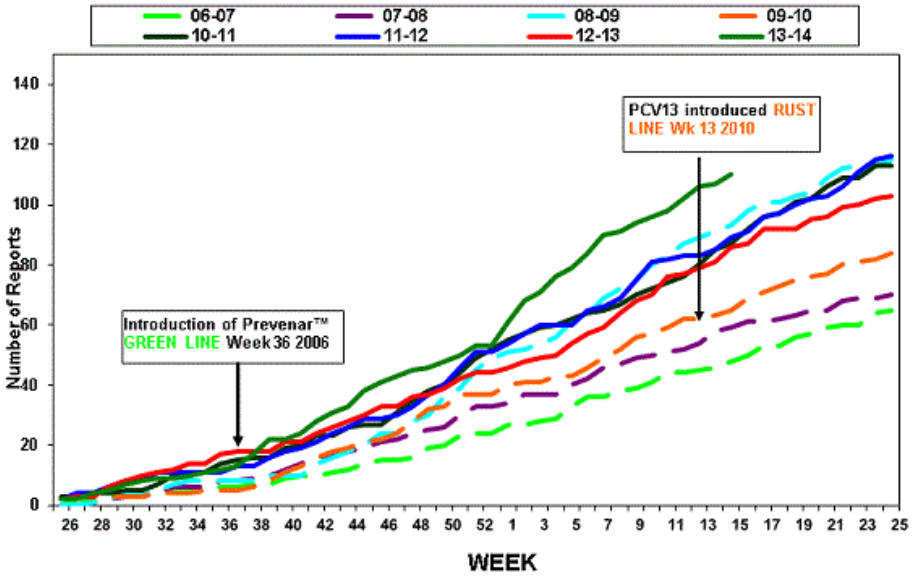
Slide: Meningitis Research Foundation

Invasive pneumococcal disease: can we eradicate it?

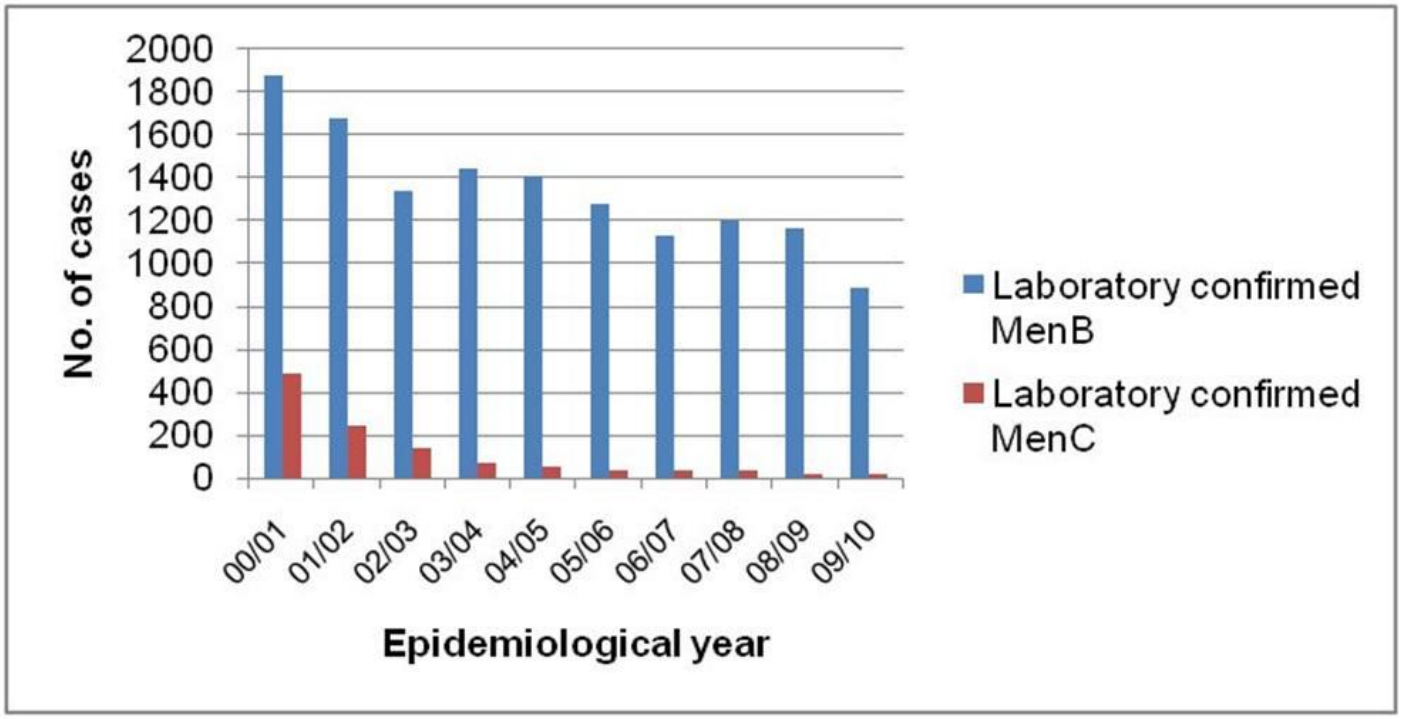


Source: HPE





Meningococcal disease: changing times



Source: Meningitis Research Foundation

Meningococcal group B vaccine: *Bexsero*

- Immunogenic in all age groups
- OMV + 3 meningococcal proteins
- OMV component efficacy proven in NZ (73%)
- Strain coverage estimated at 88%
- Likely more febrile reactions

- March 2014
  - JCVI recommended 2+1 schedule (2,4, 12 months)

Case: Umar and Uthman

- Umar
  - 14 years old, observant Muslim family
  - Asthma – well controlled on Seretide Accuhaler
  - Egg and peanut allergy – never anaphylaxis
    - Seasonal flu vaccine?
    - Travelling to Nigeria – Yellow fever vaccine?

- Uthman
  - 18 months old
  - Egg allergy
    - MMR?
    - Yellow fever?

Inactivated intramuscular influenza vaccine

Inactivated intramuscular vaccine (number of different brands)	Children aged six months and older and adults, although some of the vaccines are not authorised for young children – see table 19.6	Single injection of 0.5ml (see note above) Children aged six months to under nine years who have not received influenza vaccine before should receive a second dose of vaccine at least four weeks later.

Source: Green Book

Live attenuated nasal vaccine: *Fluenz*

Vaccine type	Authorised age indication	Dose
Live attenuated intranasal vaccine - Fluenz®	Children aged two to under 18 years (see precautions and contraindications)	Single application in each nostril of 0.1ml Children **NOT in clinical risk groups** only require one dose of this vaccine. Children in **clinical risk groups** aged two to under nine years who have not received influenza vaccine before should receive a second dose of vaccine at least four weeks later.

Greater efficacy
Broader strain coverage
Longer lasting protection

Why use this if <2yo highest risk?
Herd protection

Source: Green Book

Live attenuated nasal vaccine: *Fluenz*

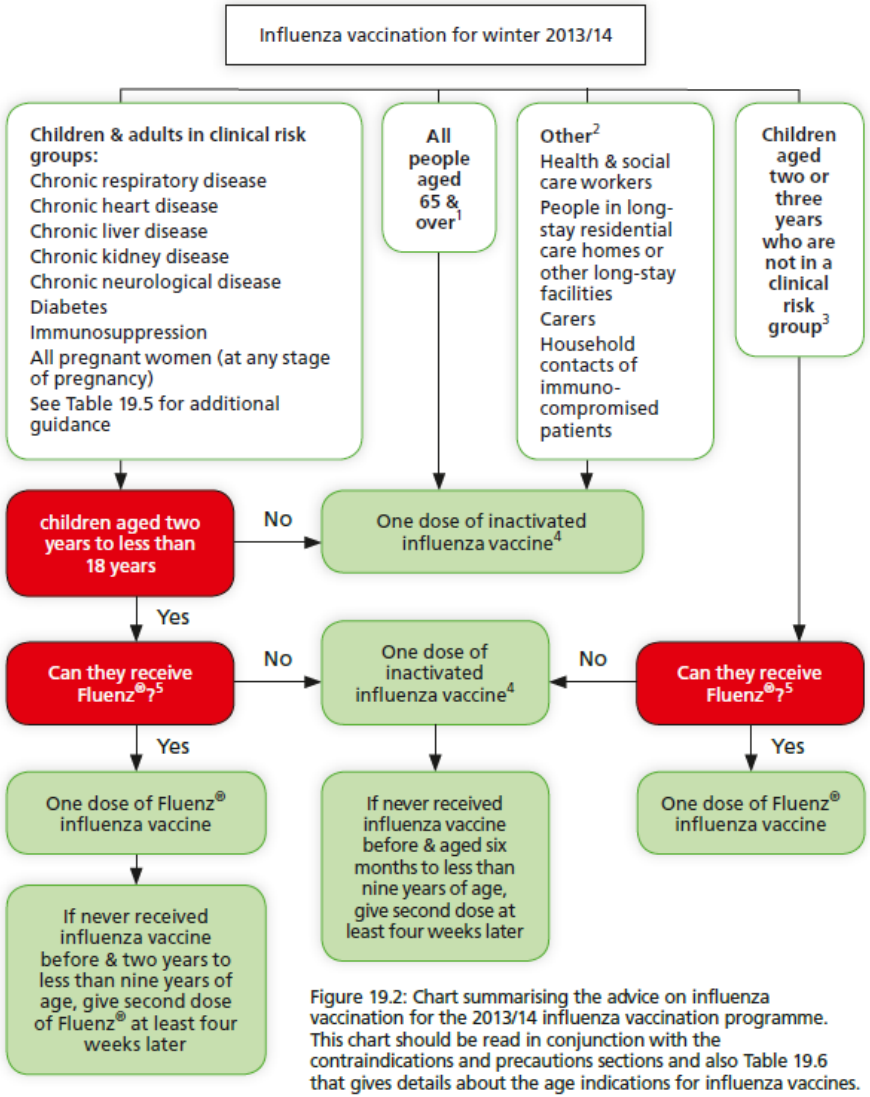


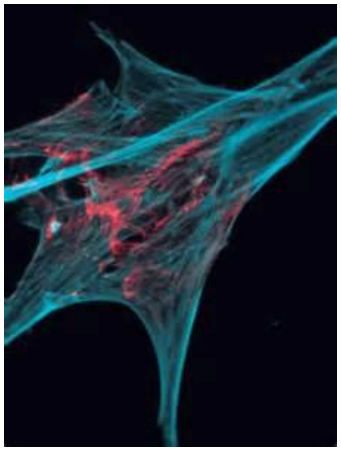
Figure 19.2: Chart summarising the advice on influenza vaccination for the 2013/14 influenza vaccination programme. This chart should be read in conjunction with the contraindications and precautions sections and also Table 19.6 that gives details about the age indications for influenza vaccines.

- ***Contra-indications***
- Anaphylaxis to vaccine or components
- Immunodeficient
- Immunosuppressed
- On aspirin
- Wheezing at the time
- Asthma BTS Step 4+

- ***Not contra-indications***
- Inhaled steroids
- Low dose oral steroids
- Asthma BTS Step 1-3

Source: Green Book

Egg Allergy & Vaccines



Chick embryo fibroblast

MMR

Embryonated hen's egg

Influenza

Egg Allergy & Influenza Vaccine

Risk of reaction low
Higher than for MMR

- Inactivated IM vaccine: ovalbumin <12ug/ml
  Safe in 1° care
  In 2° care: asthma BTS 4+ / egg anaphylaxis

- LAIV
  Insufficient safety data
  Contraindicated
  Safety trials in progress 'SNIFFLE'

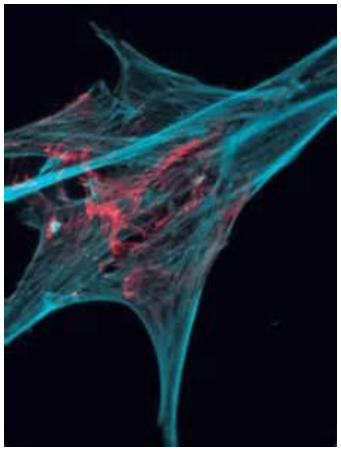
Egg Allergy & Yellow Fever Vaccine

Risk of reaction - data more limited

- Live attenuated yellow fever vaccine
  - Contraindicated if egg anaphylaxis

  - Vaccine skin prick test and ID test dose
    In specialist clinic (Evelina Childrens Hospital)

Egg Allergy & MMR



Minimal egg protein content
Reactions to gelatine / neomycin rather than egg

- MMR vaccine
  Safe in 1° care
  If history of anaphylaxis to previous vaccines, refer to allergy clinic

LAIV – contains porcine gelatine

Rabbi Abraham Adler from the Kashrus and Medicines Information Service, said:
It should be noted that according to Jewish laws, there is no problem with porcine or other animal derived ingredients in non-oral products. This includes vaccines, including those administered via the nose, injections, suppositories, creams and ointments.

In 2001, the World Health Organization consulted with over 100 Muslim scholars and confirmed that the gelatine used is considered transformed. A summary report on the findings of more than one hundred Islamic legal scholars who met in 1995 to clarify Islamic purity laws states the following:
Transformation which means the conversion of a substance into another substance, different in characteristics, changes substances that are judicially impure into pure substances, and changes substances that are prohibited into lawful and permissible substances.

Referral pathways

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HTD walk-in or Phone or Written Referral < 18 years
If unsure regarding urgency, discuss with paeds reg

ED walk-in < 18 years

Non-urgent
Paediatric ID clinic
(1st + 3rd Monday PM)
Children & Young People's Outpatients

Send referral to:
PaedsGrading@uclh.nhs.uk
or request referral via Choose & Book

Next few days
Paediatric Rapid Referral Clinic
(Mon-Fri)
Children & Young People's Outpatients

Send referral to:
PaedRapidReferrals@nhs.net
or fax to:
0203 447 9381

Same day

< 16 years or safeguarding concerns	**> 16 years and no safeguarding concerns**
Direct to ED Refer paediatrics Bleep 5301	HTD walk-in Clinic
Further advice: Tropical concerns: HTD reg Non-tropical: Dr Cohen / GOSH	If admitted: notify paeds reg (joint care)

Possible safeguarding concerns?

Have you considered – trafficking – sexual exploitation?

9-5 Child safeguarding Named Nurse Polly Smith
(07984389643)
24 hours Paediatric Reg or Consultant

Contacts

Paediatric reg bleep 5301
Paediatric consultant 07803 853567
HTD registrar 07908 250 924

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