

20.1 Scope and Purpose

- 20.1.1 This document is intended for use in the UK in event that the World Health Organisation declares that an influenza pandemic has started,¹ and the Department of Health in England (UK-wide lead agency on pandemic influenza, including the devolved administrations) has declared UK Pandemic Alert Level 2 (cases of pandemic influenza identified within the UK).
- 20.1.2 **These guidelines are not relevant for the management of patients affected by seasonal/interpandemic influenza, lower respiratory tract infections or community acquired pneumonia.**
- 20.1.3 Once an influenza pandemic is underway, users are strongly urged to ensure that they refer to the most up-to-date version of these guidelines (from web-based access points).

20.1 Clinical features in children

- 20.1.1 The commonest presenting features of influenza during an epidemic are fever, cough and rhinorrhoea and, in older children, pharyngitis and headache. The clinical features may differ during a pandemic.
- 20.1.2 Children with underlying respiratory or cardiac disease, immune compromise or who are non-ambulant are more likely to be severely affected.
- 20.1.3 The younger the child the more likely hospital admission will be needed.
- 20.1.4 The severe and life-threatening complications of influenza are likely to be
- Bacterial pneumonia
 - ARDS
 - Encephalopathy or encephalitis presenting as seizures or altered mental status.

20.3 Severity assessment in children (See Appendix 5)

- 20.3.1 Coughs and mild fevers --- Treated at home by parents with antipyretics and fluids (Note: aspirin should not be used in children)
- 20.3.2 High fever (>38.5°C) and cough or influenza like symptoms --- Advice from community Health professional. If there are no features which put them at high risk of complications they should be treated with oseltamivir, and given advice on antipyretics and fluids. Children aged <1 year and those at risk of complications (Table 12.1) should be seen by a GP.
- 20.3.3 High fever (>38.5°C) and cough or influenza like symptoms PLUS at risk group ----- Seen by GP/A & E consultation.
- Cough and fever (or influenza like illness) and temperature >38.5°C AND
Children with chronic disease (see Table 12.1)
Or one of below features
- Breathing difficulties
 - Severe earache
 - Vomiting > 24 hours
 - Drowsiness
- These children may be considered at increased risk of complications and an antibiotic given as well as oseltamivir (in those >1 year of age) and advice on antipyretics and fluids. Children aged <1 year with none of the above features should be treated with antipyretics and fluids with a low threshold for antibiotics if they become more unwell.

20.3.4 When to refer for admission?

Indicators are:

- Signs of respiratory distress.
Markedly raised respiratory rate

grunting
□ recognize □ Is recession
breathlessness with chest signs

- Cyanosis
- Severe dehydration
- Altered conscious level
- Complicated or prolonged seizure
- Signs of septicaemia – extreme pallor, hypotension, floppy infant

20.3.5 Assessment in hospital. Triage for admission to wards, HDU or PICU. Most children admitted to hospital are likely to need oxygen therapy and/or intravenous support as well as antibiotics and oseltamivir.

a) Indications for transfer to High Dependency or Intensive Care

- the child is failing to maintain a SaO₂ of >92% in FiO₂ of >60%
- the child is shocked
- there is severe respiratory distress and a raised PaCO₂ (> 6.5 Kpa)
- there is a rising respiratory rate and pulse rate with clinical evidence of severe respiratory distress with or without a raised PaCO₂
- there is recurrent apnoea or slow irregular breathing
- there is evidence of encephalopathy

20.3.6 What to do when there are no PICU beds available?

Children will have to be triaged on the basis of the severity of their disease a) acute and b) co-existing and the likelihood of their achieving full recovery

20.4 General investigations for children in hospital

20.4.1 A full blood count with differential, urea, creatinine and electrolytes, and liver enzymes and a blood culture should be done in all severely ill children.

20.4.2 A CXR should be performed in children who are hypoxic, have severe illness or who are deteriorating despite treatment.

20.4.3 Pulse oximetry should be performed in every child being assessed for admission to hospital with pneumonia.

20.5 Microbiological/virological investigations in hospital

20.5.1 Early pandemic recommendations. (UK Alert levels 1-3)

A. Virology – all children

- Nasopharyngeal aspirate or nose and throat swabs

B. Bacteriology – children with influenza related pneumonia

- Blood culture (before antibiotic treatment is commenced)
- Sputum samples obtained from older children
- Paired serological examination for influenza/other agents.

20.5.2 Established pandemic recommendations (UK Alert level 4)

A. Virology – not routinely recommended

B. Bacteriology – children with influenza related pneumonia

- Blood culture (before antibiotic treatment is commenced)
- Sputum samples obtained from older children

- Paired serological examination for influenza/other agents

20.6 General management of children admitted to hospital

- 20.6.1 Where possible children should be cohorted using rapid virological tests.
- 20.6.2 Patients whose oxygen saturation is 92% or less while breathing air should be treated with oxygen given by nasal cannulae, head box, or face mask to maintain oxygen saturation above 92%.
- 20.6.3 When children are unable to maintain oral intake supplementary fluids should when possible be given by the enteral route. Intravenous fluids in those with severe pneumonia should be given at 80% basal levels.
- 20.6.4 Children can be safely discharged from hospital when
7. Child is clearly improving
 8. is physiologically stable
 9. can tolerate oral feeds
 10. respiratory rate is < 40/min (<50/min in infants)
 11. awake oxygen saturation is >92% in air.

20.7 Anti-viral therapy in children

- 20.7.1 In the setting of a pandemic, children should only be considered for treatment with antivirals if they have all of the following:
- an acute influenza-like illness (see definition in clinical section)
 - fever (>38.5°C) *and*
 - been symptomatic for 2 days or less
- 20.7.2 Oseltamivir is the anti-viral agent of choice.
- 20.7.3 In children who are severely ill in hospital oseltamivir may be used if the child has been symptomatic for <6 days (but there is no evidence to demonstrate benefit or lack of it in such circumstances)

20.8 Antibiotic therapy in children

- 20.8.1 Children a) who are at risk of complications of influenza or b) with disease severe enough to merit hospital admission during an influenza pandemic should be treated with an antibiotic that will provide cover against *S pneumoniae*, *Staph aureus* and *H influenzae*.
- 20.8.2 For children under 12 years co-amoxiclav is the drug of choice. Clarithromycin or cefuroxime should be used in children allergic to penicillin. For children over 12 years doxycycline is an alternative.
- 20.8.3 Oral antibiotics should be given provided oral fluids are tolerated.
- 20.8.4 Children who are severely ill with pneumonia complicating influenza should have a second agent added to the regime (eg clarithromycin or cefuroxime) and the drugs should be given intravenously to ensure high serum and tissue antibiotic levels.

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