

National Minor Illness Centre

Management of H1N1 Influenza: Desktop Guide 21st November 2009

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H1N1 Diagnostic criteria

- Fever (pyrexia $\geq 38^{\circ}\text{C}$) or a history of fever,
AND
- influenza-like illness (TWO OR MORE of the following symptoms: cough; sore throat; rhinorrhoea; limb or joint pain; headache; vomiting or diarrhoea)
OR
- severe and/or life-threatening illness suggestive of an infectious process

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Diagnostic criteria - comment

- It is impossible to distinguish H1N1 influenza on clinical grounds from many other common viruses
- The most frequent symptoms are cough, fever, sore throat, malaise and headache
- Primary care clinicians will need to cope with much diagnostic uncertainty
- In July, only 13% of patients with these symptoms were suffering from H1N1 flu (*BMJ 2009;339:b3247*)

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Clinical Presentation¹

- 50% of those infected have no / mild symptoms
- Cases mainly occur in children and young adults. Complications are more likely in obese patients.
- The spectrum of disease ranges from non-febrile, mild upper respiratory tract illness to severe or fatal pneumonia
- The infectious period is probably from two days before symptoms start until five days afterwards (maybe seven days in children)

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H1N1 in Pregnancy

- Pregnant women are more at risk of respiratory complications, especially in the third trimester
- The evidence for an increase in the rate of congenital malformations, and for an increased risk of miscarriage, is conflicting
- Lowering fever with paracetamol is recommended, and thought to reduce the teratogenic risk

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Differential Diagnosis includes:

- Other respiratory viruses
- Pyelonephritis
- Meningitis / septicaemia
- Mastitis
- Malaria
- Leptospirosis

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Assessment - history

- Immunocompromised?
- Rigors?
- Rash?
- Travel outside Europe / USA?
- Urinary symptoms?
- Lactating?
- In contact with contaminated water (e.g. rivers or sewers)?

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Face to face assessment is recommended if..

- Child aged under one year
- Seriously ill
- Rigors (urinalysis recommended)
- Breathless or c/o chest pain
- Confused
- Another important diagnosis needs to be excluded
- Fever lasting beyond five days (suggests secondary bacterial infection)

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Assessment - examination

- General condition, hydration
- Cyanosis
- Temperature
- Respiratory rate
- Auscultation for crackles
- In children: nasal flaring, subcostal/intercostal recession, capillary refill time

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Assessment of the seriously ill patient

- Pulse
- Blood pressure in adults
- Oxygen saturation
- Level of consciousness

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Criteria for hospital admission²

- Severe respiratory distress
- Respiratory rate > 30/min in adults, > 40/min in children, or > 50/min under one year
- Oxygen saturation ≤ 94%
- Respiratory exhaustion
- Severe clinical dehydration
- Clinical shock
- Altered conscious level
- More details are in the DH Clinical Package²

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Fever in babies

- Use an **axillary** thermometer in babies aged under four weeks
- High fever alone is not an indication for hospital admission, EXCEPT in babies under six months (NICE guideline on feverish illness in children under five)³:
- Admit if:
 - Temperature >38°C and aged under 3 months
 - OR
 - Temperature > 39°C and aged 3-6 months

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Antiviral medicines -
always prescribe if:

- Severe illness
- Immunocompromised
- Diabetes
- Lung, heart, kidney or neurological disease
- Asthma (with treatment within the last three years)
- Pregnant woman
- Aged under 5 or over 65

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NHS Choices, 11th August⁴:

- “The government’s Scientific Advisory Group for Emergencies (SAGE) believes there is still some uncertainty about the risk profile of the virus.
- While there is still this doubt, the government has decided to continue offering Tamiflu to **everyone** with swine flu at their doctor’s discretion”
- The UK is the only country to have adopted this policy, which differs from WHO advice.

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Prescribing antivirals

- Antivirals should be offered to patients with flu-like illness
- They need not be offered to those with minor symptoms, even if these fit the diagnostic criteria for H1N1
- They can be started more than 48 hours after the onset of the illness, if symptoms are worsening, but will be less effective
- The RCGP has a useful algorithm:
http://www.rcgp.org.uk/PDF/Assessment_Algorithm_updated.pdf

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Antiviral prophylaxis

- Not routinely recommended, unless:
 - the contact is at particularly high risk of complications from influenza
 - and**
 - the likelihood of exposure to the case while infectious is high, e.g. persons living and / or sleeping in the same household, and boy / girlfriends
- The prophylactic dose is the same as the treatment dose, but given once daily for ten days

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Antiviral vouchers

- Antiviral vouchers have been issued, which can be taken to any antiviral collection point
- A PIN number is no longer necessary
- For adults, the right hand side of the NHS prescription can be used to print antiviral prescriptions, if endorsed with “ACP”
- See:
http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_104492.pdf

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Which antiviral?⁵

- Oseltamivir capsules are suitable for most patients
- Liquid preparations of oseltamivir **should be reserved for children under one year**
- Zanamivir is recommended in pregnancy and renal impairment. It may also be preferable in people being treated for HIV infection: see <http://www.hiv-druginteractions.org/>

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Oseltamivir: new interaction

There are no official warnings yet, but the following new interaction has been reported by pharmacists on medicine information notice-boards:

- **Methotrexate** levels may be increased by concomitant oseltamivir - toxicity monitoring is required.

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Dose of oseltamivir for treatment⁶

Age of patient	Weight	Capsule	Dose for 5 days
1-3 years	<15 kg	30mg	30mg twice daily
3-7 years	15-23 kg	45mg	45mg twice daily
7-13 years	23-40 kg	30mg x 2	60mg twice daily
Over 13 years	>40 kg	75mg	75mg twice daily

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Giving oseltamivir capsules to children:

- Pour the capsule contents into a small amount (<5ml) of dessert topping, apple sauce or yogurt to mask the bitter taste
- Stir, and give the entire contents to the patient
- The contents should be swallowed immediately after preparation

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Oseltamivir for babies

- Oseltamivir is not licensed for the treatment of children aged under one year, but it is recommended by the European Medical Association⁷
- Oseltamivir may be ineffective in neonates and very young infants because they may not be able to metabolise oseltamivir to its active form
- If oseltamivir is used "off-label", this must be carefully explained and documented

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Oseltamivir – change in dosage

- On 20th November, the recommended dose for babies was changed. The 12mg/ml oseltamivir suspension has been quarantined, so all dosages now refer to the 15mg/ml oral solution
- The new treatment dose, twice daily for five days, is:
 - 0-1month: 2mg/kg
 - 1-3 months: 2.5mg/kg
 - 3-12 months: 3mg/kg

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Side effects of oseltamivir⁵

- Common: nausea, vomiting, abdominal pain, diarrhoea, headache, conjunctivitis
- Unusual: rash, hepatitis, arrhythmias, neuropsychiatric disorders (in children and adolescents), visual disturbances, Stevens-Johnson syndrome, and toxic epidermal necrolysis
- These side effects mostly occur only after the first dose of the medicine, and will usually stop as treatment continues. They can be reduced by taking the medicine with food

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Zanamivir diskhaler

- Adult and child over 5 years:
 - for treatment: two 5mg blisters to be inhaled twice a day for five days
 - for prophylaxis: two 5mg blisters to be inhaled once a day for ten days
- Side effects (rare): bronchospasm, respiratory impairment, angioedema, urticaria, and rash; also reported, neuropsychiatric disorders (especially in children and adolescents)
- Caution: asthma

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Other management

- Antipyretics should not be used routinely, because they may delay recovery^{3,8}
- However, in pregnancy their use may reduce the risk of congenital abnormalities⁵
- Their analgesic effects may be useful for symptom control
- Fluid intake should be increased, to replace that lost in sweat and secretions

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Other management¹

- If the oxygen saturations are low, oxygen therapy should be considered while awaiting hospital referral
- Steroid therapy may be useful in hospital patients with septic shock and adrenal insufficiency, but it has been shown to increase the risk of secondary infection so is not recommended in primary care
- Patients taking warfarin should have their INR checked and report any unusual bleeding or bruising

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Integrated Health

- Large doses of Vitamin C (up to 6000mg daily for five days) may reduce the duration of upper respiratory tract infections, and possibly also prevent and reduce the duration of pneumonia^{9,10}
- Echinacea and pelargonium extracts may also help, though the evidence is less secure^{11,12}
- Psychosocial stress has a serious adverse effect on the immune system, and should be minimised¹³

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Sickness Certification

- The Department of Health has stated that it is acceptable to provide a Med 3 certificate after a telephone consultation for swine flu.
- See:
http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_106297.pdf

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Complications¹

- Acute respiratory distress syndrome¹⁴
- Viral pneumonia
- Secondary bacterial infections
- Rhabdomyolosis with renal failure¹⁵
- Myocarditis¹⁶
- Worsening of underlying conditions

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Diagnosis of secondary pneumonia

- Symptoms: persisting or worsening fever, rigors, cough, bloodstained or rusty sputum, unilateral chest pain
- On examination: rapid respiration and pulse, crackles, bronchial breathing, dullness to percussion

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Treatment of bacterial pneumonia complicating influenza

- Pneumonia following influenza may be caused by staphylococcus aureus
- Therefore the first-line antibiotic is not amoxicillin ¹
- Co-amoxiclav or doxycycline (in adults) are the first line antibiotics
- Clarithromycin if allergic to penicillin, except for patients taking statins, who should be given azithromycin

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High dose clarithromycin, twice daily for seven days

- Adults and children over 12 years: one 500mg tablet
- Child:
 - under 8 kg, 7.5 mg/kg
 - 1–2 years, 62.5 mg
 - 3–6 years, 125 mg
 - 7–9 years, 187.5 mg
 - 10–12 years, 250 mg

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High dose azithromycin, once daily for three days

- Adult: 500 mg
- Child over 6 months: 10 mg/kg *or*
 - weight 15–25 kg, 200 mg
 - weight 26–35 kg, 300 mg
 - weight 36–45 kg, 400 mg

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DH Planning Assumptions, 3 September 2009 ¹⁷

- Clinical Attack Rate: up to 30% of population
- Peak Clinical Attack Rate: up to 6.5% of population per week
- Case Complication Ratio: up to 15%
- Case Hospitalisation Ratio: up to 1%, of whom up to 25% could require intensive care
- Case Fatality Ratio: up to 0.1%
- Peak Absence Rate: up to 12% of workforce

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References

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