## Antiviral pH1N1 Options in Various Populations

### Population

<table>
<thead>
<tr>
<th>Age</th>
<th>Treatment</th>
<th>Treatment Dose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 1 (&lt;3 months; use only if critical)</td>
<td>Tamiflu x 5 day (if oral use)</td>
<td>0.5mg x 5days</td>
<td>Limited data; info based on group's mortality risk</td>
</tr>
<tr>
<td>Age 1-6</td>
<td></td>
<td></td>
<td>Tamiflu Commercial Powder for Suspension: 125mg/ml (tintu ferris flavus)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; =&lt; 15kg</td>
<td>30mg  BID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 15-23kg</td>
<td>45mg  BID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 23-40kg</td>
<td>60mg  BID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 40kg</td>
<td>75mg  BID</td>
</tr>
<tr>
<td>Age 7-12</td>
<td>Ralenza x 5 day</td>
<td>2 inhalations BID</td>
<td>Ralenza indicated for age &gt; 7 yr in Canada FDA 75 yrs. Must be able to use the dislaker.</td>
</tr>
<tr>
<td>Age 13-18</td>
<td>Ralenza x 5 day</td>
<td>2 inhalations BID</td>
<td></td>
</tr>
<tr>
<td>Healthy Adult</td>
<td>Ralenza x 5 day</td>
<td>2 inhalations BID</td>
<td></td>
</tr>
<tr>
<td>Pregnancy &amp; Lactation</td>
<td>Tamiflu x 5 day</td>
<td>75mg po BID</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ralenza x 5 day</td>
<td>2 inhalations BID</td>
<td></td>
</tr>
<tr>
<td>Renal Impairment</td>
<td>Tamiflu x 5 day</td>
<td>CrCl: &gt; 20-29mL/min</td>
<td>No dose adjustment for Ralenza 10-20% may be absorbed.</td>
</tr>
<tr>
<td></td>
<td>CrCl: &gt; 10-19mL/min; AVOID, or 75mg 4x8h 11</td>
<td></td>
<td>Consider extending the treatment duration ICU:10days &amp;/or 75-150 mg BID (esp. if obese, &gt;150kg)</td>
</tr>
<tr>
<td>Critically Ill / ICU - severe, progressive disease</td>
<td>Tamiflu x 5 day</td>
<td>WHO 12, Arano 7 (depending on weight; renal fx permitting)</td>
<td>Ralenza for nebulizer/ventilator mechanical, not for reconstitution</td>
</tr>
</tbody>
</table>

### Other Populations

- **COPD / Asthma**
  - Tamiflu x 5 day | 75mg po BID | Avoid rebo (aerosol MICS, PRED, BOS) |

- **Pneumococcal vaccine**
  - If not previously vaccinated, for age < 6 years and/or if high risk: complicating pneumonia commonly associated with < 6 years old.
  - For mildly/morbidly associated with bacterial infection, a pneumococcal vaccine is recommended.

- **Surgical masks** useful for those in proximity of ILI; N95 respirator mask useful for occupational health care workers in very close contact (e.g. within 2 meters &/or swabbing/scoping) those with ILI.

### Antiviral for Treatment: Reserved

- For more complicated, moderate-severe presentations & those with risk factors such as pregnancy as may ↓ progression to severe disease / hospitalization. Ideally used within 48hr of symptom onset; used later esp. if severe disease, clinical deterioration or fever persists. Not recommended for mild illness with no underlying risk factors as in those situations shortens course by ~ 1 day & provides some symptom relief only, but if symptoms worsen or fails to improve within 72hrs, then treat.

### Other: Considerations for Underpervision

- **Tamiflu® (Oseltamivir)** Oral capsules:
  - 50,75,150mg (not only viral) infection e.g. pneumonia
  - Duration: Treatment po BID, usually x 5 days
  - Prophylaxis once daily, usually x 10 days

- **Ralenza** (Zanamivir) Inhalation - Duskhaler
  - Dose/Duration: Treatment BID inhalation x 5 days
  - Prophylaxis once daily inhalation x 10 days
  - SE: nausia +/- vomiting 10%; Rare: behaviour changes especially kids
  - Suspension Dosing Errors: an oral dosing dispenser with 30mg. 45mg and 60mg graduations has resulted in errors if directions given in mL or teaspoons, USA. Ensure units of measure in dosing instructions match those on the device official! In order of mg
  - Other: concerns about resistance if overused.

### GBS, CNS side effects:
- GBS: additional dose adjustment required for renal fx. Instructions can be found online.
- CNS side effects: gait disturbances; dose adjustment required for renal fx. Instructions can be found online.

### Other Links
- [CDC](http://www.cdc.gov)
- [WHO](http://www.who.int)
- [FluNet](http://www.fluenet.org)
- [Canadian Immunization Guide](http://www.immunization.gc.ca)
- [Healthlink](http://www.healthlinkonline.ca)
- [RxFiles](http://www.rxfiles.ca)
- [Healthline online](http://www.healthlineonline.ca)
- [Health Line](http://www.healthlineonline.ca)
- [MedicAlert](http://www.medicalert.com)

### Clinical Significance
- of DI's unknown!

### Critical Indications
- for drug interaction GBS: Guillain-Barre syndrome; LFK: influenza like illness; SE = side effect; CDC = Center for Disease Control; WHO = World Health Organization; PNEU = Pneumococcal vaccine

### References
- 1. WHO. 2009. Influenza (pH1N1). Available at: [www.fluenet.org](http://www.fluenet.org)
- 2. CDC. 2009. Influenza (pH1N1). Available at: [www.cdc.gov](http://www.cdc.gov)
- 3. FETR. 2009. Influenza (pH1N1). Available at: [www.fetr.com](http://www.fetr.com)
AS03-Adjuvanted H1N1 Pandemic Influenza Vaccine

**Arepanrix™ H1N1** (Link to Monograph: [http://www.gsk.ca/english/docs-pdf/Arepanrix_PIL_CAPA01v01.pdf](http://www.gsk.ca/english/docs-pdf/Arepanrix_PIL_CAPA01v01.pdf))

**Efficacy:** Expected to be excellent match to the pH1N1 strain-99% efficacy to pH1N1 2009 strain.

**Components:**

- **Antigen:** Swine influenza virus, inactivated, containing antigen equivalent to 2/California/7/2009 (H1N1)-like strain (X-179A) 3.75µg HA** per 0.5mL dose (*isolated from virus propagated in eggs; **HA = haemagglutinin) (egg allergy: if low risk, may administer vaccine & observe for 60min; if high risk egg allergy, initial test dose of 10% followed by 90% after 30minutes of observation if no reaction.)

- **Preservative:** contains 5µg Thimerosal USP per 0.5mL dose or 2.5 micrograms organic mercury (Hg) per 0.5mL dose; metabolized to ethyl Hg & excoriated in urine.

- **Adjuvant:0.5mL dose:** DL-α-tocopherol 11.86 mg, Squalene 10.69 mg, Polysorbate 80 4.86 mg. (Adjuvants not egg allergy: if low risk, may administer vaccine & observe for 60min; if high risk egg allergy, initial test dose of 10% followed by 90% after 30minutes of observation if no reaction.)

**Studies eval:** Efficacy & safety approval based on data from similar adjuvanted vaccines.

- **Pandemrix:** an H1N1 vaccine with (5.25 µg HA with AS03) vs non-adjuvanted data
  - Local & global side effects more common in adjuvanted group.

- **Arepanrix™ H5N1:** an H5N1 vaccine with AS03 data (~3500 studied; safety summary done after ~9800)

**Adverse Effects:** (more common) pain at injection site; muscle aches, lymmphadenopathy; (see monograph) Adverse effect reporting for immunizations: [http://phsphp.cac.gc.ca/imm/evali-eng.php](http://phsphp.cac.gc.ca/imm/evali-eng.php)

- A higher than expected number of reports of anaphylaxis with one lot of Arepanrix (A860C007A) Cause is being monographed.

- Recent data suggests that acetaminophen may → immune response to vaccines.**


**Note:** rates of pH1N1 in Canada have risen significantly over the week preceding 24Oct09


3 Arepanrix – ASO3 Adjuvanted Pandemic H1N1 Influenza Vaccine - Monograph [http://www.gsk.ca/english/docs-pdf/Arepanrix_PIL_CAPA01v01.pdf](http://www.gsk.ca/english/docs-pdf/Arepanrix_PIL_CAPA01v01.pdf)


13 Centers for Disease Control and Prevention (CDC). Updated interim recommendations for use of antiviral medications during the current H1N1 influenza. Oct 21, 2009. (http://www.cdc.gov/h1n1flu/influenza-guidance_h1n1.htm)


19 More than 2000 children and adults have been hospitalized with Pandemic (H1N1) 2009, including 12 children who died.

20 The Canada Immunization and Respiratory Infections Antiviral Use Task Force has issued a statement. [http://www.immunize.ca/content/products/ecps_english.cfm](http://www.immunize.ca/content/products/ecps_english.cfm)

21 75 mg po now then 30mg po in 48 hours (total 2 doses).

22 From August 30 to November 28, 2009, a total of 6,314 hospitalized cases including P/T except PE and 3 territories. From August 30 to November 28, 2009, a total of 6,314 hospitalized cases including 957 (15.2%) cases admitted to an intensive care unit (ICU) as well as 259 deaths had been reported. The Pandemic (H1N1) 2009 strain accounted for nearly 100% of the positive influenza A subtyped specimens. [http://www.phac-aspc.gc.ca/fluwatch/index-eng.php](http://www.phac-aspc.gc.ca/fluwatch/index-eng.php)

WHO updated Nov/09 H1N1 Revised Guidance http://www.who.int/csr/resources/publications/swineflu/c clinical_management_h1n1.pdf


Additional references:


