Pandemic (H1N1) 2009 – clinical considerations

Preparation and information must strike a balance between complacency and panic, writes David Hanlon

SINCE THE FIRST REPORTS FROM MEXICO in April of a new strain of influenza in humans, it has spread around the globe, with substantial activity in the winter flu season in the southern hemisphere, and unusual summertime outbreaks in the northern hemisphere. This pandemic is officially classified by WHO as being of moderate severity, and given its stability and progress to date, there is every reason to expect that it will continue to spread over the coming months.

What can we learn from the clinical experience in countries that have already experienced large numbers of cases? What can we expect to see as the incidence in Ireland increases this winter, as seems inevitable? There is no real certainty about how the outbreak will evolve. So far, we have seen a level of influenza activity in the population similar in late summer to what we typically see in mid-winter as evidenced by the sentinel GP surveillance practices.[1] This is expected to rise rapidly at some stage in the autumn or winter, peak over a few weeks and then subside again.

Assuming the overall moderate nature of the pandemic persists, we may not see the level of severe illness that had been predicted in the pre-pandemic planning, but it would be naive if not foolish to expect that this pandemic will not put some sectors of our health service under severe pressure. There will be more deaths and it will pose a significant challenge.

Guidance documents and public health policy have been developed and are regularly modified as the situation unfolds. The reader should refer to **www.hpsc.ie**[2] for up-to-date information. Queries on particular outbreaks in schools or institutions can be addressed to local public health specialists.

Clinical features

The classical clinical presentation of influenza is one of a sudden onset of fever, myalgia and upper respiratory symptoms with cough. The patient is relatively incapacitated with the symptoms for a period of perhaps 48 hours before making a steady recovery over the following days, with cough and fatigue tending to persist in the convalescent period. The textbook complications of secondary bacterial infections of upper and lower respiratory tract occur in a substantial minority, including pneumonias of staphylococcal and non-staphylococcal aetiology, as well as exacerbations of underlying chronic illness. These occur particularly in the elderly and those with other comorbidities.

In reality however, pandemic influenza covers the full clinical spectrum, ranging from asymptomatic infection and people with mild and relatively non-specific symptoms, including diarrhoea or vomiting, right through to fulminant viral pneumonias leading to rapid deterioration, adult respiratory distress syndrome (ARDS) and death or prolonged periods in ITU.

The diagnosis will be made on the basis of the clinical features, with testing largely reserved for hospitalised patients and those with severe illness.

Features of influenza in particular subgroups

It is useful, if slightly artificial, to consider influenza by reference to particular population subgroups. The points illustrated are most relevant but not necessarily exclusive to the populations identified.

Children are most susceptible to influenza infections, and represent the population with the highest levels of influenza-related hospitalisations in the US experience.[3] The clinical presentation may be different, with fever and GI or URTI symptoms. In practice, it may be difficult to reliably differentiate this from other viral illness on clinical grounds, other than on a probability basis. More severe illness can present as sepsis and collapse, such as we typically associate with meningitis and septicaemia *(see Table 1)*.

Current advice[4] is to give oseltamivir (Tamiflu) to children under five with a clinical diagnosis of influenza. In practice, a minority with severe presentations may warrant hospital assessment and consideration of pre-hospital administration of penicillin if a diagnosis such as meningococcaemia is a possibility. Those with relatively mild illness may go undiagnosed and thus untreated, the majority will make uncomplicated recoveries anyway. The risk, as with any viral illness, is that some patients (adult or child) will deteriorate rather than improve, and the need to monitor and seek review as necessary is worth emphasising with parents. The younger the child the greater the attendant risk of complications.

Pregnant women are a group at high risk from influenza, and where management can be controversial. Early in pregnancy there is particular risk to the foetus from the hyperpyrexia. Pregnant women[5] with flu in the first trimester particularly should take paracetamol and ensure that they continue folic acid supplementation: if they have other risk factors, or if requested, or clinically their illness is moderate or severe they should be given oseltamivir. Pregnant women with influenza in the second and third trimester should be treated with oseltamivir because they are among those at

highest risk of severe illness and death from influenza.

People with significant comorbidities *(see Table 2)* are obviously at risk of developing complications from influenza, and should be given oseltamivir as soon as possible, although it is still worthwhile initiating antivirals later in the illness where presentation or prescription was delayed. There are few interactions or dosage restrictions required other than in the setting of renal failure.[6]

The incidence of pandemic influenza is low in those over 65, presumably related to an immunity acquired when they were younger: nevertheless, those who do contract influenza are significantly more likely to have comorbidities and to develop complications than younger persons. An afebrile presentation is also more common in older people.

The low risk patient?

The majority of the population, however, is encompassed by those older children, teenagers, young and middle-aged adults who have no particular risk factors. Treatment of these patients with oseltamivir is not routinely advocated unless they are particularly unwell (or have risk factors). This group highlights some of the more unpredictable and challenging features of pandemic influenza, of which we need to be particularly aware.

It is the easiest group to be complacent about, because the vast majority have a mild illness with a straightforward uncomplicated course. While this group has the lowest level of hospitalisation, the largest proportion of deaths reported in the US was in people aged between 25 and 50 years. This phenomenon would seem to be related to the development of a primary influenza pneumonia.

Influenza (viral) pneumonia

No useful predictive indicator has been identified for this complication, which affects a tiny minority, perhaps 1 in 5,000 cases. It is characterised by the acute onset of severe respiratory compromise three to five days into what until that point appeared to be a routine influenza. These patients are reported to deteriorate suddenly, with vascular and respiratory collapse, development of ARDS and all the associated complications that follow. They often require prolonged and sometimes extreme levels of treatment in intensive care, despite which many will die. Typically these patients can be 20 to 40 days in intensive care, with perhaps 50% mortality.

It is critically important that everyone who gets influenza or cares for someone with influenza is aware of this small risk of developing severe complications, and that they watch for signs of deterioration such as those listed in *Table 3*.

While it is evidently true to say that people die from influenza every year, this pattern of severe illness in a minority of younger people is different to what is seen in seasonal influenza, and is something of a hallmark of some previous pandemic outbreaks. It is one of the reasons why vaccination of the whole population is planned once sufficient vaccine becomes available. Vaccination uptake by frontline healthcare workers and high-risk patients is a priority.

How bad will the pandemic be?

If similar patterns are followed here as occurred in Australia, we can expect significantly increased levels of illness among the general population over a period of perhaps eight to 10 weeks this winter. There will be associated school and work absences, and increased attendances for acute illness in general practice and A&E departments, which will amount to them being even busier than usual. With advance planning and preparation of services, along with education of the population, this will generally be manageable. Individual areas of service will however, come under more severe pressure, such as availability of ITU beds, or where a large local outbreak occurs in a community or residential institution, or among healthcare workers. These are likely to attract disproportionate publicity and comment, and could lead to higher levels of anxiety among the general population.

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Table 1

Paediatric resp. distress severity assessment

	Mild	Severe
Infants	Temperature < 38.5ºC Resp rate < 50 breaths/min Mild recession Taking full feeds	Temperature > 38.5ºC Resp rate > 70 breaths/min Moderate to severe recession Nasal flaring Cyanosis Intermittent apnoea Grunting respiration Not feeding
Older children	Temperature < 38.5ºC Resp rate < 50 breaths/min Mild breathlessness No vomiting	Temperature > 38.5ºC Resp > 50 breaths/min Severe difficulty in breathing Nasal flaring Cyanosis Grunting respiration Signs of dehydration

Table 2

Defined risk groups

- Chronic respiratory, heart, kidney, liver or neurological disease
- Immunosuppression (whether caused by disease or treatment)
- Diabetes mellitus
- People aged 65 years and older
- Children less than five years (children less than two years are at higher risk for severe complications)
- People on medication for asthma
- Severely obese people (BMI ≥ 40)
- Pregnant women
- Haemoglobinopathies

Table 3

When patients should re-consult

- Shortness of breath at rest or while doing very little
- Painful or difficult breathing
- Coughing up bloody sputum
- Drowsiness, disorientation or confusion
- Fever for three days and not starting to get better (or getting worse)
- Starting to feel better then developing high fever and feeling unwell again

Modified from Pandemic Influenza Expert Group advice

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Your issues or observations welcome to feedback@icgp.ie

References on request