

Executive summary

1. Introduction

- a. This revised guidance, prepared in November 2008, replaces the draft version for consultation published in January 2007, and all other documents previously published by the Pandemic Influenza Expert Group (PIEG).
- b. The aim of the document is to provide timely, authoritative information on pandemic influenza, to provide clinical guidance for health professionals, and to provide public health advice for the public, public health professionals, and policy makers in the Department of Health and Children and other government Departments and agencies, all of whom will be involved in the response to an influenza pandemic.

2. Pandemic Phases

- a. The phases of a pandemic are subdivided as per WHO advice, with the addition of EU and Irish alert levels, allowing for a graded response to be planned.

3. Impact

- a. It is not possible to predict when the next pandemic will occur, which influenza strain will cause it, and how severely it will affect the world's population. However, when planning for a pandemic, PIEG recommends that the UK Health Protection Agency's model be used, and that a range of scenarios are considered, ranging from a clinical attack rate of 25%, with a hospitalisation rate of 0.55% of clinical cases, and a death rate of 0.37% of clinical cases; to a worst case scenario, with a clinical attack rate of 50%, a hospitalisation rate of 3.7% and a death rate of 2.5% of clinical cases.

4. Surveillance and situation monitoring

- a. Surveillance is an essential component of preparedness for pandemic influenza, and efforts are being made to continuously strengthen clinical and virological surveillance for seasonal influenza and for novel viruses. During the planning phase the PIEG advises that it is important to focus also on the development of template "situation monitoring" reports, i.e. reports that measure the health and non-health impact, and which contain for example information on absenteeism due to illness, use of healthcare and other resources etc.

- b. With regard to surveillance of antiviral and vaccine effectiveness, side effects and toxicity, PIEG recommends that this work be done in conjunction with ECDC, who is tendering for this work at present.
- c. During a pandemic, timely information on the number of deaths occurring will be essential. Recent changes to the Civil Registration Act, which allows for registration of deaths for up to 3 months following its occurrence, may jeopardise the capacity of the system to accurately and quickly measure the impact of a pandemic using mortality information. PIEG therefore recommends that consideration should be given to reviewing this Act, with a view to shortening the timeframe for death registration to 5 days.
- d. When the initial cases of pandemic influenza occur in Ireland, PIEG recommends that detailed case based enhanced surveillance is carried out, in order to accurately describe the epidemiology, clinical features and outcome. In addition information on contacts of pandemic influenza cases will need to be gathered. PIEG recommends that a national electronic contact tracing system is developed for this purpose.
- e. During the pandemic sentinel weekly GP and hospital surveillance will need to continue. In the interim, the sentinel hospital surveillance system needs to be strengthened. A system for active surveillance among a subset of hospitalised patients should be developed too.
- f. As a vital component of the response to pandemic influenza, PIEG recommends that planning for surveillance surge capacity be undertaken and resources are allocated to these tasks.

5. Public Health Response: Antiviral drugs

- a. Antiviral drugs are essential components of a comprehensive pandemic response. Pending the availability of virus specific vaccines, and assuming that they will be effective against the pandemic strain, they will be the only influenza-specific medical intervention available for use in a pandemic. PIEG recommends that they are used to prevent or reduce deaths and hospitalisations, to prevent morbidity, and to maintain essential services during a pandemic.
- b. Ireland has a stockpile of oseltamivir sufficient to treat 25% of the population, and of zanamivir sufficient to treat 20% of the population aged over 7 years. The emergence of resistance of A (H1N1) to oseltamivir during the 2007/2008 season is a cause of concern, and warrants ongoing review.

- c. During the pandemic alert period, PIEG recommends that oseltamivir treatment is used for any avian influenza cases. If an outbreak of highly pathogenic avian influenza occurs in birds in Ireland, PIEG recommends that antivirals should be used for prevention and control of avian influenza in occupational groups and other contacts exposed to dead or diseased birds.
- d. At the start of a pandemic, when isolated cases or small outbreaks are occurring in Ireland, PIEG recommends that contact tracing of family and health care worker contacts be carried out and that short term post exposure prophylaxis be offered.
- e. Later on, when cases are widespread in Ireland, PIEG recommends that all early symptomatic cases are treated, but that contact tracing and post exposure prophylaxis are discontinued.
- f. If the clinical attack rate is very high and stockpiles are not sufficient to treat all symptomatic persons, PIEG recommends that the following groups are prioritised for treatment: Persons hospitalised with influenza, ill health-care and emergency service workers, ill high risk persons in the community (those with chronic illnesses,) and high risk residents of institutions.
- g. PIEG, noting that significant logistical problems will arise in achieving timely and appropriate distribution and delivery of antiviral drugs, recommends that sufficient resources are put into planning a robust capacity in delivering antiviral drugs as needed as quickly as possible.

6. Public Health Response: Vaccines

- a. Vaccination is the ideal primary public health response in the event of an influenza pandemic. However there are significant delays, of at least 6 months, before a pandemic specific vaccine can be produced.
- b. Vaccination against seasonal influenza has 2 benefits, namely reducing the burden of influenza each year, and increasing vaccine production capacity. PIEG recommends that every effort is made to increase seasonal influenza vaccination coverage of all people at high risk in all settings (e.g. healthcare clinics, GP surgeries and workplaces) and to achieve the WHO target of 75% uptake of seasonal vaccination by older people by 2010.
- c. The goals for vaccination during a pandemic are to prevent and reduce death and hospitalisations, to prevent and reduce influenza related morbidity and to maintain essential services by protecting the health of essential service workers.

- d. PIEG recommends that Ireland should enter into an advanced purchase agreement with vaccine manufacturer(s) for sufficient vaccine to vaccinate the whole population, in the event of a pandemic emerging.
- e. PIEG recommends that initial supplies of the pandemic specific vaccine be prioritised to the following subgroups of the population:
 - i. Health care staff with patient contact (including ambulance staff), and staff in residential care homes for the elderly
 - ii. Providers of essential services e.g. fire, utilities, Gardaí, security, communications, defence forces, undertakers and essential healthcare staff without direct patient contact
 - iii. Those with high medical risk e.g. chronic respiratory or heart disease, renal failure, diabetes or immunosuppression due to disease or treatment, women in the last trimester of pregnancy, and children aged from 6 months to 23 months
 - iv. All over 65 years of age
 - v. Selected industries – maintenance of essential supplies e.g. pharmaceuticals
 - vi. Selected age groups, depending on advice from WHO e.g. children
 - vii. Offer to all

Please note that these priorities are subject to change as the epidemiology becomes evident.

- f. PIEG recommends that protocols for timely assessment of vaccine effectiveness should be drawn up in advance of a pandemic and that options for measuring vaccine uptake among priority groups and in the general population are examined as part of the planning process.
- g. Scientific data is emerging to demonstrate that “pre-pandemic” H5N1 vaccination might have a significant impact on the size, duration, morbidity and mortality of the pandemic, if the next pandemic were H5N1 derived. However there is no guarantee that the next pandemic will be H5N1 derived. PIEG recommends that the Department of Health and Children considers commissioning a cost-benefit analysis looking at various options for use of pre-pandemic H5N1 vaccine.
- h. Given that *Streptococcus pneumoniae* is one of the main pathogens responsible for secondary bacterial infection

following influenza infection, PIEG recommends that the benefits of pneumococcal vaccine is promoted among at risk groups and healthcare professionals.

7. Public health Response: Non pharmaceutical interventions in the pandemic alert period (WHO Phases 3, 4 and 5)

- a. Non pharmaceutical public health interventions include public health information, communications, personal measures such as respiratory hygiene and self isolation when sick, increasing social distance (school closures), measures at ports of entry, travel restrictions etc. In the pandemic alert period, PIEG recommends that the WHO approach to outbreak communications be adopted for all communications about influenza. The principles of the WHO approach include developing trust, announcing information early, being transparent, engaging and talking to the public and integrating risk communication into preparedness planning.
- b. PIEG recommends that information on respiratory hygiene should be promoted, including public campaigns and respiratory hygiene in healthcare settings, from Phase 3 on. A universal respiratory hygiene strategy should be adopted in all health care facilities now.
- c. In order to prevent spread of illness, PIEG recommends that cases of illness due to novel virus occurring during the pandemic alert period should be isolated and assessed in hospital. Cases should be interviewed in depth, and all contacts traced.
- d. PIEG recommends that all schools should have ready access to information on influenza and how to reduce the risk of infection, now, at Phase 3.
- e. PIEG recommends that closure of schools, universities and educational institutions could be considered during Phases 4 and 5 of the pandemic alert period, but only if clusters of cases due to novel virus were occurring in Ireland at that time, if transmission was occurring in these settings, and if the case fatality was high.
- f. Similarly, if during Phase 5, Ireland was experiencing clusters of cases, and the case fatality was high, PIEG recommends that population wide measures such as closing workplaces, discouraging mass gatherings etc should be considered.
- g. PIEG recommends that at Phase 4 and 5; a national medical helpline should be established to deal with individual queries or

- concerns, and to direct those with symptoms to the appropriate location for care and treatment.
- h. PIEG recommends that from Phase 3 on, advice and information on avoiding contact with high risk environments should be available for travellers to areas where outbreaks of novel influenza are occurring. From Phase 4 on, PIEG recommends that travellers should be advised to defer non-essential travel to affected areas.
 - i. From Phase 4 on, PIEG recommends that international travellers coming from, or going to affected areas, should be provided with Health alert Notices, be asked to self-report if they are ill, and to postpone travel if ill. Exit screening for travellers via questionnaire should be implemented.
 - j. From Phase 4 on, PIEG recommends that passengers who become ill on board, should be separated from other travellers, and the Public Health authorities in the destination and transit countries should be informed, so that contact tracing and control measures can be implemented.
 - k. PIEG recommends that consideration be given to the significant human resource implications of implementing these recommendations, and that manpower planning for pandemic influenza also includes planning for a robust public health infrastructure and sufficient surge capacity for public health.

8. Public health response: Non pharmaceutical interventions during the Pandemic (Phase 6)

- a. During the pandemic, the aims of non-pharmaceutical interventions are to slow the spread of infection, gaining time for the development of pandemic specific vaccine and other pharmaceutical measures, to decrease the size of the epidemic peak, and to reduce the total number of cases.
- b. PIEG recommends that the Pandemic Severity Index, a planning tool developed in the USA to characterise the severity of a pandemic in terms of numbers of cases and case fatality ratio, is used in order to implement interventions according to the levels of severity experienced in the population. Category 5 is the most severe category.
- c. During Phase 6, PIEG recommends that the WHO outbreak communications approach be taken to all risk communication activities in relation to pandemic influenza.
- d. PIEG recommends that information on respiratory hygiene should be promoted, including public campaigns and respiratory

- hygiene in healthcare settings. A universal respiratory hygiene strategy should be adopted in all healthcare facilities.
- e. PIEG recommends that during Phase 6, voluntary isolation of pandemic influenza cases when symptomatic.
 - f. PIEG advises that the evidence at this point does not support a recommendation for public use of facemasks during Phase 6 as a measure to prevent transmission of disease.
 - g. PIEG recommends that initial cases seen in Phase 6 should be interviewed in depth and all contacts identified, contact traced and asked to go into voluntary home quarantine by the local Department of Public Health.
 - h. As for the pandemic alert period, PIEG recommends that all schools should have ready access to information on influenza and how to reduce the risk of infection. All schools and day care institutions should have a plan for how they could close during an emergency. For Pandemic Index category 4 and 5 pandemics, PIEG recommends that school/college/institution closure should be strongly considered on a national basis.
 - i. PIEG recommends that population wide measures to reduce mixing of adults (close workplaces, initiate leave of absence for non essential workers, discourage mass gatherings) should be strongly considered on a national basis for category 4 and 5 pandemics.
 - j. In order to encourage prompt self-diagnosis, PIEG recommends that the public should be informed of the symptoms of influenza, how to recognise if they might have it, and advised of practical issues such as the value of having a thermometer at home
 - k. In addition, PIEG recommends that a national medical helpline be established to deal with individual queries and concerns, and to direct those with symptoms to the appropriate location for care and treatment.
 - l. During the pandemic, PIEG recommends that travellers be advised to defer non-essential international travel to affected areas.
 - m. PIEG recommends that health alert notices are provided to all travellers to and from affected areas, travellers are advised to check themselves for fever and to report any illness, and to defer travel if ill. Exit screening for at-risk travellers should be implemented.
 - n. During Phase 6, PIEG recommends that passengers who become ill on board, should be separated from other travellers, and the Public Health authorities in the destination and transit countries should be informed

9. Health system response: Clinical management of patients with influenza like illness during an influenza pandemic.

- a. The aim will be to treat as many people as possible at home during the pandemic. People may be treated at home with appropriate advice and treatment from health professionals, or in hospitals if too ill, or lacking the social supports to be able to manage at home. PIEG recommends that all patients who are more than one year of age, with an acute influenza like illness, fever and symptomatic for less than 48 hours should be considered for treatment with antivirals (neuraminidase inhibitors). This is subject to having sufficient antivirals to treat all those clinically ill, and evidence that antivirals are effective against the pandemic strain.
- b. There is no validated severity assessment tool for influenza related pneumonia. PIEG recommends that the CRB-65 score, which has been validated for community acquired pneumonia, is used to aid management of influenza related pneumonia. The Pandemic Medical Early Warning Score (PMEWS) could be used as an alternative measure in the community. In hospital settings PIEG recommends that the CURB-65 severity assessment tool is used to categorise disease severity, and guide investigations and management.

10. Health system response: infection control

- a. In advance of a pandemic strain emerging, it is not possible to know its infectivity, pathogenicity, mode(s) of transmission, virulence etc. PIEG is assuming in the guidance that the modes of transmission, incubation period and period of communicability are similar to seasonal influenza.
- b. The balance of evidence points to droplet and direct and indirect contact as the most important routes of transmission. Airborne transmission may also occur. PIEG recommends that standard infection control precautions and droplet precautions are the principal infection control strategies that should be rigorously followed for pandemic influenza. In certain circumstances (during aerosolising procedures) these control measures need to be augmented by the use of airborne precautions.
- c. As nebulisation is an aerosolising procedure, PIEG recommends that the use of nebuliser therapies should be minimised wherever feasible without compromising patient care.

- d. PIEG recognises that full implementation of infection control guidance will be challenging, particularly in primary care settings. It recommends that adequate resources are provided by the system to facilitate implementation of the recommendations.

11. Influenza in animals and human health implications

- a. Avian influenza has become a disease of great importance for animal and human health. Surveillance is very important not only for animal health, but also to provide early warning of new strains in animals that might pose a risk to human health. The Department of Agriculture, Fisheries and Food has had a serological monitoring programme in place for avian influenza since 1995.
- b. PIEG recommends that close collaboration between veterinary and public health authorities continues at all levels, with ongoing development and review of protocols and joint working.