



**GUIDANCE ON
THE MANAGEMENT OF
PANDEMIC INFLUENZA**

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1. INTRODUCTION

The aim of this document is to provide:

- Information about the nature of an influenza pandemic in the context of worldwide on and offshore projects.
- Guidance on diagnosis, estimation of severity and management of cases
- Advice on reducing the risk of infection
- Recommendations for the purchase and use of anti-viral and other medication and personal protective equipment
- Suggestions regarding care of the dead

In this way the effects of a pandemic on the health of the workforce, their family and friends and the project itself will be minimised.

This document is based in part on the official UK guidance on planning for an influenza pandemic. Some of these papers are attached as they provide excellent background information.

The document refers to pandemic influenza in adults only.

Frontier Medical Services would be pleased to offer further advice as required.

1.1 Pandemic influenza

Pandemic flu is a type of influenza that spreads rapidly to affect most countries and regions around the world. Unlike the 'ordinary' flu that occurs every winter in the UK, for example, pandemic flu can occur at any time of year. Pandemics of influenza have occurred sporadically throughout history. There have been three in the last one hundred years and these have resulted in many deaths.

Pandemics of flu are due to the emergence of a new flu virus that is markedly different from recently circulating strains. Few, if any, people will have any immunity to this new virus. This allows it to spread widely and easily and to cause more serious illness.

Experts predict another pandemic will occur but cannot say exactly when it will happen. When it does, it may come in two or more waves several months apart. Each wave may last two to four months.

Pandemic flu is more serious than 'ordinary' flu. As much as a quarter of the population may be affected, maybe more. Pandemic flu is likely to cause the same symptoms as 'ordinary' flu; however, the symptoms may be more severe because nobody will have any immunity or protection against that particular virus.

1.2 Impact of pandemic influenza on the project

A pandemic is likely to cause many deaths worldwide, disrupt the daily life of many people and cause intense pressure on health, other services and, indeed, all aspects of life.

In particular the effects on industry, particularly in the relatively closed community of a remote oil and gas project or offshore vessel, could be more extreme than in society at large.

Reasons for this include:

- The dependence of the industry on international air travel, which might be responsible for importing infection but may also cause restrictions on travel to and from infected countries
- The possibility of increased infection rates compared to society at large
- The need to maintain production while the workers, especially key personnel, are becoming ill either on site or when on leave
- The effect on the ability of personnel to work, not just during the illness itself but also during the recovery period
- The effect on the availability of workers who have decided to stay at home with their families
- Unavailability of externally provided services, eg due to sickness of pilots, food suppliers, etc
- The problems associated with caring for personnel who become seriously ill, including the provision of appropriate levels of care and/or medical evacuation in order to receive this
- The need to be involved with the local community including local workers, their families and the requirements of local health and legal authorities
- The possibility of sites being quarantined

1.3 Planning assumptions

Once a pandemic of influenza starts, everybody will be at risk; however each pandemic is different and until the virus starts circulating it is impossible to predict its full effects. Certain groups may be at greater risk than others: until the virus starts circulating we will not know for sure who the risk groups will be, but children, the aged and those with long term ("chronic") diseases may well be most at risk of serious complications and death. Currently most authorities are planning on the basis of a clinical attack rate of 25%, a case fatality rate of 0.37% and a case hospitalisation rate 0.55%.

1.4 Definition of Terms

Clinical attack rate: the number of people in a population that develop influenza with symptoms of infection.

Case fatality rate: the number of infected people who die.

Case hospitalisation rate: the number of infected people who need to be hospitalised)

Unfortunately experience shows that infection rates in a closed community can be higher than the population at large. Therefore for the purposes of this document an increased clinical attack rate of 50% will be used.

Over the entire period of the pandemic, ie **both** waves, the following **total minimum** numbers of cases can be expected per population of 1,000

Clinical cases: 500

Hospitalisation: 3

Deaths: 2

These estimates will be used in this document, where necessary. However it must be borne in mind that hospitalisation in a conventional system is likely to be for severe pneumonia. It is recommended here that *all* patients with pneumonia be evacuated to further care, so hospitalisation (or, at least, the number of patients requiring medical evacuation) is likely to be much higher than this.

It must be remembered that these assumptions and the plans based on them will have to be modified as more becomes known about the virus once it develops and starts to spread. Essentially it is difficult to plan accurately for a disease when its characteristics are not yet known and might be said thus far not actually to exist.

2. CLINICAL CONSIDERATIONS

2.1 Introduction

Clinicians should consider reading the Clinical Guidelines for Patients with an influenza-like illness during an Influenza Pandemic (see Section 10).

2.2 Diagnosis

Plainly it is crucially important to be able to diagnose accurately cases of pandemic influenza. In a pandemic, diagnosis will primarily be “clinical”, ie, based on symptoms and signs in the context of the pandemic rather than on laboratory investigations. The current case definition is **“the presence of fever and new (or, in those with chronic lung disease, worsening) cough of acute onset in the context of influenza circulating in the community”**. This definition may be modified once a pandemic occurs.

The range of symptoms associated with uncomplicated influenza infection include:

- cough (~85%)
- feeling unwell (~80%)
- headache (~65%)
- anorexia (~60%)
- coryzal (“cold”) symptoms (~60%)
- muscle pain (~53%)
- sore throat (~50%)

Rapid near-patient testing for influenza may be more widely available in future.

2.3 Clinical course

Based on seasonal influenza the following might be expected in an uncomplicated case:

- The incubation period is one to four days
- Infected adults are usually contagious from the day before to five days after onset of the illness
- Fever usually declines after two to three days and normally disappears by the sixth day
- Cough, weakness and fatigue can persist for one to two weeks and up to six weeks

2.4 Complications

Following the initial course described above, some patients become more ill than usual due to a number of complications. These can include relatively minor acute bronchitis and the much more important pneumonia, which can be due to either the virus itself or, more commonly, secondary bacterial infection.

The onset of complications should be suspected on grounds of:

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

2.5 General management advice

Patients with clinically defined uncomplicated influenza infection would be expected to make a full recovery. They require good symptomatic management, access to anti-viral treatment, information about the natural history, and advice as to when to re-consult.

Patients with new or worsening symptoms, particularly shortness of breath or fever not responding to treatment, should be examined to assess the presence and severity of influenza-related pneumonia.

Patients with a worsening of pre-existing medical conditions should be managed according to best practice for that condition with reference to published disease-specific guidelines, if available.

2.6 Other medical provision

Patients needing investigations normally available in hospital, eg, X-rays, blood tests, microbiological investigations, would be best treated in hospital. Rather than trying to provide these on site, efforts might be better spent on having robust arrangements for evacuation and hospitalisation.

It will be necessary to ensure that there are sufficient stocks of conventional treatments on site to treat both victims of the pandemic and other patients. In

particular, intravenous fluids will be required, together with equipment for urinary catheterisation. A sufficient number of tympanic thermometers (x per 100 personnel) with disposable earpieces will be required for the duration of the pandemic. Medical oxygen could be required in such large quantities that a suitable oxygen concentrator device would be preferable to using bottled medical oxygen.

2.7 Medical evacuation

It is plain that detailed forward planning with the appropriate agencies and organisations will be required for the following:

- Hospitalisation of nationals, both those who live locally and elsewhere in
- Hospitalisation of foreign nationals
- Evacuation to such hospitals by road or air
- Repatriation by air

It must be borne in mind that it may prove difficult to move or hospitalise patients who are deemed to be infectious. Plans should be agreed in advance with the relevant parties, preferably in writing, and regularly reviewed and updated.

2.8 Anti-viral drugs

These drugs are not to be confused with vaccinations, which are described separately.

The anti-viral drug Oseltamivir (also known as Tamiflu) is currently recommended for the treatment of pandemic influenza. It has a low incidence of side effects and can reduce the severity and duration of the disease, and hospitalisation rates, if started within 48 hours of the onset of illness.

The dose of Tamiflu for treatment is 75mg twice daily for five days. Once a pandemic is underway it may be very difficult to get hold of this drug. Stockpiling in advance should be considered. Using the estimated figures of 'x' per 100 personnel, sufficient courses for treatment of cases occurring throughout the pandemic (ie for both waves) would be required.

It is believed that current stocks of Tamiflu have a shelf life of a few months but subsequently available stocks are likely to have a much longer shelf life.

In addition to all other infection control measures (see below) it is possible that anti-virals may be recommended for front-line health workers for prophylaxis, ie to prevent the disease given their recurrent exposure. The efficacy of such

measures will not be known for some time after the pandemic occurs. The currently recommended dose of Tamiflu for this indication is 75mg daily. As the project's doctors and nurses might easily be involved in clinical work whilst at home, this would suggest that enough Tamiflu be stockpiled to cover each doctor and nurse for the duration of each four-month wave.

2.9 Paracetamol

This is the mainstay of symptomatic treatment of influenza in helping to diminish fever and relieve pain. A dose of two 500mg tablets four times per day for six days should be allowed for.

2.10 Oral antibiotics

These will be required for the treatment of the respiratory complications of bacterial bronchitis and non-severe pneumonia.

The proportion of patients who will suffer from bacterial bronchitis is not known but 10% may be used as an estimate. Suitable oral antibiotics would be:

- Co-amoxiclav: one tablet three times a day for seven days
- Doxycycline: (for patients allergic to penicillins): 200mg on first day then 100mg daily for a further six days

Patients with non-severe pneumonia should be evacuated for treatment, but if this is not possible they should be treated with the same antibiotics used for bronchitis.

2.11 Intravenous antibiotics

These should be used for the treatment of severe pneumonia in patients who cannot be evacuated or whilst awaiting evacuation. The percentage of patients quoted above in Planning Assumptions are likely to require hospitalisation and will be suffering from severe pneumonia. The drugs required are:

Cefotaxime 1g iv twice daily for five days

plus

Clarithromycin 500mg twice daily for five days

2.12 Accommodation

It will be necessary to identify in advance, and/or provide buildings for screening and cohorting of patients. Such accommodation will require appropriate facilities

including beds, sanitation, wash basins, lighting, clinical and other waste disposal, communications, staff rest areas, separate air conditioning, etc. Soft-skin temporary buildings that can be stored and then erected when necessary may be appropriate.

3. WORKFORCE PLANNING

3.1 General

Each patient will be unfit for work for at least the duration of the illness itself. In uncomplicated cases this will be about six days. However as we all know from our personal experience of viral illness, even when a patient is no longer feverish they are often unable to function normally for days or even weeks. The proportion of patients that will be so affected and for how long is not known. The implications for flexible workforce planning are apparent. This could include using the minimum work force possible, extended work periods and restriction to essential activity only.

Absenteeism may be more than this either due to a higher rate of illness, the need to care for sick family members or fear of exposure to infection. Past pandemic experience indicates that between 10-35% of the workforce may be absent from work. The absentee rate in domestic industry is expected to peak for one to two weeks at the height of the outbreak, which may be around weeks 6 to 9. However on the project the peak may be staggered depending on the relative progress of the pandemic on site, locally, nationally and internationally.

3.2 Patient care

The demands on the project medical team will be far greater than normal, particularly if one or more becomes sick. Consideration should therefore be given to contingency planning for expanding the team. In addition the day-to-day non-medical needs of patients will need extra provision, eg feeding in the sick bay or accommodation, increased frequency of changing bed linen, servicing the sick bay, etc.

See also Medical Staffing under Infection Control, below.

4. REDUCING THE RISK AND THE IMPACT

4.1 Introduction

Infection control measures and other interventions will help reduce the number of infections occurring on site, the speed with which the infection spreads through the project and the effect the infection has on the functioning of the project. Infection control measures are described separately but other measures are detailed here.

4.2 Pandemic awareness

The nature of the infection and the progress of the pandemic locally, nationally and internationally must be monitored and plans modified accordingly.

4.3 Fitness for work

Workers who are particularly at risk of suffering from complications or dying should not work on site during the pandemic period as they may be at increased risk of infection and the medical care available will be limited. Once the pandemic is underway the risk categories will become more apparent but currently these are believed to be as listed at Appendix 2: **Patients at high-risk of influenza-related complications** in Clinical Guidelines for Patients with an Influenza-like illness during an Influenza Pandemic (see Section 10).

4.5 Travel restrictions

Consideration should be given to restricting travel to and from areas where the infection is known to be active. Such restrictions are likely to be imposed externally.

4.6 Screening on arrival for work

Persons who have been off-site should be clinically screened for the presence of infection.

4.6 Case finding

In order to find cases early there should be a low threshold for self-referral for medical aid and for referral by supervisors and managers.

4.7 Social distancing

This term refers to measures intended to reduce human contact and the opportunity for infection to occur. Such measures could include reducing activity and manning levels, reducing all types of travel, keeping meetings and social gatherings to a minimum in terms of frequency, duration and numbers attending. Shared accommodation will lead to increased infection rates.

It may be beneficial or even necessary to withdraw medical services to the local population.

5. INFECTION CONTROL

5.1 Introduction

The subject of infection control during pandemic influenza is described in great detail in the “Guidance for Pandemic Influenza: Infection Control in Hospitals and Primary Care Settings” (see Section 10). Key points of this document are emphasised below.

5.2 Personal interventions

Some basic measures can be taken at the individual level to reduce the risk of infection:

- Respiratory hygiene: covering the mouth and nose with a tissue when coughing or sneezing
- Disposing of dirty tissues promptly and carefully – bagging and binning them
- Avoiding non-essential travel and meetings or crowds as described under Social Distancing
- Hand washing frequently with soap and water: reduces acquiring the virus from contact with infected surfaces and from passing it on
- Cleaning hard surfaces (eg kitchen worktops, door handles) frequently, using a normal cleaning product
- Making sure family members follow this advice

5.3 Isolation

Persons who are suspected of having the disease should be separated from the population at large and from each other until deemed fit or the disease becomes more florid and is confirmed.

Once the disease is confirmed the patient should once again be separated from the population at large and from other patients until deemed non-infectious.

This approach is often called “cohorting”.

Wherever possible, patients with uncomplicated disease should be treated in their own accommodation. However some may have to be treated in the sickbay or clinic.

Consideration should be given to locally-based workers returning home to be cared for by their family. This would ease the burden on the project but would have an attendant risk of spreading infection to the patient's family.

5.4 Hand hygiene

Hand hygiene is the single most important practice to reduce the transmission of infectious agents in healthcare settings and is an essential element of Standard Infection Control Principles. During outbreaks of pandemic influenza strict adherence to hand hygiene recommendations should be enforced.

The term "hand hygiene" includes hand washing with soap and water and thorough drying, and the use of alcohol-based products (ie, gels or foams) containing an emollient that do not require the use of water.

If hands are visibly soiled or contaminated (for example, contaminated with respiratory secretions), they should be washed with soap and water and dried. When decontaminating hands using an alcohol rub, hands should be free of dirt and organic material. The hand-rub solution must come into contact with all surfaces of the hand paying particular attention to the thumbs, backs of the hands and the nail folds, all of which are often missed.

Hands should be decontaminated before and after all patient contact with an infected patient or their bed area, removal of protective clothing, and cleaning of equipment. Following hand washing, hands should be dried thoroughly using paper towels that are then discarded in the nearest waste receptacle.

Waste bins with foot-operated lids should be used whenever possible.

In addition to the placement of alcohol rub at the point of use (eg, patient's beds, exam rooms and lockers), consideration should also be given to distributing personally carried alcohol rubs.

All staff, patients and visitors entering and leaving areas where care is delivered should perform hand hygiene with soap and water followed by drying, or with an alcohol hand rub.

5.5 Management of the coughing and sneezing patient

Patients, as well as staff and visitors, should be encouraged to minimise potential influenza transmission through good hygienic measures as follows:

- Cover nose and mouth with disposable single-use tissues when sneezing, coughing, wiping and blowing noses
- Dispose of used tissues in nearest waste bin

- Wash hands after coughing, sneezing, using tissues, or contact with respiratory secretions and contaminated objects
- Keep hands away from the mucous membranes of the eyes and nose
- Some patients may need assistance with containment of respiratory secretions; those who are immobile will need a receptacle (eg, a plastic bag) readily at hand for immediate disposal of tissues and a supply of hand wipes and tissues
- Patient masking: where possible, in common waiting areas or during transport, coughing/sneezing patients should wear surgical masks to assist in the containment of respiratory secretions and to reduce environmental contamination

6. PERSONAL PROTECTIVE EQUIPMENT (PPE)

6.1 Overview

PPE should be worn to protect staff from contamination with body fluids and thus reduce the risk of transmission of pandemic influenza between patients and staff and from one patient to another.

Care in the correct donning and removal of PPE is essential to avoid inadvertent contamination. All contaminated clothing must be removed before leaving a patient care area. Disposable or surgical masks being removed last.

PPE should comply with the relevant BSEN standards.

6.2 Surgical masks

Surgical masks should be worn by health care workers for close patient contact (eg, within three feet). This will provide a physical barrier and minimise contamination of facial mucosa by large particle droplets, one of the principal ways influenza is transmitted.

If pandemic influenza patients are cohorted in one area, and multiple patients must be visited over a short time or in rapid sequence, it may be practical to wear a single surgical mask upon entry to the area and to keep it on for the duration of the activity or until the surgical mask requires replacement. However, other PPE (eg gloves, gown) must be removed between patients and hand hygiene performed.

All contaminated PPE must be removed before leaving a patient care area with surgical masks or FFP3 respirators being removed last, followed by thorough hand hygiene.

Surgical masks should:

- Cover both the nose and the mouth and not be allowed to dangle around the neck after usage
- Not be touched once put on
- Be changed when they become moist
- Be worn once and discarded in an appropriate receptacle as clinical waste
- Hand hygiene must be performed after disposal is complete

6.3 Respirator masks

These provide high-grade particulate filtration. They consist of a soft facial mask superficially similar to a surgical mask but more substantial, better fitting and with a filter section. They are *not* powered, self-contained or positive pressure devices. The recommended standard is an EN149:2001 FFP3 disposable respirator. A good fit is required for the device to be reliable.

A respirator mask is required for aerosol generating procedures such as airway management, chest physiotherapy and nebuliser therapy.

6.4 Gloves

Gloves are not required for the routine care of patients with pandemic influenza *per se*. Standard Infection Control Principles require that gloves be worn for invasive procedures, contact with sterile sites, non-intact skin, and mucous membranes, and during all activities that carry a risk of exposure to blood, body fluids, secretions (including respiratory secretions) and excretions, and when handling sharp or contaminated instruments.

Gloves should be removed immediately after use, disposed of as clinical waste, and hand hygiene performed. No attempt should be made to wash gloves for subsequent re-use.

If glove supplies become limited during a pandemic priorities for glove use may need to be established. In this circumstance, gloves should always be prioritised for contact with blood and bloody fluids, invasive procedures, and contact with sterile sites.

6.5 Aprons

Disposable plastic aprons should be worn whenever there is a risk of personal clothes or uniform coming into contact with a patient's blood, body fluids, secretions (including respiratory secretions) and excretions or during activities that involve close contact with the patient (eg examining the patient).

Plastic aprons should be worn as single use items for one procedure or episode of patient care and then discarded and disposed of as clinical waste. In cohorted areas, aprons need to be changed between patients.

6.6 Gowns

Gowns are not required for the routine care of patients with influenza. However gowns should be worn if extensive soiling of personal clothing or uniform with respiratory secretions is anticipated, or there is risk of extensive splashing of blood, body fluids, secretions, and excretions onto the skin of the healthcare worker. Procedures such as airway management intubation and activities that involve holding the patient close (eg, in paediatric settings) are examples of when a gown may be needed. Fluid-repellent gowns are preferable, but if non fluid-repellent gowns are used a plastic apron should be worn beneath.

Gowns should:

- Fully cover the area to be protected
- Be worn only once and then placed in a waste or laundry receptacle as appropriate, and hand hygiene performed immediately after removal.

6.7 Eye protection

The use of eye protection should be considered when there is a risk of contamination of the eyes by splashes and droplets, eg, blood, body fluids, secretions, and excretions generated through patient care. This should be an individual risk-assessment at the time of providing care.

Eye protection should always be worn during aerosol-generating procedures. Eye protection can be achieved by the use of any one of the following:

- surgical mask with integrated visor
- full face visors
- polycarbonate safety spectacles or equivalent

Of note, non-disposable eye protective equipment (eg, polycarbonate safety spectacles issued as personal equipment to staff on a long-term basis) pose a potential cross-infection risk. It is important that any such items are decontaminated after soiling using agents recommended by the manufacturer, and when leaving an influenza patient segregated area prior to performing final hand hygiene.

6.9 Quantities of PPE required

It is extremely difficult to predict the quantities required but the following is offered as a reasonable estimate on the basis of the likely numbers of patients, contacts with them by medical and non-medical personnel and contacts involving aerosol generation.

Surgical masks: 12 for each of the cases

Gloves: for each of the severe pneumonias: 12 pairs/day for five days

Respirator masks: for each of the severe pneumonias: four per day for five days

Repellent gowns: for each of the severe pneumonias: four per day for five days

Eye protection: non-disposable eye protection: six per medical team member

Aprons: In rolls of 100

Alcohol hand rub:

- One 60 ml personal dispenser per health care worker per day during the pandemic
- 500ml dispensers
- Bio-hazard disposal bags

6.10 Medical staffing

Prompt recognition of healthcare workers with influenza is essential to limit the spread of the pandemic. Healthcare workers with pandemic influenza should be excluded from work, although exceptions may be necessary. As a general principle, healthcare workers who care for pandemic influenza patient areas should not care for other patients although once again exceptions may be necessary.

Healthcare workers who are at high-risk for complications from pandemic influenza should not provide direct patient care.

7. VACCINATION

Routine vaccination against seasonal influenza is recommended but opinion is divided as to whether this will afford any protection against pandemic influenza.

It is extremely unlikely that a vaccination against the strain of influenza that is responsible for the pandemic will be available for some months after the start of the pandemic. Once it becomes available its use will initially have to be rationed on the basis of need, with the medical team having first priority.

8. THE DEAD

Patients dying from influenza or its complications should be considered as posing a similar infection risk as live patients.

Mortuary capacity including refrigeration should be prepared in advance.

Local cultural and religious requirements should be catered for.

9. SUMMARY

An influenza pandemic will occur at some time in the future. We do not know when this will happen or how severe its effects will be. Contingency planning will help reduce the number of people becoming ill, the number dying and the economic effects of the disease. Such plans should be exercised and also reviewed both at regular intervals and in the light of new recommendations.

10. LINKS

www.dh.gov.uk/assetRoot/04/12/17/55/04121755.pdf
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