PANDEMIC FLU GUIDELINES FOR EMERGENCY MEDICINE

INTRODUCTION

The response to any disease outbreak must be an integrated effort involving the entire medical community. The (Emergency Department) ED environment presents its own unique set of variables, owing to the diverse mixture of often non-specific signs and symptoms, a high risk of exposure from resuscitative and other invasive procedures, and the EDs vital role in limiting transmission by maintaining a high index of suspicion, sequestering high-risk patients, and strictly adhering to clearly defined infection control measures.

Therefore, in addition to institutional protocols, EDs should possess their own policy guidelines, tailored specifically for application in an ED setting. This should cover essential areas viz.:

1. Basic, important information on the clinical characteristics of pandemic flu and its initial management. (http://www.hhs.gov/pandemicflu/plan/pdf/S05.pdf)

2. Definitions of alert levels and their respective responses

(http://www.who.int/csr/disease/avian_influenza/phase/en/index.html)

3. Criteria for isolation and transfer to designated flu hospitals / health centres.

(http://www.crisis.gov.sg/NR/rdonlyres/BA0F05A9-8206-42C7-9FF7-8FCA06A06076/0/AnnexC_Mgtofcases_13May07.pdf)

4. Physical infrastructure and equipping of the department to receive, manage and arrange for the appropriate disposition of potentially infected patients (Practical Aspects of Implementation of a Bioterrorism Preparedness Program in a Hospital setting. Infectious Disease Clinics of North America, Volume 20, Issue 2, Pages 443-453 Z. Shaikh)

5. A preparatory model for ED staff with regard to education and training, audits, exercises, surveillance, prophylaxis and stockpiling.

ED managers need to exercise flexibility in application of these principles for their own departments. All planning would need to be guided by ethical principles. Canada has drawn up a guide on ethical principles to be used in such situations. This would be one source of reference on the subject.
(http://www.utoronto.ca/jcb/home/documents/pandemic.pdf).

In addition, planning parameters may be available at:
http://www.doh.state.fl.us/rw_Bulletins/PANFLUWhitePaper11-21-05.pdf

Secretariat: 34 Jeffcott Street, West Melbourne, Victoria, 3003 Australia
Ph :+61 3 9320 0444 Fax: +61 3 9320 0400 Email: ifem@acem.org.au Web: www.ifem.cc

ROUTINE INFECTION CONTROL IN THE EMERGENCY DEPARTMENT

EDs should not wait for an outbreak to trigger the implementation of infection control measures. All Emergency Departments should routinely institute basic infection control measures that would need to be systematically enhanced if the world moved closer to a pandemic flu situation. These routine measures should include the following:

1. Screening of all patients at the entrance of the Emergency Department to identify those who would be at high risk of having a communicable infectious illness
2. Isolation of all such patients screened as infectious in a separate area of the Department with its own separate ventilation system
3. Use of, at least, basic Personal Protective Equipment (viz surgical mask, hospital scrubs) when attending to patients who are potentially infectious (http://www.hhs.gov/pandemicflu/plan/pdf/S04.pdf).
4. Hand-washing or use of alcohol rubs before and after attending to any patient presenting to the Emergency Department (http://www.hhs.gov/pandemicflu/plan/pdf/S04.pdf).
5. Arrangement of special isolation facilities for those patients who require inpatient care and likely to be having active infection with a highly communicable illness.
6. Screening surveillance is one other measure that may be implemented in normal times. Such surveillance measures achieve two objectives:
    a. They provide early warning of an impending infectious disease outbreak
    b. They serve as a regular reminder to staff on the need to remain vigilant for such outbreaks. To maintain such vigilance weekly reports of such surveillance will need to be disseminated to all staff through various channels of communication in the hospital.

A. ORGANISATION OF THE EMERGENCY DEPARTMENT DURING AN OUTBREAK

This comprises 3 main arms:

1. Implementation of and strict adherence to control measures within the ED.
2. Management of the capacity matrix, which involves the organization of space requirements, facilities, equipment and manpower; and
3. Maintenance of an effective communications network within the ED and its parent hospital, as well as between hospitals and national / international health authorities.

CONTROL MEASURES IN THE EMERGENCY DEPARTMENT

Most exposures to influenza occurs in hospitals or other healthcare settings. Influenza-infected healthcare workers (HCW), patients and visitors can spread infection within and outside healthcare facilities. Transmission risks are primarily from unprotected exposure to unrecognized cases in inpatient and outpatient settings. It can also occur through large respiratory droplets and close contact with infected patients. Also, exposure during aerosol-generating procedures may increase the risk of infection. Strict adherence to appropriate infection control practices, including the use of personal protective equipment (PPE), helps prevent transmission.

Control measures that need to be implemented in Emergency Departments include the following:

1. Early identification of persons infected or suspected to be infected with influenza – this may be implemented by fever screening carried out at the entrance of the ED for all patents presenting there. Fever screening consists of the following:

- Rapid temperature measurement of all patients coming to the ED by use of Tympanic Membrane (TM) thermometers
- Completion of fever-screening questionnaire. The questionnaire has the following components:
    i. Patient ID
    ii. Temperature measurement
    iii. History of fever documentation
    iv. Travel history documentation especially to areas of current flu infection
    v. Contact history documentation
    vi. Documentation of related symptoms of flu
    vii. Particulars of accompanying persons, including contact particulars
- All patients who fail the fever screening test are to be directed to the "Fever" zone of the ED. This helps separate febrile and potentially infectious cases from other patients.
- Staff manning the fever screening station should be wearing at least surgical masks at the stage of Alert Green. Once Alert Yellow is declared, consideration needs to be given to have these staff wearing full PPE (viz. head cover, goggles, N95 masks, full-sleeved disposable gowns and shoe covers).
  Reference: (http://www.hhs.gov/pandemicflu/plan/pdf/S04.pdf)

2. Early isolation of persons infected or suspected to be infected with influenza – while all patients failing the fever screening test should be seen in a separate fever zone, it may not be feasible to have dedicated resuscitation areas in the fever zone. Patients requiring acute resuscitation may then have to be directed to a designated portion of the Department's Resuscitation Area that will need to be set aside for possibly infected patients.

- The fever zone is the area where all patients with fever, positive contact history and history of travel to infected communities and those with associated symptoms will be attended to.
- The fever zone should have facilities for full triage, patient registration and management of ambulant and trolley-based patients. A number of observation beds will also be useful in this zone. In addition, this zone will require its own X-Ray facility, patient toilet and separate access to a discharge pharmacy.
- Ventilation systems in the fever zone need to be separate from the rest of the ED. While air entering the fever portion may come from the same source, viz. re-circulated air from the rest of the hospital, mixed with fresh air, the effluent air from these fever zones should be channelled out of the ED and into the external air after being passed through suitable bacterial / viral filters (e.g. HEPA filters) and ultraviolet radiated zones. Such air should not be re-circulated to cool air-conditioning systems. The fever zone should, preferably, have a negative pressure of, at least 5 kpa.
- If the patient were to require inpatient admission, then arrangements will need to be made to move the patient along distinct channels of the hospital, including pre-identified elevators, to the isolation wards.
- In the event of resuscitation areas, there should also be one resuscitation bay that should be isolated from the others to manage patients who are possibly infected. This identified bay should have its

own separate ventilation system that fulfils the criteria set for the fever zone.

3. Early implementation of preventive measures to limit the transmission of disease - these should be implemented in all areas of the Emergency Department, whether fever or non- fever zones. Such preventive measures refer to the high standard of hygienic practices needed for staff that comes into contact with patients.

- All staff should wash their hands either with soap and water, or use an alcohol-based hand rubs if soap and water were not readily available.
- To maximise the effectiveness of hand hygiene, all staff should not to wear wrist- watches and jewellery on the hands.
- Hand washing / rub is also recommended:
  - Between patient contacts
  - Before donning or after removing protective apparel
  - After contact with any respiratory secretions
  - After removing the mask.
  - Before leaving the isolation area
  - Before touching your personal items
  - Before meal breaks
- This standard of hand hygiene is required even if gloves had been worn earlier.
- Other protective actions taken include the following:
  - Keeping the stethoscope clean. This is achieved by placing the stethoscope on the table beside the trolley after its use before proceeding with the rest of the physical examination. After the examination is over, the gloves removed and hands cleaned with hand rub, the stethoscope should then be cleaned with alcohol wipes. Care would be taken to use wipes to hold on to parts of the stethoscope that may have been contaminated. Hands are wiped with hand-rub after the procedure.
  - Removal of gloves and washing of hands before handling notes, charts or X-Rays, or writing in the patient's notes.
  - Use of full protective gear including the Positive Airway Pressure Respirator (PAPR) for those managing airways during resuscitations.
- Routine cleaning of equipment needs to be made mandatory, especially after contact with a potentially infectious person. Such equipment include trolleys, x-ray tables, examination surfaces and couches. 70% alcohol is recommended for use to wipe all equipment according to the equipment manufacturer's instructions.
- Terminal cleaning of isolation rooms needs to be carried out after each potentially infectious patient has used it. Cleaning should be done with phenol substances. Cleaning should cover all surfaces, including walls, tabletops and change of curtains.
- Patients requiring nebulizer treatments should either be managed with metered-dose inhalers (MDI), or if nebulization was still required and MDIs not available, this should preferably be carried out in an area where the expired air is readily blown into the external air environment. If in an enclosed room, no other patient should share that facility and there should be negative pressure of at least 5 kPa.
- Maintaining patient movement records within the ED or considering use of RFID or other proximity devices may also assist in identification of contacts within the department.

MANAGEMENT OF EMERGENCY DEPARTMENT CAPACITY MATRIX

Consideration needs to be given to staff rostering to fixed composite teams with little (if any) mixing between teams. This maximizes team integrity and minimizes losses to the department as a result of one member falling sick with flu. It also simplifies contact tracing activities within the department.

The additional work-up of patients required during an infectious disease outbreak, together with the slowing down of the pace of work that occurs when staff have to be completely gowned up with full PPE results in longer time to manage each patient and an increased need for medical, nursing and ancillary staffing of the ED. There will be a need to determine the additional staffing that will be required to manage not only the routine number of patients coming to the ED, but also the additional numbers that will be expected from the community. For planning purposes, the additional staffing during an infectious disease outbreak should be 50% higher than during non-outbreak periods (based on experience during SARS outbreak).

The Emergency Department will also be expected to maintain large observation areas separate to the ED owing to the slowing down of inpatient admissions and the difficulty in obtaining isolation beds for patients requiring inpatient care. Such areas, close to the current ED, will need to be pre-identified and the 24-hour staffing for these will need to be determined.

The manpower crunch will force Emergency Departments to consider shifting from the current usual three shifts per day system to a two shifts per day system so as to mallow for more staff to be present at any one time in the ED. The longer work hours would be tolerable if limited to a few weeks (usually not more than 3 months) and if associated with other measures to improve staff welfare and communication.

Consideration will also need to be given to staff from the ED falling ill. However, where infection control practices have been strictly complied with, the tendency for infectious disease transmission and the likelihood of staff coming down with common ailments decreases significantly.

The additional staffing requirements would usually be met by pre-planning and decreases in workload in the surgical areas of the hospital. Detailed pre-pre-allocation would be important and briefings for potential staff who may have to work in the ED during outbreaks allows for a smoother transition of these staff to the ED.

Planning for the additional staffing of the ED will have to be done pari-passu with the increased need for outbreak-associated logistics such as PPE, disposable gowns, eye goggles, visors, and Positive Airway Pressured Respirators. Stockpiles for these should be identified and tied up with the hospital's materials Management Department. There will also be a need for additional patient trolleys, wheelchairs and beds during the period of the outbreak. Sources of these will need to be identified and arrangements made to have them delivered promptly in the event of the outbreak situation.

COMMUNICATION AND PREPARING STAFF FOR AN OUTBREAK

Preparing training pamphlets, slides and e-learning documents for staff training have immense value in that they can be used repeatedly. Learning materials for infection control procedures will have immense value for staff education to function in times of disease outbreak.

These learning materials could form the basis for random audits that can be conducted at the Emergency Department at any of the stages of alert, e.g. hand-washing audits, use of fever screening audits and proper disposal of disposable items in the ED.

Changes in physical infrastructure have to be carefully planned and put in place preferably either before an outbreak occurs.

The appointment of an ED Taskforce to guide the department in its preparatory tasks is useful to ensure planning responsibility. This task force should also represent the department in similar hospital-wide groups.

A disease outbreak situation is also an extremely stressful period for the staff of the Emergency Department. To maximize morale and daily attendance, communication from departmental leadership on a daily basis, welfare activities and provision of scope for frequent debriefs and feedback are all issues that need to be managed carefully and sensitively.

The ED Chief/Manager will also need to be closely involved with the hospital's outbreak planning process, including in the area of determination of clinical protocols for management of suspected and probable cases of influenza. Such clinical protocols will also need to be disseminated to ED staff on a regular basis.

CONCLUSION

Every ED can be prepared to cope with the various aspects of managing patients in the build-up to a pandemic flu situation. Leadership and political will to address this difficult and sensitive issue are pre-requisites for long-term success.