

ANNEX E: HEALTHCARE SERVICE PLANNING PRINCIPLES

Much of the information in this Annex comes from the CDC, Guidelines for Utilization of Non-Traditional Settings for Delivery of Medical Care During an Influenza Pandemic – draft 03/23/000, p. 15-18.

E.1. Introduction

During a pandemic or other medical emergency, the province and health authorities may have to call on many additional resources to meet the increased need for medical care. The province or region may need additional health care beds or facilities, additional personnel and other resources. This Annex outlines the general planning principles and actions required to determine possible needs and the best means of meeting those needs.

The agency, authority or facility will appoint an individual or task force (depending on the complexities of the jurisdiction(s) involved) to coordinate and oversee the development and implementation of the guidelines. Use an ethical decision making model to prioritize allocation of resources and patient care.

E.2. Assessment of Facility

Bed Capacity

Conduct an assessment of each facility currently in use (see [Appendix E-2](#)). For each site determine the factors which limit patient care. These might include:

- Emergency department capacity.
- Number of beds.
- Number of intensive care unit beds.
- Quantity of ventilators.
- Space – to separate beds.
- Space and capacity to separate by gender or age.
- Ceiling height, ventilation systems.
- Transportation of patients, staff and public.
- Storage capacity including pharmacy.
- Water and sewage service.
- Disposal/storage of medical waste.
- Kitchen facilities.
- Facilities to lodge and feed staff.
- Morgue capacity.

Supplies

Equipment will be scarce during the pandemic, and unlikely to be stockpiled beforehand. Sharing between agencies may occur at the local level but cannot be depended on as a resource option.

Therefore, it is important to complete and maintain a listing of inventory within each of the facilities.

- ❑ Identify medications that will be used for treatment of influenza complications during the pandemic. Develop strategies for securing these during a pandemic.
- ❑ Address supply chain and transportation issues for staff, equipment and supplies.
- ❑ Determine existing equipment which would be used in the pandemic, such as:
 - Hospital beds, ICU beds.
 - Ventilators.
 - Ready supply or contingency supplies of antibiotics, antiviral agents, needles, syringes.
 - Bronchodilators.
 - Oxygen and oxygen equipment.
 - Blood pressure cuffs, thermometers, pulse oximeters.
 - Hand washing solution, gloves, masks bedding.
 - Body bags and burial supplies.

Work with the federal/provincial governments to prioritize and allocate bulk purchased equipment and supplies.

Source of Supply

Identify sources of extra supplies needed to provide health care.

- ❑ Identify supply chain and transportation issues.
- ❑ Conduct a community-wide space and site resource inventory in conjunction with community emergency planning representatives.
- ❑ Determine the availability of shelters, schools, gymnasiums, nursing homes, daycare centers, and other potential sites for aggregate care.
- ❑ Determine location and availability of vacant land for possible mobile hospital installations.
- ❑ Make arrangements with owners of each facility to use the site, if necessary, to care for ill persons during a pandemic.
- ❑ Conduct an inventory of health care personnel including current and retired MDs, RNs and other nursing personnel, veterinarians, others with medical training and other potential volunteers.
- ❑ Determine sources from which additional staff could be redeployed or acquired during a pandemic, e.g. retired healthcare providers, students and allied disciplines.

Assessment of Pandemic Impact

- ❑ Estimate the number of out-patient visits and hospitalizations that could be expected during a pandemic and determine the extent to which health care organizations might be overwhelmed (see [Annex B](#)).
- ❑ Estimate the shortage of staff in health services and develop strategies to minimize the impact. Consider staff shortages due to illness, sick children, lack of childcare, death.

Security Issues

Plans need to be made to secure the contents of local health care facilities. Due to limited supplies and equipment during the pandemic, their protection from theft and vandalism will be paramount. Plans should be made to ensure that:

- Each health care facility has security services or local police to protect against loss of equipment, medical supplies and drugs during the pandemic.
- Secure storage area(s) are designated for supplies/drugs/equipment.
- Transportation routes to and from health care facilities remain unobstructed.

Care Guidelines

- Develop community-wide guidelines regarding what type of care could be provided at each site and what will trigger activation of these sites.
- Designate an individual to oversee the care provided in each traditional and non-traditional setting. The type of person selected for each site may vary based on the type of care provided. This person should monitor patient flow, maintain a log of patient activity including patient outcome, and monitor availability of supplies.
- Determine how triage will be managed.
- Establish provisions for referral to other health care services.
- Follow infection control procedures outlined in [Annex I](#).
- Define the extent of care that each type of provider can perform according to law/collective agreements, scope of practice and professional standards.
- Ensure that health care providers' liability protection extends to providing care and service in all settings.

E.3. Pandemic Impact on Staffing

Assess the Impact

The pandemic will have a profound affect on staffing, as many more health care workers will be required, but many will be ill or caring for family members who are ill. Planning for staff shortages will be one of the major factors in pandemic planning.

- Assess current numbers of health care workers, home care staff, and their skill levels.
- Estimate impact of pandemic on staffing levels.
- Monitor staffing levels and staffing shortages.
- Follow occupational health recommendations for when staff are to be excluded from work due to influenza.
- Develop staff roles for health care and other essential services to cover essential work and augment areas where additional work is required.
- Assess and maintain a current list of staff that are qualified to work in Critical Care (ICU, PAR, ER, CCU, etc.) to manage the care of ventilated influenza patients and other critically ill patients.

- ❑ Assess availability of auxiliary and ancillary staff required during the pandemic such as: medical students, nursing students, interns and physiotherapy, pharmacy, radiography and pathology services (especially bacteriology and virology).
- ❑ Consider the potential and risk management issues of using people who may be authorized as a back-up workforce e.g. volunteers, retired professionals.
- ❑ Plan to work with community organizations such as St John's Ambulance, Red Cross, and/or Salvation Army.
- ❑ Plan how the facility will function if staff are absent due to influenza disease, fear of getting the disease from patients, or needing to care for sick or dying relatives at home.
- ❑ Support staff through critical incident debriefing, grief counselling, child care support, etc.

Education

- ❑ Assess requirements and provide education to health care providers on the care and management of persons suffering from influenza and its complications.
- ❑ Provide education on infection control practices for influenza.
- ❑ Develop strategies to ensure competency of staff that may be performing new skills.
- ❑ Refer to Federal Clinical Care Guidelines (<http://www.phac-aspc.gc.ca/cpip-pclcpi/pdf-cpip-03/cpip-appendix-g.pdf>).

Care Guidelines

- ❑ Designate a leader who is familiar with the pandemic preparedness plan.
- ❑ Designate alternate sites for delivering care to influenza patients.
- ❑ Develop plans to determine level of care at each site/facility.
- ❑ Develop strategies to set up and staff after-hours assessment sites.
- ❑ Designate a separate assessment/admission/triage area for people with suspected influenza.
- ❑ Develop hospital admission criteria, and determine who is treated where, when, how and by whom.
- ❑ Designate sites where non-influenza conditions will be treated during the pandemic.
- ❑ Evaluate the capacity for home care support, family or volunteer support available for early discharge of influenza patients who can be cared for at home.
- ❑ Identify social services that will be available for emergency foster care for children whose parents have died from influenza during the pandemic.
- ❑ Develop implementation plans for the use of medications during the pandemic.
- ❑ Develop plans for care of the deceased.
- ❑ See Canadian Pandemic Influenza Plan (<http://www.phac-aspc.gc.ca/cpip-pclcpi/>) Annex I (<http://www.phac-aspc.gc.ca/cpip-pclcpi/pdf-cpip-03/cpip-appendix-i.pdf>).

APPENDIX E-1: CRITICAL HOSPITAL OPERATIONS

This list of critical hospital operations includes areas where the demand may increase markedly, but continuing operation is critical. Health authority pandemic plans and facility pandemic plans should consider these areas and determine which are critical in their facility, and how to keep them operational.

Hospital Wide Resources

- Engineering (essential for dealing with breakdowns, maintenance, checking airflow).
- Sewerage.
- Water Supply.
- Medical Gases (essential for the provision of oxygen and medical air).
- Natural gas supply.
- Electricity.
- Security (including antiviral and vaccine security considerations).
- Air conditioning/Air flow (essential for air flow, preventing spread of influenza).
- Maintenance Services.
- Vehicles and Transport.

Hospital Critical Support Services

- Central sterilization.
- Infection Control.
- Pharmacy.
- Information Technology (essential communication tools).
- Communications.
- Laboratory Services.
- Diagnostic Imaging.
- Purchasing.
- Warehouse/Stores.
- Building and Nutrition Services.
- Mortuary Services (in particular storage space, and space capacity for patients who die outside of hospital).

Hospital Units

- | | |
|---|---|
| <input type="checkbox"/> General Unit. | <input type="checkbox"/> Children's/Pediatric Unit. |
| <input type="checkbox"/> Ambulatory Care Units. | <input type="checkbox"/> Obstetrics/Maternity. |
| <input type="checkbox"/> Emergency Department. | <input type="checkbox"/> Special Care Nursery. |
| <input type="checkbox"/> Intensive Care. | <input type="checkbox"/> Oncology. |
| <input type="checkbox"/> Coronary care, Cardiothoracic. | <input type="checkbox"/> Renal Care. |
| <input type="checkbox"/> Medical unit. | <input type="checkbox"/> Mental Health. |
| <input type="checkbox"/> Surgical Unit. | |

APPENDIX E-2: HOSPITAL BED CAPACITY

The following worksheets have been developed to assist health authorities and facilities in planning for an influenza pandemic. They can be used to compliment centralized bed management systems, or can be used on their own to evaluate bed capacity and achieve maximum bed utilization.

As well as the maximum number of beds available, facilities should determine the hours of care needed to staff those beds.

Advance planning should be in place for the likely change in bed acuity.

The estimates from these worksheets can be used in generating FluSurge estimates (see [Appendix B-1](#)).

Table E-1: Evaluating Bed Capacity

Description		Position Title
Who is responsible for collecting the information for this table (should be contained in the facility's emergency plans)?		
Who will have authority and responsibility for applying this information during a pandemic?		
Description	In 72 hours	In 7 days
1. What is the total number of non-ventilated beds, without oxygen, which:		
(a) are currently open and staffed?		
(b) could be available during an emergency if extra short-term resources were available?		
What are the limiting factors (e.g., staffing, equipment, physical space, other)?		
2. What is the total number of non-ventilated beds, with oxygen supply, which:		
(a) are currently open and staffed?		
(b) could be available during an emergency if extra short-term resources were available?		
What are the limiting factors (e.g., staffing, equipment, physical space, other)?		
3. What is the total number of ventilated beds, which:		
(a) are currently open and staffed (total of 1(a) and 2(a) above)?		
(b) could be available during an emergency if extra short-term resources were available (total of 1(b) and 2(b) above)?		

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What are the limiting factors (e.g., staffing, equipment, physical space, other)?		
4. If a directive came to stop all elective surgery/admissions:		
(a) How many beds (total) would become available?		
(b) How many of these beds have oxygen supply?		
(c) How many of these beds are ventilated?		
5. How many extra emergency ventilator beds could your hospital create? (NOTE: consider use of all ventilator capacity, including time-cycled ventilators, anaesthetic machines, CPAP, BiPAP, and the availability of oxygen/suction and air supply, recovery and operating rooms and neuroscience beds.):		
(a) assuming current staffing levels?		
(b) assuming additional resources for staffing?		
What are the limiting factors (staffing, equipment, physical space, other)?		
Total number of beds that could be available (total of 3(a), 3(b), 4(a), 5(b))		
	Yes	No
6. Does your hospital have any excess capacity, such as provision of meals or sterilization capacity, to assist other health care facilities or the community?		
7. Does your hospital have an affiliation with another health care facility which may have extra bed capacity?		
8. If yes to 7. above, is this affiliation with:		
(a) long-term care facility/ies?		
(b) acute detoxification unit(s)?		
(c) rehabilitation facility?		
(d) crisis unit?		
(e) other (please specify)?		

Table E-2: Inventory of Beds (Worksheet)

Type of Bed	Total # of physical beds in facility	# of physical beds with O2 supply	# of currently operating beds (open and staffed)	# of currently operating beds with O2 supply (open and staffed)	Current proportion of elective vs. emergency cases/beds	# of beds able to be staffed using current resources	# of beds, with O2 outlet, for which space would be available, no physical bed available	# of beds, without O2 outlet, for which space would be available, no physical bed available	Comments (e.g. unique equipment, special purpose)
Medical									
Special Medical/ Stepdown									
Surgical									
Special Surgical									
Coronary Care (CCU)									
Intensive Care (ICU)									
Pediatric									
Special Care Nursery (SCN)									
Neonatal ICU (NICU)									
Day Ward									
Recovery Room (PAR)									
Sleep Laboratory									
Closed Wards									
Other									
TOTAL									

Table E-3: Inventory of Ventilators (Worksheet)

Type of Ventilator	Intensive Care	Coronary Care	Special medical/stepdown	Recovery Room	Operating Room	Emergency Department	Storage	In Repair	Sleep Study Laboratory	Physiotherapy	Other
Oxylog											
Bird											
CPAP spont. breathing											
BiPAP spont. breathing											
TOTAL											

Table E-4: Emergency Ventilator Capacity Considerations (Worksheet)

Property	Intensive Care	Coronary Care	High Dependency	Recovery Room	Operating Room	Emergency Department	Neuroscience	Sleep Study Laboratory	Other
Suction									
Oxygen outlet									
Medical air outlet									
Airflow (negative pressure)									
Airflow (positive pressure)									
Room monitoring									
Physical Bed									
Bed space, but no physical bed									
TOTAL									

Table E-5: Beds with Oxygen (Worksheet)

Type of Bed	Acute Care Inpatient	Intensive Care	Emergency Department	Recovery Room	Other
With O2/Suction					
Without O2/Suction					

APPENDIX E-3: OTHER HEALTH SERVICE NEEDS

Other health services will experience a greater than usual demand. These include mortuary services, BC NurseLine and other sources of information, Public Health Units and walk-in medical clinics.

Mortuary Services

During a pandemic, local authorities will have to be prepared to manage additional deaths due to influenza, over and above the number of fatalities from all causes expected during the inter-pandemic period. Within any locality, the total number of fatalities (including influenza and all other causes) occurring during a 6- to 8-week pandemic wave is estimated to be similar to that which typically occurs over six months in the inter-pandemic period.

The Canadian Pandemic Plan has guidelines to assist local planners and funeral directors in preparing to cope with large-scale fatalities due to an influenza pandemic. A number of issues have been identified, which should be reviewed with coroners/medical examiners, local authorities, funeral directors, and religious groups/authorities. See the Canadian Pandemic Influenza Plan, Annex I (<http://www.phac-aspc.gc.ca/cpip-pclcpi/pdf-cpip-03/cpip-appendix-i.pdf>) for more information.

BC NurseLine

BC NurseLine provides health information and advice offered through a toll-free (within BC) telephone line. The lines are staffed by registered nurses 24 hours a day, 7 days a week. A pharmacist is also available 5 p.m. to 9 a.m., 7 days a week. NurseLine should expect increased usage of their services in the event of the pandemic as people call about their symptoms, about self-care options and for advice regarding visiting health care practitioners.

BC HealthGuideOnline and BC HealthFiles are on-line sources of information on health topics that can be publicized to assist the public with self-care and management of symptoms (<http://www.bchealthguide.org/kbaltindex.asp>). A hard copy version of BC HealthGuide is available at no charge to all BC residents.

Public Health Units

Public Health Units can expect increased inquiries about vaccination and treatment. If the Unit conducts immunization clinics, the volume of patients will be much higher during an influenza pandemic than is usual during inter-pandemic influenza seasons.

Walk-In Medical Clinics

Walk-in medical clinics are treatment centres that operate on a first-come, first-served basis and do not require an appointment with the physician. During an influenza pandemic, walk-in clinics should expect increased volume, both from people infected with the influenza virus, and from people suffering from influenza-like illness. This is in addition to the usual patient caseload.

APPENDIX E-4: CRITICAL SUPPLIES

The following table details critical supplies required during the pandemic. Supplies include for requirements for vaccine/antiviral clinics, treatment needs, hand hygiene, etc. Be aware that supplies may be limited, both within the region and from other sources (e.g. other provinces, internationally).

Table E-6: Critical Supplies List

Item	Quantity Required
Medical Supplies/Equipment	
3 cc syringes 1", 25 gauge needles	
Acetone	
Adhesive tape (hypoallergenic and other)	
Adult airways	
Adverse reaction reporting form	
Alcohol hand rinse	
Alcohol wipes	
Ampoules of diphenhydramine 50 mg IM	
Ampoules of epinephrine 1:1000 SQ	
Antibacterial hand washing solutions	
Band-Aids	
Blankets	
Blood pressure cuffs (different sizes)	
Body bags	
Cold packs (sodium, ammonium nitrate, gel packs)	
Consent forms for vaccines	
Cots/Mats	
Cotton balls	
Cotton Swabs	
Disinfecting wipes	
Disposable manual resuscitators	
Disposable tips, catheters, tubing, canisters	
Emesis bags	
Flashlight	
Garbage bags (regular, biohazard, and autoclave bags)	
Gloves (latex and non-latex, all sizes)	
ID bands for patients	
Inline suction catheters	
Intravenous supplies	
IV solutions	
IV tubing	
Liquid soap	
Nasal prongs	

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Item	Quantity Required
Nasopharyngeal swabs	
Needles, 25 gauge 7/8"	
Oxygen masks	
Oxygen tubing	
Oxymeters and probes	
Paper gowns (all sizes)	
Paper table covers	
Paper towels	
Pediatric airways	
Pillows	
Portable O ₂ with masks and tubing	
Portable suction	
Safety glasses	
Sharps containers	
Spray bottle of bleach solution	
Sterile gauze pads	
Stethoscopes	
Surface cleaner and disinfectant	
Surgical/procedure masks	
Syringes	
Testing reagents	
Thermometers (with disposable covers)	
Tourniquet	
Tuberculin syringes with 5/8" needles (for epinephrine)	
Vaccine (doses/day)	
Vaccine cooler/refrigerator (Styrofoam containers and cold packs are adequate for local transport and day use)	
Vaccine information sheets	
Ventilator supplies	
For Antiviral Clinics	
Adhesive labels (pre-printed)	
Antiviral (client/day x doses/client)	
Medication information sheets	
Pill counting trays and spatulas (automatic pill counter if available)	
Small resealable pouches for pills	
General Supplies and Equipment	
Canteen supplies (e.g., juice, cookies)	
Chairs	
Clipboards	
Cups for water	
Envelopes	
Facial tissue	
File boxes	

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Item	Quantity Required
Garbage containers	
ID badges for staff (or colour-coded t-shirts, etc.)	
List of emergency telephone numbers	
Paper	
Paper towels	
Pens and pencils	
Portable partitions (or other material to provide a limited number of private areas)	
Post-it notes	
Rubber bands	
Scissors	
Signage	
Stapler and staples	
Table pads and clean paper to cover table for work site	
Tables	
Tape	
Telephone (fixed and mobile)	
Trash bags	
Water	
Training and Communications Equipment	
Computers	
Photocopier paper (perhaps already in facility)	
Printers	
Public announcement system or bullhorn(s)	
Two-way hand-held radios or messaging devices for key personnel and security staff	
VCR/TV (for orientation and training, as necessary)	
Video camera (for orientation and training, as necessary)	