

Z1: UNIVERSITY HEALTH SERVICES

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University of California, Berkeley Influenza Pandemic Emergency Operations Plan Additional Unit Information

This DOC Plan Annex contains additional information specific to University Health Services (UHS) response to a pandemic influenza event. Building upon existing emergency response and business resumption initiatives, this contingency plan will *supplement* the existing campus Emergency Operations Plan (EOP) and Department Operations Center (DOC) Plan.

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I. EXECUTIVE SUMMARY

This Department Operations Center (DOC) Plan annex was developed for University Health Services (UHS) to specifically cover the critical functions and positions, and response/recovery actions for our department as they apply to an influenza pandemic scenario. A DOC Plan Annex – UHS Pandemic Flu Master Binder has been created with additional details and materials pertaining to the response plan as outlined.

The University Health Services is an outpatient medical facility, much like a large group medical practice. Since it is not an acute care hospital, it does not have the supplies or resources of such a facility. In the event of an influenza pandemic, the UHS will serve to help reduce the burden on the surrounding acute care hospitals by providing education and guidance to the campus community conducting surveillance consistent with CDC guidelines, triaging patients appropriately, and advising patients to stay home when appropriate. In the event an infirmary is established on campus, UHS will provide medical oversight to patients who do not require acute care hospitalization.

Pandemic Flu Planning Team

The Pandemic Flu Planning Team is responsible for coordinating internal DOC activities to develop the DOC Plan annex for pandemic flu, regular plan review and updates as needed. The Team is charged with keeping information current and available to all UHS personnel. Additional duties include, but are not limited to, working with campus administration and other campus units as required; evaluating operational needs and appraising UHS senior management of recommended actions and policies.

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II. UNIT RESPONSE CHECKLIST

UC Berkeley Phase	GENERAL UNIT ACTIONS	SPECIFIC UNIT ACTIONS
1 – Pre-Event Planning <i>New virus in animals, no human cases</i>	<ul style="list-style-type: none"> • Develop comprehensive unit plans • Develop and test unit communication plans • Conduct operations test during staff or safety meetings • Communicate developments with staff/faculty/students • Refer general questions from staff/faculty/students to http://www.uhs.berkeley.edu/pandemicflu/ • Encourage adoption of hygiene etiquette behavior • Encourage personal preparedness plans for staff/faculty/students 	<ul style="list-style-type: none"> • Develop educational materials for influenza and prevention (hand washing and respiratory etiquette) • Update the UHS website regularly with updates and new information http://www.uhs.berkeley.edu/pandemicflu/ • Conduct staff trainings • Assure essential personnel receive fit-testing and training on respiratory protection (with EH&S) • Update emergency contact information for UHS staff • Review <u>specific procedures</u> included in this comprehensive <u>UHS DOC Plan Annex</u> • <u>Identify resources needed to respond to an influenza pandemic and forward requests for budgetary consideration</u>
2 – Animal Outbreak of Highly Pathogenic Avian Influenza in North America	<ul style="list-style-type: none"> • Same as 1 	<ul style="list-style-type: none"> • Same as 1 plus: • Educate all appropriate parties about the details of UHS Pandemic Plan and Response • Conduct a daily census of staff – determine who is on vacation, off-campus and out sick • Conduct surveillance following CDC guidelines • Coordinate response with the City of Berkeley • Prepare information bulletins/materials (internal and external) • Coordinate media response with Public Affairs • Consider establishing phone triage lines for UHS and Counseling Psychological Services (CPS) • Assess quantity of needed supplies onsite • Provide essential personnel with respirators
3 – Confirmed Human to Human Outbreak Overseas <i>Evidence of Sustained Human-to-Human Transmission</i>	<ul style="list-style-type: none"> • Same as 2 plus: • Gather unit decision makers for preplanning; review list of critical and noncritical functions for unit • Refer staff/faculty/students who are or may be traveling to website for additional travel information specific to UC Berkeley • Begin monitoring daily absenteeism of staff/faculty/students 	<ul style="list-style-type: none"> • Same as 2 plus: • DOC members meet regularly (as often as needed) • Intensified surveillance following CDC guidelines • Stockpile essential supplies (such as masks/respirators) • Review and consult on campus travel policy to affected areas • Plan Mental Health Response
4 – Confirmed Human Outbreak in North	<ul style="list-style-type: none"> • Same as 3 plus: • Mandate adoption of hygiene etiquette behavior • Hold regular meetings with decision 	<ul style="list-style-type: none"> • Same as 3 plus: • Activate DOC as directed • Assess response capabilities and determine if staffing re-assignment is needed

America	<p>makers</p> <ul style="list-style-type: none"> • Report to campus EOC: <ul style="list-style-type: none"> ▪ Daily absenteeism reports of staff/faculty/students • At direction of EOC, prepare to activate plans to continue critical functions and implement alternate plans for noncritical functions 	<ul style="list-style-type: none"> • Review Pandemic Flu Annex in light of new information and modify as needed • Immunize staff for pandemic influenza according to CDC and City of Berkeley Guidelines as soon as vaccine becomes available • Work with the City of Berkeley to coordinate distribution of antiviral medications as needed • Follow CDC guidelines for screening and testing of suspect pandemic influenza cases • Consider Proactive Mental Health response • Create support structure for UHS staff (manage stress, fatigue, etc) • Coordinate with RSSP to ready isolation and quarantine spaces • Discuss need for social distancing measures and possible “campus closure” (canceling of classes and sending as many students home as possible)
5 – Widespread Pandemic Overseas and North America <i>Sustained Transmission = Pandemic*</i>	<ul style="list-style-type: none"> • Same as 4 plus: • Other actions as directed by the EOC 	<ul style="list-style-type: none"> • Same as 4 plus: • Redistribute staff as needed • Implement Mental Health response and UHS support structure for staff • Implement social distancing measures as determined by campus leadership (including relocation of students)
6 – Recovery	<ul style="list-style-type: none"> • Situation Assessment • Phased resumption of instruction, research, business activities • EOC moves into Recovery mode and determines activation status • Prepare to deactivate the EOC • Debriefing and After-Action Reports documenting lessons learned 	<ul style="list-style-type: none"> • Same as 5 plus: • Continue Mental Health response • Continue surveillance for new cases following CDC guidelines

*A Pandemic Severity Index will be applied as an influenza pandemic emerges (see Appendix C of the Influenza Pandemic Emergency Operations Plan).

III. CRITICAL FUNCTIONS

A. UHS Mission

The mission of UHS is to provide medical and mental health care, credible information, subject matter expertise, and anticipatory planning for the campus.

B. Critical Functions

The critical functions essential to the UHS mission are:

1. Medical Services: Provide urgent, primary and specialty medical care to eligible people including pharmacy, radiology, and laboratory services; direct medical disaster response.
2. Mental Health Services: Provide mental health services including onsite triage, crisis intervention, and critical incident stress response to eligible people and campus departments.
3. SHIP and Campus Workers Compensation Services: Provide Student Health Insurance Plan (SHIP) services to plan members, including triage of incoming calls and walk-ins, authorizations for care, and benefits counseling. Provide benefits to campus faculty and staff in case of injury, illness, death, or aggravation of a pre-existing condition resulting from employment.

Key functions that can be performed off-site (i.e. home, secondary locations):
<p>Key functions that can be performed off site:</p> <ul style="list-style-type: none">• Medical Services (off-site triage by phone)• Mental Health Services (off-site triage by phone) <p>Resources Required:</p> <ul style="list-style-type: none">• Temporary medical and mental health staff (e.g., community providers, mutual aid staff from other campuses)• Isolation Space <p>Supplies Needed:</p> <ul style="list-style-type: none">• Medical supplies and pharmaceuticals, esp. vaccine, anti-virals, anti-pyretics, disposable thermometers, and masks• Frequently used forms

Procedures for implementing these critical functions are documented in the UHS DOC Manual (a copy is located in the Emergency Shed).

The UHS response to an influenza pandemic will vary depending on the severity and impact of the outbreak as measured by WHO/CDC and Alameda County Pandemic Alert Phases (see the UHS

Pandemic Flu Master Binder, Section II). For detailed response plans, see appropriate section included in the UHS Pandemic Flu Master Binder

C. Essential Positions

Personnel in the following roles have been cross trained to provide leadership for the critical functions identified:

Critical Function:	Position/Job Classification:
1. <u>Medical Services</u>	1) Medical Director 2) Clinical Services Assistant Director 3) Clinical Services Operations Director 4) Occupational Health Physician
2. <u>Mental Health Services</u>	1) CPS Manager 2) CARE Services Manager 3) Social Services Manager
3. <u>SHIP and Workers Compensation Services</u>	1) Health Plan Administrator 2) Workers Compensation Manager 3) TBD

IV. UNIT COMMUNICATIONS PLAN

In the event of an infectious disease emergency such as the global transmission of Pandemic Flu, communication to UC Berkeley staff, faculty, students and community, and notification of key leadership and operational staff is *essential*.

This communication framework was established to deliver consistent, factual, and timely messages within and outside the UC Berkeley community.

A. Principles

The following principles will guide UHS’s communications during an infectious disease emergency:

1. UHS statements and policies will follow guidelines established by the federal Centers for Disease Control and Prevention (CDC).
2. Messages will be coordinated with:
 - Public Affairs
 - Local public health departments and medical centers
 - UC Berkeley constituencies
3. Information released will be:
 - Coherent
 - Credible
 - Timely

- Accessible
- Responsive to audiences
- Available in languages appropriate for the Berkeley community

B. Communications Liaisons

The UHS Communications Liaisons are responsible for gathering internal and external communications and distributing the information to both internal and external campus units (including campus administration and other DOCs). The liaisons are also responsible for ensuring that all members of the department receive current and accurate information regarding pandemic flu.

UHS Communications Liaisons:

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C. External Communication

1. *Audiences:* The people this framework is designed to reach:

- UCB Students; Undergraduate, and Graduate
- Parents and Guardians of UC Berkeley Students
- Faculty and Staff; Visiting scholars, Post-Docs
- Office of the President
- Legislators and Government Officials

- Other UC Campuses and Academic Institutions
- Local and International Community

2. *Modes of Communication*: To reach these audiences the following communication resources have been identified and procedures established:

Urgent Communications

- Mass E-mail message: E-mail sent to UC Berkeley students/faculty/staff. Note mass e-mails require authorization from VC-Student Affairs (for students) and VC-Administration (for faculty/staff) and assistance from IS&T.
- Website Posting: Information posted on UHS website (<http://www.uhs.berkeley.edu/>) and UCB News Center website (<http://newscenter.berkeley.edu/>).

Less Timely Communications

- Mailing: Mass mailing sent to parents of UC Berkeley students, local community (in consultation with City of Berkeley Public Health Department)
- Notice Board Posting: Leafleting and posting of informational flyers to student residential centers, local neighbors, businesses

Media Relations Communications

The Office of Public Affairs (PA) will be responsible to coordinate message coherence, credibility and dissemination. The Associate Vice Chancellor of Public Affairs will designate a point person to receive information and direct it to the appropriate venue and spokesperson for dissemination (*in the event of an on campus emergency there will likely be the need to fund a temporary staff position*).

Pandemic Flu-related questions and inquiries should be directed as follows:

- Press inquiries should be directed to Media Relations at 510-642-3734.
- Policy clarification questions should be directed to the Associate Chancellor – Chief of Staff at 510-642-0347.
- Health-related questions should be directed to Clinical Services Administration at University Health Services call 510-642-1814.

D. Internal Communication and Notification

Communication between operational staff and key leadership on case information will be provided on a need to know basis consistent with privacy regulations. For timely notification and communication the following procedures were created (see the UHS Pandemic Flu Master Binder, Section IV):

- A Notification Flow Sheet with contact information and assigned communication responsibilities
- U.C. Berkeley's Emergency Infectious Disease Contact Information
- Community Hospital, Federal, State, County and City Infectious Disease Contact Information
- Laboratory Contact Information

V. RESOURCES

Pandemic influenza is anticipated to put enormous stresses on the healthcare system as a whole, including the availability of medical supplies and personal protective equipment (PPE). It is anticipated that there will be nationwide supply-chain failures during a pandemic and that there will be little or no mutual aid. UHS recognizes the importance of securing adequate resources in advance of an influenza pandemic and is working with Alameda County Department of Public Health and Berkeley City Public Health to stockpile needed resources.

An inventory of emergency supplies is included in the UHS Pandemic Flu Master Binder, Section V.

VI. SURVEILLANCE

A. National Surveillance

The CDC maintains an extensive national influenza surveillance system for detecting influenza on an ongoing basis (Table 1 below). During the Pandemic Alert Period, the CDC issues recommendations for enhanced surveillance to identify patients at increased risk for infection with a novel influenza virus. These recommendations will evolve depending on information available at the time and will likely focus on severely ill, hospitalized or ambulatory patients who meet defined epidemiologic and clinical criteria. State and local health departments are notified of current recommendations via the Health Alert Network (HAN) and are responsible for distributing recommendations to healthcare providers. The City of Berkeley Health Department will distribute this information as it changes to UHS.

The CDC will use the surveillance data collected to detect the introduction and early cases of a pandemic influenza virus in the United States. Health Care providers at UHS are a part of this early detection system and follow the criteria established by the CDC for surveillance and testing. The UHS clinical staff is oriented to the CDC criteria for influenza surveillance as summarized below. Once a novel influenza strain exhibits sustained human-to-human transmission (WHO Phase 6, see the UHS Pandemic Flu Master Binder, Section VI), intensified surveillance criteria is anticipated.

Table 1. Components of the National Influenza Surveillance System

(<http://www.hhs.gov/pandemicflu/plan/sup1.htm>)

Activity	Surveillance type	Description
<p>U.S. collaborating laboratories of the:</p> <ul style="list-style-type: none"> • WHO Global Influenza Surveillance Network • National Respiratory and Enteric Virus Surveillance System (NREVSS) 	<p>Virologic surveillance</p>	<p>Collaborating laboratories report weekly to CDC the number of influenza tests performed and the number of positive results by type, and in some cases, subtype and age group. If non-subtypable viruses or unusual subtypes are detected, the specimens are sent to the state public health laboratory or to CDC for further testing.</p>
<p>Sentinel Provider Network (SPN)</p>	<p>Outpatient surveillance</p>	<p>Approximately 2,300 healthcare providers monitor outpatient visits for ILI (fever >100°F or 37.8°C AND sore throat and/or cough in the absence of a known cause other than influenza). Specimens from a small subset of patients are submitted to state public health laboratories for influenza virus testing.</p>
<p>Emerging Infections Program (EIP) influenza project</p>	<p>Hospital surveillance</p>	<p>Eleven EIP sites report to CDC cases of laboratory-confirmed influenza-related hospitalizations in children aged <18 years on a bi-weekly basis.</p>
<p>New Vaccine Surveillance Network (NVSN) pediatric hospitalizations</p>	<p>Hospital surveillance</p>	<p>NVSN enrolls a subset of patients aged <5 years who are hospitalized with fever or respiratory symptoms. Nose and throat swabs are obtained and tested for influenza by viral culture and RT-PCR. The rate of laboratory-confirmed influenza-related hospitalizations is reported to CDC on a bi-weekly basis.</p>

122 Cities Mortality Reporting System	Mortality surveillance	Municipal vital records offices transmit weekly data to CDC on the total number of death certificates filed and the number with pneumonia and/or influenza listed as a cause of death. National Notifiable Disease Surveillance System (NNDSS) influenza-associated pediatric mortality
Mortality surveillance	Participating state health departments report to CDC all laboratory-confirmed influenza-related deaths among children <18 years. State and territorial epidemiologists' reports State-level assessments	Health departments report on a weekly basis the overall level of influenza activity as none, sporadic, local, regional, or widespread.

B. Interim Recommendations

Enhanced U.S. Surveillance and Diagnostic Evaluation to Identify Cases of Human Infection with Avian Influenza A (H5N1):

NOTE: This guidance pertains to the avian influenza A (H5N1) circulating as of October 2005. CDC will provide updated guidance for avian influenza A (H5N1) or for new situations, as needed, through the Health Alert Network.

Enhanced surveillance efforts by state and local health departments, hospitals, and clinicians are needed to identify patients at increased risk for influenza A (H5N1). Interim recommendations are as follows:

Testing for avian influenza A (H5N1) is indicated for hospitalized patients with:

- Radiographically confirmed pneumonia, acute respiratory distress syndrome (ARDS), or other severe respiratory illness for which an alternative diagnosis has not been established, **and**
- History of travel within 10 days of symptom onset to a country with documented avian influenza A (H5N1) infections in poultry and/or humans. (For a regularly updated listing of H5N1-affected countries, see the World Organization for Animal Health [OIE] website at http://www.oie.int/eng/en_index.htm and the WHO website at <http://www.who.int/en/>).

- **OR** -

Testing for avian influenza A (H5N1) should be considered on a case-by-case basis in consultation with state and local health departments for hospitalized or ambulatory patients with:

- Documented temperature of >100.4°F (>38°C); and
- One or more of the following: cough, sore throat, or shortness of breath; and

- History of contact with poultry (e.g., visited a poultry farm, a household raising poultry, or a bird market) or a known or suspected human case of influenza A (H5N1) Case in an H5N1-affected country within 10 days prior to onset of symptoms.

C. Suspect Case

If a clinician suspects a human case of infection with an avian or novel influenza strain, review the criteria as outlined by the CDC (See Human Influenza A (H5) Domestic Case Screening Form in the UHS Pandemic Flu Master Binder, Section XV). If history and findings are consistent with an avian or novel strain of influenza, Clinicians need to contact the City of Berkeley Health Department for guidance at (510) 981-5300. If it is after hours call (510) 981- 5911 and ask the dispatcher to contact the Health Officer on call. In consultation with the Health Officer on call, collect specimens and arrange for specimen processing at the State Public Health laboratory. The Berkeley City Health department will notify the CDC via the emergency response Hotline at (770) - 488-7100.

D. Trigger for Initiating Nonpharmaceutical Interventions

The trigger for initiating nonpharmaceutical interventions (NPI) as proposed by the CDC, is best defined by “a laboratory-confirmed cluster of infection with a novel influenza virus and evidence of community transmission”. Activations of appropriate interventions would occur when a laboratory confirmed human pandemic flu virus case cluster, associated with community transmission, is reported within the State or region regardless of category of pandemic severity. Refer to CDC/HHS Figure A – Pandemic Severity Index and Table A – Triggers for Implementation of Mitigation Strategy by Pandemic Severity in the UHS Pandemic Flu Master Binder, Section VI.

VII. CASE MANAGEMENT

A. Triage

The triage function is a normal part of UHS operations to determine what level of service is most appropriate for a patient’s needs. Typically triage takes place in the Urgent Care unit and is performed by a nurse. In the very earliest stages of a pandemic, triage may continue to be done in the normal manner.

Once the numbers of patients seeking evaluation or consultation is too great to continue to use the normal pathways, the UHS will move to an emergency triage mode. This determination will be made by the UHS DOC in consultation with the Chief Urgent Care Physician, the Urgent Care Nurse Manager and others as appropriate.

Mass triage will need to separate those that are ill and seeking medical care from those who have concerns but are not symptomatic to reduce cross contamination. If the weather is dry and warm the outdoor space immediately outside Urgent Care may be used to separate the well from the ill. The

UHS can erect the blue canopies outside the building on different ends of the open space and direct patients to the appropriate service.

If the weather is poor or it is too dark, the UHS has identified the Education Center as the logical choice for evaluating a large number of people rapidly. Ill patients would be directed by a volunteer to enter the Section Club room through a single door on the Durant side of the building. They would then be assessed for level of service needed and in accordance with the screening guidelines currently in place by the CDC. Patients requiring additional treatment would be escorted to the Urgent Care unit by UHS staff/volunteers.

Patients who are not ill would be directed to enter the Class of 42 room on the Bancroft side of the building. Patients not requiring medical care would meet with a healthcare provider who would answer questions and refer as needed. (See diagram of potential flow in the UHS Pandemic Flu Master Binder, Section VII). Every effort will be made to keep people who are not ill at home through the provision of timely and relevant information on the UHS and campus web sites to limit possible exposure.

Simplified triage tags will be used to reduce writing for healthcare personnel.

B. Mass Care

Pandemic influenza is anticipated to put enormous stresses on the healthcare system as a whole. The University Health Services recognizes the importance of developing surge capacity to reduce the pressure on the hospitals in the area while providing key services to the campus community. It is anticipated that requests for mass care would occur within the context of a campus emergency and be managed under the auspices of the Incident Command Structure (ICS). Given that the needs of a specific situation are unknown in advance, the plans below offer general guidelines and would need review and modification in the event of an actual event. As the situation worsens, it is expected that there would be incremental changes to usual care offered along a continuum from usual patient care to austere patient care.

Surge capacity may be defined as the ability to manage a sudden, unexpected increase in patients that ordinarily would exceed the capacity of the healthcare system. This terminology encompasses the physical space demands, organizational structure, clinical staff (medical and mental health), ancillary personnel, support (e.g. nutrition), supplies, medications, information systems and other resources needed to support public health and patient care.

Outpatient facilities such as the University Health Services will see an increase in demand for services in a pandemic influenza event. In addition, experience suggests that for every individual that is ill, many more may seek evaluation. It will be important to provide timely, accurate health information and mental health support measures to attempt to reduce the volume of patients who are not ill but may have concerns or seek evaluation.

The healthcare systems in the area are frequently operating at or above daily capacity. Pandemic influenza has the potential to become a catastrophic event that would rapidly deplete available resources. Managing expectations in the face of such an event will be a critical task. Triage and prioritization of resources will be needed and there will, of necessity, be an adjustment in the standard of medical care available.

Response to a disaster will be based on a tiered response with University Health Services modifying processes to increase capacity as the first tier. If campus resources are inadequate to meet demand, other resources would be recruited as required. Staff resources, especially nursing resources, are likely to be a key restriction on patient volume. This shortfall is likely to be exacerbated in the pandemic influenza scenario by staff absences due to illness or family obligations and the fact that many nursing staff hold dual appointments at both UHS and local hospitals that will render them unavailable.

As the pandemic picture evolves, opportunities for staff training and exercising emergency plans should be prioritized.

C. Strategies

1. Provide timely information via a variety of methods

Goal: to stretch limited health care resources by reducing the numbers of persons who are not ill or ill persons whose illness could be managed by self care measures from seeking medical evaluation. Provide information to reduce anxiety and improve coping skills among members of the campus community.

Measures might include:

- Regular communications with campus community early in the pandemic to educate members on measures to reduce disease transmission.
- Developing a self monitoring of pandemic influenza guide and making it available on the UHS web site/hard copy.
- Provide and publicize Self Care measures with instructions on when it is appropriate to seek medical care.
- Consider message on main incoming UHS phone line, (510) 642-2000, and line for hearing impaired only, (510) 643-1233.
- Mental health support materials available via the web or recorded messages or other mechanisms.
- Plan for reaching out to vulnerable campus populations with special needs.

2. Establish Pandemic Influenza Triage Center

Goal: To quickly sort out patients who require medical care from those who are not ill, have a non infectious health problem or need information. Take measures to reduce the spread of pandemic influenza as individuals seek medical care.

Measures:

- Set up Pandemic influenza triage center (see Section VII, Case Management).
- Determine hours of operation (8am - 8pm may be desirable if staffing can support).

- Determine staffing needed to support operations. 12 hour shifts may be needed initially until additional resources can be located. Include clinical and non clinical support staff.
- Clarify legal issues related to a pandemic disaster e.g. use of healthcare volunteers etc.
- Provide vaccination or other protection when possible for clinical staff.
- Consider incentives to encourage staff to work, such as providing housing away from family during the event, childcare etc.
- Consider use of medical personnel who do not normally do triage to cover shifts i.e. clinical staff in primarily administrative roles, recent retirees, campus staff who have suitable backgrounds.
- Advance request for additional staff to campus EOC as necessary.
- Utilize simplified forms that collect data needed to register patients and document services e.g. triage tags.
- Signage on respiratory hygiene/cough etiquette posted. Universal precautions followed by clinical and frontline staff.
- Masks, tissues, hand hygiene materials and disposal receptacles made available in waiting area.
- Establish respite area for clinical staff to take needed breaks.
- Consider need for child care to allow clinical staff to work.
- Document costs of staffing to apply for reimbursement.

3. Re-Prioritize Scope of Services

Goal: To identify services that may be temporarily suspended to allow for redeployment of resources to meet acute needs

- Define selected services that may be postponed e.g. annual exams, wellness exams, career counseling to allow for redeployment of resources as needed based on current circumstances in both the medical and mental health areas.
- Publicize revised scope of services to clients.
- Define distinct blocks of time for the delivery of influenza related care and non-influenza care.
- Designate waiting areas to separate influenza patients from others. (UC waiting area for influenza, Specialty waiting area for all others).
- Define and defer care for services for common conditions that are self limiting e.g. non-complicated URIs that can be managed in the outpatient setting and provide information on home management (self or family based). Consider use of the web site to allow people to self select home management.
- Wherever possible and clinically acceptable, shift to low tech methodologies e.g. p.o. hydration vs IV hydration.
- Clarify disposition criteria according to the situation (e.g. hospitalization, home health care, self or family care). Re-evaluate criteria frequently based on the situation.
- Discuss possible need for palliative care if situation warrants.

4. Establish Threshold for Opening Off-Site Treatment Facility

Goal: To identify the need to open an off-site treatment facility and the criteria for site selection. Site suitability will vary according to patient acuity. Sicker patients may be more easily cared for in

a “ward” environment while those with less acuity may be accommodated in a dormitory type of setting. This decision would be made in consultation between campus and public health officials as the situation dictates.

- Assess acuity patterns determine best type of setting to deliver care.
- Determine the anticipated volume of patients that can be served.
- Determine the maximum number of patients that can be served within UHS
- Determine possible setting for 24 hour services for patients within UHS e.g use clinic space on the second floor or possible use of the atrium for patients.
- Evaluate alternative sites using existing criteria (see CDC/HHS Appendix 7 in the UHS Pandemic Flu Master Binder, Section VIII). Consider any special needs populations such as the physically handicapped, young children etc.
Potential locations for mass treatment in a “ward” may include RSSP, Haas auditorium, and ASUC ballroom.
- Weigh pros and cons of putting large numbers of patients in open setting e.g. auditorium vs. residential facility with double occupancy. Patient acuity and staffing levels will need to be considered.
- Set aside a palliative care area for those unlikely to survive.
- Consider batching patients with pandemic influenza to reduce need for multiple transports.
- Identify supplies needed to create infirmary space. Included are such items as cots, blankets, pillows, towels, personal hygiene kits etc. Consult with Office of Emergency Preparedness to see what quantities are on hand.
- If possible purchase and prepackage supplies to allow for treatment packs of supplies to treat 50 patients at a time. Identify storage space for supplies.
- Can oxygen be delivered in selected site? Arrange for supply of oxygen and delivery mechanisms.
- Establish minimum staffing levels for each shift. 12 hour shifts may be necessary initially until alternative staffing can be arranged. Utilize other staff to stretch clinical resources.
- Distribute guidebook for the roles and activities involved in mass triage. Guidelines for what level of care is to be delivered and by whom is one element that needs to be spelled out.
- May need to request additional portable toilets based on site selected.
- Consult with UCPD regarding security arrangements.
- Consult with the American Red Cross for assistance with alternative care site needs for food/supplies.
- Establish criteria for demobilizing and closing alternate site.

5. Establish Morgue Capacity

- If anticipated number of deaths precludes usual procedures, contact EOC to see if refrigerated truck may be procured for holding bodies.
- Assure adequate numbers of body bags are available.
- Construct log to catalog bodies.
- Establish notification system for next of kin.
- Establish plan for spiritual and emotional support to those not expected to survive and family members. Possible personnel are clergy, counselors, psychologists etc.
- Set aside private space for mourning.

VIII. ISOLATION AND QUARANTINE

A. Containment Strategies

If initial strategies aimed at containment of a novel influenza virus fail and the virus enters the United States, efforts will be directed towards containment. Containment strategies that might be adopted include those on the individual level, such as good hand washing and cough etiquette and the isolation of patients and monitoring of their contacts. On the community level, strategies may include canceling large gatherings or classes and dismissing schools for varying periods of time based on circumstances.

Early in the course of a Pandemic, implementing containment measures may, in the face of a less efficiently transmitted virus, slow the spread of the virus and allow for medical intervention. As suggested by HHS, the following community containment measures may be taken on the Berkeley campus as appropriate to the situation:

Graded Implementation of Community Containment Measures (http://www.hhs.gov/pandemicflu/plan/sup8.html)	
Level of influenza activity	Response
No novel influenza strains of public health concern in global circulation	Preparedness planning
Limited novel influenza virus ¹ transmission abroad; all local cases are either imported or have clear epidemiologic links to other cases	Quarantine of close contacts
Limited novel influenza virus transmission in the area, with either a small number of cases without clear epidemiologic links to other cases or with increased occurrence of influenza among their close contacts	Quarantine of close contacts
Sustained novel influenza virus transmission in the area, with a large number of cases without clear epidemiologic links to other cases; control measures aimed at individuals and groups appear to be effective	Focused measures to increase social distance; ² consider community-based measures
Sustained novel influenza activity in the area, with a large number of cases in persons without an identifiable epidemiologic link at the time of initial evaluation; control measures are believed to be ineffective	Community-level measures to increase social distance; consider snow days and community-wide quarantine
Decreases in the number of new cases, unlinked (or "unexpected") cases, and generations of transmission	Quarantine of contacts
Transmission has been controlled or eliminated; no new cases reported	Active monitoring in high-risk populations; continue for 2-3 incubation periods after control or elimination of transmission

¹"Novel influenza viruses" include avian or animal influenza strains that can infect humans (like avian influenza A [H5N1]) and new or reemergent human viruses that cause cases or clusters of human disease.
²"Focused measures to increase social distance" include measures applied to groups rather than individuals or whole communities (e.g., quarantine of groups of exposed persons and measures that apply to the use of specific sites or buildings)

CDC has further organized community mitigation strategies according to the pandemic severity index and US Government Stages with progression from Alert status to Standby (first human case in the US) to Activate (first laboratory confirmed cluster in state or region). Refer to CDC/HHS Figure A. Pandemic Severity Index and Table A. Triggers for Implementation of Mitigation Strategy by Pandemic Severity in the UHS Pandemic Flu Master Binder, Section VI.

B. Social Distancing

Social distancing is designed to reduce the amount of contact between adults in the community and the workplace. Measures such as alternative work schedules or alteration of work environments to reduce the social density and preserve a healthy workplace may facilitate preservation of essential services in a pandemic. Other measures to be considered, such as cancellation of large public gatherings and dismissal of students should be matched to the level of threat. See Summary of the Community Mitigation Strategy by Pandemic Severity, CDC/HHS Figure A (see the UHS Pandemic Flu Master Binder, Section VI).

Specific operational procedures for isolation and quarantine within the UC Berkeley campus community will follow current recommendations by the CDC and local public health authorities at the time. Mitigation measures may be anticipated to remain in effect until sufficient vaccination has been administered to the campus or until other parameters are reached as outlined by Public Health officials.

C. Quarantine

Quarantine: Is the separation or restriction of activities of persons who are not infected or symptomatic with a contagious illness, but who are believed to have been exposed to a communicable disease and are therefore at higher risk of becoming infected (e.g., close contacts of a case of suspected or confirmed H5N1 case).

Household members in homes of an ill individual may have an increased risk of contracting pandemic influenza and potentially have asymptomatic illness which may promote disease transmission and therefore would be advised to stay home. Quarantine of such household members is a strategy that should be considered on the basis of all available evidence.

Quarantine should be considered in the setting of limited disease transmission in the area and when most cases are linked to an earlier case or through a known transmission setting. CDC suggests considering this strategy at pandemic severity level 2 and above (see Section VI in the UHS Pandemic Flu Master Binder). Consider combining this option with the use of antivirals if effective, feasible and quantities are sufficient.

Information on taking care of ill people at home is available at www.pandemicflu.gov and the Red Cross website <http://www.redcross.org/news/ds/panflu/>. Links to this information will be posted on the UHS web site.

1. Duration of Quarantine

Based on current data the recommended duration of quarantine is 7 days. This interval may be adjusted as information on the specific virus becomes available during a pandemic.

At the end of the quarantine period the person quarantined should be assessed for physical symptoms such as fever and/or respiratory symptoms (these symptoms may be refined as more is learned about the particular virus responsible for the pandemic). If symptoms are present then the patient is placed in isolation (home isolation is preferred when possible). The person quarantined should also be assessed for psychological distress and referred appropriately. If no symptoms are present, the patient may resume normal activities.

2. General Considerations

- Assess for necessary support services such as psychological support, food and water, household and medical supplies.
- Collect data on all persons quarantined including: relationship to case patient, details of exposure, whether vaccinated or treated with antiviral prophylaxis, or using PPE.
- Provide attended phone number to call if symptoms develop or other immediate needs arise.
- Monitor daily or more frequently if resources permit. Persons in quarantine should be assessed for symptoms by either active or passive monitoring. In the midst of a pandemic, persons in quarantine will be asked to assess their symptoms twice a day and call a designated number to report their condition where it will be logged. If there is a question about his/her condition, a nurse will assess the patient. If staffing permits, a UHS staff member will call the person in quarantine daily to check in on him/her.
- Persons in quarantine should limit their interactions with other household members to prevent the potential spread of influenza viruses in the interval between exposure and the recognition of the clinical syndrome. Eating and sleeping in a separate room, use of a separate bathroom and use of PPE may be employed.

Household members without symptoms may go to school or work without restriction unless the person quarantined develops symptoms.

In some cases persons may not have access to an appropriate environment for home quarantine e.g. dormitory. In this case UHS will contact RSSP to make arrangements for an appropriate quarantine setting.

D. Isolation Authority and Assessment

Isolation: Is the separation and restriction of activities of symptomatic individuals who are infected with a contagious disease. The goal is to minimize or eliminate exposure and transmission to others.

Voluntary home isolation combined with antiviral treatment, as available and indicated, is

recommended at all levels of the pandemic severity index. Many ill individuals who are not critically ill may be safely managed at home with appropriate support.

1. Legal Authority

The legal basis for communicable disease control through mandatory isolation and quarantine derives from federal, state, and local public health laws. These laws rest on three basic concepts: the broad powers vested in public health officials, the restraints placed upon them by Constitutional and other laws, and the specific duties public health officials are obligated to carry out.

Public health authority is grounded in “police powers,” which include isolation and quarantine. Therefore, public health officials may seek the assistance of law enforcement counterparts to enforce a public health order.

The Health Officer for the City of Berkeley has authority to use both Isolation Agreements and Isolation Orders to ensure the safety of the larger public.

Patients meeting the case classification for an avian or a novel influenza will be issued legal orders of isolation by the Public Health Department. Most patients cooperate with voluntary isolation, and home isolation is preferred when hospitalization is not indicated. If the patient does not agree to isolation, the health department can individually ascertain intent, and if necessary, obtain a warrant for the patient's arrest. Violation of a local health officer ordered isolation is a misdemeanor and the penalties usually involve enforced isolation either in a facility with a guard or a locked facility.

2. Assessment for Home Isolation

Decisions regarding hospital vs. home isolation will be made by Berkeley City Health Department (BCHD) in consultation with attending and consulting physicians. The decision will be based on severity of symptoms, details of exposure, and the feasibility of home isolation. A primary caregiver must be available, who will remain in the home and is not at high risk of complications from influenza.

The home or alternative accommodation must be assessed before placing a case on Home Isolation. If possible, BCHD will assess the location by home visit. Alternatively, a telephone assessment may be made by interview with the person to be isolated, or a responsible adult household member. Interviews will include both open-ended and specific questions to elicit information.

Example Requirements

- Separate Bedroom
- Bathroom with commode and sink; if multiple bathrooms are present, designate one for exclusive use of influenza patient.
- Telephone

If Home Isolation requirements cannot be met, the person will be placed in a designated U.C. Berkeley isolation unit or other appropriate isolation facilities.

Special requirements for individual patients that have mobility, sensory, or other impairments, will be evaluated on an individual basis so appropriate accommodations can be coordinated.

E. Residential Isolation Facilities

The Centers for Disease Control and Prevention (CDC) states that if an asymptomatic exposed student lives in a residence where appropriate infection control precautions cannot be implemented and maintained (e.g. crowded dormitory settings), alternative housing arrangements should be made. To allow for on campus isolation and quarantine space, off campus locations, such as local hotels and apartments that may be willing to house healthy individuals will be identified and used.

Residential and Student Service Programs was charged with developing a shelter accommodation protocol for members of the residential community who would require quarantine or isolation. RSSP will be responsible for the set up of those facilities including the furnishings as noted in CDC guidelines.

1. Notification

The attending physician at UHS or designee will contact the EOC if activated (or RSSP directly if the EOC is not activated), to indicate the need to make isolation and/or quarantine arrangements. If the patient currently resides in university-run housing, roommate(s) will be notified as appropriate and relocated if necessary.

If the isolating facility is in compliance with standards and guidelines that are established by the CDC, then there is no need for community notification as community standards for protecting the public from communicable disease will have been met.

2. Isolation Facilities

All isolation housing, sites would ideally meet the following criteria:

- i. They provide maximum privacy, with a private entrance and exit (optimal).
- ii. The location minimizes the potential for contact with others who are not infected.
- iii. They are non-shared ventilation environments.
- iv. They are fully furnished with refrigerators, microwaves, televisions, telephones, desks, couches, beds and computer connections.
- v. They have private bathrooms.

Options for isolation and quarantine will be identified by RSSP in advance of a pandemic and assessed for suitability when more information is known about the particular virus strain. It may be necessary to relocate some residents to create quarantine/isolation space within the RSSP housing units.

3. Isolation Services

Welcome Sheet: A laminated informational handout will be provided to the student. This sheet will summarize important isolation procedures that the student must follow and will provide phone numbers to call if they have any problems or concerns.

- Dining accommodation: Three meals per day will be provided by RSSP staff. Snacks and bottled water will be provided in each isolation/quarantine area.
- Transportation: Any transport should be limited as much as possible and dependent upon the condition of the patient. If medically necessary, UHS will call EH&S during business hours or the UCPD after hours asking to have the off-hours EH&S Responder paged. EH&S personnel, using appropriate infection control measures, may transport the patient to/from the medical facility and back to an isolation area if necessary and medically stable. If the volume of transportation needs place an undue burden on EH&S operations, they will assist in educating/fitting additional staff in PPE to permit the use of other campus vehicles for transport.
- Medical Support: UHS will monitor all patients in isolation and quarantine. If the numbers of patients are small, medical services will be available at UHS and at Alta Bates Summit Medical Center or other community health care providers (e.g. Kaiser). UHS Counseling and Psychological Services will also be available to the student upon request. As numbers of ill patients rise, the UHS will transform the health care model to accommodate the surge.
- Academic Support: Social Services will assist as appropriate to enable the student to keep up with classes when possible.

IX. ANTIVIRALS AND VACCINE

A. Antiviral Drugs Use

Use of antiviral drugs is expected to be a strategic part of a response to an influenza pandemic. Antiviral drugs may decrease the severity of clinical illness and complications if administered to ill persons within 24-48 hours of symptom onset. Federal and state stockpiles of these medications are expected to be inadequate to meet demand and must therefore require targeted use. Guidelines for use of antiviral drugs may change over time. UHS will comply with current State guidelines for administration and coordinate with the City of Berkeley Public Health Department to obtain needed supplies. All medications must be tracked according to the procedures outlined by the dispensing authority. Security may be needed to transport these medications to the dispensing site. Personal stockpiling is strongly discouraged at this time.

Should an influenza pandemic necessitate a formal request for these medications, it will be essential to educate the public on the current guidelines for the administration of these medications.

Current State recommendations include antiviral administration for:

- Treatment of cases to decrease the impact on the healthcare system
- Post exposure prophylaxis in select settings such as initial containment in the early stages of a pandemic when isolated cases or limited clusters of cases can be identified and investigated
- High risk occupational exposures in healthcare settings
- Exposure of high risk persons in institutional and household settings.

The following tables from HHS describe the characteristics of these medications.

Table 1. Characteristics of Anti-Influenza Antiviral Drugs

(<http://www.hhs.gov/pandemicflu/plan/sup7.html>)

	Inhibits	Acts on	Administration	Common Side Effects
Amantadine	M2 ion channel	Influenza A	Oral	CNS, GI
Rimantadine	M2 ion channel	Influenza A	Oral	CNS, GI (less often than amantadine)
Oseltamivir	Neuraminidase	Influenza A and B	Oral	GI
Zanamivir	Neuraminidase	Influenza A and B	Inhaler	Bronchospasm

These agents differ in mechanisms of action, pharmacokinetics, FDA-approved indications, dosages, cost, and potential for emergence of drug resistance (see July 2005 recommendations of the AHIC (<http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>)). The neuraminidase inhibitors and rimantadine are superior to amantadine with regard to the frequency of serious side effects. The use of M2 inhibitors, particularly for treatment, is likely to lead to the emergence and spread of drug-resistant influenza viruses.

Table 2. Recommended Daily Dosage of Antivirals for Treatment and Prophylaxis

(From *Prevention and Control of Influenza Recommendations of the Advisory Committee on Immunization Practices [ACIP], July 2005*)

Antiviral Agent	Age Groups (years)				
	1–6	7–9	10–12	13–64	≥65
Amantadine^a					
Treatment, influenza A	5mg/kg body weight/day up to 150 mg in two divided doses ^b	5mg/kg body weight /day up to 150 mg in two divided doses ^b	100 mg twice daily ^c	100 mg twice daily ^c	≤100 mg/day
Prophylaxis, influenza A	5mg/kg body weight /day up to 150 mg in two divided	5mg/kg body weight /day up to 150 mg in two divided doses ^b	100 mg twice daily ^c	100 mg twice daily ^c	≤100 mg/day

	doses ^b				
Rimantadine^d					
Treatment, ^e influenza A	NA ^f	NA	NA	100 mg twice daily ^{c,g}	100 mg/day
Prophylaxis, influenza A	5mg/kg body weight /day up to 150 mg in two divided doses ^b	5mg/kg body weight /day up to 150 mg in two divided doses ^b	100 mg twice daily ^c	100 mg twice daily ^c	100 mg/day ^h
Zanamivir^{i,j}					
Treatment, influenza A and B	NA	10 mg twice daily	10 mg twice daily	10 mg twice daily	10 mg twice daily
Oseltamivir					
Treatment, ^k influenza A and B	dose varies by child's weight ^l	dose varies by child's weight ^l	dose varies by child's weight ^l	75 mg twice daily	75 mg twice daily
Prophylaxis, influenza A and B	NA	NA	NA	75 mg/day	75 mg/day

NOTE: Amantadine manufacturers include Endo Pharmaceuticals (Symmetrel (R)-tablet and syrup) and Geneva Pharms Tech (Amantadine HCL-capsule); USL Pharma (Amantadine HCL-capsule and tablet); and Alpharma, Carolina Medical, Copley Pharmaceutical, HiTech Pharma, Mikart, Morton Grove, and Pharmaceutical Associates (Amantadine HCL-syrup), and Sandoz. Rimantadine is manufactured by Forest Laboratories (Flumadine (R)-tablet and syrup); Corepharma, Impax Labs (Rimantadine HCL-tablet), and Amide Pharmaceuticals (Rimantadine HCL-tablet). Zanamivir is manufactured by GlaxoSmithKline (Relenza (R)-inhaled powder). Oseltamivir is manufactured by Roche Pharmaceuticals (Tamiflu (R)-tablet). Information based on data published by the U.S. Food and Drug Administration at www.fda.gov, accessed 3/30/2005.

^a The drug package insert should be consulted for dosage recommendations for administering amantadine to persons with creatinine clearance ≤ 50 ml/min/1.73m².

^b 5 mg/kg body weight of amantadine or rimantadine syrup = 1 tsp/2.2 lbs.

^c Children aged ≥ 10 years who weigh < 40 kg should be administered amantadine or rimantadine at a dosage of 5 mg/kg body weight /day.

^d A reduction in dosage to 100 mg/day of rimantadine is recommended for persons who have severe hepatic dysfunction or those with creatinine clearance ≤ 10 mL/min. Other persons with less severe hepatic or renal dysfunction taking 100 mg/day of rimantadine should be observed closely, and the dosage should be reduced or the drug discontinued, if necessary.

^e Approved by FDA only for treatment among adults.

^f Not applicable.

^g Rimantadine is approved by FDA for treatment among adults. However, certain experts in the management of influenza consider it appropriate for treatment among children. (See American Academy of Pediatrics, 2003 Red Book.)

^h Older nursing-home residents should be administered only 100 mg/day of rimantadine. A reduction in dosage to 100 mg/day should be considered for all persons aged ≥ 65 years if they experience possible side effects when taking 200 mg/day.

ⁱ Zanamivir administered via inhalation using a plastic device included in the medication package. Patients will benefit from instruction and demonstration of the correct use of the device.

^j Zanamivir is not approved for prophylaxis.

^k A reduction in the dose of oseltamivir is recommended for persons with creatinine clearance < 30 ml/min.

^l The dose recommendation for children who weigh ≤ 15 kg is 30 mg twice a day. For children who weigh > 15 to 23 kg, the dose is 45 mg twice a day. For children who weigh > 23 to 40 kg, the dose is 60 mg twice a day. And for children who weigh > 40 kg, the dose is 75 mg twice a day.

B. Pandemic Influenza Vaccine Administration

It is anticipated that there will be insufficient quantities of pandemic influenza vaccine available at the start of a pandemic and that vaccine administration must therefore be prioritized. Guidelines are currently being developed at the national and state level. University Health Services will administer vaccine in accordance with State guidelines. It is anticipated that clinical staff that are treating patients with potential pandemic influenza will be prioritized to receive the pandemic vaccine early to prevent loss of health care personnel. The City of Berkeley Public Health Department will have primary responsibility for monitoring and evaluating vaccine distribution and administration.

As vaccine supplies increase, the seasonal influenza vaccine clinics will serve as the model for a mass immunization clinic. See layout in Section IX of the UHS Pandemic Flu Master Binder. The location for the clinic will be selected in anticipation of the need. The site selected should allow for unidirectional flow of patients with an entrance and a separate exit. There needs to be room for a considerable quantity of persons to be served quickly. Handicap accessibility is important. If the weather permits, the majority of persons could remain outside and small numbers of patients admitted for vaccination at a time. Possible locations include the Alumni house, the lobby of ASUC etc.

X. INFECTION CONTROL

The following Infection Control guidelines for University Health Services (UHS) were adapted from:

- U.S. Department of Health and Human Services (HHS) – Pandemic Influenza Plan (<http://www.hhs.gov/pandemicflu/plan/>)
- Center for Disease Control and Prevention (CDC) – Interim Guidance on Planning for Use of Surgical Masks and Respirators in Health Care Settings during an Influenza Pandemic (http://www.pandemicflu.gov/plan/health_care/maskguidancehc.html)
- World Health Organization (WHO) – Avian Influenza, Including Influenza A (H5N1), in Humans: WHO Interim Infection Control Guidelines (http://www.who.int/csr/disease/avian_influenza/guidelinetopics/en/index3.html)

For infection control in non-health care settings, see the Safe Work Practices and Safe Home Practices Handouts at the end of this Section.

The infection control guidance provided in this Section is based on our current knowledge of routes of influenza transmission, the pathogenesis of influenza, and the effects of influenza control measures used during past pandemics and interpandemic periods. Given some uncertainty about the characteristics of a new pandemic strain, this Section allows for flexibility and real-time decision-making that take new information into account as the situation unfolds. The specific characteristics of a new pandemic virus—virulence, transmissibility, initial geographic distribution, clinical manifestation, risk to different age groups and subpopulations, and drug susceptibility—will remain

unknown until the pandemic gets underway. If the new virus is unusual in any of these respects, UHS will follow updated infection control guidance provided by HHS and CDC.

A. Background: Influenza Transmission, Pathogenesis, and Control

1. Modes of Influenza Transmission

Influenza is transmitted person to person through close contact. Transmission occurs through multiple routes, including large droplets and direct and indirect contact. Fine droplet inhalational transmission may also occur.

Most information on the modes of influenza transmission from person to person is indirect and largely obtained through analysis of outbreaks in health care facilities and other settings (e.g., cruise ships, airplanes, schools, and colleges). Although the knowledge base is limited, the epidemiologic pattern observed is consistent with transmission through close contact (i.e., exposure to large respiratory droplets, direct contact transfer of virus from contaminated hands to the nose or eyes, or exposure to small-particle aerosols in the immediate vicinity of the infectious individual [known as “short-range exposure to aerosols”]). The relative contributions and clinical importance of the different modes of influenza transmission are unknown. While some observational studies and animal studies raise the possibility of short-range airborne transmission through small-particle aerosols, convincing evidence of airborne transmission of influenza viruses from person to person over long distances (e.g., through air-handling systems, or beyond a single room) has not been demonstrated. However, one study in mice performed in a room outfitted with a slowly rotating fan to continuously agitate the air found that influenza virus sprayed into the room remained infective for some mice for extended periods (up to 24 hours) at room atmospheres of low humidity (17 to 24%). Room atmospheres with higher humidities into which virus suspension was sprayed were no longer infective in mice after one hour.

i. Droplet transmission

Droplet transmission involves contact of the mucous membranes of the nose or mouth or the conjunctivae of a susceptible person with large-particle droplets containing microorganisms generated by an infected person during coughing, sneezing, or talking. Transmission via large-particle droplets requires close contact between source and recipient persons because these larger droplets do not remain suspended in the air and generally travel only short distances. Three feet has often been used by infection control professionals as a guide for “short distance” and is based on studies of respiratory infections; however, for practical purposes, this distance may range from three to six feet. Special air handling and ventilation are not required to prevent droplet transmission.

On the basis of epidemiologic patterns of disease transmission, large droplet transmission—via coughing and sneezing—has traditionally been considered a major route of seasonal influenza transmission.

ii. Airborne transmission

In contrast to tuberculosis, measles, and varicella, the pattern of disease spread for seasonal influenza does not suggest transmission across long distances (e.g., through ventilation

systems); therefore, negative pressure rooms are not needed for patients with seasonal influenza. However, localized airborne transmission may occur over short distances (i.e., three to six feet) via droplet nuclei or particles that are small enough to be inhaled. The relative contribution of short-range airborne transmission to influenza outbreaks is unknown.

Several often-cited papers raise concern about short-range aerosol transmission as a possible route of spread for influenza. These include laboratory studies in animals, observational studies during the 1957-58 influenza pandemic, and an epidemiologic study of transmission on an airplane with an inoperative ventilation system. An experimental study in which the infectious dose of influenza virus was found to be as much as 100-fold lower for persons infected with small aerosols than with nasal drops has further raised this concern. Although data are limited, the possibility remains that short-range aerosol transmission is a route of influenza transmission in humans and requires further study.

iii. Aerosol-generating procedures

It is likely that some aerosol-generating medical procedures (e.g., endotracheal intubation, open suctioning, nebulizer treatment, bronchoscopy) could increase the potential for generation of small aerosols in the immediate vicinity of the patient. Although this mode of transmission has not been evaluated for influenza, given what is known about these procedures, additional precautions for health care personnel who perform aerosol-generating procedures on influenza patients are warranted.

iv. Contact Transmission (Direct and via Fomites)

Contact transmission of influenza may occur through direct contact with contaminated hands, skin, or fomites followed by auto-inoculation of the respiratory mucosa. Influenza transmission via contaminated hands and fomites has been suggested as a contributing factor in some studies. There are insufficient data to determine the proportion of influenza transmission that is attributable to direct or indirect contact. However, it is prudent to reinforce recommendations for thorough and frequent handwashing, which is known to reduce the likelihood of contamination of the environment and to reduce transmission of respiratory infections. Surgical mask or respirator use may provide an additional benefit by discouraging facial contact and subsequent autoinoculation.

2. Pathogenesis of Influenza and Implications for Infection Control

Human influenza is a disease of the respiratory tract. Influenza virus infects respiratory epithelial cells via receptors found principally in non-ciliated cells of the upper respiratory tract; infection also can occur in the lower respiratory tract. There is no natural or experimental evidence that human seasonal influenza virus infection of the gastrointestinal tract can occur.

While conjunctivitis may be associated with human infection with some avian influenza viruses, ocular infection does not appear to be a primary route for transmission of human influenza viruses, although data are very limited. Nonetheless, it is prudent to prevent exposure of the eyes as well as the mucous membranes of the respiratory tract to possibly infectious material (e.g., as may occur when health care workers perform splash-generating procedures).

3. Control of Transmission in Health Care Facilities

Outbreaks of influenza have been prevented or controlled through a set of well established strategies that include vaccination of patients and health care personnel; early detection of influenza cases in a facility; use of antivirals to treat ill persons and, if recommended, as prophylaxis; isolation of infectious patients in private rooms or cohort units; use of appropriate barrier precautions during patient care, as recommended for Standard and Droplet Precautions (see Section X in the UHS Pandemic Flu Master Binder); and administrative measures, such as restricting visitors, educating patients and staff, and cohorting health care workers assigned to an outbreak unit.

These are the primary infection control measures recommended in this plan. They will be updated, as necessary, based on the observed characteristics of the pandemic influenza virus.

B. Infection Control: University Health Services

The infection control guidelines described below are generally applicable throughout the different pandemic phases. In some cases, as indicated, recommendations may be modified as the situation progresses from limited cases to widespread community illness.

1. Basic infection control principles for preventing the spread of pandemic influenza

The following infection control principles apply in any setting where persons with pandemic influenza might seek and receive health care services (e.g. Urgent Care, Occupational Health, isolation area/infirmery).

Initiation of infection control precautions begins when the patient enters triage with influenza-like symptoms (see below) as shown in the diagram at the end of this Section [developed by WHO for Avian Influenza H5N1, this flow chart will be modified as needed based on the characteristics of the pandemic influenza virus].

- Limit contact between infected and non-infected persons
 - Isolate infected persons (see Section VIII, Isolation and Quarantine).
 - Limit contact between nonessential personnel and other persons (e.g., social visitors) and patients who are ill with pandemic influenza.
 - Promote spatial separation in common areas (i.e., sit or stand as far away as possible—at least 3 feet—from potentially infectious persons) to limit contact between symptomatic and non-symptomatic persons.
- Persons caring for influenza patients and who must be in contact should:
 - Wear a surgical or procedure mask for close contact with infectious patients.
 - Use contact and airborne precautions, including the use of N95 respirators, when appropriate.
 - Wear gloves (gown if necessary) for contact with respiratory secretions.
 - Perform hand hygiene after contact with infectious patients.

Symptoms of influenza include fever, headache, myalgia, prostration, coryza, sore throat, and cough. Otitis media, nausea, and vomiting are also commonly reported among children. Typical influenza (or “flu-like”) symptoms, such as fever, may not always be present in elderly patients, young children, patients in long-term care facilities, or persons with underlying chronic illnesses.

- Contain infectious respiratory secretions:
 - Instruct persons who have “flu-like” symptoms (see below) to use respiratory hygiene/cough etiquette (see Box 1 below).
 - Promote use of masks by symptomatic persons in common areas (e.g., waiting rooms) or when being transported (e.g., in emergency vehicles).

BOX 1. RESPIRATORY HYGIENE/COUGH ETIQUETTE

(<http://www.hhs.gov/pandemicflu/plan/sup4.html>)

To contain respiratory secretions, all persons with signs and symptoms of a respiratory infection, regardless of presumed cause, should be instructed to:

- Cover the nose/mouth when coughing or sneezing.
- Use tissues to contain respiratory secretions.
- Dispose of tissues in the nearest waste receptacle after use.
- Perform hand hygiene after contact with respiratory secretions and contaminated objects/materials.

Health care facilities should ensure the availability of materials for adhering to respiratory hygiene/cough etiquette in waiting areas for patients and visitors:

- Provide tissues and no-touch receptacles for used tissue disposal.
- Provide conveniently located dispensers of alcohol-based hand rub.
- Provide soap and disposable towels for handwashing where sinks are available.

Masking and separation of persons with symptoms of respiratory infection

During periods of increased respiratory infection in the community, persons who are coughing should be offered either a procedure mask (i.e., with ear loops) or a surgical mask (i.e., with ties) to contain respiratory secretions. Coughing persons should be encouraged to sit as far away as possible (at least 3 feet) from others in common waiting areas. Some facilities may wish to institute this recommendation year-round.

2. Management of infectious patients

i. Respiratory hygiene/cough etiquette

Respiratory hygiene/cough etiquette has been promoted as a strategy to contain respiratory viruses at the source and to limit their spread in areas where infectious patients might be awaiting medical care (e.g., Primary Care, Urgent Care).

The impact of covering sneezes and coughs and/or placing a mask on a coughing patient on the containment of respiratory secretions or on the transmission of respiratory infections has not been systematically studied. In theory, however, any measure that limits the dispersal of respiratory droplets should reduce the opportunity for transmission.

The elements of respiratory hygiene/cough etiquette include:

- Education of health care staff, patients, and visitors on the importance of containing

respiratory secretions to help prevent the transmission of influenza and other respiratory viruses.

- Posted signs (in languages appropriate to the populations served) with instructions to patients and accompanying family members or friends to immediately report symptoms of a respiratory infection as directed.
- Source control measures (e.g., covering the mouth/nose with a tissue when coughing and disposing of used tissues; using masks on the coughing person when they can be tolerated and are appropriate).
- Hand hygiene after contact with respiratory secretions.
- Spatial separation, ideally >3 feet, of persons with symptoms of respiratory infections in common waiting areas when possible.

ii. Droplet precautions and patient placement

Patients with known or suspected pandemic influenza should be placed on droplet precautions (see A.1.i of this Section) for a minimum of 5 days from the onset of symptoms. Because immunocompromised patients may shed virus for longer periods, they may be placed on droplet precautions for the duration of their illness. Health care staff should wear appropriate PPE (see below). For placement of patients, see Sections VII and VIII on Triage and Isolation/Quarantine.

If the pandemic virus is associated with diarrhea, contact precautions (i.e., gowns and gloves for all patient contact) should be added.

CDC will update these recommendations if changes occur in the anticipated pattern of transmission (www.cdc.gov/flu) and UHS will comply with the most current guidelines.

3. Infection control practices for health care personnel

Infection control practices for pandemic influenza are the same as for other human influenza viruses and primarily involve the application of standard and droplet precautions (see Section X in the UHS Pandemic Flu Master Binder) during patient care in health care settings (e.g. UHS, alternative care sites – isolation area/infirmery). This guidance also applies to health care personnel going into the homes of patients. During a pandemic, conditions that could affect infection control may include shortages of antiviral drugs, decreased efficacy of the vaccine, increased virulence of the influenza strain, shortages of single-patient rooms, and shortages of PPE. These issues may necessitate changes in the standard recommended infection control practices for influenza. CDC will provide updated infection control guidance as circumstances dictate with which UHS will comply.

Additional guidance is provided for family members providing home care and for use in public settings (see Sections on Safe Home Practices and Safe Work Practices) where people with pandemic influenza may be encountered.

i. Personal protective equipment (PPE)

Surgical mask and respirator use is one component of a system of infection control practices to prevent the spread of infection between infected and non-infected persons where pandemic influenza patients might receive health care services (e.g., Urgent Care, isolation area/infirmarium, home health care delivery). During an influenza pandemic, surgical masks and respirators—along with other forms of PPE (e.g., gloves, gowns, and goggles)—should be used by health care personnel in health care settings in conjunction with Standard and Droplet Precautions, respiratory hygiene, cough etiquette, vaccination, and early diagnosis and treatment. Additional information about Standard and Droplet Precautions can be found at http://www.cdc.gov/ncidod/dhqp/gl_isolation_droplet.html.

Reuse of disposable PPE items should be avoided due to the increased risk for potential contamination; however this risk must be weighed against the need to fully provide protection for health care personnel.

If a sufficient supply of PPE items is not available, health care personnel may consider reuse of some disposable items (as noted below) only when essential as a temporary solution and only if the item has not been obviously soiled or damaged (e.g. creased or torn).

a) PPE for standard and droplet precautions

PPE is used to prevent direct contact with the pandemic influenza virus. PPE that may be used to provide care includes surgical or procedure masks, as recommended for droplet precautions, and gloves and gowns, as recommended for standard precautions (see Section X in the UHS Pandemic Flu Master Binder). Additional precautions may be indicated during the performance of aerosol-generating procedures (see below). Information on the selection and use of PPE is provided at www.cdc.gov/ncidod/hip/isolat/isolat.htm/.

Masks (surgical or procedure)

- Wear a mask when entering a patient's room.
- A mask should be worn once and then discarded.
 - If pandemic influenza patients are cohorted in a common area or in several rooms (e.g. in a Residence Hall), and multiple patients must be visited over a short time, it may be practical to wear one mask for the duration of the activity; however, other PPE (e.g., gloves, gown) must be removed between patients and hand hygiene performed.
- Change masks when they become moist.
- Do not leave masks dangling around the neck.
- Upon touching or discarding a used mask, perform hand hygiene.

Gloves

- A single pair of patient care gloves should be worn for contact with blood and body fluids, including during hand contact with respiratory secretions (e.g., providing oral care, handling soiled tissues). Gloves made of latex, vinyl, nitrile, or other synthetic

materials are appropriate for this purpose; if possible, latex-free gloves should be available for health care workers who have latex allergy.

- Gloves should fit comfortably on the wearer's hands.
- Remove and dispose of gloves after use on a patient; do not wash gloves for subsequent reuse.
- Perform hand hygiene after glove removal.
- If gloves are in short supply (i.e., the demand during a pandemic could exceed the supply), priorities for glove use might need to be established. In this circumstance, reserve gloves for situations where there is a likelihood of extensive patient or environmental contact with blood or body fluids.
- Use other barriers (e.g., disposable paper towels, paper napkins) when there is only limited contact with a patient's respiratory secretions (e.g., to handle used tissues). Hand hygiene should be strongly reinforced in this situation.

Gowns

- Wear an isolation gown, if soiling of personal clothes or uniform with a patient's blood or body fluids, including respiratory secretions, is anticipated. **Most patient interactions do not necessitate the use of gowns.** However, procedures such as intubation and activities that involve holding the patient close are examples of when a gown may be needed when caring for pandemic influenza patients.
- A disposable gown made of synthetic fiber or a washable cloth gown may be used.
- Ensure that gowns are of the appropriate size to fully cover the area to be protected.
- Gowns should be worn only once and then placed in a waste or laundry receptacle, as appropriate, and hand hygiene performed.
- If gowns are in short supply (i.e., the demand during a pandemic could exceed the supply) priorities for their use may need to be established. In this circumstance, reinforcing the situations in which they are needed can reduce the volume used.
- Alternatively, other coverings (e.g., patient gowns) could be used. It is doubtful that disposable aprons would provide the desired protection in the circumstances where gowns are needed to prevent contact with influenza virus, and therefore should be avoided. There are no data upon which to base a recommendation for reusing an isolation gown on the same patient. To avoid possible contamination, it is prudent to limit this practice.

Goggles or face shield

- In general, wearing goggles or a face shield for routine contact with patients with pandemic influenza is not necessary. If sprays or splatter of infectious material is likely, goggles or a face shield should be worn as recommended for standard precautions. Additional information related to the use of eye protection for infection control can be found at <http://www.cdc.gov/niosh/topics/eye/eye-infectious.html>.

b) PPE for special circumstances

Precautions for early stages of a pandemic

- Early in a pandemic, it may not be clear that a patient with severe respiratory illness has pandemic influenza. Therefore precautions consistent with all possible etiologies, including a newly emerging infectious agent, should be implemented. This may involve the combined use of airborne and contact precautions, in addition to standard precautions, until a diagnosis is established.

PPE for aerosol-generating procedures

- During procedures that may generate increased small-particle aerosols of respiratory secretions health care personnel should wear gloves, gown, face/eye protection, and a N95 respirator or other appropriate particulate respirator (see CDC Recommendations below). Respirators should be used within the context of a respiratory protection program that includes fit-testing, medical clearance, and training.
- CDC Recommendations:
 - National Institute for Occupational Safety and Health (NIOSH)-certified respirators (N-95 or higher) are recommended for use during activities that have a high likelihood of generating infectious respiratory aerosols, including the following high-risk situations:
 - Aerosol-generating procedures (e.g., endotracheal intubation, nebulizer treatment, and bronchoscopy) performed on patients with confirmed or suspected pandemic influenza
 - Resuscitation of a patient with confirmed or suspected pandemic influenza (i.e., emergency intubation or cardiac pulmonary resuscitation).
 - Providing direct care for patients with confirmed or suspected pandemic influenza-associated pneumonia (as determined on the basis of clinical diagnosis or chest x-ray), who might produce larger-than-normal amounts of respirable infectious particles when they cough.
- Negative pressure isolation is not required for routine patient care of individuals with pandemic influenza.
 - If possible, airborne infection isolation rooms should be used when performing high-risk aerosol-generating procedures.
 - If work flow, timing, resources, availability, or other factors prevent the use of airborne infection isolation rooms, it is prudent to conduct these activities in a private room (with the door closed) or other enclosed area, if possible, and to limit personnel in the room to the minimum number necessary to perform the procedure properly.

PPE for managing pandemic influenza with increased transmissibility

- The addition of airborne precautions, including respiratory protection (an N95 filtering face piece respirator or other appropriate particulate respirator), may be considered for

strains of influenza exhibiting increased transmissibility, during initial stages of an outbreak of an emerging or novel strain of influenza, and as determined by other factors such as vaccination/immune status of personnel and availability of antivirals. As the epidemiologic characteristics of the pandemic virus are more clearly defined, CDC will provide updated infection control guidance, as needed.

Prioritizing the use of respiratory protection when supplies are limited

- In the event of actual or anticipated shortages of N-95 respirators:
 - Other NIOSH-certified N-, R-, or P-class respirators should be considered in lieu of the N-95 respirator.
 - If re-useable elastomeric respirators are used, these respirators must be decontaminated according to the manufacturer's instructions after each use.
 - Powered air purifying respirators (PAPRs) may be considered for certain workers and tasks (e.g., high-risk activities). Loose-fitting PAPRs have the advantages of providing eye protection, being comfortable to wear, and not requiring fit-testing; however, hearing (e.g., for auscultation) is impaired, limiting their utility for clinical care. Training is required to ensure proper use and care of PAPRs.
- Several measures can be employed to minimize the number of personnel required to come in contact with suspected or confirmed pandemic influenza patients, thereby reducing worker exposure and minimizing the demand for respirators. Such measures include the following:
 - Establishing specific wards/an infirmary for patients with pandemic influenza
 - Assigning dedicated staff (e.g., health care, housekeeping, janitorial) to provide care for pandemic influenza patients and restricting those staff from working with non-influenza patients
 - Dedicating entrances and passageways for influenza patients
- If pandemic influenza patients are cohorted in a common area or in several rooms (e.g. in a Residence Hall), and multiple patients must be visited over a short time, it may be practical to wear one N-95 respirator for the duration of the activity; however, other PPE (e.g., gloves, gown) must be removed between patients and hand hygiene performed.
- In the event of an actual or anticipated shortage, ensure that sufficient numbers of respirators are prioritized for use during the high-risk procedures described previously in the section on CDC Recommendations.
 - This will require real-time supply monitoring to ensure that excess respirators are not held in reserve while health care personnel are conducting activities for which they would otherwise be provided respiratory protection.
 - Conversely, excessive use of respirators could result in their unavailability for high-risk procedures.
 - Decision guidance for determining respirator wear should consider factors such as duration, frequency, proximity, and degree of contact with the patient.

- Occupational health and safety professionals can assist with making these site- and activity-specific decisions.
- For example, a nurse entering a room with a suspected or confirmed pandemic influenza patient to obtain vital signs should wear an N-95 respirator. A housekeeper entering multiple rooms of confirmed or suspected influenza patients to mop floors or clean patient equipment should be similarly protected. Work activities such as those performed by a receptionist at the entrance of a hospital should be designed to prevent exposure of the worker to large numbers of potentially infected patients. In such situations, the use of transparent barriers or enclosures is preferable to the use of respirators.
- If supplies of N-95 (or higher) respirators are not available, surgical masks can provide benefits against large droplet exposure, and should be worn for all health care activities for patients with confirmed or suspected pandemic-influenza. Follow guidelines for standard and droplet precautions.

Reuse of Filtering Facepiece Respirators

- An Institute of Medicine committee recently reported that disposable masks and respirators do not lend themselves to reuse because they work by trapping harmful particles inside the mesh of fibers of which they are made. This hazardous buildup cannot be cleaned out or disinfected without damaging the fibers or other components of the device, such as the straps or nose clip. Moreover, the committee could not identify any simple modifications to the manufacturing of the devices that would permit reuse, or any changes that would dispense with the need to test the fit of respirators to ensure a wearer is fully protected.
- However, the committee suggested that, if necessary, a disposable N-95 respirator can be reused with the following precautions (these steps are intended for reuse of a respirator by *a single person*):
 - 1) A protective covering such as a medical mask or a clear plastic face shield should be worn over the respirator to protect it from surface contamination;
 - 2) The respirator should be carefully stored between uses; and
 - 3) The wearer should wash his or her hands before and after handling the respirator and the device used to shield it.

c) Caring for patients with pandemic influenza

Health care personnel should be particularly **vigilant to avoid**:

- Touching their eyes, nose or mouth with contaminated hands (gloved or ungloved). Careful placement of PPE before patient contact will help avoid the need to make PPE adjustments and risk self-contamination during use. Careful removal of PPE is also important. (See also: <http://www.cdc.gov/ncidod/hip/ppe.html>)
- Contaminating environmental surfaces that are not directly related to patient care (e.g., door knobs, light switches)

ii. Hand hygiene

Hand hygiene has frequently been cited as the single most important practice to reduce the transmission of infectious agents in health care settings (see <http://www.cdc.gov/handhygiene/pressrelease.htm>) and is an essential element of standard precautions. The term “hand hygiene” includes both handwashing with either plain or antimicrobial soap and water and use of alcohol-based products (gels, rinses, foams) containing an emollient that do not require the use of water.

- If hands are visibly soiled or contaminated with respiratory secretions, wash hands with soap (either non-antimicrobial or antimicrobial) and water.
- In the absence of visible soiling of hands, approved alcohol-based products for hand disinfection are preferred over antimicrobial or plain soap and water because of their superior microbiocidal activity, reduced drying of the skin, and convenience.
- Always perform hand hygiene between patient contacts and after removing PPE.
- Ensure that resources to facilitate handwashing (i.e., sinks with warm and cold running water, plain or antimicrobial soap, disposable paper towels) and hand disinfection (i.e., alcohol-based products) are readily accessible in areas in which patient care is provided.
- For additional guidance on hand hygiene see <http://www.cdc.gov/handhygiene/>.

iii. Disposal of solid waste

Standard precautions are recommended for disposal of solid waste (medical and non-medical) that might be contaminated with a pandemic influenza virus:

- Contain and dispose of contaminated medical waste in accordance with facility-specific procedures and/or local or state regulations for handling and disposal of medical waste, including used needles and other sharps, and non-medical waste.
- Discard as routine waste used patient-care supplies that are not likely to be contaminated (e.g., paper wrappers).
- Wear disposable gloves when handling waste. Perform hand hygiene after removal of gloves.

iv. Linen and laundry

Standard precautions are recommended for linen and laundry that might be contaminated with respiratory secretions from patients with pandemic influenza:

- Place soiled linen directly into a laundry bag in the patient’s room. Contain linen in a manner that prevents the linen bag from opening or bursting during transport and while in the soiled linen holding area.
- Wear gloves and gown when directly handling soiled linen and laundry (e.g., bedding, towels, personal clothing) as per standard precautions. Do not shake or otherwise handle soiled linen and laundry in a manner that might create an opportunity for disease transmission or contamination of the environment.

- Wear gloves for transporting bagged linen and laundry.
- Perform hand hygiene after removing gloves that have been in contact with soiled linen and laundry.
- Wash and dry linen according to routine standards and procedures (http://www.cdc.gov/ncidod/dhqp/gl_environmentinfection.html).

v. Dishes and eating utensils

Standard precautions are recommended for handling dishes and eating utensils used by a patient with known or possible pandemic influenza:

- Wash reusable dishes and utensils in a dishwasher with recommended water temperature (www.cdc.gov/ncidod/hip/enviro/guide.htm).
- Disposable dishes and utensils (e.g., used in an alternative care site set-up for large numbers of patients) should be discarded with other general waste.
- Wear gloves when handling patient trays, dishes, and utensils.

vi. Patient-care equipment

Follow standard practices for handling and reprocessing used patient-care equipment, including medical devices:

- Wear gloves when handling and transporting used patient-care equipment.
- Wipe heavily soiled equipment with an EPA-approved hospital disinfectant before removing it from the patient's room. Follow current recommendations for cleaning and disinfection or sterilization of reusable patient-care equipment.
- Wipe external surfaces of portable equipment for performing x-rays and other procedures in the patient's room with an EPA-approved hospital disinfectant upon removal from the patient's room.

vii. Environmental cleaning and disinfection

Cleaning and disinfection of environmental surfaces are important components of routine infection control in health care facilities. Environmental cleaning and disinfection for pandemic influenza follow the same general principles used in health care settings.

a) Cleaning and disinfection of patient-occupied rooms

(See: www.cdc.gov/ncidod/hip/enviro/Enviro_guide_03.pdf)

- Wear gloves in accordance with existing policies for environmental cleaning and wear a surgical or procedure mask in accordance with droplet precautions. Gowns are not necessary for routine cleaning of an influenza patient's room.
- Keep areas around the patient free of unnecessary supplies and equipment to facilitate daily cleaning.
- Use any EPA-registered hospital detergent-disinfectant. Follow manufacturer's

recommendations for use-dilution (i.e., concentration), contact time, and care in handling.

- Follow facility procedures for regular cleaning of patient-occupied rooms. Give special attention to frequently touched surfaces (e.g., bedrails, bedside and over-bed tables, TV controls, call buttons, telephones, lavatory surfaces including safety/pull-up bars, doorknobs, commodes, ventilator surfaces) in addition to floors and other horizontal surfaces.
- Clean and disinfect spills of blood and body fluids in accordance with current recommendations for Isolation Precautions (http://www.cdc.gov/ncidod/dhqp/gl_isolation.html).

b) Cleaning and disinfection after patient discharge or transfer

- Follow standard facility procedures for post-discharge cleaning of an isolation room.
- Clean and disinfect all surfaces that were in contact with the patient or might have become contaminated during patient care. No special treatment is necessary for window curtains, ceilings, and walls unless there is evidence of visible soiling.
- Do not spray (i.e., fog) occupied or unoccupied rooms with disinfectant. This is a potentially dangerous practice that has no proven disease control benefit.

viii. Postmortem care

Follow standard facility practices for care of the deceased. Practices should include standard precautions for contact with blood and body fluids.

Removal of the body

- PPE should be used:
 - N-95 respirator, if removing the body immediately after the patient's death
 - Surgical or procedure mask is sufficient if air in the room has been exchanged
 - Disposable long-sleeved, cuffed gown (waterproof, if the outside of the body is visibly contaminated with potentially infectious excretions or secretions)
 - Alternatively, if no waterproof gown is available, a waterproof apron can be used
 - Non-sterile, ambidextrous gloves (single layer) should cover the cuffs of the gown
 - If splashing of body fluids is anticipated, balaclava-type cap (disposable) and face shield (preferable) or goggles
- The body should be fully sealed in an impermeable body bag prior to removal from the isolation room/area or infirmary.
- No leaking of body fluids should occur and the outside of the bag should remain clean.
- After removing PPE, perform hand hygiene.
- Transfer to morgue facilities (see Section VII).
- If the family wished to view the body after removal from the isolation room/area or infirmary they may be allowed to do so. If the patient died during the infectious period,

- the family should wear gloves and gowns and perform hand hygiene.
- Cultural sensitivity should be practiced when a pandemic influenza patient dies.

ix. Laboratory specimens and practices

Follow standard facility and laboratory practices for the collection, handling, and processing of laboratory specimens. See Section XV Forms, Specimen Submittal Form.

4. Reducing exposure of persons at high risk for complications of influenza

Persons who are well, but at high risk for influenza or its complications (e.g., persons with underlying diseases), should be instructed to avoid unnecessary contact with health care facilities caring for pandemic influenza patients (i.e., do not visit patients, postpone nonessential medical care).

i. University Health Services

Patients with nonemergency symptoms of an influenza-like illness may seek care at UHS. Implementation of infection control measures when these patients present for care will help prevent exposure among other patients and clinical and nonclinical office staff.

a) Detection of patients with possible pandemic influenza

- Post visual alerts (in appropriate languages) at the entrance to UHS instructing persons with respiratory symptoms (e.g., patients, persons who accompany them) to:
 - Inform reception/triage when they first register for care.
 - Practice respiratory hygiene/cough etiquette (see Box 1 above).
- Triage patients calling for medical appointments for influenza symptoms:
 - Discourage unnecessary visits to UHS.
 - Instruct symptomatic patients on infection control measures to limit transmission in the home and when traveling to necessary medical appointments.

b) “Source control” measures

- Post signs that promote cough etiquette in common areas (e.g., elevators, waiting areas, lavatories) where they can serve as reminders to all persons in UHS. Signs should instruct persons to:
 - Cover the nose/mouth when coughing or sneezing.
 - Use tissues to contain respiratory secretions.
 - Dispose of tissues in the nearest waste receptacle after use.
 - Perform hand hygiene after contact with respiratory secretions.
- Facilitate adherence to respiratory hygiene/cough etiquette. Ensure the availability of materials in waiting areas for patients and visitors.
 - Provide tissues and no-touch receptacles (e.g., waste containers with pedal-operated lid or uncovered waste container) for used tissue disposal.
 - Provide conveniently located dispensers of alcohol-based hand rub.

- Provide soap and disposable towels for hand washing where sinks are available.
- Promote the use of procedure or surgical masks and spatial separation by persons with symptoms of influenza.
 - Offer and encourage the use of either procedure masks (i.e., with ear loops) or surgical masks (i.e., with ties or elastic) by symptomatic persons to limit dispersal of respiratory droplets.
 - Encourage coughing persons to sit at least 3 feet away from other persons in common waiting areas.

c) Patient placement

- Where possible, designate separate waiting areas for patients with symptoms of pandemic influenza. Place signs indicating the separate waiting areas.
- Place symptomatic patients in an evaluation room as soon as possible to limit their time in common waiting areas.

5. Care of pandemic influenza patients at alternative sites

If an influenza pandemic results in severe illness that overwhelms the capacity of existing health care resources, it may become necessary to provide care at alternative sites (e.g., gyms, auditoriums, conference centers, hotels). See Section VII on Case Management. The same principles of infection control apply in these settings as in other health care settings.

C. Fit-Testing

Respirator use should be in the context of a complete respiratory protection program in accordance with Occupational Safety and Health Administration (OSHA) regulations. Detailed information on respiratory protection programs, including fit-test procedures, can be accessed at OSHA's Respiratory Protection eTool (www.osha.gov/SLTC/etools/respiratory). Staff with responsibility for direct patient care should be medically cleared, trained, and fit-tested for respirator use.

UHS works with EH&S to fit-test a portion of the medical staff every year. A list of UHS staff that has been fit-tested is included in the UHS Pandemic Flu Master Binder. UHS will work with EH&S to expedite fit testing for medical personnel who have not yet been fit tested when the risk of pandemic influenza is elevated.

D. Safe Work Practices: Pandemic Flu – Handout

The following are recommendations for Safe Work Practices in non-healthcare settings.

The specific characteristics of a new pandemic virus will remain unknown until it emerges. The Centers for Disease Control and Prevention (CDC) and its partners will provide updated infection control guidance, as needed at <http://www.cdc.gov/flu>.

Infection Control

Recommendations for Infection Control and Preventing the Spread of Pandemic Flu Viruses

- Students, staff and faculty who are sick should **STAY HOME!**
 - At home, **physically separate the member(s) of the household with influenza** from the non-ill persons as much as possible.
- Promote and practice **hand hygiene and respiratory /cough etiquette:**
 - **Wash your hands frequently** using warm water and soap, scrubbing all surfaces for about 15- 20 seconds (or a waterless, **alcohol-based hand rub** when soap is not available). Some flu viruses can live up to two hours on surfaces like desks, phones and door knobs – wash your hands after coming in contact with contaminated surfaces.
 - **Avoid touching your face**, unless you have clean hands. The eyes, nose and mouth are entry ports for flu viruses.
 - **Cover your nose/mouth** with a disposable tissue when coughing and sneezing. Dispose of tissues and wash your hands immediately.
 - If tissues are unavailable, **cough/sneeze into the inside of your elbow.**

The benefit of wearing masks in the workplace and schools has not been established but may be used in the event of an influenza pandemic. Recommendations for the UC Berkeley campus will be available at <http://www.uhs.berkeley.edu/pandemicflu/>.

For additional information, please see Flu Information for Workplaces and Employees at <http://www.cdc.gov/flu/workplace/>.

Cleaning and Disinfecting

Recommendations for Cleaning and Disinfecting (outside the healthcare setting):

- Follow standard facility procedures for cleaning and disinfecting all environmental surfaces that are frequently touched (e.g. door handles, light switches, faucets).
- Perform hand hygiene after cleaning and disinfecting surfaces.

Further recommendations will be developed collaboratively by Environment, Health & Safety, Residential & Student Service Programs, and University Health Services as more is known about the particular influenza strain resulting in a pandemic.

E. Safe Home Practices: Pandemic Flu – Handout

The following are recommendations for Infection Control in the Home or Residence.

The specific characteristics of a new pandemic virus will remain unknown until it emerges. The Centers for Disease Control and Prevention (CDC) and its partners will provide updated infection control guidance, as needed at <http://www.cdc.gov/flu>.

Infection Control

Recommendations for Infection Control and Preventing the Spread of Pandemic Flu Viruses

- If you are sick, **STAY HOME!** – At home, **physically separate the member(s) of the household with influenza** from the non-ill persons as much as possible.
- All persons in the household should carefully follow recommendations for hand hygiene (see below) after contact with an influenza patient or the environment in which care is provided.
- Wash used dishes and eating utensils either in a dishwasher or by hand with warm water and soap. Separation of eating utensils for use by a patient with influenza is not necessary.
- Laundry can be washed in a standard washing machine with warm or cold water and detergent. It is not necessary to separate soiled linen and laundry used by a patient with influenza from other household laundry.
 - Care should be used when handling soiled laundry (i.e., avoid “hugging” the laundry) to avoid contamination.
 - Hand hygiene should be performed after handling soiled laundry.
- Tissues used by the ill patient should be immediately placed in a bag and disposed with other household waste. Consider placing a bag for this purpose at the bedside.
- Normal cleaning of environmental surfaces in the home should be followed.

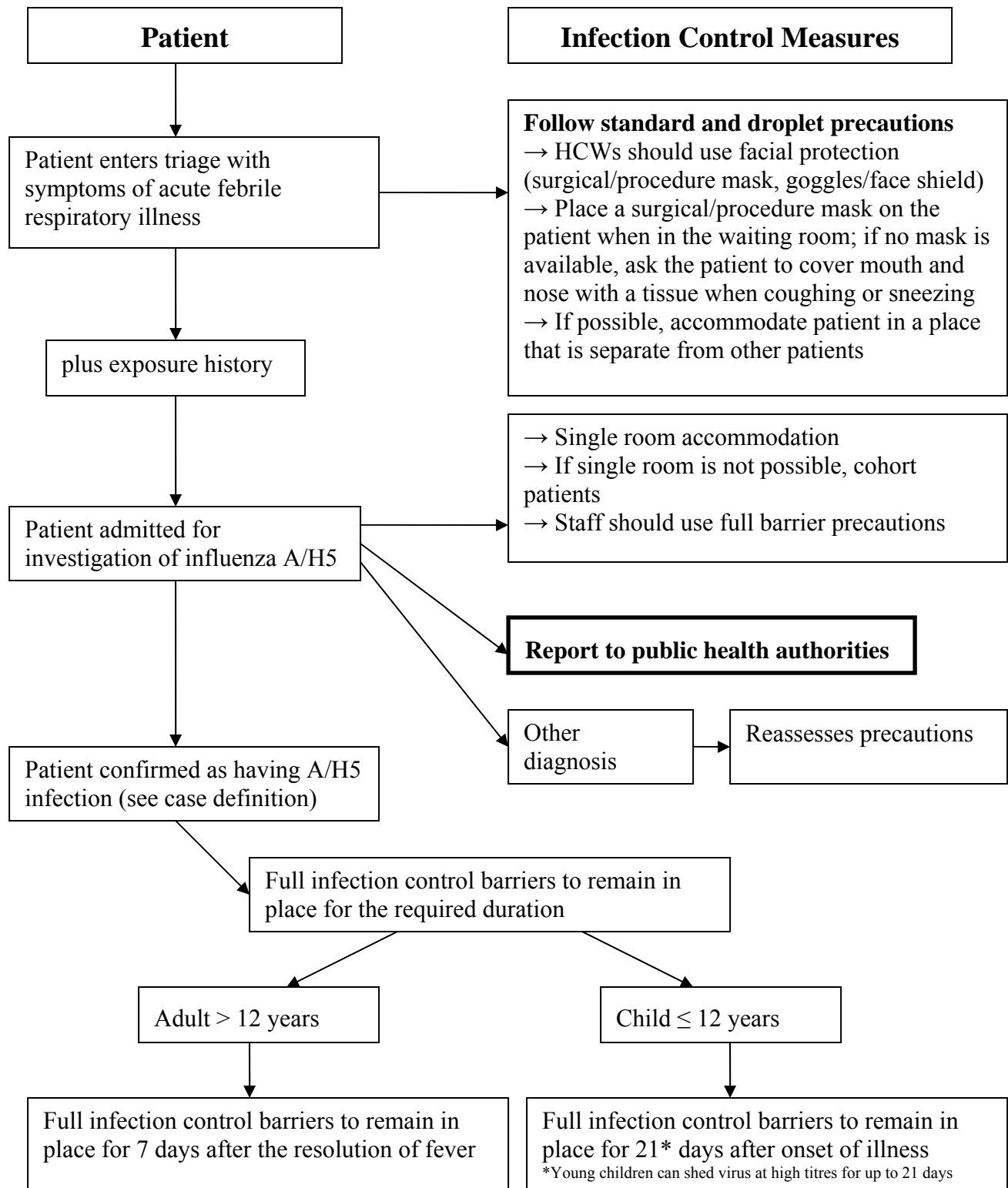
Although no studies have assessed the use of masks at home to decrease the spread of infection, use by the patient and/or caregiver during interactions may be of benefit. The wearing of gloves and gowns is not recommended for household members providing care in the home. For additional information, please see the Center for Disease Control and Prevention website at <http://www.cdc.gov/flu>.

Hand Hygiene and Respiratory/Cough Etiquette

Recommendations for Preventing the Spread of Flu Viruses:

- **Wash your hands frequently** using warm water and soap, scrubbing all surfaces for about 15-20 seconds (or a waterless, **alcohol-based hand rub** when soap is not available). Some flu viruses can live up to two hours on surfaces like desks, phones and door knobs – wash your hands after coming in contact with contaminated surfaces.
- **Avoid touching your face**, unless you have clean hands. The eyes, nose and mouth are entry ports for flu viruses.
- **Cover your nose/mouth** with a disposable tissue when coughing and sneezing. Dispose of tissues and wash your hands immediately.
- If tissues are unavailable, cough/sneeze into the inside of your elbow.

Initiation of Avian Influenza Infection Control Precautions in the Health-care Facilities (Developed by WHO for Avian Influenza H5N1, this flow chart will be modified as needed based on the characteristics of the pandemic influenza virus.)



XI. MENTAL HEALTH

An influenza pandemic is likely to be associated with a considerable increase in the need of students, faculty and staff for psychosocial support. Addressing the mental health needs will help the UC Berkeley community cope in a pandemic, supporting the effective implementation of medical and non-medical public health measures.

The mental health staff of the University Health Services (Counseling and Psychological Services, CARE Services, Psychiatry, Social Services and Health Promotion) will provide psychological and social support as well as educations for students, faculty and staff by adapting guidelines from the American Public Health Association (APHA) and other professional organizations to meet the needs of the campus.

A. Mental Health Response

The following plans will be implemented following the APHA Mental Health and Behavioral Guidelines for Response to a Pandemic Flu Outbreak (Spring 2006):

1. Initiation of efforts to increase health protective behaviors and response behaviors. Individuals under stress will need reminders to take care of their own health and limit potentially harmful behaviors. For example, campus websites will post psycho-educational guidelines and resource material that emphasize healthy steps to stress management and coping with trauma. This public education plan will include repeated and multiple communications using various media (e.g. radio, print media etc.) and will include the following messages:

- Encouragement of prevention through readiness for a health emergency.
- Good safety communication. Promoting clear, simple, and easy-to-do measures can be effective in helping individuals protect themselves and their families.
- Public education. Educating the public not only informs and prepares, it enlists them as partners in the process and plan. Education and communications will need to address information about the pandemic and its impact, fears of contagion, danger to family and pets and mistrust of authority and government.

2. Coordination of efforts to bring together groups of campus community members through a variety of means, including web-based, telephone or in-person workshops, to facilitate community directed efforts for emotional support, stress management, crisis management, psycho-educational skills training and action-planning to address campus community mental health needs. Organizing communal needs and directing action toward tangible goals will help foster the inherent community resiliency toward recovery.

3. The mental health efforts will be guided by the following basic principles:

- Establish safety: identify safe areas and behaviors, paying specific attention to making

all campus worksites safe and supportive for all workers called to be on-site.

- Maximize individuals' ability to care for self and family and provide measures that allow individuals and families to be successful in their efforts.
- Teach calming skills and maintenance of natural body rhythms (e.g., nutrition, sleep, rest, exercise).
- Maximize and facilitate connectedness to family and other social supports to the extent possible (this may require electronic rather than physical presence).
- Foster hope and optimism while not denying risk.

4. A priority of the mental health response will be to care for first responders (e.g. medical care givers, mental health providers, crisis response teams and managers) to maintain their function and workplace presence.

5. Mental Health Surveillance. Data will be gathered to assess ongoing population level estimates of mental health problems in order to direct services and funding. Surveillance will address PTSD, depression and altered substance use as well as psychosocial needs (eg housing, transportation, schools, employment) and loss of critical infrastructure necessary to sustaining community function.

6. Special emphasis will be placed on developing and promoting grief-support groups (delivered via web and telephone when in-person groups are impractical).

7. Counseling services will be offered via telephone to allow both mental health providers and clients to remain home if needed.

8 Services will be coordinated and extended through collaboration with Red Cross's mental health efforts on and off campus, and with other community mental health services.

B. Organizational Preparation

- A listing of community volunteers (both licensed mental health providers and para-professionals) will be developed. The names, contact information and credentials will be kept in several UHS locations and used when additional staffing is needed. The list will be maintained and updated by the UHS volunteer coordinator as is managed under other disaster response conditions.
- A list of psychiatric medications most likely to be needed in response to pandemic reactions will be prepared by UHS Chief Psychiatrist to guide purchase and storage of emergency supplies.
- Educational material specific to a pandemic situation will be prepared in advance for use on campus websites and other communication vehicles.
- Contracts will be developed for delivery of web-based seminars and support groups in place of in-person mental health interventions.

- Mental health staff will receive training in pandemic preparation and in our pandemic and disaster operations plans.
- UHS mental health staff will receive annual training to update skills in mental health response to disaster and critical incident stress management.
- Campus religious organization leaders will be invited to participate in the pandemic mental health response planning to insure spiritual counseling needs of the campus are included in the campus response.

XII. OCCUPATIONAL HEALTH

A. Recommendations

1. General Health Promotion

Employees should see their personal health care provider for regular health check-ups and vaccinations. Vaccination against regular, seasonal influenza is recommended each year. People should see their health care provider if they develop symptoms of regular, seasonal influenza develop to receive antiviral medication, if appropriate.

Flu symptoms may include:

- Increase in temperature (100 F or higher)
- Cough
- Body aches
- Sore throat
- Shortness of breath

2. Sick Leave

Employees should not come to work if they are ill. In the event of an avian influenza pandemic, employees must call-in sick to their supervisor if experiencing any of the above symptoms. Refer to updates of pandemic information at www.uhs.berkeley.edu/pandemicflu.

People who have traveled in the last 7 – 10 days to countries where there have been bird or human cases of avian influenza H5N1 should promptly seek care from their personal health care provider if they are experiencing flu-like symptoms. A current list of both human and bird cases of avian influenza H5N1 is located at: <http://www.pandemicflu.gov/>.

Employees who have had direct contact with a person with confirmed or suspected avian influenza should be self-quarantined (restriction of movement in the community). These employees should call their supervisor to report they cannot come into work. They should call their health care provider for consultation.

People with suspected avian influenza should be self-isolated and their household members should

be self-quarantined for 7 – 10 days. Discuss isolation and quarantine measures with your health care provider.

3. Infection Prevention

At this time, no vaccine is commercially available to prevent avian influenza H5N1. Researchers are working to develop an effective and safe vaccine against the H5N1 virus. In the event such a vaccine is offered, information on how to obtain the vaccine will become available on the UHS website www.uhs.berkeley.edu. Obtaining a seasonal influenza vaccine is highly recommended each year.

Personnel who work on campus while the Social Distancing Policy is in effect should follow these infection prevention measures to reduce direct exposure of nasal/oral droplets (cough, sneeze) from others and to prevent the spread of larger droplets on hands, skin, and other surfaces. Infection prevention includes:

- Social Distancing
- Hand Hygiene
- Respiratory/Cough Etiquette
- Respiratory Protection
- Other Personal Protective Equipment

See Sections VIII. Isolation and Quarantine, and X. Infection Control for additional details.

Important! Surgical masks and respirators DO NOT take the place of social distancing, hand washing and good respiratory etiquette.

B. Occupational Health Screening Tool for Pandemic Influenza

Daily Self Assessment by all employees (students, staff, faculty, residents, fellows, etc.):

Prior to arriving to campus for work each day, **all** staff will be asked to perform a health assessment by listening to a voice mail type message.

The message will contain the following:

- “If you have a temperature greater than 100.4 degrees F (38 degrees C) and also have **two** of the following: sore throat, cough or shortness of breath - **you must stay home**. You must remain off work until your temperature is less than 100.4 degrees F. You must hang up and alert your supervisor that you are ill and not reporting to work today”
- Employees who become ill at work must go home if they develop a temperature over 100.4 degrees F and may not return to work until their temperature is normal for a period of 7 days and they have no symptoms.
- Employees returning from travel in an area where there have been confirmed cases of pandemic influenza should remain at home for 7 – 10 days. If a fever develops, they should contact their primary care physician for advice and not return to work until 7 – 10 days after the resolution of symptoms.

C. Health Care Personnel

Health care personnel are at risk for pandemic influenza through community and health care-related exposures. Once pandemic influenza has reached the Berkeley community, UHS must implement systems to monitor for illness in the UHS and volunteer clinical workforce following CDC and Berkeley City Health Department guidelines and manage those who are symptomatic or ill.

- Implement a system to educate personnel about occupational health issues related to pandemic influenza (See Section XIV on Education and Training).
- Screen all personnel for influenza-like symptoms before they come on duty. Symptomatic personnel should be sent home until they are physically ready to return to duty.
- Health care personnel who have recovered from pandemic influenza, and should develop antibody against future infection with the same virus, and therefore should be prioritized for the care of patients with active pandemic influenza and its complications. These workers would also be well suited to care for patients who are at risk for serious complications from influenza.

Personnel who are at high risk for complications of pandemic influenza (e.g., pregnant women, immunocompromised persons) should be informed about their medical risk and offered an alternate work assignment, away from influenza-patient care, or considered for administrative leave until pandemic influenza has abated in the Berkeley community.

D. Workers Compensation

Pandemic Influenza raises many unique questions relating to worker's compensation coverage. It is not possible to anticipate the many scenarios that may give rise to claims. At present, each case will be evaluated on its own merits. If an influenza pandemic were to impact the University, this position will be re-evaluated.

XIV. EDUCATION AND TRAINING

Education and training is critical to develop efficient preparedness and response capabilities. University Health Services (UHS) is responsible for providing information to health care providers and the public, including UC Berkeley faculty, staff, students and parents, which will guide their response to a potential influenza pandemic situation.

A. Provider Education and Training

University Health Services' ability to respond to an infectious disease outbreak such as pandemic

influenza is dependent upon the knowledge and experience of providers with emergency response assignments and responsibilities. Having sufficient staff orientated and well trained is the basis for a strong network that has the capability to detect, control, treat, and prevent illness and injury resulting from an infectious diseases outbreak. The education and training objectives for this plan will address:

- Roles and responsibilities
- Emergency organization and responsibilities
- Importance of surveillance
- Case definitions and differential diagnosis guidelines
- Preventative treatment guidelines/protocols
- Protective measures (including PPE)
- Safety guidelines
- Contact investigation and follow up
- Management of medical operations and casualty care
- Treatment and follow up guidelines
- Vaccine techniques (as applicable)
- Resources
- Risk communication
- Communication with media

UHS will work in cooperation with the City of Berkeley and Alameda County health officials to accomplish these training objectives. A variety of trainings methods will be used including:

- Lectures and/or informative letters, and memorandums.
- Combination of lectures and practice sessions.
- Response exercises.

1. Response Training Exercises

Response exercises will allow response personnel and various campus departments to become familiar with the procedures, facilities, and systems used during an actual outbreak. This Pandemic Flu Annex can be activated for a response exercise and employees can rehearse actions at varying levels of a Pandemic Influenza outbreak. Examples of response exercise methods include:

- *Table Top Exercises* - March 28, 2007, UHS will participate in a *Table Top Exercise* simulating a Pandemic Influenza outbreak on campus. This will provide response personnel and administrators time to examine potential scenario-related problems, and discuss current approaches to problem solving. Notes will be taken during this exercise to learn whether current policies and procedures appear to be effective in handling specific situations that may arise during a pandemic. Specific gaps in preparedness will be identified and corrected.
- *Practical Exercises* - A *Practical Exercise* of a simulated infectious disease outbreak involving key campus and community partners. Exercise could further test the skills and capabilities of personnel, communications, planning facilities to respond to an infectious disease outbreak.

2. Evaluation of Incidents and Exercises

Critical evaluation of response performance to actual infectious disease outbreaks and training exercises is essential to assure optimal performance and identify opportunities for improvement. A formal debrief and evaluation will be scheduled after each incident and training exercise to assess strengths and weakness, and identify specific strategies to assure effective management, communication and response.

Dedication to ongoing evaluation, implementation of recommended improvements and revisions to the Pandemic Flu Annex will assure forward progress to protect the UC Berkeley campus community from serious infectious disease outbreaks.

B. Public Education and Outreach

The objective of the UHS pandemic influenza public education and outreach plan is to provide communication from campus leaders and public health experts to all UC Berkeley students, parents, staff, faculty, visiting scholars, post-doctorates, and campus visitors in order to:

- Emphasize the responsibility of individuals to assess their own level of risk, monitor physical symptoms, and seek help as needed.
- Address fear by clarifying misconceptions and providing reassurance that protective measures are in place to maximize the health and safety of the campus community.
- Educate campus members and visitors on relevant policies and procedures.

In addition, tailored education is provided as warranted (e.g. when campus members contact UHS after assessing their own risk).

Education Methods

A variety of methods are used to meet the public education and outreach objectives. Actual and planned methods include:

- UHS website at <http://www.uhs.berkeley.edu/pandemicflu/>.
- Electronic communications, including periodic updates.
- Group education (e.g. town hall meeting) will be provided upon request or if determined necessary by campus or public health officials.
- Individual education can be provided through a Pandemic Influenza hotline and within the health care setting. Individual education would also be provided to close contacts if a suspect or probable Pandemic Influenza case were to occur.

C. Specific Education and Training Resources

A variety of materials have been developed to meet the education and training objective previously outlined. As an influenza pandemic emerges, these resources will be modified as we learn the specific characteristics of a new pandemic virus—virulence, transmissibility, initial geographic distribution, clinical manifestation, risk to different age groups and subpopulations, and drug susceptibility. Some examples of the materials available are:

- Handout: Pandemic Influenza – Frequently Asked Questions
- Handout: Hand Washing Guidelines
- Handout: Preparing for a Flu Pandemic Fact Sheet – Coping and Emotional Well-being
- Power Point Presentation: U.C. Berkeley Pandemic Flu Preparedness
- Power Point Presentation: Pandemic Influenza Table-Top Exercise – March 2007
- Poster: Fight the Flu

The education and training materials are located in the UHS Pandemic Flu Master Binder.

XV. FORMS

UHS will utilize forms developed by the CDHS and CDC. Examples of the forms include:

- CDC – Human Influenza A[H5] Case Screening and Report Form
- CDHS – Screening for Suspect Avian (H5N1) Influenza
- CDHS – Specimen Submittal Form: Suspect Avian Influenza (H5N1)
- CDHS – Case Report Form for Lab-Confirmed Avian (H5N1) Influenza

These forms are located in the UHS Pandemic Flu Master Binder and will be updated as new information becomes available.