Although regional outbreaks of respiratory disease caused by various strains of influenza virus occur on a fairly predictable annual basis, pandemic influenza is uncommon and can be broadly devastating. The occurrence of avian influenza (H₅N₁) in poultry and the diagnosis of sporadic cases of H₅N₁ influenza in humans, particularly in Asian countries, have heightened concern that we may be on the verge of a global influenza pandemic. This presumption is based on an awareness that the H₅N₁ strain is new to the human host, pre-existing immunity is essentially lacking and documented human infections due to H₅N₁ influenza have been associated with ~50% mortality rate among confirmed cases. Furthermore, an effective vaccine for this avian influenza strain is yet to be developed and antiviral agents that are active against the virus are in limited supply. Fortunately, at the present time, transmission of the H₅N₁ virus from avian host to humans is rare and unsustained. However, an immense threat to the public health and welfare would occur if the virus should mutate and become better adapted at infecting human hosts. It is this type of scenario that has stimulated the Federal Government and all state health departments to develop pandemic influenza response plans.

In Tennessee, the Tennessee Department of Health (TDH) is the agency responsible for coordinating a statewide influenza pandemic response. TDH collaborates and communicates with many other groups including managed care organizations, the Tennessee Department of Education, various hospitals and others as efforts are made to minimize morbidity and mortality and hopefully, to minimize societal and economic disruption. The Tennessee Emergency Management Agency (TEMA) has the responsibility and authority for coordinating and supervising emergency services of all departments of state government during major emergencies.

While recognizing the major role assumed by CDC, various state health departments and other agencies in developing preparedness plans, it is critical to acknowledge that several of these organizations as well as the American College Health Association (ACHA) have drawn our attention to the fact that college campuses can serve as epi-centers for communicable infectious diseases such as influenza and SARS. The mobility of students and faculty, crowding in dormitories and the chance of importing disease through national and international travel can lead to the establishment and spread of disease on a college campus.

As colleges and universities develop pandemic influenza preparedness plans, it is appropriate to reexamine the ACHA Vaccine-Preventable Disease Task Force guidelines pertaining to SARS since these recommendations are also relevant to pandemic influenza. The task force recommended that universities:

1. Establish a multidisciplinary Emergency Response Team including student health services, upper management (deans, vice presidents, etc), mental health professionals, representatives from local and state health departments and, if
available, appropriate members from health sciences divisions. This team is responsible for developing internal and external communication protocols and identifying facilities that could be used for screening infected persons and identifying where stockpiles of personal protective equipment and other necessary supplies would be needed.

2. Establish an additional university-wide workgroup that would include representatives from units such as international studies, housing office, food services, human resources, public affairs, representatives from security and the local police department as well as other academic deans. This group would address safety and security, infection control measures, student insurance and support matters, public relations and other challenges associated with a campus disease epidemic including crisis intervention.

3. Address policy issues related to hosting visitors to campus from disease affected regions as well as to travel of university students, faculty or staff to specific disease affected countries.

4. Address the disease control policies and potential mandates that may be imposed by state and federal authorities as described in state and federal response plans.

Since pandemic influenza would likely have a profound impact on both campus and community alike, it is strongly recommended that university emergency response teams and various work groups include appropriate healthcare experts (public health, communicable diseases, etc), health department representatives and individuals linked to community preparedness organizations including local hospitals. These individuals can be instrumental in the proper design and implementation of a pandemic influenza preparedness plan.

With appropriate support from the Tennessee Board of Regents (TBR) and from various presidents and chancellors, well constructed and efficiently functioning Emergency Response Teams and Workgroups representing TBR campuses are expected to address the following objectives in developing pandemic influenza preparedness plans (note: these objectives should be incorporated into an Alert Matrix that recognizes three response levels that correspond to 1) Pandemic Influenza Anywhere Outside of North America, 2) Anywhere in North America and 3) Pandemic Influenza on Campus):

1. **Develop and maintain an open and active communication with local and regional health departments.** TDH will rapidly disseminate information to health departments in the state when the World Health Organization (WHO) issues a Phase 5 Pandemic Alert which indicates that an influenza pandemic is imminent. This declaration will be based on the occurrence of person to person spread of an avian influenza strain such as H5N1, followed by localized outbreaks of infection.
2. **Develop appropriate internal and external coordination plans.** After receiving a health alert notification from TDH, TBR campuses will engage their pandemic influenza response plans which are guided internally by established emergency preparedness or emergency operations plans and which are consistent with the TDH Pandemic Influenza Response Plan. Emergency Response Team members, functioning through an Incident Command Center with a designated chain of command will address such immediate matters as the need to cancel classes, school closure, mass communication with students and faculty and the initiation of wide scale healthcare efforts on campus.

Appropriate external coordination is equally important and TBA campus response plans must be clearly integrated with local and state partners including hospital systems, health departments and emergency management agencies. Note that TDH has the authority to impose actions on campuses in addition to the campuses own policies.

In large part, successful internal and external coordination efforts hinge upon properly structured communication lines and a collegial working relationship between the various parties.

3. **Establish a system for syndromic or case surveillance on campus.** College campuses frequently include students and faculty who travel widely throughout the world and it is conceivable that a campus site could function as a communicable disease epicenter. In this regard, it is important to monitor student absenteeism rates as well as student health service visits, particularly for respiratory illnesses. As a member of the Emergency Response Team, the student health service representative is responsible for alerting the team about specific cases, clusters of cases and possible imported cases. After appropriate consultation, the Emergency Response Team may recommend such further actions as health department notification and the initiation of case-contact investigation. Clearly, actions of this sort require advice and guidance on the part of the local/regional health department. In selected settings, including veterinary schools and animal research, it is possible that bird cases of avian influenza might appear on campus. Those working with susceptible animals must be made aware of the signs and symptoms of illness and of the need to notify the Emergency Response Team about known or suspected animal cases. Laboratories handling novel influenza viruses are expected to conduct surveillance of lab workers for influenza-like illnesses.

4. **TBR campuses will develop travel recommendations that are consistent with CDC international travel guidelines.** Following the declaration of a Phase 5 Pandemic Alert by WHO, CDC will issue travel recommendations for both inbound and outbound travelers. These recommendations may include 10-day monitoring periods for incoming travelers from high risk areas, strict airport-
based screening measures as well as the posting of travel advisories and travel restrictions.

In developing guidelines dealing with international travel at the time of pandemic influenza, planning must accommodate the following groups:

• Faculty and students arriving from areas affected by H₅N₁ avian influenza. These individuals will need to be properly informed of relevant policy and undergo health screening.

• Faculty and students enrolled in coursework or conducting business in areas affected by avian influenza.

• Faculty and students scheduled to travel to affected areas.

5. **Develop communicable disease control measures.** As a component of their preparedness planning, TBR site Emergency Response Teams, in collaboration with appropriate health professionals and health department colleagues should develop informational and instructional brochures and postings as well as web pages and email messages that provide the following information:

• A description of pandemic influenza including clinical and epidemiological aspects. (refer to www.pandemicflu.gov)

• An outline of the mechanisms of infection transmission and the methods used to limit transmission (personal hygiene-particularly handwashing and covering cough, restriction of mass gatherings, environmental cleaning).

• A description of circumstances that would result in and methods to be used to achieve cancellation of classes and events, school closure and residence hall closures.

As a component of their communicable disease control measures, TBR campuses should also define their role in community response activities pertaining to vaccine distribution and antiviral medication distribution. This can only be achieved through collaboration and coordinated planning with local and regional health departments and the intent and strategy should be included in the pandemic influenza response plan. Presently, vaccine against the H₅N₁ influenza strain is not available. If and when the vaccine becomes available, it will likely be distributed by CDC in limited amounts to state health departments and subsequently to local public health systems. It is then distributed to individuals in specified priority groups. It is unlikely that vaccine would be distributed at a TBR campus site.
Although H\textsubscript{5}N\textsubscript{1} influenza antiviral agents (neuraminidase inhibitors) are available for prophylaxis and treatment, supplies are limited and TBR campus use of these agents during a pandemic period should be described in the overall response plan and must be consistent with health department guidelines. Note that state controlled neuraminidase inhibitor agents will be used according to federal guidelines.

6. **Develop an appropriate plan to accommodate campus-related healthcare needs of students, faculty and staff during an influenza pandemic.** In the event of pandemic influenza, it is likely that many students will choose to return to their homes and families and many faculty and staff will not report to work. Furthermore, depending on characteristics of the pandemic, it is conceivable that TBR and/or TDH will recommend the closing of schools and residence halls as well as the cancellation of group gatherings. For those students, faculty and staff remaining on campus, TBR sites must be prepared to address healthcare needs and the following strategy is suggested:

- Collaborate with community partners including local/regional health departments and local hospitals to define a triage strategy and referral guidelines as well as plans for mass dispensing (hand sanitizers, masks or other supplies) and mass care sites both on and off campus. The overall community will also need to address the issue of surge capacity.

- Determine whether the TBR site has the ability to meet outpatient evaluation and healthcare needs of students and staff possibly confined to campus. If indicated, develop a plan of care for these persons.

- Define the capacity and role of Divisions of Health Affairs faculty practice programs such as ETSU Physicians & Associates at East Tennessee State University and student health services in providing outpatient healthcare during a pandemic period. If the campus has the capacity to offer a range of services it will be necessary to:
  - identify sites and staff to provide the services
  - develop an operational plan to deliver services under pandemic and surge conditions
  - establish dependable communication lines with community partners (hospitals, health department, police and EMA)
  - identify and stockpile an adequate supply of essential items including personal protective equipment (N-95 masks, surgical masks, gloves), infection control items (hand sanitizers) and other supplies needed to evaluate and manage significant numbers of persons with respiratory illnesses
  - accommodate potential mortuary concerns
7. **Address the needs of students living on campus during an influenza pandemic.** Difficult circumstances encountered during an influenza pandemic would likely result in many students returning to their homes and many faculty and staff not reporting to work. Based on the course of a pandemic, it is also possible that TBR and/or TDH would recommend the closure of schools and the cancellation of mass gatherings and events. However, it is conceivable that groups of students, particularly international students and certain out of state students would remain on campus for a period of time even after a school closure declaration. In this regard, the Emergency Response Team in collaboration with student health services, campus housing, campus food service and local health department staff will develop plans to:

- Consistently and accurately communicate with students and parents through posted notices, email, a dedicated web page and/or telephone.

- Identify the housing and residence hall units to be used by the remaining students. Carefully consider consolidating housing options while accommodating concerns about crowding, disease transmission and the availability of support staff.

- Identify housing options to be used for isolation should such measures become necessary.

- Monitor the student census and status of student health in each housing and residence hall unit.

- Monitor the availability of essential services (food, utilities, etc) for each occupied unit.

- Provide for student healthcare needs through student health service, affiliated outpatient clinics or community based healthcare facilities.

8. **Develop a plan to maintain business continuity, essential operations and essential services.**

- The potential for pandemic influenza to disrupt business, education, healthcare services and social order should not be underestimated. Educational institutions, including TBR campuses, should expect significant student, faculty and staff absenteeism during an influenza pandemic and should be prepared for a declaration from CDC and/or TDH to close all or some campus operations. In this regard, TBR campuses should conduct the following:

- A school and department specific assessment to determine which
operations and services should be considered essential and which can be
eliminated or curtailed for both short and extended periods of time. These
assessments must accommodate such matters as the maintenance of
campus security, the health and welfare of students and others who remain
on campus, the need to maintain internal and external communications, the
care of any animal populations on campus and the need to provide
education and training as it pertains to the pandemic.

- Develop a list of employees needed to support the specified essential
  operations and services and address such workforce related issues as the
  capacity to conduct telecommunications with employees, the ability to
  assess and triage employees who become ill at work and the management
  of sick leave policies (should the standard policy be waived during an
  influenza pandemic?).

- An assessment of the capacity to provide web-based education for
  students.

9. Clearly define and, if indicated, enhance communication capabilities and
develop plans to ensure the transmission of accurate and timely information
during the period of pandemic influenza. TBR campuses are expected to
evaluate their telephone, computer-based and radio communications capabilities
as well as their media and public affairs services as they relate to providing and
receiving information to and from a variety of individuals and organizations. At
a minimum, it is essential to plan for reliable communications with:

- TBR, TDH, local and regional health departments, local healthcare
  facilities, community police and EMA’s.

- Faculty, staff, students and parents. For these groups communication
efforts should include a dedicated website, posted notices, email
  messaging and 800 information lines and hotlines.

- Various media organizations. The Emergency Response Work group
  includes a member of the campus public affairs office and among its
  functions is the responsibility to provide accurate and timely media
  releases.

10. Identify legal authority to address a range of potential exceptional/
extraordinary events associated with pandemic influenza. TBR campus
pandemic influenza preparedness plans must define the legal authority that will be
utilized to address such matters as the restriction of movement on campus, the
suspension of mass gathering events, the execution of infection control measures
on campus, the provision of a range of healthcare services on campus, etc. In this
regard, campuses may wish to include legal counsel as a member of their
pandemic influenza preparedness work group.

11. **Implement an exercise or drill to test the plan and develop a recovery plan.** Carefully evaluate various aspects of the campus preparedness plan and revise accordingly. Participate in exercises relating to the community’s preparedness plan.

Develop a recovery plan to deal with consequences of a pandemic including financial and operational disruption and the potential loss of students and staff.

12. **Consider the potential role for campus staff to assist in the overall community response to pandemic influenza.** TBR campuses that include health affairs related programs (medicine, nursing, public health, etc) as well as veterinary programs may wish to dialogue with community preparedness partners on ways in which staff and trainees from these programs might volunteer to assist in the overall community response to pandemic influenza.

Felix A. Sarubbi, MD
Professor of Medicine
Chief, Division of Infectious Diseases
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**RESOURCES**

[www.pandemicflu.gov](http://www.pandemicflu.gov)
[www.whitehouse.gov/homeland/pandemic-influenza.html](http://www.whitehouse.gov/homeland/pandemic-influenza.html)
[www.ahc.umn.edu/outreach/epp/pandemic/home.html](http://www.ahc.umn.edu/outreach/epp/pandemic/home.html)