ARMED FORCES EPIDEMIOLOGICAL BOARD
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July 18, 2006

Armed Forces Epidemiological Board (AFEB)

MEMORANDUM FOR The Honorable William Winkenwerder, Jr., MD, Assistant Secretary of Defense for Health Affairs

SUBJECT: DoD Pandemic Influenza Preparedness – AFEB Select Subcommittee Recommendations

1. As requested, the AFEB's Select Subcommittee on Pandemic Influenza Preparedness has developed recommendations regarding the Department's preparedness for a possible influenza pandemic. In preparing these recommendations, the subcommittee has engaged in regular teleconferences and has received a series of full briefings by content experts from National Institutes of Health, The Centers for Disease Control and Prevention, the National Vaccine Program Office, the Food and Drug Administration, DoD and others. The subcommittee also engaged in face-to-face meetings with you and the Military Surgeons Generals.

2. The enclosed documents as listed below represent our consensus recommendations based on the best current virologic, immunologic, vaccinologic, and public health data available. The scenarios provided are intended to prompt the development a "Play Book" of responses to predictable situations DoD may experience in the event of an influenza pandemic.

a. Recommendations for Pandemic Preparedness
b. Recommendations for the Use of Pandemic Influenza Vaccine
c. Recommendations Regarding the Use of Masks During an Influenza Pandemic
d. The Role of Children in the Epidemiology of Influenza
e. Pandemic Influenza Scenarios

3. These recommendations are deliberative products of the full Board and were discussed in open session during AFEB meetings.

4. In keeping with the AFEB mission of providing independent scientific advice on matters concerning operational programs, policy development, and research needs for the prevention of disease and injury and promotion of the health, this subcommittee and the full Board stand ready to support the Department and our military service members. Please do not hesitate to call upon us as the need arises.

Gregory A. Poland, M.D.
President
Chairman, Select Subcommittee on
Pandemic Influenza Preparedness

Enclosures: As stated
cc: See distribution list

AFEB

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Recommendations for Pandemic Preparedness

Select Subcommittee for DoD Pandemic Influenza Preparedness

July 18, 2006

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INTRODUCTION

Below we present a list of recommendations for urgent consideration by the Department of Defense for accelerating and improving avian and pandemic influenza (AI/PI) preparedness. We note that these recommendations are not meant to be taken in order of importance – that is to say, the subcommittee believes that implementation of these recommendations are important to an adequate level of preparedness. Some of these recommendations will require DoD to take the lead, while others imply cooperative effort with inter-agency organizations (eg. CDC, DHHS, etc.)

The subcommittee firmly and unanimously agrees that the ability to rapidly develop and deploy a safe and effective vaccine is the single most important modality likely to substantially alter the course of an influenza pandemic and its attendant consequences. In addition, we present this document as one informing pandemic preparedness in general, noting that the current immediate pandemic threat is influenza A/H5N1.

GENERAL RECOMMENDATIONS:

1. It is important that DoD be a full partner working effectively and interactively with NIH, CDC and FDA in the national effort to respond to the pandemic influenza/avian influenza threat. In past influenza virus threats (e.g. 1957, 1968, and 1976) DoD was directly involved with CDC, NIH and FDA in developing and evaluating surveillance and epidemiologic data, vaccine selection and evaluation, evaluation of vaccine immunogenicity and reactogenicity data and the planning of efficacy studies.

2. DoD should actively develop, fund and sustain a PI/AI Research and Development Focus in order to effectively participate in inter-agency efforts against PI/AI. The development of such expertise would allow DoD to rapidly and effectively evaluate and disseminate new information in real time, rapidly conduct clinical trials, collect and analyze epidemiologic data, select candidate vaccines suitable for use in the military, and coordinate DoD response planning. Such a focus, and the resultant expertise that would be developed would be reminiscent of the fabulous past successes DoD experienced in response to influenza threats during and post-World War II with the influenza commissions, and could integrate in a synergistic manner with plans for an Armed Forces Health Surveillance Center.

3. DoD should adopt an AI/PI clinical case definition under which all Services would report suspected and confirmed cases, and such reporting should be regarded as an Urgent Reportable Event, requiring immediate (no delay) reporting to Health Affairs. This case definition should be consistent with definitions devised by WHO and/or CDC.

4. DoD should insure uniformity of key points in PI planning across all Services. Examples of the need for uniformity might include:
    a. Who, how, to whom and by what mechanism(s) diagnostic specimens from suspected cases of PI/AI are to be collected, transported, evaluated, and results reported
    b. Clarifying and strengthening he role of existing DoD diagnostic laboratories of excellence, including USAMRIID, the Air Force Epidemiological Laboratory in San Antonio, and the Naval Health Research Center in San Diego in the rapid handling and assay of specimens described in (a) above
    c. Who, how, and under what priority vaccines and antivirals will be used
    d. Priority for who receives vaccine and antivirals in different scenarios

5. Immediately, DoD should develop a comprehensive "playbook" for avian/pandemic influenza response. Such a book would take into consideration various likely scenarios and outline quite specifically the mitigation steps necessary to confine and control the outbreak. Thus, Commanders across the globe would know precisely, and uniformly, what "page" of the playbook (i.e., what response) we are on – hence eliminating confusion, and differing policies or responses within the same geographic area. Under separate cover we have provided nine "draft scenarios" as a starting point around which response plans could be developed and exercises conducted. Because of the very short "window-of-opportunity" for attempts at containment, a uniform set of guidelines and actions should be in place to empower field/theater commanders.

6. DoD should develop a comprehensive and informed procurement "business model" for decisions regarding acquisition of pandemic vaccines and other biologics, as well as antiviral medications. For example, a "rolling inventory model" that allows limited purchase and stockpiling of the currently available but suboptimal A/H5N1 "1203" vaccine, along with possible contract clauses to allow for interim emergency needs for the rapid acquisition of additional pandemic vaccine doses. In addition, such a model would inform and allow the limited purchase and stockpiling of the next generation vaccine, without committing the entire vaccine acquisition budget to a single vaccine, and yet allowing for sufficient real and virtual supplies to be available in the event that an immediate response (i.e. deliver vaccines) is required.

VACCINE RECOMMENDATIONS:

7. The committee is impressed by the variety of vaccines in development and suggests that the DoD develop a flexible policy regarding vaccine procurement that allows rapid adjustments responsive to the emerging science. In this regard, the highest priority should be given to the evaluation and acquisition of vaccine(s) effective for primary immunization against H5 and other candidate pandemic strains of influenza. This is the only modality likely to have a significant impact

on the outcome of pandemic influenza in either the military or the civilian population

8. DoD – Health Affairs should communicate with and develop a strong permanent and continuing partnership with DHHS and NIH, as well as other inter-agency organizations. The July 15, 2006 Pandemic Response Joint meeting is an excellent example of the value of such close partnerships. Such a partnership should allow access to the following NIH/FDA/CDC information useful for devising a comprehensive DoD Response Plan:
    a. Data regarding human A/H5N1 and any other pandemic strain clinical trials
        i. A list of vaccines currently being evaluated and candidate vaccines in the pipeline, with information on their availability (dates and quantities)
        ii. A list of completed, planned, pending and in progress clinical studies with initiation and completion dates, and information on the numbers and ages of the subjects involved
        iii. Data on immunogenicity, safety, dosing, duration of antibody effect, kinetics of antibody response, cross-reactivity against related viral clades, vaccine potency over time, and priming effects
        iv. Depending upon timelines and the speed with which the above data can be accumulated, DoD should volunteer as a clinical trial site in an effort to accelerate completion of these research efforts and insure that the results are relevant to military populations
    b. Data regarding the antigenic and genetic analysis of influenza isolates submitted to the various HHS and DoD laboratories

ANTIVIRAL RECOMMENDATIONS:

9. DoD – Health Affairs should communicate with and develop a strong permanent and continuing partnership with DHHS and NIH; as well as other inter-agency organizations. Such a partnership should allow access to the following NIH/FDA/CDC information useful for devising a comprehensive DoD Response Plan:
    a. Data regarding antiviral drug safety, dosing, and kinetics for new and existing antivirals (oseltamivir, zanamivir)
        i. "Two-hit" studies of co-pharmacokinetics of simultaneous oseltamivir and zanamavir administration
        ii. Studies of treatment with a combination of a neuraminidase inhibitor (oseltamivir, zanamivir) and amantadine/rimantadine
        iii. Data regarding higher doses of antivirals for longer periods of time

10. DoD should plan for, stockpile and consider the growing possibility that oseltamivir may be ineffective (resistant) against certain pandemic strains of influenza

a. Consider "two-hit" strategies of oseltamivir + zanamivir, and/or a neuraminidase inhibitor plus amantadine/rimantadine
b. Develop sufficient stockpiles of zanamivir as a possible alternative to or addition to oseltamivir as the primary drug of choice

SURVEILLANCE RECOMMENDATIONS:

11. DoD should increase the number of and capabilities (surge capacity, etc.) of active surveillance sites for novel influenza strains. This should include Africa, South America, and the Middle East. In particular, it is important that such sites increases the number of samples acquired for analysis and surveillance for novel influenza strains. These sites will require sophisticated diagnostic capability and hence the people, equipment, and supplies to effectively utilize these resources. In addition, methods and protocols should be in place for the rapid and immediate transport of specimens to existing centers of excellence for rapid testing and confirmation, and rapid reporting/dissemination of results.

12. Because of its unique position in holding advanced research resources in or near H5N1 endemic areas (e.g., NAMRU2, USAFRIMS, and NAMRU3), DoD should consider facilitating or participating in prospective studies of H5N1 transmission among high risk cohorts in these endemic areas. Such cohort studies might provide H5N1 epidemiological data (to include: seroprevalence, incidence, secondary transmission among family members, etc.) that would very much help to guide US domestic pandemic modeling and preparations.

13. DOD can play a greater role in facilitating the collection of H5 and other isolate data and ensuring that the whole genome in a subset of these viruses could be sequenced, antigenically identified and shared to aid in vaccine development.

OUTBREAK RESPONSE RECOMMENDATIONS:

14. DoD should develop sufficient stockpiles of the following in order to effectively respond to a possible pandemic. Such inventory should be "rolling" to minimize/prevent waste.
    a. Oseltamivir
    b. Zanamivir
    c. Amantadine
    d. Rimantadine
    e. Pandemic and Seasonal Influenza Vaccines
    f. Gloves/Disposable gowns
    g. N-95 masks
    h. Surgical masks
    i. Ventilators
    j. Antibiotics suitable for post-influenza pneumonia (see IDSA recommendations)
    k. Diagnostic reagents

15. DoD needs to develop plans for “surge capacity” in diagnostic laboratory assay capacity – both for technicians and assay supplies, reagents, and equipment. In addition, DoD should conduct training in RT-PCR for H5 and H7 influenza A viruses among DoD laboratories that have thermocyclers. This training should include providing a source of positive and negative controls, standardized reagents, and routine proficiency testing. It is very likely that after a pandemic is recognized, DoD will not be able to rely upon state laboratories or the CDC for laboratory support.

16. DoD should strongly consider developing new models of PI response, with pre-specified outcomes, using game and chaos theory, given the inherent variability, uncertainty, and instability in the many variables that will drive pandemic influenza spread and the speed of such outbreaks. Notably, several Nobel prizes have been given to scientists who have developed and applied such theory to complex situations where all of the important decision threshold variables are uncertain and evolving.

17. DoD should develop a formal structure and plan for how PI response plans will change over time, and how such changes and updates will be communicated throughout the system.

18. A PI response plan for pediatric beneficiaries needs to be developed (in progress). Under separate cover we have developed a summary of the issues surrounding pediatric influenza in the context of seasonal influenza outbreaks. The select subcommittee is concerned that the information to date suggests that among the most important strategies for protecting adults may be to immunize and protect schoolchildren. In addition, past pandemics have demonstrated that the pediatric population is the most susceptible to infection and subsequent morbidity and mortality.

19. DoD should preposition antibiotics, rapid bedside diagnostic tests for influenza A, and N95 masks at sites of densely populated military personnel such as training camps, large ships, and prisons. Due to crowding, such sites have great potential for explosive spread of novel influenza viruses. Such explosive epidemics may amplify the incidence among the crowded populations' contacts and thus facilitate spread to both adjacent military and civilian populations. These crowded sites should draft written prevention and control procedures and conduct training in their application and in the use of pandemic supplies.

20. DoD should insure development and approval of local installation plans for isolation and quarantine that are consistent across the services and include active service members beneficiaries.

Recommendations for the Use of Pandemic Influenza Vaccine

Select Subcommittee on DoD Pandemic Preparedness

July 18 2006

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Background:

In 1997, a novel influenza A/H5N1 virus began infecting residents of Hong Kong who had exposure to poultry. After an extensive culling program, no further evidence of new H5N1 infections occurred. In 2003, a closely related influenza A/H5N1 virus again began infecting residents of Hong Kong, and has now spread to involve wild migratory birds across an estimated 40 or more countries. In addition, 230 human cases of avian influenza as of 14 July 2006 have been confirmed, with 132 deaths, occurring in 10 different countries. More importantly, the virus has continued to mutate/evolve such that several evolutionarily-related clades are now apparent. Much uncertainty about the eventual outcome for both avian and human health remains. Prudence however suggests that we prepare for the worst possible outcome (a pandemic), while preparing to mitigate the morbidity, mortality, and widespread disruption that such a pandemic would evoke. With this as background, the Select Subcommittee on Pandemic Preparedness offers the following recommendations for the use of the recently develop0ed and stockpiled influenza A/H5N1/1203 vaccine for use within the Department of Defense. The recommendations below represent consensus recommendations of the Subcommittee based on the best current virologic, immunologic, vaccinologic, and public health data available.

Provisos:

1. The threat of avian and pandemic influenza is rapidly evolving with inherent uncertainty associated with decision-making. The select subcommittee will vigilantly and in real-time closely monitor and follow events such that our ongoing recommendations will reflect this evolving knowledge base and understanding.

2. The subcommittee is cognizant of the need to quickly formulate and disseminate new recommendations as new information warrants.

3. As such, recommendations of the subcommittee should be viewed as relevant to the time period in which they are generated.

Recommendations:

1. The subcommittee recommends that only FDA approved vaccines against pandemic influenza be considered for administration to DoD personnel in the absence of an immediate threat (i.e. evidence of sustained human-to-human transmission).

2. In the event that influenza A/H5N1 emerges as a pandemic virus causing sustained human-to-human transmission, the subcommittee recommends that the sanofi-pasteur influenza A/H5N1/1203 vaccine held by DoD be authorized under the Emergency Authorization Act for immediate administration to all eligible service members.

3. Being cognizant of the high mortality rate of those with documented H5N1 avian influenza infection, the subcommittee recommends administration of the sanofi-pasteur influenza A/H5N1/1203 vaccine (when approved by FDA) to all laboratory personnel working with H5N1 viruses under containment conditions, as well as those individuals with continuing animal-based occupational exposure to H5N1 viruses.

4. Given the limited safety database and relatively moderate immunogenicity of the current sanofi-pasteur influenza A/H5N1/1203 vaccine, the zoonotic nature of H5N1 infections and absence of evidence for sustained human-to-human transmission, the subcommittee recommends immunization not be extended to other service members at the current time. The subcommittee recognizes that scientific, epidemiologic, and other conditions could change rapidly and new or additional recommendations may be required in a short time frame.

5. Given the evolving and unpredictable nature of H5N1 avian influenza and the imminent availability of improved vaccine candidates the subcommittee recommends a DoD vaccine acquisition policy that would allow for purchase and stockpiling of improved vaccines as they become available. At this time, the subcommittee does not recommend the purchase of the sanofi-pasteur 1203 vaccine beyond the doses planned for in the 2006 budget.

6. The Subcommittee recommends that accelerated mechanisms be developed and implemented to enable DoD personnel to actively participate in the clinical evaluation of the improved vaccines referred to in 5. above.

Recommendations Regarding the Use of Masks During an Influenza Pandemic

Select Subcommittee for DoD Pandemic Influenza Preparedness

July 17, 2006

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Use of Respiratory Masks During an Influenza Pandemic

The mechanics and biology of influenza virus transmission are well documented in the literature. Influenza virus transmission occurs through three primary mechanisms:

1. Large droplet particles: Resulting in infection due to exposure to large respiratory droplets containing infectious influenza virus. Transmission from this mechanism generally requires close contact with an infected person (3-5 feet), and results from inhaling such particles into the upper respiratory tract.

2. Fomites: Resulting in direct mucosal membrane inoculation from touching infected inanimate objects.

3. Small-particle aerosol: Resulting in infection due to exposure to small-particle aerosols that are inhaled into the lower respiratory tract. Exposure can occur at a distance and does not require intimate or close contact with an infected person. Such aerosols are of particular importance as a mechanism for infection during invasive procedures involving ill patients (i.e. bronchoscopy, suctioning) and health care workers, and when exhaled air from mechanical respirators is inadequately filtered.

As a result of the physical size of the particles/droplets that result from each of the above methods of transmission, the following methods of protection are appropriate under ideal circumstances:

1. Large droplet particles: Use of a surgical mask.

2. Fomites: Regular hand washing (alcohol-based cleanser; soap and water)

3. Small particle aerosol: Use of an N-95 or greater mask.

For the following recommendations, we assume a scenario in which there are hundreds to tens of thousands of ill and symptomatic persons due to pandemic influenza. We note that the use of a mask of virtually any type would have benefit by inhibiting direct inoculation of virus-contaminated fingers into the nose or mouth. Further, under ideal circumstances of a ready materiel supply, we would recommend the following methods of physical prophylaxis to prevent infection:

1. Symptomatically ill patient: Such patients should wear surgical masks to decrease the chance of disseminating large droplet particles.

2. Pre-exposure contact: If there is close contact, wearing a surgical mask would be appropriate. If distant contact (i.e. walking in public areas) a mask is not recommended.

3. Occupational risk (i.e. HCWs): If available, HCWs caring for a patient with suspected or documented avian/pandemic influenza should wear an N-95 or greater mask. If these are not available, a distant second best option is to wear a surgical mask.

It should also be emphasized that prophylaxis against fomite-mediated transmission requires the availability of alcohol-based hand cleaner, or at least sinks with running water and soap. In addition, regular cleaning of frequently handled objects is likely to be helpful, as is touching common physical objects (i.e. door knobs) using a paper towel or Kleenex. We also note that central geographic locations for dispensing masks and hand-cleaners are focal points for person-to-person spread, and counter to the benefit of social distancing and should be avoided. For DoD beneficiaries surgical masks and hand cleaners are readily available on the open market. Finally, evidence exists demonstrating reduced influenza transmission in environments with high relative humidity, which may suggest additional helpful adjunctive strategies.

The Role of Children in the Epidemiology of Influenza

Select Subcommittee for DoD Pandemic Influenza Preparedness

July 17, 2006

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The important role of children in the epidemiology of influenza has been well documented in the medical and in the public health literature. There is a disproportionate burden of illness from influenza in young and otherwise healthy children. (Neuzil et al. NEJM 342:225-31, 2000; Izurieta et al, NEJM 342:232-239, 2000; Quach et al. Pediatrics 112:e197-201.). Further, Bueving and colleagues reviewed more than three hundred papers to estimate the incidence of influenza and concomitant morbidity and mortality in children from 0-19 years of age. The overall incidence of influenza was found to range from 5% to 9.5%. Although serious morbidity was seldom reported and no cases of mortality were found in this pediatric age group, the authors urged caution but concluded that there are a limited number of children with proven influenza reported in the literature; the authors believed this was likely related to under reporting. (Bueving, et al. Rev. Med. Virol. 15:383-391, 2005.)

As stated by Glezen, *"The highest attack rates of influenza occur in children and tend to proceed to secondary peaks of illness in adult populations."* Glezen and Couch further state in their 1978 NEJM paper *that "The highest morbidity occurred in preschool children with an estimated attack rate of over 30%. During the early stages of epidemics there was a predominance of cases among school-aged children and school absenteeism peaked earlier than other non-virologic indexes. These observations support the concept of rapid dissemination of influenza among school children and suggest that control of epidemic influenza might be facilitated by prophylaxis for that age group and other accessible, healthy populations."* (Glezen et al NEJM 298:587-592, 1978)

Reports of the effectiveness of influenza vaccines given to children in controlling epidemics in Japan seems to question the value of prophylaxis. In their extensive review Glezen and Couch state that *"The policy in Japan for many years has been to vaccinate all school children to prevent spread of influenza*.(J. Infect. Dis, 141:258-264, 1980) *Evaluations of effectiveness have not been conducted, but influenza epidemics in Japan have not been prevented."* Dowdle and colleagues have written: *"The effect of the school immunization program, if not dramatic, could be significant; we have no basis for judgment."* (Journ Infect. Dis. 141:258264, 1980).However, earlier studies by Monto and colleagues (Bull. WHO 41:537-542, 1969) in Tecumseh, Michigan, suggested the opposite*: "The protection from illness in Tecumseh was not limited to the vaccinated children; all age-groups experienced lower rates of respiratory infection. Thus vaccination of schoolchildren was shown to produce a marked lowering of illness rates in an entire community."* This was true when compared to a control community of similar size and demographic characteristics.

In a very complete review of the issues associated with influenza Glezen and Couch also state*: "Early in the course of an epidemic, from 35-50% of affected persons will be school aged, and as the epidemic progresses, this proportion will decrease, and the proportion of affected preschool children and adults will increase. This age shift suggests that the initial horizontal spread in the community occurs among school children and is followed by vertical spread to their older and younger contacts." "Other studies have demonstrated the importance of school children as disseminators of influenza in the community and introducers of infection into families. Studies in*

Cleveland, Houston, Seattle and Tecumseh have solidified this concept and also recognized the importance of preschool children as well, particularly those in regular day care outside of the home. Longini has introduced a useful mathematical model to estimate the frequency of community acquired infection and the secondary attack rate within the household.(Biometrics. 38:115-126, 1982. Amer. J. Epidemiology 115:736-748, 1982) *Using infection data from both the Seattle and Tecumseh* (Bull WHO; 41:537-542, 1969) *studies, he has shown that the model closely simulates the best available infection data."* (Glezen and Couch *in* Evans, Viral infections of humans; Epidemiology and Control. 4th edition. Plenum Medical, 1997; pp 473-505)

Conclusions:

Based upon examination of what appears to be a representative sample of relevant literature the following conclusions seem valid:

1. Children, especially school age children, are very important in the spread of influenza in a population and the epidemiological consequences of influenza in children cannot be ignored.. There is secondary spread to infants and to adults. Thus, in military facilities with dependents present on or near a base, the expectation would suggest spread to military personnel: first to members of the household, and then to other military personnel and other close contacts (civilian) in the near-by population.

2. Although there is little direct information available, some have suggested that if one could control the infections in children by vaccination, this would have a beneficial effect on adult populations in the community. The Japanese experience questions this conclusion. Since we do not yet have an available vaccine for H5N1, vaccination in children is not presently an option, but may be given consideration when/if a vaccine is available in specific local circumstances. In this regard an added advantage to immunization of children is that parents are more likely to also receive similar immunizations.

3. By extrapolation, spread initially through a pediatric population and then into the adult population would also be an important consideration in theatre where there are military personnel on the ground because of children in the local population.

4. In reviewing the literature pertaining to outbreaks of influenza, there is no data that the subcommittee could find documenting the effective use of antibiotics to prevent secondary infections. In fact, many papers indicate that bacterial infections are not usually a problem although this question has not, as far as I can find, been completely addressed either in children or in adults.

5. It should not be overlooked that major advantages have been defined for immunization again influenza using the available nasal spray for healthy children (ages 5-17 years). (Clinical Infectious Diseases; Vol 42, 2006).

Recommendations:

1. **Given the important role children play in amplifying influenza transmission and in view of the recent Advisory Committee on Immunization Practices (ACIP) recommendations for influenza immunization in small children in preparation for the seasonal influenza, DoD should consider pediatric vaccination with FDA approved pandemic influenza strains as an adjunct to influenza control.**

2. **In the event of widespread human outbreaks of influenza, DoD should consider closing DoD schools and daycare centers as part of community-based efforts to control transmission to adults.**

Other Potentially Useful References

Woods and Abramson. "The next influenza pandemic: Will we be ready to care for our children? J. Pediatr. 147:147-155, 2005.

Feigin, Cherry, Demmler, Kaplan S. Textbook of Pediatric Infectious Diseases. Saunders. 5th Edition, 2004.

Committee on Infectious Disease of the American Academy of Pediatrics. Redbook 2003. American Academy of Pediatrics. 2003.

Pandemic Influenza Scenarios

Select Subcommittee for DoD Pandemic Influenza Preparedness

July 15, 2006

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The Armed Forces Epidemiological Board recommends the Department of Defense develop a "Play Book" of responses to a wide variety of situations where pandemic influenza could impact DoD's operational mission. The following scenarios are provided as examples of potential situations DoD may face in managing pandemic influenza.

Scenario # 1

Military Installation A is an air mobility command location with a population of 4,500 active duty military service members. A C-5 squadron is scheduled to deploy within the next four (4) days to a location in the Middle East as part of an air expeditionary force. The installation is located in a rural area in the Midwest. The public health authorities report that both of the two (2) poultry producers in the local area have experienced large die-offs of broiler chickens raised in large confinement units. Initial testing on the chickens indicates influenza; serotyping results are expected in the next 24 hours. One poultry worker has been hospitalized with a severe respiratory condition. Rapid tests performed on the worker were positive for influenza type A; other diagnostic test results are pending.

The rate of influenza-like illnesses (ILI) at the installation clinic has increased by 30% over the last week with two cases hospitalized at the local civilian hospital. The influenza vaccine rate for active duty personnel assigned to the installation exceeds 95%.

Scenario # 2

A large Army installation in the eastern United States with a population in excess of 10,000 active duty military service members is home to two (2) infantry regiments. The installation's training programs in-process and graduate approximately 400 soldiers each week. Upon graduation, the soldiers are assigned to one of over a dozen locations world-wide. An Air Force installation is collocated with the Army installation. In the last week the ILI rate among the Army trainees has tripled. Five (5) cases were either hospitalized or placed in trainee "Medical Hold" owing to their illness. The ILI rate at the collocated Air Force installation, however, has remained stable over the last three (3) weeks and is within historical seasonal norms. There have been no reports of unusual ILIs in the local community. No cases of avian influenza (H5N1) have been reported in the United States and human-to-human transmission has not been confirmed anywhere in the world. However, four (4) cases of avian influenza in humans were reported in the Yeongi-Kongju region of Korea in the last month, two (2) of which died in spite of aggressive treatment at a hospital in Seoul.

Five (5) members of the infantry instructor cadre returned eight (8) days ago from a deployment to Korea. Two (2) the members of the deployed instructor cadre became ill with a severe respiratory infection while deployed; one (1) member of the cadre was hospitalized with acute respiratory disease. Viral throat cultures are pending.

Scenario # 3

A carrier battle group deployed in the Pacific reports an ILI outbreak. Thirty-two (32) cases among the nearly 400 personnel assigned to the guided missile cruiser attached to the carrier group have been diagnosed in the last six (6) days. None have required evacuation to date. As diagnostic testing capability is very limited in the carrier group, throat specimens were collected from the most severely-ill patients and are en route to San Diego, California for testing.

The carrier group completed a port call one week ago. Since the port call, the host country's Minister of Health has reported an outbreak of avian influenza with sustained human-to-human transmission in two (2) locations.

Scenario # 4

Over 3,500 members of an airborne brigade are scheduled to return to their home base over the next ten (10) days. A similar number are deploying from the home base to backfill those returning home. The World Health Organization has reported a wide-ranging outbreak of avian influenza with sustained human-to-human transmission among the inhabitants of a country adjacent to the airborne brigade's deployment site. No cases of avian influenza have been reported in the deployment area. While deployed, soldiers interact with the indigenous population on a daily basis.

Scenario #5

The State Department has requested DoD's support in evacuating non-essential State Department personnel and their families from the country of Vietnam. The Vietnam Minister of Health has reported a possible outbreak of a yet undiagnosed respiratory illness among villagers in a province just east of Da Nang. Over 1,000,000 poultry in Vietnam have been destroyed in the last four (4) months in an effort to control an avian influenza outbreak. The province affected by the respiratory disease outbreak supplies poultry to the Da Nang markets. No cases of human-to-human transmission of avian influenza have been confirmed by the World Health Organization; however, a novel influenza (H1N1) variant has been recently reported by the Centers for Disease Control and Prevention based on human throat specimens collected in Thailand.

While the Ho Chi Minh City airport remains open to air travel, several commercial carriers, including four (4) US companies, have cancelled all flights into the country. A carrier battle group is conducting a training exercise in the Red Sea.

Scenario #6

A large Joint exercise is scheduled to commence in Thailand in two (2) weeks. Two (2) members of an Air Force air expeditionary force deployed to participate in the exercise have been diagnosed with acute respiratory distress. The airmen are part of an engineering squadron that arrived in the exercise area one (1) week earlier. Medical intelligence sources are reporting widespread ILI of unknown type among Thailand's military forces. Avian influenza (H5N1) has been reported in poultry raised in Thailand and the Thai government has instituted an intensive poultry vaccination program. No sustained human-to-human transmission of avian influenza has been reported by the World Health Organization, but 22 Thai poultry workers and six (6) members of the Thai Health Ministry's poultry vaccination force have become ill in spite of prophylactic use of oseltamivir. Three (3) deaths have been reported.

Scenario #7

Two (2) human cases of suspected avian influenza (H5N1) were reported last week by the non-governmental organization operating a health care facility in the Kurdish region of Iraq. The cases involve a ten-year-old child and his mother living on a Kurdish farm. Poultry on the farm are experiencing a die-off; poultry on other farms in the area are suspected to be affected, but information is currently limited. No sustained human-to-human avian influenza transmission is currently recognized worldwide. Army personnel assigned to Camp B, about three (3) hours north of Baghdad, are conducting peacekeeping operations with Kurdish forces. These operations involve close contact with Kurdish citizens in small agrarian villages.

Scenario #8

The first outbreak of avian influenza (H5N1) in the United States was reported yesterday in a broiler chicken production facility in central California. The broiler facility is located 50 miles from a large Air Force military installation that serves as a deployment hub for the West Coast. The installation buys approximately 80% of it poultry products from vendors in the local area. These poultry products are sold in the base commissary and served in base dining halls. There are no reported human cases of avian influenza in the United States to date. Rates of ILI at the installation are within seasonal norms. The California State Health Department and US Department of Agriculture (USDA) are actively engaged at the broiler facility. National Guard personnel have been asked to help destroy all poultry at the facility. The Adjutant General of the California National Guard has contacted the installation commander seeking advice and logistical support in the culling operation.

Scenario #9

An Army regional medical center in the Northeast United States reported an unexpectedly large number of cases of ILI among children last week. This week, school attendance in the local area is down sharply and there is an increase in adult cases. Approximately 10% of the pediatric cases received throat cultures last week. Additional throat cultures have been collected on adult cases this week. Nasal washes were performed on two (2) adult cases upon the advice of the Army's preventive medicine consultants; results from the tests are still pending. Medical personnel absenteeism is at 30% today. The influenza vaccination rate among health care workers at the medical center is approximately 90% for active duty personnel and 55% for civilian workers.

Scenario #10

A carrier battle group deployed in the Pacific has had no reported cases of influenza in the last week. Yesterday, the carrier battle group began a scheduled port call in Country X. Today, the country's Minister of Health reported a suspected outbreak of avian influenza with possible human-to-human transmission in two (2) locations: a small village outside capital and the port call city. Diagnostic testing capability is very limited in the carrier battle group. Carrier battle group personnel are currently on liberty within the area.

After curtailing liberty and restricting all personnel to the ships, two (2) seamen who had participated in the liberty and returned to the ship three (3) days ago reported this morning to sick call with fever, myalgia, headache, sore throat and fatigue.