

Department of Defense Severe Acute Respiratory Syndrome (SARS) Medical Preparation and Response Planning Guidance

REFERENCES:

- a. Federal Response Plan: <http://www.fema.gov/rrr/frp/>
- b. DoD Directive 3025.15, SUBJECT: Military Assistance to Civil Authorities http://www.dtic.mil/whs/directives/corres/pdf/d302515_021897/d302515p.pdf
- c. United States Government Interagency SARS Concept of Operations Plan. November 18, 2003.
- d. Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) - CDC, January 8, 2004 (or most recent version).
- e. The Centers for Disease Control and Prevention. www.cdc.gov.
- f. Severe Acute Respiratory Syndrome Communicable Disease Outbreak Management Guidelines and Tiered Framework in Deployment Operations, May 2003.
- g. The World Health Organization. www.who.int.
- h. Department of Defense Directive 6200.3: Emergency Health Powers on Military Installations. May 12, 2003.
- i. The DoD Global Emerging Infections Surveillance and Response System (DoD-GEIS). www.geis.ha.osd.mil.
- j. USD(P&R) Memorandum, Severe Acute Respiratory Syndrome Communicable Disease Outbreak Management in Deployment Operations
- k. Department of Defense Directive, 6010.22, National Disaster Medical System (NDMS), January 21, 2003
- l. TRANSCOM Policy, Air Medical Transport for Severe Acute Respiratory Syndrome Patients
- m. Tri-service Reportable Events Guidelines and Case Definitions, Version 1.0. July 1998.
- n. ASD(HA) Memorandum, Policy for DoD Smallpox Epidemiological Response Teams, September 16, 2002

1. Purpose. This document provides implementing instructions and accompanying planning guidance to prepare for and respond to an outbreak of Severe Acute Respiratory Syndrome (SARS). The goal of these response guidelines is to maintain operational effectiveness by minimizing disease and death due to SARS. The guidance provides an outline of considerations at the Department of Defense (DoD) level and directs that subordinate organizations throughout DoD prepare to respond to a SARS epidemic in a manner appropriate for their areas of responsibility.
2. Mission. To prepare the DoD to preserve combat readiness, save lives, and prevent human suffering in the event of an outbreak of SARS. DoD organizations and units are expected to incorporate this guidance into their existing installation and medical treatment facility (MTF) standard operating procedures. In the event of a SARS outbreak, DoD will respond in accordance with this document and subordinate organization plans and procedures derived from this document. When authorized by the Secretary of Defense, DoD will provide support to civil authorities in accordance with the National Response Plan.
3. Applicability and Scope. These guidelines are applicable to medical units with the Military departments of the Air Force, Army, Navy, and Marine Corps and address SARS response for military members, nonmilitary persons under military jurisdiction, selected Federal employees, and family members and other people eligible for care within the military health care system. These guidelines will also be provided to the U.S. Coast Guard and the Veterans Administration.
4. Policy. This DoD guidance amplifies and implements the *Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS)* drafted by the Centers for Disease Control and Prevention (CDC), based on the *United States Government Interagency SARS Concept of Operations Plan (CONPLAN)* (see references d. and e.). The guidelines outline an appropriate response to SARS and provide guidance for military assistance to civil authorities (reference b.). It is DoD policy to protect personnel and property on military installations in the event of a public health emergency (see reference i.), including a SARS outbreak. Upon request from a lead Federal Agency, DoD capabilities to assist civil authorities in responding to a SARS outbreak would be made available in accordance with current DoD policies and procedures (see references b. and l.) upon approval and direction from the Secretary of Defense.
5. Summation. Appendix 1 briefly summarizes the overall guidance and key actions. Appendix 2 provides background information on SARS infection and transmission. Appendix 3 summarizes restriction of movement as an infection prevention and control measure. Appendix 4 summarizes virological surveillance and testing.

6. General. The DoD must be prepared to rapidly and effectively respond to control a SARS outbreak. Early recognition of cases and application of appropriate infection prevention and control measures will be critical in controlling future outbreaks. SARS is a recently recognized febrile, severe lower respiratory illness that is caused by infection with a novel coronavirus, SARS-associated coronavirus (SARS-CoV). During the winter of 2002 through the spring of 2003, the WHO received reports of over 8,000 SARS cases and nearly 800 deaths. The emergence of SARS provided a fresh illustration of the potential for a new disease to suddenly appear and spread, leading to widespread health, social, and economic consequences. There is no vaccine or effective treatment available; therefore, traditional public health measures remain the cornerstone of disease control.

a. SARS control measures. Traditional public health tools are used to prevent the spread of any infectious disease, and they constitute the fundamental strategy for controlling SARS. Currently, the only available public health strategies to limit the impact of SARS are rapid identification of infected persons and activation of control measures. These measures include global and community surveillance, networking with local public health authorities, detection and isolation of cases, identification, tracing, and monitoring of contacts, adherence to infection prevention and control precautions, use of personal protective equipment such as masks, and use of restriction of movement procedures (e.g., isolation or quarantine) for potentially infected persons.

b. Considerations. The following considerations guide subsequent recommendations.

(1) SARS-CoV considerations.

(a) Other coronaviruses are known to be seasonal and to occur more commonly during the colder months of the year. It is likely that the SARS-CoV will also be seasonal.

(b) The SARS virus is new to the human population, and universal susceptibility to the virus is assumed.

(c) It can be assumed that the vast majority of febrile respiratory illnesses will not be SARS unless high incidence rates of SARS have been identified in an area.

(d) Laboratory tests, although sensitive and specific, do not reliably detect SARS-CoV early in the course of disease. As yet, there is no rapid, reliable field test. Moreover, when prevalence is low, laboratory tests have limited value, due to high false positive results.

(e) Clinical features of SARS are nonspecific, but diagnosis can be guided by a history of exposure risk.

(2) Coordinating considerations.

(a) In a national SARS outbreak, the Department of Health and Human Services (DHHS) is the federal lead in reviewing surveillance and epidemiological data, determining the risk of an epidemic, and coordinating the distribution of anti-SARS medication, as specified in reference d.

(b) The DoD is responsible for SARS response on military installations. The DoD will coordinate with all levels of civilian public health authority in reporting and response to all cases of SARS among DoD personnel and their families.

(3) General considerations.

(a) Health risk information should be provided to key partners by establishing critical baseline information about the current communication needs and barriers within installations, and identifying effective channels of communication during a SARS outbreak.

(b) Laboratories should prepare to process significant numbers of specimens quickly to prevent work backlogs that may delay the processing of critical specimens for extended periods of time. As the prevalence of disease increases, sampling methodologies should be considered by medical treatment facilities.

(c) In a SARS epidemic, military and civilian treatment facilities should plan accordingly to treat a high number of patients with viral pneumonia. Support of critically ill patients will require increased medical staff, increased numbers of ventilators, and increased monitoring equipment. The DoD should plan for the distribution of life support equipment and should coordinate with the National Stockpile as needed.

(d) Professional and ancillary health care staff will need ongoing education and training on recognition and treatment of SARS, infection prevention and control procedures, and containment to protect healthcare workers to prevent the spread of SARS in MTFs.

(e) Beneficiary populations should be informed of the initial signs and symptoms of SARS and those symptoms that may require medical treatment or hospitalization.

(f) Demand for mortuary affairs support may be considerable.

(g) Recruit training centers may be particularly vulnerable, and planning needs to take into account how to control a SARS outbreak in a recruit population.

(h) Infection prevention and control precautions, including medical screening and risk communication, should be planned and instituted in the case of a SARS outbreak regarding screening of deploying and redeploying forces.

(4) Legal considerations.

(a) Reference i. summarizes the key roles played by Public Health Emergency Officers in assessing potential public health emergencies and advising commanders. Military commanders' actions regarding restriction of movement on a military installation of infected or possibly infected DoD and non-DoD personnel will be determined by the nature of the outbreak and the laws, regulations, and policies concerning those specific types of situations, especially regarding people other than military personnel. Commanders must obtain legal and medical advice on individual situations from their legal and medical staffs. Local legal advice will reflect State law and coordination with civilian authorities. For actions regarding isolation or quarantine on a military installation, please see reference h.

(5) Operational considerations.

(a) General operational considerations. SARS has the potential to spread among US Forces during ground, air, or sea operations. Medical units should tailor guidance and policies to their unit's own unique circumstances with respect to the handling of SARS patients and potential SARS patients, and SARS infection prevention and control practices. Medical personnel should be aware of current CDC, DoD, COCOM, TRANSCOM and Service specific SARS policies and guidance.

(b) Identifying travelers with early SARS symptoms, such as fever and flu-like illness, should be considered during embarkation and debarkation to reduce the spread of infection.

(c) Potential effect of SARS on military readiness. SARS poses a distinct threat to military operations. Because symptomatic persons may shed significant numbers of infectious virus particles, SARS can spread very rapidly and infect large percentages of servicemembers during contingency operations. During an epidemic, individuals in a military unit may be rendered non-functional, and significant medical resources may be required to treat cases and control disease spread. The threat of a SARS epidemic among military forces or even in a civilian community could significantly affect military readiness. An outbreak could degrade combat-mission capability among vulnerable troops, stress military medical operations to maximum capacity, restrict military movement, and may divert military manpower for health care or crowd control. The ability of all military units to conduct missions could be greatly reduced.

(d) Intelligence. In most conceivable SARS situations, initiation of the epidemic would be a result of natural events. While far from an ideal biowarfare or bioterrorism agent, scenarios may be envisioned where SARS CoV could be used by a hostile force to covertly propagate infection among U.S. military or coalition forces. Should a SARS-related biological attack on the United States be suspected, the Federal Bureau of Investigation (FBI) and CDC would have a lead role in investigating. Virus isolation from acutely ill persons would be an important part of the investigation. In such an event, reporting should move quickly up the chain of command to the Office of the Assistant Secretary of Defense for Health Affairs. Technical support (for virus isolation) should be requested from either the Armed Forces Institute of Pathology (AFIP) (<http://www.afip.org/>), the Air Force Institute for Operational Health (AFIOH) (<http://starview.brooks.af.mil/afioh/>), or the Navy Health Research Center (NHRC) (<http://www.nhrc.navy.mil/>).

(e) Media impact. The media will play an important role in reporting the events associated with a SARS outbreak. The DoD should take a proactive role in addressing the impact of SARS on military personnel and resources, and in providing information on SARS to DoD beneficiaries. Health Affairs will coordinate the internal and external public release of information on SARS (and specific events) with OASD (Public Affairs), the Service Surgeons General Public Affairs and the Service Chiefs of Information, as well as with the Centers for Disease Control and Prevention's National Center for Infectious Diseases, as appropriate.

(f) Medical. Medical and public health needs will be significant factors. The DoD will respond to a SARS outbreak affecting military populations and installations with existing resources. Expert consultation will be made immediately available to DoD areas affected by an outbreak through Service Preventive Medicine Hubs at United States Army Center for Health Promotion and Preventive Medicine (USACHPPM), Air Force Institute for Operational Health (AFIOH), Navy Health Research Center (NHRC), reference laboratories, and infectious disease experts at military medical centers. Coordination with local authorities including public health authorities is critical in responding to SARS. Augmentation of local resources will be provided upon request from affected areas. Augmentation personnel and equipment will come from areas not affected by SARS. In the event DoD assets are overwhelmed, DoD may need to seek assistance from other civilian and federal agencies. If a federal emergency is proclaimed and the Federal Response Plan activated, DoD will provide medical support under Emergency Support Function (ESF) #8-Health and Medical Services Annex. The federal lead agent for ESF #8 is the Department of Health and Human Services. Requests for support will come through the Director of Military Support (DOMS) and must be approved by the Secretary of Defense. The National Disaster Medical System (NDMS), which includes DoD coordination of participating federal and nonfederal-fixed hospitals and DoD-provided patient evacuation, is the primary federal-level hospital-response element. The NDMS will be used during a

federal response when local hospital resources are taxed. Other DoD medical capabilities external to NDMS may be requested, if necessary to augment or sustain the federal/local response to save lives and minimize human suffering. Restrictions on the use of military medical stocks and on military personnel treating civilians may need to be addressed in mission planning. Procedures and agreements for DoD to access equipment and supplies from the National Pharmaceutical Stockpile need to be formulated prior to any outbreak of SARS. The office of the Assistant Secretary of Defense for Health Affairs will serve as office of responsibility for coordinating procedures and agreements related to the National Pharmaceutical Stockpile.

(g) Mortuary affairs. Despite efforts to save lives and prevent injury, SARS may result in mass fatalities. Modern medical treatment and support will likely reduce the fatality rate, but considerable numbers of people may still die. In the event of a major outbreak, DoD may be requested to assist in mitigating the potential health risks posed by mass fatalities. In addition, provisions must be made to transport the human remains of those who contracted fatal SARS infections in theater.

(h) Transportation assets. Transportation of DoD and other federal personnel and equipment during an outbreak of SARS will be critical to a successful response. DoD transportation assets are in high demand and require advanced planning. All transportation modes should be considered to support domestic consequence-management operations. Unlike overseas deployments, ground transportation is an option in a domestic situation. Under the Federal Response Plan Emergency Support Function (ESF) #1, Department of Transportation's Movement Coordination Center will coordinate deployment of federal resources, including DoD resources, to support consequence-management operations. In addition, provisions must be made to transport human remains of those who have contracted fatal SARS infections in theaters of operation. In general, safety procedures for human remains infected with SARS-CoV should be consistent with those used for any human remains. However during contingency operations additional procedures should be considered to ensure the human remains meet requirements for safe transport to the continental United States for eventual return to families. The procedures developed through the Armed Forces Radiobiology Research Institute for the safe transport of anthrax infected remains may serve a template.

7. Concept of Operations.

a. The aim of DoD SARS medical response will be to:

(1) Minimize SARS morbidity and mortality among DoD personnel and their families and protect installations.

(2) Ensure that U.S. military forces remain dominant across the full spectrum of military operations and able to engage adversaries in any theater.

(3) Support civil authorities who will lead the response to a national SARS outbreak (see reference d, l.).

b. In order to preserve life, the military medical system must coordinate with civilian authorities in terms of prevention, recognition (including identification of cases and contact tracing), and containment (including isolation and quarantine).

c. SARS is expected to evolve in four levels. These preparedness levels follow the risk levels outlined in the *United States Government Interagency SARS Concept of Operations Plan* (see reference d.). Actions required during these levels vary greatly. Preparation for an epidemic is required during Level 1. Emergency response is required in Levels 2A, 2B, and 3. Recovery and recording of lessons learned is required in Level 4. These levels, while expected to occur sequentially, may be prolonged or may be greatly shortened, lasting only days. The definitions of the levels, as defined in the National CONPLAN, and actions required by DoD are provided below.

(1) **Preparedness Level 0:** (Pre-outbreak Period) No evidence of human to human transmission. DoD conducts medical surveillance of SARS-like-illness and laboratory-based surveillance of specimens received and isolates obtained. DoD also conducts an initial availability assessment of medications, supplies, and equipment potentially needed for SARS response.

(2) **Preparedness Level 1:** (Outbreak Imminent) Implemented upon the identification of severe acute respiratory disease outbreak of unknown etiology with geographic spread within a community and/or spread to other communities. There are no significant outbreaks or concerns about community transmission. During this level, commanders should review their SARS contingency plan, hygiene procedures, and personal protective equipment procedures.

(3) **Preparedness Level 2A:** (Outbreak Beginning) Localized disease outbreaks are identified in multiple cities with person-to-person transmission identified in institutional settings (such as health care facilities) and/or groups (such as families) with close contact to an index case. Should the initial outbreak occur in a U.S. military population, the local installation's public health resources will conduct the investigation and coordinate with civilian public health authorities as appropriate.

(4) **Preparedness Level 2B:** is the same as Preparedness Level 2A, except that SARS cases with no defined epidemiological links are identified in one or more cities or installations, but available tools for containment (i.e., infection prevention and control practices, isolation and quarantine) appear effective in controlling global spread of the disease. Members of military units should be alert for evidence of increasing spread of SARS-like illness in their unit.

(5) **Preparedness Level 3:** (Outbreak Ongoing) Implemented when outbreaks of disease move beyond defined institutional or family settings into the community as evidenced by an increase of SARS cases with no immediately apparent epidemiological links within large cities or regions located in two or more cities and available tools for containment become less effective due to lack of available resources. Commanders should consider mass restriction of movement procedures and alternative care facilities to assist in containment.

(6) **Preparedness Level 4:** (Pandemic/Post Pandemic) Occurs when the disease has affected all areas of the world and protective immunity may have developed among those who have been infected, but the virus continues to circulate among susceptible individuals who have not been infected previously. After-action reports and lessons learned will be documented in the Joint Lessons Learned Databases and as otherwise directed. In the event that catastrophic numbers of deaths may have occurred, the Service recruiting commands may increase efforts to replenish the ranks.

8. Responsibilities.

a. Service Surgeons General shall coordinate with their respective military commanders in the development of implementing guidance for Service-wide response plans based on the guidelines outlined in this document.

9. Medical planning and response considerations. The CDC *Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS)* should be used in planning for installation and unit medical responses (see reference e.). Special consideration should be given to the following in developing response guidance.

a. Surveillance. Current routine surveillances (laboratory and non-medical-respiratory disease surveillances, reportable medical events surveillance, ESSENCE, and other surveillance programs) will continue in the absence of SARS. However, as SARS cases emerge, surveillance systems will be enhanced to include surveillance for SARS cases and suspected cases using the most current CDC SARS case definitions and supplemental laboratory support.

(1) Laboratory Surveillance of Hospitalized Pneumonias. Once it is confirmed that SARS is re-emerging, respiratory samples from patients admitted to MTFs diagnosed with a viral pneumonia will be sent to the Brooks AFB Virology laboratory for SARS testing.

(2) MTF-level Surveillance. As SARS becomes more prevalent and less regionalized, the possibility of SARS being imported through travelers from high-risk areas must be considered. Infection prevention and control techniques to include routine masking of health care workers involved with direct patient care, and masking/isolation of patients being evaluated for SARS (those with influenza-like illness who have traveled to high-risk

areas or have been in contact with a person who traveled to high-risk areas) must be initiated (See Appendix 4.)

b. Medical evaluation and care of probable/suspected cases (including laboratory diagnosis). The CDC definition for probable/suspect/confirmed cases will be used (see reference f.).

(1) Suspected cases of SARS seen at MTFs will be masked and isolated as soon as recognized.

(2) Medical evaluation for pneumonia will include X-rays, routine microbiology to include cultures and serologies for bacterial and virological etiologies, and specimens for SARS testing. In DoD, SARS testing is available through the AFIOH Virology Laboratory, NHRC, and MTF labs who are members of the CDC laboratory network. Information about DoD laboratories capable of doing SARS testing is available at the DoD Virtual Public Health Laboratory Webpage at the DoD Global Emerging Infections System website (<http://www.geis.ha.osd.mil>).

(3) With no recognized SARS specific anti-viral treatment available, medical care will consist primarily of supportive care. Ventilation support and antibiotics for bacterial complications are critical components of care. MTFs need to assess their current inventory of supplies and equipment and plan for additional supplies and equipment in the event of an outbreak of SARS.

(4) Plans should account for the possibility of overwhelming MTF intensive care unit/bed/isolation capacity. Options to be considered include: opening unused portions of the MTFs, using non-medical facilities as expansion areas, and transferring patients. Needed resources (to include staffing, equipment, etc.) should be planned for accordingly.

c. Identification of Close Contacts and Contact Tracing. With no vaccine or chemoprophylaxis available, prevention of infection depends on rapid identification and isolation of cases, rapid contact identification and tracing, and appropriate restriction of movement of contacts.

(1) MTFs should have trained teams available to begin contact tracing whenever a SARS case is suspected. Procedures to coordinate contact tracing within the military and with the civilian authorities should be outlined prior to any outbreak.

(2) CDC criteria for determining close contacts as well as contact tracing forms will be used (see Reference d).

d. Reporting Requirements. SARS is a reportable disease. Suspected/probable/confirmed cases will be reported through Service epidemiology hubs to

the Defense Medical Surveillance System (DMSS). Service hubs and DMSS will report any suspect/probable/confirmed cases to Health Affairs (Program Director, Military Public Health). In addition, the reporting MTF will comply with local/state/CDC requirements for reporting SARS.

e. Restriction of Movement. Restriction of movement includes isolation, quarantine, travel advisories/restriction, incarceration, and home quarantine.

(1) Military commanders are empowered to impose restriction of movement techniques in response to emergencies through DoDD 6200.3, Emergency Health Powers on Military Installations.

(2) This same DoD directive directs the appointment of a Public Health Emergency Officer (PHEO) to coordinate a medical response to emergencies and advise the commander in determining whether or not restriction of movement techniques should be invoked.

(3) In addition to consultation with the PHEO, the commander should consult with General Counsel prior to finalizing any decision.

(4) All decisions to invoke restriction of movement should also be coordinated with the local authorities to include public health agencies.

(5) It is possible that various restriction of movement methods may be employed simultaneously to contain a SARS outbreak. Options include home or work quarantine, and facility or building-wide lock down. Total base-wide quarantine may be considered under extreme circumstances. Daily monitoring of quarantined contacts as well as appropriate infection prevention and control techniques will be employed.

(6) Arrangements must be in place for the immediate transfer of any symptomatic contacts to the MTF for isolation, evaluation, and care.

f. Training and exercises. SARS preparedness and response guidance must include procedures to ensure that the appropriate personnel are adequately trained in the epidemiology, clinical presentation, diagnostic and supportive care techniques, infection prevention and control techniques and contact tracing procedures for SARS. SARS response should be included into exercises as appropriate to ensure that MTF and installation personnel understand their roles and procedures in the response.

g. Facilities. To respond to an epidemic of SARS, military treatment facilities must have patient-care plans that address treatment, provide respiratory support, and stress general medical support, management, patient movement, and evacuation requirements. If the number of seriously ill patients in an outbreak exceeds military

treatment facility capacity, buildings other than hospitals, such as schools and churches, may be converted into treatment facilities. Military facility commanders may require extra support, as buildings other than medical facilities are pressed into service. Medical commanders may consider cooperative arrangements with sister services and other government agencies in some locations. Such arrangements require coordination with appropriate approving authorities. Provisions for increased staff or for emergency training of volunteer staff should be made.

h. Mental health and chaplain services. Guidance must include provision for mental health and chaplain services for emergency workers and their families, especially when these workers are deployed away from their home base. Mental health and chaplain services should also be provided for SARS casualties and their families. Depending on the size of the outbreak, it may be appropriate for the installation community activities center to act as a family support center, in coordination with personnel from the American Red Cross, to assist the military family. Stress management teams will be used as appropriate.

i. Administration and Logistics. The principal material requirement for dealing clinically with SARS is supportive care, including ventilator support. Considerable demand for ventilators is likely, and MTF commanders should access stockpiled ventilators.

APPENDIX 1: Summary of Actions in DoD SARS Response Guidelines

Before a SARS outbreak, develop, review and update SARS response guidance at command and installation level. Medical commanders should establish programs and policies to:

- (a) Identify facilities that could serve as expanded military treatment facilities in the event of overwhelming numbers of patients with severe SARS pneumonia.
- (b) Train health care providers in SARS recognition and response.
- (c) Continue and refine surveillance for SARS-like (febrile, upper respiratory) illnesses during off-season, as appropriate.
- (d) Develop and exercise plans for increased active surveillance during an outbreak, particularly laboratory-based surveillance.
- (e) Set up triage clinics to distinguish those who may need hospitalization from those who can be cared for at home.
- (f) Train and exercise epidemic and medical treatment response teams.
- (g) Maintain a supply of shipping materials for SARS-infected specimens.
- (h) Report cases of SARS-like illness via reportable disease chain.
- (i) Staff military treatment facilities to treat SARS patients.

Once a SARS outbreak is confirmed, MTF commanders will:

- (a) Conduct active surveillance to identify SARS cases.
- (b) Ensure appropriate and prompt reporting of SARS cases.
- (c) Provide care for SARS patients.
- (d) Implement contingency plans to increase patient care capacity.
- (e) Provide care for excess load of pneumonia cases.
- (f) Keep commanders informed of situation and medical impact.

MTF commanders should provide after-action medical summaries after a SARS epidemic has subsided.

APPENDIX 2: Background Information on SARS Infection and Transmission of SARS.

1. SARS. SARS is a contagious illness that generally affects the respiratory tract of infected patients. The severity of illness is highly variable, ranging from mild illness to death. In general, SARS begins with a high fever (temperature greater than 100.4°F [$>38.0^{\circ}\text{C}$]). Other symptoms may include headache, an overall feeling of discomfort, fatigue, and body aches. About 10 to 20 percent of patients have diarrhea. SARS patients may develop a dry cough, and most patients develop pneumonia that can be fatal (see reference f. for latest information). According to the WHO, during the SARS outbreak of 2003, a total of 8,098 people worldwide became sick with SARS; of these, 774 died. In the United States, there were 192 cases (8 laboratory confirmed) of SARS among humans, all of whom got better. As of March 21, 2003, the majority of patients identified as having SARS have been adults aged 25 to 70 years who were previously healthy. Few suspected cases of SARS have been reported among children less than 15 years old. Following exposure, symptoms develop after an incubation period of two to seven days, although in some cases it may be as long as 10 days. The virus that causes SARS is spread from person to person in respiratory secretions. Spread may be facilitated in closed environments such as in barracks and on board buses, ships, and aircraft. It is not yet clear whether persons who recover from SARS-CoV infection develop long-lasting protective immunity or whether they are susceptible to re-infection and disease, as is the case with other human coronaviruses.

2. Deaths due to SARS. SARS virus causes disease by infecting the surface cells of the upper respiratory tract. Mortality estimates across populations range from three to fifteen percent, but may be as high as 40 percent in persons over the age of 60.

3. Transmission of SARS virus. The animal reservoir for SARS is unknown, although the WHO reports that some civet cats in Southern China are infected with the virus. Served in restaurants, civet cats are considered a delicacy. Occasionally, viruses that are normally confined to animals can be transmitted to nearby humans, resulting in significant disease. If transmission of SARS from human to human begins and is sustained, an epidemic may result, because the vast majority of people will not have antibody to SARS. SARS outbreaks are neither regional nor national but rather confined to limited geographic—and even institutional—settings. The outbreaks are dynamic, the characteristics which can change quickly. This ability to infect people early in the illness before symptoms are apparent facilitates rapid spread of SARS virus among populations.

4. SARS vaccine. No vaccine is currently available.

5. Anti-SARS drugs. No specific anti-viral treatment has been shown to be effective. The CDC, the National Institutes of Health (NIH), the Food and Drug Administration (FDA) and academicians are developing protocols to assess antiviral drugs that show activity in vitro against SARS-CoV (see reference f. for latest information and treatment recommendations).

APPENDIX 3: Restriction of Movement

1. Definition and Use of Restriction of Movement. Various public health tools will be required to stop an outbreak of infectious diseases like SARS. One of these tools is quarantine. Quarantine refers to the restriction of persons presumed to have been exposed to some infectious or communicable disease. Quarantine of exposed persons may be the best initial way to prevent a highly contagious disease, such as SARS, especially when combined with other health strategies, including patient isolation, travel advisories, and other appropriate infection prevention and control measures. Note that although quarantine measures may be instituted and enforced for both individual persons and populations, the term is used more frequently for measures employed at a population-wide level. On the other hand, isolation pertains to keeping already infected individuals away from others so they cannot infect them. Implementing restriction of movement depends on public health planning, preparedness, and coordination with civil authorities.

2. Suggested Activities Associated With Restriction of Movement Procedures. Although local officials will largely carry out quarantine, DoD can help coordinate and ensure that important activities have been planned for, including those listed below:

- a. Identify pertinent legal statutes in place to allow public health intervention and implementation of the isolation and quarantine measures.
- b. Identify personnel responsible for coordination of isolation and quarantine activities.
- c. Identify appropriate facilities to be utilized for isolation and care of SARS patients.
- d. Identify appropriate enforcement entities to enforce isolation and quarantine orders.
- e. Identify appropriate personnel (medical maintenance, etc.) to maintain medical treatment facilities.
- f. Establish procedures for monitoring and controlling access to facilities.
- g. Establish procedures for appropriate disposal of medical waste when using a non-medical facility.
- h. Establish laundry arrangements (on-site if possible) and appropriate disposal of medical waste.
- i. Arrange for food service support for facility occupants.
- j. Establish procedures for monitoring health status of facility staff and plans for referral to appropriate care.

APPENDIX 4: Virological Surveillance and Testing

The DoD Influenza and Respiratory Viruses Surveillance Program collects specimens from 27 bases (sites from all three services and the Coast Guard) and several overseas research facilities, in addition to 7 recruit training facilities. Two laboratories provide the laboratory services, the Epidemiological Surveillance Laboratory at the AF Institute for Operational Health (AFIOH), which provides the testing for the 27 bases and the overseas labs, and the Respiratory Disease Laboratory Naval Health Research Center (NHRC), which provides testing for the 7 training facilities and from shipboard cases.

Testing Procedures for Patients Suspected of Having SARS:

1. Confirm patient meets the current case definition for SARS at:
<http://www.cdc.gov/ncidod/sars/casedefinition.htm>.
2. Contact AFIOH or NHRC for consultation, especially if more than 1 patient is being considered for SARS testing. Testing may take a few days to 2 weeks.
 - a. AFIOH:
Chief Diagnostic Virology: DSN: 240-1679
NCOIC Virology; DSN: 240-3758
 - b. NHRC:
Director, Respiratory Disease Laboratory, DSN: 553-7628
Director, Director, DoD Center for Deployment Health Research,
DSN: 553-8097
NHRC on-call physician pager: 1-(619)-604-7851
3. All patients suspected for SARS should also be tested for bacterial pathogens causing SARS-like illness, such as *Mycoplasma pneumoniae*, *Bordetella pertussis*, *Legionella pneumophila*, *L. micdadei*, and *Chlamydia pneumoniae*. Bacterial cultures for these agents can be tested at local laboratories.
4. All patients should also have acute and convalescent sera tested for SARS antibody. **These should be submitted at the same time as the respiratory or body fluid specimens.**

5. Specimen submissions to AFIOH or NHRC.

- a. **Must have CDC's consent forms** filled out by patient or legal representative.

Include the consent forms with the specimens. For the respiratory specimens use the RT-PCR, for the sera, use the EIA consent:

<http://www.cdc.gov/ncidod/sars/lab/rtpcr/consent.htm>

<http://www.cdc.gov/ncidod/sars/lab/eia/consent.htm>

- b. Swabs must be in M4 transport media or commercially available viral transport media (**respiratory sites only**)

(1) Should be available from MTF lab

(2) M4 media is also available from AFIOH, upon request. Viral transport media is available from NHRC upon request. Contact lab for details.

(3) Sentinel sites and others participating in the DoD Influenza and Respiratory Viruses Surveillance Program should already have media kits available.

(4) M4 tubes should not be used if the color is either yellow (too acidic) or magenta (too basic.)

- c. Acute and convalescent sera should be in standard red-top or serum separator tubes.

- d. Body fluids, including sputum, should be submitted in sterile containers with no additional fluid.

- e. Stool should be sent in sterile containers with no fluid added. **Swabs with stool WILL NOT BE ACCEPTED.**

- f. Useful instructions in how to correctly obtain specimens can be found on the CDC website: http://www.cdc.gov/ncidod/sars/specimen_collection_sars2.htm

6. Order of preference for specimens (other than sera) should be:

- a. Bronchial lavage

- b. Nasal lavage

- c. Nasopharyngeal swabs (smaller and thinner, passed in along the inferior meatus of the nose)

- d. Oropharyngeal swabs
- e. Other body fluids to include pleural fluid or sputum
- f. Stool

7. Specimen Handling

a. Temperature.

- (1) **Avoid freeze-thaw cycles which destroys viruses**
- (2) Storage at -70 °C is best, and shipped on dry ice.
- (3) If dry ice not available, store and ship at 4 °C (refrigerator temperature).

b. Requisition slips:

(1) **AFIOH:** Submit specimens with the DoD Influenza Surveillance questionnaire as a lab requisition slip. Available at the AFIOH website (<https://afioh.brooks.af.mil/influenza>), under the Forms and Documents tab on the left hand side.

(2) **NHRC:** Use the CDC specimen submission forms for all patients available at <http://www.cdc.gov/ncidod/sars/pdf/intcasereportform-sars.pdf>

c. **Ensure that labs are informed before any specimens are sent, to prepare for specimen arrival. Specimens cannot be accepted during the weekends at either lab.** Additional shipping information can be found in the SDE letter at the AFIOH website.

d. Ship overnight via courier of choice.

8. Addresses for shipping

AFIOH/SDEM

2730 Louis Bauer Drive, Bldg 930
Brooks City-Base, TX 78235-5132
DSN: 240-1679 Comm: 210-536-1679

Naval Health Research Center

McClelland Rd. & Patterson Rd.
Gate 2, Building 322, Room 211
San Diego, CA 92152
DSN: 553-7027 Comm: 619-553-7027
Fax: 210-536-2638