TRANSPORTING ACUTE INFECTIOUS RESPIRATORY CONDITIONS

PURPOSE: EMS responders provide medical care to persons whose presenting complaint may or may not be related to a respiratory communicable disease. The EMS responders more often than not may not know of their exposure to a communicable disease and should consider that in all instances necessitating hands-on medical care, the patient is a potential transmitter of a communicable disease. This guideline is intended to help the prehospital provider by outlining methods of self-protection, establishment of a process for decontamination of equipment and personnel. For exposure reporting requirements, see Miscellaneous Policies Module, **Universal Blood & Body Substance Precautions.**

DEFINITIONS:

1. **Severe Acute Respiratory Syndrome (SARS):**
   (a) Risk Factors: The patient has traveled to an area (or passed though the airport) with documented or suspected community transmission of SARS in the 10 days prior to becoming ill or the patient has had close contact with a person who is ill with a cough and/or difficulty breathing and the close contact person has traveled to an area (or passed through the airport) with documented or suspected community transmission of SARS in the 10 days prior to becoming ill.
   (b) Signs and symptoms: The incubation period for SARS is typically 2 to 7 days and as long as 10 days. Begins with fever (>100.4°F [>38.0°C]), sometimes is associated with chills and rigors. This might be accompanied by other symptoms, including headache, malaise, myalgia, and sometimes mild respiratory symptoms. Some patients have reported diarrhea during the febrile prodrome. After 3 to 7 days, a lower respiratory phase begins with the onset of a dry, nonproductive cough or dyspnea, which might be accompanied by or progress to hypoxemia. In 10%-20% of cases, the respiratory illness is severe enough to require intubation and mechanical ventilation. The case-fatality rate is approximately 3%. (source: CDC)
2. **Tuberculosis:**
   (a) TB High Risk Factors: Alcoholics, IV drug users, contacts of patients known to have active TB, low income populations, prisoners, HIV infected persons, nursing home residents, refugees. Persons with other pre-existing medical conditions which compromise the ability to fight infection are also at increased risk, such as: chemotherapy, diabetes, steroid therapy, renal failure, some cancers. (source: CDC).
   (b) Signs and symptoms: sputum-producing cough, coughing up blood, weight loss, loss of appetite, lethargy/weakness, night sweats, or fever.

1. **AMT -** *Aeromedical Transport Team*
2. **CDC** is the *Center for Disease Prevention and Control*, the lead agency nationally for monitoring, standards development, and information dissemination to the public and the health care community on infections diseases.
3. **Exposure to TB or other airborne pathogens** is an event in which a prehospital provider sustains substantial respiratory exposure to a confirmed infectious tuberculosis case, or other airborne pathogen, or to a suspect case who is determined to have been an infectious case at the time of the incident, without benefit of all applicable exposure control measures.
4. **High Efficiency Particulate Air (HEPA) Mask** is a mask that is 99.97 % efficient against 0.3 micrometer or larger particles. A HEPA mask should be worn by prehospital providers while caring for and transporting any patients with known active TB histories, any suspect infectious TB case, or symptoms of SARS.
5. **NIOSH** is the National Institute for Occupational Safety and Health.

AUTHORITY: California Health and Safety Code Sections 199.65-199.68, 1797.186, 1797.188-1797.189.

POLICY:

Infectious respiratory patients should be transported using the minimum number of prehospital personnel and without patients or passengers who have not been exposed. If a parent is to accompany a sick child, the parent should use protective equipment during transport as described below:

1. Sufficient infection control supplies shall be on board to support the expected duration of transport plus additional supplies in case of delays.

2. Receiving facilities shall be notified prior to transport of a patient with a known respiratory infectious disease to facilitate preparation and implementation of appropriate infection control procedures.
3. Concerns regarding movement of possible SARS patients in the United States should be discussed with appropriate local, state, and federal health authorities, including the CDC - 24 hr. response number: (770) 488-7100.

INFECTION CONTROL:

1. Protective equipment may **not** be removed during the transport of a patient with a respiratory infectious disease.
2. Personal activities, including eating, drinking, application of cosmetics, and handling of contact lenses shall not be performed during a patient transport.
3. Respiratory droplets and possible airborne spread, SARS may be transmitted if residual infectious particles on environmental surfaces are brought into direct contact with the eyes, nose, or mouth, e.g. by unwashed hands. See Miscellaneous Policies Module - **Universal Blood and Body Substance Precautions**.

PROTECTIVE EQUIPMENT AND PROCEDURES WHILE TRANSPORTING:

1. Universal Precautions shall be worn for all patient contacts per Miscellaneous Policies Module - **Universal Blood and Body Substance Precautions**.
2. Fit-tested NIOSH approved mask WITH 95% filtering efficiency shall be worn by personnel in the patient care compartment during transport of suspected SARS or TB patient.
3. The door and/or window between driver and patient compartments should be closed before a suspected SARS/TB patient is brought onboard.
4. Gowns and gloves are not required for personnel whose duties are strictly limited to driving.
5. Vehicles that have separate driver and patient compartments and can provide separate ventilation to these areas are preferred for transport of possible SARS patients. N-95 (or greater) respirators should be worn by the driver if the driver's compartment is open to the patient-care compartment. Drivers that provide direct patient care (including moving patients on stretchers) should wear a disposable gown, eye-protection, and gloves as described above during patient-care activities. If a vehicle without separate compartments and ventilation must be used, the outside air vents in the driver compartment should be open, and the rear exhaust ventilation fans should be turned on at the highest setting during transport of SARS patients to provide relative negative pressure in the patient care compartment.
6. Oxygen delivery with NRM may be used for patient oxygen support during transport. If tolerated, the patient may wear a paper surgical mask to reduce droplet production. Positive pressure ventilation should be performed using a resuscitation BVM, preferably one equipped to provide HEPA or equivalent filtration of expired air.
7. If tolerated, the patient may wear a paper surgical mask to reduce droplet production.
8. If possible, cough-generating procedures should be avoided during pre-hospital care (e.g., nebulizer treatments).
9. **Mechanically Ventilated Patients**
   a. When positive pressure ventilation is needed, a BVM, preferably one with HEPA or equiv. filtration of expired air.
   b. EMS provider agencies should consult their ventilator equipment manufacturer to confirm appropriate filtration capability and the effect of filtration on positive pressure ventilation. Mechanical ventilators for SARS-patient transport should provide HEPA or equivalent filtration of airflow exhaust.
10. **IV Clinical Specimens**
    a. Standard precautions must be used when collecting and transporting clinical specimens.
    b. Clinical specimens should be labeled with appropriate patient information and placed in a clean self-sealing bag for storage and transport.
11. **Waste disposal**
    a. Dry solid waste, e.g., used gloves, dressings, etc., or waste that is saturated with blood, body fluids, or excreta should be collected in leak-proof biohazard bags or containers for disposal as regulated medical waste in accordance with local requirements at the destination hospital.
    b. Sharp items such as used needles or scalpel blades should be collected in puncture resistant sharps containers for disposal as regulated medical waste in accordance with local requirements at the destination hospital or provider agency.

c. Suction devices should be fitted with in-line HEPA or equivalent filters in accordance with manufacturer's recommendations.
d. Suctioned fluids and secretions should be stored in sealed containers for disposal as regulated medical waste in accordance with local requirements at the destination hospital. Handling that might create splashes or aerosols during transport should be avoided.

12. **Cleaning and Disinfecting after transporting a possible SARS patient**
    a. Personnel performing cleaning should wear non-sterile gloves, disposable gowns and face shields/eye-protection while cleaning the patient-care compartment or reusable equipment, according to manufacturer's instructions.
    b. Compressed air that might re-aerosolize infectious material should not be used for cleaning the vehicle or reusable equipment.
    c. Non-patient-care areas of the vehicle should be cleaned and maintained according to vehicle manufacturer's recommendations.
    d. Patient-care compartments (including stretchers, railings, medical equipment, control panels, and adjacent flooring, walls and work surfaces likely to be directly contaminated during care) should be cleaned using an EPA-registered hospital disinfectant in accordance with manufacturer's recommendations.
    e. Spills of body fluids during transport should be cleaned by placing absorbent material over the spill and collecting the used cleaning material in a biohazard bag. The area of the spill should be cleaned using an EPA-registered hospital disinfectant. Cleaning personnel should be notified of the spill location and initial clean-up performed.
    f. Contaminated reusable patient care equipment should be cleaned and disinfected promptly after use and before returning to service.
    g. Reusable equipment should be cleaned and disinfected according to manufacturer's instructions.
13. **Follow-up of EMS Personnel who Transport suspected SARS Patients**
    a. Personnel may continue working during the 10 day post-exposure period if they have no symptoms of fever or respiratory illness.
    b. Personnel who have transported a suspected SARS patient and develop symptoms of SARS within the 10 day post-exposure period should be directed to seek medical evaluation and should be reported to the state health department and to the CDC at the number listed above.
14. **Fixed-wing, pressurized aircraft:**
    a. Cabin airflow characteristics may reduce exposure of occupants to airborne infectious particles; however, based on current understanding of how SARS is transmitted, airflow alone does not provide complete protection of personnel when sharing airspace with an infectious SARS patient. N-95 (or better) respirators are recommended for prehospital personnel in any part of an aircraft that shares air (directly or through the ventilation system) with the patient-care cabin.
    b. AMT service providers shall consult manufacturer(s) of their aircraft to identify cabin airflow characteristics, including: HEPA filtration and directional airflow capabilities, air outlet location, presence or absence of air mixing between cockpit and patient-care cabin during flight, and the time and aircraft configuration required to perform a post-mission airing-out of the aircraft.
    c. Aircraft ventilation should remain on at all times during transport of SARS patients, including during ground delays.
    d. Aircraft that provide space for crew members to perform necessary personal activities (eating, drinking, handling contact lenses, etc.) in an area that does not share air with the patient-care cabin should be selected for flights likely to exceed 4 hours.
15. **Rotor-wing, and non-pressurized aircraft:**
    a. In aircraft with uncontrolled interior airflow such as rotor-wing and small, non-pressurized fixed-wing aircraft, all personnel should wear disposable, N-95 or better respirators during transport of SARS patients.
    b. Personnel should not wear leather or other “flight” gloves while providing patient care. Handling or storage of medication or clinical specimens should not be done in areas where food or beverages are stored or prepared.
16. Disposable, N-95 respirators are approved for in-flight use. Personnel using N-95 respirators should be fit-tested. If air is shared between the cockpit/flight deck and the patient-care cabin, cockpit/flight deck crew should wear disposable N-95 respirators.

a. For cockpit crews, aircraft aviator tight-fitting face-pieces capable of delivering oxygen that has not mixed with cabin air may be used in lieu of a disposable N-95 respirator. Personal activities that require removal of respirators should not be performed in the patient-care cabin.
b. Excretions (feces, urine, etc.) shall be secured in a non-permeable bag or container and disposed of properly at the destination facility. An opportunity for patients to eliminate prior to the scheduled flight is strongly encouraged.

17. Aircraft Cleaning and Disinfecting:
    a. After transporting a SARS patient, exits and doors should be closed and aircraft air conditioning turned on at maximum capacity for several minutes in accordance with the airing time specified by aircraft-manufacturers to provide at least one complete air-exchange. Non-pressurized aircraft should be aired out with exits and doors open long enough to ensure a complete air-exchange. Blowers and high-powered fans that might re-aerosolize infectious material should not be used for cleaning the aircraft.
    b. Cleaning shall be postponed until airing out is complete.
    c. Cleaning personnel shall wear non-sterile gloves, disposable gowns and face shields while cleaning patient-care areas and equipment.
    d. Compressed air that might re-aerosolize infectious material should not be used for cleaning the aircraft.
    e. Non-patient-care areas of the aircraft should be cleaned and maintained according to manufacturer's recommendations.
    f. Patient-care areas (including stretchers, railings, medical equipment control panels, and adjacent flooring, walls and work surfaces likely to be directly contaminated during care) shall be cleaned using an EPA-registered* hospital disinfectant in accordance with aircraft manufacturer's recommendations.
    g. Spills of body fluids during transport should be cleaned by placing absorbent material over the spill and collecting the used cleaning material in a biohazard bag. The area of the spill should be cleaned using an EPA-registered hospital disinfectant.
    h. Contaminated web seats or seat cushions shall be placed in a biohazard bag and labeled with the location and type of contamination for later disposal or cleaning.
    i. Contaminated reusable patient care equipment shall be placed in biohazard bags and labeled for cleaning and disinfecting at the AMT service medical equipment section.
    j. Reusable equipment should be cleaned and disinfected according to manufacturer's instructions.
18. **Logistical Planning and Post Flight Follow-up:**
    a. Sufficient infection control supplies should be on board to support the expected duration of the flight plus additional time should the aircraft experience maintenance delays or weather diversions.
    b. Flight planning should identify emergency or unexpected diversion airfields, and coordinate with authorities in advance.
    c. After the flight is complete, the AMT team should provide the following information to their medical director: flight number/date; address of the team/aircraft basing; duration of patient transport; names, contact information, and crew positions (including estimated duration of direct patient care provided) of mission personnel.
    d. AMT services should designate individuals responsible for performing post-mission monitoring of mission personnel and reporting results to the AMT service medical director.
    e. Flight personnel should be monitored (directly or by telephone) at least once daily for 10 days for evidence of fever or respiratory illness that would require evaluation and follow up.
19. **Ground/In-Flight Emergency Procedures** AMT service providers should have a written plan addressing patient handling during in-flight and/or ground emergency situations. Activities such as donning life vests and litter-patient emergency egress may create special exposure risks. Use of N-95 respirators must be weighed against time constraints and on-board emergency conditions (e.g., smoke in the cabin, sudden cabin decompression). Gowns and latex gloves represent a fire/flash hazard and should not be worn during ground or in-flight emergency situations.