Interim Laboratory Biosafety Guidelines for Handling and Processing Specimens Associated with Severe Acute Respiratory Syndrome (SARS)

Background: The Centers for Disease Control and Prevention (CDC) and the World Health Organization have received reports of patients with Severe Acute Respiratory Syndrome (SARS) from various international and domestic sources. The cause of these illnesses is unknown and is being investigated, but current findings strongly suggest a viral etiology. Up-to-date information and CDC guidance documents with respect to SARS can be found at http://www.cdc.gov/ncidod/sars. Effective and timely communication between clinical and laboratory staff is essential in minimizing the risk incurred in handling specimens from patients for whom SARS is suspected. Specimens from patients with suspected SARS should be labeled accordingly and the laboratory should be alerted to insure proper specimen handling. Listed below are interim biosafety guidelines for handling these specimens:

A. Blood Specimens for Routine Serology, Chemistry and Hematology:

These specimens may be handled using Standard Precautions (previously Universal Precautions). Laboratory workers should wear protective equipment, including disposable gloves, laboratory coats, eye protection and a surgical mask, or face shield to provide a barrier to mucosal surface exposure. Centrifugation should be carried out using sealed centrifuge cups or rotors that are loaded and unloaded in a biological safety cabinet.

B. Specimens for Microbiological Analysis

1. The following activities may be performed in Biosafety Level (BSL) 2 facilities using BSL-2 practices as described in the CDC/NIH Biosafety in Microbiological and Biomedical Laboratories manual (BMBL) (full text available at http://www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4s3.htm):

a. Pathologic examination and processing of formalin-fixed or otherwise inactivated tissues.
b. Molecular analysis of extracted nucleic acid preparations.
c. Electron microscopic studies with glutaraldehyde-fixed grids.
d. Routine examination of bacterial and mycotic cultures.
e. Routine staining and microscopic analysis of fixed smears.
f. Final packaging of specimens for transport to diagnostic laboratories for additional testing. Specimens should already be in a sealed, decontaminated primary container.

2. Activities involving manipulation of untreated specimens may be performed in BSL-2 facilities, but with more stringent BSL-3 work practices. All specimen manipulations should be carried out in a certified biological safety cabinet. Laboratory workers should wear protective

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equipment, including disposable gloves, solid front gowns with cuffed sleeves, eye protection and respiratory protection. Acceptable methods of respiratory protection include a NIOSH approved filter respirator (N-95 or higher); or powered air-purifying respirators (PAPRs). equipped with high efficiency particulate air (HEPA) filters. Personnel who cannot wear fitted respirators because of facial hair or other fit-limitations should wear loose fitting hooded or helmeted PAPRs. Centrifugation should be carried out using sealed centrifuge cups or rotors that are loaded and unloaded in a biological safety cabinet. These activities include:

a. Aliquoting and/or diluting specimens
b. Inoculation of bacterial or mycological culture media.
c. Performing diagnostic tests that don't involve propagation of viral agents in vitro or in vivo.
d. Nucleic acid extraction procedures involving untreated specimens
e. Preparation and chemical- or heat-fixing of smears for microscopic analysis.

3. The following activities require BSL-3 facilities and BSL-3 work practices:

a. Viral cell culture
b. Initial characterization of viral agents recovered in cultures of SARS specimens.

4. The following activities require Animal BSL-3 facilities and Animal BSL-3 work practices:

a. Inoculation of animals for potential recovery of the agent from SARS samples.
b. Protocols involving animal inoculation for characterization of putative SARS agents.

Packaging, shipping and transport of specimens from suspect and probable SARS cases must follow the current edition of the International Air Transport Association (IATA) Dangerous Goods Regulations - http://www.iata.org/dangerousgoods/index and US DOT 49 CFR Parts 171-180 - http://hazmat.dot.gov/rules.htm. Step-by-step instructions on appropriate packaging and labelling can be viewed at the following CDC website: http://www.cdc.gov/ncidod/sars/pdf/packingspecimens-sars.pdf.

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