RESPIRATORY TRACT CULTURES

I. GENERAL CONSIDERATIONS

The interpretation of a respiratory tract culture is complicated by the presence of the microflora of the oral/nasopharynx. Secretions obtained from the upper or lower respiratory tract are commonly "contaminated" with these normal flora organisms, thus complicating the interpretation of culture results. Specimen collection methods are designed to maximize collection of exudative material and minimize oro-pharyngeal material and should be followed carefully.

II. SPECIMEN COLLECTION

A. Upper Respiratory Tract Infection

The upper respiratory tract is considered as the upper airway from the larynx through the nasopharynx and oropharynx to the nose, nasal sinuses and middle ear. Predominant symptoms should be identified so the location of infection can be determined for specimen collection.

(1) **Pharyngitis**

(a) The primary cause of bacterial pharyngitis is group A beta-hemolytic Streptococcus (S. pyogenes). **The preferred test to detect this organism is the Group A Strep GenProbe.** This test is a nucleic acid probe with a 24 hour turnaround time. Routine "throat" cultures often take 48 hours for a final report. The GenProbe test screens for group A streptococci only, while a throat culture will detect not only group A streptococci but also other beta-hemolytic streptococci which may cause (relatively infrequent) pharyngitis. **Requests to screen for organisms other than beta-hemolytic streptococci from a throat culture must accompany the culture request.**

(b) For either test, the specimen should be collected with dual culture swab system swabs. The tongue should be depressed while the swabs are rubbed vigorously over each tonsillar area and posterior pharynx. Any exudative material should be touched, and care should be taken to avoid the tongue and uvula. Place the swabs in the tube and be sure swab tips contact transport fluid-filled sponge at the botton of the tube. **Throat cultures for Neisseria gonorrhoeae, Corynebacterium diphtheriae or other pathogens require special considerations. Please consult ChildLab.**

(2) **Sinusitis**

(a) High quality specimens are obtained only by aseptic puncture of the sinus cavity and needle aspiration/wash of the contents. The aspirate should be injected into a sterile screw-capped tube or a pediatric Isolator tube and transported in this

fashion. These types of specimens are appropriate for both aerobic and anaerobic culture. Refer to *Sterile Body Fluid* collection procedure.

(b) **Nasal or nasopharyngeal swab or nasal wash specimens are not of value in the diagnosis of sinusitis.**

(3) **Otitis**

(a) **Otitis Media**

Specimen collection of middle ear fluid to determine the etiologic agent of otitis media is best performed by direct aspiration (tympanocentesis) of the effusion with needle and syringe or at the time of myringotomy. Refer to *Sterile Body Fluid Culture.* Purulent material draining from a ruptured membrane can be sampled with a mini-tipped swab (mini-tip swab on flexible shaft); care should be taken to avoid touching the external ear canal. Keep in mind that such swab cultures of exudate in the external ear canal may contain colonizing organisms (bacteria or fungi) as well as potential pathogens from the middle ear. **Cultures of the nasopharynx or throat are not reliable in guiding the physician to the specific microorganism causing otitis media.**

(b) **Otitis Externa**

Material should be collected from the external ear canal by swab and transported using the dual culture swab system swabs.

B. Lower Respiratory Tract Cultures

Secretions from the lower respiratory tract, obtained either as expectorated sputum or aspiration are generally not collected on ambulatory pediatric patients. Such specimens are generally collected and processed on hospitalized patients to insure isolation of common bacterial agents of pulmonary disease (e.g., S. pneumoniae, Haemophilus influenzae, S. aureus, Enterobacteriaceae). This DOES NOT include processing for such agents as Mycoplasma pneumoniae, Chlamydophila pneumoniae , Chlamydia trachomatis, Legionella, Mycobacteria, Nocardia, Pneumocystis, viruses, or fungi (except rapidly growing species such as Candida or Aspergillus); special cultures should be requested for each of these. Furthermore, diagnosis of some of these agents is improved by collection of specimens using more invasive methods and/or by noncultural methods such as serology and PCR. Contact ChildLab for additional testing information. Because potentially pathogenic organisms such as Streptococcus pneumoniae or Staphylococcus aureus may be present as members of the normal flora of the upper respiratory tract, the interpretation of an organism's significance in a specimen depends on evidence of its origin from the lower respiratory tract or association with exudative material.