# SPECIAL GUIDELINES FOR SPECIMEN COLLECTION AND TRANSPORT

### I. Principle

All diagnostic information from the Microbiology Laboratory is contingent on the quality of the specimen received. Consequences of a poorly collected and/ or poorly transported specimen include failure to isolate the causative microorganism and recovery of contaminants or normal microbiota. This can lead to improper treatment of the patient. Often, direct specimen smears are utilized to determine the quality of the specimen, to provide rapid information for diagnosis and therapy, and to allow the physician to determine if additional, better quality specimens should be collected.

#### II. Specimen

#### A. General Considerations

This procedure addresses instructions that must be communicated to physicians, nurses, and phlebotomy teams.

- 1. Safety considerations
  - a) Follow universal precaution guidelines. Treating all specimens as potentially hazardous eliminates the need for warning labels.
    - (1) laboratory coat or gown) when collecting or handling specimens. If splashing may occur, protective eyewear, face masks and aprons may be necessary.
  - b) Do not contaminate the external surface of the collection container and/or its accompanying paperwork.
  - c) Minimize direct handling of specimens in transit from the patient to the laboratory. See Section B Transport of Diagnostic Specimens
- 2. General guidelines for proper specimen collection
  - a) Collect specimen before administering antimicrobial agents when possible.
  - b) Collect specimen with as little contamination from indigenous microbiata as possible to ensure that the sample will be respresentative of the infected site.
  - c) Utilize appropriate collection devices. Use sterile equipment and aseptic technique to collect specimens to prevent introduction of microorganisms during invasive procedures
  - d) Clearly label the specimen container with the patient's full name and date of birth, and with the date and time of collection.
  - e) Collect an adequate amount of specimen. Inadequate amounts of specimen may yield falsenegative results.
  - f) Develop an understanding of the Microbiology Laboratory's source identification schemes. Know when to include "rule-out" requests. For example, the laboratory routinely screens for *Shigella, Salmonella, Yersinia,* and *Campylobacter* species in stool cultures but not for *Vibrio* or *Aeromonas*.
  - g) Identify the specimen source and/or specific site fully and correctly so that proper culture media will be selected during processing in the laboratory. For example, use Abscess, right leg.
  - h) If a specimen is to be collected through intact skin, cleanse the skin first. For example, use 70% alcohol followed by iodine solution (1 2% tincture of iodine or 10% solution of povidone-iodine.) Prevent burn by tincture of iodine by removing excess after specimen has been collected.
  - i) Before collecting the specimen, consider the risk/benefit ratio of the collection procedure to the patient.
  - j) Collect specimens in sturdy, sterile, screw-cap, leakproof containers with lids that do not create an aerosol when opened.

- 3. General guidelines for proper specimen transport
  - a) Transport all specimens to the laboratory promptly.
    - (1) To ensure the survival and isolation of fastidious organisms and to prevent overgrowth by more hardy bacteria
    - (2) To shorten the duration of specimen contact with some local anesthetics used in collection procedures that may have antibacterial activity
    - (3) To provide a more accurate diagnosis of the infectious disease process.
  - b) Alternative to prompt delivery
    - (1) Refrigerate most specimens at  $2 8^{\circ}$ C. The following are exceptions:
      - (a) Specimens that may harbor temperature-sensitive organisms such as *Neisseria* species should be left at room temperature.
      - (b) For anaerobic specimens, use Amies Gel Swab. (See Table 1.)
      - (c) Stool specimens
        - (i) For bacterial culture, mix stool with a transport medium (Carey-Blair medium).
        - (ii) For parasitology examination, mix stool with preservative (PVA and formlin).
      - (d) Hold CSF specimens at room temperature unless they are to be cultured for viruses.
      - (e) Wound and Body fluid cultures should be left at room temperatures.
- 4. Use of specimen transport systems
  - a) Aerobic transport methods are listed in Table 2. Certain types of swabs should be used for the collection and transport of certain cultures, as described in Table 2.
  - b) Specific transport containers for specimens are listed in Table 3.

**Table 1: Transport Systems for Anaerobic Specimens** 

System & Supplier	Description
Syringe or needle aspirates	Express excess air from syringe, remove needle, and use syringe cover to cap
	syringe. If fairly large volume is collected (2 ml or more), transfer specimen to
	a sterile container. Anaerobic bacteria can survive for 24 hours at room
	temperature . <sup>a</sup>
BD	AMIES Gel without charcoal
BD, Div. Of Becton	Single swab
Dickinson and Co.,	
Rutherford, NJ	For throat, vaginal, skin and wound specimens
BD	AMIES Gel without charcoal
BD, Div. Of Becton	Soft Aluminum wire
Dickinson and Co.,	
Rutherford, NJ	For male urethral sampling, as well as ear, nose, throat and eye specimens

 Table 2: Transport Systems for Aerobic Specimens

System & Supplier (references)	Comments
BD BD, Div. Of Becton Dickinson and Co.,	AMIES Gel without charcoal Single swab
Rutherford, NJ	For throat, vaginal, skin and wound specimens (aerobic/anaerobic)
BD BD, Div. Of Becton Dickinson and Co., Rutherford NI	AMIES Gel without charcoal Soft Aluminum wire For male urethral sampling, as well as ear, nose, throat, and eve specimens
Calcium alginate swabs	Can be toxic for some strains of <i>N. gonorrhoeae</i> , HSV, and <i>Ureaplasma urealyticum</i> , and may be toxic for some cell cultures. Useful for collection of <i>Chlamydia</i> cultures.
Cotton swabs	Residual fatty acids may inhibit some bacteria and <i>Chlamydia</i> spp. If cotton is glued or spun to wooden applicator stick, wooden stick may inactivate HSV arid interfere with some <i>Ureaplasma</i> identification tests.
Dacron swabs	Useful in collection of viral and group A streptococcus specimens
Nasopharyngeal-urethrogenital swabs (example: Calgiswab type IV; Spectrum Diagnostics, Glenwood, IL)	Flexible wire shafts and small tips provide easier specimen collection, especially for collection of nasopharyngeal specimens, <i>B. perussis</i> , and male urethral specimens of <i>N. gonorrhoeae</i> .
Sterile screw-cap cups	Useful for collection of urine, sputum, stool, bronchoaveolar lavage, and biopsy specimens. Useful for hair or skin-scraping specimens. If biopsy specimen is small, add small amount of sterile nonbacteriostatic 0.85% NaCl to cup. Never place biopsy specimen in formalin or wrap in gauze.
Sterile tubes (screw-cap plastic tubes, sterile Vacutainer tubes without additives).	Useful for collection of sterile fluids, bronchoalveolar lavage, drainage or brush specimens.

## Table 3: Specimen Transport Guide

Source and Type of Specimen	Transport Method
Blood	Bactec bottles Standard 10/Aerobic or Peds Plus/F
CNS CSF Ommaya fluid Brain abcess CNS biopsy	Sterile screw-cap tube Sterile screw-cap tube Sterile screw-cap cup or tube. If specimen is small, send in sterile cup with small amount of sterile 0.85% NaCl. (Never place in formalin-for Microbiology.)
Gastrointestinal System Feces Rectal swab Gastric lavage or washings Duodenal aspirate Rectal biopsy Signoidoscopy specimen	Sterile screw-cap cup; Para Pak with Carey Blair medium. Gel swab transport system (for pinworm, use pinworm collection kit) Sterile screw-cap or Lukens trap Sterile screw-cap cup or tube. If specimen is small, send in sterile cup with small amount of sterile 0.85% NaCl. (Never place in formalin- for Microbiology.) Sterile screw-cap cup or tube. (Never place in formalin-for Microbiology.)
Eye Conjunctival scrapings Corneal scrapings Intraocular fluid	Send prepared smears and directly inoculated media. Send prepared smears and directly inoculated media. Send prepared smears and directly inoculated media <u>or</u> Sterile screw-cap tube/cup, or capped syringe <b>without needle</b> with air expelled.
Genital tract, female Amniotic fluid Bartholin fluid Fallopian tube Cervical	Sterile screw cap cup of 1 - 2 ml sample Sterile screw cap cup of 1 - 2 ml sample Gel swab transport system 1- 2 ml of sample Gel Swab transport, viral or chlamydial transport, Aptima Probe (GC/Chlamydia)
Urethral	Gel Swab transport, viral or chlamydial transport, Aptima Probe
Endometrial Vulva	Sterile screw-cap cup or tube Capped syringe <b>without needle</b> ; swab transport, viral or chlamydial transport, Aptima Probe
Genital tract, male Anal swab Urethral Epididymis Prostatic massage Semen Penile lesion Specimens for <i>N. gonorrhoeae</i>	Gel swab transport, viral or chlamydial transport, Aptima Probe Gel Swab transport, viral or chlamydial transport, Aptima Probe Gel swab transport system; sterile screw-cap cup, Aptima Probe Sterile screw-cap cup, tube or swab transport system, Aptima Probe Sterile screw-cap cup, tube or swab transport system, Aptima Probe Capped syringe <b>without needle</b> ; Gel swab transport, viral or chlamydial transport system, Aptima Probe
Anal, cervical, urethral, vaginal	Gel swab transport

## Table 3: Specimen Transport Guide

Source and Type of Specimen	Transport Method
Lower respiratory tract	
Lung biopsy	Sterile screw-cap cup; if specimen is small, place it in a small amount
	of sterile 0.85% NaCl (Never place in formalin-for Microbiology).
Expectorated sputum	Sterile screw-cap cup
Induced sputum	Sterile screw-cap cup
Tracheal or endotracheal aspirate	Lukens trap or sterile screw-cap cup or tube
Bronchoalveolar lavage fluid	Lukens trap or sterile screw-cap cup or tube
Bronchial washings	Lukens trap or sterile screw-cap cup or tube
Transbronchial biopsy	Sterile screw-cap tube with 1-2 ml of sterile 0.85% NaCI
Bronchial brush	1-2 unfixed slides labeled
Transtracheal aspirate	Sterile screw-cap cup or tube
Lung aspirate	Sterile screw-cap cup or tube
Upper respiratory	
Throat swab	Gel swab transport or viral transport system
Nasal swab	Gel swab transport or viral transport system
Oral culture	Gel swab transport or viral transport system
Nasopharyngeal swab	Gel swab transport or viral transport system
Tympanocentesis fluid	Capped syringe without needle or sterile screw-cap cup
Sinus aspirate	Capped syringe without needle or sterile screw-cap cup
Nasopharyngeal suction/ Nasal	Sterile screw-cap cup or viral transport system
washings	Sterile screw-cap cup or viral transport system
Sterile body fluids (excluding CSF, urine,	Sterile screw-cap container, capped syringe without needle
blood) Pleural, peritoneal, ascites, joint	
and synovial fluid	
Deep wounds, aspirates, tissues	
Site wound	Gel swab transport
Deep wounds or abscesses	Sterile screw-cap container or gel swab transport system
Soft tissue aspirates	Capped syringe without needle <i>a</i> or sterile screw-cap cup
Bone	Sterile screw-cap cup; if specimen is small, place it in a small amount
	of sterile 0.85% NaCl to prevent drying.
Punch skin biopsy	Sterile screw-cap cup; if specimen is small, place it in a small amount
	of sterile 0.85% NaCl to prevent drying.
Urine	
Clean catch	Sterile screw-cap cup or tube
Straight catheter	Sterile screw-cap cup or tube
Suprapubic aspirate	Capped syringe without needle or sterile screw-cap cup or tube
Bladder washout	Sterile screw-cap cup or tube (be careful to label specimens with
	correct <b>times</b> and <b>sites</b> )
Bilateral ureteral catheterization	Sterile screw-cap cup or tube (be careful to label specimens with
	correct <b>times</b> and <b>sites</b> )

Specimens obtained by a physician using needle aspiration should be transferred to a sterile tube or container prior to transport of the specimen to the laboratory. If there is little material in the syringe, the physician should draw a small amount of sterile I nonbacteriostatic 0.85% NaCl or sterile broth through the syringe and then transfer the specimen to a sterile tube. Alternatively, and only if the specimen will be compromised by transferring it from the syringe, a small amount of sterile 0.85% NaCl or broth may be drawn into the syringe prior to removal of the needle. The physician should use a protective device while removing the needle to avoid injury and should cap the syringe with a sterile cap prior to transporting it to the laboratory. **SYRINGES WITH NEEDLES WILL BE REJECTED.** 

#### **B.** Transport of Diagnostic Specimens

- 1. SMMC Laboratory provides special transport bags to assist with handling of diagnostic specimens. All specimens must be in a leak-resistant primary container labeled "Biohazard" and must be placed in leak resistant secondary Biohazard plastic bags.
- 2. The requisition must be placed in the pouch on the back of the sample bag.
- 3. Couriers are not allowed to pick up specimens that are leaking and not in secondary containers such as the transport bag.
- 4. **Make sure specimens are sent at the appropriate temperature**. Most specimens should be sent at 2-8 degrees Celcius or refrigerated. Remember to NEVER FREEZE whole blood, except in very rare instances that instructions specify. Call SMMC Client Services if unsure about temperature requirements.