

**The University of Chicago Medical Center
Clinical Microbiology Laboratory**

Policies and Procedures for Specimen Collection and Transport

I) Introduction

Rapid and accurate diagnosis of infectious diseases is contingent upon the proper collection and rapid transportation of specimens to the Clinical Microbiology Laboratories. Of equal importance is the accuracy and completeness of information received with each specimen.

This section of the manual contains guidelines for specimen collection and transport.

II) Specific information about specimen collection and transport is provided in each of the following tables:

Table 1	Bacteriology, Mycology, Mycobacteriology, Chlamydia, Virology
Table 2	Parasitology
Table 3	Bio-Outbreak

TABLE 1 BACTERIOLOGY, CHLAMYDIA, MYCOLOGY, MYCOBACTERIOLOGY (AFB), MOLECULAR VIROLOGY

Category	Type	Preparation	Volume / Max. No.	Container/Transport	Transport time
Anaerobe	Fluid or Tissue	<p><u>The following specimen types not accepted:</u></p> <ul style="list-style-type: none"> • Catheter tips • Hardware • Oral wounds or tissue • Respiratory, including BAL, ET aspirate, NP swab, oral or throat swabs • Saliva • Stool (feces) • Swabs not in anaerobic transport media • Swabs received in oxidized (blue) anaerobe transport medium • Vaginal • Urine 	<p>Fluid or tissue recommended.</p> <p>Swabs only if fluid or tissue not available.</p>	<p>Anaerobic transport tube with black cap</p> <p>Vacutainer tube</p>	<p>24 hours, no refrigeration in transport</p>
Anal	For HPV	<ol style="list-style-type: none"> 1. Patient should avoid enemas and receptive anal intercourse for 24 hours prior to specimen collection. 2. Discard spatula and brush (used for endocervical sampling), part of the ThinPrep kit, Oracle #130231. 3. Moisten a standard Dacron-tipped swab (Oracle #115066) with tap water, and insert it about 2 inches into the anal canal. 4. Apply gentle pressure to the swab against the walls of the rectum and anus canal. 5. Remove the swab with a twirling motion and gentle pressure on the walls of the anal canal to maximize cellular yield. 6. Swirl the swab for 15 seconds in a ThinPrep container and discard the swab. 7. If digital examination is necessary, perform it after the anal Pap smear and HPV sampling. 		Thin Prep Pap	<p><u>ThinPrep PAP</u> Within 180 days of collection, no refrigeration preferred</p>

TABLE 1 BACTERIOLOGY, CHLAMYDIA, MYCOLOGY, MYCOBACTERIOLOGY (AFB), VIROLOGY

Category	Type	Preparation	Volume / Max. No.	Container/Transport	Transport time
Blood	Blood	<p>1. Perform skin decontamination with Chloraprep. Pinch wings of the applicator to break the ampule inside. Wet sponge by repeatedly pressing and releasing sponge against venipuncture site.</p> <p>2. Scrub venipuncture site continuously for 30 seconds using a back and forth motion.</p> <p>3. Allow the site to air dry for 30 seconds. DO NOT blot or dry.</p> <p>4. To prepare the bottle, remove the plastic cap from the top of the bottles and cleanse with 70% alcohol. Remove any surplus disinfectant with sterile gauze before injection blood into the bottle.</p> <p>If <i>Malassezia furfur</i> is suspected, submit 3-5 mL in yellow top SPS tube in addition to Bactec bottles as listed in the next column.</p>	<p><u>Bacterial / Fungal:</u></p> <p><u>Neonates (≤30 days old or weighing <5 kg):</u> Inoculate Peds Plus bottle (pink) only with 0.5 – 3 ml blood.</p> <p><u>>Neonate to <2 yr:</u> Inoculate Peds Plus bottle (pink) only with 1 – 3 ml blood.</p> <p><u>2 yr - ≤10 yr:</u> Inoculate Peds Plus bottle (pink) with 2-3 ml blood and Lytic/10 Anaerobic/F bottle (purple) with 3-8 ml blood.</p> <p><u>11 yr or older:</u> Inoculate Aerobic Plus bottle (gray) with 8-10 ml blood and Lytic/10 Anaerobic/F bottle (purple) with 8-10 ml blood.</p>	BACTEC bottles	24 hours, no refrigeration.
			<p>AFB: 5 ml</p> <p>PCR: 2 ml</p>	Myco/F Lytic bottle	
	Blood	Venipuncture		Lavender-top EDTA vacutainer tube	6 hours, no refrigeration

TABLE 1 BACTERIOLOGY, CHLAMYDIA, MYCOBACTERIOLOGY (AFB), MYCOLOGY, VIROLOGY

Category	Type	Preparation	Max. No/Volume	Container/Transport	Transport time
Blood (cont.)	Bone Marrow	Sterile percutaneous aspiration.	<u>Bacterial / Fungal / AFB:</u> 1 ml per test	Yellow-top SPS vacutainer tube	24 hours, no refrigeration
			<u>CMV PCR:</u> 1 ml	Lavender-top EDTA vacutainer tube	
	Blood bag	Entire blood bag and IV tubing.		Entire blood bag and IV tubing.	24 hours, no refrigeration
	Serum for Cryptococcal Antigen	Venipuncture	3.0 ml 1/day	Red top vacutainer tube	7 days, refrigerated (once removed from clot)
Body Fluid (other than blood, urine or CSF)	Amniotic, ascitic, bile, dialysis, joint, peritoneal, pericardial, pleural	Decontamination of overlying skin and aspiration of fluid. Anaerobic culture is recommended for amniotic fluid.	<u>Bacterial / Fungal:</u> 1 ml for joint, pericardial 10 ml for others	Sterile, sealable screw-cap container, vacutainer, or anaerobic transport tube	24 hr, no refrigeration
			<u>AFB:</u> 2 ml for joint, pericardial >10 ml for others		
Catheter	Intravenous tip	Decontamination of overlying skin. Aseptically remove catheter and clip 5 cm of the distal tip directly into a sterile cup.		Sterile, sealable screw-cap container	24 hr, no refrigeration
CSF	Includes CSF shunt, ventricular fluid or shunt	Skin decontamination with Chloraprep.	<u>Bacterial / Fungal:</u> 1 ml	Sterile, sealable screw-cap container, vacutainer, or anaerobic transport	24 hr, no refrigeration
			<u>AFB:</u> 2 ml		
			<u>PCR:</u> 0.5 ml / test		
			<u>Cryptococcal Antigen:</u> 1 ml		
Ear	Internal	Cleanse external canal with mild detergent and collect fluid from beyond eardrum.		Rubber-capped syringe, sterile, sealable screw-cap cup, or anaerobe transport	24 hr, no refrigeration
	External	Use moistened swab to remove debris or crust from the ear canal. Firmly rotate swab in outer canal.		Transport swab	24 hr, no refrigeration

TABLE 1 BACTERIOLOGY, CHLAMYDIA, MYCOBACTERIOLOGY (AFB), MYCOLOGY, VIROLOGY

Category	Type	Preparation	Max. No/Volume	Container/Transport	Transport time
Eye	Conjunctiva	Cleanse area around eye with mild detergent. Moisten swab with saline and roll over conjunctiva.		Bacterial / Fungal: Transport swab	24 hr, no refrigeration
				Adenovirus PCR: Viral transport	
	Corneal scraping	Specimen collected by ophthalmologist using a sterile spatula to scrape ulcers and/or lesions. Scrapings are directly inoculated onto plate media and glass slides. For <i>Acanthamoeba</i> requests, contact Microbiology at 2-6133 before collecting specimen.		Bacterial / Fungal: Plate media and slide kit. Call 2-6133. Adenovirus PCR: Viral transport	24 hr, no refrigeration
	Vitreous fluid	Surgical aspiration.		Rubber-capped syringe, sterile, sealable screw-cap cup, or anaerobe transport	24 hr, no refrigeration
Feces	See Stool				
Gastric Aspirate		Physician collected specimen. Accepted only for AFB culture on patients who cannot provide a sputum specimen.	1/day for 3 days ≥ 5 ml	Neutralize specimen within 4 hours of collection with 100 mg of sodium carbonate per 5 to 10 mL of wash. If in-house, call 2-6133 for transport with sodium carbonate.	24 hr, refrigerated

TABLE 1 BACTERIOLOGY, CHLAMYDIA, MYCOBACTERIOLOGY (AFB), MYCOLOGY, VIROLOGY

Category	Type	Preparation	Max. No/Volume	Container/Transport	Transport time
Genital, Female, External	Cervix	Wipe cervix clean of vaginal secretions and mucus. Using a speculum with no lubricant, compress the cervix. Obtain exudate from endocervical glands. Not appropriate for Group B Strep screen.		<u>Bacterial / Fungal:</u> Transport swab	24 hr, no refrigeration
		If using the Aptima transport kit, use the large swab to remove the cervical mucus. Discard this swab. Use the smaller swab in the kit to collect the specimen. Place swab in transport tube, break off the shaft, and tightly seal the transport tube.		<u>Chlamydia / GC,</u> <u>Trichomonas:</u> Aptima transport	<u>Aptima transport:</u> Within 60 days of collection, 2 to 30°C, refrigeration preferred
		For HPV, follow the ThinPrep PAP test instructions for use.		<u>HPV:</u> ThinPrep PAP collection kit	<u>ThinPrep PAP</u> Within 180 days of collection, no refrigeration preferred
		Collect swab provided with the viral transport kit and place swab in viral transport.		<u>HSV PCR:</u> Viral transport	7 days, refrigeration preferred
Urethra	Wipe urethra clean with sterile gauze. Obtain exudate or discharge with swab. Alternatively, a swab may be inserted 2 cm inside the urethra for specimen collection.		<u>Bacterial / Fungal:</u> Transport swab	24 hr, no refrigeration	
			<u>Chlamydia / GC:</u> Aptima transport	<u>Aptima transport:</u> Within 60 days of collection, 2 to 30°C, refrigeration preferred	
Vagina	-Use a speculum with no lubricant. Aspirate or swab material from high on the vaginal wall. -Not appropriate for Chlamydia/GC probe testing. -Not appropriate for Group B Strep screen.		<u>Bacterial / Fungal:</u> Transport swab <u>Chlamydia culture:</u> Viral transport	24 hr, no refrigeration	
Vaginal cuff	Aspirate of abscess by physician.		Rubber-capped syringe, sterile sealable screw-cap cup, or transport swab	24 hr, no refrigeration	
Vaginal / Rectal	Without using a speculum, swab the lower vagina followed by the rectum using the same swab or two different swabs. Appropriate for Group B Strep screen only.		Transport swab	24 hr, no refrigeration	
Vulva, labia	Clean lesion with saline; do not use alcohol. Remove crust if present. Abrade lesion to obtain fluid or scrape beneath extending border of lesion.		<u>Bacterial / Fungal:</u> Transport swab	24 hr, no refrigeration	
			<u>HSV PCR:</u> Viral transport		

TABLE 1 BACTERIOLOGY, CHLAMYDIA, MYCOBACTERIOLOGY (AFB), MYCOLOGY, VIROLOGY

Category	Type	Preparation	Max. No/Volume	Container/Transport	Transport time
Genital, Female, Internal	Amniotic fluid	Pressure catheter, amniocentesis, or aspirations with syringe at Caesarean section Anaerobic culture is recommended.	Uncontaminated fluid, 10 ml Min. volume: 3 ml	Rubber-capped syringe, sterile sealable screw-cap cup, or anaerobe transport	24 hr, no refrigeration
	Bartholin gland abscess	Decontaminate skin with iodine. Aspirate abscess with needle and syringe or express exudate from duct. Aspirate is preferred.	Exudate or 0.5 ml aspirate	Rubber-capped syringe, sterile sealable screw-cap cup, transport swab, or anaerobe transport	24 hr, no refrigeration
	Cul de sac (culdocentesis)	Surgical procedure. Aspiration through posterior vaginal vault.		Rubber-capped syringe, sterile sealable screw-cap cup, or anaerobe transport	24 hr, no refrigeration
	Endometrium	Wipe cervix clean of vaginal secretions and mucus. Curetting or aspiration is preferred. If swabs are to be used, insertion through a sterile tube sheath will help avoid contamination with vaginal flora.		Rubber-capped syringe, sterile sealable screw-cap cup, transport swab, or anaerobe transport	24 hr, no refrigeration
	Fallopian tubes Ovaries Uterine	Surgical procedure, tissue or aspirate obtained by physician.		Rubber-capped syringe, sterile sealable screw-cap cup, or anaerobe transport	24 hr, no refrigeration
	Intra-uterine device (IUD)	Surgical removal of IUD plus secretions	IUD and secretions	Sterile, sealable screw-cap cup	24 hr, no refrigeration
Genital, Male, External	Penile lesions	Clean skin surface with 70% alcohol.		<u>Bacterial / Fungal:</u> Transport swab	24 hr, no refrigeration
				<u>HSV PCR:</u> Viral transport	
	Scrotum	Clean skin surface with 70% alcohol.		Transport swab	24 hr, no refrigeration
Urethra	Wipe urethra clean with sterile gauze. Obtain exudate or discharge with swab. Alternatively, a swab may be inserted 2 cm inside the urethra for specimen collection.			<u>Bacterial / Fungal:</u> Transport swab	24 hr, no refrigeration <u>Aptima transport:</u> Within 60 days of collection, 2 to 30°C, refrigeration preferred
				<u>Chlamydia / GC:</u> Aptima transport	

TABLE 1 BACTERIOLOGY, CHLAMYDIA, MYCOBACTERIOLOGY (AFB), MYCOLOGY, VIROLOGY

Category	Type	Preparation	Max. No/Volume	Container/Transport	Transport time
Genital, Male, Internal	Prostatic fluid Seminal fluid Scrotal fluid	Aspirate collected by physician.	0.5 ml	Rubber-capped syringe, sterile sealable screw-cap cup, or anaerobe transport	24 hr, no refrigeration
Hair		Cleanse surface, clip affected hair Only accepted for fungal (dermatophyte) culture.		Sterile sealable screw-cap container or Mycosel slant	24 hr, no refrigeration
Hardware		Surgical removal by physician		Sterile sealable screw-cap container	24 hr, no refrigeration
Nails		Cleanse surface, clip affected nail Only accepted for fungal (dermatophyte) culture.		Sterile sealable screw-cap container or Mycosel slant	24 hr, no refrigeration
Respiratory Lower	Sputum	Rinse mouth or gargle with water to remove excess oral flora. Patient must cough deeply. At least one first morning specimen recommended for AFB.	<u>Bacterial / Fungal:</u> 1/day 1 ml <u>AFB:</u> 3 within 24 hours, 8 hours apart or 1/day for 3 days 5 ml	Sterile sealable screw-cap container	24 hr, no refrigeration <u>CF:</u> 48 hr, refrigerated <u>AFB:</u> 7 days, refrigerated within 1 hr of collection.
	Endotracheal or Tracheal aspirate	Not recommended for Pediatric patients. Consult Pediatric Infectious Diseases before collecting.	1/day 1 ml	Sterile sealable screw-cap container	24 hr, no refrigeration
	Transtracheal aspirate	Skin is cleansed, anesthetized, and decontaminated. Routinely cultured for <i>Legionella</i> .	1 ml	Sterile sealable screw-cap container	24 hr, no refrigeration
	Broncho-alveolar lavage (BAL), bronchoscopy	Aspirate through inner chamber at bronchoscopy. Routinely cultured for <i>Legionella</i> .	<u>Bacterial / Fungal:</u> 1 ml <u>AFB:</u> ≥ 5 ml <u>RBVP:</u> 1 ml <u>CMV, HSV, VZV Adenovirus PCR:</u> 1 ml <u>PCP FA:</u> 1 ml	Sterile sealable screw-cap container	24 hr, no refrigeration <u>AFB:</u> 7 days, refrigerated within 1 hr of collection.
	Bronchial brush	Place in 1 ml sterile saline.		Sterile sealable screw-cap container	24 hr, no refrigeration

TABLE 1 BACTERIOLOGY, CHLAMYDIA, MYCOBACTERIOLOGY (AFB), MYCOLOGY, VIROLOGY

Category	Type	Preparation	Max. No/Volume	Container/Transport	Transport time
Respiratory Upper	Mouth, oral	Swab areas of exudation or inflammation. Not appropriate for anaerobe culture.		Bacterial / Fungal: Transport swab	24 hr, no refrigeration
				HSV PCR: Viral transport	
	Nasal sinuses	Aspirate collected by physician.		Sterile sealable screw-cap cup, or transport swab	24 hr, no refrigeration
	Nasopharyngeal aspirate	Kit consists of 0.9% NaCl flush syringe, 23g butterfly, and viral transport media. 1. Discard liquid from 0.9% NaCl syringe, leaving 1 ml in the syringe. 2. Measure length of butterfly tubing needed by holding next to nose with ends at top and bottom of nose. 3. Cut butterfly tubing, discard needle end in sharps container. 4. Attach tubing to syringe. 5. Recline patient to a 45° angle; insert tubing. 6. Quickly instill the 1 ml of saline and then aspirate back into syringe. 7. Transfer aspirate into viral transport media (wash media in and out of syringe to instill maximum specimen). 8. Tightly close lid.	1 per 7 days For Respiratory Panel or Influenza A/B and RSV testing only.		24 hr, no refrigeration
Nasopharyngeal flocced swab	Kit consists of flocced swab and viral transport media. 1. Insert the flocced swab into the nasal passage until a slight resistance is met. 2. Rotate the flocced swab 2-3 times and hold the swab in place for 5-10 seconds to ensure maximum absorbancy. 3. Put the swab in the viral transport media and break the shaft at the designated breakpoint. 4. Tightly close lid.	1 per 7 days For Respiratory Panel or Influenza A/B and RSV testing only.	Collection kit available from General Stores.	≤ 4 hr, no refrigeration >4 hr, refrigerated	
	Nose	Insert moist swab about 1 inch (2.5 cm) into nose and gently rotate against nasal mucosa		Transport swab	24 hr, no refrigeration

TABLE 1 BACTERIOLOGY, CHLAMYDIA, MYCOBACTERIOLOGY (AFB), MYCOLOGY, VIROLOGY

Category	Type	Preparation	Max. No/Volume	Container/ Transport	Transport time
Respiratory Upper (cont)	Throat / pharynx	Swab areas of exudation, membrane formation, or inflammation. Rub tonsillar crypts vigorously. Avoid touching oral mucosa or tongue with swab. If <i>C. diphtheriae</i> suspected, indicate in Micro Special Request field. If GC is suspected, order a GC culture screen.		<u>Bacterial / Fungal:</u> Transport swab	24 hr, no refrigeration
Stool	Feces	If collected in bedpan, must not be contaminated with urine, residual soap, or disinfectant. <u>Fecal leukocytes, and parasite exam:</u> Specimens are rejected on inpatients that have been in-house >3 days. <u>C. difficile PCR:</u> Formed stools and specimens on patients <12 months old are rejected.	<u>H.pylori Ag:</u> 1 per day 1 gram of feces	Clean, sealable screw-cap container <u>GI Panel:</u> Collect in clean, wide-mouth container. Use spoon in lid of Para-Pak C&S transport container to transfer specimen into preservative. Fill to red line.	24 hr, refrigerated <u>AFB:</u> 7 days, refrigerated within 1 hr of collection. <u>GI Panel in ParaPak:</u> 4 days, no refrigeration
			<u>AFB:</u> 1 per day 1 gram of feces		
			<u>C. difficile PCR:</u> 1 per 7 days 1 gram of feces		
			<u>GI Panel</u> 1/day 1 gram of feces		
	Rectal swab	Insert swab approximately 1" past anal sphincter. Gently rotate the swab to sample the anal crypts. For detecting <i>N. gonorrhoeae</i> (GC), <i>Chlamydia</i> , patient >=14 yr old.	1/day	<u>Chlamydia / GC:</u> Aptima transport <u>C. difficile screen on admission:</u> Cobas PCR media swab	<u>Aptima transport:</u> Within 60 days of collection, 2 to 30°C, refrigeration preferred 24 hr, refrigerated
	Rectal swab	For detecting <i>N. gonorrhoeae</i> (GC), <i>Chlamydia</i> , patient <14 yr old.		<u>Chlamydia:</u> Viral transport <u>GC:</u> Transport swab	24 hr, no refrigeration
Skin	Lesions, fungal	Cleanse surface, scrape skin.		Sterile sealable screw-cap container	24 hr, no refrigeration
	Lesions, Viral	Disrupt surface of lesion and collect fluid with a swab.		<u>HSV & VZV PCR:</u> Viral transport	24 hr, no refrigeration
Tissue	External (skin)	Tissue obtained after surgical debridement preferred.	1 cm or 3-4 mm dermal punch biopsy	Sterile sealable screw-cap cup or anaerobe transport	24 hr, no refrigeration
	Internal	Surgically obtained. Lung biopsies routinely cultured for <i>Legionella</i> .	1 cm	Sterile sealable screw-cap cup or anaerobe transport	24 hr, no refrigeration

TABLE 1 BACTERIOLOGY, CHLAMYDIA, MYCOBACTERIOLOGY (AFB), MYCOLOGY, VIROLOGY

Category	Type	Preparation	Max. No/Volume	Container/Transport	Transport time
Urine	Clean voided, Clean catch (mid-stream) Early morning specimen is best for AFB culture.	Female Cleansing Instructions: 1. Stand in a squatting position over the toilet. Separate the folds of the skin around the urinary opening. 2. Cleanse the area around the opening with the first castile soap towelette. 3. Repeat using a second clean towelette. 4. Urinate the first portion of urine into the toilet. 5. As you continue to urinate, bring the collection cup into the midstream to collect the urine sample. 6. Do not touch the inside or lip of the cup. 7. Urinate the remainder of urine into the toilet. 8. Place the blue cap onto the BD Vacutainer Urine Collection Cup. 9. Return the sample to the healthcare worker. Male Cleansing Instructions: 1. Cleanse the end of the penis with the first castile soap towelette beginning at the urethral opening and working away from it (the foreskin of an uncircumcised male must be retracted). 2. Repeat using a second clean towelette. 3. Urinate the first portion of urine into the toilet. 4. As you continue to urinate, bring the collection cup into the midstream to collect the sample. 5. Do not touch the inside or lip of the cup. 6. Urinate the remainder of urine into the toilet. 7. Place the blue cap onto the BD Vacutainer Urine Collection Cup. 8. Return the sample to the healthcare worker.	1 sample/day <u>Bacterial / Fungal culture:</u> 4.0 ml of urine (at the minimum fill line of the grey top tube) 2 consecutive specimens may be necessary in females	Healthcare worker transfers sample from cup into grey top tube with boric acid. If volume is not sufficient, sterile, wide-mouthed container, tightly sealed acceptable. Please notify lab.	Grey top tube: plated within 48 hrs without refrigeration. Sterile container: must be plated within 2 hrs of collection unless refrigerated.
			<u>AFB culture:</u> 40 ml first morning urine for 3 consecutive days.	Sterile, sealable screw-cap container.	7 days, refrigerated w/in 1 hr of collection
			<u>Chlam/GC, T. vaginalis probe:</u> 20-30 ml of first voided urine (not clean void).	Sterile, sealable screw-cap container or Aptima Urine transport tube	<u>Aptima transport:</u> Within 30 days of collection, 2 to 30°C, refrigeration preferred
			<u>Adenovirus / CMV PCR:</u> 0.5 ml	Sterile, sealable screw-cap container.	24 hrs, refrigerated
	Foley catheterized, Texas catheterized	Disinfect tubing with alcohol, aspirate urine through tubing with BD vacutainer Luer-Lok Access device. Do not obtain specimen from bag.	4.0 ml of urine (at the minimum fill line of the grey top tube) 1 sample/day 2 consecutive specimens may be necessary in females	Grey top tube with boric acid. If volume is not sufficient, sterile, wide-mouthed container, tightly sealed acceptable. Please notify lab.	Grey top tube: plated within 48 hrs without refrigeration. Sterile container: must be plated within 2 hrs of collection unless refrigerated.

TABLE 1 BACTERIOLOGY, CHLAMYDIA, MYCOBACTERIOLOGY (AFB), MYCOLOGY, VIROLOGY

Category	Type	Preparation	Max. No/Volume	Container/Transport	Transport time
Urine (cont)	-Straight catheterized -Bladder urine (suprapubic aspiration or cytoscopic) -Indiana Pouch -Ileo conduit or stent -Neobladder -Nephrostomy tube -Suprapubic tube	Collected by Physician or Nurse	4.0 ml of urine (at the minimum fill line of the grey top tube) 1 sample/day 2 consecutive specimens may be necessary in females	Grey top tube with boric acid. For Pediatric straight catheterized specimen, 15 ml conical tube with white cap is acceptable.	Grey top tube: plated within 48 hrs without refrigeration. Sterile container: must be plated within 2 hrs of collection unless refrigerated.
	Urine for <i>Streptococcus pneumoniae</i> or <i>Legionella</i> antigen	Same as for culture method	1 ml 1 sample/day	Grey top tube with boric acid or sterile, wide-mouthed container, tightly sealed.	7 days, refrigerated
Wound	Abscess	Clean overlying skin surface with 70% alcohol. Aspirate with syringe, curette the lining of the lesion, or obtain tissue biopsy.		Sterile sealable screw-cap cup, or transport swab	24 hr, no refrigeration
	Extensive burn or decubitis	Clean wound surface with 70% alcohol, collect pus with swab or obtain tissue biopsy.	3-4 mm dermal punch biopsy	Sterile sealable screw-cap cup, or transport swab	24 hr, no refrigeration
	Mouth, oral, parotid, sinus	Rinse mouth. For surface wounds, use sterile swabs to scrape tissue from affected area. Aspirate abscesses with needle and syringe.		Sterile sealable screw-cap cup, or transport swab	24 hr, no refrigeration
	Skin (surface)	Clean wound surface with 70% alcohol, collect pus with swab or obtain tissue biopsy.		Sterile sealable screw-cap cup, or transport swab	24 hr, no refrigeration

TABLE 2 PARASITOLOGY

Category	Type	Preparation	Max. No. / Volume	Container/Transport	Transport time
Arthropod	Insect			Clean, sealable container	21 days, no refrigeration
	Scabies exam	<ol style="list-style-type: none"> 1. Label 2 slides with patient name and MRN. 2. Place 2 drops of mineral oil on each slide. 3. Scrape with a #15 scalpel blade held at a 90° angle to the skin holding the skin taut. 4. Suspend skin in the 4 drops of mineral oil, cover each drop with a 22x22 coverslip. 5. Seal the coverslip with clear nail polish. 6. Once polish is dried, place slides in slide holder for transport. 		2 slides in a slide transport	21 days, no refrigeration
Eye	Contact lenses or fluid			Clean, sealable container	24 hr, no refrigeration
	Corneal scrapings	<p>Notify lab to prepare <i>Acanthamoeba</i> culture plate. Plate will have to be picked up from the lab since it contains live bacteria.</p> <p>Specimen collected by ophthalmologist using a sterile spatula to scrape ulcers and/or lesions. Scrapings are directly inoculated onto plate media and glass slides.</p>		Call 2-6133 for culture plate and slide kit.	24 hr, no refrigeration
Intestinal	Duodenal contents	<p>Physician collected.</p> <p>Place in EcoFix within 30 minutes of collection. Use spoon in lid of EcoFix container to transfer specimen into EcoFix preservative. Fill to red line.</p>		EcoFix preservative	21 days, no refrigeration
	Proctoscopy	<p>Physician collected.</p> <p>Place in EcoFix within 30 minutes of collection. Use spoon in lid of EcoFix container to transfer specimen into EcoFix preservative. Fill to red line.</p>		EcoFix preservative	21 days, no refrigeration
	Scotch tape prep for Pinworm	<p>Best time for collection is a few hours after patient retires or first thing in the morning. Use transparent tape. Loop tape over end of tongue depressor and press gummy surface against perianal region. Transfer tape to glass slide, sticky side down.</p> <p>4-6 negative tapes may be needed to rule out infection.</p>		<p>Transparent tape on slide.</p> <p>Slide in container.</p>	7 days, no refrigeration

TABLE 2 PARASITOLOGY

Category	Type	Preparation	Max. No. / Volume	Container/Transport	Transport time
Intestinal (cont.)	Sigmoidoscopy	Physician collected. Place in EcoFix within 30 minutes of collection. Use spoon in lid of EcoFix container to transfer specimen into EcoFix preservative. Fill to red line.		EcoFix preservative	21 days, no refrigeration
	Stool	Collect in clean, wide-mouth container. Use spoon in lid of EcoFix container to transfer specimen into EcoFix preservative. Fill to red line. The following substances may interfere with detection or identification of parasites: barium, mineral oil, bismuth, metronidazole, tetracyclines, antimalarial agents, and nonabsorbable antidiarrheal preparations. Specimen collection should be delayed for up to 2 weeks after discontinuation. Must not be contaminated with water or urine.	1/day for 3 days	EcoFix preservative	21 days, no refrigeration
Respiratory	Sputum	Deep sputum obtained early in the morning.	1 ml	Clean, sealable container	21 days, no refrigeration
Respiratory	BAL	Aspirate through inner chamber at bronchoscopy.	1 ml	Clean, sealable container	21 days, no refrigeration
Urine	Clean voided, Clean catch (mid-stream)	A midday specimen is best for <i>Schistosoma haematobium</i> – an increased number of eggs are shed at that time.	20-30 ml	Clean, sealable container	7 days, refrigerated
Worm				Clean, sealable container	21 days, no refrigeration

TABLE 3 BIO-OUTBREAK

Category	Type	Preparation	Max. No. / Volume	Container/Transport	Transport time
Anthrax	Cutaneous	Vesicular stage: Collect vesicle fluid		Transport swab	≤ 2 hr, no refrigeration
		Eschar stage: Collect lesion material without removing eschar.			Must be hand-carried to lab.
	Gastrointestinal	Stool	5-10 grams	Clean, leakproof container	≤ 1 hr, no refrigeration
		Blood: Collect as for bacterial culture. Samples should be collected at no less than hourly intervals.	3 samples / 24 hr period or 4-6 samples / 48 hr period for FUO	BACTEC bottles	Immediate, no refrigeration Must be hand-carried to lab
	Inhalation (pulmonary)	Sputum: Patient must cough deeply to obtain sputum instead of saliva.	1 ml	Sterile, leakproof container	≤ 2 hr, no refrigeration Must be hand-carried to lab
		Blood: Collect as for bacterial culture. Samples should be collected at no less than hourly intervals.	3 samples / 24 hr period or 4-6 samples / 48 hr period for FUO	BACTEC bottles	Immediate, no refrigeration Must be hand-carried to lab
Botulism Toxin	Enema fluid	Purge with a minimum amount of sterile, non-bacteriostatic water.	20 ml of fluid	Sterile, leakproof container	≤ 2 hr, refrigerated Must be hand-carried to lab
	Food sample	Original food container	10-50 grams of food	Original container placed in leakproof device	≤ 2 hr, refrigerated Must be hand-carried to lab
	Nasal swab	Insert swab about 1 inch (2.5 cm) into nose and gently rotate against nasal mucosa.		Transport swab	≤ 2 hr, no refrigeration Must be hand-carried to lab
	Serum	Venipuncture – collect before antitoxin is given.	10-20 ml	Red top vacutainer tube.	≤ 2 hr, refrigerated Must be hand-carried to lab
	Stool		10-50 grams	Sterile, leakproof container	≤ 2 hr, refrigerated Must be hand-carried to lab

TABLE 3 BIO-OUTBREAK

Category	Type	Preparation	Max. No. / Volume	Container/Transport	Transport time
Plague, Tularemia	Blood	Collect as for bacterial culture.	3 samples / 24 hr period or 4-6 samples / 48 hr period for FUO	BACTEC bottles	Immediate, no refrigeration Must be hand-carried to lab
	BAL, Bronchoscopy	Aspirated through inner chamber at bronchoscopy.	1 ml	Sterile, leakproof container	≤ 2 hr, no refrigeration Must be hand-carried to lab
	Sputum	Patient must cough deeply to obtain sputum instead of saliva.	1/day 1 ml	Sterile, leakproof container	≤ 2 hr, no refrigeration Must be hand-carried to lab
	Throat / pharynx	Swab areas of exudation, membrane formation or inflammation. Rub tonsillar crypts vigorously. Avoid touching oral mucosa or tongue with swab.		Transport swab	≤ 2 hr, no refrigeration Must be hand-carried to lab
Smallpox	Biopsy		2-4 pieces of tissue	Sterile, leakproof freezable container	≤ 2 hr, refrigerated Must be hand-carried to lab
	Scabs	Scrape material from rash		Sterile, leakproof freezable container	≤ 2 hr, refrigerated Must be hand-carried to lab
	Vesicular fluid	Use sterile swab to scrape the base of the lesion	Multiple swabs from multiple lesions	Viral transport	≤ 6 hrs, refrigerated Must be hand-carried to lab
Viral hemorrhagic fever	Serum	Venipuncture	10-12 ml	Red top vacutainer tube	≤ 6 hrs, refrigerated Must be hand-carried to lab

References:

CDC website: <http://www.dpd.cdc.gov/dpd.cdc.gov>

Jousimies-Somer H, Summanen MS, Citron DM, Baron EJ, Wexler HM, Finegold SM. *Wadsworth-KTL Anaerobic Bacteriology Manual*. 6th ed. Belmont, CA: Star Publishing Company; 2002.

Jorgenson, J., M.A. Pfaller, K.C. Carroll, G. Funke, M.L. Landry, S.R. Richter, and D.W. Warnock. 2015. *Manual of Clinical Microbiology*, 11th ed., American Society for Microbiology, Washington, D.C.

Leber, Amy L., ed. *Clinical Microbiology Procedures Handbook*. 4th ed. Washington, D.C.: ASM Press, 2016.
Mayo Medical Laboratories website: <http://www.mayomedicallaboratories.com/test-catalog/index.html>