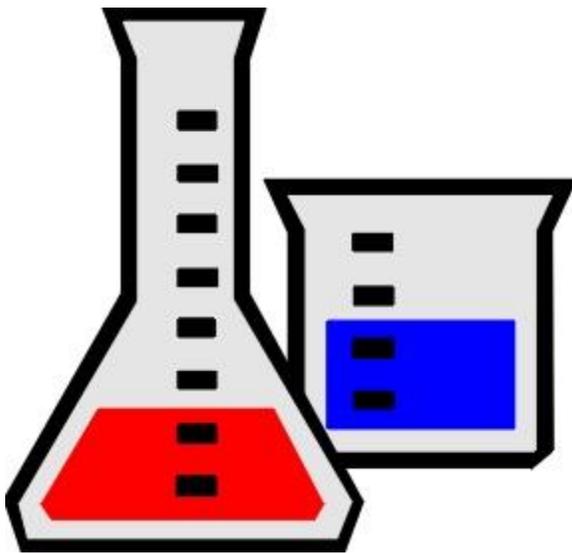


**LABORATORY
MOUNT NITTANY MEDICAL CENTER
1800 E. PARK AVENUE
STATE COLLEGE, PA 16803**



- **Specimen Requirements**
- **Revision date:
January 2020**
- **Additional test
information including
performance specifications
will be made available
upon request.**

Phone (814) 234-6117

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Specimen Collection

When more than one tube of blood is drawn from a patient, a specific order of collection is important in reducing the effects of additive carryover or cross-contamination from one tube to the next; and anticoagulant contamination from possible back flow. Blood collection tubes have color-coded stoppers that indicate the type of anticoagulant, if present, in the tube.

Blood collected in anticoagulants must be mixed thoroughly by inverting the tube gently ten times, or until the anticoagulant is dissolved. Always check the expiration dates of the blood collection tubes before using. Tubes that are out of date may not draw the proper amount which can affect coagulation studies and have adverse affects on other procedures.

Order of Draw:

1. Blood Culture
2. Coagulation tube
3. Serum tube with or without clot activator, with or without gel
4. Heparin tube with or without gel plasma separator.
5. EDTA tubes
6. Oxalate/fluoride tube

NOTE: Plastic serum tubes containing a clot activator may cause interference in coagulation testing.

Color of tube by order of draw	Additive/preservative
Light Blue	Sodium Citrate
Dark Blue (metal free)	None
Yellow or Red plastic Serum Separator	Barrier Gel
Red plastic serum tubes	Clot Activator
Dark Green 6ml	Sodium Heparin
Green plastic plasma separator	Lithium Heparin
Lavender /purple/ white PPT	EDTA
Pink	EDTA
Dark Blue with EDTA	EDTA
Gray	Sodium Fluoride/K Oxalate

SPECIMEN REQUIREMENTS AND PRESERVATIVES:

All specimens must be clearly labeled as follows: NAME (last, first), 2nd identifier such as date of birth, DATE & TIME of collection, initials of collector, and Social Security number if specimens are for any Blood Bank procedures. If not indicated otherwise, transport to the laboratory within 2 hours, or separate the plasma/serum from the cells. **This can be accomplished by using a serum or plasma separator tube, and centrifuging. The serum must be removed from the red top tubes within two hours of collection.** Exceptions to this rule are: Protimes, APTT, Blood Bank, Glucose, and Ammonia. See the following information:

DEPARTMENT	TEST	TUBE	SPECIAL INSTRUCTIONS
Hematology	CBC- no diff	Purple	8 hrs room temp; > 8 hrs refrigerate up to 24 hrs.
	CBC- w/diff	Purple	8 hrs room temp; > 8 hrs refrigerate up to 12 hrs. Smear must be made within 8 hours.
	Sed Rate	Purple	24 hrs refrigerated or Room Temp
	Synovial Fluid Analysis	EDTA	4 Hours Room Temperature; 24 hours refrigerated
Blood Bank	Type & Rh	Pink- min 3 ml	No serum separator or clot activator tubes
	Antibody Screen	Pink- min 3 ml	No serum separator or clot activator tubes
	Crossmatch	Pink- min 3 ml	No serum separator or clot activator tubes
	Anti-D Profile	Pink- min 3 ml & Lavender	No serum separator or clot activator tubes
Coagulation*	Protime	Light Blue- Must fill tube to fill line	24 hrs room temp; spun or unspun or 24 hrs frozen plasma. Cannot be refrigerated.
	APTT	Light Blue- Must fill tube to fill line	8 hrs room temp if patient not receiving heparin. 4 hrs if patient receiving heparin; Can be spun or unspun; Cannot be refrigerated.
	D-Dimer	Light Blue	4 hours room temp; Can be spun or unspun
	Fibrinogen	Light Blue	2 hrs room temp
	Platelet Function Test	Light Blue	Requires two tubes; 4 hours room temp. 21, 20, 19 Gauge needle only! DO NOT use Butterfly!
	Xa	Light Blue	4 hr room temp; spun or unspun
Chemistry	Glucose	Gray	24 hrs room temp. If drawn in green or yellow w/SS; must be spun within 1 hr. and refrigerate; spun specimen acceptable for 8 hrs room temp or 72 hrs refrigerated.
	CK	Green	4 hrs room temp; 7 days refrigerated. Hemolyzed specimen unacceptable. Separate plasma or serum from cells within 2 hours

	CKMB	Green	12 hours room temp; 3 days refrigerated; Separate plasma or serum from cells within 2 hours
	Lipid Profile	Green	8 hrs room temp; 2 days refrigerated; Separate plasma or serum from cells within 2 hours
	HA1C	Purple	3 days room temp; 7 days refrigerated. Do not spin! No capillary samples.
	Ammonia	Green on Ice	Centrifuge and immediately place on ice; Immediately transport to lab as it must be analyzed within 15 minutes from time of collection.
	Electrolytes	Green	8 hrs room temp; Must be spun and separated within 1 hr. Hemolyzed specimen unacceptable. Only good uncapped for 1 hour.
DEPARTMENT	TEST	TUBE	SPECIAL INSTRUCTIONS
Chemistry Cont'd	Drug Levels	Red- No serum separator tube	8 hrs room temp; 24 hrs refrigerated; separate serum from cells within 2 hrs.
	Pro-BNP	Green- No Capillary, No serum	72 hours room temp; 12 months refrigerated; separate plasma from cells within 2 hours. Cannot be capillary.
	CO2	Green	1 hour uncapped; 8 hours capped at room temp. Separate plasma from cells within 2 hours.
	Ferritin	Green	8 hrs room temp; 7 days refrigerated; separate plasma from cells within 2 hours
	Free PSA	Green	3 hrs room temp; 8 hrs refrigerated; Separate plasma or serum within 2 hours
	BHCG	Green/RYS	8 hrs room temp; separate plasma from cells within 2 hours
	Troponin	Green	Acceptable for 24 days refrigerated; must be spun within 2 hrs
	T4 Free	Green	7 days refrigerated. Separate plasma from cells within 2 hrs.
	TSH	Green	7 days refrigerated. Separate plasma from cells within 2 hrs.
Special Chem	CEA	Red or Yellow w/SS	Spin and separate within 2 hrs; 8 hrs room temp. 48 hrs refrigerated
	Cortisol	Red or Yellow w/SS	Spin and separate within 2 hrs; 8 hrs room temp. 48 hrs refrigerated
	Estradiol	Red or Yellow w/SS	Spin and separate within 2 hrs; 8 hrs room temp. 48 hrs refrigerated
	Folate	Red or Yellow w/SS	Spin and separate within 2 hrs; No hemolysis; must be protected from light ; 8

		hrs room temp; 48 hrs refrigerated
FSH	Red or Yellow w/SS	Spin and separate within 2 hrs; 8 hrs room temp. 48 hrs refrigerated
LH	Red or Yellow w/SS	Spin and separate within 2 hrs; 8 hrs room temp. 48 hrs refrigerated
Progesterone	Red or Yellow w/SS	Spin and separate within 2 hrs; 8 hrs room temp. 48 hrs refrigerated
Testosterone	Red or Yellow w/SS Plasma (EDTA or Heparin)	Spin and separate within 2 hrs; 48 hrs room temp.; 7 days refrigerated
Prolactin	Red or Yellow w/SS	Spin and separate within 2 hrs; 8 hrs room temp. 48 hrs refrigerated
Thyroid Tests (T3, Free T3, T4)	Red or Yellow w/SS	Spin and separate within 2 hrs; 8 hrs room temp. 48 hrs refrigerated
Hep B surf Ab	Red or Yellow w/SS Plasma (EDTA or Heparin)	Spin and separate within 24 hrs; 3 days room temp.; 7 days refrigerated
HbsAg	Red or Yellow w/SS Plasma (EDTA or Heparin)	Spin and separate within 24 hrs; 24 hrs room temp.; 14 days refrigerated
Hep C	Red or Yellow w/SS Plasma (EDTA or Heparin)	Spin and separate within 24 hrs; 6 hrs room temp.; 7 days refrigerated
HIV	Red or Yellow w/SS	Spin and separate within 24 hrs; 24 hrs room temp.; 14 days refrigerated
B12	Red or Yellow w/SS Plasma (EDTA or Heparin)	Spin and separate within 2 hrs; No hemolysis; must be protected from light ; 8 hrs room temp; 48 hrs refrigerated
PTH (Intact)	Plasma (EDTA or Heparin)	Spin and separate from cells within 2 hours. EDTA Plasma- 25 hrs room temp; 14 days refrigerated Lithium Heparin- 9 hrs room temp; 72 hrs refrigerated Sodium Heparin- 9 hrs room temp; 72 hrs refrigerated
Vitamin D	Red or Yellow w/SS	Spin and separate within 2 hrs; 24hrs room temp; 7 days refrigerated

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	Insulin	Red or Yellow w/SS	Spin and separate within 2 hrs; 8 hrs room temp. 24 hrs refrigerated
	Rubella (IgG)	Red or Yellow w/SS Plasma (EDTA or Heparin)	Spin and separate within 2 hrs; 8 hrs room temp, 7 days refrigerated
Serology	RPR	Red or Yellow w/SS	2 hrs room temp; 5 days refrigerated. Must be separated from cells within 2 hours
DEPARTMENT	TEST	TUBE	SPECIAL INSTRUCTIONS
Serology Cont'd	Mono Test	Red or Yellow w/SS	2 hrs room temp; 8 days refrigerated. Must be separated from cells within 2 hrs.
	ASO	Red or Yellow w/SS	2 hrs room temp; 8 days refrigerated. Must be separated from cells within 2 hrs.
	Lyme	Red or Yellow w/SS	2 hrs room temp; 5 days refrigerated. Must be separated from cells within 2 hrs.
	ANA- sent to Reference Lab	Red or Yellow w/SS	4 days room temp; 7 days refrigerated.
Urinalysis	Urine	Sterile leak proof container; 2 hrs unrefrigerated. Should be delivered promptly after collection. Can be processed up to 48 hours after collection if kept refrigerated. Minimum amount: >2ml.	
Semen Analysis	Must be scheduled through Mount Nittany Medical Center's Centralized Scheduling department. Refer to enclosed collection procedure.		
* The specimen of choice for coagulation studies is blood obtained from an undisturbed peripheral vein. Blood from an indwelling catheter or a "port" is sub-optimal for coagulation studies and frequently results in erroneous abnormal values. Blood drawn from these sites is used only as a last resort.			

COLLECTION PROCEDURE FOR SEMEN ANALYSIS

Important information

- Must be scheduled through Centralized Scheduling (234-6106) and specimens are only accepted Monday through Friday 8 AM – 4 PM
- Specimen should be delivered to the Outpatient Laboratory within one hour of collection.
- A doctor's order must accompany the specimen.

How to collect the specimen:

1. Do not have sexual activity (intercourse or masturbation) for 2-7 days before specimen collection.
2. For specimen collection masturbation is the most satisfactory method.
3. Collect specimen in a clean, wide mouth container. Do not use a condom, lubricants or anything else that may contaminate the specimen. Coitus interruptus does not yield a satisfactory specimen.
4. Keep the specimen warm at about body temperature. This may be done by keeping the specimen container close to the body.
5. Bring the specimen to the Outpatient Laboratory within one hour of collection.
6. After delivering the specimen to the Outpatient Laboratory, you will need to go to Patient Registration and register.

Fetal Fibronectin Collection

EQUIPMENT:

COLLECTION KIT- The specimen collection kit contains specimen collection devices consisting of a sterile Dacron swab and a specimen transport tube containing 1 ml extraction buffer. The specimen collection device is intended for collection of cervicovaginal specimens for Fetal Fibronectin (fFN) testing. Specimens should be obtained only during a speculum examination. This collection kit is the only acceptable collection system that can be used.

PROCEDURE:

1. During a speculum examination, prior to any examination or manipulation of the cervix or the vaginal tract, lightly rotate the Dacron swab across the posterior fornix of the vagina approximately 10 seconds to absorb cervicovaginal secretions. Subsequent attempts to saturate the swab may invalidate the test.
2. Remove the swab and immerse Dacron tip in buffer. Break the shaft (at the score) even with the top of the tube.
3. Align the shaft with the hole inside the tube cap and push down tightly over the shaft, sealing the tube. **Warning:** The shaft must be aligned to avoid leakage.
4. Attach a label to the specimen transport tube that includes patient's name, ID#, date and time of collection.
5. Send the tube to the laboratory for testing. Transport specimens at 2-25 degree C.
6. Specimens not tested within 8 hours of collection must be stored refrigerated at 2-8 degree C and assayed within 3 days of collection. Do not expose to temperatures above 25 degree C.

LIMITATIONS:

1. **Bloody sample:** Testing a bloody sample may lead to a false positive result.
2. If a patient has had sexual intercourse within 24 hours prior to sample collection, a false positive may result.
3. Do not contaminate the swab or cervicovaginal secretions with lubricants, soaps, disinfectants or creams. These substances may interfere with absorption of the specimen by the swab or with the antibody-antigen reaction of tests.

Note: Label containers used for blood and other specimens in the presence of the patient and at the time of collection. Labels will include at least the patient's name and ID number, specimen source, date and time of collection, and initials of the person labeling the specimen. Please refer to the laboratory's Specimen Labeling and Rejection Policy

Occult Blood, Fecal

Principle:

Fecal

The Laboratory is using the Hemoccult SENSA test as a diagnostic aid to monitor patients for bleeding with iron deficiency anemia or recuperating from surgery, peptic ulcer, ulcerative colitis and other conditions. It is also used in screening programs for colorectal cancer.

Gastric “Gastrocult”

This is a rapid screening test designed for detecting the presence of occult blood and determining the pH of gastric aspirate or vomitus. As with any occult blood test, the results of the Gastrocult test cannot be considered conclusive evidence of the presence or absence of upper gastrointestinal bleeding or pathology.

Patient Preparation:

Patient should be placed on a meat-free, high residue diet starting 48 hours prior to the day of testing and continuing through the test period. This diet can increase the accuracy of the test results and may provide roughage to help uncover “silent” lesions, which bleed intermittently.

Food to eat:

apricots, apples, bananas, celery, lettuce, oranges, pears, peaches, plums, raisins, raspberries, strawberries, tomatoes

Foods, Drugs and Vitamins to Avoid:

Red meat (beef, lamb), including processed meats and liver, raw fruits and vegetables not listed above.

Vitamin C in excess of 250 mg/day

Aspirin or aspirin containing products

Alcoholic beverages in excess

Anti-inflammatory drugs, Iron supplements

Specimen Collection Procedure:

- Fecal:**
1. Check expiration date of slide to be used. Do not use if expired. Attach patient I.D. label or clearly print patient I.D. information in area on front of each slide.
 2. Care must be taken to not contaminate materials or personnel with stool specimen. Hands, gloves and working area should be clean and free of blood.
 3. Do NOT collect specimen during a menstrual period or while patient has bleeding hemorrhoids.
 4. Inspect paper in circles to make sure it is pale beige in color. It will lose its sensitivity and discolor if exposed to sunlight, fluorescent light, UV light or heat.

5. Do not refrigerate. Store at room temperature.

6. A small fecal sample is applied to the guaiac paper of the Hemoccult SENSE slide as a THIN SMEAR using the applicator stick provided. To increase the probability of detecting occult blood, separate samples should be taken from two different sections of each fecal specimen and applied to Box A and Box B. Cover at least $\frac{3}{4}$ of the circled areas.

7. Many patients may be instructed to prepare their own slides without the use of a bedpan. Give them an applicator stick to use and instruct them to collect the specimen from toilet tissue or a collection device given to them.

8. Since bleeding from gastrointestinal lesions may be intermittent, fecal samples for testing should be collected from three consecutive bowel movements or three bowel movements closely spaced in time.

Slide Storage & Stability:

Do not refrigerate. Store at room temperature. Note expiration date on back of slide. Rotate stock to avoid expiration before use.

Once inoculated, the slides must be tested within 14 days.

Gastric “Gastrocult”

Either gastric aspirate obtained by nasogastric intubation or vomitus is an appropriate sample for testing. A small portion of the specimen should be submitted to the laboratory in a plastic 4.5 oz. screw-cap container.

Fecal occult blood slides are not designed for use with gastric samples. Factors common to gastric samples such as low pH, high drug concentrations, metal ions or plant peroxidase in food may affect the function of fecal Guaiac-based occult blood tests. Gastrocult slides, not distributed or used outside of Mount Nittany Medical Center Laboratory, are designed to function reliably in the presence of these factors.

Note: Label containers used for blood and other specimens in the presence of the patient and at the time of collection. Labels will include at least the patient's name and ID number, specimen source, date and time of collection, and initials of the person labeling the specimen. Please refer to the laboratory's Specimen Labeling and Rejection Policy

Urinalysis

Urinalysis testing is one of the most useful procedures available to the physician as an indicator of health or disease, especially in the areas of metabolic and renal disorders.

Routine urine specimens must arrive in the Laboratory for testing within sixty minutes of collection or refrigerated up to 4 hrs at 2-8°C to avoid alteration of the urinary constituents.

Decomposition of urine regularly occurs in urine specimens that remain at room temperature for over sixty minutes. Bacteria may utilize any glucose in the urine, and the urea-splitting organisms convert urea to ammonia, producing an alkaline urine. Casts decompose in alkaline and/or hypotonic urine and red blood cells may be lysed. Marked changes in pH may also affect other cellular components.

The specimen must be collected in a sterile container with a tightly sealed lid and properly identified with the patient's name, date of birth, location, and specimen source.

TO AVOID SPECIMEN REJECTION BY THE LABORATORY:

1. All specimens submitted for testing must be identified and labeled accurately.
2. Must be refrigerated immediately and delivered to lab within 4 hrs, or delivered to the laboratory within sixty minutes of voiding if kept at room temperature.

<i>Changes that occur in urine as it decomposes</i>	
RESULT	REASON
Changes in color	Breakdown or alteration of chromogen or other urine constituents such as hgb.
Changes in odor	Bacterial growth, decomposition
Increased turbidity	Increased bacteriuria, crystal formation, precipitation of amorphous material
Falsely low pH	Glucose converted to acids and alcohols by bacteria and yeast
Falsely elevated pH	Breakdown of urea by bacteria, producing Ammonia
False negative glucose	Utilization by bacteria
False negative ketone	Volatilization of acetone, Breakdown of acetoacetate by bacteria
False negative bilirubin	Destroyed by light
False negative urobilinogen	Destroyed by light
False positive nitrite	Nitrite converted to nitrogen, which evaporates
Increased bacteriuria	Bacteria multiplying in specimen
Disintegration of cells or casts	Unstable environment, especially when urine is alkaline and/or hypotonic.

Specimen Collection

A first morning specimen is the most concentrated and best for nitrite, protein and microscopic examination. The urine should be a clean-catch midstream collection. Specimens from infants and young children can be collected in a disposable U-bag apparatus. The collection container must be sterile, clean and dry.

Random specimens are most convenient and are good for chemical screening and microscopic examination.

If the specimen is likely to be contaminated by vaginal discharge or hemorrhage, recollect a clean-voided specimen. It may be necessary to pack the vagina or use a tampon in some cases, especially when examination of the urinary sediment is critical.

Postprandial specimens are collected after a meal and are good for glucose screening.

Note: Label containers used for blood and other specimens in the presence of the patient and at the time of collection. Labels will include at least the patient's name and ID number, specimen source, date and time of collection, and initials of the person labeling the specimen. Please refer to the laboratory's [Specimen Labeling and Rejection Policy](#)

24 Hr Urine Collection

EQUIPMENT:

24-hour urine collection container.

Consult the test procedure to determine if a special preservative is required. The Laboratory will provide a container with the proper preservative for each test and the container will be labeled with the preservative

SPECIMEN COLLECTION PROCEDURE:

1. All voided urine during a precise 24-hour period is placed in a container, which is labeled with the patient's name, collection dates and time.

Examples: John Doe

Begin: 6-14-91 0800 hrs.

Ended: 6-15-91 0800 hrs.

2. Consult the laboratory to determine if a special preservative is required. The Laboratory will provide a container with the proper preservative for each test and the container will be labeled with the preservative. If a special preservative is not indicated, the container must be kept chilled in the refrigerator or kept in a pan of ice water to preserve the chemical components present.
3. When you are ready to begin the collection, have patient completely empty bladder and **DISCARD** this urine. Record time. This is the starting time of the 24 hour collection and all urine formed by the kidneys from now until the same time the next day must be placed in the large chilled container.
4. If any specimen is lost during the collection period, the quantitative test results will be in error and of no value to the physician or patient, so start another collection.
5. No specimen will be accepted in the Laboratory without a complete patient identification label. The patient's height and weight must be documented in the computer or paper requisition for creatinine clearance tests. A blood sample is also required (green PST tube).

MICROBIOLOGY COLLECTION INSTRUCTIONS

GENERAL INSTRUCTIONS

1. Proper specimen collection is extremely important in acquiring valid microbiology results. Some etiologic agents are recovered at specific source/body sites, therefore appropriate specimen would need to be collected. Specimen sites are subject to specimen contamination and need to be collected as aseptically as possible. Whenever possible specimen material should be obtained before antibiotics or other antimicrobial agents have been administered. Prompt delivery of specimens to the laboratory is necessary if subsequent results are to have etiological validity. Fastidious organisms may not survive any significant delay.
2. Body fluid, exudates, or tissue from sites of possible infection is preferable to a culturette swab of the site. . Ideally tissue specimens should be placed in a sterile container with a small amount of sterile saline for transport.
3. Check outdates of all culturettes and transport devices. Do not use if expired. Immerse specimens collected on a culturette swab in the transport media to prevent drying. Any tissue specimens submitted must be clearly labeled as such, otherwise the specimen may not be retrieved from the transport media.
4. EXCEPTIONS: Throat specimens for Rapid Beta Strep Group A screening must be submitted on a dry swab if rapid results are expected. Genital/Rectal specimens for Beta Strep Group B must be submitted in LIM broth or culturette.
5. Specimens must be clearly labeled with the patient's full name, specimen site and source, date and time of collection; include two patient identifiers. Please refer to the Specimen Labeling and Rejection Policy. All specimens should be transported to the laboratory in a tightly sealed container in a biohazard transport bag. Specimens received in the laboratory with evidence of spillage where the transport container has been contaminated, will be rejected. The submitting physician or inpatient area will be notified of the rejection and a new specimen will be requested.
6. When a body fluid, sputum, or tissue is submitted, one specimen is usually sufficient for multiple culture types (ex., routine, fungus and acid fast). However, it is advisable to submit separate specimen if Cytology is ordered. If the sample material is collected using a culturette swab, a separate swab should be obtained for each culture type.
7. Anaerobic cultures are only performed on appropriate specimens. Specimen materials from areas of the body likely to be contaminated with excessive normal flora are unacceptable for anaerobic culture as these sites may yield misleading information (i.e. throat, nasopharyngeal, sputum, bronchial., feces, rectal, vaginal, cervical, urine and specimens and sites contaminated with intestinal contents

MICROBIOLOGY COLLECTION REQUIREMENTS

Delivery to the Lab must occur within 24 hours unless otherwise stated
 (Sensitivities done when appropriate) *= Gram Stain included

SOURCE/BODY SITE	Collection container/device	Specimen type and Recommended Collection volume	General instructions	Time allowable before processing
BLOOD cultures, Adult	BACTEC Aerobic and Anaerobic vial Reference: Policy-Guide to Phlebotomy Blood Cultures	16 -20 ml blood per set (8-10 ml per bottle)	Two sets, separate sites, Room temperature, document collection time and source/ site	Immediate delivery preferred
BLOOD culture-Pediatric	BACTEC- Peds Plus vial	1-3 mL-blood per bottle	Room temperature	Immediate delivery preferred
CSF*	Sterile tube	>1 mL CSF, lumbar Puncture Fluid	The 2 nd tube of the set is the preferred tube for Microbiology requests	Immediate delivery, room temperature
Cath Tip	Sterile container	1-2 inch distal end of catheter	Intravascular only, NO FOLEY	Immediate delivery preferred, room temperature
Normally sterile body fluids* Pleural, Peritoneal Pericardial, Synovial	Sterile container	Fluid 50- 100mL	Large volumes should be transferred to smaller containers and delivered to the Lab immediately.	Immediate delivery preferred, room temperature
Body Tissues, and aspirates, deep wounds*	Sterile container preferred (aspirate in Eswab is acceptable)	Exudate, abscess contents, drainage and body tissue	When collected by needle aspiration, remove needle and replaced with sterile cap.	Immediate delivery preferred. BD E swabs acceptable up to 48 hours room temperature
Surface wound Culture*	BD-ESwab Collection Transport swab	Skin, blister,rash,ear,eye	Aerobic culture only- NO anaerobic culture*	48 hours/room temperature
Upper Respiratory tract-Bacterial Culture	BD ESwab for culture	Throat, Nasopharyngeal, Sinus aspirates	No rapid testing or PCR on ESwab	48 hours/room temperature
Nasopharyngeal for Influenza A and B Antigen or PCR	Nylon flocked nasopharyngeal swab submitted in 1 mL	Nasopharyngeal swabs are specimen of choice.	Insert a nylon flocked nasopharyngeal swab into the nares until	Immediate delivery preferred

SOURCE/BODY SITE	Collection container/device	Specimen type and Recommended Collection volume	General instructions	Time allowable before processing
	UTM is preferred. Contact the Lab for collection kit	Nasopharyngeal washes and aspirates are also acceptable	resistance is met; and then vigorously swab the surface of the nasopharynx. Repeat the process on the other side with the same swab.	
Nasopharyngeal for RSV (Respiratory Syncytial Viral Antigen)	Nylon flocked nasopharyngeal swab submitted in 1 mL UTM is preferred	Nasopharyngeal swabs are specimen of choice. Nasopharyngeal washes and aspirates are also acceptable	Specimens on patients over age 18 must be sent to reference Lab	Immediate delivery preferred
Throat for rapid Group A Strep screen	Dry Dacron swabs	Rub the posterior of the tonsil, soft palate, back wall of the lower pharynx.	Transport immediately to the Lab for processing.	12 hours
MRSA Surveillance Screen-PCR	Copan Double Transport Swab	Anterior nares		24 hours room temperature. Refrigerated (2-8 degrees C) for up to 5 days
Lower Respiratory Tract Culture*	Sterile leak-proof container	5-10mLSputum, 10-50mL Bronchial Lavage, Lung Aspirates	Sputum Early AM deep cough collection is recommended. Sputum cultures are screened by gram stain for acceptability.	8 hours
Urine Culture	Sterile container or urine C&S Transport Tube. The preservative tube must contain 4 mL and should not be overfilled (over 5 mL)	1- 50 mL Mid – Stream, Clean Catch, Catherized,Suprapubic Aspiration . Reference: Clinical Resource Manual procedure, Collection of Urine Specimen)	First morning voided urine preferred Method of collection should be indicated on the order/requisition.	Immediate transport (less than 2 hours), refrigeration (up to 24 hours) and transport preservative (up to 48 hours)
Stool Culture	Sterile container immediate delivery.	Refer to Stool Specimen Requirement Chart	Routine stool culture for Salmonella, Shigella,	See stool collection instructions chart

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SOURCE/BODY SITE	Collection container/device	Specimen type and Recommended Collection volume	General instructions	Time allowable before processing
	Use stool transport media for delayed delivery		Campylobacter and E. coli Shigatoxins 1 and 2.. Exam for fecal leukocytes is available upon request with an order for WBCS	
VRE Screen (Vancomycin Resistant Enterococcus)	Rectal transport swabs or BD Eswab	Rectum		Rectal swab 24 hours BD Eswab-48 hours room temperature
Genital culture*	BD-Eswab for culture	Vaginal, cervical, endocervical,urethral		Immediate delivery preferred, 24 hours, room temperature
Female Genital: Group B Streptococcus screen	Collect vaginal/cervical specimen on culturette and break off swab in Lim broth supplied by Lab	Vaginal/cervical	Test is for identification of carriers of GBS in obstetrical patients	Lim broth Immediate transport/ within 24 hours. A culturette (no Lim) is acceptable if submitted within 4 hours ,room temperature.
Trichomonas wet prep exam	Collect with swab and immediately break off in 5 mL of room temperature saline tube.	Vaginal, urethral	Transport in 5 mL room temp. saline with tight fighting lid.	< than one hour-room temperature

Microbiology Stool Specimen Requirements

Enteric Pathogens:

No more than 2 specimens per patient episode should be submitted for stool culture without prior pathologist approval. Inpatients after the third day should not have stool submitted for culture without prior approval.

C Difficile:

Only one stool sample will be tested within a 48 hour time frame.

Follow-up testing is not routinely recommended as test of cure. Following a positive C difficile toxin result, additional testing will be accepted only after a seven day interval from initial positive result.

Ova & Parasite:

Stool specimens must be as fresh as possible. Pertinent clinical history may be helpful. Patients with diarrhea developing after hospital admission rarely, if ever, has parasites as the cause of diarrhea. Specimens from Inpatients submitted after the fourth hospital day will not be accepted without prior consultation.

It is recommended that three specimens be examined for Ova & Parasite. Collect each specimen at an interval of three days (48 to 72 hours) since the previous collection. The irregular passage of the diagnostic stages of parasites dictates the timing of collection.

STOOL COLLECTION INSTRUCTIONS

Your doctor requested laboratory tests to be done on your bowel movements (stool). In order to do these tests correctly we need a sample of your stool. Please follow the instructions below

INSTRUCTIONS FOR TESTS:

1. Sample kits are available from your doctor or Mount Nittany Medical Center Laboratory. Please bring your doctor's order with you so that we may give you the correct sample kit. Sample kits do not need to be refrigerated.
2. Read the instructions with the sample kit. If you do not understand the instructions, call the hospital laboratory at (814) 231-7300 between the hours of 8:00 AM and 4 PM.
3. If you are unable to obtain a sample kit, use a clean glass or plastic container with a wide opening and lid that seals the container. These samples must be refrigerated, kept cool during transport, and delivered to the laboratory. Refer to the chart below.
4. Collect stool on a clean dry surface. Do not allow stool to contact toilet water. Use plastic wrap under toilet seat or obtain a collection device from the hospital laboratory.
5. Label the container with your full name, date, and time of the bowel movement.
6. If several tests are ordered, use the shortest time to get the sample to the hospital. Refer to the chart below.
7. Your doctor may order ova and parasite collection for three different samples. Collect three samples from three different bowel movements at least 48 hours apart. The first sample should be brought to the laboratory as soon as possible. If you are using sample kits, you may keep specimen #2 until specimen #3 is collected and deliver them together as long as the processing time frame is not exceeded.
8. You will need to register in person at the hospital Patient Registration. Our hours are Monday through Friday 7:00 AM to 7:00 PM. Saturday hours are 7:00AM to 12:00 PM.

FOLLOW THE GUIDELINES BELOW FOR THE SAMPLE(S) NEEDED

TEST REQUEST	MINIMUM AMOUNT	TIME ALLOWED BEFORE PROCESSING	
		Un-Preserved	Preserved
Ova and Parasite Testing (OP Crypto, OP Giag, OP Isos+Cyclos, OP Smears+Conc)	Total-Fix Vials up to fill line, or 20 ml liquid stool, or formed stool 4 cm in diameter.	O&P specimens must be in Total-Fix Preservative (Sent to Reference Lab)	1 month
Routine Culture for Enteric Pathogens and/or Smear for WBCs	Preserved C&S Vial up to fill line, or 1 ml liquid stool, or formed stool 1 cm in diameter (About the size of a pea)	2 hrs refrigerated 1 hr un-refrigerated	3 days refrigerated
Clostridium Difficile PCR	1 tsp (5ml) liquid stool or unformed soft stool 1 cm in diameter (about the size of a marble). Formed stool unacceptable	5 days refrigerated 24 hours un-refrigerated	Unacceptable
Clostridium Difficile PCR with Reflex to Toxin	1 tsp (5ml) liquid stool or unformed soft stool 1 cm in diameter (about the size of a marble). Formed stool unacceptable	24 hrs refrigerated	Unacceptable
Rotavirus Antigen	1 tsp (5ml) liquid stool or formed stool 1 cm in diameter (about the size of a marble)	72 hrs refrigerated 1 hr un-refrigerated	Unacceptable

ACID FAST BACILLI, Mycobacteria, (TB culture)

Sputum: (Expectorated Deep Cough or Bronchial Lavage)

1. Collect 5 to 10 ml of an early morning sputum with as little oral or nasal contaminate as possible
2. Send to lab in sterile leak proof container.
3. 3 specimens collected on successive days are recommended.
4. Suitable specimens may be obtained by induction of cough with inhalant of warm aerosolized sterile sodium chloride solution 10%.
5. Submit as soon as possible. Do not refrigerate unless there is a greater than 1 hour delay in processing.

Urine:

1. Collect in early morning
2. Collect at least, 50 ml of cleanly-voided midstream urine.
3. Neither 24 hour urines nor urines in preservative are acceptable for acid-fast bacilli.
4. Send to lab immediately because the specimen must be processed within 2 hours as pH in urine kills the acid fast bacteria.

Blood/Bone Marrow:

Collect 5 mL of blood in a *BD Bactec Myco/F Lytic* culture bottle. These bottles are available upon request from the Lab. Prep of the arm is the same as a regular Blood culture and the bottle can be placed directly on the vacutainer holder. Deliver specimen immediately to the Lab. Specimen will be sent to a reference lab for analyses.

Other Body Sites:

Fluid, exudate, abscess contents, drainage, and tissue rather than swabs, can be submitted for Mycobacteria culture. When collected by needle aspiration, clear any bubbles from the syringe, remove the needle and replace with a sterile cap, and transport to the Laboratory. Collect at least 50 cc (up to 100 cc) of fluid if possible and send to the laboratory in a sterile container. Large containers containing body fluids should not be sent to the laboratory routinely. Transfer to smaller containers and transport to the laboratory

NOTE: Specimens sent on BD ESwab Collection Transport System swabs are not acceptable for AFB culture. These specimens must be sent to Mayo Lab for culture.

FUNGAL CULTURE COLLECTION:

Specimens are to be collected aseptically, placed in sterile containers, and transported to the Lab promptly. Should a delay in transport exceed 2 hrs, refrigerate specimens at 4°C, with the exception of CSF (25° - 30°C), Blood (25° - 30°C), and Dermatology specimens (15° - 30°C).

NOTE: Specimens collected on BD ES swabs, other than throat, mouth and vaginal, are unacceptable for Fungus culture and must be sent to Mayo Lab for culture

1. **CUTANEOUS SPECIMENS:** Specimen should be stored at room temperature 15-30 C
 - a. **Hair** – (mark on the container that it contains hair)
 - i. Infected hairs can easily be removed and sent in a sterile container
 - ii. Uninfected hair is more difficult to remove
 - iii. Hair is plucked out by the roots with sterile forceps.
 - iv. The best specimens include the hair roots
 - b. **Skin-** (mark on the container that it contains skin)
 - i. The skin should be cleansed with an alcohol swab
 - ii. Epidermal scales at the active border should be removed with a sterile scalpel
 - iii. Place the scrapings in a sterile container and send to the lab
 - c. **Nails**
 - i. The nails should be cleansed with an alcohol swab
 - ii. The outermost layer should be removed by scraping with a scalpel
 - iii. Deeper scrapings, debris under the edges of infected nails, and nail clippings are also suitable for culture
 - iv. All collections should be placed in a sterile container and sent to the lab.
2. **KOH Preparations:**

Only keratinized tissue is acceptable for KOH preps. All other specimens submitted for fungal culture will be examined by the gram stain method for the presence of yeast or hyphae.
3. **FUNGAL CULTURES:**

NASOPHARYNX, MOUTH THROAT, VAGINA OR STOOL are screened for yeast only

 - a. Specimens must be collected on a sterile swab
 - b. Specimen **MUST** be sent to the laboratory immediately
 - c. If a delay in transport exceeds two hours then store the specimen at refrigerator temperature of 4 degrees Celsius
4. **URINE:**
 - a. Suprapubic aspirates and catheterized specimens are the most suitable for urine fungal culture
 - b. **BUT** properly collected midstream clean-catch urines are acceptable.
 - c. Early morning specimens are preferable
 - d. Twenty-four hour specimens and indwelling catheter bag specimens are unacceptable
 - e. Specimens should be in a sterile container and sent to the lab promptly
 - f. If transport is delayed by two hours then refrigerate at 4 degrees Celsius

5. **BLOOD:**

For yeast, such as Candida, collect in same manner as for routine blood cultures. In cases of suspected systemic mycosis (Fungus), collect 10 ml blood or Bone Marrow in a non-serum separator lithium or sodium heparin tube. Submit to the lab as soon as possible.

If there is a delay in transport or processing exceeding 2 hours, store the blood at 25°-30°

6 **RESPIRATORY:**

(Sputum, bronchial washings, tracheal lavage, bronchial lavage, tracheal aspirates, and lung biopsy). Before a sputum specimen is collected the patient's teeth must be extensively brushed or their dentures must be removed. The mouth should be cleansed with a mouthwash or several rinses of sterile water or saline. Specimens expectorated from deep cough or induced by aqueous aerosol are satisfactory. Nasopharyngeal secretions, saliva or oral secretions are unsatisfactory. The first morning sputum is optimal. Approximately 5 - 10 ml is collected in a sterile leak-proof container and sent to the lab immediately. Twenty-four hour sputum specimens are not acceptable for fungal culture. Aspirations, lavages, and biopsies are collected aseptically by physicians. Specimens should be collected in sterile containers and sent to the lab immediately.

If delay in transport or processing exceeds 2 hrs, specimens should be refrigerated at 4°C.

7 **CSF:**

A request for Cryptococcal Antigen should be ordered with a suspected fungal infection. An order for Routine Culture and/or Fungal Culture must also be placed.

Immediate delivery to the lab is recommended.

Store CSF at room temperature.

PARASITE COLLECTION:

BLOOD PARASITES: for Plasmodium (Malaria), Babesia, Trypanosoma and Microfilaria

Blood for the detection of parasites should be collected in EDTA (lavender top) tubes. The degree of parasitemia may vary with time. Should clinical suspicion for malarial infection remain high, several specimens collected at varying intervals may be appropriate. Optimal collection time would be immediately prior to fever spike. Notify the Laboratory when a malarial smear is requested and include travel history if available. Laboratory personnel will collect the appropriate blood samples and prepare thick and thin smears within 1 hour of collection.

URINE for SCHISTOSOMIASIS:

Collect 50 cc of fresh random urine, preferably between noon and 3pm (the time of peak egg secretion) and transport to the Laboratory immediately for processing. The test will be sent to the reference lab

PINWORM PADDLE FOR ENTEROBIUS VERMICULARIS

Specimens should be obtained within a few hours after the individual retires or early in the morning before a bowel movement or bath. Ova of the pinworm are rarely encountered in the stool because the female migrates to the perianal region to deposit ova.

Obtain pinworm paddle from Laboratory. It has a flat plastic surface and one side is sticky. The paddle is attached to a plastic cap and inserted into a plastic tube.

Remove the paddle from the tube and press the sticky surface against several areas of the perianal region. Replace the paddle in the tube and deliver it to the Laboratory. The test will be sent to a reference lab.

**Urine and Genital Chlamydia and Gonorrhea RNA Testing
 Specimen Requirements:**

****This test is not intended for use with throat, rectal, or other types of specimens
 ***This test will be sent to reference lab.**

Source**	Collection container/device	Minimum Volume	Time Allowed Before processing
URINE	<p>Patient must NOT have urinated for the last one hour. Collect 15-60 ml of the first catch urine (first part of the stream) into a clean, polypropylene container without preservatives.</p> <p>Hold the Aptima tube upright and firmly tap the bottom of the tube on a flat surface. Use the transfer pipette, aspirate urine from the urine cup and dispense into the Aptima tube.</p>	<p>The correct volume of urine has been added to the Aptima tube when the fluid level is between the black lines on the fill window. This volume corresponds to 2 ml of urine. DO NOT over or under fill the tube.</p>	<p>Urine specimens must be transferred to the Aptima tube within 24 hours. Once in the transport media, urine specimens must be processed within 30 days when stored at room temperature or 1 year when frozen</p>
URETHRAL/ ENDOCERVICAL	<p>Collect endocervical specimens using Aptima Unisex swab. Remove excess mucus with cleaning swab and discard. Place and leave swab in Aptima Transport Medium.</p>		<p>Swab specimens must be received at the reference lab and processed within 60 days of collection either at room temp or refrigerated. Froze swab specimens are good for 1 year for cervical/vaginal or 6 months for urethral.</p>
VAGINAL	<p>Collect vaginal specimens using Aptima swab. Place and leave swab in Aptima Transport Medium.</p>		

VIROLOGY CULTURE (Virus):

Most viral agents require the presence of viable tissue cells in the sample collected. A special transport media capable of stabilizing and supporting tissue cells during the transportation time must be used for most specimens other than Blood, CSF, Pericardial Fluid and Urine. Viral/Chlamydia Transport Media (VCM) is available from the laboratory. VCM is stored at room temperature (25°-30°C) before use. **All specimens must be transported in sealed leak-proof biohazard bags**

If a delay in transport to the Laboratory is unavoidable, refrigerate the inoculated VCM vial and deliver to the laboratory within 24 hours of collection.

When requesting more than one viral culture type per specimen site, collect and inoculate one VCM media vial per site.

All viral cultures are sent to Quest for processing.

1. **Blood:** During the early acute phase of infection, collect 10 - 20 mL of blood into sterile non-serum separator sodium heparin tubes. Do not place in VCM media.
2. **Spinal or Pericardial Fluid:** Collect up to 2-3 mL of fluid in a sterile tube. Do not transfer to a VCM media vial.
(Exception: Herpes - transfer to VCM media vial)
3. **Urine:** Collect 10-50 mL of clean voided first morning urine in a sterile container. Do not transfer to a VCM media vial.

VIRAL Nasopharyngeal Specimen:

Nasopharyngeal Swabs:

Insert nylon flocked nasopharyngeal [swab](#) into the nares until resistance is met at the level of the turbinate; and then vigorously swab the entire surface of the nasopharynx. Repeat the process on the other side with the same swab. Insert nylon flocked NP swab into 1 ml UTM (Universal Transport Media) Tube. The swab and medium are packaged together as a kit. Contact Lab for kit.

Nasopharyngeal Washings:

- **Children age 3 years to 18 years:** Instill 2-4 ml of normal or phosphate buffered sterile saline into each nostril with the head hyperextended and the patient to not to swallow. Then tilt the head forward; allowing the fluid to run out of the nares into a sterile container.
- **Infants and Toddlers:** Place the child supine. Using a (needleless) syringe instill 0.2 – 0.3 ml of sterile saline into each nares, one at a time. Aspirate contents with a small sterile bulb syringe and place into a sterile container. Repeat until an adequate specimen of 0.5 to 1 ml is obtained.

Nasopharyngeal aspirations:

- Using a flexible, sterile pipette, aspirate material from the nasopharynx.

BORDETELLA PERTUSSIS:

1. **Bordetella Culture:**

a. Outpatient Collection:

Obtain *special* [ESwab Collection and Transport System](#) from the laboratory.

Nasopharyngeal swabs (the ESwab cap is unscrewed and removed, the swab applicator stick is securely attached to the cap) are inserted through the nostril over into the nasopharynx. **Immediate** inoculation of the ESwab is required as Bordetella pertussis is susceptible to drying. To inoculate, place swab into the ESwab vial. Bend or cut shaft-leaving swab in agar. Recap vial and send to lab as soon as possible (do not refrigerate)

2. **Bordetella PCR (DNA Testing):**

a. Nasopharyngeal aspirate: submit in 1-1.5 ml saline.

b. Nasopharyngeal swab: Use [ESwab collection and transport system](#). Do not use calcium alginate swabs as they may contain substances that inhibit PCR. Swab both nostrils. Place swab(s) immediately back into the ESwab transport tube. Alternately, collect nasopharyngeal swab using wire collection swab and place in viral transport media.

CYTOPATHOLOGY:

The Cytology laboratory will receive specimens from 0700 until 1500 Monday through Friday. All unfixed specimens should be submitted before 1430, if possible. Fixed specimens (pap smears) will be accepted at any time. Always submit a separate specimen for Cytology and do not combine with Microbiology. If there is a delay in transport, refrigerate. Specimens are accepted only from physicians, physician assistants or nurse practitioners authorized by law.

GYNECOLOGICAL CYTOLOGY:

Conventional Pap Smears:

Material is smeared directly onto a labeled slide and immediately sprayed with a spray fixative or immersed in 95% ethyl alcohol. Label slide with patient's name and date of birth. A legible and accurately completed request form must accompany each specimen.

Thin Prep Pap Test:

The Thin Prep Pap test (TPPT) sample is obtained from the ectocervix using a plastic spatula. Rinse the spatula into the PreservCyt Solution vial by swirling the spatula vigorously in the vial 10 times. Discard the spatula. Obtain a sampling from the endocervix using an endocervical brush device. Insert the brush into the cervix until only the bottommost fibers are exposed. Slowly rotate 1/4 or 1/2 turn in one direction. **DO NOT OVER-ROTATE.** Rinse the brush in the same PreservCyt Solution by rotating the device in the solution 10 times while pushing against the PreservCyt vial wall. Swirl the brush vigorously to further release material. Discard the brush. Tighten the cap so that the torque line on the cap passes the torque line on the vial. Record the patient's name, date of birth and ID number on the vial.

HPV DNA Typing:

Can be ordered when submitting a TPPT. Reflex testing can be ordered if the pap results are Ascus or atypical glandular cells. HPV DNA Typing can also be ordered regardless of the pap diagnosis. Carefully select the appropriate box on the GYN requisition. The accompanying requisition slip should be completed with all pertinent clinical history and information

NON-GYNECOLOGICAL CYTOLOGY:

Urine:

1. Clean catch midstream specimen, collected in a clean, dry container with a securely closed lid. (A first morning urine or a 24-hour urine collection is not acceptable due to cellular degeneration. If the specimen is delivered after hours as stated above please refrigerate.)
2. Label the specimen with the patient name, date, collection time, collector's initials and ID if available and submit with a Non-Gyn cytology requisition.
3. Deliver promptly to the laboratory.

Bladder Washing: Send to the laboratory immediately after collection.

Urethral and Renal Brushing: Procedure is the same as Bronchial Washings.

Body Cavity Fluid:

Fluid specimens should be submitted in a clean, dry container which has been securely closed and properly labeled. All specimens should be submitted before 1430 hours if possible. If collected after hours, over the weekend, or during holiday hours, the specimen must be refrigerated

Fine Needle Aspiration:

Requests for fine needle aspiration collection by a pathologist will only be performed on palpable masses. These procedures must be scheduled through the Cytology department by calling 234-6115. Inpatient FNA requests can be found online. Otherwise the fine needle aspiration specimen is submitted with a completed Non-GYN Cytology requisition. All submitted slides must be labeled with the patient's name and date of birth. Air-dried or spray fixed slides will be accepted. Specimens comprised of significant fluid (i.e. cyst fluid) must be refrigerated or CytoLyt fixative can be added to the fluid (50-50 mix) for preservation. CytoLyt can be provided by calling 234-6115. Specimens may be submitted anytime.

Cerebral Spinal Fluid: The collected specimen is taken directly to the Laboratory.

Sputum:

1. Upon awakening have the patient cough deeply and expectorate all the sputum into the cup. Patient is to continue until 4 ml is collected being careful not to contaminate the outside of the cup.
2. If ordered x3. Repeat for three days, using a fresh container each day.
3. Submit specimen with a Non-Gyn cytology requisition.

Bronchial Washing and Brushings:

The brush specimen may be smeared directly onto a labeled glass slide then immediately fixed by immersing into 95% ETOH or by spray fixative. The brush is rinsed/agitated in a tube containing Normasol and sent to Cytopathology department.

Gastric and Esophageal Brushings: The procedure is the same as Bronchial brushings.

Nipple Discharge:

Express material from the nipple and gently smear on a glass slide. Properly label slides with patient's name, date of birth, site of the lesion, left or right. Air-dried or spray fixed slides will be accepted. Submit with a non-gyn cytology requisition. These may be submitted to the Laboratory at any time.

Tzanck Smears:

Scrape the margins of an ulcer or denuded base of a vesicle. Gently smear on a glass slide. Properly label slides with patient's name, date of birth and submit with a non-gyn cytology requisition with site of lesion information. Air dried or spray fixed slides will be accepted. These may be submitted to the lab at any time.

HISTOPATHOLOGY

There are several benefits in having a pathologist examine tissue removed by a physician or surgeon. Besides providing diagnostic, prognostic and quality assurance information, a permanent record of what was removed is established.

COLLECTION SPECIFICATIONS:

1. Except for the cases defined below, specimen biopsy must be submitted in formalin and must be accompanied by properly completed requisition for Pathology.
2. SPECIMEN CONTAINERS
 - a. Must be labeled on the body of the container (not on the lid)
 - b. The label must contain the following (without exception):
 - i. Patient's full name
 - ii. Unique identification number
 - iii. Person's gender
 - iv. Date-of-birth and age
 - v. The date the specimen was obtained
 - vi. The organ/tissue site
3. SPECIMEN REQUISITION
 - a. Must include the following:
 - i. The patient's full name
 - ii. A unique identification number (SS#) (SS# not on inpatients)
 - iii. Patient's gender/sex
 - iv. Patient's date-of-birth
 - v. Name of submitting physician
 - vi. Other pertinent clinician information
 - vii. Date-of-collection
 - viii. Site of specimen
 - ix. Brief clinical history
 - x. Preoperative and/or postoperative diagnoses
 - b. Specimen requisition forms will be provided on request
4. The patient's social security number is necessary to retrieve all historical data.
5. Also, include all pertinent insurance information.

ROUTINE SURGICAL TISSUE:

Tissue removed must be immediately placed in 10% Formalin. Any delay in preserving the tissue in this manner will result in significant distortion of the cellular architecture and may make interpretations either difficult or impossible. For breast, lymph node, kidney biopsy, nerve biopsy, muscle biopsy, bone marrow biopsy and testicular biopsies for infertility see below

FOREIGN BODIES AND CALCULI:

Foreign bodies (if free of tissue) and calculi (i.e. kidney, ureteral or bladder stones) may be submitted without fixative.

FROZEN SECTION AND STAT GROSS EXAM BY PATHOLOGIST:

Tissue must be delivered immediately to the laboratory with NO FIXATIVE. A Frozen Section requisition with complete patient identification must be submitted with the specimen. Laboratory personnel should be notified of the frozen section or gross examination request. DO NOT leave the tissue on the counter without notifying someone.

BREAST SPECIMENS:

The time the specimen is removed (either by biopsy or by excision) from the patient must be recorded. Needle core biopsies should then be submitted into 10% formalin. The time the core biopsy is submitted into formalin should also be recorded. Excision specimens should be sent fresh immediately to the Pathology laboratory. The time removed and the time in formalin should be written on the Pathology Requisition form. These times are needed for any potential estrogen, progesterone and HER2/neu testing of carcinomas.

LYMPH NODE BIOPSIES:

In cases of suspected lymphoma or lymphadenopathy of unknown etiology, lymph node biopsies must be delivered immediately to the laboratory fresh, without fixative. Laboratory personnel must be notified of the delivery. Lymph nodes with known diagnosis of metastatic disease or suspected metastatic disease may be submitted in formalin if no frozen section is required.

KIDNEY BIOPSIES:

Must be scheduled 24 hours in advance of the biopsy. A pathologist or pathologist assistant will assist with specimen collection at the bedside. The specimen should not be placed in fixative. The pathologist and nephrologist will decide how the specimen is to be divided for routine histology, electron microscopy and fluorescence studies.

MUSCLE BIOPSIES AND NERVE BIOPSIES:

Must provide the laboratory a 24 hour notice prior to the biopsy. These specimens are sent to Therapath Neuropathology Lab for processing. The tissue should be brought to the histology laboratory ASAP with no fixative on the specimen. The tissue should be sent on saline moistened gauze. Notify the laboratory personnel of delivery

BLOOD AND BONE MARROW SPECIMENS:

Flow cytometry, cytogenetics and other special testing on these specimens is performed by an outside reference laboratory. Every effort should be made to acquire these specimens early in the day since they must first be processed at MNMC. In general, these should be submitted by 3:00 p.m. In unusual circumstances, these can be sent out later at night and on weekends.

TISSUE FOR CYTOGENETICS:

This includes products of conception and other specimens needing cytogenetics (placenta's, fetal demise and unusual neoplasms). The tissue should be submitted in saline as soon as possible. For fetal demise cases it is preferable if the clinical team excises a small amount of skin and submits it in saline as soon as possible to maintain maximum cellular viability.

Mount Nittany Medical Center
State College, PA 16803
(814) 234-6117

AMPUTATION OF A LIMB:

These specimens should be wrapped in at least one large, properly labeled, biohazard bag and sent immediately to the Pathology laboratory. No fixative is necessary.

TESTICULAR BIOPSY FOR INFERTILITY:

These biopsy specimens should be submitted in Bouin's, which is the preferred fixative. Bouin's solution should be obtained from the laboratory prior to biopsy.

CMS APPROVED PANELS:

Physicians should target their test ordering to only those tests related to a specific symptom or disease condition. Medicare pays for only medically necessary tests and not routine screening tests. All requests must include Diagnosis and ICD-9 codes.

The following are the only profiles offered at Mount Nittany Medical Center. Any tests required that are not a part of these profiles must be ordered separately. Custom profiles are not available.

BASIC METABOLIC:

BUN
Chloride
CO2
Creatinine
Glucose
Potassium
Sodium
Calcium

ELECTROLYTES:

Chloride
CO2
Potassium
Sodium

RENAL:

Albumin
BUN
Calcium
Chloride
Creatinine
Glucose
Phosphorus
Potassium
Sodium
CO2

COMPREHENSIVE

METABOLIC:

Albumin
Alk. Ph'tase
Bilirubin
BUN
Calcium
Chloride
CO2
Creatinine
Glucose
Potassium
Protein
SGOT
SGPT
Sodium

HEPATIC FUNCTION

(LIVER):

Albumin
Alk. Ph'tase
Direct & Total Bilirubin
SGOT
SGPT
Total Protein

LIPID:

Cholesterol
HDL
Triglycerides

HEPATITIS:

Hepatitis A virus ab IgM
Hepatitis B Surface ag
Hepatitis B Core ab, IgM
Hepatitis C

OBSTETRIC:

CBC with Diff
Hepatitis B Surface ag
Rubella ab
RPR
Type, Rh and Ab Screen

SPECIMEN TRANSPORT BY MNMC COURIER

PURPOSE:

To define the proper procedure to be used to maintain the integrity of specimens transported to Mount Nittany Medical Center for the purpose of performing clinical laboratory procedures.

GUIDELINES:

1. Specimens are transported by courier from outpatient phlebotomy stations that are staffed by employees of the Mount Nittany Medical Center Laboratory. This courier may also stop in physicians' offices to pick up specimens that have been obtained the same day.
2. Specimens are prepared for transport by the staff at the outpatient facilities.
3. Specimens containing a barrier gel are centrifuged, placed in an upright position in provided transport packaging, and maintained at 1° - 6° C.
4. Lavender tubes can be placed in the provided transport container.
5. Pro-Times and PTTs are **NOT** centrifuged and are kept at Room Temperature. Pro-times are stable for 24 hours. PTT's are stable for 8 hrs.
6. Other specimens that require freezing are centrifuged and the specimens frozen.
7. Urines are transported in a clean catch container and urine cultures are transferred to a urine culture kit for preservation.
8. All specimens are placed in biohazard bags. Refrigerated specimens are placed in a cooler along with frozen transport media to maintain the temperature.
Frozen specimens are packed in ice and placed in the cooler for transport.
9. Specimens are transported back to the laboratory, as soon as possible, for processing.
10. Specimens coming from physicians' offices are treated the same, although no provisions are provided for frozen specimens from the physicians' offices. Patients who require tests in which specimens must be frozen shortly after collection must report to the outpatient laboratory at the Medical Center for specimen collection.

Therapeutic Drug Collection

Drug			Usual Sampling Time
ANALGESICS, ANTIPYRETICS, ANTIINFLAMMATORY			
Acetaminophen	Peak		Therapeutic: 1 hour post dose Overdose: 4 hours post ingestion
Acetylsalicylic Acid (Salicylate)	Peak		Peak level is reached in 1-2 hours but optimal sampling time is 4-6 hours.
ANALYPTIC, BRONCHODILATOR			
Theophylline	Trough	IV	Prior to IV infusion
	Peak	IV Oral	Immediately before next oral dose 4-6 hours after beginning <ul style="list-style-type: none"> ● 2 hours after administration of product with rapid release properties ● 4 hours after administration of product with sustained release properties
ANTIPILEPTICS			
Carbamazepine	Trough		Immediately pre-dose
Ethosuximide			Due to long elimination half-life, actual sampling time is unimportant but should be consistent.
Phenobarbital			Due to long elimination half-life, actual sampling time is unimportant but should be consistent.
Phenytoin	Peak	IV	2-4 hours after dose
		Oral	Due to long elimination half-life, actual sampling time is unimportant but should be consistent.
Primidone	Trough		Immediately before next dose
Valproic Acid	Trough		Immediately pre-dose
ANTIEOPLASTICS			

Methotrexate			Will depend on dose, duration of infusion and clinical status of the patient (Consult specific treatment protocol).
ANTIBIOTICS			
<u>Aminoglycosides:</u>			
Amikacin	Peak	IV IM	1 hour after the end of a 30 minute infusion 1 hour after IM dose
	Trough		Immediately before next dose
Dibekacin	Peak	IV IM	1 hour after the end of a 30 minute infusion 1 hour after IM dose
	Trough		Immediately before next dose
Gentamicin	Peak	IV IM	1 hour after the end of a 30 minute infusion 1 hour after IM dose
	Trough		Immediately before next dose
Kanamycin	Peak	IV IM	1 hour after the end of a 30 minute infusion 1 hour after IM dose
	Trough		Immediately before next dose
Netilmicin	Peak	IV IM	1 hour after the end of a 30 minute infusion 1 hour after IM dose
	Trough		Immediately before next dose
Streptomycin	Peak		1 hour after IM dose
	Trough		Immediately before next dose
Tobramycin	Peak	IV IM	1 hour after end of a 30 minute infusion 1 hour after IM dose
	Trough		Immediately before next dose
Vancomycin	Peak	IV	1 hour after infusion
	Trough		Immediately before next dose
CARDIAC AGENTS			
Disopyramide	Trough		Immediately before next dose
Lidocaine			Obtain sample approximately 2 hours after start of therapy with loading doses or 6-12 hours after initiation of therapy without loading doses.
Procainamide/N-Acetyl-procainamide	Peak	IV	Immediately after IV loading dose. 2 hrs after start of IV maintenance infusion.

		Oral	Oral absorption is highly variable. Thus, multiple samples may be required to measure peak concentration
	Trough	Oral	Immediately pre-dose
Propranolol	Trough		Immediately pre-dose
Quinidine	Trough	Oral	Immediately pre-dose
Digoxin			8-24 hours after dose
Flecainide	Trough		Immediately prior to dose
PSYCHOACTIVE AGENTS			
Amitriptyline	Trough		Immediately pre-dose
Desipramine	Trough		Immediately pre-dose
Imipramine	Trough		Immediately pre-dose
Nortriptyline	Trough		Immediately pre-dose
Doxepin	Trough		Immediately pre-dose
Lithium			12 hours after evening dose