

# PROVINCIAL PUBLIC HEALTH LABORATORY NETWORK OF NOVA SCOTIA

## PROVINCIAL MICROBIOLOGY USERS' MANUAL

**PPHLN – M0008-03**

**Revision date: 2023-11-10**

### **ANCHOR LABORATORIES**

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#### **Queen Elizabeth II Health Sciences Centre**

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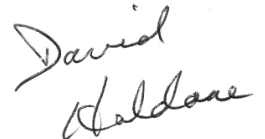
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## **INTRODUCTION**

The purpose of this manual is to guide health care workers in the choice, collection and transport of specimens. We have tried to distil the most useful information in what we hope is an easily accessible format.

Our goal is to help laboratory users avoid the frustration and inconvenience of specimen rejection and enable the collection of the highest quality specimens. By doing so, we can provide pertinent information most speedily, and loss of time and effort will be minimized for patients, clinicians and laboratory staff.

This manual has been extensively rewritten and updated. Despite the most careful proof reading, occasional errors may occur. Please let us know if any errors are present. We welcome feedback to enable us to improve future editions of this manual.



**David Haldane MB FRCP**

Clinical Director

Provincial Public Health Laboratory Network of Nova Scotia

## GENERAL INFORMATION

### SERVICES AVAILABLE - DIAGNOSTIC TESTING

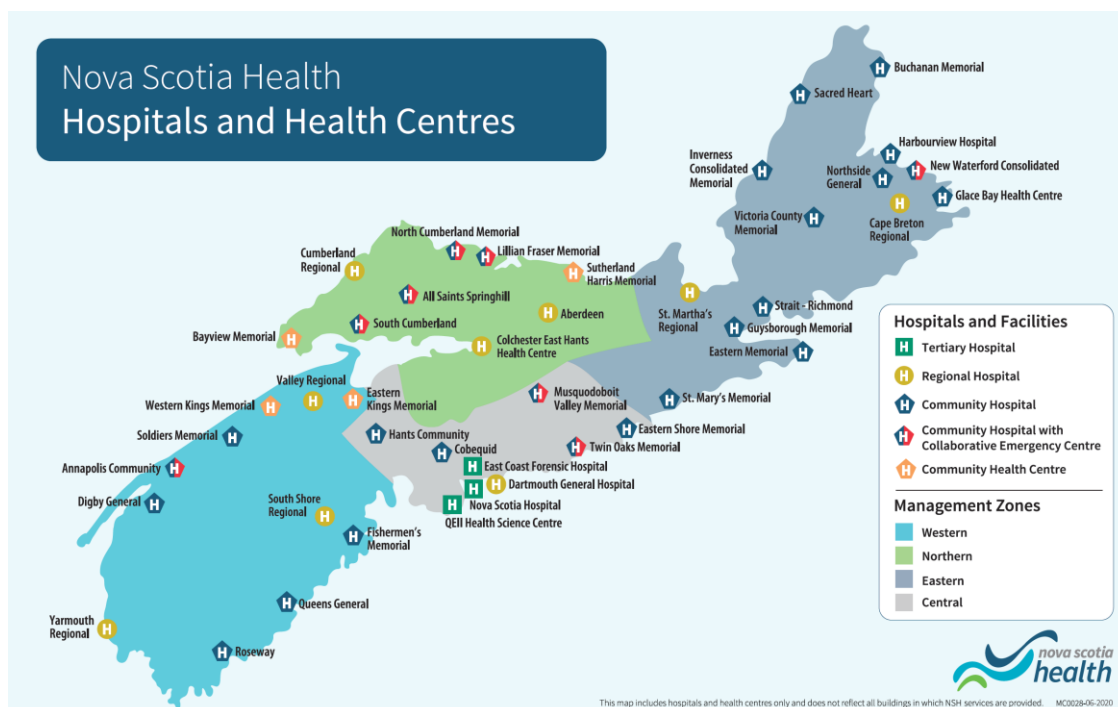
The Provincial Public Health Laboratory Network consists of Rapid Response Laboratories and Zonal Laboratories that provide clinical diagnostic testing locally throughout the province and the “anchor” microbiology laboratories located in the Central Zone, at the Queen Elizabeth II Health Sciences Centre and the IWK Health Centre, which are both zonal and reference laboratories.

Diagnostic services covered (include the following microbiology laboratory testing services:

- Bacteriology
- Environmental Microbiology (Water)
- Molecular Diagnostics
- Mycobacteriology
- Mycology
- Parasitology
- Serology
- Virology
- Food Microbiology – testing only available through CFIA (Canadian Food Inspection Agency)

Specimen Labelling. Please note the following:

- **All samples AND the requisition accompanying them must be labeled with two unique identifiers** (note that date of birth is not accepted as a separate identifier). In the absence of a health card number, an alternative unique identifier should be used (e.g. passport number).
- **All requisitions should indicate the time and date of collection.** Most types of specimens are time sensitive (needing to be processed in hours rather than days) and are invalid when they are too old.



**CONTACT INFORMATION**

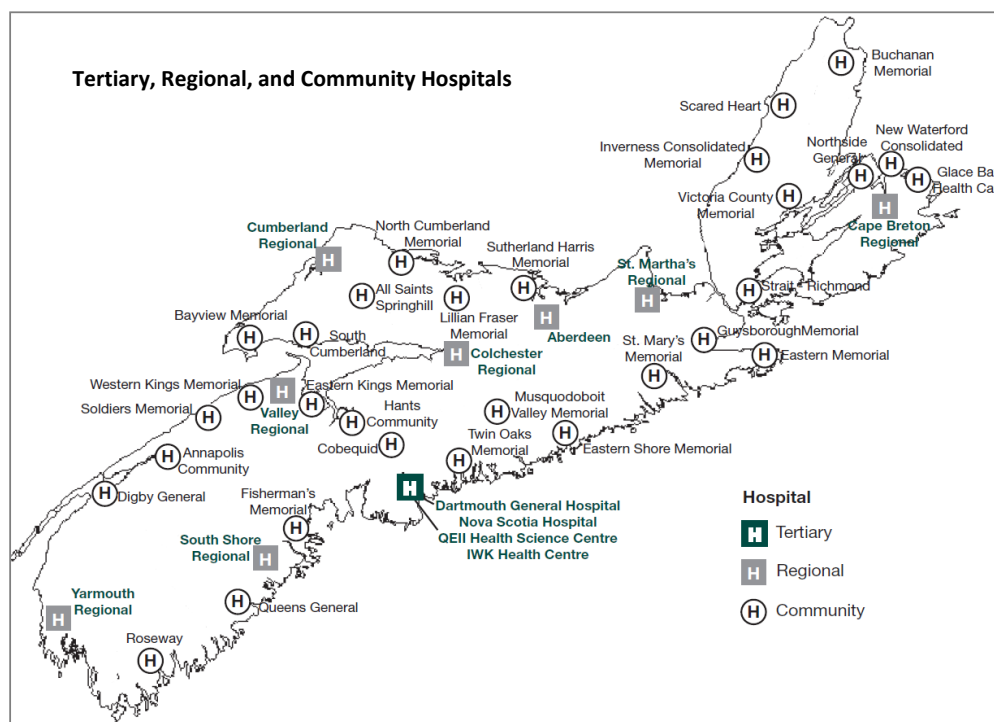
**Table 1: Contact List for PPHLN Anchor Laboratories (CZ Microbiology & IWK Health Microbiology)**

<b>Laboratory Contact List: Central Zone &amp; PPHLN Anchor Laboratory (Call QEII locating *902-473-2220 or 2222 and have them page the specific Microbiologist)</b>					
Service	Name	Position	Phone 902-473-	Page via QEII locating	Email
PPHLN	Dr. David Haldane	PPHLN Clinical Director and Microbiology Consultant	2392	*473-2220	David.Haldane@nshealth.ca
	Janice Pettipas	PPHLN Program Coordinator	8280		Janice.Pettipas@nshealth.ca
	Joy Kearsey	PPHLN Provincial Biosafety Officer	7025		Joy.Kearsey@nshealth.ca
	Carrie Phillips	PHAC – LLTO (Lab Liaison Technical Officer)	8242		Carrie.Phillips@nshealth.ca
Microbiology QEII	Dr. Todd Hachette	Service Chief Microbiology	6885	*473-2220	Todd.Hachette@nshealth.ca
	Charles Heinstein	Technical Manager	2231		Charles.Heinstein@nshealth.ca
Bacteriology <sup>1</sup> ; Media Area & Wash-up <sup>2</sup> ; Processing Area <sup>3</sup> ; Special Pathogens: Mycobacteriology-Level III <sup>3</sup> , Mycology <sup>1</sup> , Parasitology <sup>1</sup>	Dr. Ross Davidson	Director of Bacteriology	5520	*473-2220	Ross.Davidson@nshealth.ca
	Dr. David Haldane	Director of Special Pathogens	2392	*473-2220	David.Haldane@nshealth.ca
	Dr. Glenn Patriquin	Director Bacteriology / IPAC - Lab	7493	*473-2220	Glenn.Patriquin@nshealth.ca
	Dr. Ian Davis	Director Bacteriology / Antimicrobial Stewardship	4096	*473-2220	Ian.Davis@nshealth.ca
	Audra Russell-Tattrie <sup>1,2</sup>	Technical Supervisor	4103		Audra.Russell-Tattrie@nshealth.ca
Clarissa DeCoste <sup>1,3</sup>	Technical Supervisor	7843		Clarissa.Decoste@nshealth.ca	
Virology, Immunology, Molecular	Dr. Todd Hachette	Director of Virology / Immunology / Molecular	6885	*473-2220	Todd.Hachette@nshealth.ca
	Dr. Jason LeBlanc	Director of Virology / Immunology / Molecular	7698	*473-2220	Jason.LeBlanc@nshealth.ca
	Jimmy MacDonald	Technical Supervisor	5528		Jimmy.Macdonald@nshealth.ca
Environmental Microbiology	Dr. Ross Davidson	Director of Environmental Microbiology	5520	*473-2220	Ross.Davidson@nshealth.ca
<b>Central Zone Microbiology Laboratory Contact Numbers</b>					
Microbiology Administrative Assistant, Anna-Marie Gonsalves	902-473-6624	CORE Lab (Serology screening) Section – QEII	902-473-4340		
Microbiology Main Office - FAX	902-473-4432 (fax)	Immunology / EIA Sections – QEII	902-473- 6886 / 1155		
PPHLN – FAX	902-422-1367 (fax)	Molecular Section – QEII	902-473-7480		
Central Reporting (Lab Reports) – QEII	902-473-2266	Mycobacteriology (Level III –QEII) – leave message	902-473-7621		
Specimen Receiving Area (Processing Area – Microbiology QEII)	902-473-2120	Mycology / Parasitology Section – QEII	902-473-6695		
Bacteriology Section – QEII	902-473-6695	Media Section – QEII	902-473-7977		
<b>Laboratory Contact List: IWK Health &amp; Pediatric Anchor Laboratory (4 digit Pager #: call IWK Switchboard 902-470-8888)</b>					
Service	Name	Position	Phone 902-470-	Pager	Email
Pediatric Microbiology	Dr. Tim Mailman	Chief - IWK Health Centre Lab; Head - Microbiology	7892	2005	Tim.Mailman@iwk.nshealth.ca
	Melissa Stark	Manager – Microbiology	8266		Melissa.Stark@iwk.nshealth.ca
<b>IWK Health Centre Microbiology Laboratory Contact Numbers</b>					
IWK Microbiology Laboratory	902-470-8271	IWK Microbiology - FAX			902-470-7046 (fax)
<b>After Hours</b>					
To locate the On-Call QEII Microbiologist or Medical Officer of Health, please contact QEII Locating at 902-473-2220 or 2222					

**Table 2: Contact List for Zonal and Regional Hospitals – Sites of Local Testing**

Hospital	On-site routine Microbiology lab services	Zone	Address	City	Postal Code	Hospital switchboard phone #
South Shore Regional Hospital	*No	Western	90 Glen Allan Drive	Bridgewater	B4V 3S6	(902) 543-4603
Yarmouth Regional Hospital	Yes	Western	60 Vancouver Street	Yarmouth	B5A 2P5	(902) 742-3541
Valley Regional Hospital	Yes	Western	150 Exhibition Street	Kentville	B4N 5E3	(902) 678-7381
Colchester East Hants Health Centre	Yes	Northern	600 Abenaki Road	Truro	B2N 5A1	(902) 893-4321
Cumberland Regional Health Care Centre	*No	Northern	19428 Highway 2, RR 6	Amherst	B4H 1N6	(902) 667-3361
Aberdeen Hospital	Yes	Northern	835 East River Road	New Glasgow	B2H 3S6	(902) 752-7600
St. Martha's Regional Hospital	*No	Eastern	25 Bay Street	Antigonish	B2G 2G5	(902) 867-4500
Cape Breton Regional Hospital	Yes	Eastern	1482 George Street	Sydney	B1P 1P3	(902) 567-8000

\* Refer questions to zonal or referral lab as appropriate



[Locations and Facilities | Nova Scotia Health \(nshealth.ca\)](https://www.nova Scotia Health.ca)

## **SOURCES OF SPECIMEN COLLECTION CONTAINERS AND REQUISITION FORMS**

Community based physicians (Central Zone: Halifax, Eastern Shore and West Hants) requesting laboratory tests from the QEII Health Sciences Centre may order the necessary collection containers and requisitions from **Customer Service (902-466-8070, fax 902-466-8074)**. **Once the order is approved and ready, the physician will be contacted. Physicians can arrange for supplies to be sent by courier (at their expense) or supplies can be picked up between 8:00 AM and 4:00 PM, Monday to Friday (closed 11:30-12:30) at 109 Dorey Ave, Burnside Dartmouth.** Alternately, contact your local / regional laboratory site.

### **COLLECTION CONTAINERS / SUPPLIES**

#### **Central Zone**

- A variety of specimen containers and kits can be obtained by contacting Central Zone's Customer Service (902) 466-8070 or completing the accompanying (Figure 1) 'QEII Pack Room Requisition – Basic Lab Supply Order Form'.
- Exception: Viral Transport Swab Kit which are typically used to collect viral specimens (i.e. nasopharyngeal swabs for influenza virus/respiratory viral pathogens). These swabs are ordered directly through the QEII-Division of Microbiology. For external clients within the Central Zone, complete the accompanying (Figure 2) 'Viral Transport Swab Kit Order Form' and fax it to 902-473-7971.

#### **Eastern/Northern/Western Zones & IWK Health**

- Contact your local / regional laboratory site regarding their collection supplies process.
- Viral Transport Swabs can be obtained from your local /regional lab as they obtain a supply for their zone local area from CZ-Microbiology.

### **REQUISITIONS (TESTING SERVICES)**

#### **Central Zone**


- Requisition reference numbers and fax request options can be viewed at:  
<http://www.cdha.nshealth.ca/pathology-laboratory-medicine/blood-collection-services/how-obtain-laboratory-requisitions>

#### **Eastern/Northern/Western Zones & IWK Health**

- Contact your local / regional laboratory site regarding requisitions.



Figure 1: QEII Pack Room Requisition (Basic Lab Supply Order Form)

QEII PACK ROOM REQUISITION Basic Lab Supply Order Form						FAX (902) 466-8074				
*ALL REQUESTED INFORMATION IS TO BE COMPLETED IN FULL OTHERWISE ORDER WILL NOT BE FILLED										
<b>Ship To:</b> _____ <b>Name:</b> _____ <b>Address:</b> _____  <b>Phone:</b> _____ <b>Fax:</b> _____						<b>Customer #</b> _____		<b>Ship Instructions:</b> _____		
						<b>Contact Name:</b> _____				
NOTE: ALL ORDERS RECEIVED SUBJECT TO VERIFICATION QUANTITIES ORDERED ARE SUBJECT TO CHANGE										
GROUP	DESCRIPTION	UN	QTY	STOCK#	PRIMARY CARE PRICE	DESCRIPTION	UN	QTY	STOCK#	PRICE
<b>FORMS</b>	BLOOD/URINALYSIS	PACK		CD0002	NIC	GENERAL SURGERY CLINICAL	PACK		PrinA 1012	NIC
	BLOOD_URINE/STOOL/FLUIDS	PACK		CD0003	NIC	NEUROSURGERY CLINICAL	PACK		PrinA 1013	NIC
	CONSENT FOR AUTOPSY	PACK		CD0739	NIC	GYNECOLOGY/OBSTETRICS	PACK		PrinA 1014	NIC
	CONSENT FOR INVESTIGATION	PAD		CD0301	NIC	ORAL/MAXILLOFACIAL/DENTISTRY	PACK		PrinA 1015	NIC
	CYTOLOGY	PACK		CD1840	NIC	ORTHOPEDIC SURGERY	PACK		PrinA 1016	NIC
	MICROBIOLOGY OUTPA-	PACK		CD0433	NIC	OTOLARYNGOLOGY	PACK		PrinA 1017	NIC
	PHYSIOTHERAPY REFERRAL OUTPATIENT	PACK		CD0035	NIC	PLASTIC SURGERY CLINICAL	PACK		PrinA 1018	NIC
	SEMEN ANALYSIS	PACK		CD1933	NIC	THORACIC SURGERY CLINICAL	PACK		PrinA 1019	NIC
	TISSUE REPORT - SURGICAL PATHOLOGY REQUISITION	PAD		QE7188	NIC	UROLOGY CLINICAL	PACK		PrinA 1020	NIC
	X-RAY REQ'S	PAD		CD0013	NIC	VASCULAR SURGERY CLINICAL	PACK		PrinA 1021	NIC
	CARDIAC NUCLEAR MEDICINE CONSULTATION	PACK		CD1631	NIC	OPHTHALMOLOGY SURGERY	PACK		PrinA 1022	NIC
	BONE DENSITY CONSULTATION	PACK		CD1632	NIC	CYTOPATHOLOGY CARD	PACK		PrinA 1026	NIC
	DIAGNOSTIC MAMMOGRAPHY CONSULTATION	PACK		CD1630	NIC					NIC
MRI CONSULTATION	PACK		CD1629	NIC					NIC	
<b>BOTTLES</b>	24 HOUR URINE BTLs						EA		150932	\$1.51
	CAPS FOR 24 HOUR URINE BOTTLES						EA		151104	\$0.68
	URINALYSIS SCREW CAP (RED TOP)						BAG		152000	\$9.32
	OVA AND PARASITE STOOL CONTAINER						EA		151044	\$1.22
	STOOL TRANSPORT CONTAINER FOR C&S						EA		151603	\$0.76
	URINE BOTTLES STERILE - 60 ML (ORANGE)						EA		151257	\$0.14
<b>KITS</b>	HEMOCULT #2 PATIENT KIT						KIT		118157	\$1.90
	PIN WORM						EA			NIC
	SKIN SCRAPING						EA			NIC
	AMPLICOR (CHLAMYDIA) SWAB						BOX		151566	\$67.08
	VIRAL TRANSPORT SWAB								ORDER DIRECTLY FROM CDHA LAB N / C	
	FORMALIN						EA		122020	\$0.50
	THROAT SCREEN SWAB						EA		151349	\$0.38
	AIMES TRANSPORT SWAB (RED TOP)						EA		151081	\$0.28
ZIP-LOCK BAGS						CASE		150749	\$73.97	
<b>PAP SUPPLIES</b>	CYTO PAP ENVELOPE						BOX		150696	\$69.91
	SLIDE HOLDER						CASE		151669	\$164.35
	SLIDES						PACK		151624	\$6.07
<b>TUBES</b>	LAVENDER						EA		121512	\$0.10
	BLUE						EA		151278	\$0.12
	GOLD						EA		156237	\$0.24
	RED						EA		118684	\$0.10
	GREY						EA		124641	\$0.13
<b>NEEDLES</b>	21G (1 1/2)						BX		103773	\$12.61
	22G (1 1/2)						BX		103772	\$12.61

**Figure 2: Viral Transport Swab Kit Order Form**

For direct use only if in Central Zone (Halifax, Eastern Shore and West Hants)  
Other Zones should order kits from your Local / Regional Lab



**VIRAL TRANSPORT SWAB KIT ORDER FORM** (2020-06-12-v1)  
**FAX ORDER TO: 902-473-7971**

All requested information must be completed in full; otherwise order will not be filled.

<b>SHIPPING INFORMATION (Ship to):</b>		<b>SHIPPING INSTRUCTIONS:</b>	
Name:			
Address:			
Postal Code:			
Phone:			
Contact Name:			
<b>*COURIER INFORMATION:</b>			
*Courier Name:			
*Courier Account # or Cost Centre #			
*Courier Phone #			
<b>QUANTITY OF SWAB KITS REQUESTED:</b>		<b>LAB USE ONLY:</b>	
	<b>Swabs Requested</b>		<b>Swabs Shipped</b>
			<b>Date Shipped</b>
			<b>Expiration Date</b>
			<b>Initials</b>

**ORDERING INFORMATION**

1. Please fax request using the "Viral Transport Swab Kit Order Form"
  - Fax to **(902) 473-7971**.
  - Order in single units of swabs, NOT in cases or boxes.
2. When ordering please keep in mind the following:
  - The viral transport swab kits have components that have a short shelf-life and therefore have expiry dates. Please order according to your needs instead of "stock-piling".
3. Orders will be processed and mailed using **Canada Post** and should arrive in 1-2 weeks.
4. \*Courier considerations:
  - If you prefer a courier service, please indicate your courier name / account number and the courier phone number in the courier information area of the order form.
  - NSHA locations must use ACFM as courier and provide cost centre number as Courier Account #
5. All orders received are subject to verification. The quantities ordered may be subject to change depending on provincial supplies.

## **SPECIMEN COLLECTION AND TRANSPORT**

### **INTRODUCTION**

This guide to specimen collection and transport provides information on the appropriate collection and handling of optimal specimens to ensure the best chance of detection of organisms causing infection. It is hoped this manual will be able to provide guidance in most circumstances. If a laboratory user has a question after consulting this manual, a laboratory physician or scientist should be contacted (see Table 1 for contact information).

Specimens often contain potentially infectious micro-organisms: consequently, it is essential that routine precautions be followed. All specimens should be considered hazardous, not only for the micro-organisms that are suspected of being present, but also for other infectious agents (such as Hepatitis B or HIV) that are present at low prevalence in the population. As carriage of these infectious agents is often not known either to the patient or to the physician or health care worker, the best defence against infection is to assume that the organisms are present and to take precautions accordingly.

**If you have a needle stick injury please consult the “Team Member Blood and Body Fluid Exposure” (Placeholder at time of update) Policy AD-OHS-TBD on the NSH OP3 site. For Eastern/Northern/Western Zones IWK Health, contact your local or regional lab as appropriate.**

### **GENERAL GUIDELINES FOR COLLECTION**

- Specimens should be collected before starting antimicrobial agents wherever possible without compromising care.
- Use appropriate specimen collection methods. Sterile collection material and aseptic technique must be used for collection of specimens using invasive procedures.
- If a specimen is to be collected through intact skin, the skin should be disinfected thoroughly, allowing several minutes for the disinfectant to have effect. Examples of skin disinfectants include 70% alcohol, iodine solution, povidone-iodine, chlorhexidine, etc. If tincture of iodine is used, remove with 70% ethanol after the procedure to prevent burning of the skin. An adequate amount of specimen should be collected.
- As a general rule, more is better than less. For example, a sterile tube or urine container with 10 ml of pus is a better specimen than a swab. Small amounts of specimen are subject to drying, becoming aerobic, and undergo other forms of deterioration, whereas larger volumes minimise the risk of false negative results. Stool containers should be filled to the fill line (but not overfilled) and mixed with the transport medium.
- For specimens from non-sterile sites, attempt to collect the specimen with as little contamination from the surrounding normal flora as possible.
- When specimens are collected, it is important that the external surface of the specimen container and the requisition are not contaminated. **Leaking specimens or specimens with evidence of external contamination will usually result in rejection of the specimen by the laboratory.**
- As soon as the specimen is collected and the container appropriately labelled, the specimen container should be placed in a plastic bag. The requisition should be completed and placed in the side pouch separate from the specimen container. The requisition should not be placed in the same part of the bag as the specimen.

- Use the appropriate transport media or transport kits to preserve the viability of the organism or its nucleic acid. Some specimens require refrigeration during transport.

## **SPECIMEN IDENTIFICATION AND INFORMATION**

- The specimen should be collected in the standard containers available through hospital stores. These containers are selected to have low failure rates and may be selected to be compatible with instruments.
  - Other non standard containers are usually rejected by laboratories because of the risk of extraneous contamination
- **Both the specimen container and the requisition must be labelled with two means of identification.** Legal name and a government issued number are accepted. **Date of birth is not acceptable as a separate identifier.** This is an accreditation requirement. The **date and time of collection** should be indicated also.
- The specimen source should be clearly and completely indicated to ensure that the appropriate processing takes place. For example, a "swab of the hip" taken in the OR from the joint would be processed/interpreted quite differently from a superficial swab of a hip ulcer.
- When specific diagnoses are being considered, they may have a bearing on the processing of the specimen; these diagnoses should be indicated in the clinical detail section on the requisition to ensure that the specific questions can be answered. This is particularly important if the suspect organism is unusual or requires extraordinary processing.
- Pertinent historical data (e.g. travel, association with a known outbreak, immunosuppression, or underlying disease) should be indicated in the clinical detail section of the requisition. For example, travel history is important to prompt measures to detect species of organism that are not locally endemic.

## **SPECIMEN TRANSPORT – GENERAL GUIDELINES**

- Specimens should be transported to the laboratory as quickly as possible.
- Specimens that are from suspect CJD patients (see MPA Routine Manual 08-0 CJD CSF Procedure ID 49372) should be transported to the lab separately in a sealed plastic container and the microbiology laboratory should be notified that a CJD suspect sample is going to arrive.
- Specimens that cannot be transported rapidly should be refrigerated, with the following exceptions:
  - Blood cultures should be held at room temperature.
  - CSF cultures should be held at room temperature (meningococci are susceptible to cold).
  - Skin scrapings should be kept at room temperature as dermatophytes are cold sensitive.
- Specimens for PCR should be refrigerated if they can be delivered within 72 hours, but if delays are anticipated, they should be frozen at -70°C, or -20°C if -70°C is not available.
- Stool cultures for bacteriology should be mixed with enteric transport medium (Carey-Blair Enteric Transport medium) and kept at 4°C. These samples are also suitable for some kits using enteric pathogen PCR.
- Stool for parasitology should be mixed with parasite transport medium (SAF) and can be held at room temperature. SAF contains 4% formalin.
- Stool for virology, *C. difficile* PCR, or *Helicobacter pylori* antigen should be placed in a sterile container without any preservative. Store specimen at 4°C prior to transport on ice pack.

- Eswabs with liquid Amies Transport Medium are the preferred swab for bacteriology in Central Zone. In other zones Amies Transport Medium swabs should be used. Swabs should only be used for bacteriology if there is insufficient pus or fluid sample available to send in a dry sterile container. Swabs should not be used for mycobacterial samples.
- For anaerobic culture, as much fluid or pus as possible (up to 50ml) should be collected and sent without delay in a dry sterile container.

**NOTE:**

- **Do not send specimens in needles or syringes for culture.** There are difficulties with maintenance of anaerobic conditions in plastic syringes. **Needles must not be attached to the syringes.** Recapping of needles is not recommended because of the risk of needlestick injury. Needles are a hazard to laboratory staff.
- If the volume of the specimen is very low, non bacteriostatic saline (preservative free) may be drawn up and used to flush the needle and syringe into a sterile container.

# PATIENT COLLECTION INSTRUCTIONS

The following pages provide instruction sheets for specimen collection for patients.  
These may be used directly or as the basis for developing a local version.

<b>Fig 3: Stool Samples</b> .....	p.12
<b>Fig 4: Female Anatomy - How to Collect a Urine Specimen for Culture</b> .....	p.14
<b>Fig 5: Male Anatomy - How to Collect a Urine Specimen for Culture</b> .....	p.15
<b>Fig 6: Self-Collection of Vaginal Swabs</b> .....	p.16
<b>Fig 7: Sputum Sample</b> .....	p.17

**Figure 3: Stool Samples**

## INSTRUCTIONS FOR THE COLLECTION OF STOOL SAMPLES

Test	Container <i>Cap colors may vary with manufacturer</i>		Store Before Collection	Store After Collection	Deliver to Lab
<b>Ova and Parasites (O&amp;P)</b>	Container is called "SAF Fixative", has a yellow cap and the contents are colorless.		Room Temperature	Room Temperature	*24 hours
<b>Bacterial Culture and Sensitivity (C&amp;S)</b>	Container is called "Enteric Pathogen Transport" has a blue cap and the contents are pink.		Room Temperature	Refrigerate	24 hours
<b>Virus Culture and C. difficile cytotoxin Helicobacter pylori antigen</b>	Use a dry sterile container. (i.e. same as used for urine collection)		Room Temperature	Refrigerate	24 hours

**SAFETY** • The materials in the Enteric Pathogen Transport and the SAF Fixative vials should not be taken internally.

### HOW TO COLLECT THE SPECIMEN

- Avoid: mineral oil, bismuth, barium or kaolin (Kaopectate) in the five days before collecting the sample.
- Pass stool on a dry surface such as a clean container, plastic wrap or paper towel. Do not allow water or urine to touch the stool.
- **Ova and Parasites (O&P) and Bacterial Culture and Sensitivity (C&S)** - Using the scoop attached to the inside of the specimen container lid, add a tablespoon size amount of stool to the vial until the fill line is reached. Use the scoop to thoroughly mix the stool with the material in the vial of the appropriate containers.
- **Virus NAAT, C. difficile antigen and NAAT testing, Helicobacter pylori antigen** - Transfer a sample of stool into a dry sterile container.
- Screw the lid on firmly taking care not to contaminate the outside.
- If you have been asked to collect more than one sample for any of these tests, additional sample(s) must be collected on separate days. Label the container with the date of collection. If possible, deliver the samples to the lab on each day (\*not necessary for Ova and Parasite specimens as these can be delivered on the last day).
- Refrigerate the samples until you are able to deliver them to the lab.

**Note: If you have trouble collecting the specimen, please contact your healthcare provider.**

### MAKE SURE THE SPECIMEN CONTAINER LABEL INCLUDES

- Your legal name
- Your Health Card Number or another unique identifier (as determined by your healthcare provider)
- Date and time of collection

### MAKE SURE THE REQUISITION FORM INCLUDES

- Your legal name and date of birth
- Your Health Card Number or another unique identifier (as determined by your healthcare provider)
- Date and time of collection
- Physicians full name and address
- The name of any antibiotic you are taking
- If you have traveled outside North America; indicate where you were traveling.
- If you have immigrated from outside North America; indicate from where you have come.

**Note: If the specimen and requisition are not labelled correctly, the specimen will not be processed.**

**DELIVER SAMPLES WITHIN 24 HOURS**


- To your Local district laboratory.
- \*If collecting more than one sample for O&P - all these samples should be delivered to the lab on the last day.
- If delay is expected, refrigerate the sample (do not freeze) and deliver on the same day as collected.



Figure 4: Female Anatomy – How to Collect a Urine Specimen for Culture

## Female Anatomy

### HOW TO COLLECT A URINE SPECIMEN FOR CULTURE

Urine for C&S			
<i>Note: Container cap colors may vary with manufacturer</i>			
Container (dry sterile)	Store Before Collection	Store After Collection	Deliver to Lab
	Room Temperature	Refrigerate	1 hour (same day if refrigerated)

#### Urine that touches the surrounding skin will contaminate the sample




1. First wash your hands.
2. Remove the cap of the sterile container(s), being careful not to touch the inside of the cap or container.
3. Spread the labia apart and pass a few tablespoons of urine.
4. Briefly stop the stream and then void into the container (½ full only).  
  
If you are required to collect two samples, use bottle #1 to collect the first part of your urine and bottle #2 to collect the remainder.
5. Replace the container cap tightly.
6. Write your name and Health Card number (or other unique identifier as determined by your healthcare provider) on the container(s).

#### PLEASE ENSURE THE FOLLOWING ARE COMPLETED

- Your name, Health Card Number, date and time of collection are on **both** the container and the requisition.
- The requisition must also have your physician's name and address.
- **If delay is expected, refrigerate the sample (do not freeze) and deliver the sample to the lab the same day as it is collected.**

Figure 5: Male Anatomy – How to Collect a Urine Specimen for Culture

Male Anatomy			
HOW TO COLLECT A URINE SPECIMEN FOR CULTURE			
Urine for C&S			
<i>Note: Container cap colors may vary with manufacturer</i>			
Container (dry sterile)	Store Before Collection	Store After Collection	Deliver to Lab
	Room Temperature	Refrigerate	1 hour (same day if refrigerated)



**Urine that touches the surrounding skin will contaminate the sample**

1. First wash your hands.
2. Remove the cap of the sterile container(s), being careful not to touch the inside of the cap or container.
3. If you are uncircumcised, retract the foreskin completely.
4. Keep your foreskin retracted during voiding.
5. Briefly stop the stream and then void into the container (½ full only).



If you are required to collect two samples, use bottle #1 to collect the first part of your urine and bottle #2 to collect the remainder.

6. Replace the container cap tightly.
7. Write your name and Health Card number (or other unique identifier as determined by your healthcare provider) on the container(s).

**PLEASE ASSURE THE FOLLOWING ARE COMPLETED**

- Your name, Health Card Number, date and time of collection are on **both** the container and the requisition.
- The requisition must also have your physicians name and address.
- **If delay is expected, refrigerate the sample (do not freeze) and deliver to the lab on the same day as the sample is collected.**

Figure 6: Self-Collection of Vaginal Swabs

## INSTRUCTIONS FOR SELF-COLLECTION OF VAGINAL SWABS

Please read all instructions before collecting specimens. If you have any questions about this procedure, please ask your doctor or nurse.

**\*Ask your Doctor about a patient label to place on the tube. It is essential that your specimen be appropriately labelled with both YOUR NAME and HEALTH CARD NUMBER.**

1. Wash hands with soap and water. Rinse and dry.
2. It is important to maintain a comfortable balance during the collection procedure.
3. Twist the cap to break the seal (Figure 1). Do not use if seal is broken or damaged. Pull the cap with attached swab off the tube. Do not touch the soft tip or lay the swab down. If you touch or drop the swab tip or the swab is laid down, discard the swab and request a new vaginal swab.
4. Hold the swab by the cap with one hand so the swab tip is pointing toward you (Figure 2).
5. With your other hand, gently spread the skin outside the vagina. Insert the tip of the swab into the vaginal opening (Figure 2.) Point the tip toward your lower back and relax your muscles.
6. Gently slide the swab no more than two inches into the vagina (Figure 3). If the swab does not slide easily, gently rotate the swab as you push. **If it is still difficult, do not attempt to continue.** Make sure the swab touches the walls of the vagina so that moisture is absorbed by the swab.
7. Rotate the swab for 10-15 seconds (Figure 4).
8. Withdraw the swab without touching the skin. Place the swab in the tube and cap securely (Figure 5).
9. Repeat steps 2-8 if a second swab is to be collected.
10. After collection, wash hands with soap and water, rinse, and dry.
11. Return tube with swab as instructed.
12. **\* ENSURE YOUR NAME and HEALTH CARD NUMBER are on your sample.**

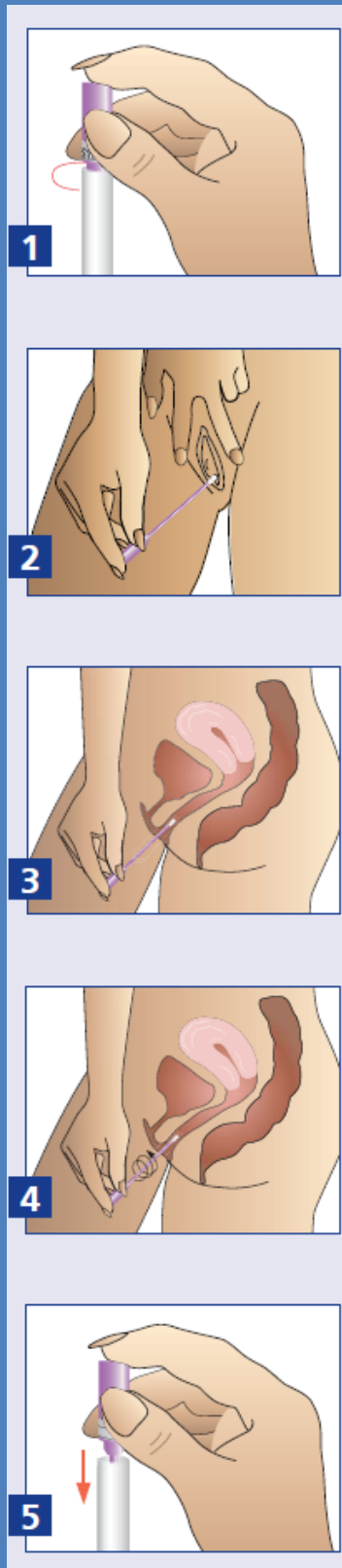



Figure 7: Sputum Samples

INSTRUCTIONS FOR THE COLLECTION OF A SPUTUM SAMPLE			
Sputum for C&S			
<i>Note: Container cap colors may vary with manufacturer</i>			
Container (dry sterile)	Store Before Collection	Store After Collection	Deliver to Lab
	Room Temperature	Refrigerate	2 hours (same day if refrigerated)

**HOW TO COLLECT A SPUTUM SAMPLE**

1. Only use the dry sterile container supplied by the lab or your physician's office.
2. If you wear false teeth, remove them before proceeding.
3. Brush your teeth with water. **\*Do not use toothpaste.\***
4. Rinse your mouth and gargle with water. **\*Do not use mouthwash.\***
5. Cough up sputum sample from deep in the chest. Let the sample pass directly into the sterile specimen collection container.
6. Do not mix saliva or post-nasal drainage with what is coughed up from the chest.

**Note: If you have trouble collecting the specimen, please contact your healthcare provider.**

**MAKE SURE THE SPECIMEN CONTAINER LABEL INCLUDES**

- Your legal name
- Your Health Card Number or another unique identifier (as determined by your healthcare provider)
- Date and time of collection

**MAKE SURE THE REQUISITION FORM INCLUDES**

- Your legal name
- Your Health Card Number or another unique identifier (not date of birth)
- Date and time of collection
- Your date of birth
- Physicians full name and address

**Note: If the specimen and requisition are not labelled correctly, the specimen will not be processed.**

**DELIVER THE SPECIMEN WITHIN 2 HOURS OR REFRIGERATE AT 4°C**



- If delay is expected, refrigerate the sample (do not freeze) and deliver it to the lab on the same day as it is collected.

# PHYSICIAN / HEALTHCARE PROVIDER COLLECTION INSTRUCTIONS

The following pages provide instruction sheets for specimen collection for physicians /healthcare providers. These may be used directly or as the basis for developing a local version.

<b>Fig 8: Blood Cultures</b> .....	p.19
<b>Fig 9: Pinworm Samples</b> .....	p.21
<b>Fig 10: Skin, Hair, and Nail Specimens for Culturing of Dermatophytes and other Fungi</b> ...	p.22
<b>Fig 11: Nasopharyngeal Swab for Respiratory Viruses</b> .....	p.23

**Figure 8: Blood Cultures**

<b>INSTRUCTIONS FOR THE COLLECTION OF BLOOD CULTURES</b>			
<b>Blood Cultures - Adult</b>			
<i>Note: blood culture bottles will vary with manufacturer – consult local or regional lab</i>			
<b>Container</b>	<b>Store Before Collection</b>	<b>Store After Collection</b>	<b>Deliver to Lab</b>
 	Room Temperature	Room Temperature	ASAP

**GENERAL CONSIDERATIONS**

- For routine blood cultures, the optimal number of collections is 2 sets (3 if you consider the patient may have endocarditis). Optimal collection (a) assures adequate blood volume, (b) picks up at least 96% of blood stream infections and (c) helps to sort out contaminants.
- Collect using separate venipuncture sites as they have less contamination than central line draws and preferably 20 minutes apart. Take them simultaneously if the patient is severely ill and needs antibiotics right away!
- Ensure an adequate volume is drawn. The bottles indicate the volume of blood that should be added to them.

**AEROBIC VS. ANAEROBIC CULTURES**

- A set of blood cultures includes an aerobic and an anaerobic vial.
- Always collect the aerobic bottle before the anaerobic.

**HOW TO COLLECT BLOOD CULTURE SAMPLE(S)**

**Sterile gloves, tourniquet, butterfly/winged needle with tubing, vacutainer holder, collection needle/adaptor, alcohol swabs, iodine or chlorhexidine swabs, discard tube, aerobic blood culture bottle, and anaerobic bottle (if ordered)**

- Apply gloves and vigorously cleanse the venipuncture site in a circle approximately 5 cm in diameter with 70% alcohol. Scrubbing should continue for 30 seconds followed by air-drying. Next, starting in the centre of the circle, apply chlorhexidine swabs which are 2% chlorhexidine gluconate in ever widening circles until the entire circle is saturated with antiseptic. 10% povidine iodine (Betadine®) and 70% isopropyl alcohol can be used in place of chlorhexidine.
- Assemble blood culture device (Figure 1)
- Discard the first ml of blood in a vacutainer tube (e.g. sodium citrate tube). This removes the small plug of skin which has the potential to contaminate the blood culture.
- Collect blood in the blood culture bottle to the fill mark to ensure an adequate draw volume. Notes: collect aerobic bottle before the anaerobic. (Figure 2). Label laboratory requisition and the blood culture bottles.

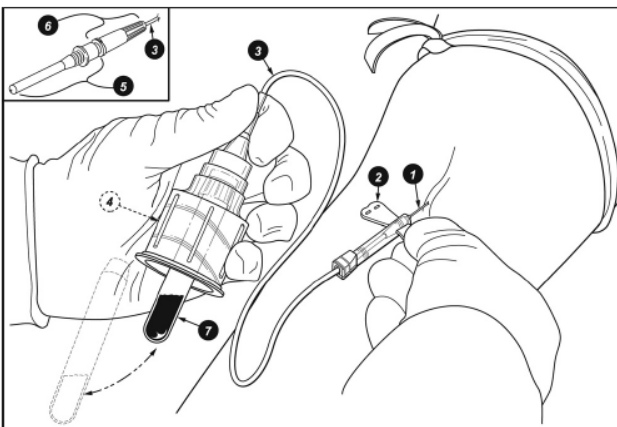
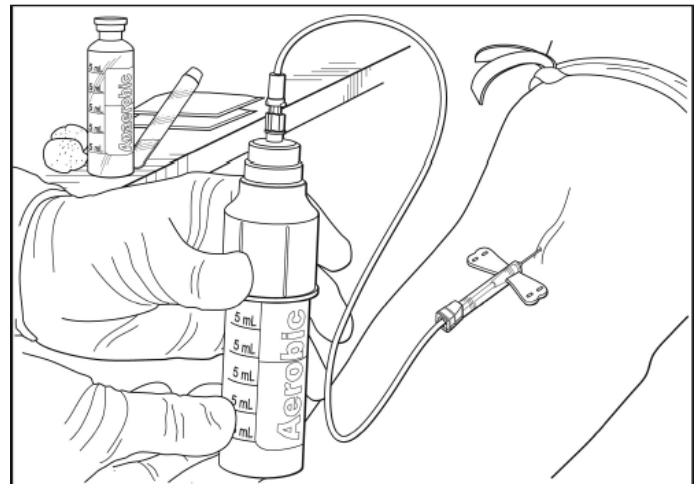


Figure 1: 1, venipuncture needle; 2, wings to aid insertion of the venipuncture needle; 3, tubing for blood transfer; 4, protective adapter to facilitate medium bottle inoculation; 5, collection needle/adaptor attachment apparatus; 6, syringe connector; 7, discard tube. (Inset) inoculation needle detail.



**Figure 8: Blood Cultures - continued**

**MAKE SURE THE BLOOD CULTURE LABEL INCLUDES**

- Patient's legal name/date of birth
- Patient's Health Card Number or another unique identifier (as determined by your healthcare provider)
- Specific source of collection
- Date and time of collection

**MAKE SURE THE REQUISITION FORM INCLUDES**

- Patient's legal name/date of birth
- Patient's Health Card Number or another unique identifier (as determined by your healthcare provider)
- Specific source of collection
- Date and time of collection
- Date of birth
- Physicians full name and address

**Note: If the specimen and requisition are not labelled correctly, the specimen will not be processed.**

**DELIVER THE SPECIMEN TO THE LAB IMMEDIATELY - ASAP**

- If transfer to the Microbiology lab is delayed – do not delay treatment.
- Do not refrigerate blood cultures. Transport them at room temperature.

**Figure 9: Pinworm Samples**

## INSTRUCTIONS FOR THE COLLECTION OF PINWORM SAMPLES

Please read carefully or your specimen might be rejected by the lab

### INTRODUCTION

Pinworms (*Enterobius vermicularis*) are worms which inhabit the lower large bowel. The female lays its eggs on the perianal skin at night. The immunological reaction to these eggs is the cause of the itch associated with the infection. Pinworm infection is detected in the laboratory by seeing the microscopic eggs that are laid on the perianal skin. Of the variety of methods available, the Vaseline swab method has advantages of being safe, convenient and sensitive. The eggs can be identified microscopically in the laboratory, and the hazard to laboratory staff is minimized.

Pinworm Samples			
Container	Store Before Collection	Store After Collection	Deliver to Lab
Vaseline swab provided inside sealed tube. <b>* Vaseline swabs are suitable for pinworm testing at the QEII Parasitology Laboratory only.</b>	Room Temperature	Refrigerate	24 hours

### SAFETY

- As pinworm ova become infective within hours of being laid, gloves should be worn during specimen collection and hands washed afterwards.

### HOW TO COLLECT THE SPECIMEN

1. The best time for specimen collection is after the patient has settled for the night or first thing in the morning, before the patient has either washed or passed stool.
2. Wear gloves.
3. Remove the Vaseline swab from the tube
4. With the patient lying on his/her side, the swab should be rolled over the perianal skin within 1 cm of the anus.
5. The swab should also be inserted, not more than 5 mm (1/3 inch), into the anal canal.
6. Replace the Vaseline swab back into the tube and seal tight.
7. Discard the gloves and wash your hands.

### MAKE SURE THE SPECIMEN CONTAINER LABEL INCLUDES

- Patient's legal name
- Patient's Health Card Number or another unique identifier (as determined by healthcare provider)
- Date and time of collection

### MAKE SURE THE REQUISITION FORM INCLUDES

- Patient's legal name
- Patient's Health Card Number or another unique identifier (as determined by healthcare provider)
- Date and time of collection
- Patient's date of birth
- Physicians full name and address

**Note: If the specimen and requisition are not labelled correctly, the specimen will not be processed.**

### DELIVER THE SPECIMEN TO THE REGIONAL LAB WITHIN 24 HOURS

- If delay is expected, refrigerate the sample (do not freeze) and deliver within a day of sample collection.



**Figure 10: Skin, Hair, and Nail Specimens for Culturing of Dermatophytes and Other Fungi**

## INSTRUCTIONS FOR THE COLLECTION OF SKIN, HAIR, AND NAIL SPECIMENS FOR CULTURING OF DERMATOPHYTES AND OTHER FUNGI

Please read carefully or your specimen might be rejected by the lab

Container	Store Before Collection	Store After Collection	Deliver to Lab
Mycology Collection Kit (CZ – QEII Lab Stores)	Room Temperature	Room Temperature	<b>3 Days</b>

### HOW TO COLLECT SAMPLE

1. Clean the affected area with 70% alcohol and allow to air dry to reduce contamination.
2. Collect the specimen:
  - a) **SKIN:** Scrape the edge of the active “ringworm” rash using the dull edge of a scalpel blade and collect the skin flakes on the heavy paper provided in the kit. Collect as many pieces as possible. Another method is to brush the skin lesion vigorously with a soft bristle toothbrush.
  - b) **NAILS:** Clean the nail with alcohol. Using a scalpel blade, scrape away and discard the superficial (often contaminated) portion and collect the deeper material on the heavy black paper provided in the kit.
  - c) **HAIR:** Using forceps, pluck broken or lusterless hair from the affected area and deposit on the heavy black paper provided in the kit. Include a skin scraping from the area as well.
3. Refold the paper so that the specimen is contained and cannot fall out.
4. Place the black paper in the envelope provided and label as per instructions below.
5. Complete the laboratory requisition noting the specimen type and source.
6. Transport the specimen at room temperature.

### MAKE SURE THE SPECIMEN LABEL INCLUDES

- Patient’s legal name/date of birth
- Patient’s Health Card Number or another unique identifier (as determined by healthcare provider)
- Date and time of collection

### MAKE SURE THE REQUISITION FORM INCLUDES


- Patient’s legal name/date of birth
- Patient’s Health Card Number or another unique identifier (as determined by healthcare provider)
- Date and time of collection
- Patient’s date of birth
- Physicians full name and address

**Note: If the specimen and requisition are not labelled correctly, the specimen will not be processed.**

### DELIVER THE SPECIMEN

- Deliver sample(s) to the local district laboratory with transport at room temperature.

**Figure 11: Nasopharyngeal Swab for Respiratory Viruses**

INSTRUCTIONS FOR THE COLLECTION OF A NASOPHARYNGEAL SWAB FOR RESPIRATORY VIRUSES				
Container		Store Before Collection	Store After Collection	Deliver to Lab
Nasopharyngeal Swab Collection kit		Room Temperature	Refrigerate	*72 hours

**HOW TO COLLECT THE SAMPLE** or view online: [Nasopharyngeal swabbing for respiratory viruses – the 4 D's \(vimeo.com\)](https://vimeo.com/348888888)

Use the swab supplied with the viral transport media.

1. Explain the procedure to the patient.
2. When collecting the specimens, wear eye protection, gloves, and a mask. Change gloves and wash your hands between each patient.
3. If the patient has a lot of mucus in the nose, this can interfere with the collection of cells. Either ask the patient to use a tissue to gently clean out visible nasal mucus or clean the nostril yourself with a cotton swab (e.g. Q-Tip).
4. How to estimate the distance to the nasopharynx: prior to insertion, measure the distance from the corner of the nose to the front of the ear and insert the shaft **approximately 2/3 of this length**.
5. Seat the patient comfortably. Tilt the patient's head back slightly to straighten the passage from the front of the nose to the nasopharynx to make insertion of the swab easier.
6. Insert the swab provided along the medial part of the septum, along the floor of the nose, until it reaches the posterior nares; gentle rotation of the swab may be helpful. (If resistance is encountered, try the other nostril; the patient may have a deviated septum.)
7. Allow the swab to sit in place for 5-10 seconds.
8. Rotate the swab several times to dislodge the columnar epithelial cells. *Note: Insertion of the swab usually induces a cough.*
9. Withdraw the swab and place it in the collection tube.
10. Refrigerate immediately.
11. Remove gloves.
12. Wash hands.
13. Attach completed requisition.
14. Transport to the laboratory.

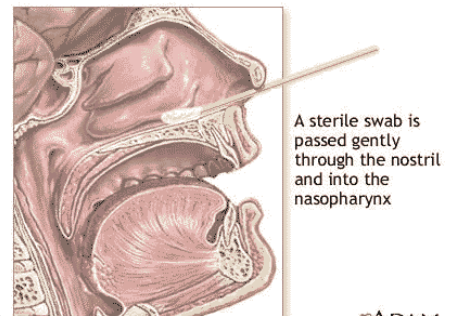


Image obtained from <http://www.nlm.nih.gov/medlineplus/ency/imagepages/9687.htm>

ADAM.

**MAKE SURE THE SPECIMEN LABEL INCLUDES**

- Patient's legal name/date of birth
- Patient's Health Card Number or another unique identifier (as determined by healthcare provider)
- Date and time of collection

**MAKE SURE THE REQUISITION FORM INCLUDES**

- Patient's legal name/ date of birth
- Patient's Health Card Number or another unique identifier (as determined by healthcare provider)
- Date and time of collection
- Patient's date of birth
- Physicians full name and address

**Note: If the specimen and requisition are not labelled correctly, the specimen will not be processed.**

**DELIVER THE SPECIMEN**

- Deliver sample(s) to the local district laboratory.
- Testing may be performed at the QE II HSC or Regional Lab: \*Patient specimens should be kept at 4°C and received for testing at the Microbiology laboratory within 72 hours. If swabs are to be delayed in transit longer than this, they should be frozen at ≥-70°C.

## **SPECIMEN TESTING INFORMATION**

<b>Table 3: Collection Guide for Common Specimens .....</b>	<b>p.25</b>
<b>Table 4: Specimen Handling in Outbreaks (Include Outbreak Number).....</b>	<b>p.29</b>
<b>Table 5: Specimen Handling for Specific Conditions or Organisms.....</b>	<b>p.30</b>
<b>Table 6: Summary of Serological Tests Available at CZ Microbiology .....</b>	<b>p.59</b>
<b>Table 7: Summary of Serological Tests Referred to Laboratories Outside CZ Microbiology.....</b>	<b>p.59</b>

**Table 3: Collection Guide for Common Specimens**

SPECIMEN	PREPARATION	AMOUNT	TRANSPORT	MAXIMUM ACCEPTABLE TRANSPORT TIME	COMMENTS
<b>Blood</b>					
Aerobic / Anaerobic culture Includes fungal culture	Disinfect skin Use aerobic bottle and anaerobic bottle	8-10 ml in each vial (up to 20 ml /set). Collect 2 sets, each from a separate site.	Room Temperature	ASAP	When using vacutainer system collect the first 1 ml in a sodium citrate tube to reduce blood culture contamination. It can be used for other testing or discarded. A "set" includes an aerobic and anaerobic bottle. 2 sets should be sent in 1 day. Aerobic blood culture detects yeast.
Mycobacterial	Disinfect skin Use Myco F Lytic® bottle	3-5 ml. Collect a single culture. Does not require an accompanying aerobic culture	Room Temperature	ASAP	Designed for detection of <i>Mycobacterium avium</i> complex bacteremia. Use on immunosuppressed patients only (i.e. HIV, transplant).
<b>Cerebrospinal Fluid (CSF)</b>					
Aerobic culture also fungal culture (indicate if required)	Disinfect skin Lumbar puncture	1 ml	Room Temperature	ASAP	<b>Use CSF requisition</b> at Central. Separate tubes should be sent for chemistry, hematology and microbiology. A fourth tube for molecular testing should be sent if required.
SUSPECT Creutzfeldt-Jakob Disease (CJD)	Disinfect Skin Lumbar puncture Follow CJD precautions as highlighted in the infection control guidelines	2-3 mls	Frozen at -70°C	ASAP	NOTIFY the laboratory when suspect CJD sample is to be shipped. Specimen should be shipped separately from other specimens in its own sealed plastic container. Ensure specimen is clearly labelled "CJD precautions".
Mycobacterial culture	Disinfect skin Lumbar puncture	2 ml (preferably more) (sample will not be processed if less than 0.5ml)	Room Temperature	ASAP	Molecular testing for TB is more sensitive than culture for detection of TB meningitis, and will be performed if there is sufficient volume of CSF.
HSV/VZV/Enterovirus PCR (Molecular panel)	Disinfect skin Lumbar puncture	1 ml	Room Temperature	ASAP	Discuss with Microbiologist or ID specialist before sending. Results may need interpretation with clinical findings. Arbovirus testing is referred out.
Other testing	Contact microbiology				
<b>Gastrointestinal</b>					
Stool for community acquired bacteria	Stool passed without contamination by urine, toilet water	Almond sized amount mixed with enteric transport medium (Cary Blair)	4°C	3 Days	Molecular testing is becoming widely used to detect common pathogens (including STEC), and is used at IWK and CZ. Cultures may be used in other zones for Salmonella, Shigella, Campylobacter, Yersinia and E.coli O157. If STEC suspected refer stool for molecular testing. Indicate if travel has occurred or shellfish associated diarrhea (extended molecular panel may be used). If involvement in outbreak use the Public Health Services outbreak number. Directed cultures

SPECIMEN	PREPARATION	AMOUNT	TRANSPORT	MAXIMUM ACCEPTABLE TRANSPORT TIME	COMMENTS
					are used to get isolates for typing and further investigation.
Stool for viruses	Stool passed without contamination by urine, toilet water	10 ml in a dry sterile container	4°C Freeze at -70°C if >72 hour delay,	2 Days	Indicate if travel has occurred. If involvement in an outbreak use the Public Health Services outbreak number.
Stool for parasites	Stool passed without contamination by urine, toilet water	Almond sized amount mixed with parasite transport medium (SAF)	Room Temperature	7 Days	EIA for Giardia/Cryptosporidium is done unless there is a history indicated on the requisition of travel, immigration, worm seen in stool, or for children under 16.
Stool for <i>C. difficile</i>	Stool passed without contamination by urine, toilet water	10 ml in a dry sterile container (should take the shape of the container)	4°C	3 Days	Liquid/soft specimens only. Test of cure is not necessary.
Other	See specific organism section or contact microbiology				
<b>Genital: Female</b>					
Vaginal swab	Self collected	Aptima swab CZ, NZ, EZ WZ – check with local lab	4°C	3 Days	Recommended for gonorrhea/chlamydia testing. (see collection instructions page 16) Bacterial vaginosis/Trichomonas/Candida vaginitis for NAAT in CZ
Gonorrhea molecular (NAAT) -Diagnosis of infection	Self collected vaginal swab	Aptima swab CZ, NZ, EZ WZ – check with local lab	4°C	3 Days	For NAAT testing, test of cure should be sent 4 weeks after treatment.
Gonorrhea culture - surveillance, - test of cure - treatment failure -prepubertal, forensic	Use speculum without lubricant other than warm water. Wipe away vaginal secretions from cervix. Swab endocervix	E-swab (CZ) Amies transport medium	4°C	2 Days	Only collect the specimen for culture if the patient has been treated for a positive molecular test. Please indicate if “Test of Cure” on the requisition. For culture, sample should be sent 3 days after treatment. If treatment failure, indicate “Treatment failure” on the requisition.
Vaginal secretions	Use speculum without lubricant other than warm water. Swab mucosa high in the vaginal canal. Rotate swab over glass slide	Aptima swab CZ, NZ, EZ, WZ check with local lab. Glass slide - air dried - labeled (2 identifiers)	4°C  Slide transport	3 Days	Microscopy will be replaced by PCR by September 2023 in CZ. Send Aptima swab instead of slide for bacterial vaginosis/ candida infection/ trichomonas diagnosis. For EZ, NZ, WZ: Label the slide with patient name and one other identifier (not the date of birth). Vaginal cultures are done for Group B Streptococcus screening in pregnancy, for vaginitis in prepubertal females, and for recurrent fungal infections. Otherwise vaginal cultures seldom provide useful information.
Genital Ulcer/ vesicles	Unroof vesicle and collect fluid and swab base	Viral transport medium	4°C	3 Days	Mpox PCR should be requested if clinically indicated. If syphilis is suspected send serology. Darkfield Microscopy is not available. Other non herpetic causes contact the laboratory. Samples for <i>H. ducreyi</i> are referred out for PCR (requires STI clinic referral).
Other	See specific organism section or contact microbiology				

SPECIMEN	PREPARATION	AMOUNT	TRANSPORT	MAXIMUM ACCEPTABLE TRANSPORT TIME	COMMENTS
<b>Genital: Male</b>					
Urine (STI)	First catch urine. Should not have voided for 2 hours	Dry sterile container	4°C	3 Days	Recommended for chlamydia and gonorrhea testing.
Gonorrhea molecular (NAAT) -Diagnosis of infection	First catch urine. Should not have voided for 2 hours	5-10 ml in dry sterile container	4°C	3 Days	For NAAT testing, test of cure should be sent 4 weeks after treatment
Gonorrhea culture - surveillance, - test of cure - treatment failure -prepubertal, forensic	Swab urethral secretions or discharge	E-swab Amies transport medium	4°C	2 Days	Please indicate if "Test of Cure" on the requisition. For culture, sample should be sent 3 days after treatment. If treatment failure, indicate "Treatment failure" on requisition.
Genital Ulcer/ vesicles	Unroof vesicle and collect fluid and swab base	Viral transport medium	4°C	3 Days	If syphilis is suspected send blood for serology, darkfield microscopy is not available. Other non herpetic causes contact the laboratory. Samples for <i>H. ducreyi</i> are referred out for PCR (requires STI clinic referral).
Other	See specific organism section or contact microbiology				
<b>Respiratory</b>					
Sputum	Deep cough Avoid postnasal drip, saliva.	Sterile container	4°C	1 Day	Specimen quality is assessed microscopically after receipt and determines the extent of workup. Specimen quality may be improved by removing false teeth, cleaning teeth without toothpaste and rinsing mouth and gargling with sterile water.
Throat swab		E-swab Amies transport medium	4°C	1 Day	Contraindicated in epiglottitis Alert the lab if <i>N. gonorrhoeae</i> or <i>C. diphtheriae</i> is sought as special media is required. For <i>N. gonorrhoeae</i> , send "aptima swab" for molecular detection.
Nasopharyngeal swab for respiratory viruses, pertussis	Advance flexible plastic NP flocked swab along base of nasal cavity to nasopharynx and rotate	Viral transport medium	4°C If delay >72 hours is expected, swabs may be kept at -70°C	1 Day	Pertussis PCR is referred to IWK. Instructional Video to assist with collection: <a href="#">Nasopharyngeal swabbing for respiratory viruses – the 4 D's (vimeo.com)</a> Some respiratory virus testing is seasonal. Only (potential) in-patients or outbreaks are routinely tested for influenza. All other requests require approval by a microbiologist If an outbreak, please indicate the Public Health Services outbreak number.
Other	See specific organism section or contact microbiology				
<b>Sterile site specimen</b>					
Tissue / Biopsy	In OR, collect at least 1cm <sup>3</sup> if possible	Dry Sterile container	Room Temperature	ASAP	No formalin Add only a drop of sterile water/ saline to prevent drying out for small samples. Histology often complements the microbiological testing, especially for fungal or mycobacterial

SPECIMEN	PREPARATION	AMOUNT	TRANSPORT	MAXIMUM ACCEPTABLE TRANSPORT TIME	COMMENTS
					infection.
Sterile fluids	Disinfect skin	Dry sterile container Aerobic blood culture bottle may be useful in addition to sterile container	Room Temperature	ASAP	Do not send in a needle and syringe. If a very small volume is aspirated, it can be washed out of the needle and syringe into a dry sterile container using sterile saline for injection.
<b>Urinary Tract</b>					
Midstream urine	Part labia / retract foreskin, begin stream and catch urine after first few mls See figures 4,5,6 in manual for collection instructions	Dry sterile container	4°C	24 hours	Cleansing of urethral orifice is not needed. (see collection instructions page 13) For STI diagnosis see under genital
Catheter urine	Disinfect collection port, aspirate urine with needle and syringe	Dry sterile container	4°C	24 hours	Do not collect from catheter bags. If chronic catheter (>48 hours), change catheter before sending culture
<b>Wound</b>					
Traumatic skin wound	Disinfect surrounding area. Swab pus and avoid skin contamination	Amies transport medium	4°C	1 Day	Wound swabs are assessed microscopically for quality which determines the workup. Indicate relevant history, e.g. animal bites, environmental water exposure, previous surgery.
Ulcers	Unroof vesicles if present and swab base and fluid.	Viral transport medium, Amies transport medium for bacteria	4°C	1 Day	<b>Do not culture decubitus ulcers.</b> Indicate in history if ulcers are related to travel (possible rickettsial disease – serological diagnosis) Genital ulcers see under Genital female/male.
Other	See specific organism section or contact microbiology				

**Table 4: Specimen Handling in Outbreaks - Include Outbreak Number (assigned by Public Health) on the Requisition**

SPECIMEN HANDLING IN OUTBREAKS					
OUTBREAK TYPE	SPECIMEN TYPES	TRANSPORT MEDIA	TRANSPORT CONDITIONS	LABORATORY PROCEDURES	SPECIAL COMMENTS
Nosocomial or Institutional (including Long Term Care Homes etc)	Dependent on site of infection – see below	If a specific agent is suspected see in Table 3	See Table 3 for specific agents. Generally 4°C is used if transport times are less than 3 days.	Bacterial isolates suspected of being involved should be kept at -70°C (-20°C for short term) until Infection Control or Public Health Services has completed all investigations. Salmonella, E. coli O157, Shigella, and Listeria isolates should be forwarded to CZ for referral to the National Laboratory for typing.	Ensure Infection Control (hospital) or Public Health Services (other institutions) has been informed. Outbreak Numbers should be assigned by Public Health Services and all requisitions connected to the outbreak should include the Outbreak Number in the patient information.
Enteric	Stool	Cary Blair (Enteric)  Dry Sterile  SAF	Keep at 4°C  Keep at 4°C  Room Temp or 4°C	Molecular detection or culture for Salmonella, Shigella, E.coli O157, Campylobacter, (non O157 STEC detected by molecular only) Refer for PCR for Norovirus, Rotavirus, Adenovirus, and for C. difficile antigen and PCR Test for parasites (Giardia / Cryptosporidium) as required.	For molecular testing, directed culture is used to obtain isolates for molecular typing, susceptibilities.  Molecular/Virology Lab CZ.  Indicate outbreak involvement and number on the requisition.
Respiratory	Sputum Bronchial wash Legionella  Nasopharyngeal swab Viral washings or swabs Up to 3 samples should be sent per outbreak	None None Avoid saline  Viral Transport medium	All at 4°C   (Freeze NPS at -70°C if unable to process within 72 hrs)	Bacterial culture for respiratory pathogens. Keep isolates at -70°C for typing. Special media required for Legionella spp. - refer to CZ lab.  PCR for SARS CoV-2, Influenza A, B, RSV, PCR for others seasonally.	Bacterial isolates may be kept at -20°C for short term storage (up to 1 month). Contact a microbiologist to arrange for typing of isolates Discuss testing with the Virologist. Virology specimens should be sent to the CZ promptly or kept at -70°C (not -20°C) if not sent within 3 days. Use Outbreak Numbers provided by Public Health Services.
Skin/wound infection	Crusts, Scrapings, Discharge or drainage swabs	Amies Transport medium  Mycology kits (scrapings)	4°C  Room Temp	Bacterial culture for <i>Staphylococcus aureus</i> / community acquired MRSA / <i>Streptococcus pyogenes</i> (impetigo), Wound infections may have gram negatives, afermentors etc.  Mycology culture for dermatophytes. If associated with spa consider mycobacterial culture (discuss with a microbiologist for specimen type to send).	Isolates may be kept at the request of Infection Control or Public Health Services.  Mycology kits consist of heavy black paper folded to contain the specimen. They are obtainable from the Stores at Central Zone.



**Table 5: Specimen Handling for Specific Conditions or Organisms**

LEGEND	
CZ	Bacteriology / mycology / parasitology laboratory Level 3 / mycobacteriology laboratory Virology / immunology / molecular laboratory QE II HSC
IWK	Pediatric microbiology laboratory IWK Health Centre
CFIA	Canadian Food Inspection Agency
Local	Available in regional hospital microbiology laboratories
NML	National Microbiology Laboratory
RT	Room Temperature
NAAT	Nucleic acid amplification assay
PHS	Public Health Services

QUICK REFERENCE CONTACT LIST		
Testing	Contact	Phone Number
CZ	Dr Glenn Patriquin	902-473-7493
Bacteriology	Dr. Ross Davidson	902-473-5520
PPHLN / Special Pathogens Mycology/ Parasitology/ Mycobacteriology	Dr. David Haldane	902-473-2392
CZ	Dr. Todd Hatchette	902-473-6885
Virology /Immunology/ Molecular	Dr. Jason Leblanc	902-473-7698
IWK Pediatric / Molecular	Dr. Tim Mailman	902-470-7892
Out of Hours for QE II HSC Microbiology On Call Medical Officer of Health	Microbiologist on call MOH on call	902-473-2222 (CZ Locating) & ask to page 902-473-2222 (CZ Locating) & ask to page

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
16S PCR	Sterile fluid/tissue	Sterile container No Formalin	4°C	PCR for 16S ribosomal RNA gene	CZ	7	Used to detect bacteria that cannot be cultured, from sterile sites only. Requires sequencing.
18S PCR	Sterile fluid/tissue	Sterile container No Formalin	4°C	PCR for 18S ribosomal RNA gene	CZ	14	Used to detect eukaryotic organisms (e.g. fungi, parasites). Requires sequencing. Only referred out after discussion with a microbiologist.
Actinomycosis	Tissue	Dry sterile container	4°C	Culture / gram	CZ	10	Moisten with a few drops sterile water/saline if small volume (no preservatives). Send separate specimen for histology.
	Pus	Anaerobic swab or Dry sterile container					A large volume of specimen is able to maintain anaerobic conditions more easily.
	Swab	Anaerobic transport media					Send a "sulfur granule" if possible.
	IUD	Dry sterile container	4°C	Anaerobic culture	CZ	7	Actinomyces spp only assessed
	Smear on slide (include sulfur granules if present)	Slide transport container	RT	Microscopy	CZ	1	Collect "sulfur granules" on gauze placed over wound drainage.
Adenovirus infections - Respiratory - Ocular	NP swab conjunctival swab/ scrapings autopsy material (lung)	Universal transport medium Vitreous fluid transport container	4°C	PCR	CZ	2 - 7	Refrigerate and transport at 4°C. If transport is delayed beyond 3 days it should be frozen at -70°C and transported on dry ice.
Adenovirus infections - Enteric	Stool	Sterile container	4°C	PCR	CZ	3	Included in enteric viral PCR.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Amoebiasis; Amoebic Dysentery	Stool	Parasite transport medium (SAF) Dry Sterile Container	RT	Microscopy PCR	CZ	5	Transport medium (SAF) must be used to prevent disintegration of trophozoites.
	Aspirated material of abscess in liver from edge or base, skin ulcer, biopsy						Consult microbiologist. Blood for <i>E. histolytica</i> serology should be sent for cases of suspected amoebic abscess. Abscess material may be sent for PCR.
Amoebiasis; Amoebic abscess / Dysentery - Serology	Blood, clotted or serum	Gold top separator tube	4°C	EIA	CZ	2 - 3 weeks	Useful for invasive disease and liver abscess. Referred out of province.
Anaplasmosis	Blood, clotted or serum	Gold top separator tube	4°C	PCR	CZ	7	For diagnosis of acute disease within 2 weeks of onset. Can be used to confirm PMN morulae seen on blood smear.
				Serology		2 weeks	For diagnosis of disease after the first week of onset. Referred to NML. Added to all samples sent for Lyme serology.
Anthrax	Swab of vesicles, eschar base, blood culture	Amies transport swab Blood culture vial (aerobic)	4°C RT	Culture	CZ	2	Level 3 organism. Inform lab as special precautions in handling are required. Notifiable condition to Public Health.
Antimicrobial levels Done by Clinical Chemistry							Includes aminoglycosides, vancomycin. Voriconazole and amikacin are referred out.
Antifungal susceptibility	Pure culture	Isolate obtained from culture	4°C	Susceptibility panel	CZ	2 2-3 weeks if referred	Available for yeast. For Molds, discuss any requests with a microbiologist, as these are referred out.
Arbovirus infections	Autopsy material (liver, brain, spinal cord)	Sterile container with sterile gauze moistened in sterile saline to keep hydrated	4°C	PCR	CZ	2 - 3 weeks	Arboviral infections are uncommon in Nova Scotia, but some species are endemic (Jamestown Canyon, Powassen, Snowshoe Hare viruses). Please consult a microbiologist. Referred to the NML.
	Cerebrospinal fluid						
Arbovirus infections - Serology	Blood, clotted or serum	Gold top separator tube	4°C	Hemagglutination inhibition (HI), plaque reduction neutralization titre (PRNT)	CZ	2 - 3 weeks	Referred to the NML.
Ascariasis	Adult worm passed by patient	Sterile container	4°C	Identification	CZ	1	Worm is identified macroscopically and is readily seen, the size of an earthworm.
	Stool	Parasite transport medium	RT	Microscopy		5	Ensure requisition indicates risk factor (e.g. travel, or adult worm seen)
Aspergillosis	Sputum; bronchial washing; pus; biopsy	Sterile container	4°C	Culture / Microscopy	CZ	14	Direct examination may demonstrate hyphae. Repeated isolation useful to confirm significance.
	Blood, BAL	Gold top separator tube BAL sterile container	4°C	Galactomannan	CZ	10	Antigen detection in immunosuppressed patients.
Aspergillosis (Allergic bronchopulmonary) - Serology	Blood, clotted or serum	Gold top separator tube	4°C	Immunodiffusion	CZ	21	Detection of antibody by immunodiffusion test is an aid in the diagnosis. Not for invasive disease. Referred out of province.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Babesiosis	Thin and thick blood film on slide	Lavender top/slide Send stained slide	RT	Microscopy	CZ	2	Blood smear stained in Hematopathology. Resembles <i>Plasmodium falciparum</i> morphologically. Occurs in NS.
	Blood	Lavender tube (EDTA)	4°C	PCR	CZ	10	Confirmatory test. Referred to NML
Bacterial Vaginosis	Vaginal swab (self collected)	Aptima swab	4°C	NAAT	CZ	5	Bedside testing includes: Measure pH (usually >4.5 in BV) and 10% KOH test (fishy odor), wet mount for clue cells. NAAT is included in testing for <i>Trichomonas</i> and <i>Candida</i> .
	Smear of vaginal discharge	Air dried glass slide	RT	Gram stain	local	21	
<i>Bartonella henselae</i> – see Cat scratch disease	Blood, clotted or serum	Gold top separator tube	4°C	Serology to NML	CZ	2 weeks	<i>Bartonella</i> serology. May be useful in culture negative endocarditis. Testing referred out of province to the NML.
Bioterrorism (Public Health involvement)	Clinical specimens (i.e. from patient)	As appropriate for specimen type	4°C	Culture NAAT	CZ	5	Safety hazard. Diagnostic specimens should be referred after consultation with a microbiologist. May be referred.
	Environmental specimens	Legal specimen in sterile container			RCMP		Not done at clinical laboratory
BK virus	Plasma	Lavender tube (EDTA)	4°C	Quantitative PCR	CZ	7	Plasma must be decanted within 24 hours.
Blastomycosis	Scrapings; purulent exudate; aspirate; sputum; CSF, biopsy	Sterile container/ E-swab Amies transport swab	4°C	Culture / Microscopy	CZ	28	Inform lab as culture is hazardous (risk group 3 organism). Travel history to endemic area in North America typical. Not endemic in N.S. (but in NB) For biopsies, ensure that tissue is also sent for histology. No formalin for Microbiology sample.
	blood	Gold top separator tube	4°C	serology	CZ	14	Referred out
Blepharitis	Purulent exudate	E-swab Amies transport swab	4°C	Culture / gram	local	2	
<i>Borrelia burgdorferi</i> – see Lyme disease							
<i>Borrelia spp.</i> Relapsing fever	Blood smear	Giemsa stain	RT	Microscopy	CZ	1	<i>Borrelia</i> seen on blood smear. Acute disease only. Not endemic in this area.
<i>Borrelia spp.</i> Relapsing fever	Blood	Gold top separator tube	4°C	serology	CZ	21	
Botulism	Stool for culture/toxin assay	Sterile container	4°C	Referred out culture	CZ	14	Notifiable disease to Public Health Services. Method requires specialized techniques and resources. Arrange with a microbiologist. Also send food/serum. Referred to National Botulism Reference Centre.
	Blood, isolate or serum	Gold top separator tube	4°C	Toxin assay	CZ	7	
	Remains of meal for culture/toxin assay	Sterile container		Culture, toxin assay	CFIA	14	

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Brain abscess	Aspirated purulent material	Sterile container/ anaerobic transport medium	4°C	Culture	CZ	4	Deliver immediately to the lab. Do not send a swab if there is sufficient material for a container. Anaerobic culture is important to detect S.anginosus group, and strict anaerobes.
Breast abscess	Abscess contents	Sterile container/ anaerobic transport medium	4°C	Culture	Local	2	
Bronchiolitis (infants-viral) – Respiratory	Nasopharyngeal aspirate; auger suction; autopsy material (lung)	Sterile container/virus transport medium	4°C	PCR	CZ	1 - 7	Please indicate suspected virus.
Brucellosis	Blood for culture	Aerobic blood culture vial	RT	Culture	CZ	5	Risk group 3 organism. Brucella is a hazard to laboratory workers. Please indicate on requisition if it is suspected so that special precautions can be taken. Serology is preferred.
	Blood, clotted or serum	Gold top separator tube	4°C	Serology Agglutination test	CZ	14	Vaccine history should be noted. Acute and convalescent serum required. Testing referred out of Province.
Buccal cellulitis	Saline aspirate	Aerobic blood culture vials	RT	Culture	Local	2	Yield is low; many physicians would treat empirically, especially if child is <5. Also see Vincent's angina.
Campylobacter enteritis	Stool	Enteric transport medium (Cary Blair)	4°C	Molecular/Culture	Local	2	Included in routine stool culture and molecular testing. Enteric culture/PCR is not routinely done on patients >3 days in hospital.
Candida auris carriage	Superficial swab axilla/groin	E-swab Amies Transport swab	4°C	Culture	Local	2	Part of Infection Prevention and Control ARO screening.
Candidiasis	Oral swab,	E swab Amies transport swab,	4°C	Microscopy (culture for resistant infection)	Local	1	Microscopic examination is much preferred to culture since it produces a more timely and specific result. Indicate if recurrent infection, as culture will be done.
	Self collected vaginal swab	Aptima swab	4°C	NAAT	CZ	7	Included in testing for BV, Trichomonas. Culture if recurrent infection (as for oral swab)
	Urine	Sterile container	4°C	Culture	Local	2	Yeast from non-sterile sites is not routinely identified to species level. Specific fungal cultures not required. Indicate if recurrent.
	Skin swab/nail clippings	Amies transport swab/Envelope for fungal scrapings	RT	Microscopy	CZ	2	Indicate site of specimen. Indicate if candidiasis is suspected. Skin scrapings are processed for dermatophytes

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
CAPD peritonitis – see Peritonitis							
Cat scratch disease	Blood, clotted or serum	Gold top separator tube	4°C	Serology to NML	CZ	2 weeks	Bartonella serology. Testing referred out of province to the NML. Requires completion of clinical data sheet.
	Tissue	Dry sterile container	4°C	PCR	CZ	2 weeks	Referred out of province.
Chagas Disease – see American Trypanosomiasis							
Chancroid	Ulcer swab	E-swab Amies transport swab	4°C	PCR	CZ	7	Referred out of province for PCR. Consult a microbiologist before sending. Not endemic locally.
Chlamydial infections	Self collected vaginal swab; conjunctival swab/ scraping; urine male – urine Rectal, throat swab	Aptima swab, Sterile container for urines	4°C	NAAT	Local	3 days	First catch urine; patient must not have urinated during the previous 2 hours
Chlamydia infections (lymphogranuloma venereum)	Serology, bubo aspiration, ulcer Chlamydia test as above	Serology - Gold top separator tube, Aptima swab/aspirate Sterile container	4°C	Serology NAAT of aspirate	CZ	7	LGV is caused by specific serotypes of <i>Chlamydia trachomatis</i> . If suspected, please call a microbiologist for assistance. The following PHAC web site may provide some assistance: <a href="http://www.phac-aspc.gc.ca/publicat/lgv/lgv-rdt_e.html#1">http://www.phac-aspc.gc.ca/publicat/lgv/lgv-rdt_e.html#1</a>  Although the current NAAT assay used in-house can detect the LGV serotypes, the method has not been validated for bubo aspirates of ulcer swabs and does not differentiate LGV from other <i>Chlamydia trachomatis</i> serotypes. Positive aptima swabs will be referred to NML for further testing.  Serology is referred to the NML. Appropriate clinical information outlining risk factors and presentation is required by NML before specimen will be processed.
Chlamydia pneumoniae,	Throat swab (preferred); sputum, NPA, BAL	Throat swab (no charcoal); sterile container	4°C	PCR	IWK	3	IWK offers PCR on throat swabs in a combination assay. Testing available daily Mon-Fri during peak respiratory/influenza season.
Chlamydia psittaci	BAL, NPA, throat	Sterile container	4°C	PCR	CZ	14	Referred to NML
Cholera	Stool	Enteric transport medium (Cary-Blair)	4°C	Culture	CZ	2	Indicate area of travel on requisition, or discuss with a microbiologist as special media is required. Notifiable to PHS.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
<i>Clostridium difficile</i> toxin	Stool PCR or EIA	Sterile container	4°C	EIA / PCR- WZ, NZ PCR - EZ, CZ, IWK.	Local	1-3 days	Only liquid/soft specimens are examined. Culture is only indicated to obtain organisms for typing in an outbreak setting. Contact CZ microbiologist to arrange. EIA antigen positive/ toxin negative samples are referred to CZ for PCR testing.
Coccidioidomycosis	Sputum; aspirates; washings; tissue; CSF	E-swab / Amies transport swab / Sterile container	4°C	Culture / Microscopy (Level 3 lab)	CZ	28	Risk group 3 pathogen, Culture is hazardous, please inform the lab if suspected. Send tissue also for histology if available.
Coccidioidomycosis – Serology	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ	14	Referred out of province.
Conjunctivitis – Acute	Conjunctival viral swab	Universal transport medium	4°C	PCR	CZ	14	Viral causes include HSV, VZV, and adenovirus. Refrigerate and transport at 4°C. If transport is delayed beyond 3 days it should be frozen at -70°C and transported on dry ice.
Covid 19	NP swab	Viral transport	4°C	PCR	Local	1	Rapid antigen tests may be available in the community. Notifiable to PH. Ideal specimen is a nasopharyngeal swab (NPS) or aspirate. Nasal swab combined with throat swabs are an option if NPS is not possible. Endotracheal specimen, is more sensitive than NPS in lower tract disease.
<i>Coxiella burnetii</i> (Q fever)	Blood, clotted or serum	Gold top separator tube	4°C	IFA for phase I/II titres.	CZ	14	Because of the high risk of laboratory acquired infection, we do not attempt isolation of <i>C. burnetii</i> . Acute and convalescent serum required. Phase I and II antibodies are used to differentiate acute and chronic forms of Q fever. This testing is done at the NML.
Coxsackie Virus Infections – see Enterovirus							
CPO screening Carbapenemase producing organism	Rectal Swab	E swab Amies Transport swab	4°C	Culture	Local	2	Part of Infection Prevention and Control ARO screening.
Cryptococcosis	Swabs; aspirates; CSF; sputum; tissue	E-swab/ Amies transport swab/Sterile container	4°C	Culture	CZ/local	14	Biopsy material should also be sent for histological examination.
	Blood	Aerobic blood culture vials	RT	Culture		5	Cryptococci will grow in aerobic blood cultures.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
	Cerebrospinal fluid antigen detection	Sterile container	4°C	Antigen detection		1	Antigen detection is a sensitive and rapid test. Consult a microbiologist to arrange testing.
Cryptosporidiosis	Stool; duodenal contents	Sterile container / SAF	RT	EIA/Microscopy	CZ	5	Included in stool parasite EIA screen.
	Biopsy material (enteric mucosa)	Formalin	RT	Microscopy	Anatomic Pathology		Biopsies should be sent to Anatomical Pathology. Tissue forms are not acid fast.
Cytomegalovirus infection – Respiratory	Bronchial washing	Sterile container	4°C	PCR	CZ	1 - 7 days	Refrigerate specimens for up to 48 hours; for long term storage, freeze at -70°C.
Cytomegalovirus infection – Urine	Urine	Sterile container	4°C	PCR	CZ	1 - 7 days	Prolonged shedding of CMV in urine may be seen in congenital CMV infection.
Cytomegalovirus infection – Tissue	Biopsy/ Autopsy materials	Sterile container	4°C	PCR	CZ	1 - 7 days	Refrigerate. Ensure histology is also performed (separate specimen of tissue in formalin).
Cytomegalovirus infections – Blood for viral load	blood	Lavender top (EDTA)	4°C	Quantitative PCR	CZ	3 days	Quantitative PCR is ONLY used for screening for CMV in transplant patients to direct pre-emptive/therapeutic decisions. Test not performed on holidays and week-ends. To ensure your sample is included in the run, please submit it to the lab 24 hours prior to the run dates (check lab for times). Ship EDTA blood to lab ASAP. Or separate plasma from EDTA blood within 24 hours of collection. Transport plasma to lab at 2-8°C within 24 hours. Only one specimen per patient per week will be processed. Note that in localized disease, the viral load test may be negative.
Cytomegalovirus infections - Serology	Blood, clotted or serum	Gold top separator tube	4°C	acute infection: IgM; immune status IgG	CZ	1-2 days	CMV IgM testing done weekly. CMV IgG testing available daily. Avidity testing available for pregnant patients. Diagnosis - acute and convalescent sera required. Immune status - single serum only required.
Decubitus ulcers	Superficial swabs not cultured						Because it is impossible to separate pathogens from colonizing organisms, we suggest antibiotic coverage of both aerobic and anaerobic organisms.
Dermatophytosis	Skin scrapings; nail clippings; hair (root ends)	Envelope with black construction paper (skin scraping kit)	RT	Culture / Microscopy	CZ	21	Direct exam with microscopy may show fungal elements. Culture confirmation may take >1 week. Use transport kit provided by Stores at the CZ.
Diarrhea – Bacterial	Stool	Enteric transport medium (Cary Blair)	4°C	Culture PCR	Local CZ	2	Routine culture includes Salmonella, Shigella, Campylobacter, Yersinia and <i>E. coli</i> 0157. PCR includes Salmonella, Shigella, Campylobacter and STEC. Travel history adds extended panel of Vibrio, Yersinia, ETEC, and Plesiomonas



SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Diarrhea outbreak EHEC request	Stool	Dry Sterile Container	4°C	PCR	IWK,CZ	7	EHEC, including E. coli O157, produce Shiga like toxins. Isolates detected in PCR panel.
Diarrhea – Parasitic	Stool	Parasite transport medium (SAF)	4°C	EIA for Cryptosporidium and Giardia Microscopy	WZ / CZ	5	Stool specimens for parasitic disease are initially tested for cryptosporidium and giardia by EIA. Microscopy will ONLY be performed if the patient is < 16 years of age or there is accompanying history of recent travel. Send 1 specimen initially; For testing of additional samples discuss with a microbiologist.
Diarrhea – Viral	Stool	Sterile container	4°C	PCR for Norovirus, Rotavirus, and Adenovirus	CZ IWK	2 - 3 days	Liquid sample is preferred. If an outbreak is suspected, report it to PHS for an outbreak number and consult a microbiologist.
Diphtheria	Swabs of nose; throat; ear or skin	E-swab Amies transport swab	4°C	Culture (special media required, notify lab)	CZ	2	Discuss with a microbiologist prior to submission of specimens, as diphtheria is not endemic in NS. Notifiable to PHS.
Diphyllobothrium (Fish Tapeworm) (Dibothriocephalus latus)	Stool	Parasite stool transport medium (SAF)	4°C	Macroscopic and microscopic analysis	CZ	5	Endemic in western Canada. Microscopy will ONLY be performed if there is accompanying history of potential exposure or recent travel.
	Unfixed segments of worm in stool	Sterile container				2	Send in a dry sterile container. Do not send in formalin, as it prevents clearing of segments.
Ear <i>Otitis externa</i> – Bacterial	Ear drainage swab	E-swab Amies transport swab	4°C	Culture	Local	2	<i>P. aeruginosa</i> and <i>S. aureus</i> significant
Ear <i>Otitis externa</i> – Fungal	Debris from ear canal			Culture	CZ	14	Fungi may cause a chronic infection, especially <i>Aspergillus niger</i> .
Echinococcosis <i>E. granulosus</i>	Aspirated fluid from cyst; excised cyst	Sterile container	4°C	Microscopy	CZ	1	Needle aspiration of cyst may lead to anaphylaxis or spillage of contents which may lead to spread of infection. Endemic in western Canada. Biopsy required for <i>E. multilocularis</i> found in Europe and Alberta. ID involvement suggested.
	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ	14	Referred out of province.
ECHO Virus infections – see Enterovirus							
Ehrlichiosis (HME, human monocytic ehrlichiosis)	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ	14	Less likely than Anaplasmosis, as NS is outside the endemic area. Travel history and any history of tick bite should be provided. Provide information to allow contact of ordering physician. Referred to NML.
	Blood	Lavender top (EDTA)	4°C	PCR	CZ	14	Most sensitive in the first week after onset.



SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Encephalitis, viral	2 ml of cerebrospinal fluid	Sterile container	4°C	PCR for enterovirus, herpes viruses and arboviruses (including WNV)	CZ	1-14	HSV is the most common cause of sporadic viral encephalitis in Nova Scotia. Arboviral infections are uncommon in Nova Scotia, but Jamestown Canyon, Snowshoe Hare and Powassen viruses may be considered. Document history of immunization/ travel if arbovirus suspected (esp WNV). Molecular test requires microbiologist approval and completion of molecular requisition with appropriate history (will be sent by lab). Concurrent serology for WNV and arboviruses should be collected. Provide information to allow contact of ordering physician
	Blood, clotted or serum	Gold top separator tube		HI / PRNT testing for arboviruses EIA for WNV		2-4 weeks	Acute and convalescent sera required. Arbovirus (e.g. Jamestown Canyon Virus, Snowshoe Hare Virus, Powassen virus and others suggested by travel history) serology will be referred to the NML. Serology is the preferred diagnostic test for WNV encephalitis as it is generally positive by the time CNS symptoms appear and the virus often disappears (see West Nile Virus encephalitis). Referred out of province
Endocarditis, bacterial	Blood	Aerobic/anaerobic blood culture vials	RT	Culture	Local	5	Three blood cultures sets within 24 hours only. Isolates should be kept for at least 3 months (at -70°C if possible), in case of need for further testing (e.g. MIC)
Enterobiasis	Vaseline swab of perianal skin	Vaseline swab	4°C	Microscopy	CDHA	5	Collect perianal swab at night or early morning. Swabs available from QE II Special Pathogens (473-6887).
Enterovirus infections	Stool; autopsy/biopsy material	Sterile container/viral transport medium	4°C	PCR	CZ, IWK	2-7 days	Enteroviruses may be recovered from the GI tracts of healthy individuals. Therefore, stool for enterovirus PCR will only be performed on immunocompromised children or from cases with acute flaccid paralysis as per the PHAC guidelines. PCR can be performed under special circumstances. Please consult a microbiologist.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
	Cerebrospinal fluid	Sterile container		PCR		1	Aseptic meningitis is a common presentation during the months of June to October. Usually due to an enterovirus at that time.  PCR is test of choice as culture of CSF has a low yield. PCR will not be performed on CSF with normal cell count, protein levels or glucose unless the patient is immunosuppressed or less than 6 months of age. PCR approval form must be completed before testing can be done. Please consult a microbiologist.
	Throat/nasal swab; vesicle fluid; rectal or other swab	viral transport medium		. PCR available under special circumstances		2 – 7 days	Throat / nasal sample tested on immunocompromised children only. Refrigerate and transport at 4°C. If transport is delayed beyond 3 days it should be frozen at -70°C and transported on dry ice.
Epstein Barr Virus – see Infectious mononucleosis							
EBV Viral load	Blood	Lavender tube (EDTA)	4°C	Quantitative PCR	CZ	7	Immunosuppressed patients only. Restricted to Infectious Disease, Transplant and Hematology
Erysipelas	Exudate from infected area or body fluid; biopsy	E-swab, Amies Transport medium swab; sterile container	4°C	Culture	Local	2	Aspirates of cellulitis are not recommended. If considered necessary for patient care, use aerobic blood culture vial.
	Blood for culture	Aerobic/anaerobic blood culture vial	RT			5	
<i>Erythema infectiosum</i> (Fifth disease)	Blood, clotted or serum	Gold top separator tube	4°C	EIA acute infection (IgM)	CZ	7	Human parvovirus B-19 is the causative agent. IgM is indicative of recent/acute infection. The virus can cause transient aplastic crisis and/or arthralgia. Virus can infect fetus. Pregnant women with acute infection should be assessed by high risk obstetrician. PCR detection of the virus will only be done under specific circumstances with consultation with a microbiologist Routine screening for immunity is not recommended.
Erythrasma (Pseudomycosis)	Skin scrapings from intertriginous area	Envelope with black construction paper	4°C	Culture / gram	CZ	2	Lesions fluoresce coral red using UV light. Gram stain may show gram positive rods.
<i>Escherichia coli</i> O157 – see EHEC request also	Stool	Enteric transport medium (Cary Blair)	4°C	Culture	Local	2	Stools are routinely processed. In patients with hemolytic uremic syndrome (HUS) consider shiga like toxin gene PCR.
Eye infections – Amoebic see Acanthameobiasis							

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Eye infections – Bacterial	Conjunctival swab or scrapings and smear	E-swab Amies transport swab/bedside slide	4°C	Culture	Local	2	Susceptibility testing of isolates may overcall resistance because the antimicrobial levels in eye drops are higher than serum levels.
Eye infections – Chlamydial	Conjunctival swab	Aptima swab	4°C	NAAT	CZ		
Eye infections – Fungal	Corneal or conjunctival scrapings	Sterile container	4°C	Culture	CZ	28	Filamentous fungi may cause corneal infections in contact lens wearers.
Food poisoning/ intoxication/infection	Remains of meal, container or package	Sterile container	4°C	Culture	CFIA		Involve Public Health Services. Minimum of 50 gm of specimen required. Food specimens should be sent to the CFIA lab by a CFIA inspector.
	Vomit				Local	2	Vomit should be neutralized with baking soda at time of sampling or on receipt in laboratory (1/2 tsp/10 ml specimen).
	Stool						Indicate relationship to outbreak, symptoms and incubation period.
Francisella tularensis (tularemia or localized ulcer)	Blood, Aspirate of skin lesion/lymph node Biopsy	Blood culture vials Sterile container	RT 4°C	Culture	CZ	4	Risk group 3 pathogen. Safety Hazard. Phone CZ microbiology processing area laboratory prior to sending (473-2120). Notifiable to PHS
	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ		Preferred specimen. Referred out of province.
Fungal culture – Superficial	Skin scrapings; nail clippings; hair (root ends)	Envelope with black construction paper	RT	Microscopy and culture	CZ	21	Use of paper kits (available from CDHA Stores) ensures the specimen is completely used.
Galactomannan See Aspergillosis							
Giardiasis	Stool; duodenal aspirate	Parasite transport medium (SAF)	4°C	EIA	CZ	5	If patient has traveled, or immigrated, indicate on requisition.
Gonorrhea	Self collected vaginal swab, males/females – urine Throat and/or anal swab	Aptima swab Dry sterile container (urine)	4°C	NAAT	CZ	2	Smears are no longer performed as NAAT testing is highly sensitive. Self collected vaginal swab is preferred for females.
Gonorrhea culture	Endocervical swab Urethral swab	E-swab Amies transport medium	4°C	Culture	CZ	2	NAAT is more sensitive for diagnosis. Culture allows susceptibilities for treatment failure, can be done at 3 days for test of cure, and is useful for forensic/legal samples
Haverhill fever – see <i>Streptobacillus spp.</i>							
<i>Helicobacter pylori</i> infection	Gastric Biopsy	Helicobacter transport medium	4°C	Culture	CZ	7	Urease positivity of biopsy has a very high positive predictive value.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
	Stool	Dry sterile container		Stool antigen detection	IWK, Colchester, Yarmouth	5	Detects active infection. No isolate for other testing.
HUS (Hemolytic Uremic Syndrome)	Stool	Enteric Transport Medium (Cary Blair)	4°C	PCR	CZ/IWK	3	EHEC, including E. coli O157, produce Shiga like toxins. Serotypes other than O157 must be detected by PCR.
Hepatitis A (Immune status)	Blood, clotted or serum	Gold top separator tube	4°C	CMIA: IgG	CZ	3	HAV IgG: routine pre-immunization serology is not cost-effective in Nova Scotia, where the population is unlikely to have been previously infected by HAV. Pre-immunization serology can be considered in older Canadians, people from HAV endemic areas or those with a past history of jaundice (Canadian Immunization Guide, 2012).
Hepatitis B	Blood, clotted or serum Viral load serum only	Gold top separator tube	4°C	CMIA	CZ	HBsAg are run daily, Anti-core are run daily. Anti-HBs are run daily HBeAg/Anti-HBe and HBV VL are run in house	For immune screening, request testing for anti HBs only. For diagnosing acute/chronic HBV infection, request HBsAg testing. Testing for HBcAb is only performed under special circumstances. HBeAg is a serology marker for infectivity. Testing for HBeAg, anti HBc IgM, along with HBsAg subtyping (referred out of province), should be considered in outbreak/ transmission investigation. For VL testing, serum is used: serum spun from the clot within 24 hours of collection. Persistent HBsAg and HBeAg in patients with elevated ALT levels indicate the likelihood of chronic active hepatitis B.
Hepatitis C	Blood, clotted or serum. Screen plus HCV PCR confirmation requires minimum volume of 1.25 ml	Gold top separator tube	4°C	CMIA Immunoblot assay Quantitative PCR	CZ	EIA screen daily (M-F) PCR/RIBA 1-2 weeks	Positive EIA tests are confirmed by PCR/RIBA. EIA screen are done daily. Repeat testing for RIBA + /PCR- should be sent after a 10-12 week interval.
Hepatitis C Genotyping	Blood, clotted or serum	Gold top separator tube	4°C	NAAT	CZ	2 weeks	Only available for patients undergoing therapy.
Hepatitis C viral load	Blood clotted or serum Minimum volume: 1.25 ml May require two tubes to get sufficient volume	Gold top separator tube	4°C	Quantitative PCR	CZ	2 weeks	Serum must be spun from the clot within 24 hours after collection. Only available for patients undergoing therapy, and as a confirmatory test.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Hepatitis D (Delta hepatitis, Delta agent)	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ	2 weeks	Performed only on patients positive for HBsAg. Persons immune to HBV (ie. HBsAb positive) are immune to HDV as well. Referred out of province.
Hepatitis E	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ	2 weeks	Referred out of province.
	Blood	Lavender tube (EDTA)	4°C	PCR	CZ	7	Discuss with a Microbiologist. Only available with special arrangement with NML.
Herpes simplex virus infections	Vesicle fluid; swab or scraping.	Universal transport medium	4°C	PCR	CZ	3 days	Recent guidelines suggest that prenatal HSV cultures are not necessary, even in women with a history of previous infections. HSV is detected by PCR. If a resistant virus is suspected in an immunocompromised patient please indicate this on the requisition to allow further investigation.
	Biopsy and autopsy material (brain, viscera) vitreous, BAL	Sterile container					1
	Cerebrospinal fluid (minimum of 200 ul)	Sterile container					1
HHV-6	Cerebrospinal fluid (minimum of 200 ul)	Sterile container	4°C	PCR	CZ	5	Included in CSF Meningitis/encephalitis panel
Histoplasmosis	Sputum; bronchial washings; tissue, swab/scrapings	Sterile container	4°C	Culture - Microscopy	CZ	28	Risk group 3 organism. Potential lab hazard. History of travel needed. Not endemic in NS. Send separate biopsy for histology in formalin. May be seen on giemsa stain of bone marrow.
	Blood for culture not recommended	Contact laboratory	RT	Culture	CZ	7	Blood culture for histoplasma is insensitive. Bone marrow culture may be useful in disseminated disease..
	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ	14	Referred out of province.
	Urine, serum	Dry sterile container Gold top Separator tube	4°C	Antigen detection	CZ	14	Useful in acute disease only. Cross reacts with other fungal infection, +ve rheumatoid factor. Referred out of province.
Hookworm infection	Stool	Parasite transport medium (SAF)	4°C	Microscopy	CZ	5	Ova identified in stool. Larvae may be seen if stool is not processed and remains at room temperature. Travel history expected.
Hot -tub folliculitis – see Swimming pool folliculitis							

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DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Human Immunodeficiency Virus – Diagnosis	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ	1 for screen	Screening EIAs are performed daily. Confirmatory Testing is done M-F.
Human Immunodeficiency Virus – Viral load	Blood Minimum volume: 1.25 ml May require two tubes to get sufficient volume	Lavender top (EDTA)	4°C	Quantitative PCR	CZ	14	HIV viral load is available as laboratory markers for decision-making and to monitor therapy. Involve ID. Send specimen to lab ASAP. <b>Plasma must be separated from EDTA blood within 24 hours after collection (a special sticker should be used in CZ).</b>
Human T-cell lymphotropic virus (HTLV I or II)	Blood, clotted or serum	Gold top separator tube	4°C	CMIA	CZ	3	Screen test available daily. Confirmatory test referred out of province.
Infective endocarditis	Blood	Aerobic/anaerobic blood culture vials	RT	Culture	Local/CZ	5	Two to three blood culture sets within 24 hours are adequate.
Infectious mononucleosis	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ	1 day (during weekdays)	EBNA positivity indicates previous resolved infection.
Influenza	Nasopharyngeal swab, endotracheal secretions	Flocked swab viral transport medium	4°C	PCR	CZ	1	PCR will be performed on 3 specimens from acute and long term care facility outbreaks during the influenza season. Ideal specimen is a nasopharyngeal swab or aspirate. Throat swabs are sub optimal and may lead to a false negative result. Endotracheal specimen in severe disease is more sensitive than NPS. Specimen should arrive at the laboratory by 9AM to ensure same day results.
	Autopsy material (lung)	Sterile container/viral transport medium				1-7	Specimen should arrive at the laboratory by 9 AM to ensure same day results.
Isolate of bacterium for further testing	Pure culture of isolate	E-swab Amies transport swab	4°C	Biochemical / molecular identification	CZ	14	Provide completed PPHLN isolate referral form.
Joint infection – Acute	Synovial fluid	Aerobic blood culture vial/sterile container	RT 4°C	Culture / gram	CZ	4	Do not transport in capped syringe. Inject small volume (5 ml) into aerobic blood culture vial. Larger volumes can be sent in a sterile container and have microscopy.
Joint infection – Chronic	Synovial fluid	Sterile container	4°C	Culture / gram Acid fast	CZ	Up to 8 weeks	Fungal and mycobacterial causes are more frequent in chronic disease and should be specifically requested. Lyme serology may be useful in addition.
Laryngitis	Throat swab or NP aspirate	E-swab Amies transport swab	4°C	Culture	CZ	2	Cultures are of limited value. If patient has associated pharyngitis, check for <i>S. pyogenes</i> . The expense of viral cultures is usually not justified.

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DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Legionellosis – Respiratory or systemic	Respiratory tract washing; sputum; lung tissue	Sterile container	4°C	Culture/ gram	CZ	7	Immunocompromised patients are at greater risk.
	urine	Sterile container	4°C	Legionella urinary antigen	CZ	1	Detects serogroup 1 only, the most common type locally.
Legionellosis – Environmental	Water Environmental sources	1 litre sterile container	4°C	Culture	CZ	7	Should only be done at request of institution's infection control or medical officer of health.
Leishmaniasis, muco-cutaneous form	Biopsy from edge or base of skin lesion; smear from same site	Slide/Sterile container	4°C	Microscopy. Referred for culture/PCR	CZ	2	Organism morphologically identified on a Giemsa stained slide (stained in Hematopathology). Alert laboratory if suspected. Culture requires specialized media that must be obtained from the reference centre. Referred for culture/PCR.
Leishmaniasis, visceral – Systemic	Thick/thin smears	Sterile container/Lavender top	4°C	Microscopy	CZ	3	Identified microscopically. Alert laboratory if suspected.
	serum	Gold top separator tube	4°C	rK39 antigen detection	CZ	14	Detects visceral spread in immunocompetent patients with cutaneous disease. Referred out.
Leishmaniasis – Serology	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ	14	Referred out of province.
Leprosy	Nasal scrapings; biopsy of tissue affected (usually skin nodules) skin slit slides	Slide/Sterile container	4°C	Microscopy Referred for PCR	CZ	14	Consult a microbiologist. Organism cannot be cultured. Tissue biopsy referred out of province for PCR. Air dry slides only for follow up staining at US National Hansen's Disease Reference Laboratory, Baton Rouge LA.
Leptospirosis	Blood Urine CSF	Lavender top (EDTA) 5 ml Fresh 0.5 ml	4°C	PCR	CZ	21	Referred to NML.
	Blood, clotted or serum	Gold top separator tube	4°C	Serology - referred for culture	CZ	14	Referred out of province.
Listeriosis	Blood for culture	Aerobic/anaerobic blood culture vials	RT	Culture	Local	5	Notifiable to PHS. Intrinsically resistant to all cephalosporins.
	Cerebrospinal fluid	Sterile container	RT	Culture/ gram		4	



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DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Lyme disease ( <i>Borrelia burgdorferi</i> )	Blood, clotted or serum CSF	Gold top separator tube	4°C	EIA serology	CZ	7	Diagnosis of early localized Lyme disease is primarily a clinical one. The performance of the serology depends on the stage of infection and is relatively insensitive in the early stages but performs well in late stages (e.g. arthritis). Nova Scotia is considered a higher risk region and Lyme disease should be considered in the appropriate clinical context. Patients presenting with characteristic erythema migrans should be treated empirically, at this stage serology is not indicated. Notifiable to PHS. We use Two different EIAs in the Modified Two Tier Testing algorithm (MTTT) Re-infection cannot be reliably diagnosed using serology as antibodies can persist for decades For CSF testing lyme serology must be positive and collected on same day. Referred out
	Joint fluid, CSF	Sterile container	4°C	PCR	CZ	14	Referred to NML
Lymphogranuloma venereum – see Chlamydia infection							
Malaria	Thick and thin blood smears from finger prick blood	Slide/Lavender top	4°C	Microscopy	Local hematopathology lab	1	Urgent test. Performed in Hematopathology. Quantitation of parasitaemia useful. Provide a travel history. Negative smear does not rule out malaria, repeat 12-24 hours later X2. Rapid test ~95% sensitive for <i>P. falciparum</i> , ~70% for other Plasmodium species.
Measles – Respiratory ACUTE DISEASE SUSPECTED	Throat washings; NP swab, urine	Universal transport medium / sterile container	4°C	PCR	CZ	7	Collect respiratory specimen within 4 days after onset of rash. Collect urine within 7 days after onset of rash. Suspect cases should be reported to Public Health Services by telephone as soon as they are suspected.
	Blood, clotted or serum	Gold top separator tube	4°C	IgM EIA	CZ	3	Collect specimen between 3 and 7 days after onset of rash. Specimens collected prior to this may be falsely negative and will require a follow up convalescent specimen. Suspect cases should be reported to Public Health Services by telephone as soon as they are suspected. All Measles IgM requests will get a “rash panel” consisting of rubella and parvovirus B19 serology in addition to the measles IgM. Laboratory should be notified to ensure rapid turn around time for results.



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DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Measles – SSPE	CSF and serum	Sterile container (CSF) and Gold top separator tube for serum	4°C	PCR and serology	CZ	7	Measles can be confirmed in CSF by PCR in encephalitis cases. Consult microbiologist if SSPE is suspected. Requires comparison of serum and CSF antibody titres and total serum protein levels. CSF and serum must be collected on the same day.
Measles – Tissue	Autopsy material (lung, brain)	Sterile container	4°C	PCR	CZ	7	Measles virus is present in throat and nasopharyngeal secretions during the acute stage and secreted in urine for at least 7 days after rash onset.
Measles – Serology IMMUNE STATUS	Blood, clotted or serum	Gold top separator tube	4°C	IgG EIA	CZ	3	
Meningitis, bacterial	Cerebrospinal fluid	Sterile container	4°C	Culture / gram PCR	Local	2	Notifiable to PHS. PCR panel includes bacterial causes and is rapid. 16S rRNA gene PCR may be performed in patients with culture negative meningitis whose clinical course and CSF findings are compatible with bacterial meningitis (consult microbiologist).
	Blood for culture	Aerobic/anaerobic blood culture vials	RT	Culture		5	
Meningitis, fungal	Cerebrospinal fluid	Sterile container	RT	Culture. Cryptococcal antigen detection	CZ	14	Cryptococcal Ag done on consultation with microbiologist. We do not perform India Ink as it is less sensitive than cryptococcal antigen testing.
Meningitis, viral/aseptic – CSF	Cerebrospinal fluid	Sterile container	4°C	PCR	CZ	1	Viral meningitis commonly presents during the months of June to October. Usually due to an enterovirus at that time.  PCR is test of choice as culture of CSF generally has a low yield. PCR will not be performed on CSF with normal cell count, protein levels or glucose unless the patient is immunosuppressed. PCR approval form must be completed before testing can be done. Please consult a microbiologist. WNV PCR is referred out only after consultation with a microbiologist. Occasionally primary HSV-2 infections can present with aseptic meningitis.
Meningitis, viral/aseptic – Respiratory	Nasopharyngeal swab Throat washings	Universal transport medium/Sterile container	4°C	PCR	CZ	2 - 7 days	See above.
Meningitis, viral/aseptic – Serology	Blood, clotted or serum	Gold top separator tube	4°C	EIA: WNV IgM HAI; PRNT	CZ	7 - 21	Arboviral infections are uncommon in N.S. but Powassen, Jamestown Canyon, Snowshoe Hare viruses are locally endemic. Specimens for West Nile Virus infection must be referred out of province (serology or CSF NAAT testing). Other viral tests are also referred out of province. Travel history is required.

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Meningococcal infections	Cerebrospinal fluid	Sterile container	RT	Culture/ gram. PCR	Local	4	Blood cultures and other sterile fluid cultures should not be refrigerated during transport. Meningococcal isolates should be typed (see below). Notifiable to PHS.
	Blood for culture	Aerobic blood culture vial	RT	Culture		5	
Meningococcal isolate for typing	Culture isolate	E-swab or Amies transport medium	RT	Agglutination	CZ	2	Isolates are referred to NML for further typing. Typing is important to track possible outbreaks and for immunization decisions by MOH.
Molecular detection of bacteria – see 16S PCR (at beginning of table)							
Molluscum – see Poxvirus infection							
Monkeypox – see Mpox							
Mpox	Lesion swab Crusts/scab Vesicular fluid Tissue biopsy Rectal swab Cerebrospinal fluid	Swabs in Universal transport medium Other samples in dry sterile container	4°C	NAAT	CZ	7	Swabs of multiple lesions may increase sensitivity. Rectal swab if proctitis is present. If there will be delay in transport >72 hours, freeze at -70C. Serology is not available. Notifiable to PHS.
MRSA Screen	Nares and groin swab	E-swab Amies transport medium	RT	Culture	Local	2	Typing of isolates may be done in outbreaks. A single swab can be used for both sites.
Mumps	Buccal swab	Universal transport medium	4°C	PCR	CZ	14	Buccal swabs are the ideal specimen for the diagnosis of acute mumps infection but shedding lasts usually only 5-7 days. Send urine after 4 days of illness.
	Urine	Sterile container				14	Also send buccal swab.
	Cerebrospinal fluid in meningitis	Sterile container				24 hours	PCR is test of choice as culture of CSF generally has a low yield. PCR will not be performed on CSF with normal cell count, protein levels or glucose unless the patient is immunosuppressed. PCR approval form must be completed before testing can be done. Please consult a microbiologist.

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DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
	Blood, clotted or serum	Gold top separator tube	4°C	Serology EIA	CZ	2 weeks	IgM testing is insensitive for diagnosis of acute infection. It is only done at the request of Public Health when the window for molecular sampling has passed (2 weeks after symptoms). IgG testing for immunity.
Mushroom, suspected poisonous	Whole mushroom	Sterile container	4°C	Macroscopic examination	CZ		Referred out. Maintain specimen in good condition as identification is based on morphology.
Mycobacterial infection – TB	Sputum; urine; aspirates, biopsy	Sterile container	4°C	Culture GeneXpert PCR	CZ	8 weeks 1-2 days for PCR	Direct stain for acid fast organisms is performed on treated and concentrated specimens, which takes 1-2 days. Swabs are not useful for diagnosing most mycobacterial infections. GeneXpert done routinely if smear positive and on request for PHS, ID. For other cases discuss with microbiologist
	Gastric lavage	Sterile container	4°C	Culture	CZ	8 weeks	Low yield specimen, not examined microscopically because of false positives.
Mycobacterial infection – Non Tuberculous Mycobacteria (e.g. MAC, M. abscessus etc)	Sputum, urine, aspirates, biopsy	Sterile container	4°C	Culture	CZ	8 weeks	2 positives from non sterile sites or 1 from invasive/sterile site for significance. Tissue preferred to sterile fluids. Histology should also be sent for tissue.
	Blood (MAC only)	MycoF Lytic (red top) blood culture vial,	RT	Culture	CZ	6 weeks	Specialized media required; available from Microbiology (473-2120).
Mycoplasma pneumoniae infection – Respiratory	Throat swab (preferred); sputum, NPA	Throat swab (no charcoal); sterile container	4°C	NAAT	IWK	3	IWK offers PCR on throat swabs in a combination assay with Chlamydia pneumoniae. Testing available daily Mon-Fri during peak respiratory/influenza season.
Mycoplasma genitalium infection – Urogenital, neonatal, other	Genital swab, urine	Aptima swab	4°C	NAAT	CZ	5	Culture no longer offered
Neisseria infection – see gonococcal or meningococcal							
Nocardiosis	Sputum; abscess aspirates; biopsies,	Sterile container	4°C	Culture / gram	CZ	21	Please indicate on the requisition that you suspect this organism. May be detected in mycobacterial cultures.
Nose swab	Nasal swab	E-swab Amies transport medium	4°C	Culture for MRSA (combine with groin swab) or S. aureus	Local	2	Culture for S. aureus in setting of multiple S. aureus infections or MRSA screening. Not suitable for diagnosis of sinus infection because of contamination by normal flora.
Osteomyelitis	Purulent discharge; pus aspirated by puncture	Sterile container/Swab	4°C	Culture / gram	Local	2	Superficial cultures of sinus drainage is usually misleading. Organisms other than S. aureus isolated from sinuses often represent colonization.

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	Bone Biopsy	Sterile container	4°C	Culture / gram		4	Multiple surgical specimens are superior.
	Blood for culture	Aerobic/anaerobic blood culture vials	RT	Culture		5	Blood cultures are usually negative in patients with chronic osteomyelitis, so their use is seldom justified for that condition.
Ova & parasites – Also see individual parasites	Stool	Parasite transport medium (SAF)	4°C	Microscopy	CZ	5	EIA is used for Giardia/Cryptosporidium only. Microsporidium must be specifically ordered. Full O&P must be specifically requested for other parasites with risk factor indicated (travel, immigration). Trophozoites will disintegrate if specimen is not in SAF. Indicate if worm seen or suspected, if so, proglottids/ worm will be sought in the specimen.
Parainfluenza virus infection	Nasopharyngeal aspirates/swabs	Universal transport medium	4°C	PCR	CZ	2 - 7 days	Part of respiratory virus panel. If transport is delayed beyond 3 days it should be frozen at -70°C and transported on dry ice.
Paralytic illness, viral	Stool; tissue; CSF	Sterile container / Universal transport medium	4°C	PCR	CZ	7	These may be secondary to enteroviruses or arboviral infection such as WNV. Polio samples are referred to NML. Consult a microbiologist on optimal specimen sample and test.
	Throat washings; swabs	Universal transport medium					
Paronychia, mycotic	Nail scrapings/clippings	Envelope with black paper	4°C	Culture	CZ	7	Clean nail with 70% alcohol prior to sampling. Use the mycology transport kit provided.
Pediculosis	Adult louse; nymphs or eggs "nits"; hair	Sterile container	4°C	Macroscopic	CZ	2	For <i>Pediculus humanus</i> , check seams of clothing for lice.
Peritonitis	CAPD fluid, Ascitic fluid Paracentesis fluid	Aerobic Blood culture vial Sterile container	RT 4°C	Culture	Local	5	Direct Gram stain not available if collected in Blood Culture vial. 50ml CAPD fluid should be centrifuged and the pellet cultured in Blood Culture vials.
Pharyngitis, viral							Viral studies are usually not justified for this clinical indication. See also under individual viral infections.
Pinworm disease – see Enterobiasis							
<i>Pityriasis versicolor</i> – see <i>Tinea versicolor</i>							
Plague	Blood, bone marrow, bubo aspirate, sputum	Blood Culture vial Sterile container	RT 4°C	Culture	CZ L3	4	Safety Hazard. Phone CZ microbiologist and processing area prior to sending (473-2120). <i>Yersinia pestis</i> is not endemic in Nova Scotia and is notifiable to PHS.
<i>Pneumocystis jirovecii</i> (PCP)	Biopsy or autopsy material (lung or other tissue)	Sterile container	4°C	PCR/DFA	CZ	1	PCR is used to screen as sensitive but not specific for disease. DFA is specific but not sensitive for disease in non HIV patients.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
	Induced sputum Bronchial washings/ lavage						Specimens must be stained within 24 hours for DFA. Sputum examination is usually reserved for patients with HIV or transplant. DFA Sensitivity in sputum - 70% (in BAL - 95%), specificity in sputum and BAL >95%. PCR is done first. Samples in formalin should be referred for histological staining.
Pneumonia, bacterial	Sputum; bronchoscopic specimens; endotracheal tube aspirate	Sterile container	4°C	Culture / gram	Local	2	Indicate special requests (e.g. Legionella) as specialized media is required. Sputum quality is assessed using Q score.
	Blood for culture	Aerobic blood culture vials	RT	Culture	Local	5	
Pneumonia, atypical – see mycoplasma, Chlamydia, Legionellosis, viral							
Pneumonia, infants – see Chlamydial infection							
Pneumonia, viral – see also Bronchiolitis	Nasopharyngeal swab, nasopharyngeal aspirates	Universal transport medium	4°C	NAAT	CZ	2-7	The usual viral causes of pneumonia include Adenovirus, Influenza A/B, Parainfluenza 1/2/3 and RSV. In immunocompromised hosts, herpes viruses like CMV, HSV, and VZ would be additional considerations. We, therefore, encourage physicians to specify the most probably agent(s) and to provide relevant clinical information on the request form. PCR for influenza A and B or RSV is initially performed on inpatients during influenza season. Respiratory viral panel for ICU & immunocompromised patients only Influenza and RSV are very rarely recovered during summer months unless travel to Southern hemisphere.
	Auger suction; nasopharyngeal aspirates; bronchial washings	Sterile container					
	Autopsy material (lung) Biopsy	Sterile container					
Poliomyelitis – see Paralytic illness, viral							Not endemic in North/South America. For request consult microbiologist
Pork tapeworm disease – see Taeniasis							
Post streptococcal glomerulonephritis	Throat or skin swab	E-swab, Amies transport swab	4°C	Culture	Local	2	Perform culture for Group A Streptococcus rather than antigen detection.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ	7	ASOT test used
Poxvirus infection (also see Mpox)	Scrapings; exudate;	Universal Transport Medium	4°C	NAAT	CZ	3-7	<i>Molluscum contagiosum</i> and Orf are occasional occupation-associated poxvirus infections. PCR is done at NML. Please consult a microbiologist.
Prostatitis	Prostatic fluid and urine pre and post prostatic massage	Sterile containers (paired specimens)	4°C	Culture	CZ	2	Individual "before-" and "after massage" midstream urines and prostatic secretions are most useful in chronic disease. Midstream urine only in acute disease.
Pseudomembranous colitis – see Diarrhea, antibiotic associated							
Psittacosis – see Chlamydial infection							Testing requires PCR and is only done with appropriate clinical information. Must be sent out of province for testing.
Pyelonephritis – see Urinary tract infection							Urine and blood cultures should be sent.
Q fever – see <i>Coxiella burnetii</i>							Serological testing only.
Rabies Serology	Blood	Gold top separator tube	4°C	Serology	CZ	4 weeks	Referred to NML. May be requested to confirm effectiveness of immunization.
Rabies Diagnostic	Blood Whole thickness biopsy of skin at the nape of the neck (must include hair follicles) CSF Saliva	Gold top separator tube Tissue in sterile container with gauze moistened with sterile saline to keep the specimen moist CSF/saliva -sterile container	4°C	Serology, PCR DFA	CZ		Rabies is a notifiable disease to PHS. Please notify the virology lab when rabies is suspected for further consultation. Corneal impressions are no longer routinely performed. Animal specimens should be sent to Dept of Agriculture. Samples sent to National Reference Centre.
Rat Bite Fever – see <i>Streptobacillus spp.</i>							
Respiratory syncytial virus (RSV) infection - Respiratory	NP aspirate; auger suction; nasopharyngeal swab; tissue	Sterile container/Universal transport medium	4°C	PCR	CZ Local	1	If the specimen cannot be transported to the lab within 72 hours, it should be stored at -70°C and shipped on dry ice.
Rheumatic fever	Throat swab	E-swab Amies transport medium	4°C	Culture for <i>S. pyogenes</i>	CZ	2	Diagnosis of Rheumatic Fever is based on "Jones Criteria". Cultures are for <i>Streptococcus pyogenes</i> .
	Blood, clotted or serum	Gold top separator tube		Serology	IWK	7	ASOT performed. Sensitivity 80%, increased if Anti DNase B also done and positive

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Rickettsial infection – other than Q fever	Blood, clotted or serum	Gold top separator tube	4°C	Serology	CZ		Please provide a travel history and consult a microbiologist. Referred out of province. Culture is not available. Not endemic in NS.
	Blood, Tissue biopsy (incl. blood vessels)	Lavender top tube (EDTA) Sterile container	4°C	NAAT	CZ	5	Typhus group PCR done at NML.
Ringworm – see Dermatophytosis							
Rocky Mountain spotted fever – see Rickettsial infection							Not endemic in NS. Occurs in US and sporadically in western Canada.
Roseola infection – see Human herpesvirus 6							
Rotavirus infection – see Diarrhea, viral infection							
Rubella: Congenital syndrome	Throat swab	Universal transport medium	4°C	Culture/PCR	CZ	7	Please consult microbiologist if there is a suspicion of congenital rubella infection. Specimen is referred to the NML for culture/PCR. Indicate CRS on requisition. Notifiable to PHS.
	Urine	Sterile container					
	Fetal autopsy (all organs, abortus)						
	Cerebrospinal fluid						
	Blood, clotted or serum	Gold top separator tube		Serology, CMIA		3	Rubella IgM testing is most useful for the diagnosis of recent infection. Testing available daily Mon-Fri.
Rubella – Prenatal (immune status)	Blood, clotted or serum	Gold top separator tube	4°C	CMIA	CZ	3	Indicate on requisition: <b>“Immune status - IgG”</b> . Testing available daily. <b>Patients who have previously tested immune do not require further testing with future pregnancies (Canadian Immunization Guide accessed May 29 2023.)</b>
Salmonellosis	Stool	Enteric transport medium (Cary Blair)	4°C	Culture	Local CZ	2	Reportable Illness. Use transport medium. See also Typhoid fever; Diarrhea, bacterial; Food-borne bacterial diseases.
SARS CoV-2 See Covid -19							
Scabies	Scrapings of skin	Sterile container	4°C	Microscopy	CZ	2	Burrows may be detected by using capillary action of india ink on skin at bedside.



SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Schistosomiasis	Urine; stool; rectal scrapings	Sterile container	4°C	Microscopy	CZ	5	Patient may have haematuria late in the stream as ova are released into the bladder lumen. Collect urine between 12 and 3 p.m. Give travel history. <i>S. haematobium</i> found in urine; <i>S. mansoni</i> / <i>S. japonicum</i> in stool.
	Blood, clotted or serum	Gold top separator tube		Serology, EIA	CZ	2 weeks	Referred out of province.
Septic arthritis/bursitis	Aspirated fluid	Sterile container / blood culture vials	4°C RT	Culture	Local	4	We should not receive capped syringes with clinical specimens. For larger volume specimens, use sterile container; for small volumes (<0.5 ml), inject into aerobic blood culture vials. Do not send specimens to Microbiology in a vacutainer tube.
Septicemia – Aerobic or anaerobic	Blood for culture	Aerobic/anaerobic blood culture vials	RT	Culture	Local	5	Send at least two and not more than three aerobic blood culture sets from separate sites (peripheral preferred).
Shigellosis – see also Diarrhea, bacterial							Notifiable to PHS. Travel history usual.
Shingles – see Varicella							
Sinusitis	Sinus aspirates (endoscopic)	Sterile container/Swab	4°C	Culture	Local	2	Nasal swabs have no role in the investigation of sinusitis since it is not possible to differentiate normally colonizing bacteria from pathogens. Submit material aspirated from the sinus if cultures are required.
Sporotrichosis	Swab; aspirate; abscess; biopsy	Sterile container	4°C	Culture	CZ	14	Endemic in NS, but rare. Send biopsy for histology also. NO formalin for culture sample.
Staphylococcal infection	Urine, sputum, blood, wound discharge	Sterile container or E-swab, Amies transport swab	4°C	Culture	Local	2-5	Nasal specimens are used to screen for carriage in patients with recurrent infections or RDU patients, or where pre-op screening is used.
Stool – see Diarrhea, bacterial, viral, parasitic							
<i>Streptobacillus spp.</i>	Blood	Aerobic/ anaerobic blood culture vials	Do not refrigerate	Culture	Local CZ	5	Acquired by rat bite or consumption of material contaminated by rats. Also called “rat bite fever”, “Haverhill fever”.
Streptococcal infection	Throat swab if pharyngitis	E-swab Amies transport swab	4°C	Culture	Local	2	Please indicate if you suspect streptococcal toxic shock. Isolates of GAS or pneumococci from sterile site infections are sent for typing.
	Exudate from infected area cellulitis or body fluid						
	Blood for culture	Aerobic/anaerobic blood culture vials	RT	Culture		5	



SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
	Blood, clotted or serum	Gold top separator tube	4°C	Serology	IWK	7	ASOT referred to IWK.
Subacute sclerosing panencephalitis - see Measles							
Swimming pool conjunctivitis – see Conjunctivitis							
Swimming pool folliculitis	Skin swab	E-swab Amies transport medium	4°C	Culture	Local	2	Usually due to <i>P. aeruginosa</i> . Cultures usually unnecessary. Alert Infection Control, Public Health Services if public pool.
Syphilis	Blood, clotted or serum	Gold top separator tube	4°C	CMIA RPR TP-PA	CZ	7	Screening test is an EIA that detects both IgG and IgM. Positive results are confirmed using the RPR and TPPA. RPR is used to follow the serologic response to treatment. The EIA and TPPA will remain positive for life. A 4 fold increase in the RPR in someone with previous positive serology suggest a re-infection.. The screening test is available daily with the confirmation TP-PA being performed twice weekly. RPR titred on new and previous positives Culture of <i>Treponema pallidum</i> is not available. PCR not available yet.
	CSF	Sterile container		VDRL			
Taeniasis (beef, pork tape worm)	Worm segments; stool	Sterile container/ Parasite transport medium (stool)	4°C	Identification	CZ	5	Identification may be made to species level if worm segments (proglottids) are sent and are mature enough. Do not send in formalin.
Tapeworm – see Taeniasis							
Tetanus	Swabs from wounds and other lesion	Amies transport medium	4°C	Culture	CZ	7	Specimen must be kept in anaerobic conditions. Culture is relatively insensitive. Direct microscopy is not diagnostic. Notifiable to PHS.
Thrush – see Candidiasis							
Ticks	Intact live tick if possible	Sterile container	4°C	Identification	Local	1	We suggest the use of online app. Labs identify to genus level only. Natural History Museum no longer identifies ticks.
<i>Tinea nigra</i>	Skin scraping	Black paper in envelope	4°C	Microscopy, fungal culture	CZ	14	Dematiaceous hyphae seen on microscopy. Usually history of travel to tropics.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
<i>Tinea versicolor</i>	Skin scraping	Black paper in envelope	4°C	Microscopy	CZ	3	Microscopy used as <i>Malassezia spp</i> are lipophilic and do not grow on routine media.
Tinea infection – see Dermatophytosis							
Toxic shock syndrome (TSS)	Vaginal swab; wound swab; focal lesions of skin, bone and lung	E-swab Amies transport medium/Sterile container	4°C	Culture for <i>S. aureus</i> or <i>S. pyogenes</i>	Local CZ	2	If ordering testing on a vaginal swab, the reason for the request must be indicated on the requisition. Isolates are referred for typing to NML.
Toxoplasmosis – Tissue/Fluid	Biopsy material; ocular fluid; amniotic fluid	Sterile container	4°C	Histology PCR	CZ	14	Should also be sent to Anatomical Pathology. PCR is available at the national reference center but consultation with a microbiologist is needed prior to sampling.
Toxoplasmosis – Serology Acute infection (IgM) Immune status (IgG)	Blood, clotted or serum	Gold top separator tube	4°C	CMIA	CZ	3	Presence of specific IgM is usually diagnostic within 1 to 2 weeks after infection. Acute infections are sent to the national reference laboratory for confirmation using IgG avidity and other methods to estimate time of seroconversion. IgG can be used to determine serostatus in immunosuppressed individuals.
Trichomoniasis	Smear on slide	Microscope slide	4°C	Gram stain	Local	14	Diagnosis is based upon microscopic (Gram stain) examination of vaginal discharge or PCR. Sensitivity of slide is comparable to a wet mount examination (approx. 70%).
	Self collected vaginal swab	Aptima swab		NAAT	CZ	5	NAAT is part of BV/ Candida testing and has increased sensitivity over microscopy.
Trypanosomiasis African	Serum	Gold top separator tube	4°C	EIA	CZ	5	Referred to National Reference Centre for Parasitology
	Thick and Thin blood smears	Slide/lavender top	4°C	Microscopy	Local Hematopathology lab	2	<i>T. brucei rhodesiense</i> causes more acute disease and may be detected in blood more readily
	CSF	Sterile container	4°C	PCR	CZ		Referred to National Reference Centre for Parasitology
Trypanosomiasis American (Chagas Disease)	Thick and Thin blood smears	Slide/lavender top	4°C	Microscopy	Local Hematopathology lab	2	<i>T. cruzi</i> may be detected in blood in acute disease, but only in febrile episodes in chronic disease. Histopathology may be useful.
	Serum	Gold top separator tube	4°C	EIA	CZ	5	Referred to National Reference Centre for Parasitology
	Blood (4 ml)	Lavender top tube (EDTA)	4°C	PCR	CZ	5	Referred to National Reference Centre for Parasitology
Tuberculosis (TB) – see Mycobacterial infection							

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Tularemia – see <i>Francisella tularensis</i>							
Typhoid fever	Stool	Enteric transport medium (Cary Blair)	4°C	Culture	Local	2	Travel history likely. Not endemic in NS. Notifiable to PHS. If you suspect a patient is a carrier, please indicate on the requisition.
	Urine	Sterile container				2	
	Blood for culture	Aerobic blood culture vials	RT			5	
	Bone marrow	Aerobic blood culture vials	RT			4	
Ureaplasma – see Nonspecific urethritis; Mycoplasmal infection							
Vaginitis, vulvo-vaginitis, vaginosis – see Bacterial vaginosis							See Cervicitis; Herpes simplex virus infections; Gonococcal infections; Trichomoniasis; Chlamydial infections; Candidiasis; Bacterial vaginosis.
Vancomycin resistant enterococci (VRE)	Stool, rectal swab	Sterile container/Amies transport swab	4°C	Culture	Local	2	Included in Infection Control ARO policy. Can be typed phenotypically, or genotypically by PCR. When MRSA also required send nares/perianal swab.
Varicella zoster and chickenpox, VZV, Shingles	Vesicle fluid; swab	Universal transport medium	4°C	PCR	CZ		IgG available for immune status only. No serology available for diagnosis of acute infection. Post immunization serologic testing ins not recommended in healthy children or adults.
	Blood, clotted or serum for immune status	Gold top separator tube		EIA		7	
Verotoxin (Shiga-like toxin) – see EHEC							
Vibrio infection	Stool	Enteric transport medium (Cary Blair), PCR	4°C	Culture	CZ	2	Specialized media is required. Indicate request and history on the requisition. Often shellfish consumption, marine water exposure or travel to tropics in history. PCR using extended enteric panel for travel.
	Blood for culture; wound	Aerobic/anaerobic blood culture vials/ E-swab, amies transport medium	RT / 4°C		Local	5	
Vincent's angina	Smear of oropharynx	Microscope slide	4°C	Gram stain	Local CZ	1	Spirochaetes and fusiforms seen on gram stain.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
Water	200 ml bathing, therapeutic, aquarium water	Water bottle with sodium thiosulfite	4°C	Culture for coliforms, E.coli Staphylococci, Pseudomonas	Environmental services Laboratory CZ	2	Minimum of 200 ml required. Best to process within 24 hours of sample taking. Store at 4°C. Send to Environmental Services Lab. For special request discuss with a microbiologist.
Water	200 ml potable water			Presence/Absence testing for coliforms and E.coli	Local Microbiology Lab WZ, EZ, NZ	1	Drinking water systems with more than one residential user that are positive should be reported to Public Health Services. NZ samples referred out.
Western equine encephalitis – see Arbovirus infection							
West Nile virus	Serum	Gold top separator tube	4°C	serology	CZ	7 - 21	Testing is referred out of province. Positive results must be confirmed at the National Reference Center.
West Nile virus – encephalitis	CSF / serum	Sterile container	4°C	NAAT/serology	CZ	7 - 21	Serology is the preferred diagnostic test for WNV encephalitis as it is generally positive by the time CNS symptoms appear and the virus often has disappeared from the CSF (see Encephalitis,viral) NAAT can be done to detect the virus in CSF under special circumstances. Referred out of province.
Whooping cough ( <i>Bordetella pertussis</i> )	Nasopharyngeal aspirates (preferred); Nasopharyngeal swab; auger suction	Swab/Sterile container	4°C	NAAT	IWK		Testing performed at IWK
Wound infection	Swab, exudate	Amies transport medium	4°C	Culture	Local	2	Quality of specimen is assessed by presence of epithelial cells. Poor (contaminated by skin flora) specimens will be rejected.
Yersinia infection	Stool	Enteric transport medium (Cary Blair)	4°C	Culture	Local	2	<i>Yersinia enterocolitica</i> is detected as part of routine stool culture
	Swab from abscess	E-swab, amies transport medium					Indicate to lab if plague is suspected, as culture is hazardous (level 3 organism).
	Blood for culture	Aerobic blood culture vials	RT	Culture		5	<i>Y. pestis</i> is not endemic in NS, and is a level 3 organism. Notifiable to PHS.
<i>Yersinia pestis</i> – see Plague							
Zika virus infection	Urine	Sterile container	4°C	PCR	CZ	7-14	PCR for pregnant or symptomatic pts. Include travel history, date of onset, and symptoms. Referred to NML.

SPECIMEN HANDLING FOR SPECIFIC CONDITIONS OR ORGANISMS							
DISEASE/ORGANISM	SPECIMEN REQUIRED	CONTAINER	TRANSPORT CONDITIONS	TEST	SEND TO	TURN AROUND TIME ESTIMATE (up to – days)*	NOTES
	blood	Gold top separator tube		serology			Serology for patients 2 weeks after symptom onset or last possible exposure. Include travel history, date of onset, and symptoms. Referred to NML.
Zoster – see VZV							

\* Turn around time to preliminary results. Completion of testing may take longer.

**Table 6: Summary of Serological Tests Available At CZ Microbiology**

<b>SEROLOGICAL TESTS AVAILABLE AT CZ MICROBIOLOGY</b>		
For tests not included in list below - please consult: Dr. T. Hatchette (902-473-6885) or Dr J. Leblanc (902 473-7698)		
<i>Borrelia burgdorferi</i> (Lyme disease) (Screen & confirmatory testing)	Hepatitis A virus (IgG and IgM)	Parvovirus B19 (IgG and IgM)
Measles virus (IgG and IgM)	Hepatitis B virus (HBsAg, anti HBs and anti HBc, HBeAg and HBeAb)	Rubella virus (IgG and IgM)
Mumps virus IgG	Hepatitis C virus (Screen and supplemental test by PCR and/or RIBA)	Syphilis (Screen and confirmatory test)
Varicella Zoster virus	HIV 1 and 2 (Screen and confirmatory Immunoblot test)	Toxoplasmosis (IgG and IgM)
Cytomegalovirus (IgG and IgM)	HTLV I/II (Screen: confirmatory test sent to NML)	Varicella Zoster immune status
Epstein Barr virus (VCA IgG, IgM and anti-EBNA)		

**Table 7: Summary of Serological Tests Referred to Laboratories Outside CDHA Microbiology**

<b>SEROLOGICAL TESTS REFERRED TO LABORATORIES OUTSIDE CZ MICROBIOLOGY</b>		
All these tests have a turnaround time of 10 to 24 days. To expedite referred out testing, special requisition forms must be completed promptly and returned to the lab.		
Amoebiasis	Ehrlichia	Malaria
Anti tetanus antibody	Filariasis	Rabies antibody
Arboviruses	Fascioliasis	<i>Bartonella henselae</i> (cat-scratch disease)
Ascariasis	Giardia	Schistosomiasis
Aspergillus precipitans	Hepatitis B subtyping	Toxocariasis
Blastomycosis	Hepatitis D (delta)	Trichinosis
Botulism	Hepatitis E	Trypanosomiasis
Coccidioidomycosis	Histoplasmosis	Tularemia
Cysticercosis (Taeniasis)	Leptospirosis	Yersinia antibody (enterocolitica and pseudotuberculosis)
Echinococcosis (Hydatid disease)	Leishmaniasis	Zika virus
<b>ORGANISMS DETECTED BY NUCLEIC ACID AMPLIFICATION AT CZ MICROBIOLOGY</b>		
HSV 1&2	CMV (also for tissues)	Measles
HIV	VZV	Mumps
HCV	Influenza A/B RSV	SARS CoV - 2
Respiratory Virus panel	GI Virus panel (Norovirus, Rotavirus, Adenovirus)	Meningitis/encephalitis panel
Adenovirus (on eye, tissue)	Anaplasma	16S rDNA and sequencing

## **SPECIMEN REJECTION**

It is important that laboratories do not process specimens that are not clearly and appropriately labelled or of good quality to ensure that inaccurate results are not generated. Accreditation standards mandate that laboratories do testing consistent with the highest possible quality of care.

Specimens will be rejected for the following reasons:

- Not received in an approved standard specimen container
- Not received in the appropriate transport medium
- Not received using the swab required for the testing (e.g. when using commercial assays)
- Specimens that are not received within the required time interval (i.e. too old)
- Specimens in containers that are leaking or broken
- Inappropriate specimens or requests
- Specimens received without 2 identifiers on the requisition and the specimen container
- Specimens that are not identified by site
- Specimens without a request or a requisition
- Specimens that are not ordered by a physician (or the requisition is suspected of being altered)
- Specimens that are ordered by a physician on themselves or their family members
- Specimens (does not include irretrievable specimens) received without the collection date and time indicated

When a sender believes that a specimen has been rejected in error, they should contact the laboratory as soon as possible. If necessary the rejection can be discussed with a microbiologist (see Table 8). If rejection is addressed promptly, the specimen may be able to be retrieved. In some circumstances, however, there may be multiple reasons for rejection of which only one was indicated on the report (e.g. too old, incorrect transport medium), and the specimen may not be salvageable.

**Table 8: Inappropriate Specimens and Reasons for Rejection..... p.61**

**Table 8: Inappropriate Specimens and Reason for Rejection**

INAPPROPRIATE SPECIMENS AND REASON FOR REJECTION		
SPECIMEN	REASON FOR REJECTION	EXPLANATION
<b>Genital</b>		
Cervix microscopy for <i>N. gonorrhoeae</i>	Results may be insensitive or misleading	It is not generally possible to distinguish <i>N. gonorrhoeae</i> from the normal cervical flora reliably. Test has very low specificity. <b>SEND:</b> self taken vaginal swab
Anaerobic culture from cervix/vagina/penis/urethra	Results may be insensitive or misleading	Anaerobic culture is not interpretable from these sites because of the plentiful anaerobic flora. <b>SEND:</b> self taken vaginal swab or male urine if gonorrhea /chlamydia is suspected
Urethral smears on females	Results may be insensitive or misleading	It is not generally possible to distinguish <i>N. gonorrhoeae</i> from the normal urethral flora reliably. Test has very low specificity. <b>SEND:</b> self taken vaginal swab if gonorrhea /chlamydia is suspected
Penis swab for culture in the absence of a history of lesion, wound or laceration	Results may be insensitive or misleading	These cultures invariably grow normal urogenital flora. Most commonly they are sent on patients with urinary catheters where there is a non specific irritation resulting in a purulent discharge. <b>SEND:</b> no culture
Perineum/labia/vulva/scrotal swabs for <i>N.gonorrhoeae</i>	Results may be insensitive or misleading	<i>N. gonorrhoeae</i> does not infect cells at these sites and so these specimens have low sensitivity. <b>SEND:</b> self taken vaginal swab or male urine if gonorrhea /chlamydia is suspected
Perineum/labia/vulva/scrotal swabs for Chlamydia trachomatis PCR	Results may be insensitive or misleading	<i>C. trachomatis</i> does not infect cells at these sites and so these specimens have low sensitivity. <b>SEND:</b> self taken vaginal swab or male urine if gonorrhea /chlamydia is suspected
<b>Respiratory</b>		
Neonatal Mycoplasma pneumoniae culture	Incorrect test	Neonatal pneumonia may be caused by genital mycoplasmas. <b>SEND:</b> genital mycoplasma culture
Nasal swabs for <i>S. aureus</i> culture (unless part of pre-op screening)	Done only from Infection Control or Nephrology /ID	<i>S. aureus</i> is normal flora of the anterior nares in many people, and carriage and treatment is only indicated in recurrent staphylococcal infections and certain high risk groups. <b>SEND:</b> no culture
Naso gastric contents	Results may be insensitive or misleading	These specimens do not give useful information.
Sputum from nasal trumpet	Results may be insensitive or misleading	Contaminated with normal flora.
Sputum for <i>Pneumocystis jiroveci</i>	Only accepted from HIV/transplant patients	Insufficient numbers of organisms gives low sensitivity. <b>SEND:</b> bronchialveolar lavage
Nasopharyngeal aspirate received in collection tubing	Incorrect transport	Specimen dries in tubing reducing accessibility and sensitivity. Needle may be needed to flush tubing which increases the risk of injury. <b>SEND:</b> flushing of tube with viral transport medium or nasopharyngeal flocced swab
Nasal swab for routine culture	Results may be insensitive or misleading	Pathogens can not be distinguished from normal flora. <b>SEND:</b> sinus cannulation aspirate
Sputum with a quality score (Q score) 0	Results may be insensitive or misleading	Pathogens can not be distinguished from normal flora. <b>SEND:</b> repeat sputum
<b>Stool / Rectal</b>		
Anal/rectal/perianal/perirectal fistula for aerobic or anaerobic culture	Results may be insensitive or misleading	These specimens grow heavy normal flora



INAPPROPRIATE SPECIMENS AND REASON FOR REJECTION		
SPECIMEN	REASON FOR REJECTION	EXPLANATION
Stool containing interfering substances (e.g barium, oils)	Interfering substance	Substance prevents processing/reading of sample
Unpreserved stool for O&P, C/S	Improper transport	Pathogens may die or break down during transport reducing sensitivity
Stool for C/S, O&P after 3 days admission	Only done for infection control	Community causes of diarrhea are rare in hospitalized patients. Contact a microbiologist if testing is justified.
Rectal swab for enteric pathogens	Results may be insensitive or misleading	Pathogens may die or insufficient quantity of stool reducing sensitivity
Formed stool for cytotoxicity or virus detection	Inaccurate results	Positive results do not indicate treatment failure. If untreated, testing not required.
Stool for <i>C. difficile</i> culture	Only done for infection control	Non specific for disease. Used for epidemiological purposes to get isolates for investigation.
Stools for <i>S. aureus</i>	Results may be insensitive or misleading	Diarrhea related to <i>S. aureus</i> food poisoning is heat stable toxin related.
Stools for fungal culture	Results may be insensitive or misleading	Results are not interpretable
Stool for WBC	Results may be insensitive or misleading	Insensitive non specific test
<b>Urine</b>		
Condom catheter/drainage	Inaccurate results	Normal flora contamination. <b>SEND:</b> in/out catheter specimen or MSU
Urine for polyomavirus	Test not available	<b>SEND:</b> urinalysis for decoy cells
<b>Serology</b>		
2 specimens within 24 hours or defined interval	Duplicate	No difference in antibody levels
HIV viral load >24 hours, CMV viral load >24 hours from collection	Inaccurate results	Plasma must be decanted from blood within 24 hours
Haemolytic/icteric sera	Inaccurate results	Interferes with test reading
HHV-6	Test not available	Test not clinically useful
Enterovirus serology requests	Test not available	Generally not clinically useful
Complement fixation tests	Test not available	Replaced by newer tests
<b>Miscellaneous</b>		
Duplicate tests	Duplicate test within defined time	Additional testing does not improve sensitivity significantly over a single test
Specimens received after defined time	Specimen too old	Deterioration of pathogens/ overgrowth of flora destroys specimen quality
Autopsy blood specimen	Inaccurate results	Agonal bacteremias give false positive results
Dry swabs	Inaccurate results	Most pathogens lose viability rapidly on dry swabs
Axilla swabs for MRSA (unless infected lesion)	Results may be insensitive or misleading	Does not add sensitivity to nasal/groin swab
Catheter tips: sump/ETT/foley/chest tube	Inaccurate results	Cultures may not reflect infecting organisms. <b>SEND:</b> fluid being drained
Colostomy/ileostomy/stoma drainage	Results may be insensitive or misleading	Culture grows normal flora
Semen/seminal fluid	Results may be insensitive or misleading	Antibacterial substances may give false negative. Interpretation difficult as contamination by normal urethral flora. <b>SEND:</b> pre and post prostatic massage urines
Fistula (vaginal/enteric)	Inaccurate results	Culture grows normal flora
Gastric washings (except mycobacteria)	Results may be insensitive or misleading	Culture grows normal oropharyngeal flora

INAPPROPRIATE SPECIMENS AND REASON FOR REJECTION		
SPECIMEN	REASON FOR REJECTION	EXPLANATION
Lochia	Inaccurate results	Contamination by normal flora
IUD	Inaccurate results	Contamination by normal flora. Culture for actinomycosis only.
Nasopharynx for C/S	Results may be insensitive or misleading	Culture grows normal oropharyngeal flora. <b>SEND:</b> throat swab for GAS or NP swab or washings for Bordetella pertussis PCR, as required.
Pilonidal cyst/coccyx/sinus	Results may be insensitive or misleading	Contamination by normal flora
Ulcers – decubitus/bedsores/buttock	Results may be insensitive or misleading	Contamination by normal flora
Wound or superficial swabs with quality score (Q score) 0	Inaccurate results (few exceptions)	Contamination by normal flora makes results uninterpretable, except for a few exceptions which are worked up.

## **REFERRAL BY DISTRICT LABORATORY**

**Fig 12: PPHLN Sample Referral Form (District Laboratory Use Only).....p.65**

**Figure 12: PPHLN Sample Referral Form (District Laboratory Use Only)**



**Sample Referral Form: Not for Isolates for Typing**  
 Please complete all of the Patient Demographic section and as much information as you have available for the other sections. The information will be used to influence the extent of work up. Use requisition with the form.

*Version: PPHLN-F0001-01  
 Effective Date: June 29, 2012*

<b>Patient Demographics:</b> (Patient label can be affixed – indicate if ICU patient)	
Patient Name:	_____
Health Card Number:	_____
Date of Birth:	_____
Sending Physician:	_____
Phone:	_____
Hospital:	_____
Inpatient:	<input type="checkbox"/> Y <input type="checkbox"/> N If Y, ICU or Floor _____

<b>Pertinent Clinical History:</b> (Please check Y or N and provide information as available)	
Outbreak related:	<input type="checkbox"/> Y <input type="checkbox"/> N If Y, outbreak # ? _____
Immunosuppression:	<input type="checkbox"/> Y <input type="checkbox"/> N If Y, cause? _____
Travel:	<input type="checkbox"/> Y <input type="checkbox"/> N If Y, where? _____
Pregnant:	<input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> not relevant _____
Other information:	_____

<b>Request:</b>	
<input type="checkbox"/> Please do identification and susceptibilities will be performed according to CDHA protocol <input type="checkbox"/> Please <b>do not</b> follow CDHA protocols	
<b>Reason for referral:</b>	
Identification:	<input type="checkbox"/> Y <input type="checkbox"/> N
Susceptibilities:	<input type="checkbox"/> Y <input type="checkbox"/> N
ESBL/carbapenemase production confirmation:	<input type="checkbox"/> Y <input type="checkbox"/> N
Doctor Request:	<input type="checkbox"/> Y <input type="checkbox"/> N If Y Doctor Name: _____
Public Health Services / ICP Request:	<input type="checkbox"/> Y <input type="checkbox"/> N
Other:	_____
Discussed with CDHA Microbiologist:	<input type="checkbox"/> Y <input type="checkbox"/> N If Y Name: _____

<b>Specimen/Isolate Information:</b>	
Specimen type and site: _____	If blood how many vials positive? ____ / ____
Specimen number: _____	Date of Collection: _____
Specimen Gram stain result: PMN _____	Bacteria _____
Other _____	
Preliminary Identification:	
Laboratory Data: (ND = not done)	
Gram stain appearance of the isolate: _____	
Growth under conditions: Aerobic _____	Anaerobic _____
5% CO <sub>2</sub> _____	
Catalase + / - / ND	Oxidase + / - / ND Urease + / - / ND Indole + / - / ND
VITEK result (please attach printout)	
Other results: _____	

