Providence HEALTH CARE	**RESPIRATORY SERVICES**	DATE CREATED: May 2005 DATE REVIEWED/REVISED: **AUGUST 2017**
POLICY & PROCEDURE	TITLE: CRITICAL CARE – Bronchoscopy, Olympus Set-Up and Assist (Respiratory Therapy) NUMBER: B-00-12-12026	RELATED DOCUMENTS: Bronchoscopy, STORZ

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SITE APPLICABILITY:

ST. PAUL'S HOSPITAL

POLICY STATEMENT:

All bronchoscopy procedures will have at minimum the following complement of staff present:

- Physician (to perform the procedure)
- Registered Nurse (to monitor the patient)
- Respiratory Therapist (to assist with the procedure)

A Critical Care Bronchoscope Usage Log will be maintained which includes the date and time of the procedure, bronchoscope serial number, patient identification, location, therapist initials, physician name, and space for comments. The log must be completed for all procedures using a bronchoscope.

GENERAL INFORMATION:

LABORATORY CONSIDERATIONS:

- Microbiology must be notified PRIOR to beginning the procedure if PJP slides are to be sent
- BAL samples are time sensitive therefore must be sent to the lab as soon as possible

ARTIFICIAL AIRWAY SIZING:

- Olympus Q180AC scope outer diameter = 5.5 mm
- Outer diameter of scope should be considered relative to inner diameter of artificial airway lumen when determining scope compatibility with artificial airway; in general an airway size 7.0mm or greater should be used with a 5.5 mm scope

NOTE: The presence of the scope in the artificial airway may result in significant autoPEEP due to the increased resistance to flow. To minimize the risks associated with this, the PEEP can be set to 0 cm H_2O and the FiO_2 can be increased to maintain oxygenation. Ventilation should be monitored closely, particularly peak inspiratory pressure, tidal volumes and autoPEEP. It may be appropriate to ventilate the patient via manual resuscitator with PEEP valve set to zero.

NOTE: Foreign body retrieval tools will only fit the working channel of a THERAPEUTIC scope. The Olympus therapeutic scope (PIT160) requires a minimum 7.5 mm inner diameter artificial airway, and can be obtained from the bronch suite if required.

EXHIBITS:

A. Bronchoscopy Specimen Collection Guide
B. SPH Bronchoscope Reprocessing Guide
C. Critical Care Bronchoscope Usage Log
D. Critical Care Bronchoscopy Orientation Checklist
E. Bronchoscopy Report Form

INDICATIONS:

- Abnormal chest x-ray or chest CT
- Unexplained respiratory symptoms such as: persistent cough, hemoptysis, wheezing, hoarseness, noisy breathing, shortness of breath
- Persistent atelectasis
- Bronchial hygiene

CONTRAINDICATIONS:

- No consent
- NPO for less than 8 hours
- Absence of skilled providers proficient in performing and assisting with the procedure
- Poor oxygenation requiring high FiO_2 and/or PEEP

INFECTION CONTROL PRECAUTIONS:

Bronchoscopy is considered an aerosol generating medical procedure (AGMP) and as such all health care providers involved in the procedure should be wearing complete PPE attire including an N95 mask and eye protection.

SPECIAL CONSIDERATIONS:

1. Chilled sterile saline and/or epinephrine 1:20 000* should be readily available in the event that uncontrolled bleeding occurs. **0.5 mL of 1:1000 epinephrine in 9.5 mL of bacteriostatic normal saline*

2. For patients with xylocaine/lidocaine allergy chloroprocaine should be used; the physician performing the procedure must make this request of Pharmacy (62173) at least 24 hours in advance.

REQUIRED SUPPLIES & EQUIPMENT:

ALL PATIENTS:

- Olympus bronchoscopy cart
- Olympus bronchoscope designated for ICU use (Q180AC)
- Olympus disposable suction valve
- Olympus disposable biopsy valve
- Bronchoscopy swivel adaptor
- Water soluble lubricant - sterile
- 4 x 4 gauze
- 6-8 x 5 mL ampules of 2% lidocaine
- 500 mL bottle normal saline (room temp)
- 500 mL bottle chilled normal saline (readily accessible)
- Sterile bowl
- 3 x 20 mL slip tip syringes
- Bite block * ***Required for ALL bronch procedures***

- Medication cups & labels
- Permanent marker
- Bath towel (as neck roll)
- Face towel (cover eyes)
- Enzymatic detergent kit for scope pre-clean procedure
- Bottle of sterile water
- 2 x 6' suction tubing
- 5-in-1 connectors
- Scissors

SUPPLEMENTAL FOR NON-INTUBATED PATIENTS:

- Lidocaine spray and nozzle tip (12 mg per metered dose)
- 10 mL 2% lidocaine for gargle or nebulization
- Denture cup
- Small volume nebulizer kit
- Oxygen delivery device (i.e. oximask)

DIAGNOSTIC and SPECIMEN SAMPLING SUPPLIES:

- Sterile sputum traps
- Sterile specimen containers
- Biopsy forceps (cupped, oval fenestrated)
- Cytology brush
- Microbiology protected sheath brush
- Sterile wire cutters
- Cytolyt
- Formalin
- 2 x frosted glass specimen slides
- Slides carrier case
- Biohazard bags
- Paper bags

EQUIPMENT PREPARATION PROCEDURE:

1. Wash hands and don gloves. Ensure all emergency airway safety equipment is present and functional.

2. Fill medication cup with 20 mL of 2% lidocaine and label with medication label. Draw up 1 mL of 2% lidocaine in 20 mL syringe and fill remainder with air. Repeat with a second syringe.

3. Open the room temperature bottle of normal saline and fill sterile bowl halfway. Fill a 20 mL syringe to the 20 mL mark and label. Add saline to a medication cup for use as in instrument rinse between sampling attempts.

4. Plug cart into an electrical outlet and turn **ON** main cart power (switch located at the front centre of the top shelf/working surface).

5. Remove the bronchoscope from the sterile container and remove the caps from each of the channels.

   NOTE: The sterilization caps are non-disposable and should be returned with the soiled scope in the sterilization basket

6. Connect bronchoscope to EXERA II CLV-180 light source processor and attach black pig tail connector to side port and twist to lock (yellow dots should align). Attach disposable suction and biopsy valves to scope and connect suction tubing to suction valve.

7. Turn **ON processor** and activate light source by pressing the **LAMP** key on the front panel. Perform White Balance by pressing **Wh/B** key while holding 4x4 gauze in front of the fibreoptics. Depress any key until a message appears on screen to confirm that the white balance is complete.

PATIENT PREPARATION PROCEDURE:

1. For non-intubated patients, have patient gargle with 10 mL of 2% lidocaine for 5-10 seconds, immediately followed by 9 sprays of lidocaine spray to the back of the oropharynx. If patient is unable to gargle then administer via small volume nebulizer.

2. Hyper-oxygenate with FiO_2 1.0 just prior to beginning the procedure. Have the patient position themselves supine or low-Fowlers.

3. Insert bite-block into patient mouth. Attach bronchoscopy swivel adaptor to end of circuit (artificial airway patients only).

BRONCHOSCOPY PROCEDURE:

1. Don full PPE attire. Verify with RN that baseline vital signs are documented and appropriate sedation has been given.

2. Lubricate the end of the scope using water-soluble lubricant on a gauze pad. Activate the scope suction to the maximum available as per a regular suction regulator. Hand the scope to the physician performing the procedure.

   NOTE: Always support the artificial airway during insertion of the scope.

3. As directed by the physician, assist with installation of lidocaine for additional topical freezing of the upper airway and tracheobronchial tree.

4. Assist with specimen collection as directed by the physician and in accordance with the Bronchoscopy Specimen Collection Guide.

SCOPE PRE-CLEANING PROCEDURE: (see Exhibit B. Bronchoscope Reprocessing Guide)

1. Power **OFF** the light source and processor. Disconnect the scope and attach the water resistant cap to the side port.

2. Empty any saline remaining in the sterile bowl and refill with sterile water.

3. Using the sponge from the enzymatic detergent kit, wipe the insertion tube from boot to distal end. Immerse the distal end of the scope into enzymatic detergent kit and aspirate the entire contents ~30 seconds. Then aspirate sterile water ~10 seconds. And then aspirate air ~10 seconds.

4. Discard suction and biopsy valves and place bronchoscope back into the sterilization bin with **SOILED** tag indicating the time at which the pre-clean procedure was completed. Complete the Critical Care Bronchoscope Usage Log.

   NOTE: The scope must be reprocessed by MDRD within 1 hour of the pre-clean completion time.

5. Deliver the scope to MDRD for sterilization. Ensure the scope is received directly by MDRD staff (do not leave unattended).

SPECIMEN DOCUMENTATION & HANDLING PROCEDURE:

Documentation in the patient record must include any abnormal anatomical findings, specimens obtained and area(s) sampled, as well as any complications or adverse events.

1. Review all specimen requisitions for accuracy and completeness. Pair with labeled specimens. All specimens should be bagged individually in a biohazard bag along with the corresponding requisition.

2. Bronchoscopy specimens should be hand delivered to the Microbiology lab by the Respiratory Therapist or delegate.

   NOTE: It is the physician's responsibility to appropriately complete all required requisitions as per the samples collected. They should also write a Procedure note in the patient record or complete a Bronchoscopy Procedure form.

DOCUMENTATION, COMMUNICATION, EDUCATION:

1. Documentation should be done on the Bronchoscopy Report form and in the Respiratory Critical Care Flowsheet. Documentation must include any abnormal anatomical findings, specimens obtained and area(s) sampled, as well as any complications or adverse events.

2. Complete the Critical Care Bronchoscope Usage Log.

3. All staff must complete the Critical Care Bronchoscopy Orientation Checklist with an ICU Core Therapist or a Bronch Suite Therapist. Staff must also demonstrate the ability to set up and assist with a procedure while supervised by a core therapist.

REFERENCES:

1. American Association for Respiratory Care. Clinical Practice Guideline: Bronchoscopy Assisting – 2007 Revision and Update. Respiratory Care 2007: Vol 52(1): 74-80.

2. Provincial Infection Control Network of British Columbia. Respiratory Infection Outbreak Guidelines for Healthcare Facilities: February 2011. P 19-20.

DEVELOPED BY:

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REVIEWED BY:

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PHC RESPIRATORY SERVICES BRONCHOSCOPY SPECIMEN COLLECTION GUIDE

SAMPLE TYPE	COLLECTION TOOL	COLLECTION METHOD	TRANSPORT MEDIA	REQUISITION TYPE
Bronchial Biopsy	Oval Fenestrated Biopsy Forceps	Obtain tissue sample with forceps; Gently place sample in formalin; Rinse forceps in saline after each formalin exposure; *Use blunt tip needle to remove sample if snagged on forceps*	Formalin	Pathology Surgical (Chartscan)
Bronchial Brushing	Cytology Brush	Brush airway mucosa; Rinse brush in Cytolyt after each sampling; Rinse brush in saline after each Cytolyt exposure	Cytolyt container	Cytopathology (Chartscan)
Bronchial Brushing for Culture & Sensitivity (C&S)	Microbiology Protected Sheath Brush	Per physician instruction: Eject biodegradable wax plug; Extend brush; Brush airway mucosa; Retract brush; Retract plug sheath; To retrieve sample: Re-advance plug sheath; Extend brush; Cut off brush tip with sterile wire cutters; Place tip in sterile specimen container	Sterile specimen container	Microbiology (Chartscan)
Bronchial Washing	Sputum Trap	Instill saline in 10 – 20 mL aliquots and suction out to obtain **minimum** 20 mL sample return; Transfer half of sample (10 mL) into Cytolyt container and remainder into sterile specimen container	Sterile specimen container	Microbiology (Chartscan)
			Cytolyt container	Cytopathology (Chartscan)
Virology	Sputum Trap	Bronchial washing or BAL (2 mL of sample is required)	Sterile specimen container	Virology (Chartscan)
BAL (Bronchoalveolar Lavage)	60 mL Slip Tip Syringe	With scope tip wedged in airway instill 60 mL saline; Wait 5-10 seconds with syringe attached to Biopsy port; Manually aspirate fluid back into 60 mL syringe until a minimum **10 mL** sample is obtained; repeat with a second aliquot per physician instructions	Sterile specimen container **TIME SENSITIVE** *deliver promptly to lab*	Body Fluids Requisition ***paper requisition only***
PJP Bronchial Washing	Sputum Trap	Instill saline in 10 – 20 mL aliquots and suction out to obtain **minimum** 20 mL sample return; Transfer half of sample (10 mL) into Cytolyt container and remainder into sterile specimen container ***Please notify lab about incoming PJP request -68184***	Cytolyt container	Cytopathology (Chartscan)
			Sterile specimen container	Microbiology (Chartscan)

The following samples are not routinely obtained in critical care:				
SAMPLE TYPE	**COLLECTION TOOL**	**COLLECTION METHOD**	**TRANSPORT MEDIA**	**REQUISITION TYPE**
Serial BAL (Bronchoalveolar Lavage)	60 mL Slip Tip Syringe	With scope tip wedged in airway instill 60 mL saline; Wait 5-10 seconds with syringe attached to biopsy port; manually aspirate fluid into 60 mL syringe until a minimum **10 mL** sample is obtained; repeat with a second aliquot; Each aliquot is collected and placed in individual sterile specimen containers (label as A & B)	Sterile specimen container **TIME SENSITIVE** *deliver to lab promptly*	Body Fluids Requisition ***paper requisition only***
TBNA (Transbronchial Needle Aspiration) for **EBUS**	Vizishot Needle Assembly	**Notify CYTOLOGY Lab at 68181 before beginning procedure** Use 20 mL luer lock syringe; flush sample out of needle assembly with 3-5 mL sterile saline	Cytolyt container	Cytopathology (Chartscan)
Flow Cytometry for **EBUS**	Vizishot Needle Assembly or aspirate (suction) sample	**Notify CYTOLOGY Lab at 68181 before beginning procedure** Use 20 mL luer lock syringe; flush sample out of needle assembly with 3-5 mL sterile saline	Sterile specimen container	Cytopathology (Chartscan) *Indicate the sample as Flow Cytometry*
TBNA (Transbronchial Needle Aspiration)	Boston Scientific Needle Assembly	Use 20 mL luer lock syringe; flush sample out of needle assembly with 3-5 mL sterile saline	Cytolyt container	Cytopathology (Chartscan)

Requisitions in Chartscan: All Chart Types → Respiratory Services Bronchoscopy

NOTE: Each sample must be sealed individually in a biohazard bag and be identified as to which area of the lung it came from (i.e. RUL); it must also include a corresponding requisition completed in full; if the sample was not from any specific area it should be identified as "general" (i.e. general wash).

All ICU bronchoscopy samples should be hand delivered to the Microbiology lab.

EXHIBIT A. BRONCHOSCOPY SPECIMEN COLLECTION GUIDE

EXHIBIT B. BRONCHOSCOPE REPROCESSING GUIDE

BRONCHOSCOPE REPROCESSING GUIDE:

SOILED/USED BRONCHOSCOPE (Olympus or Storz sterilized):

After Use:

- RT to write scope pre-cleaning time on red 'soiled' form and place on top of used scope
- Deliver soiled scope directly to MDRD decontamination area within 1 hour of pre-clean time

SPH:

- *If scope is required urgently for another procedure **DURING THE DAY**, inform MDRD that it is required STAT (will be ready within 3 hours)*
- *If scope is required urgently for another procedure **DURING THE NIGHT**, an alternate scope must be used; MDRD cannot STAT clean a scope during the overnight period*

MSJH:

- *MDRD is open 0730-2300 Mon-Fri and 1000-1800 on weekends and is closed on stat holidays*
- *Scopes used during off hours should be delivered to MDRD the following day*
- *Scopes will be reprocessed up to two hours before MDRD closes*

CLEAN BRONCHOSCOPE DUE FOR REGULARLY SCHEDULED WEEKLY REPROCESSING (Olympus non-sterilized only – Bronch Suite scopes):

Reprocessing of non-sterilized Olympus scopes is required every 7 days or less, even if they have not been used – this is an Infection Control Standard. Scopes that haven't been reprocessed prior to the "Reprocess on…" date cannot be used on a patient under any circumstances.

- Refer to "Reprocess on…" date on the bronchoscope tag
- Deliver directly to MDRD decontamination area (ring bell for assistance; if no response try the 'clean' side and ring bell there)
- Routine reprocessing will not be done on weekends or stat holidays
- Considered a low priority clean, the scope may be unavailable for several hours; inform MDRD staff if it is required urgently

PICK UP OF STERILIZED BRONCHOSCOPE FOR ICU (SPH):

- MDRD calls ICU Unit Clerk and informs the scope is ready for pick up (scope will be in a bin and wrapped with blue sterilization cloth)
- ICU Unit Clerk will inform ICU Ward Aide
- Ward Aide will pick up clean scope from MDRD Clean area, initial the pick-up form, and return scope to ICU; scope is to be returned to the cabinet shelf located in the hallway to CSICU (shelf labeled "Bronchoscopes")

PICK UP OF STERILIZED BRONCHOSCOPE FOR ED (SPH):

- MDRD will page the ED therapist when the sterilized scope is ready for pick-up
- Upon pick-up the therapist must sign the log to verify the pick-up has occurred

DELIVERY OF STERILIZED BRONCHOSCOPE FOR ICU or ED (MSJH):

- MDRD will deliver the sterilized scope to the designated storage area in ICU or ED

PHC RESPIRATORY SERVICES – CRITICAL CARE BRONCHOSCOPE USAGE LOG

PATIENT IDENTIFICATION	DATE/TIME of PROCEDURE	LOCATION	SCOPE SERIAL NUMBER	PHYSICIAN / RT	COMMENTS
				MD: RT:	
				MD: RT:	
				MD: RT:	
				MD: RT:	
				MD: RT:	
				MD: RT:	
				MD: RT:	

EXHIBIT C. CRITICAL CARE BRONCHOSCOPE USAGE LOG

EXHIBIT D: CRITICAL CARE BRONCHOSCOPY ORIENTATION CHECKLIST

PHC RESPIRATORY SERVICES

CRITICAL CARE BRONCHOSCOPY ORIENTATION CHECKLIST

_____

(Staff name here)

Refer to the online Policy & Procedure Manual for an in depth review of individual policies and protocols.

Preceptor Therapist	Preceptor Signature	Orientation Date

ORIENTATION ITEM	P&P Manual	Complete

EQUIPMENT:
 	
SPH:
• Q180AC Scope
  o Artificial airway inner diameter of 7.0 mm or larger
• Olympus Tower
  o Power
  o Light Source
  o Processor
  o White Balance
• Olympus disposable suction valve
• Olympus disposable biopsy valve
MSJH:
• Storz bronchoscope ND1 (5.2 mm)
  o Artificial airway inner diameter of 6.5 mm or larger
• Storz bronchoscope OD1 (3.7 mm)
  o Artificial airway inner diameter of 5.5 mm or larger
• Storz bronchoscopy cart with Storz video imaging system
  o Main power switch
  o Light source
  o Processor
  o Monitor
  o Video camera head
  o Light source cable inlet
  o DCI light cable
  o Standard light cable
  o Conversion coupler (for use with standard eyepiece scopes)
  o Olympus scope conversion coupler
  o Portable battery light source
• Storz disposable suction valve
• Storz disposable biopsy valve
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ORIENTATION ITEM	P&P Manual	Complete

SPH & MSJH:
• Bronchoscopy swivel adaptor (use with artificial airway)
• Water soluble lubricant
• Anti-fog
• Suction tubing
• 5-in-1 adaptors
• Sputum traps
• Medication administration via slip-tip syringe
  o 2% Lidocaine solution
  o 1:20000 Epi solution (0.5 ml epi + 9.5 bacteriostatic NS) –from Omnicell
• Sterile Normal Saline
• Cold Normal Saline
• Diagnostic sampling supplies and fixatives
• Enzymatic Detergent for pre-clean procedure
• 4 x 4 gauze		

PATIENT PREPARATION: • Monitoring equipment • Topical freezing of non-intubated vs intubated patients • Oxygen therapy for non-ventilated patients • Ventilator settings for ventilated patients • Bite block	B-00-12-12026 B-00-12-12059	
INFECTION CONTROL: • Personal Protective Equipment (PPE)	Infection Control Manual online	

SPECIMEN COLLECTION & HANDLING:
• Specimen collection chart
  o Cytology Brushing
  o Protected Sheath Brushing
  o Bronchial Alveolar Lavage (BAL)
  o Bronchial Washing
  o PJP Samples
  o Biopsies
• Requisitions –location (SCM Chart pack vs Stocked)
• Specimen bags: Biohazard and Paper bags
• Time Sensitive Specs: BAL and PJP
	B-00-12-12026
	Exhibit A
	
	B-00-12-12059
	Exhibit A	

BRONCHOSCOPE REPROCESSING & HANDLING • Pre-clean procedure • Soiled Scope Form • Reprocessing • Sterile packaging o Sterilization Cap • Storage and Transport • Bronchoscopy Usage Log	B-00-12-12026 Exhibit B Exhibit C B-00-12-12059 Exhibit B Exhibit C	

ORIENTATION ITEM	P&P Manual	Complete
BRONCHOSCOPY REPORT FORM: • Complete for all bronch procedures • Primary physician responsibility • Becomes part of official patient record	B-00-12-12026 Exhibit E B-00-12-12059 Exhibit E	
RESTOCKING & WEEKLY CHECKS: <u>SPH:</u> • ICU storage cart stocked by Bronchoscopy RT (Fri) • ICU Olympus cart checked by ICU RT (Wed night) <u>MSJH:</u> • ICU Storz cart checked by RT (Wed night)	Reference to the cart contents list	
BRONCHOSCOPY SCHEDULING: • ICU Cases o ICU RT to schedule and assist • Respirology Consults in ICU (SPH) o Bronchoscopy RT to schedule and assist • Respirology Consults in ICU (MSJH) o ICU RT to schedule and assist		

EXHIBIT E. CRITICAL CARE BRONCHOSCOPY REPORT

Providence HEALTH CARE

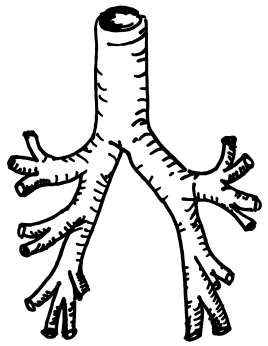
RESPIRATORY SERVICES
CRITICAL CARE
BRONCHOSCOPY REPORT

Date: _____

Location: _____

Diagnosis: _____

PROCEDURE DETAILS:		
Procedure time	Start:	Finish:
Route of entry	☐ Oral (*non-intubated*) ☐ Nasal (*R / L*) ☐ ETT (*#_____*) ☐ Tracheostomy (*#_____*)	
Specimen type	☐ Brush ☐ Wash ☐ BAL ☐ Biopsy ☐ Slides ☐ TBNA ☐ Protected Brush	
Sample site	Brush:	Wash:
	BAL:	Biopsy:
	Slides:	TBNA:
	Protected Microbiology Brush:	
COMPLICATIONS:		
NOTES:		

CLINICAL FINDINGS:	
	**NOTES:**

	Printed name	Signature
Bronch physician:		
Attending physician:		
Resident:		
Respiratory therapist:		
Nurse:		

Form No. PHC-RE021 (R. May 7-15)