01.25 – Infection Control Practices for Bronchoscopy Procedures

Purpose

To provide guidance on infection prevention and control implications for bronchoscopy procedures and the environment in which they are performed. This guidance applies to all UTMB hospitals and outpatient facilities.

Audience

All employees of UTMB hospitals, clinics, outpatient surgical center, contract workers, volunteers, and students.

Background

Bronchoscopy procedures provide direct visualization of the upper and lower respiratory tract for the diagnosis and management of inflammatory, infectious, and malignant diseases of the lungs. The flexible bronchoscope may be passed transnasally, by mouth, or through an endotracheal or nasotracheal tube, or tracheostomy or stoma. Bronchoscopy allows sampling of the respiratory tract secretions and cells, and biopsy of the airway, lung, and mediastinal structures.

Flexible and rigid bronchoscopes are complex medical devices with external surfaces and internal channels that come in contact with blood and body fluids. Meticulous and rigorous adherence to reprocessing protocols is indicated to safely clean and disinfect/sterilize these expensive and delicate instruments.

Indications for bronchoscopy include both infectious and non-infectious conditions. Infectious conditions include endobronchial infection, pneumonia, and lung abscesses.

Bronchoscope may propagate infection. These include intrapulmonary or extrapulmonary spread of infection within the same patient, pathogen transmission from one patient to another, and the spread of infection from the patient to participating medical personnel via aerosolization or exposure of mucus membranes with splash and spray of blood and body fluids. Each of these possibilities poses unique challenges in implementing effective infection control practices.

Procedure

1. Location of bronchoscopy procedures
    a. All elective bronchoscopies should be performed in a negative pressure room. If bronchoscopy is performed under fluoroscopy, then guidelines for radiation safety should be followed.
        - A negative pressure isolation room has a lower pressure than that of adjacent areas which prohibits air from flowing out of the isolation room and into adjacent areas. To be compliant and meet the Center for Disease Control guidelines, negative pressure rooms in healthcare facilities must have a minimum of 12 air exchanges per hour.
        - In specific facilities where dedicated negative pressure suites are not available (currently only at UTMB Angleton Campus),

elective bronchoscopies may be performed in an operating room suite. However, a portable HEPA air purifier unit (air scrubber) should be placed in the operating room prior to the procedure, and if an infection is suspected and microbiologic samples have been collected, the air purifier must remain in 'on' position for at least 30 minutes after the procedure.

- Following completion of bronchoscopy, the patient should be transferred to a negative pressure room in the recovery area for further monitoring until discharge criteria is met. During transportation, the patient will wear a surgical mask until placed in a negative pressure room.

b. Urgent bronchoscopies may be performed at bedside, operating room suite or bronchoscopy suite. However, the staff must don appropriate personal protective equipment and adhere to other infection control practices as in sections 3, 4 and 5 below.

2. Routine Safety Practices During Procedures
   a. Meticulous hand hygiene (HH) before and after patient contact, before and after glove use, and after contact with blood or body fluids should be performed.
   b. Perform HH before accessing clean supplies or equipment. This includes when accessing clean supply storage areas from within the procedure room before, during or after the procedure.
   c. Needles/sharps are disposed of at point of contact in a ridged puncture proof container.
   d. Personal Protective Equipment (PPE):
      - Perform HH prior to donning PPE in anteroom or in the corridor outside the procedure room.
      - Use eye protection, fluid impervious masks and gowns. If impervious gowns unavailable, wear a plastic disposable or reusable rubber apron under or over the gown.
      - A fit tested N95 mask must be worn by all HCW for all bronchoscopy procedures.
      - PPE is removed in the procedure room. N95 respirator is removed in the anteroom or in the corridor.
      - Gloves are worn for handling and cleaning contaminated equipment and/or contact with blood or body fluids.

3. Scope Reprocessing
   a. Refer to Policy 01.05.02 – Sterilization of Semi-Critical and Critical Medical Devices, and Policy 01.05.04 – High-Level Disinfection of

Semi-Critical Medical Devices

b. Education and training for endoscope processing personnel should include proper endoscope handling and procedures for leak testing, cleaning, inspecting, disinfecting, sterilizing, packaging, and storing specific endoscope make and model, including equipment and equipment connections.
c. Following the procedure, the scope must be immediately inspected and pre-cleaned. Never allow to dry prior to transport to the Reprocessing Department.
d. Transport contaminated scopes in a closed container. Reprocessing areas must be physically separate from patient care areas and procedure rooms.
e. Endoscopes should be stored suspended vertically or horizontally in a cabinet designed in a way that allow circulation of air in accordance with the endoscope manufacturer's written IFU (e.g., pressure of air flow through channels, diameter of endoscope coil). When high-level disinfected or liquid chemically sterilized endoscopes are stored vertically, the insertion tube should be as straight as possible, with the distal tip hanging freely.

4. Environmental Safety
   a. Alcohol-based hand rub (ABHR) at entrance and exit of procedure rooms on opening side of door and a dedicated hand washing sink with hands-free controls.
   b. Keep door closed during procedures and minimize traffic.
   c. Ensure adequate time for cleaning and disinfection of environmental surfaces (e.g., procedure carts, stretchers, sinks, counters) between cases is built into booking schedule.
   d. There must be routine cleaning and disinfection of non-critical medical equipment (e.g., teaching heads, light sources, cameras) between cases.
   e. Use hospital approved disinfectant wipes to clean and disinfect reusable rubber aprons between cases.
   f. Use hospital approved disinfectant wipes to clean and disinfect lead aprons between cases. Do NOT use bleach on lead aprons.
   g. At the end of the day, ensure bronchoscopy suites are isolation cleaned and disinfected (formerly known as a terminal clean).
   h. Minimize equipment and supply storage within the procedure room. Equipment and supplies stored within the procedure room should be stored in well-labelled, closed glass door cupboards. This will prevent unnecessary opening of cabinets when locating an item.

i. Procedure rooms should allow for a clean to dirty workflow.
   - A dedicated clean area for charting, dictation, and supplies.
   - A separate soiled holding area for pre-cleaning of scopes and handling of contaminated instruments.
   - Cover soiled linen containers and do not over fill waste receptacles.

5. Occupational Health
   a. All personnel involved in the procedure or reprocessing of bronchoscopes should be immunized against Hepatitis B virus.
   b. Bronchoscopy personnel should be monitored by Employee Health (EH) for exposure to tuberculosis.
   c. Health Care Workers (HCW) who have exudative lesions or weeping dermatitis should contact EH and refrain from direct patient care and from handling patient care equipment until the condition is resolved.
   d. All personnel performing or assisting with bronchoscopy procedures must be knowledgeable about potential infectious and chemical hazards associated with these procedures and familiar with UTMB Safety Manual.

References

1. 2022 Guidelines for Design and Construction of Hospitals and Outpatient Facilities, Facility Guidelines Institute (FGI)
2. AARC Clinical Practice Guideline Bronchoscopy Assisting – 2007 Revision & Update. Respiratory Care January 2007, 52 (1) 74-80.
3. American College of Chest Physicians and American Association for Bronchology Consensus Statement: Prevention of Flexible Bronchoscopy-Associated Infection. Chest. 2005 Sep; 128(3): 1742–1755.
4. 01.05.02 – Sterilization of Semi-Critical and Critical Medical Devices http://www.utmb.edu/policies_and_procedures/19034204
5. 01.05.04 – High Level Disinfection of Semi-Critical Medical Devices http://www.utmb.edu/policies_and_procedures/19034206
6. 01.21 – Tuberculosis (TB) Control Program
7. http://www.utmb.edu/policies_and_procedures/19410784
8. 08.01.01 – Policy and Guidelines on AIDS, HIV and Hepatitis B http://www.utmb.edu/policies_and_procedures/40654318