



Introduction to TB Infection Control

Fundamentals of Infection Control

- **Administrative controls:** reduce risk of exposure
- **Environmental controls:** prevent spread and reduce concentration of droplet nuclei
- **Respiratory protection controls:** further reduce risk of exposure to wearer only

Hierarchy of Infection Control



Administrative Controls



Environmental Controls



Respiratory Protection

Fundamentals of Infection Control

Hierarchy of Infection Control

- Administrative controls
 - Reduce risk of exposure via effective IC program
- Environmental controls
 - Prevent spread and reduce concentration of droplet nuclei
- Respiratory protection controls
 - Further reduce risk of exposure in special areas and circumstances

TB-Infection Controls: Simplified

- Administrative: **WHO?**
 - Who is a TB suspect?
 - Who is at risk from exposure?
 - Who has infectious TB?
 - Who has drug resistant TB?
- Environmental: **WHERE?**
 - Where is optimal place to minimize risk?
- Personal Respiratory Protection: Special high risk settings

Administrative Controls (1)

Most Important . . .

- Assign responsibility for TB infection control
- Work with health department to conduct TB risk assessment and develop written TB IC plan, including All precautions
- Ensure timely lab processing and reporting
- Implement policies and procedures for managing TB patients

Administrative Controls (2)

- Test and evaluate Health Care Workers (HCW) at risk for TB or for exposure to *M. tuberculosis*
- Train HCWs about TB infection control
- Ensure proper cleaning of equipment
- Use appropriate signage advising cough etiquette and respiratory hygiene

Environmental Controls

- Control source of infection
- Dilute and remove contaminated air
- Control airflow

Respiratory Protection (RP) Controls

- Implement RP program
- Train HCWs in RP
- Train patients in respiratory hygiene

Relevance to Biologic Terrorism Preparedness

- Multidrug-resistant *M. tuberculosis* is classified as a category C agent of biologic terrorism
- Implementing guidelines in this document is essential to preventing the transmission of *M. tuberculosis* in healthcare settings

Environmental Controls

- Control source of infection
- Dilute and remove contaminated air
- Control airflow
 - Keep infectious air moving outside
 - Keep HCWs ‘upwind’ , infectious patients ‘downwind’

Airborne Infection Isolation Room Policies

- Environmental factors and entry of visitors and HCWs should be controlled
- Air changes per hour (ACH) (volume /time)
 - ≥ 6 ACH (existing)
 - ≥ 12 ACH (new)
- Minimum of 2 ACH of outdoor air
- HCWs should wear at least N95 respirators

What is ventilation?

- Movement of air
- “Pushing” and/or “pulling” of particles and vapors
- Preferably in a controlled manner

Ventilation control

- Types of ventilation
 - Natural
 - Local
 - General

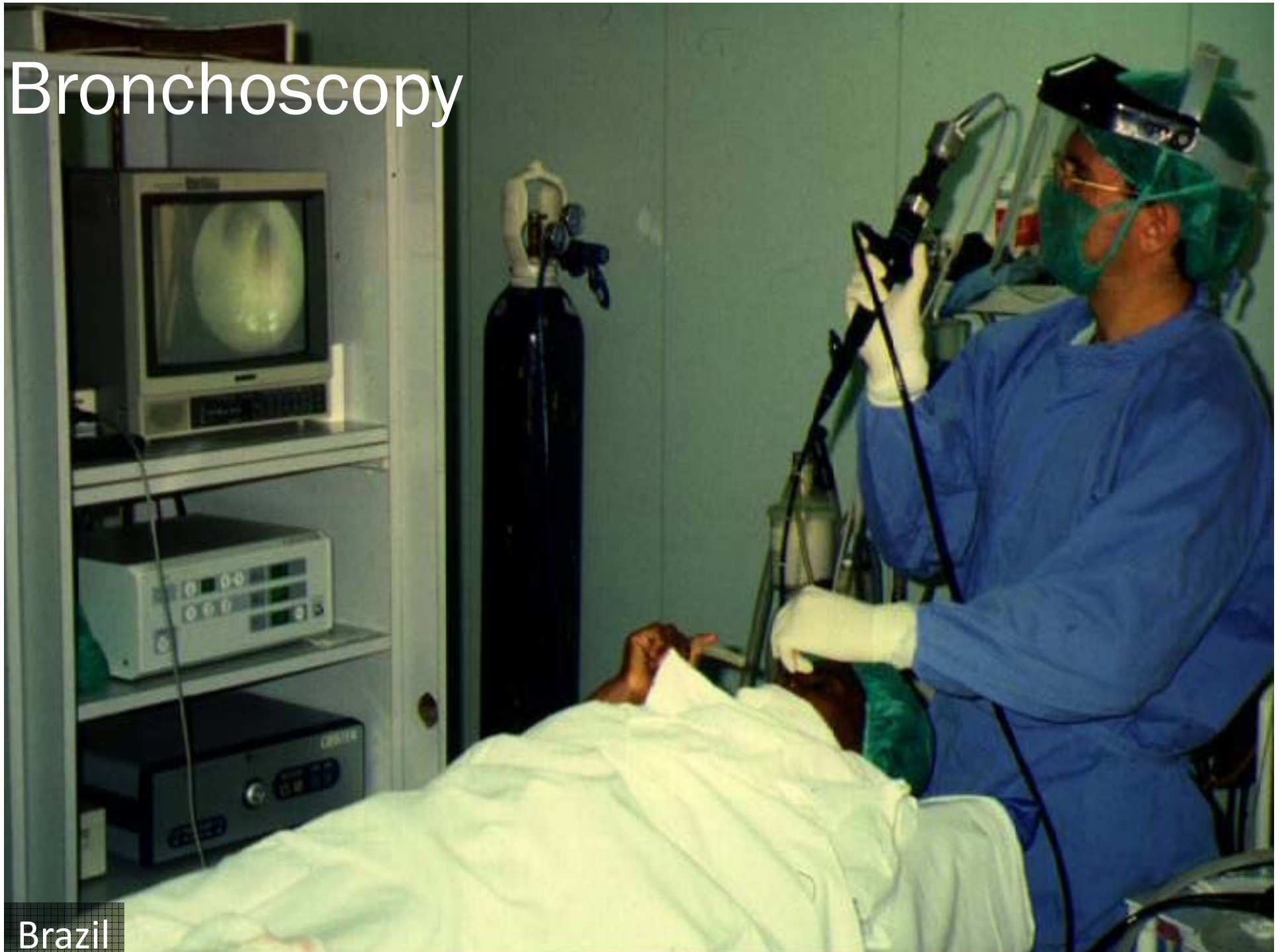


Local exhaust ventilation

- Source capture
 - Exterior hoods
 - Enclosing hoods



Bronchoscopy



Brazil





Natural vs Mechanical Ventilation

- Good natural ventilation is better than bad mechanical ventilation.
- Major limitation of natural ventilation is that it depends upon outdoor weather conditions.
- Can control odor and improve comfort of occupants , but not if very cold or very hot.
- Usually we do not have a choice and must work with where we are!

Room Air Cleaners

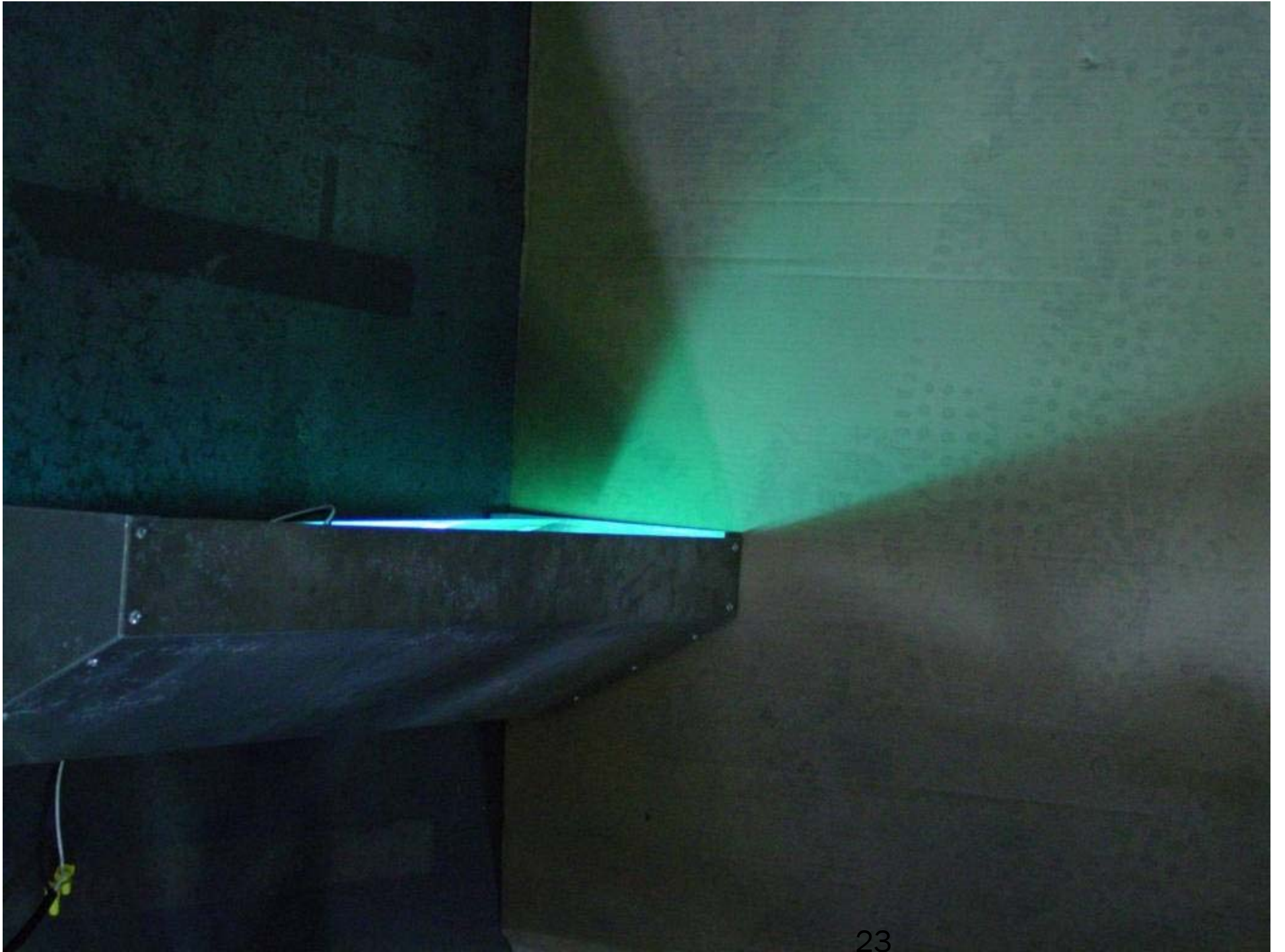




TB Outpatient unit – Helio Fraga Institute, MoH, Rio de Janeiro

Ultraviolet Germicidal Irradiation (UVGI)

- Used as supplement or back-up to dilution ventilation
- Does NOT provide negative pressure
- Requires maintenance, esp. cleaning bulbs
- Not effective at high humidity (>70%)
- Occupational exposure limits: eye & skin





LUMALIER
COMMERCIAL LIGHTING DESIGN, INC.
743 South Dudley
Memphis, Tennessee 38104
901-724-5500