THE REPUBLIC OF UGANDA
MINISTRY OF HEALTH

UGANDA Supranational® Reference Laboratory

Timely Accurate Diagonostics for a TB-Free Africa

Training on LJ CULTURE diagnostic technique

Module three: Biosafety in LJ culture laboratories

DATE:

VENUE: SRL, Uganda

FACILITATOR:

Outline

- Biosafety in TB laboratories.
- Personal Protective Equipment in molecular labs.
- Disinfection in laboratories.
- Assessment
- Summary

Standard safety requirements in TB Culture lab

- Administrative controls, including good lab practices, SOPs, and accident management plans
- Engineering controls such as a controlled ventilation system
- Use of personal protective apparel/equipment appropriate for the task
- Waste management procedures
- General lab safety procedures including physical, biohazard, fire, chemical, and electrical safety

EXERCISE (5MINS)

1. list the essential Biosafety equipment used in TB lab and outline their importance

Recommended Facilities and Equipment

1. The lab must be contained, i.e physically separated from other labs.
2. Access to the lab must be restricted, preferably through an anteroom.
3. Controlled ventilation should be installed which maintains a directional airflow into the lab

Recommended Facilities and Equipment cont'd

4. Air from the containment lab should not be re-circulated to other areas in the building –(high-efficiency particulate air (HEPA) filtration

5. Certified Class II biosafety cabinets .

6. Centrifuges equipped with biosafety canisters (buckets with aerosol containment lids)

Biosafety levels in a TB lab

BSL1 – AFB smear microscopy

- Can use countertop if airflow is directed away from laboratory staff
- Need for exhaust fan to draw air away from area
- BSC preferred

BSL2 – Specimen processing for TB culture

- Work performed in a BSC
- Safety centrifuge cups opened only in BSC

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Biosafety levels in a TB lab

BSL2 – Molecular laboratory

- Three areas with separate airflow
- NO LIVE TB; dead cells only

BSL2 and/or BSL3 – TB Culture: Identification and DST

- All work performed in a BSC
- Isolation and air exhaust needed for manipulating large quantities of live TB

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TB culture lab

Follow all biosafety protocols for work in the TB culture lab

- Collect samples for molecular testing
- Disinfect outside of tubes before removing from BSC
- Heat kill samples if DNA extraction occurs in the moderate-risk TB laboratory.

LJ culture laboratories

Good laboratory practices

- Minimize aerosol generation – cross contamination
- Disinfect areas with freshly prepared 5% concentration of Lysol

PPE in a LJ culture lab

- Laboratory coats
  - Front closing
  - Long sleeved
  - Washable at the lab or disposable
- Gloves
  - Powder free (powder may increase cross contamination)
  - Single use
  - Latex free (due to allergies)

Disinfection in a LJ culture lab

- Freshly prepared 5% lysol.
- 70% ethanol
  - –wash inside the BSC and where metal surfaces are present
  - –disinfection removes nucleic acid contamination from pipettes and metal and plastic surfaces

PPE demonstration

- Donning and doffing of PPE
  - Gloves
  - N95 respirator
  - Lab coats/gowns
  - Shoe covers/lab shoes

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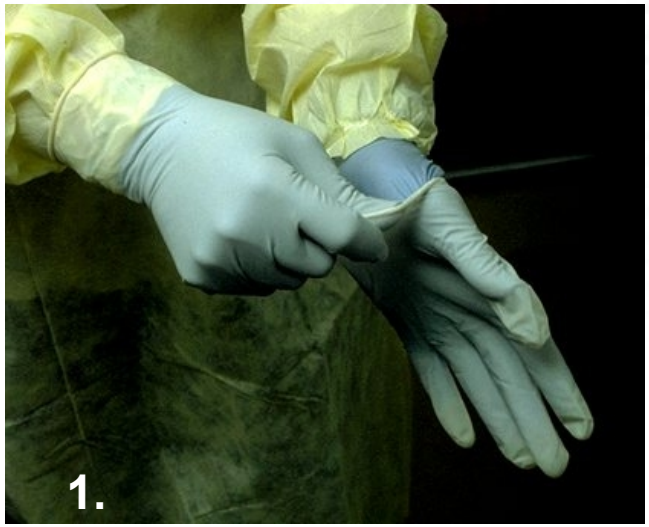
Example: Doffing Gloves



Assessment

1. What is the required concentration of Lysol and ethanol in a LJ culture laboratory.
2. What biosafety level is ideal for a LJ culture lab?
3. List four (6) safety equipment and three (4) requirements for a facility to perform LJ culture
4. Outline two concepts of Good Laboratory practices that are carried out in the LJ Culture Laboratory

Summary

- Use freshly prepared disinfectants and sterilizing methods to minimize risk of exposure when working in LJ culture Lab
- Ensure that the Recommended Facilities and Equipment such as Negative pressure are operational at all times when working
- Good lab practice should be maintained at all times in LJ culture lab

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