Use of Elastomeric Masks at a TB Hospital

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Infection Control

- Texas Center for Infectious Disease (TCID) formerly the State Chest Hospital was established in San Antonio, TX in 1956.

- No infection control program was in place prior to 1986 other than TST for employees which were performed annually.

- Multidrug resistant TB patients were sharing rooms with other patients, some of whom did not even have TB.

- Many patients were not on TB treatment because of end stage respiratory disease, liver toxicity, treatment failure or MDR TB.

- Since patients did not have to take treatment for TB, many patients did not take treatment.

- Staff were told not to wear masks because it made patients feel bad and they were told a positive TST would protect them from TB.
Infection Control

• One of the drug susceptible TB patients acquired MDR TB from his roommate – he grew MTB with the same susceptibility pattern with extensive resistance one year after discharge and the genotype matched (was a research tool at the time).

• A TB Hospital should have measures in place to prevent transmission of TB to other patients and employees!!!
Infection Control

• 40-50% of the staff converted to TST positive after employment
• A total of 7 nurses converted their TST in 1992
• 1-2% of the staff had TB disease
Infection Control

- Patients with TB were encouraged to take treatment and not miss doses.
- Patients were cohorted into rooms by drug susceptibility and later private rooms were instituted after this incident.
- Doors were kept closed.
- Fans were placed in the isolation rooms and UV lights placed at the door entrance and over the beds.
- And a respiratory protection program was instituted.
Respiratory Protection Program

- Prior to 1995 only surgical masks were used
- No sputum database was utilized and the need for a Respiratory Protection Program was evident due to high TST conversion
- Guidelines for Isolation Precautions in Hospitals were published in 1996
- Respiratory Protection Program was implemented in 1995 - 1997
Administrator / RPP

1. Cardiopulmonary Department (Respiratory)
2. New employee Fit Testing
3. Training
4. Yearly Fit Testing
5. Collect all Sputum and data from patients with TB disease
Institution of RPP

• From surgical masks we migrated to elastomeric respirators
• TCID selected the elastomeric respirator over the N-95 respirator based on the following factors:
  • Reliability and Comfort
  • Better Respiratory Protection
  • Cost Effectiveness
  • Less Time Consuming for Fit Testing
Elastomeric Respirators

- Moldex 7000/8000 were implemented
- PAPRs as back up
- Paradox Database software was put into effect as means of tracking TB disease trends
Number of Respirators in use

• There are approximately 173 Employees at TCID
• Out of 173 Employees 138 wear Elastomeric Respirators
• Our compliance for annual Fit Testing Quarterly – 95% -100%
Elastomeric Respirators

- The current Elastomeric Respirator TCID institutes:
  
  **North 7700 - S, M, L**
  134 Employees

  **Moldex – S, M, L**
  2 Employees

  **Powered Air Purifying Respirators**
  2 Employees
Training

All new employees are required to watch a video that is accepted by The Occupational Safety and Health Administration (OSHA) and must answer a set of questions regarding the video and given an insert.

New employees are Fit Tested with smoke irritant using OSHA standards for Qualitative Elastomeric Fit Testing:

Appendix A to § 1910.134: Fit Testing Procedures (Mandatory)
Annual Fit Testing

1. TCID Employees are notified via E-mail
2. Required to watch training video
3. Required to answer a set of questions regarding the RPP
4. Given another insert reviewing the maintenance of their Respirator
Review

***IMPORTANT INFORMATION ABOUT YOUR RESPIRATOR***

1. **DO NOT TAKE YOUR RESPIRATOR HOME.**
   It is very important that your respirator remains at work to ensure the safety of all workers within the facility. Failure to do so may result in employee being sent home.

2. **FILTERS ARE TO BE CHANGED ONE YEAR FROM DATE OF ISSUE**

3. **ALWAYS INSPECT YOUR MASK**
   It is important to make sure your mask is in good working condition for the safety of yourself and others in the facility.

4. **CLEANING AND MAINTENANCE OF YOUR RESPIRATOR.**
   We recommend that you wipe down your mask with alcohol after every use. You may also clean your mask by removing the filters and submerging your mask in soap and water. If filters do get submerged or wet, they do need to be replaced as soon as possible.

5. **IF MASK BREAKS OR INHALATION VALVE COMES OFF, PLEASE CONTACT THE RESPIRATORY DEPARTMENT TO GET REPLACEMENT**
   The Respiratory Department is open 24 hours a day so please feel free to stop in at any time for mask fits and replacement.

If you have any questions or concerns about your respirator, please call or visit The Respiratory Department.
Employee Backpack
Results

TCID has not had an employee TST conversion since 1994.
Benefits

- Reusable
- Cost Effective
- Better Protection
- Come in different sizes (S, M, L)
- User seal check is quick
- They protect you from bodily fluids
Limitations

• The mask shifts with oily skin or sweaty skin.
• The masks are reportedly hotter than an N95.
• Maintenance is by means of cleaning and disinfecting.
• Communication with patients is difficult.
Employee Compliance

- Employees must have the mask with them at all times according to the infection control policy.

- The mask is an essential piece of equipment and the employee will report to RT to obtain another mask if they cannot locate it.

- Employees are provided lockers to store their masks.
Cost Effectiveness

• Elastomeric masks cost approximately $30-$35 per mask.

• The approximate cost of one box of 20 N95 masks is $17.

• If N95 masks are single use only one nurse could use up to 20 per day caring for a patient assignment.
Sustainability/Future Plans

• Continue with the use of Elastomeric Respirators

• Currently the Respiratory Department is searching for elastomeric respirators with a speaking diaphragm to enhance communication with patients
Conclusion

- In conclusion due to the high prevalence of employee TST conversions the RPP was created.
- TCID is now the only free standing TB hospital in the country.
- The RPP has continued to evolve and is tailored to our current patient population.
Thank you!

Any Questions?