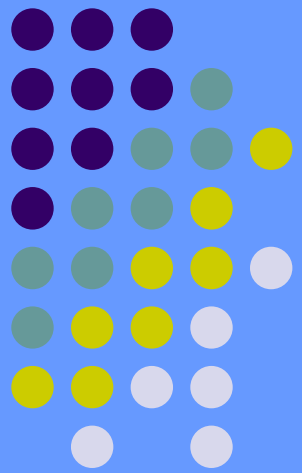
BASIC CONCEPTS OF INFECTION CONTROL

Occupational Health Risks for Healthcare Workers (HCW)

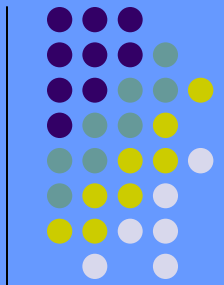
International Federation of Infection Control



Reducing Occupational Risks for HCWs

- Assess infection risks, prioritise prevention measures
- Educate about safety & infection prevention related to specific risks Investigate HCW exposures and post-exposure management
- Collect & analyze reports of HCW blood exposures and develop prevention strategies based on the data

Understanding HCW Risks



- HCWs are exposed to a variety of diseases and pathogens that they can acquire and also transmit.
- Occupational Health Departments or services reduce risks to the HCWS, minimize subsequent disease and recommend funding for the facility

Risk Assessment

Consists of two components:

- Organizational risk assessment which determines policy and procedure (e.g. Occupational Health policies on reporting sharps injuries, or policies regarding vaccination and pre-employment screening
- Individual healthcare worker risk assessment with each patient interaction

Hierarchy of Controls to Minimize Risk of Infection

Engineering Control

- Sharps devices for blood borne infections, air handling systems for airborne diseases
- Most desirable form of compliance

Administrative Controls

- Policy and procedure development; safety culture, providing fiscal and human resources
- Occupational Health plays a large role here

Individual Controls

- Personal protective equipment; hand hygiene
- Least reliable as depends on worker compliance

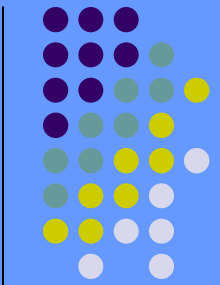
General Measures for OH Service to Reduce Infection Risk

1. Keep easily retrieved OH records for all employees
2. Screen new employees for communicable disease history, educate and immunize
3. Provide infection assessment and guide work restrictions for staff with infectious diseases or exposures

General Measures for OH Service to Reduce Infection Risk

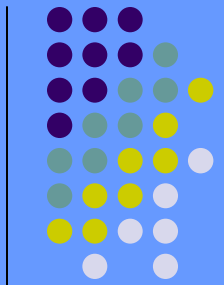
4. Manage the occupational blood exposure program in the facility
   - Develop accident reporting forms from which data can be analyzed
   - Identify potentially preventable risks from the data, recommend changes in practices or products
   - Participate in product evaluation for safety to HCWs

Measures to Prevent Contact Transmission



1. Wash hands when they are likely to have been soiled and between patients
2. Use alcohol hand rubs when hands are not visibly soiled and between patients
3. Wear sterile gloves for contact with normally sterile body sites
4. Wear clean gloves for contact with mucous membranes and non-intact skin

Measures to Prevent Contact Transmission

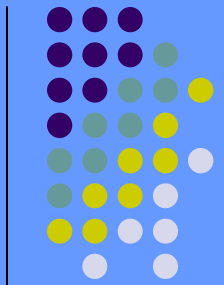


5. Use gloves (recycled or household gloves OK) for contact with moist body substances and objects soiled with MBS
6. Use barrier precautions (masks, eyewear, gowns or aprons) when spatter is likely
7. Handle all clinical specimens as if infectious

Measures to Prevent Contact Transmission

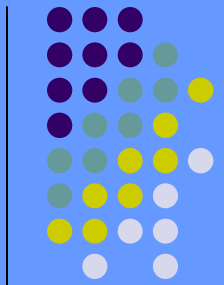
8. Handle linen and trash to avoid skin contact & protect subsequent handlers
9. Clean & disinfect appropriately all items used between patients

Specific Measures to Prevent Airborne Disease Transmission



1. Restrict susceptible personnel and patient or family contacts when possible
2. Use effective masks or ventilator-type masks for tuberculosis when necessary
   - They are expensive and often unavailable
   - They may not protect susceptibles from all airborne communicable diseases
3. Surgical masks may have little benefit

Post-Exposure Disease Prevention



- It is much better to prevent exposure whenever possible than to manage post-exposure treatment
- Also less expensive: post-exposure management of a single puncture in the US now costs more than $300

McCormick et al. Am J Med 199;91(Suppl 3B):301-307

Post-Exposure Disease Prevention: Occupational

1. Define “exposure” for the disease
2. Identify exposed employees and volunteers
3. Schedule 1st visits for baseline or prophylaxis immediately: sooner is better
4. Keep records to allow retrieval of information
5. Publicise as necessary

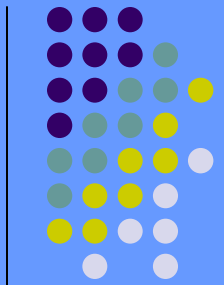
Post-exposure Management for Bloodborne Diseases

- Baseline: test source for HBV, HCV, HIV
- Test recipient for same
- If high risk exposure for HIV, prophylaxis for HIV is indicated immediately (within hours)

Post-exposure Management for Bloodborne Diseases

- If employee is HBV susceptible, 1st dose of HBV vaccine +HBIG is indicated (within hours)
- Schedule follow-ups as indicated
- Give instructions for sexual contact precautions

Limiting or Preventing Occupational Exposures



- Identify personnel at high risk
- Use methods that limit exposures from all patients rather than only diagnosed cases: safe injection for all patients, coughing patient precautions, gloves for contact with all moist body substances, etc.
- Provide appropriate education for all personnel

Specific Agents

Infection	Staff → Patient	Patient → Staff
Chickenpox, dissemin. zoster	High	High
Localized varicella-zoster (shingles)	Moderate	Moderate
Conjunctivitis, viral (e.g., adenovirus)	High	High
Cytomegalovirus (CMV)	Rare	Rare

Specific Agents

Infection	Staff → Patient	Patient → Staff
Hemorrhagic fever (Ebola & Marburg virus)	Low	Moderate (risk from puncture unknown)
Hepatitis A	Rare	Rare
Hepatitis B	Low	Moderate (risk from puncture: 6-35%)
Hepatitis C	Rare	Low (risk from puncture: 1-7%)

Specific Agents

Infection	Staff → Patient	Patient → Staff
Herpes simplex	Rare	Low
Human immunodeficiency virus (HIV)	Very Rare	Rare (risk from puncture: 0.03%)
Influenza	Moderate	Moderate
Measles	High	High

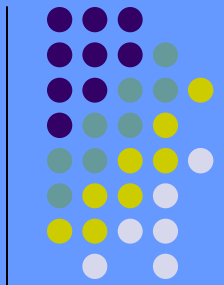
Specific Agents

Infection	Staff → Patient	Patient → Staff
Meningococcal infection	None reported	Rare
Mumps	Moderate	Moderate
Pertussis	Moderate	Moderate
Respiratory syncytial virus	Moderate	Moderate

Specific Agents

Infection	Staff → Patient	Patient → Staff
Rotavirus	Moderate	Moderate
Rubella	Moderate	Moderate
Salmonella or Shigella	Low	Low
Scabies	Low	Low
Staphylococcus aureus (includes wound and skin infection)	Rare	No data

Administrative Support for Occupational Health



- Mandate from administration must define responsibility, lines of communication, and authority
- Clinical and laboratory support for outbreak investigation
- Policies for mandatory work exclusion, workload and funding

Occupational Health

- Like Infection Prevention Programs, is often quick to show value
- Properly managed, is often cost-effective
- May save lives and reduce risk for serious illness among expensive, hard to replace employees
- May provide benefit out into the community

Key Points

- Assess infection risks to personnel and prioritise preventive measures
- Implement an education programme about safety and infection prevention related to the specific risks of work in the facility
- Determine susceptibility to vaccine preventable diseases and implement an appropriate immunisation programme

Key Points

- Conduct exposure investigations including review of post-exposure management

- Implement surveillance of occupational blood exposures and develop prevention strategies for high-risk practices or departments

References and Further Reading

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