Health care workers - occupational safety, screening and information exchange
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Handout

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1. Introduction

Occupational medicine and occupational health:

= is the branch of medicine which is concerned with the maintenance of health in the workplace, including prevention and treatment of diseases and injuries, with secondary objectives of maintaining and increasing productivity and social adjustment in the workplace. [1]


Additionally protection of particular groups (pregnant employees, disabled employees,...).

The main aim is to avoid the danger of accidents, occupational diseases and work-related illness.

Healthcare workers (HCW) encounter many medical risks while providing healthcare services to individuals and the community.

Legal, technical, and medical measures must be taken to prevent employees from sustaining physical or mental damage because of work hazards.

These hazards and risks increase occupational accidents, diseases and job-related health problems.

2. Occupational health surveillance

Measures for health surveillance: [3-5]

- **Risk assessment** – Exposure assessment and risk assessment to identify hazardous agents and processes
  
  → **dangerous working agents**: irritative, corrosive, flammable, toxic
  
  → **biological agents** (considering risk group, infection pathway, etc.)
  
  → **exposure to radiation, heat, noise,**...

workplace measurements: workplace concentrations for chemical agents, carcinogenic agents, etc.

- **health status screening** - suitability testing (pre-occupational), periodic surveillance (biological monitoring, follow-up tests), vaccination status
- **Post exposure surveillance**
- **Education/training** on safe work practices (hand washing,...)
- **safe systems of work** (safe workplaces, physical protection and personal protection equipment)
- **reporting systems**
General rights, duties and responsibilities... [6]

...of employers:

→ to ensure preventive and protective measures to minimize occupational risks
  → to provide adequate information, comprehensive instruction and necessary training on occupational safety and health
  → to provide workers with adequate protective clothing, equipment and appropriate training
  → notifying the competent authority (e.g. labour, medical inspectorate) of cases of occupational injuries and diseases

...of workers:

→ to report imminent and serious danger to their lives or health
  → are responsible for participating in training provided by the employer, using personal safety equipment
  → cooperation between employers and workers and/or their representatives through workers’ safety delegates, safety and health committees, collaboration in providing information and training
  → work related infections are considered occupational diseases (right to compensation, rehabilitation and curative services)

3. Health hazards in healthcare facilities [7]

→ Biological hazards (bacteria, viruses, fungi, cell cultures, parasites,...)
→ Chemical hazards (disinfectants, anesthetic gases, antineoplastic agents, latex)
→ Physical hazards (noise, heat, radiation)
→ Ergonomic hazards (heavy lifting, musculoskeletal disorders, PC working stations)
→ Psychosocial hazards (shift work, violence, stress, mobbing, burn-out)

4. Vaccination & Screening of HCW [8]

- HCW are at increased risk of infection with bloodborne pathogens because of occupational exposure to blood and other body fluids
- Most exposures among health-care workers are caused by percutaneous injuries with sharp objects contaminated with blood or body fluids
- The pathogens most commonly transmitted to health-care workers in occupational settings are the hepatitis B (HBV) and C viruses (HCV) and the human immunodeficiency virus (HIV)
Risk of transmission of bloodborne pathogen from an infected patient to a HCW by a needlestick injury: [9]

- 3-10% for hepatitis B
- 3% for hepatitis C
- 0.3% for HIV

The two most common causes of needlestick injuries are recapping and the unsafe collection and disposal of sharps waste [19].

**In Austria: “Vaccination programme for HCW” – national guideline [10]**

HepA, HepB, Influenza

Diphtheria, Tetanus, Pertussis, Polio, Measles, Mumps, Rubella, Varicella, Pneumococcus >50a

Meningococcus (vulnerable patients! (pediatrics, ICU, oncology,..)

Respective vaccinations are strongly recommended by the Ministry of Health for HCW in Austria.

→ labour law: ASchG §43 employer has to take safety precautions and has to provide vaccines

**Occupational infection with tuberculosis (TB)**

25% of the global population is infected with latent TB infection (LTB). The LTB is described as “a state of persistent immune response to stimulation by Mycobacterium tuberculosis antigens without evidence of clinically manifested active TB. 10%, especially within the first few years, may progress to active TB. HCWs are with an increased risk of LTB and TB disease, because of their sustained occupational exposure to such infection. [11]

The pooled prevalence estimate for LTBI in HCWs was 37%, and the risk of LTBI among HCWs is more than twice that of control populations. [12]

Airborne transmission from sources with active pulmonary or laryngeal tuberculosis; susceptible person must inhale airborne droplet nuclei to become infected→ Droplets can remain suspended in the air for hours. **High risk tasks**: induction of sputum, bronchoscopy, intubation, etc. [13]

5. Risk Reduction/Prevention [3]

“STOP” Principle

- **Substitution** or elimination (if possible): for example using formaldehyde-free disinfectants etc., Reduce number of injections by providing oral medication, assign a central hospital for treating highly infectious patients.
• **Technical** measures (equipment such as safety needles to, puncture resistant and unbreakable transport/waste boxes for blood specimen/needles to reduce needlestick injuries or contamination, secure storage spaces, isolation rooms, easily cleanable surfaces, separated patient/staff toilets, OP equipment (with integrates local suction etc.)

• **Organizational** measures (limit personnel exposed to infectious patients, establish occupational safety committee

• **Personnel protective equipment** (gloves, gowns, face masks, x-Ray aprons, eye googles, respirators), regular trainings, teaching sessions (prevent risky behavior “no recapping”, changing frequency,..), developing SOPs (after a needlestick infection should be available and known by all members)

6. **Information exchange and report**

Recording obligations in the **Health and Safety at Work Act** Employers have to keep the following records: [3]

- Safety and health protection documents
- Proof that instructions have been given to workers
- Accidents at work (needlestick injuries,..)
- Fatal accidents at work
- Employees who are exposed to agents which are carcinogenic, mutagenic, toxic for reproduction, or biological agents of the groups 2, 3 or 4
- Checks and maintenance of work equipment
- Employees for whom suitability tests or follow-up tests are required

Health and safety committee: > 100 employees, annually, information exchange with safety representatives, occupational physician, works council

Quality management (ISO certification, audits,..)

7. **Ethical Aspects – situation in Austria**

• Healthcare worker’s privacy and civil rights must always be respected (compulsory vaccination for HCW is not executable in respect of article 8 of the European Convention on Human Rights (ECHR) → right to respect for one’s private and family life. However,
vaccination of health care workers is strongly recommended to prevent health care associated transmissions and autoinfections, but coverage in general remains suboptimal.

- In Austria: vaccination status has not to be revealed by the employees (only voluntarily; data protection law), however new employees have to be screened before starting to work.
- Improving staff education may increase coverage. Clarification of the benefits of vaccination in specific staff groups may also improve uptake. Routine booster vaccinations and immunity testing were generally acceptable and compulsory vaccination of certain staff groups warrants further investigation

**Summary**

- Healthcare workers are exposed to chemical, physical, biological, ergonomic and psychosocial hazards
- HBV, HCV, HIV and TB pose the greatest risk of infection
- Infection with hepatitis B virus is preventable with immunization
  - All healthcare workers should be vaccinated against hepatitis B
- Written standard procedures on how to manage needlestick injuries should be available and known to all staff
References


