SCOPE OF
THE WORKPLACE ASSESSMENT
IN HEALTH CARE SECTOR

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Croatian Institute for Health Protection and Safety at Work
• identifies hazards at workplace and their potential health influences
• define measures to prevent occupational injuries and diseases
• main and basic act for implementation of health protection at work and for employer’s actions and obligation
• protect workers health and reduce costs for material and human damages
HEALTH CARE SECTOR

- significant employment sector
- ~ 80,000 employees
- about ¾ - women
- specific working tasks
- health risk
CROATIAN INSTITUTE OF OCCUPATIONAL HEALTH

Analysis of occupational health hazards in economic activities

Sources of data: risk assessment documents

Croatia

- ~1,400,000 employees
- 142,550 employees = 10% of working population
- all economic activities

Health care sector

- ~80,000 employees
- 12,000 employees = 15% of working population

- clinical hospital: 13 (5,055)
- general hospital: 11 (3,803)
- special hospital: 5 (2,588)
- rehabilitation center: 1 (72)
- policlinic: 1 (80)
- first aid institution: 1 (403)

Healthy Workplaces for Health Workers

SEEEWA 2011
AVERAGE NUMBER OF HEALTH HAZARDS PER WORKER

\[ X = 4.2 \]

- A Agriculture, hunting and forestry
- B Fishing
- C Mining and quarrying
- D Manufacturing
- E Electricity, gas and water supply
- F Construction
- G Wholesale/retail trades, repairs
- H Hotels and restaurants
- I Transportation and communication
- J Financial intermediation
- K Real estate and business activities
- L Public administration and defence
- M Education
- N Health and social work
- O Other community and social activities
- P Private households
- Q Extra-territorial organisations
OCCUPATIONAL HAZARDS

- mechanical hazards
- falling and tripping
- electric hazard
- fire and explosion
- thermal hazards

- chemicals
- biological agents
- physical agents
- statodynamic strain
- psychosocial and organizational factors

Injuries

Occupational diseases

Work-related diseases
HEALTH HAZARDS RESULTING IN INJURIES

- **Mechanical hazards**
- **Falling and tripping**
- **Electric hazards**
- **Fire and explosion**
- **Thermal hazards**

### Health Hazards Resulting in Injuries

#### Tools:
- Manual, mechanized

#### Machines and equipment
- **Transport devices**
  - Motor vehicles: cars, trucks, tractors
  - Transport devices: forklift
  - Engineering vehicles: bulldozers, excavators, road rollers, loaders

#### Lifting devices
- Cranes, derricks

#### Object manipulation
- Guns

### Falling of persons
- At the same level
- In depth
- From heights
- From heights over 3m

### Falling of objects
- Open electric circle
- Other electric hazards
- Explosive substances
- Inflammable substances
- Hot material
- Cold material
HEALTH HAZARDS RESULTING IN INJURIES

Health care sector

Mechanical hazards

- sharp instruments
- needles
- 22.6%

Falling and tripping

- moving
- 26.4%
HEALTH HAZARDS RESULTING IN INJURIES

Health care sector

**Electric hazard**

- equipment
- 22,3%

**Violent patients**

- USA: ~ 40% of all attacks at workplace
- EU: 4% employees
- Croatia: ?
### INJURIES AT WORK

#### Health care sector

<table>
<thead>
<tr>
<th></th>
<th>Croatia</th>
<th>EU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number/Year</td>
<td>1.200 - 1.500/y</td>
<td>~ 30% higher than average</td>
</tr>
<tr>
<td>Rate/100.000 employees</td>
<td>1.600 - 2.100</td>
<td>~ 4.000</td>
</tr>
<tr>
<td>% of all injuries at work</td>
<td>5–8%</td>
<td></td>
</tr>
</tbody>
</table>

#### Croatia

- Number: 21,000 - 25,000/y
- Rate/100,000 employees: 1.550 - 1.750

#### EU

- Rate/100,000 employees: ~ 4,000
INJURIES AT WORK
rate/100 000 employed/2010.

Human health and social work: 8.7%
Construction: 9.8%
Wholesale/retail trades: 10.6%
Manufacturing: 28.6%

Agriculture, forestry and fishing
Mining and quarrying
Manufacturing
Electricity and gas supply
Water supply, waste management
Construction
Wholesale/retail trades, repairs
Transportation and storage
Accommodation and food service
Information and communication
Financial and insurance activities
Real estate activities
Professional and scientific activities
Administrative and support service
Public administration and defence
Education
Human health and social work
Arts and entertainment
Other service activities
Private households
Extra-territorial organisations

Healthy Workplaces for Health Workers
SEFWA 2011
INJURIES AT WORK IN HEALTH CARE SECTOR

%  
35  
30  
25  
20  
15  
10  
5  
0  

hand foot head upper arm back pelvis

Healthy Workplaces for Health Workers

SEEWA 2011
### Occupational Hazards

#### Injuries
- mechanical hazards
- falling and crashing
- electric hazards
- fire and explosion
- thermal hazards

#### Occupational diseases
- chemicals
- biological agents
- physical agents
- statodynamic strain
- psychosocial and organizational factors

#### Work-related diseases
Occupational disease

DISEASES

Work related disease
- age
- habits
- predisposition
- working process
- external sources

List of occupational diseases

Healthy Workplaces for Health Workers

SEEMW 2011
HEALTH HAZARDS RESULTING IN OCCUPATIONAL AND WORK-RELATED DISEASES

- **chemicals**
  - Toxins
  - Corrosives
  - Irritants
  - Asphyxiants
  - Allergens
  - Fibroens
  - Mutagens
  - Cancerogens
  - Teratogens

- **biological agents**
  - Infectious material, persons and animals
  - Dangerous plants and animals

- **physical agents**
  - Noise
  - Vibration
  - Altered atmospheric pressure
  - Adverse climatic conditions
  - Ionizing radiation
  - Non-ionizing radiation
  - Insufficient lighting
HEALTH HAZARDS RESULTING IN OCCUPATIONAL AND WORK-RELATED DISEASES

**Dynamic work**
- repetitive movements with or without force exertion
- rapid work activities
- lifting and carrying of heavy loads
- pushing and pulling of loads
- exertion of high-intensity forces

**Static work**
- long-time sitting or standing
- awkward posture
- kneeling, squatting
- work in confined space
- hands overhead

**Psychosocial and organizational factors**

**Statodynamic strain**

**Unfavourable pace of work**
- high work intensity/normative work
- no control over pace/speed of work
- irregular time patterns

**Disturbed biorhythm**
- shiftwork, night work
- over-time work

**Interfering with social needs**
- working out of place of residence

**Responsibility for people and materials management**
- driving

**Possible uncommon events**

**Hard receiving of information**
- audio and visual signals and signs
- noise
- insufficient lighting

**Unsuitable job demands**
- demanding job
- low job decision control
- isolated work
- monotonous tasks
- contact with clients

**Burnout**

*Healthy Workplaces for Health Workers*
HEALTH HAZARDS RESULTING IN OCCUPATIONAL AND WORK-RELATED DISEASES

**Biological agents**
- contact with patients, blood, body fluids
- microorganisms
- 40%

**Chemicals**
- anaesthetic gases
- sterilizers
- laboratory reagents
- cytotoxic drugs
- drugs
- disinfectants
- latex
- 20%

Health care sector
Physical hazards

- ionising radiation: 1.7%
- non-ionising radiation: 4.6%
- vibration
HEALTH HAZARDS RESULTING IN OCCUPATIONAL AND WORK-RELATED DISEASES

Statodynamic strain

- lifting and carrying
- pushing and pulling of loads
- long-time sitting or standing
- awkward posture
- repetitive movements

- Croatia: 27%
- EU: 37-47% = economy
  60% = health care

- nurses
- unskilled workers
- surgeons
- dental personnel

Healthy Workplaces for Health Workers

SEWEA 2011
HEALTH HAZARDS RESULTING IN OCCUPATIONAL AND WORK-RELATED DISEASES

Health care sector

Psychosocial and organizational factors

• over-time, shift and night work
• responsibility, decision making
• high expectations
• emergencies
• contact with patients
• confrontation with pain
• dealing with dying people
• violence of patients and family members

• Croatia: 7%
• EU: 28% = economy
  45% = health care
HEALTH RISK IN HEALTH CARE SECTOR

- Occupational diseases
  - statodynamic strain
  - biological agents
  - chemicals
  - ionizing radiation
  - psychosocial and organizational factors

- Work-related diseases
OCCUPATIONAL DISEASES

Croatia
- number: ~ 80 - 200/y
- rate/100,000 employees: 6 - 15

EU
- rate/100,000 employees: ~ 10 - 170

Health care sector

Croatia
- number: ~ 8 - 30/y
- rate/100,000 employees: ~ 10 - 30
- 7–14% of all OD

EU
- rate/100,000 employees: ~ 4 – 60
- 3 - 19% of all OD in particular state
OCCUPATIONAL DISEASES
rate/100 000 employed

EU
• OD: ~ 10 – 170
• OD in health care: ~ 4–60
OCCUPATIONAL DISEASES IN CROATIA
rate/100 000 employed/2010.

Healthy Workplaces for Health Workers

SEEEWA 2011
OCCUPATIONAL DISEASES IN HEALTH CARE SECTOR

% of infectious occupational
diseases in health care sector
- Sweden: 10%
- Germany: 33%
- France: 40%
- Croatia: 66%

Healthy Workplaces for Health Workers
SEEW A 2011
INFECTIONOUS DISEASES IN HEALTH CARE SECTOR

- Viral hepatitis: 24%
- TBC: 27%
- Scabies: 24%
- Smallpox: 8%
- Bacterial infections: 12%
- Viral infections: 5%
## OCCUPATIONAL DISEASES IN HEALTH CARE SECTOR 2002.-2010.

<table>
<thead>
<tr>
<th>Cancer</th>
<th>Dermatitis</th>
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<td>breast</td>
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<td>thyroid</td>
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<td>blood</td>
<td>infectious</td>
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<td>kidney</td>
<td>radiodermatitis</td>
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<td>colon</td>
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</table>

**Healthy Workplaces for Health Workers**

SEEWA 2011
Injuries at work
- needlestick/sharp injuries/punctures
- cut, contusions, fractures

Occupational diseases
- infections
- cancers
- dermatitis
- cataract
- allergies
- ...

Work-related diseases
- musculoskeletal diseases
- psychosomatic disorders: stress, burnout, anxiety, irritability, depression
Risk

= probability * severity of damage
RISK ASSESSMENT

- Course of continuing medical education of occupational physicians

ROLE OF THE OCCUPATIONAL MEDICINE SPECIALIST IN HEALTH RISK ASSESSMENT AT WORK
# RISK ASSESSMENT OF INJURIES AT WORK

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Source of hazard</th>
<th>Implemented measures</th>
<th>Probability</th>
<th>Type of injury</th>
<th>Severity of injury</th>
<th>Risk level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical hazards</td>
<td></td>
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<tr>
<td>Falling and tripping</td>
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<tr>
<td>Electric hazard</td>
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<td>Fire and explosion</td>
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<td>Thermal hazards</td>
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# Risk Assessment of Occupational and Work-Related Diseases

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Source of hazard</th>
<th>Implemented measures</th>
<th>Probability</th>
<th>Occupational disease</th>
<th>Work-related disease</th>
<th>Severity of disease</th>
<th>Risk level</th>
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<tbody>
<tr>
<td>Chemicals</td>
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<td>Biological agents</td>
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<td>Noise</td>
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<td>Vibration</td>
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<td>Radiation</td>
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<td>Climate</td>
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<td>Static strain</td>
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<td>Other hazards</td>
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</table>
# Classification of Injury Severity

<table>
<thead>
<tr>
<th>Severity of Injury</th>
<th>Characteristics of Injury</th>
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<tbody>
<tr>
<td>Very light</td>
<td>No danger for life</td>
</tr>
<tr>
<td>Abrasion, small bruise</td>
<td>Insignificant body damage</td>
</tr>
<tr>
<td></td>
<td>Preserved function of injured body part</td>
</tr>
<tr>
<td></td>
<td>Maintained work ability</td>
</tr>
<tr>
<td>Light</td>
<td>No danger for life</td>
</tr>
<tr>
<td>Cut, bruise, contusion</td>
<td>Light body damage</td>
</tr>
<tr>
<td></td>
<td>Temporary limitation of function of injured body part</td>
</tr>
<tr>
<td></td>
<td>Short-term work disability</td>
</tr>
<tr>
<td>Medium</td>
<td>Potential threat for life</td>
</tr>
<tr>
<td>Wound, stab, larger</td>
<td>Significant body damage</td>
</tr>
<tr>
<td>laceration and contusion,</td>
<td>Temporary significant limitation of function of injured</td>
</tr>
<tr>
<td>wrench, fractures</td>
<td>body part</td>
</tr>
<tr>
<td></td>
<td>Temporary work disability</td>
</tr>
<tr>
<td>Severe</td>
<td>Real threat for life</td>
</tr>
<tr>
<td>Amputation, crushing,</td>
<td>Permanent body damage or destruction of body part</td>
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<tr>
<td>multiple injuries</td>
<td>Permanent work disability</td>
</tr>
<tr>
<td></td>
<td>Mutilation</td>
</tr>
<tr>
<td>Fatal or collective accident</td>
<td>Death</td>
</tr>
</tbody>
</table>
CLASSIFICATION OF DISEASE SEVERITY

A = disease without consequences on work ability

B = disease which consequences can not significantly influence work ability

C = disease which consequences can reduce work ability

D = disease with permanent consequences which cause work disability, progressive disease

E = disease with handicap, fatal disease
### RISK QUANTIFICATION

<table>
<thead>
<tr>
<th>Probability</th>
<th>Very light</th>
<th>Light</th>
<th>Medium</th>
<th>Severe</th>
<th>Fatal</th>
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<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
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<td>Insignificant</td>
<td>1</td>
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<td>2</td>
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<td>Small</td>
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<td>3</td>
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<tr>
<td>Medium</td>
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<td>3</td>
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<td>High</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>Very high</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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## RISK QUANTIFICATION AND MEASURES

<table>
<thead>
<tr>
<th>Risk level</th>
<th>Risk</th>
<th>Preventive measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>insignificant</td>
<td>– working conditions are satisfactory&lt;br&gt;– additional measures are not needed</td>
</tr>
<tr>
<td>2</td>
<td>acceptable</td>
<td>– working hazards do not exceed allowable limits&lt;br&gt;– maintaining and long-term monitoring of working conditions</td>
</tr>
<tr>
<td>3</td>
<td>medium</td>
<td>– working conditions can in some persons cause disorders&lt;br&gt;– planning and regularly performing measures&lt;br&gt;– regular health surveillance</td>
</tr>
<tr>
<td>4</td>
<td>high</td>
<td>– working conditions can endanger the health&lt;br&gt;– performing measures in short term&lt;br&gt;– regular health surveillance</td>
</tr>
<tr>
<td>5</td>
<td>very high</td>
<td>– working conditions can be a threat for life&lt;br&gt;– stop the working process&lt;br&gt;– performing the measures immediately&lt;br&gt;– immediate health surveillance</td>
</tr>
</tbody>
</table>
Thank you!

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