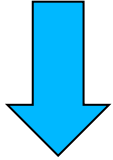




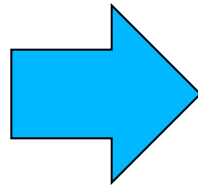
HAZARD & RISK: e.g. SAFETY AND HEALTH IN HOSPITALS



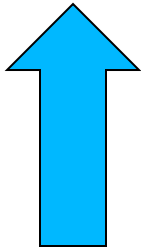
Hazard



Exposure



**Risk of
Outcome/Effect**



Control Measures

Hospital eTool - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print Copy Paste

Address <http://www.osha.gov/SLTC/etools/hospital/mainpage.html> Go Links

Y! Search Web NEW Toolbar Update Choose Buttons Welcome Tour

DashBar Enter search words here Search

Return to Safety and Health Topic Pages



Hospital eTool

- ▶ Scope
- ▶ Site Map
- ▶ User Guide
- ▶ Expert Systems
 - Fire Safety
 - LOTO
 - Standards
- ▶ References
- ▶ Glossary
- ▶ Credits

Hospital eTool

Click on the area for more specific information.



Hospital Universiti Kebangsaan Malaysia (HUKM)



Hazard Classification

■ Physical

- ☐ Noise, Heat, Vibration, Ionizing radiation, Pressure, Poor lighting, Electricity

■ Chemical

- ☐ Solid/liquid/semisolid/gas
- ☐ Heavy metal, solvent etc

■ Biological

- ☐ Bacteria, Virus, Parasite

■ Psychological

- ☐ Stress

■ Ergonomic problem

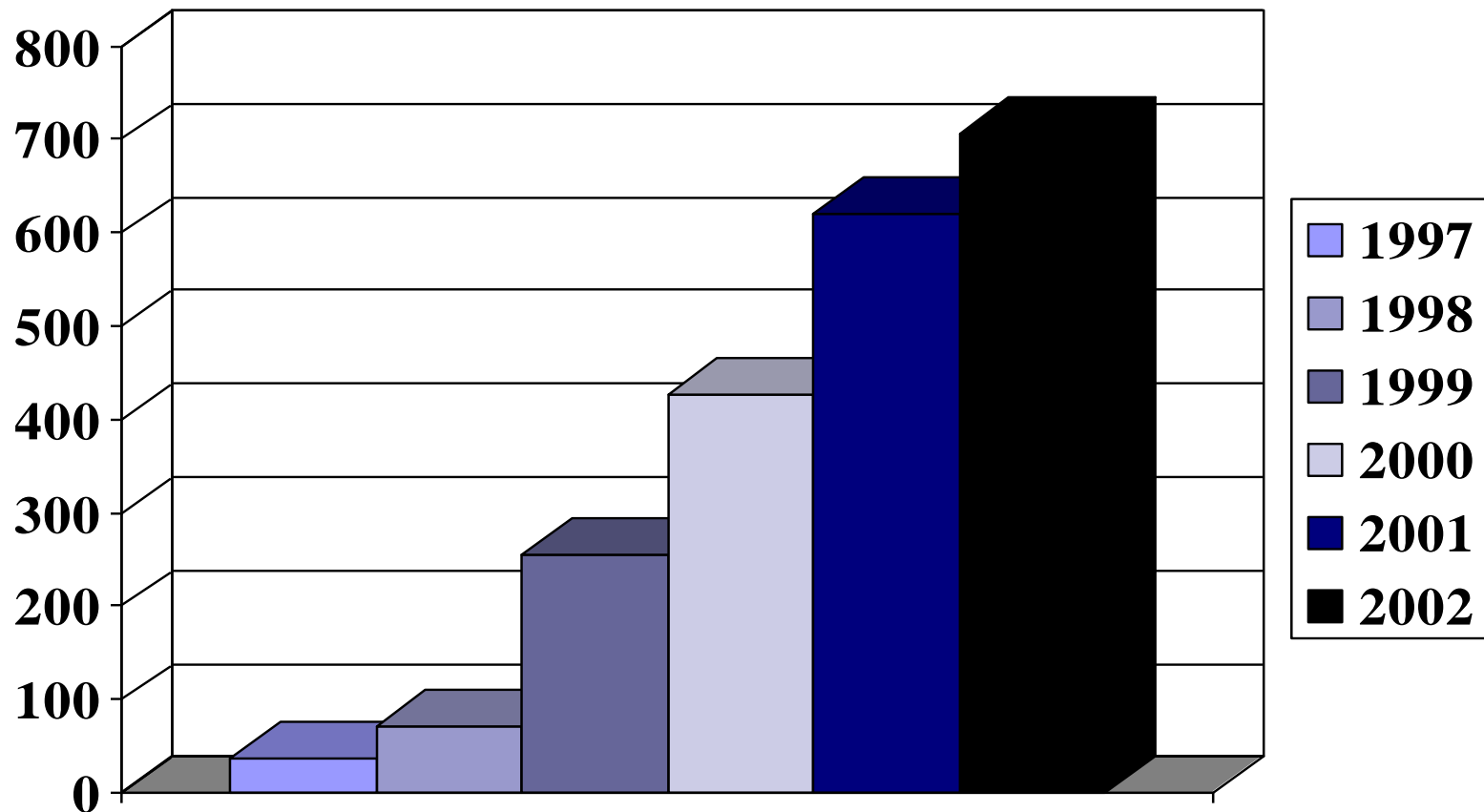
- ☐ Lifting heavy object, poor posture, repeated movements



Biological Hazards

- **Hepatitis B**
- **HIV/AIDS**
- **Tuberculosis**
- **SARS**
- **MERS-CoV**
- **Ebola**

Needlestick Injuries, MOH (1997-2002)





INCIDENCE RATE OF NEEDLESTICK INJURIES 2002

CATEGORY	NO OF CASES	NO. AT RISK	INCIDENCE RATE/1,000
DENTAL OFFICER	17	687	24.7
ATTENDANT	31	2,512	12.3
DOCTOR	165	6,836	24.1
MEDICAL ASSIST.	45	4,535	9.9
JM/MIDWIFE	50	6,823	7.3
NURSE	181	21,104	8.5
MLT	9	2,153	4.1





Hepatitis B and Health Care Workers

- **Prevalence among blood donors : 1.55% HBsAg positive (45124 screened in 1993)**
- **Liver cancer - 70% of cases are due to HBV**
- **Prevalence among HCW are 3-5 times higher than the general population**
- **Risk associated with :**
 - ✓ **Higher frequency of exposure to blood, body fluid and contaminated sharps**
 - ✓ **Longer duration of work- in contact with high risk groups**
 - ✓ **High prevalence of Hepatitis B among patient**



Severe Acute Respiratory Syndrome

■ Issues arise:

- ☐ Case management- specific protocols
- ☐ Appropriate personal protective equipments:
mask, respirators, gowns, gloves
- ☐ Efficient ventilation system

HAZARDOUS CHEMICALS

detergents

pesticides

formaldehyde

pharmaceuticals

toxic
wastes







Designated area for chemical carcinogens



DERMATITIS DUE TO DETERGENT EXPOSURE



Case report: Allergic Contact Dermatitis (Latex allergy)

- A trainee staff nurse complained of skin lesion on both hands - worse after using latex glove
- Patch test: positive to latex allergen
- Use alternative glove: latex-free glove



Physical hazards

- **Ionizing Radiation**
- **Noise**
- **Vibration**
- **Heat**



Ionizing Radiation- Results of injury:

- **Nucleic Acids:** Damaged chromosomes
- **Acute effects:** damaged bone marrow
- **Chronic effects:** cancer, thyroid damage, cataracts, sterility, growth and developmental defects, and decreased life expectancy



Case Report: Noise Induced Hearing Loss

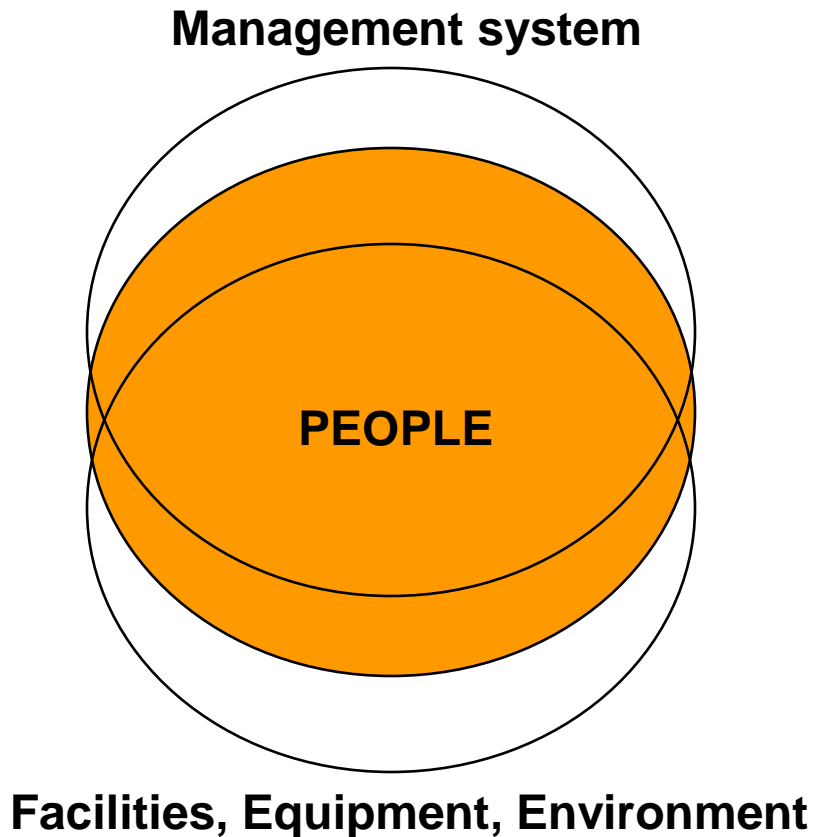
- A 55 year old medical assistant, worked at POP Room & Orthopaedic OT
 - Presented with progressive and marked hearing loss, associated with depression
 - 30 years exposure to noise (85-100 dBA)



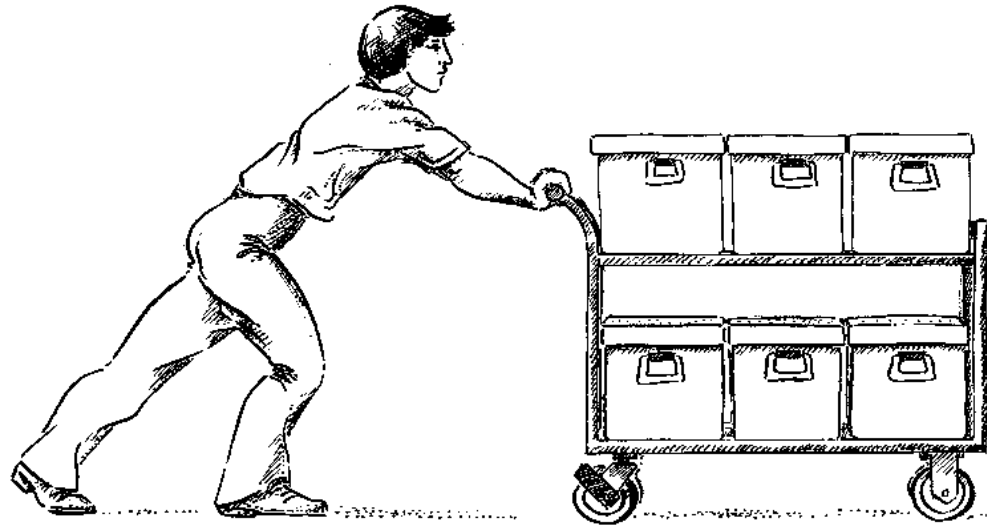
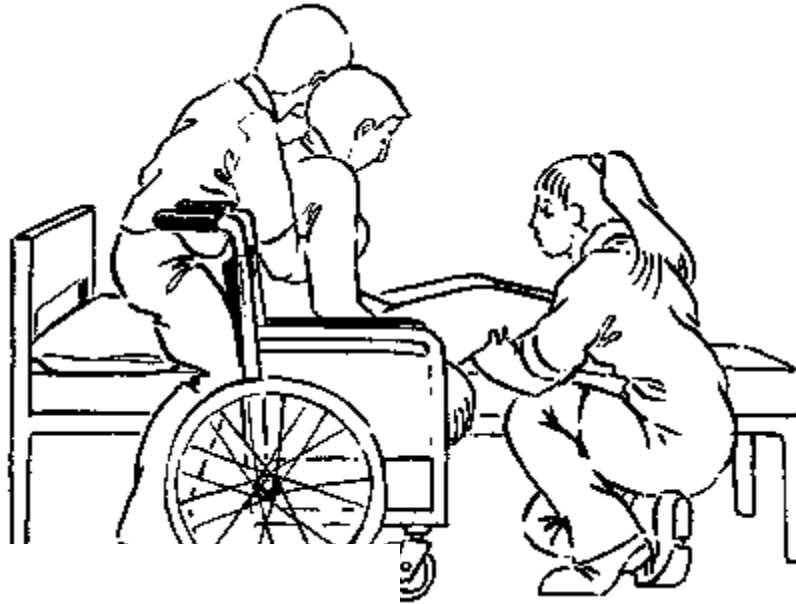
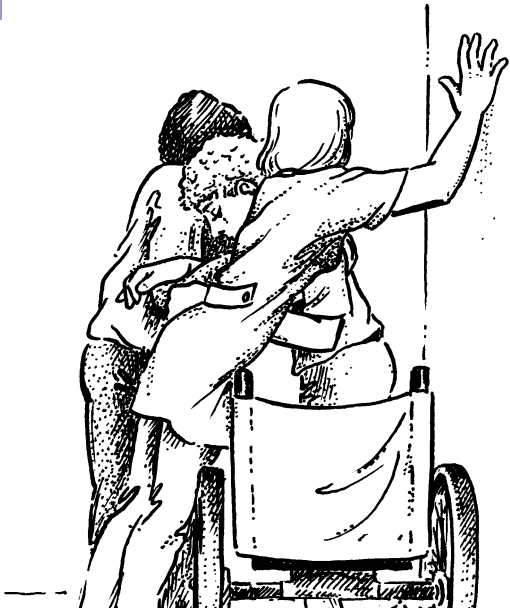
Ergonomic Problems

- **Lifting heavy objects/patients**
- **Awkward posture**
- **Static posture-prolonged standing**

Ergonomics: People-centered



- Fitting workplace conditions and job demands to the capabilities of the working population
- Through a process of identifying and controlling job risk factors





Rubber flooring for the slope and metal rail



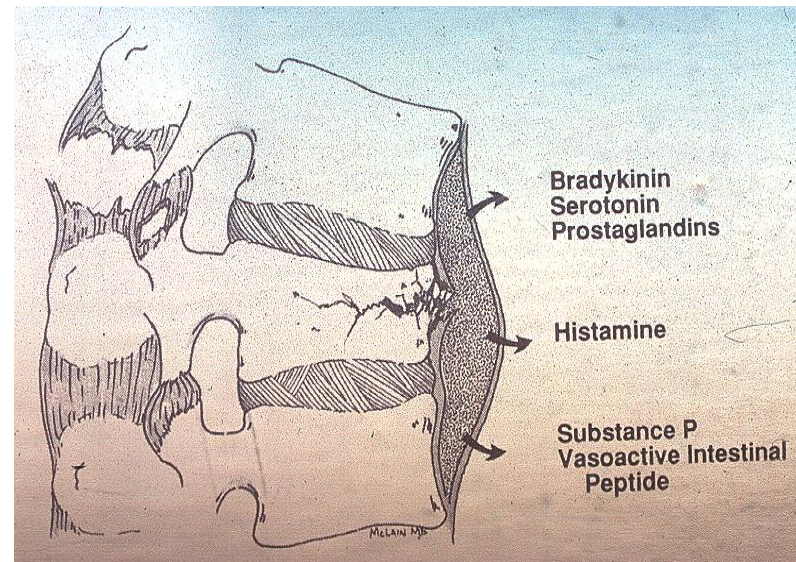
Congested work stations

Non-ergonomic chairs



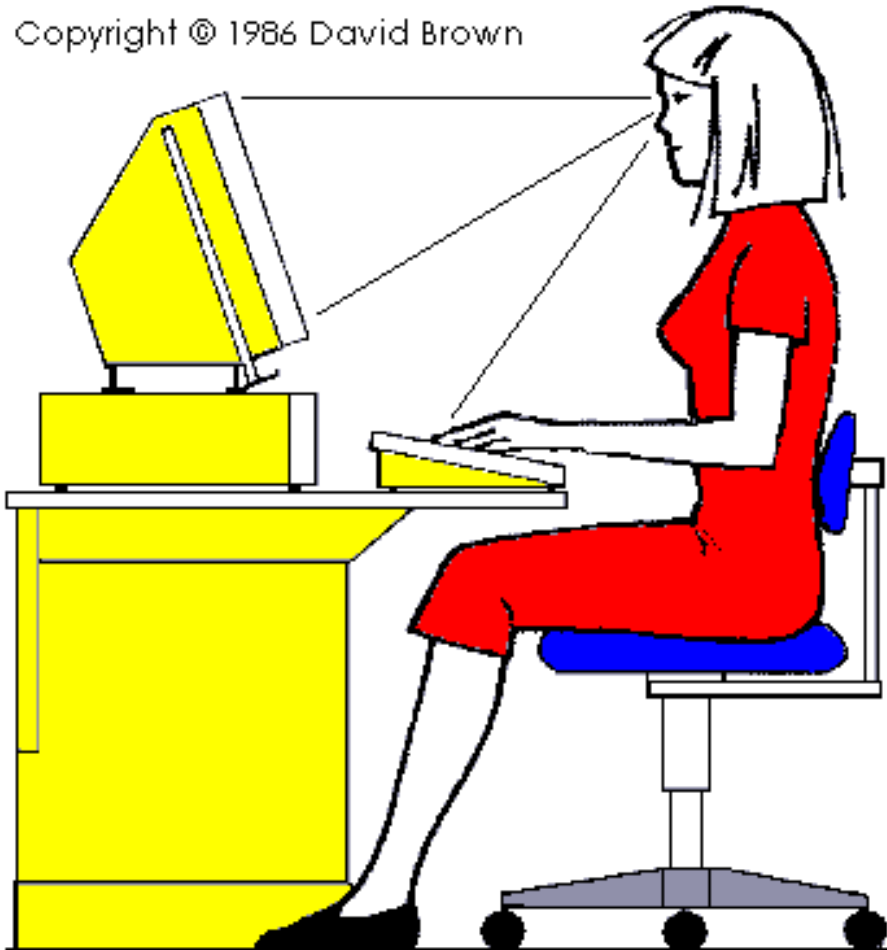
Case Report: Injury while manual handling

- 55 y.o staff nurse @ Ortho Ward
- c/o: Acute, severe pain at lower back while transferring an obese patient from bed
- Diagnosis: Compression Fracture L1



Computer Work Station

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- ‘Typing Injuries’
- Eye Strain
- Back Pain
- Psychological Stress



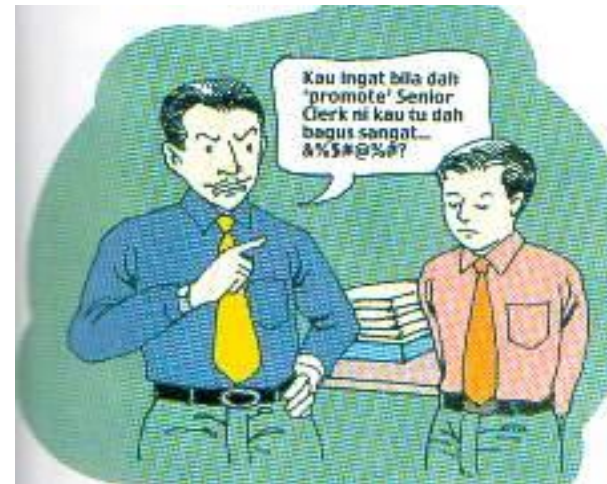


Psychosocial factors

- **Stress**
- **Depression**
- **Anxiety**
- **Burnout**
- **Shift work**

Stressor at Workplace

- S- Support
- T-Task
- R-Role
- E-Environment
- S-Shift work
- S-Superior
- O-Organization
- R-Reward not sufficient



Signs of Stress



How you feel (emotion)

- Anxious
- Depressed
- Angry/frustrated
- Bored

How you think (cognition)

- Poor concentration & memory
- Poor organization and decision making
- Less creative in problem solving
- Hypersensitive to criticism

How you behave

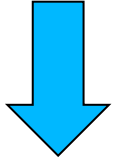
- Accidents/mistakes
- Sleeping problems
- Take drugs
- Problematic social behavior

Your Body

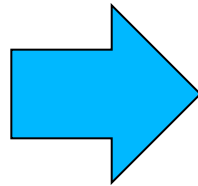
- Aches and pain
- Sweating, dizzy, breathless
- Frequent infections
- Asthma, cardiac problems, hypertension



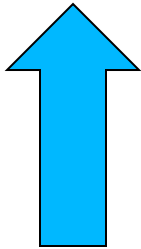
Hazard



Exposure



**Risk of
Outcome/Effect**



Control Measures



STEPS OF RISK ASSESSMENT

1. Look for hazards
2. Decide who might be harmed and how
3. Assess the likelihood of exposure
4. Evaluate risks from hazards
5. Decide whether existing precautions adequate or more should be done
6. Record findings
7. Review assessment periodically.



Hazard Classification

■ Physical

- Noise, Heat, Vibration, Ionizing radiation, Pressure, Poor lighting, Electricity

■ Chemical

- Solid/liquid/semisolid/gas
- Heavy metal, solvent etc

■ Biological

- Bacteria, Virus, Parasite

■ Psychological

- Stress

■ Ergonomic problem

- Lifting heavy object, poor posture, repeated movements



Hazard Rating	Definition in Terms of Potential to Cause Harm to People
1	No injury/slight injury/illness – not affecting work performance or causing disability
2	Minor injury/illness – affecting work performance such as restriction of activities or need a few days to recover
3	Major injury/illness – result in permanent partial disability or affecting work performance in the long term
4	Permanent total disability or fatality
5	Multiple fatalities (large exposed population)

Exposure Rating	Definition
Improbable (1)	Exposure less than one per year
Remote (2)	Exposure greater than one time per year
Occasional (3)	Exposure greater than one time per month
Probable (4)	Exposure greater than one time per week
Frequent (5)	Potential exposure one or more time per shift or per day

Exercise in Risk Characterization

HR \ ER	Very low (1)	Low (2)	Medium (3)	High (4)	Very high (5)
No/slight injury (1)					
Minor injury (2)					
Major injury (3)					
Fatality/ permanent disability (4)					
Multiple fatalities (5)					

HR= Hazard Rating
ER= Exposure Rating
Risk rating = HR x ER

Adequacy of Control Measures

- Suitable for protecting employees
- Effective in preventing or minimizing exposures
- Properly maintained

HIERARCHY OF CONTROL MEASURES

- a) Elimination
- b) Substitution
- c) Total enclosure of process and handling systems
- d) Isolation
- e) Modification of the process parameters
- f) Engineering control
- g) Administrative
- h) PPE (Personal Protective Equipment)





Eye wash station



Fire extinguisher



First Aid box

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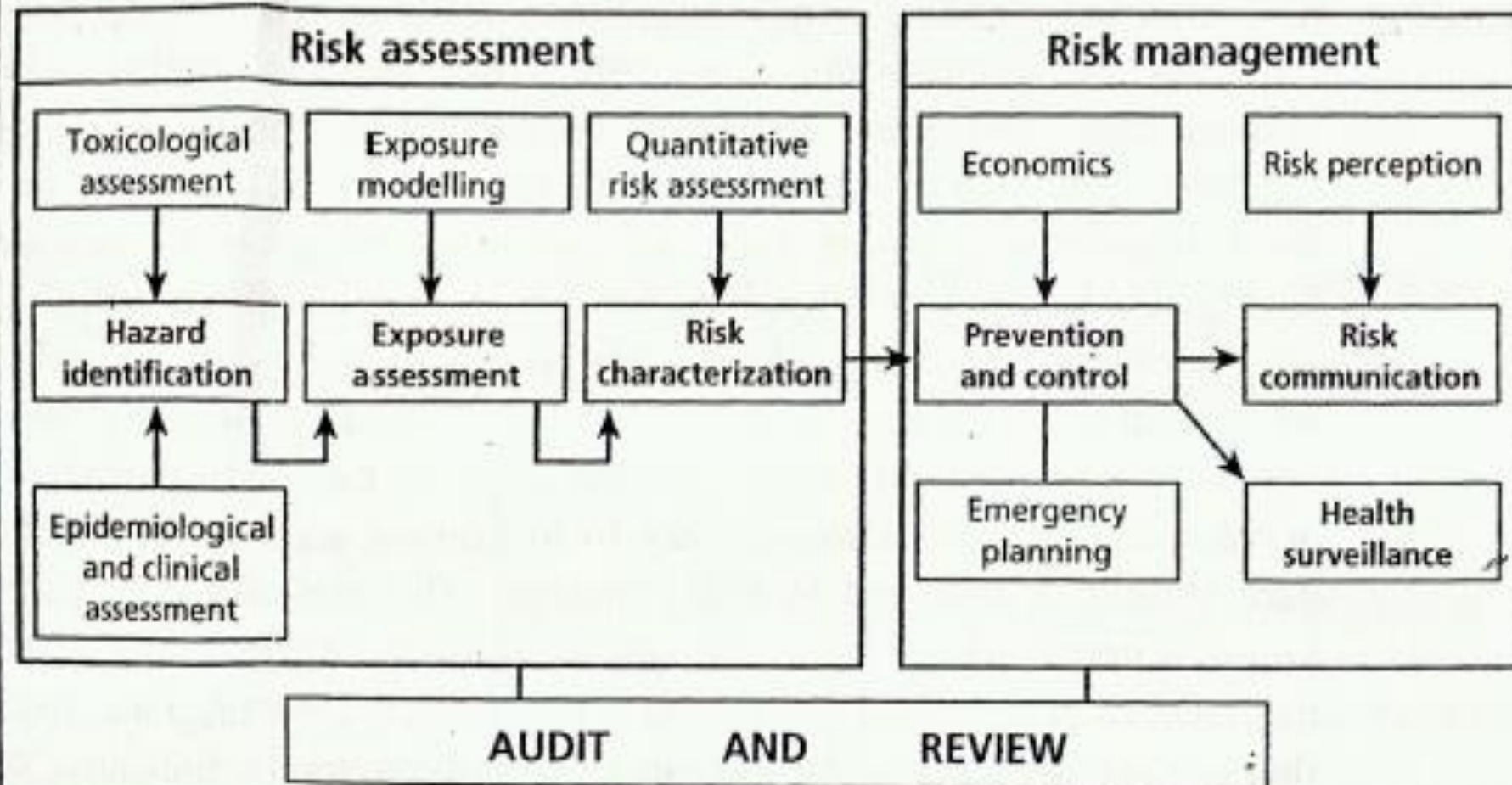
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RISK DECISION

1. RISK NOT SIGNIFICANT
2. RISK SIGNIFICANT & ADEQUATE CONTROL MEASURES
3. RISK SIGNIFICANT & NOT ADEQUATE CONTROL MEASURES,
4. UNABLE TO ASSESS THE RISK

Health and Safety Management

Occupational health risk assessment and management





THANKS

- ASSALAMMUALAIKUM WT. WBT.