



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



# OCCUPATIONAL HEALTH

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# OCCUPATIONAL HEALTH

- ❑ Millions of workers are exposed to **toxic materials**
- ❑ **or any other hazards** , (**occupational hazards**) and
- ❑ **exposures** which are sufficient to result in a series of health problems.
- ❑ Fortunately, the **most distinguishing** feature of the **occupational hazards** is that,
  - ❑ **they are preventable.**
- ❑ Therefore, there is a crucial role that can be played by
  - ❖ **Health professionals**, both in
  - ❑ **Recognizing** work-related medical problems and
  - ❖ **Taking** appropriate measures **to prevent** them
- ❑ **Occupational Health**
- is concerned with the **effects** of **work on health**



# Occupational Health



is concerned with the effects of work on health,  
so it may be defined as  
that science devoted to the

Recognition,  
Evaluation and  
Control,

of workplace hazards that  
may cause

sickness  
impaired health or  
significant discomfort

to employees  
in the community.

The health of the workers has several determinants,  
including risk factors at the workplace leading to  
cancers, accidents, musculoskeletal diseases, respiratory  
diseases, hearing loss, circulatory diseases, stress-related  
disorders and communicable diseases and others.



# Occupational Health

It is defined

by the International Labor Office (ILO)  
and World Health Organization (WHO) *in 1950* as:



"The **promotion** and **maintenance** of the **highest** degree of physical, mental and social wellbeing of **all workers** in all occupations" (*Forsmann 1983*).

- ❑ This definition emphasizes the term **health** rather than disease, According to the WHO's **occupational health definition** Occupational health deals
  - with all aspects of **Health** and **Safety** in the **workplace** and
  - has a **strong focus** on **primary prevention** of hazards

It combines both occupational medicine & occupational hygiene

## History

- ❑ The history of occupational diseases is as old as organized economic activity.
- ❖ Back pain resulting from strain at work is described in an Egyptian papyrus dating to at least **1600 BC**.
- ❖ Other occupational disorders were **prominently mentioned** by
- ❖ **Hippocrates in 460 BC** (Roman author). taught physicians that 'When you come to a patient's house, you should ask him what **sort of pains** he has, **what caused them**, how **many** days he has been ill, whether the bowels are working and what sort of food he eats.
- ❖ In the **Middle Ages** and early **Renaissance**
- ❖ several medical articles **were written** on the hazards of
- ❖ **mining** and smelting. صهر
- ❖ **The Modern Era**





## The Modern Era

The modern era of occupational medicine dates from the **early 1700s**,

One of the great **pioneers** in occupational medicine was the Italian physician **Bernardino Ramazzini** (1633–1714)

He is often described as the '**Father of Occupational Medicine**'

he wrote the first **comprehensive textbook** in this field. Ramazzini wrote: 'I may venture أجرو (set further) to **add one more question**:

➤ **What occupation does he follow?**

- in his writings, **Ramazzini described** many occupational **illnesses** that are still seen today, and furthermore,
- **described** the principles **for their control**
- He convicted أدان the lack of ventilation and unsuitable temperatures
- he urged labourers in dusty trades to work in **large, ventilated** rooms,





- he recommended **rest intervals** in prolonged work and
- advocated (advised) **exercise and correct working postures**

❑ **Charles Thackrah** wrote the **first book** in English in **1831**,

❑ **New** and **extensive legislation** during that time was **legislated in Britain**

- to protect the health of workers,
- to control CHILD LABOUR, and
- to **protect** the **public health** at a time of profuse pollution and cheating of food.

❑ **In 1914**, **workers' compensation**, patterned after the German system, was introduced into Canada.

❑ **The one major event** that profoundly **influenced** and **shaped** the development of occupational health was



## ❖ the Industrial Revolution in the eighteenth century

❖ The industrial revolution resulted in work being carried out in factories in **urban centres**.



❖ **Effects** were seen **both within the community**, as well as  
❖ **in the individual** worker.

❑ In fact, many consider the most **significant health impact** of industrialization to be **on the community**

❑ **Family life** was **disrupted** (interrupt by causing a disturbance or problem), with **men leaving their families** and moving to work in new industrial areas.

In the industrial areas, **health** and **social problems** **emerged**.  
such as **poor housing** and sanitation, **alcoholism**,  
**prostitution, and poverty**





## "Occupational Disease" :

- is a disease caused by **exposure** to
- a **specific causative agent** at work, and
- **that agent** has been **fully established**(recognized), can be
- **identified, measured** and eventually **controlled**  
eg (*silicosis, brucellosis, lead poisoning*)

### □ Occupational diseases:

- They are a group of **diseases** which **arises out of** and during **the course** of employment, and its **causes** **present** in the occupation.
- ❖ So, there must be a **specific factor** or **substance** in the **work place**, **exposure to which** causes the **disease** occurrence.
- The symptoms and signs often present and appear when the **worker is on job**. *Silicosis, asbestosis, noise induced hearing loss, metal poisoning* are some examples of occupational diseases

# Occupational disease

- It is a disease arising out of or during the course of employment and its cause present in the occupation (e.g. silicosis).

## Why its diagnosis is very critical?

- 1) Worker has the right to receive medical care at the expense of the employer.
- 2) Worker has the right for paid sick leave.
- 3) If disability occurs, the worker has the right for compensation.

# Characteristics of Occupational Illness

1. The **clinical** and **pathological** presentation of occupational disease(OD) is **often identical** to that of non OD. *For example, asthma due to airborne exposure to toluene diisocyanate is clinically indistinguishable from asthma due to other causes.*
2. OD. may occur after the **termination of exposure**. Best eg *asbestos-related mesothelioma (can occur 20–40 years after the exposure.* Some forms of **occupational asthma** manifest **at night**, several hours after the end of the exposure.
3. The **clinical** manifestations of O.D. can **vary with the dose** and **timing of exposure**.  
*For example, at very high airborne concentrations, elemental mercury is acutely toxic to the lungs and can cause pulmonary failure.*  
*at lower levels of exposure, elemental mercury has no pathologic effect on the lungs but can have chronic adverse effects on the central and peripheral nervous systems.*



4. Occupational factors **can act in combination with non occupational factors** to produce disease. *example is the interaction between exposure to asbestos and exposure to tobacco smoke.*

*Long-term exposure to asbestos alone increases the risk of lung cancer about fivefold.*

*Long-term smoking of cigarettes increases the risk of lung cancer about 10–20-fold.*

*Exposed to both, the risk of lung cancer is increased about 50–70-fold.*

5-O.D often develop over **many months or years**, depending on the intensity and circumstances of exposure.

Cancer resulting from inhalation of **Asbestos** fibers, *for example, generally takes at least 20 years to develop, and when it does develop it is difficult or impossible to identify the exact cause in the individual patient.*

6- O.D. **often resemble other medical** conditions; for example, *Lead poisoning duplicates the symptoms of several illnesses, and asthma resulting from sensitization to chemicals in the workplace is often falsely attributed to exposures at home.*

- ❖ Information about the incidence and distribution of such diseases is **thus far from complete.**
- For these reasons, most OD are **often overlooked** or **misdiagnosed** and are **undercounted** in statistical reports.
- ❖ They are more common than is generally realized
- ❖ **All physicians treating adults should have some concern for ODs** whether in **treatment** or **diagnosis** or for the **implications of certain exposures** on the health of **their patients**

## This is because ODs



- ✓ may affect any organ system,
- ✓ may be the cause of unrecognized disease after retirement and
- ✓ occasionally affect other members of the family if chemical exposures are brought home unintentionally or
- ✓ through associated reproductive toxicity.

## Two main elements are present in the definition of an occupational disease:

1. The **causal relationship** between **exposure** in a specific working environment or work activity **and** a **specific disease**; and
2. The fact that the **disease occurs among** a group of **exposed persons** with a frequency **above the** average morbidity of the **rest of the population**

# General criteria for identification and recognition of occupational diseases

## ❖ *Strength of association.*

The **greater the impact** of an **exposure** on the **occurrence** or development of **a disease**, the **stronger** the likelihood of a **causal relationship**.

## ❖ *Consistency.* (lack of change lack of deviation coherence)

**Different research** reports have generally **similar results** and **conclusions**.

## ❖ *Temporality or time sequence.*

The **exposure** of interest **preceded** the **disease** by a **period of time consistent** with any proposed biological mechanism.



❖ *Biological gradient.*

The **greater the level and duration of exposure**, the **greater the severity** of diseases or their incidence.

❖ *Specificity.*

Exposure to a **specific risk** factor results in a **clearly defined pattern of disease or diseases**

❖ *Interventional studies.*

Sometimes, a **primary preventative** trial may verify whether **removing a specific hazard** or **reducing** a specific **risk** from the working environment or work activity **eliminates** the development of a specific disease **or reduces** its incidence.

## 'Work Related Disease'

is a disease that may be **aggravated** or **exacerbated** by work exposures (eg. Bronchial asthma, heart attack)

- **Work-related diseases:**

- Some diseases are **not specially caused by exposures** on job, but
- they are **aggravated by** occupational stressors.
- So, they can **affect all people**. *Hypertension, coronary heart diseases are examples of work related diseases.*

## Work-related diseases

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Occur largely in the community

'Multifactorial' in origin

Exposure to workplace may be a factor

May be notifiable and compensatable

## Occupational diseases

Occur mainly among working population

Cause is specific

Exposure to workplace is essential

Notifiable and compensatable



# Occupational medicine:



- ◎ Royal College of Physicians, (1978) defined
- ◎ **occupational medicine** as: "it is primarily a branch of preventive medicine with some therapeutic functions".
- ◎ **Occupational medicine deals with:**
  - 1) **Health problems** of workers at any workplace.
  - 2) Work **environment** and its **adverse effects** on workers' health.
  - 3) Health **promotion** for workers and **proper prevention** and **treatment**

It combines both occupational medicine and occupational hygiene

# Differences between occupational medicine and clinical medicine



Items	Occupational Medicine	Clinical Medicine
<b>Target group</b>	Workers at all jobs (Healthy)	Patients irrespective to their jobs
<b>Health status</b>	Healthy and diseased	Diseased only
<b>Place</b>	Plants	Hospitals & Clinic
<b>Diagnosis</b>	System of medical examinations	Examination and investigations
<b>Management</b>	Occupational health program	Medical/surgical treatment





## Occupational Health Program:

It is defined as a program for promotion and protection of the health of the working people in their working environment and prevention of occupational hazards in the work place.

### Staffing of occupation health program:

- 1- Industrial physician.
- 2- Occupation nurse.
- 3- Occupational hygienist.
- 4- Safety engineer.
- 5- Industrial safety personnel.
- 6- Toxicologist.