

NON COMMUNICABLE DISEASES (NCD's)

NCD's

- Non-communicable diseases (NCDs), also known as chronic diseases, are not passed from person to person.
- They are usually of long duration and generally slow progression.
- NCDs also result in rapid deaths such as seen in certain diseases such as heart diseases, stroke, cancers, diabetes, chronic kidney diseases, osteoporosis, Alzheimer's disease and others.
- They are the **number one** cause of death and disability in the world.

- NCD's are the leading cause of death globally.
- In 2012 they caused 68% of all deaths (38 million) up from 60% in 2000.
- About half were under age 70 and half were women (WHO, 2015).
- with 80% in low and middle income countries.
- More than 9 million of all deaths attributed to NCDs occur before the age of 60.
- Around the world, NCDs affect women and men almost equally.
- NCDs are not only a health problem but a development challenge as well.

- Non-communicable diseases – such as heart disease, stroke, cancer and chronic respiratory disease – **were once considered to be a problem for high-income countries alone**. Yet these diseases now account for more deaths than HIV, malaria, tuberculosis, diarrhea and all other communicable diseases combined.
- NCDs are related to the interaction of various genetic, environmental and especially lifestyle factors, including smoking, alcohol abuse, unhealthy diets and **physical inactivity**.

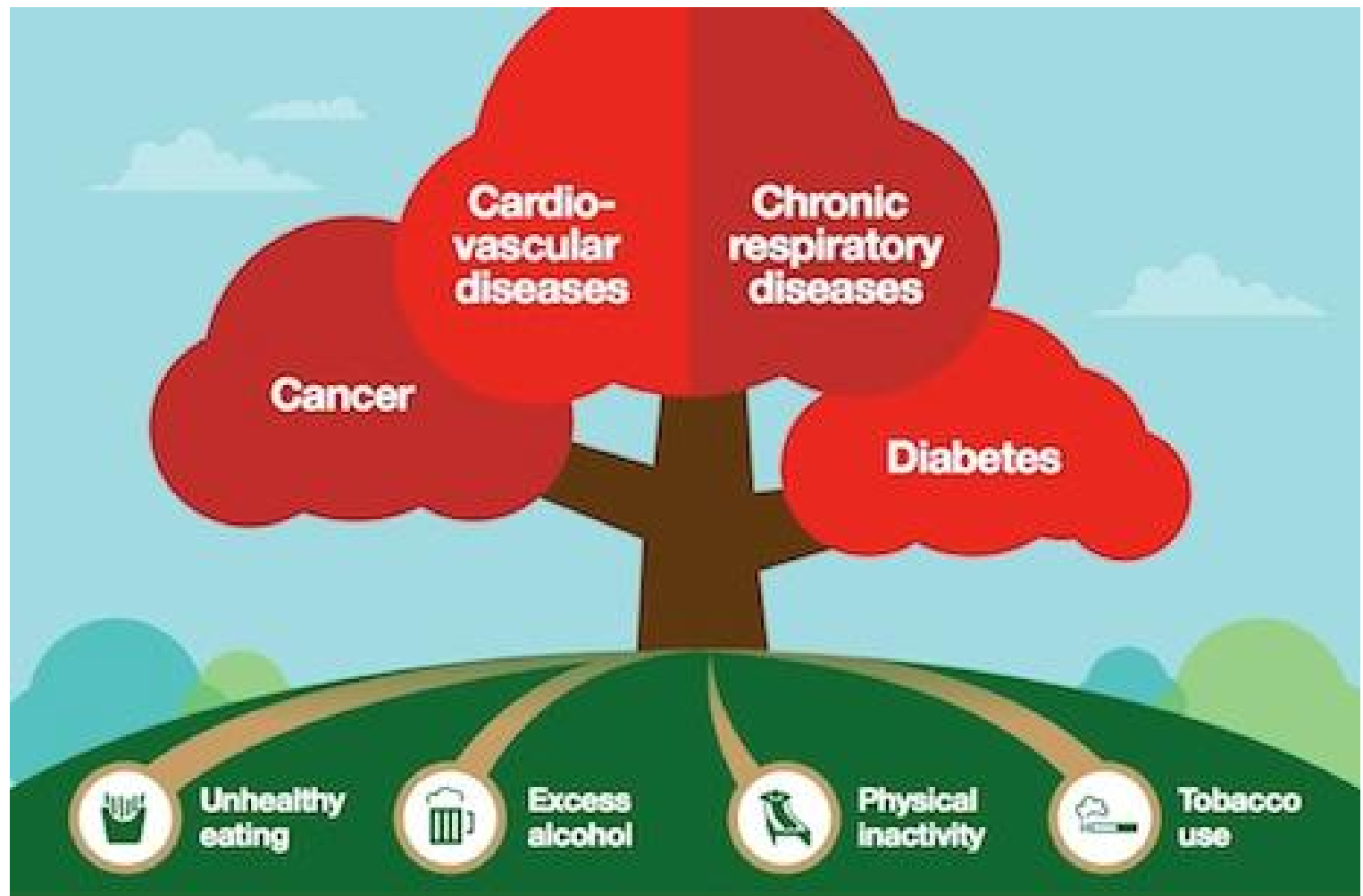
Features

- Gradual onset
- Multiple causes
- Long natural history
- Prolonged treatment
- Care predominates
- Multidisciplinary
- Prolonged follow up
- Quality of life after treatment

Contributing risk factors

- unhealthy diets,
- physical inactivity,
- tobacco and alcohol use,
- air pollution.
- raised blood pressure,
- overweight/obesity,
- raised blood glucose and
- raised cholesterol

In a nut shell



WHO on NCD's-

Messages from Global Status Report of WHO on NCD's (2014)

1. Noncommunicable diseases act as **key barriers** to poverty alleviation and sustainable development.
2. While some countries are making progress, the **majority are off course** to meet the global NCD targets.
3. Countries can move from political commitment to action by prioritizing high-impact, **affordable interventions**.

4. All countries need to set national NCD targets and be **accountable** for attaining them.
5. Structures and processes for **multisectoral** and **intersectoral** collaboration need to be established.
6. **Investment** in health systems is critical for improving NCD outcomes.
7. **Institutional and human resource capacities** and financial resources for NCD prevention and control require strengthening.

Indian scenario

- In India, NCDs were responsible for 53 per cent of deaths and 44 per cent of disability adjusted life years lost (Reddy, et. al., 2005).
- As per WHO- Every year, roughly 5.8 million Indians die from heart and lung diseases, stroke, cancer and diabetes.
- In other words, 1 in 4 Indians risks dying from an NCD before they reach the age of 70.

- “Heart diseases, diabetes, cancers, and chronic respiratory diseases now affect younger and younger people,”

says Dr Poonam Khetrapal Singh, Regional Director of
WHO South-East Asian Region.

Steps taken in India

- India: first to adapt the Global Monitoring Framework on noncommunicable diseases (NCDs).
- India has an operational policy, strategy or action plan to reduce physical inactivity and/or promote physical activity (WHO, 2014).

A reported case study on NCD in India

- In a community-based study in Kerala on risk factor profile for chronic non-communicable diseases, **there was high burden of NCD risk factors observed, comparable to that in the United States** (Thankappan, et al., 2010).

List of NCD's

1. Diabetes
2. Hypertension
3. Osteoporosis
4. Alzheimer's disease
5. Heart Disease
6. Fibromyalgia
7. Lung Cancer
8. Leukemia
9. Skin Cancer
10. Seizures or Epilepsy
11. Hyperthyroidism
12. Hypothyroidism
13. Asthma
14. Lumbar back ache
15. Obesity
16. PCOS
17. Mental illness
18. Others...

1.1 BILLION PEOPLE
worldwide have high blood pressure



**Nearly half of them
don't know they have it**

Visit the CDC Center for
Global Health to learn more.
cdc.gov/globalhealth



Diabetes

- Diabetes is a chronic disease in which the body either cannot produce insulin or cannot properly use the insulin it produces.
- More specifically, diabetes is a condition that affects the body's ability to use glucose as fuel.
- Diabetes leads to high blood sugar levels, which can damage organs, blood vessels and nerves.
- Diabetes is a devastating medical condition affecting people of all ages, genders, and nationalities.

Types of diabetes

- **In type 1 diabetes**, the pancreas produces very little insulin or no insulin at all.
- In this, the body's immune system destroys the cells that release insulin, eventually eliminating insulin production from the body.
- **In type 2 diabetes**, the pancreas does not produce enough insulin or the body does not properly use it.
- Type 2 diabetes is associated with hereditary factors and lifestyle risk factors including poor diet, insufficient physical activity and being overweight or obese.

Hypertension

- Blood pressure is the force exerted by the blood against the walls of blood vessels, and the magnitude of this force depends on the cardiac output and the resistance of the blood vessels.
- Normal is 120/80 mm/Hg.
- Hypertension is having a blood pressure higher than 140 over 90 mmHg, a definition shared by all the medical guidelines.
- Uncontrolled hypertension may eventually cause health problems, such as heart disease and stroke.

Risk factors

- **Age** - everyone is at greater risk of high blood pressure as they get older. Prevalence of hypertension is higher in people over 60 years of age
- **Size** - being overweight or obese is a key risk factor
- **Sex** - men and women have different risk profiles. While they have the same lifetime risks, men are more prone at younger ages while women are more prone at older ages
- **Lifestyle** - as mentioned above, this is to blame for growing rates of hypertension, from greater uptakes of dietary salt, excessive alcohol, low dietary potassium, and physical inactivity.
- **Stress**. High levels of stress can lead to a temporary increase in blood pressure.
- **Certain chronic conditions**. Certain chronic conditions also may increase your risk of high blood pressure, such as kidney disease, diabetes and sleep apnea.
- **Family history**. High blood pressure tends to run in families.

Osteoporosis

- Osteoporosis is a disease where decreased bone strength increases the risk of a broken bone. It is the most common reason for a broken bone among the elderly.
- Bones that commonly break include the back bones, the bones of the forearm, and the hip.
- Until a broken bone occurs there are typically no symptoms.
- Bones may weaken to such a degree that a break may occur with minor stress or spontaneously.
- Chronic pain and a decreased ability to carry out normal activities may occur following a broken bone.

- Key risk factors for osteoporosis include
 - genetics,
 - lack of exercise,
 - lack of calcium and vitamin D,
 - personal history of fracture as an adult,
 - cigarette smoking,
 - excessive alcohol consumption,
 - history of rheumatoid arthritis,
 - low body weight, and
 - family history of osteoporosis.

- Treatments for osteoporosis, in addition to prescription osteoporosis medications, include stopping use of alcohol and cigarettes, and assuring adequate exercise, calcium, and vitamin D

Cardiovascular diseases (CVD's)

- Cardiovascular disease is caused by disorders of the heart and blood vessels, and includes coronary heart disease (**heart attacks**), cerebrovascular disease (**stroke**), raised blood pressure (**hypertension**), **peripheral artery disease**, **rheumatic heart disease**, **congenital heart disease** and **heart failure**.
- Although heart attacks and strokes are major killers in all parts of the world, 80% of premature deaths from these causes could be avoided by controlling the main risk factors: **tobacco**, **unhealthy diet** and **physical inactivity**.

Cardiovascular diseases:

Contributing factors

- A person's genetic make-up
- The foundations of adult health are laid in early life
- Socioeconomic group
- Mental health
- Diet
- Overweight and obesity
- Inactivity
- Tobacco
- Alcohol
- Diabetes
- Globalization and urbanization

Cardiovascular diseases:

Prevention

- Focusing on a combination of risk factors for cardiovascular disease
- Implementing medical screening for individuals at risk
- Providing effective and affordable treatment to those who require it

Cancer

- **Cancer** is the uncontrolled growth and spread of cells that arises from a change in one single cell. The change may be started by external agents and inherited genetic factors and can affect almost any part of the body. The transformation from a normal cell into a tumour cell is a multistage process where growths often invade surrounding tissue and can metastasize to distant sites.

Cancer: Interaction between a person's genetic factors and any of three categories of external agents

- physical carcinogens, such as ultraviolet and ionizing radiation or asbestos;
- chemical carcinogens, such as vinyl chloride, or betnaphthylamine (both rated by the International Agency for Research into Cancer as carcinogenic), components of tobacco smoke, aflatoxin (a food contaminant) and arsenic (a drinking-water contaminant); and
- biological carcinogens, such as infections from certain viruses, bacteria or parasites.

Most chemicals to which people are exposed in everyday life have not been tested for their long-term impact on human health.

Cancer:

the majority of cancer deaths

- Lung, breast, colorectal, stomach and liver cancers
- In high-income countries, the leading causes of cancer deaths are lung cancer among men and breast cancer among women.
- In low- and middle-income countries cancer levels vary according to the prevailing underlying risks. In sub-Saharan Africa, for example, cervical cancer is the leading cause of cancer death among women.

Cancer:

risk factors for cancer

- tobacco use
- unhealthy diet
- insufficient physical activity
- the harmful use of alcohol
- Infections (hepatitis B, hepatitis C (liver cancer), human papillomavirus (HPV; cervical cancer), *Helicobacter pylori* (stomach cancer))
- Radiation
- variety of environmental and occupational exposures of varying importance

Cancer: policy

WHO's approach to cancer has four pillars:

- prevention,
- early detection,
- screening,
- treatment
- palliative care.

Chronic respiratory diseases:

Quick facts and figures

- According to the WHO Global Status Report on NCDs 2010, smoking is estimated to cause about 71% of all lung cancer deaths and 42% of chronic respiratory disease worldwide. Of the six WHO regions, the highest overall prevalence for smoking in 2008 was estimated to be the in the European Region, at nearly 29%.



Chronic respiratory diseases:

Quick facts and figures

- Survey data from 2002–2007 indicate that over half of all children aged 13–15 years in many countries in the European Region are exposed to second-hand tobacco smoke at home. Second-hand smoke causes severe respiratory health problems in children, such as asthma and reduced lung function; and asthma is now the most common chronic disease among children throughout the Region.

Chronic respiratory diseases:

Quick facts and figures

- According to the latest available data for 1997–2006, over 12% of infant deaths in the world are due to respiratory diseases.
- Indoor air pollution from biological agents related to damp and mould increases the risk of respiratory disease in children and adults. Children are particularly susceptible to the health effects of damp, which include respiratory disorders such as irritation of the respiratory tract, allergies and exacerbation of asthma. Damp is often associated with poor housing and social conditions, poor indoor air quality and inadequate housing hygiene.

Chronic respiratory diseases:

Quick facts and figures

- Most countries in the world and the European Region have introduced a wide range of comprehensive policies to reduce and eliminate tobacco smoke. For example, the advertising of cigarettes and the sale of tobacco products to minors have been banned in more than 80% of the countries in the Region. Smoking in restaurants and bars continues to be regulated less strictly, however. Ireland, Turkey and the United Kingdom are the first countries to make public places 100% smoke free.

Obesity- A medical condition

- Obesity is one of the greatest public health challenges of the 21st century. Its prevalence has tripled in many countries of the WHO European Region since the 1980s, and the numbers of those affected continue to rise at an alarming rate, particularly among children.
- In addition to causing various physical disabilities and psychological problems, excess weight drastically increases a person's risk of developing a number of noncommunicable diseases (NCDs), including cardiovascular disease, cancer and diabetes.
- The risk of developing more than one of these diseases (co-morbidity) also increases with increasing body weight.

Obesity

- Overweight and obesity are defined as "abnormal or excessive fat accumulation that may impair health"
- Body mass index (BMI) – the weight in kilograms divided by the square of the height in meters (kg/m^2) – is a commonly used index to classify overweight and obesity in adults. WHO defines overweight as a BMI equal to or more than 25, and obesity as a BMI equal to or more than 30.

BMI classification	
Underweight	< 18.5
Normal range	18.5 - 24.9
Overweight	≥ 25.0
<i>Preobese</i>	25.0 - 29.9
Obese	≥ 30.0
<i>Obese class I</i>	30.0 - 34.9
<i>Obese class II</i>	35.0 - 39.9
<i>Obese class III</i>	≥ 40.0

Obesity: Quick facts and figures

- In 2008, more than 1.4 billion adults were overweight and more than half a billion were obese. At least 2.8 million people each year die as a result of being overweight or obese. The prevalence of obesity has nearly doubled between 1980 and 2008. Once associated with high-income countries, obesity is now also prevalent in low- and middle-income countries.



Obesity: Quick facts and figures



- Globally, over 40 million preschool children were overweight in 2008
- Childhood obesity is one of the most serious public health challenges of the 21st century. Overweight children are likely to become obese adults. They are more likely than non-overweight children to develop diabetes and cardiovascular diseases at a younger age, which in turn are associated with a higher chance of premature death and disability.

Obesity: Quick facts and figures

- Supportive environments and communities are fundamental in shaping people's choices and preventing obesity
- Individual responsibility can only have its full effect where people have access to a healthy lifestyle, and are supported to make healthy choices.
- WHO mobilizes the range of stakeholders who have vital roles to play in shaping healthy environments and making healthier diet options affordable and easily accessible.



Alzheimer's disease

- Alzheimer's disease is a chronic neurodegenerative disease that usually starts slowly and gets worse over time.
- The most common early symptom is difficulty in remembering recent events (short-term memory loss).
- As the disease advances, symptoms can include problems with language, disorientation (including easily getting lost), mood swings, loss of motivation, not managing self care, and behavioural issues.
- As a person's condition declines, they often withdraw from family and society.
- Gradually, bodily functions are lost, ultimately leading to death.

Fibromyalgia

- Fibromyalgia is a disorder characterized by widespread musculoskeletal pain accompanied by fatigue, sleep, memory and mood issues.
- Causes
 - Genetics
 - Lifestyle
 - Sleep disturbances
 - Psychological factors

Hyperthyroidism

- It is the condition that occurs due to excessive production of thyroid hormone by the thyroid gland.
- **Symptoms:** nervousness, irritability, increased perspiration, heart racing, hand tremors, anxiety, difficulty sleeping, thinning of the skin, fine brittle hair, and muscular weakness



Hypothyroidism

- Hypothyroidism, also called underactive thyroid or low thyroid, is a common disorder of the endocrine system in which the thyroid gland does not produce enough thyroid hormone.
- Since the main purpose of thyroid hormone is to "run the body's metabolism," it is understandable that people with this condition will have symptoms associated with a slow metabolism.
- **Causes:** Fatigue, Weakness, Weight gain or increased difficulty losing weight, Coarse, dry hair, Dry, rough pale skin, Hair loss, Cold intolerance (you can't tolerate cold temperatures like those around you), Muscle cramps and frequent muscle aches, Constipation, Depression, Irritability, Memory loss, Abnormal menstrual cycles.

Signs and symptoms of Hypothyroidism



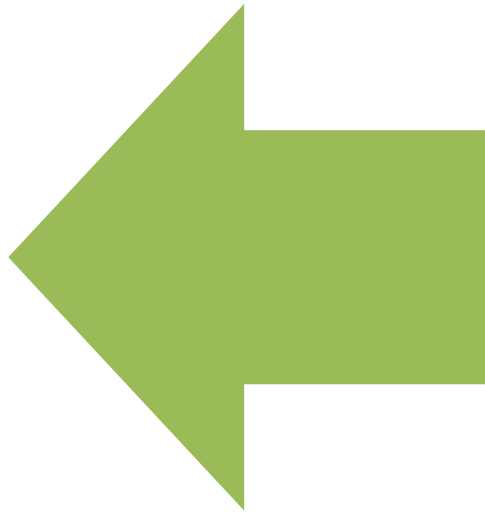
PCOS

- Polycystic ovary syndrome (PCOS) is a set of symptoms due to elevated androgens (male hormones) in females.
- Signs and symptoms of PCOS include irregular or no menstrual periods, heavy periods, excess body and facial hair, acne, pelvic pain, difficulty getting pregnant, and patches of thick, darker, velvety skin.

Mental illness

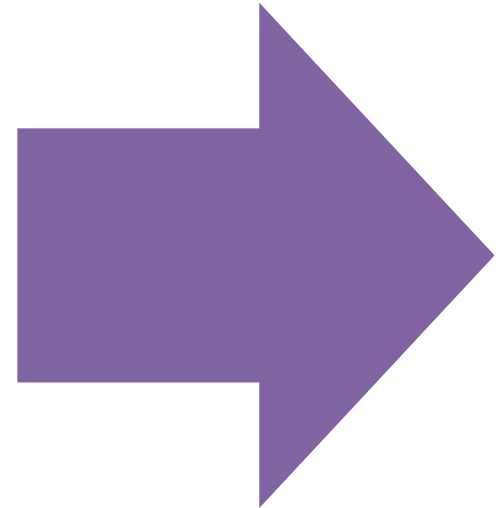
- A mental disorder, also called a mental illness or psychiatric disorder, is a behavioral or mental pattern that causes significant distress or impairment of personal functioning.
- Commonly recognized categories include specific phobias, generalized anxiety disorder, social anxiety disorder, panic disorder, agoraphobia, obsessive-compulsive disorder and post-traumatic stress disorder.

HOW TO DEAL NCD'S



Pharmacological
interventions

Non-Pharmacological
interventions



Pharmacological approach

- Access to **safe and affordable medicines** is crucial.
- Cost-effective medicines in low cost generic forms are **inaccessible** and **unaffordable**.
- Efforts are required to provide medicines in **Govt. hospitals at affordable prices** and required quantities.
- Concerted **global efforts** are important.
- Efficient **procurement** and **distribution**.
- **Side-effects** are inevitable.

NCDs are largely preventable.

PREVENTION IS BETTER THAN
CURE

- Eliminating major risks could prevent most NCDs.

Action towards physical inactivity

- The World Health Organization (WHO) reported that physical inactivity is the fourth leading risk factor for global mortality, accounting for 6% of deaths globally.
- Physical inactivity levels are rising in many countries with major implications for the prevalence of noncommunicable diseases (NCDs) and the general health of the population worldwide.