

Chronic non-communicable disease

Epidemiology

The chronic non-communicable disease

is defined as “an impairment in body function or structure that necessitates a modification in person’s life-style or has persisted for a long length of time.”

Deaths by broad cause group

- Projected main causes of death, worldwide, all ages, 2018
- Total deaths 2018 - **58** million

Cardiovascular disease – heart disease, stroke-30%

Communicable diseases,maternal,perinatal conditions and nutritional deficiencies-30%

Cancer=13%

Chronic respiratory diseases

Injuries-9%

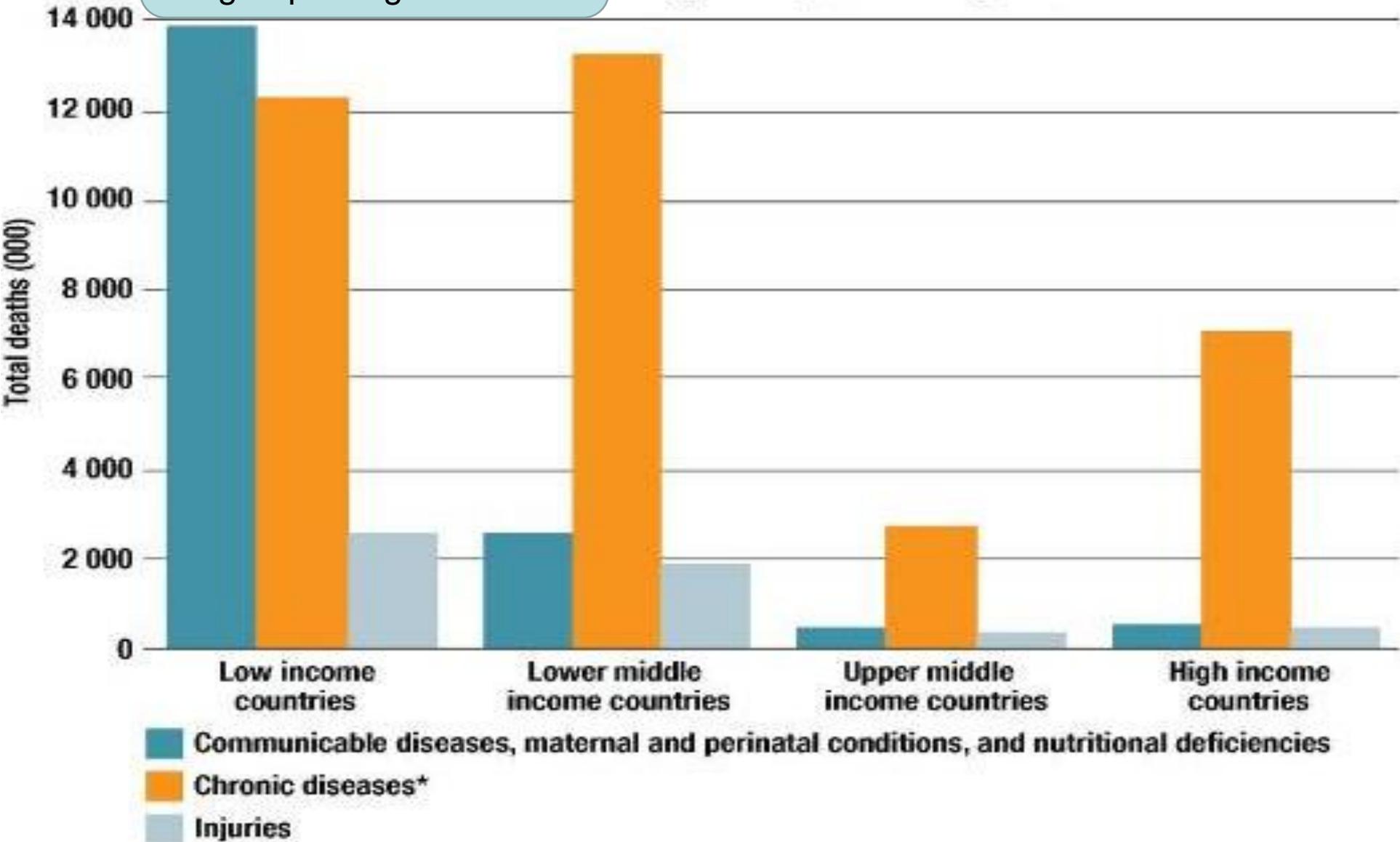
Diabetes=2%

Other chronic diseases-9%

**60% of all deaths are due to
chronic diseases**

**35.000.000 people
will die from
chronic
diseases in 2020**

Projected deaths by major cause-World Bank income group-all ages-2018



Chronic Diseases

- Diabetes
- Asthma
- Congestive Heart Failure
- Hypertension
- Hyperlipidemia
- Cancer

EPIDEMIOLOGICAL PECULIARITIES

- 1. Multifactorial Causation
- 2. Latent Period
- 3. Insidious onset
- 4. Non-reversible changes
- 5. Modification In life-style
- 6. Multi-directional Approach

Obesity

- Is a type of malnutrition that is characterized by abnormal growth of adipose tissue.
- This can occur due to increase in size and/or in the number of the fat cells.
- BMI \geq 30 in males and 28.6 in females is indicative of obesity.

Over weight

- Is the term used for weight more than expected for given age, sex, and occupation.

Aetiology OF Obesity

- 1. Age: obesity increases with the age. Overweight infants are more likely to be obese adults
- 2. Sex: Post-menopausal women are more likely to gain weight. In men, obesity occurs a decade earlier than females.
- 3. Sedentary Life Style: sedentary behavior and obesity generally coexist.
- 4. Genetic Factors: genes suggested to be involved in the regulation of food intake through action in the central nervous system as well as in adipocyte function
- 5. Diet: increasing portion size, eating away from home, and consuming high-energy dense foods appear to increase energy intake. Hormonal influences on diet continue to be explored.
- 6. Psychosocial Factors: stress, depression, sociocultural factors.
- 7. Endocrine Factors: hypothyroidism, Cushing's syndrome, genetic syndromes.

Measurement of Obesity 1:

- 1. Body Weight: The actual body weight (ABW) is compared with the expected body weight. (EBW) Following methods are commonly used to calculate the expected weight.

-**Broca's Method:**

$$\text{EBW} = \text{Height in cm} - 100$$

-**Lorenze's Method:**

$$\text{EBW (males)} = \text{Ht in cm} - 100 - \{(\text{Ht in cm} - 150) / 4\}$$

$$\text{EBW (females)} = \text{Ht in cm} - 100 - \{(\text{Ht in cm} - 150) / 2\}$$

The ratio ABW/EBW is called Corpulence Index. If it is more than 1.2 it is considered over-weight.

Measurement of Obesity 2:

- 2. Body Mass Index (BMI):
 $BMI = W / H$
Here W = weight in Kg, and H = Height in meters multiplied by itself.
The desirable range of BMI is:
 - Males: 20.1- 25
 - Females: 18.7—23.8
- A person is considered obese if BMI is above 30.0 in males, and 28.6 in females.

Measurement of Obesity 3:

- 3. Skin Fold Thickness: Measurement of skin fold thickness at mid-triceps, biceps, sub-scapular region, and supra-iliac regions are used for this purpose. However, this method is not popular due to lack of standardization, poor repeatability, and technical problems involved in the measurement.

Hazards of Obesity:

Mortality: Obesity is a known risk factor for mortality in ischaemic heart disease, hypertension, and renal diseases.

Morbidity: Obesity is a risk factor for a number of conditions like hypertension, ischaemic heart disease, gallstones, and osteoarthritis.

In addition, obese persons carry higher risk of post-operative complications and accidents.

Prevention and Control:

- 1. Diet:** Reduction in fats and carbohydrates in the diet, (especially refined foods, sweets, oils, etc.) is recommended both for treatment as well as prevention. Increase in consumption of dietary fibers and un-refined foods is the other side of the coin.
- 2. Physical Exercise:** Regular physical exercise like fast walking, playing out-door games like tennis, and swimming are necessary adjuvant to diet.

General Rp/ : decrease intake-increase consumption !

- 3. Other Measures:** These include use of drugs, removal of excess fat by surgery, gastric bypass etc. are tried, but have limited value.

Coronary Heart Diseases (CHD)

Ischaemic Heart Diseases (IHDS)

- Coronary heart diseases is considered the world's modern (epidemic) as stated by WHO.

Definition OF CHD :

It can be defined as the impairment of the heart function due to inadequate blood flow to the heart, compared to its needs, caused by obstructive changes in the coronary circulation to the heart.

CHD may manifest itself in many presentations:

- a) Angina pectoris on effort.
- b) Myocardial infarction.
- c) Heart irregular rhythms.
- d) Cardiac failure.
- e) Sudden death.

Magnitude and burden of CHD:

- cause of 1/4 deaths **in** industrialized countries.
- first leading cause of death in these countries.
-
- 25 to 28% heart attacks die suddenly instantly or within 24 hours
- 55% of all cardiac deaths, mortality occurs within the first hours.

- CHD. death in developing countries lower than developed,
- Masked by other causes
- Problems in diagnosis and reporting also play a role.
- However, CHD death rates in those countries are increasing; eg
- Singapore, death rate doubled ,within 20 years

Epidemiology1

- Person:
more frequent among the middle- aged and older men.
 due to accumulation of hazards.
- men have more CHD death rates than women
- more among CHD family histories
- hypertension and diabetes mellitus prone **CHD**
- life styles and habits
- type A personalities more prone to CHD.
- high social class in the 1950's; however, since the 1970's it became more among lower classes.

Epidemiology2

- Time:
 - Epidemics began at different times in different countries.
- In USA in the early 1920' s,
- in Britain in 1930's & later in European countries.
- Now, the developing countries are catching up,
- Epidemics started earlier, are now showing a decline.
- **USA**, decline seen 1968, with a 25% fall in mortality
- **by** 1980. Declines in NZ, Canada and Australia.

Epidemiology 3

Place:

- Highest mortality in North Europe
- South Europe are much lower
- Japan are extremely low
- Developing countries, CHD death rates are increasing.

Aetiology and risk factors CHD:

- Multifactorial.
- The greater the factors present the more CHD.
- Non- modifiable factors (i.e. **risk markers**): age, sex (male), familial hypercholesterolemia, genetic and personality
- Modifiable factors (i.e. **risk factors**): smoking, hypertension, cholesterol , diabetes , obesity, sedentary habits and stress).

1. Smoking:

- Major CHD risk factor.
- responsible for 25% deaths under 65 men.
- The risk is directly related to No/day
- Synergistic with other risk factors

2. Hypertension:

- Accelerates the atherosclerotic process, especially if hyperlipidaemia present
- SBP better predictor CHD than DBP.
- However, both are important risk factors.

3. Serum cholesterol:

- Population with CHD have high cholesterol
- Cholesterol important risk factor for CHD
- LDL most directly related to CHD.

ATP III Lipid and Lipoprotein Classification

LDL Cholesterol (mg/dL)

<100	Optimal
100–129	Near optimal/above optimal
130–159	Borderline high
160–189	High
≥190	Very high

ATP III Lipid and Lipoprotein Classification (continued)

HDL Cholesterol (mg/dL)

<40 Low

≥60 High

ATP III Lipid and Lipoprotein Classification (continued)

Total Cholesterol (mg/dL)

<200	Desirable
200–239	Borderline high
≥240	High

Specific Dyslipidemias: Elevated Triglycerides

Classification of Serum Triglycerides

- Normal <150 mg/dL
- Borderline 150–199 mg/dL
- High 200–499 mg/dL
- Very high \geq 500 mg/dL

Specific Dyslipidemias:

Elevated Triglycerides (≥ 150 mg/dL)

Causes of Elevated Triglycerides

- Obesity and overweight
- Physical inactivity
- Cigarette smoking
- Excess alcohol intake

Specific Dyslipidemias: Elevated Triglycerides

Causes of Elevated Triglycerides (continued)

- High carbohydrate diets (>60% of energy intake)
- Several diseases (type 2 diabetes, chronic renal failure, nephrotic syndrome)
- Certain drugs (corticosteroids, estrogens, retinoids, higher doses of beta-blockers)
- Various genetic dyslipidemias

Specific Dyslipidemias: Elevated Triglycerides (continued)

Non-HDL Cholesterol: Secondary Target

- Non-HDL cholesterol = VLDL + LDL cholesterol
= (Total Cholesterol – HDL cholesterol)
- VLDL cholesterol: denotes atherogenic remnant lipoproteins
- Non-HDL cholesterol: secondary target of therapy when serum triglycerides are ≥ 200 mg/dL (esp. 200–499 mg/dL)
- Non-HDL cholesterol goal:
LDL-cholesterol goal + 30 mg/dL

4. Other risk factors:

- DM: CHD is 2- 3 times higher in diabetics
- FH CHD increase the risk *of* premature death.
- Physical activity

- Type A personality
- High alcohol intake
- Oral contraceptives

- Hormones: difference between men and women

Prevention of CHD:

- **CHD is preventable.**
 - I. Primary prevention:
 1. Control of risk factors among populations:
 - a) Dietary changes:
 - Reduction of fat intake (saturated, cholesterol)
 - Avoid alcohol consumption.
 - b) Smoke free society
 - c) Blood pressure:
 - d) Physical activity:
 2. Identification of high risk groups: specific advice.

Prevention of CHD:

II. Secondary prevention:

Prevent recurrence and regression of CHD:

- a) Screening high risk groups.
- b) Drugs, coronary surgery, pace- makers.. etc.
- c) Control of risk factors i.e. smoking, HTN, DM diets, exercise... etc.

Prevention of CHD:

- III Tertiary prevention:
Rehabilitation of cardiac function through:
- changes in behavior, habits, life- styles, diets,
- use of drugs,
- occupational rehabilitation,
- control of risk factors
- psychological rehabilitation

Hypertension

Classification

- Normal $< 120/ < 80$
- Prehypertension 120-139/80-89
- Hypertension ; stage -1 : 140-159/90-99
- Hypertension ; stage -2 : $> 160+ / 100 +$

Hypertension in developing countries

Magnitude of The Problem

1. Public and professional awareness is lacking greatly
2. In our country (and many other developing countries) this issue is not adequately addressed by almost all organizations.

Magnitude of HTN

3. Open market for all possible drugs
4. Many misconceptions regarding hypertension and its treatment by the public.
5. Medical professionals belong to too many “schools” with diverse treatment traditions and standards

Magnitude of the HTN2

6. **Not** adequately recognized as an important life-long risk for other more “attractive” diseases such as
Chronic Renal Failure,
Stroke and
Myocardial Infarction, at least until recently

All above affect all aspects of management of HTN

Prevalence, Awareness, Treatment and Control of hypertension in the US Adult (NHANES)

And RO

%			RO
	1976-80	1999-2000	
Prevalence	32	18	20% ?
Awareness	51.0	70	27%?
Treated	31.4	59	?
Controlled	9.9	34	20%?

*Burt V et al, Hypertension 1996 & Unpublished data NHLBI (NHANES III, Phase 2)
JNC-VII 2003*

Hazmi 2001; Kalanta 2001; Warsy 1999; Wahid Saeed 1996& Al-Nozha 1997

Prevalence in some countries

<i>Country</i>	<i>Prev %</i>	<i>Contr %</i>
USA	18	34
Canada	22	16
Egypt	26	8
China	14	3

Worldwide

Worldwide	20% of adults
Worldwide	50% over 60 years

Socioeconomic implications of untreated hypertension

- **In USA Cost of Hypertension: \$47.2 billion (NHLBI 2013). In 50 million people.**

Where do we see the problems?

- **Awareness:** Severely lacking among public and professionals despite the significance of the disease for public health.
- **Treatment:** guidelines exist, but not applied.
- **Control:** Small percentage of those identified and treated are controlled (20% !)
- **Holistic approach** in management with consideration of co-morbidities and risk factors are inconsistent

What is needed?

- Educate the professionals on prevention and treatment of HTN.
- Improve the teaching on life style-modifications to the medical and general public
- Improve the general public awareness of the importance of normalized BP.

What we need?

- Cooperate with policy makers to project multitudes of actions to fight HTN through out the society all year long
- Develop training packages for health care providers in prim. care centers.
- Cooperate with national and international organizations to learn from each others experience.

Management Plan

- Establish Good patient relationship.
- Educate patient & family on the consequences
- Encourage Self monitoring.
- BP goal.
- Non pharmacological therapy.
- Pharmacological therapy.
- Simplify drug regimen.
- Elderly.

Diabetes Mellitus (DM)

Diabetes Mellitus (DM)

- It is a chronic disease due to deficiency or diminished effectiveness of insulin. The disease affects the metabolism of carbohydrates, proteins, fats, water and electrolytes.

Classification DM:

- I. Diabetes mellitus:
 1. Insulin dependant = Juvenile onset (IDDM, type 1).
 2. Non insulin dependant DM = Maturity onset (NIDDM, type II).
- II. Impaired glucose tolerance:

intermediate state between DM and normality, pregnancy state, obesity and stress may precipitate this condition.
- III. Gestational DM:

Pregnancy induced.

Diagnostic criteria for Type II DM

Diabetes	Impaired glucose tolerance	Normal	Biochemical Index
>7mmol/L >126 mg/dl	6.1-6.9 mmol/L 111-125 mg/dl	< 6.1mmol/L < 110 mg/dl	FBG
>11.1mmol/L >200 mg/dl	7.7-11mmol 140-200mg/dL	<7.7 mmol/L < 140 mg/dL	2hr OGTT
> 11.1mmol/L (>200mg/dl + symptoms)			Random PG

Severity DM:

- IDDM is the most lethal form, abrupt onset.
- NIDDM is the commonest presentation,
- with gradual onset,
- mild nature of the disease
- compatible with long living with adequate control.

Magnitude of DM:

- Most common metabolic diseases of human beings.
- The prevalence worldwide two to six percents.
- Developing countries, DM masked by communicable diseases as well as malnutrition.
- Higher rates of occurrence are found in developed countries
- DM is the eighth leading cause of death in USA.
- Diabetics are incapacitated by many serious complications as atherosclerotic diseases, renal failure, neuropathy and blindness.

Aetiology DM:

- The fundamental cause unknown,
- Several theories suggest different causative mechanisms.
- Inherited & exposure factors accumulate to produce DM
- The primary agent is insulin deficiency, genetic, pancreatic
- Insulin available in normal amounts but of defective nature
- Peripheral tissues may have decreased sensitivity to it.

Diabetes in **relation to pregnancy:**

- a) Adult type DM which manifests itself for the first time during pregnancy.
- b) Gestational DM that disappears with the end of pregnancy.

Magnitude of Gestational DM:

- It has been estimated that 10,000 babies are born to women with diabetes every year in developed countries.
- The possibility of occurrence rises with higher parity and age of pregnant female
- incidence rates of diabetes in pregnant women range from 0.1 to 0.5 every 100 pregnancies.

Morbid effects:

- 1. Maternal complications ,Higher incidence of pre-eclampsia, eclampsia, infections and post partum haemorrhage.
- 2. Fetal and child Morbidity from birth trauma, deranged metabolism and congenital anomalies .

Epidemiology DM:

- Person:
DM increases with age.
- There are more young male diabetics than females.
- In middle age, women are more affected because of pregnancy.
- **Genetic:** Undisputed aggregation of cases in families are found in DM.
- - **Immune** mechanism: Cell mediated
- - **Body weight:** obesity.
- - Diet:

Diseases Incriminated in DM:

- 1) Viruses: e.g. rubella, mumps, coxsackie, cytomegalovirus
- 2) Endocrine: acromegaly, Cushing's, thyrotoxicosis.
- - Behavior **and** stress: Lack of exercise and Stress (example: trauma, surgery or psychic troubles. .etc.) may bring out the disease.

Epidemiology DM:

- II. Place:
DM is commoner in developed countries.
- different age structure of population
- better facilities of diagnosis
- stress
- sedentary occupations.

Epidemiology DM:

- **III. Time**

- 1 DM is on the increase due to prolongation of life span, changing life styles, better diagnosis and improved medical care
- 2 Seasonality: DM peak incidence is recorded in winter months (suggesting fluctuating viral diseases).

Prevention DM:

- **I. Primary Prevention:**

Identification of those at risk:

- 1. Individuals with positive family history
- 2. Those over 40 years of age.
- 3. Obese individuals.
- 4 Females with suggestive obstetric history
- 5. Cases with premature atherosclerosis.
- b) Health education:
 - I Maintenance of optimal body weight
 - 2. Promotion of physical exercise.
 - 3. Diet modification
 - 4. Avoidance of diabetogenic drugs. e.g. contraceptive pills, corticosteroids.
 - 5. Family life education: avoidance of marriage among diabetics
 - 6. Prevention of pregnancy

Prevention DM:

- **II. Secondary prevention:**
 - a) Screening: The preventive significance of early detection is two fold:
 - 1. Discovery of the disease in its pre-symptomatic state if followed by adequate treatment minimize the danger of complications such as coma and infection.
 - 2. Early therapy reduces the progress of disease and may reverse the pathologic changes.
 - Chronic hyperglycemia exhausts the already weak islets of Langerhans (insulin producing cell).
 - Diabetics with no or minimal complications at the time of diagnosis have a death rate less than one third that of patients with serious complications at time of diagnosis.
 - All risk groups should be screened periodically.

Prevention DM:

- **II. Secondary prevention:**

- a) **Screening:**

- Tests for screening:*

- Detection of glucose in urine two hours after a meal are considered diabetics unless proved otherwise.

- Mild cases may escape diagnosis when there is no glucostirea. This lack of sensitivity may miss up to 50% of cases (false negative).
- Reliable results are obtained two hours after 75 grains oral glucose. 180 mg/dl blood is threshold value for diagnosing diabetes.
- Any organized group of the community can be the target of a screening program for diabetes. Example: Workers covered by health insurance, mothers attending MCH centers, school children, labourers in factories . . . etc.

Prevention DM:

II. Secondary prevention:

b) Treatment:

Aim is to maintain serum glucose within normal:

1. by diet modification alone,
2. diet and oral hypoglycemic drugs
3. or diet *and* insulin.

NB. controlled diabetics life expectation is approximating that of general

Prevention DM:

- **II. Secondary prevention:**

- c) Health education:

- as in counselling individual patients or Group education in organized session it should cover the following: .

- 1. Maintain the ideal body weight
 2. Train diabetic for self care as it is crucial for good prognosis.
 - to stick to treatment measures
 - to detect dangerous signs and symptoms.
 - The diabetic should be able to test his blood, choose his diet, regulate his physical activities, administer his own -and even adjust- his daily insulin dosage.
 3. Health education should also stress the use of diabetic cards.

Prevention DM:

III. Tertiary prevention:

Treat complications and rehabilitate patient to lead a life as normal as possible.

- periodic checkups for visual acuity (retinopathy), renal functions (nephropathy), and testing peripheral nerves sensation (neuropathy)
- Diabetics cards which provide information needed for emergency situations as hypoglycemic and ketoacidotic episodes.

Cancer

- Cancer emerges as a major public health problem not only in developed countries, but also in many developing countries.

Cancer

- Definition:
cancer can be regarded as a group of diseases characterized by the following:
 1. Abnormal growth of cells.
 2. Ability to invade adjacent tissues and even distant organs.
 3. The eventual death of the affected patient if the tumor has progressed beyond that stage when it can be successfully removed.

Magnitude of the CA problem:

- All forms are causing 9% of deaths throughout the world.
- At the beginning of this century, sixth cause of death in developed countries.
- Today, it is the second leading cause of death next to cardiovascular diseases in these countries.
- In developing world, it ranks fourth as a cause of death.

Magnitude of the CA problem:

- There is a steady increase in incidence and mortality. This could be explained by :
 1. Techniques for case-finding & detection.
 2. Control of communicable diseases .
 3. Marked demographic aging.
 - 4 .Changes in life style and environment

Geographic distribution & place CA:

- The international variations in pattern attributed to multiple factors such as environmental, food habits, life style, genetic inadequacy in detection and reporting ,population structure.
- For example, cancer of the stomach is common in Japan, and has a low incidence in United States.
- Or the other hand, breast cancer is common in United States and has a low incidence in Japan.
- In Egypt, due to the prevalence of bilharzia, cancer bladder is more common than in areas where there is no bilharzia. Also it was observed that cancer mortality is highest in urban and industrial communities, and lowest in mountain areas.

Person characteristics and CA

- Age:
Mortality is low during infancy and preschool years, and drops to its minimum level during subsequent childhood period.
- At older ages the rate rises consistently to a peak.
- More than half the cancer deaths today are persons aged 65 years and over.

Person characteristics and CA

- Sex:
In general more frequently in females than in males. But, the following is observed:
- a) Incidence of cancer lip, larynx, lung, bronchus, tongue, pharynx and oesophagus is higher among males than females.
- b) Cancer of thyroid and biliary passages is more among females.
- c) Gastro-intestinal tract cancer is equally distributed among males and females.

Person characteristics and CA

- Ethnic background:
Cancer is more among non- whites, this can be attributed to the increase of cancer of digestive and genital system especially for males.
- On the other hand, skin cancer is more among white race.

Person characteristics and CA

- Religion:
Both Jewish and Moslem women have very low rates of cervical cancer, a point which has variously ascribed to hygienic practices associated with sexual habits and male circumcision.

Person characteristics and CA

- Marital status:
Cancer cervix occurs more in sexually active women.
Cancer breast is more common among the' unmarried.

Person characteristics and CA

- **Socio- economic status:**
inverse association between cervical cancer and socio- economic status
- On the contrary, breast cancer was found to occur more commonly among women **of** high social standards.
- This differences may be due to differences in the life style, dietary pattern, marital practices, fertility pattern and personal hygiene.

Etiology of cancer:

- As with other chronic diseases, cancer has a multifactorial aetiology.
- 1. Genetic factor
- 2. Personal habits
- 3. Dietary factors
- 4. Occupational exposures
- 5. Infection
- 6. Physical agents
- 7. Chemical agents

Cancer prevention

- a series of measures based on medical knowledge in the fields of prevention, detection, diagnosis, treatment, after care and rehabilitation.
- This aimed at reducing the number of new cases, increasing the number of cures and reducing the invalidism due to cancer.
- It is estimated that at least one third of all cancers are preventable.

Cancer prevention

- 1. Primary prevention:
- a) Health education: tobacco and alcohol , hygiene , immunization , detection and treatment
- b) Industrial and occupational control:
- c) Environmental pollution:

Cancer prevention

- 2. Secondary prevention
- a) Early detection of cases
- b) Treatment

Cancer prevention

- 3. Tertiary prevention:
- a) Pain relief
- b) Rehabilitation and psychological support

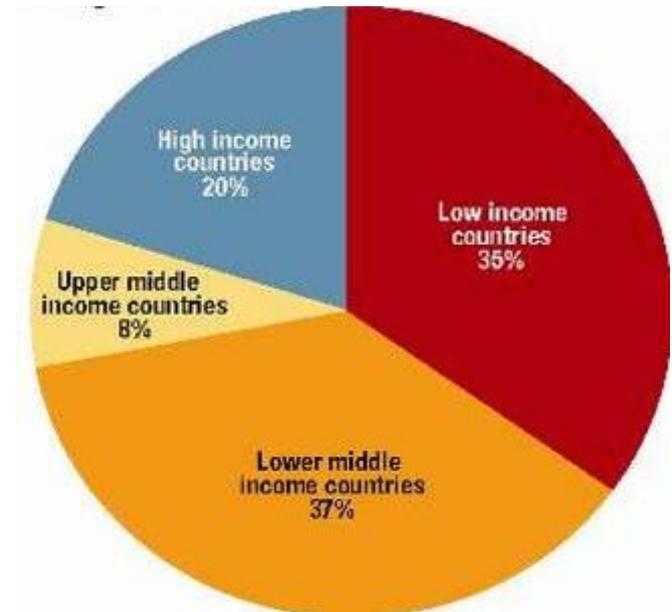
**THE COST OF INACTION
IS CLEAR AND UNACCEPTABLE**

- Chronic disease epidemic is rapidly evolving
- Global recognition and response has not kept pace
- Misunderstandings can be dispelled by the strongest evidence

10

MISUNDERSTANDING CHRONIC
DISEASES MAINLY AFFECT
HIGH INCOME COUNTRIES

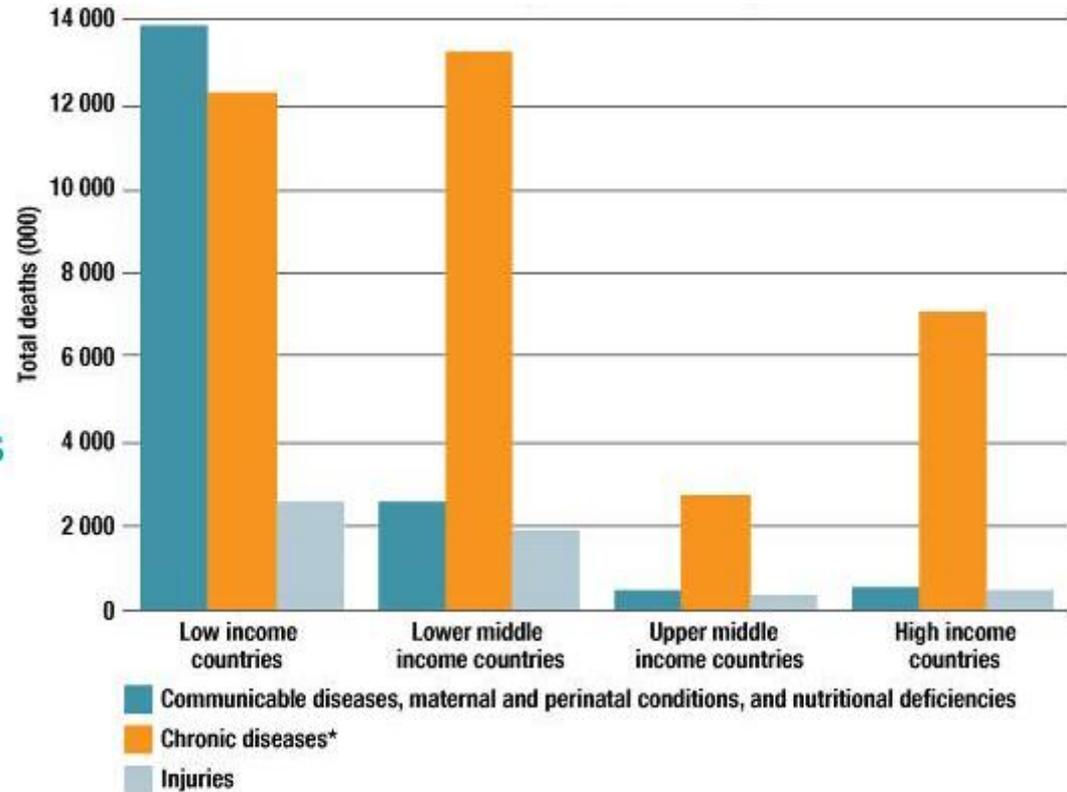
Projected global distribution of chronic disease deaths by World bank income group, all ages 2015



9

MISUNDERSTANDING LOW AND MIDDLE INCOME COUNTRIES SHOULD CONTROL INFECTIOUS DISEASES BEFORE CHRONIC DISEASES

Projected deaths by major cause and World Bank income group, all ages, 2015.



MISUNDERSTANDING

**CHRONIC DISEASES
MAINLY AFFECT
RICH PEOPLE**

8

face to face

WITH **CHRONIC DISEASE: STROKE**



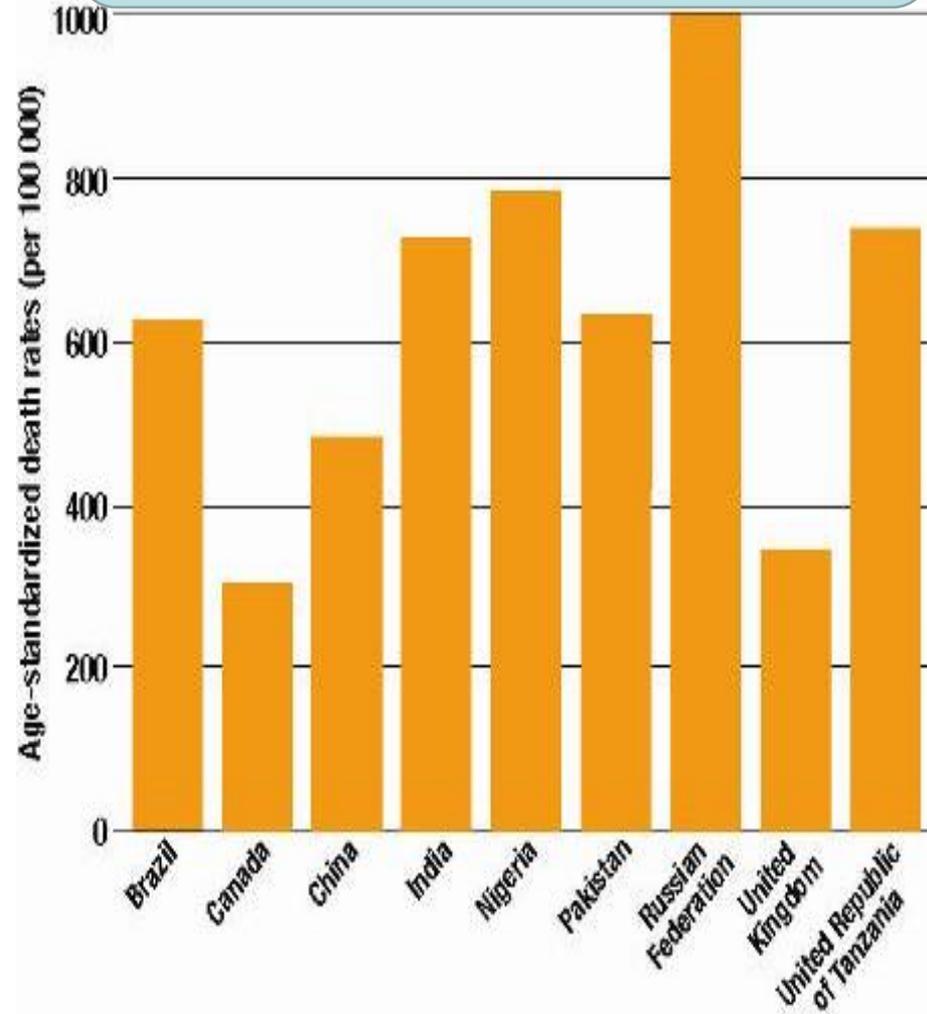
Name	Roberto Severino Campos
Age	52
Country	Brazil
Diagnosis	Stroke

7

MISUNDERSTANDING

CHRONIC DISEASES MAINLY AFFECT OLD PEOPLE

Projected chronic disease death rates for selected countries, aged 30-69, 2015



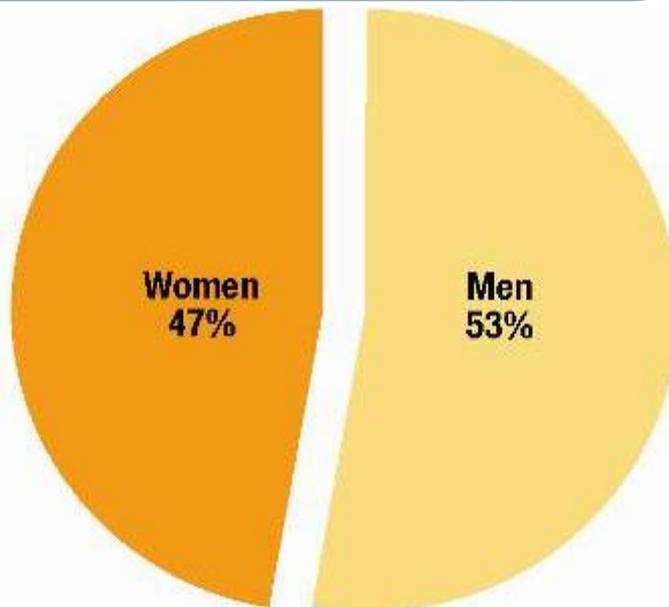
face to face

WITH **CHRONIC DISEASE: CANCER**



Name	Mariam John
Age	13
Country	United Republic of Tanzania
Diagnosis	Bone cancer

Projected global coronary
heart disease deaths by
sex, all ages, 2015



6

MISUNDERSTANDING

**CHRONIC
DISEASES AFFECT
PRIMARILY MEN**

face to face

WITH **CHRONIC DISEASE: HEART DISEASE**



Name	Shakeela Begum
Age	65
Country	Pakistan
Diagnosis	Heart disease

5

**MISUNDERSTANDING
CHRONIC DISEASES
ARE THE RESULT
OF UNHEALTHY
“LIFESTYLES”**

face to face

WITH **CHRONIC DISEASE: OBESITY**



Name	Malri Twalib
Age	5
Country	United Republic of Tanzania
Diagnosis	Obesity

4

MISUNDERSTANDING

**CHRONIC DISEASES
CAN'T BE PREVENTED**

3

MISUNDERSTANDING

**CHRONIC DISEASE
PREVENTION AND CONTROL
IS TOO EXPENSIVE**

HALF-TRUTH

2

“My grandfather smoked and
was overweight –
and he lived to 96”

face to face

WITH CHRONIC DISEASE: **CANCER**



Name	K. Sridhar Reddy
Age	52
Country	India
Diagnosis	Cancer

1 **HALF-TRUTH**
Everyone
has to die of
something

face to face

WITH **CHRONIC DISEASE: DIABETES**

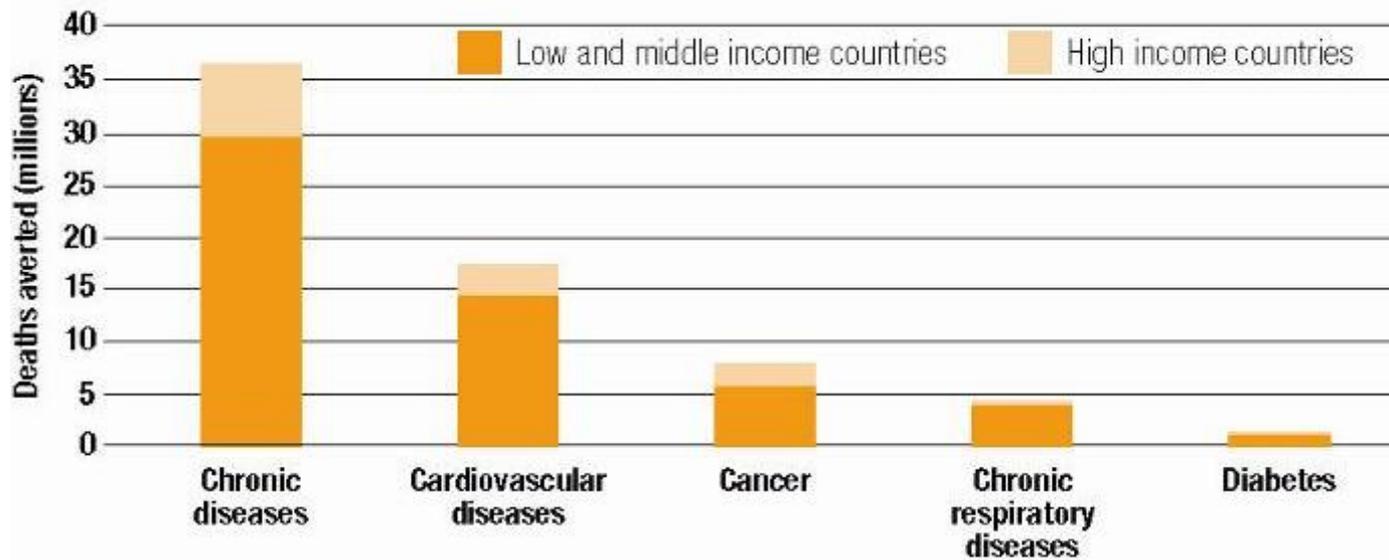


Name	Jonas Justo Kassa
Age	65
Country	United Republic of Tanzania
Diagnosis	Diabetes

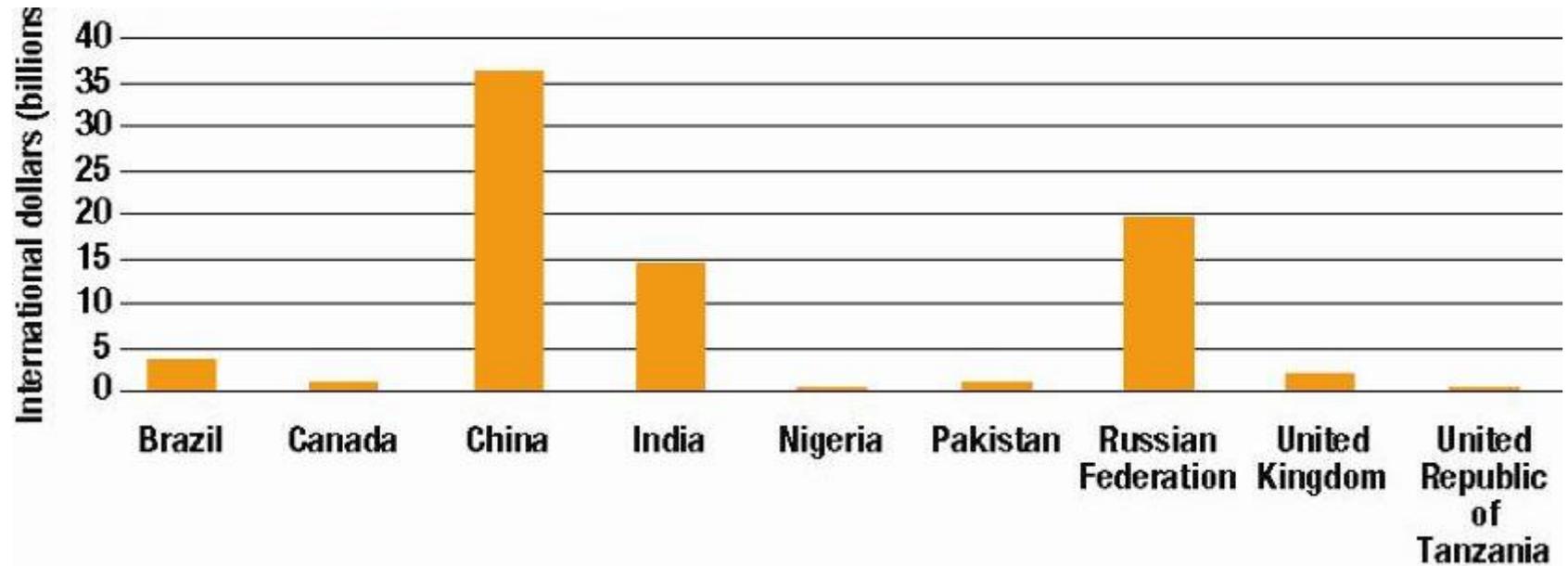
- A 2% annual reduction in chronic disease death rates worldwide, per year, over the next 10 years.
- The scientific knowledge to achieve this goal already exists.

36 000 000 lives can be saved

Projected cumulative deaths averted by achieving the global goal, by World Bank income group, 2016-2025



LABOUR SUPPLY GAINS FROM ACHIEVING GLOBAL GOAL BY 2025



The **stepwise** framework

1

PLANNING STEP 1

Estimate population need and advocate for action

2

PLANNING STEP 2

Formulate and adopt policy

3

PLANNING STEP 3

Identify policy implementation steps

Policy implementation steps	Population-wide interventions		Interventions for individuals
	National level	Sub-national level	
Implementation step 1 CORE	Interventions that are feasible to implement with existing resources in the short term.		
Implementation step 2 EXPANDED	Interventions that are possible to implement with a realistically projected increase in, or reallocation of, resources in the medium term.		
Implementation step 3 DESIRABLE	Evidence-based interventions which are beyond the reach of existing resources.		

Comprehensive and integrated action is the means to prevent and control chronic diseases

STATUS QUO



INVEST NOW

THE CAUSES ARE KNOWN.
THE WAY FORWARD IS CLEAR.
IT'S YOUR TURN TO TAKE ACTION.