UNIT 2 NON-COMMUNICABLE DISEASES-1

Structure
2.0 Introduction
2.1 Objectives
2.2 National Response to Non-Communicable Diseases
2.3 National Programme for the Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS)
   2.3.1 Diabetes
   2.3.2 Hypertension
   2.3.3 Cardiovascular Diseases
   2.3.4 Stroke
   2.3.5 Obesity
2.4 Blindness
   2.4.1 Categories of Visual Impairment
   2.4.2 National Programme for Control of Blindness
2.5 National Programme for Prevention and Control of Deafness
2.6 National Tobacco Control Programme
2.7 Thyroid Diseases
2.8 Injuries and Accidents
   2.8.1 Operational Guidelines for Trauma Care Facility on National Highways
   2.8.2 Risk Factors for Road Traffic Injuries
2.9 National Mental Health Programme
2.10 National Programme for Health Care of the Elderly (NPHCE)
2.11 Let Us Sum Up
2.12 Model Answers
2.13 References

2.0 INTRODUCTION

In the previous unit, you learnt about the epidemiology of non-communicable disease, which included burden of disease in India, cause and risk factors.

There are National Health Programmes on the non-communicable diseases and key programme is National Programme on Cancer Diabetes Cardiovascular Diseases and Stroke (NPCDCS) with objectives of risk reduction for prevention of NCDs and early diagnosis and appropriate management of these NCDs. The strategies used are health promotion for the general population and disease prevention for the high risk groups. The expected outcomes of the programme is to create awareness on healthy life styles, health promotion at school, community and work places, and management of Non-Communicable Diseases, particularly Diabetes, Cardiovascular Diseases and Stroke.

In this unit you will be study objectives and various activities carried out under national health programme and preventive measures for control of disease.
2.1 OBJECTIVES

After completing this unit, you should be able to describe:

- national health programmes related to NCDs;
- prevention, screening and management of diabetes, hypertension, cardiovascular and coronary heart diseases;
- prevention, screening and management of stroke, obesity, blindness and thyroid diseases;
- prevention, screening and management of injuries and accidents; and
- integrated management for the NCDs.

2.2 NATIONAL RESPONSE TO NON COMMUNICABLE DISEASES

There are operational guidelines for the prevention, screening and control of common non-communicable diseases (NCDs) which are a part of comprehensive primary health care being came into existence in 2016.

The World Health Organization (WHO) has included four major NCDs – Cardiovascular Diseases (CVD), such as heart attacks, Diabetes, Chronic Respiratory Diseases (Chronic Obstructive Pulmonary Diseases and Asthma) and Cancer for bigger focus. Data from community based NCD programmes in India depicts that the NCDs also account for a significant proportion of illness and deaths.

These NCDs share common risk factors and for which there are a set of similar public health approaches related to health promotion, prevention and management. Key factors linked to the onset and course of these four NCDs are:

- Tobacco use and exposure,
- Unhealthy diet,
- Physical inactivity,
- Harmful use of alcohol,
- Indoor and ambient air pollution,
- Stress,
- Poverty (as a cause and consequence),
- Poor health seeking behaviours, and
- Low access to health-care services.

Diabetes and hypertension can cause stroke, heart attack or kidney failure, and all are amenable to prevention, early detection and treatment.

2.3 NATIONAL PROGRAMME FOR THE PREVENTION AND CONTROL OF CANCER, DIABETES, CARDIOVASCULAR DISEASES AND STROKE (NPCDCS)

Let us now discuss about various guidelines and main focus of the National programme
for prevention and control of cancer, diabetes, cardiovascular diseases and stroke as given below:

- The main focus of NPCDCS is to enable opportunistic screening (Opportunistic screening happens when someone asks their doctor or health professional for a check or test, or a check or test is offered by a doctor or health professional) at PHC/CHC and District levels, through the setting up of NCD clinics.

- At the PHC and sub-centre levels, additional funding for glucose testing was provided for all those over 30 years of age and all pregnant women and encompassing greater outreach, better follow up through systematic monitoring and data collection to enable improved surveillance, including the use of IT for patient records, follow-up and referral Sub-centre level. Community based assessment checklist for early detection of NCDs is given in Annexure-1.

- These guidelines envisage that the risk assessment, screening, referral, and follow up for selected NCDs amongst all women and men aged 30 years and above, would be included in the set of services being offered at the HWC/SHC.

These operational guidelines are designed to help state and district programme and facility level managers and service providers to strengthen and expand risk assessment, screening and management of Hypertension and Diabetes Mellitus.

The main focus of these guidelines is on:

- Screening and diagnosing common NCDs;
- Identifying and addressing modifiable risk factors,
- Treating using standard treatment guidelines,
- Follow up
- Referring patients at appropriate level.

The guidelines are an adjunct to and build on the relevant recommendations of the NPCDCS guidelines. The roles and responsibilities of the primary health care terms are given in Annexure 2. The package of services under NPCDCS is shown in Annexure 3 (page no. 9 doc).

In urban areas, states would need to evolve strategies that combine effective outreach and facility based primary health care services to serve as a platform for the delivery of this intervention. The range of facilities and outreach mechanisms vary widely between and within States, and local, context specific mechanisms would need to evolve through a process of piloting and study before being scaled up. Existing platforms and partnerships would be strengthened to implement the intervention.

### 2.3.1 Diabetes

**Diabetes** is classified into three types namely:

1) **Type 1 diabetes (T1DM):** Usually occurs in younger people, children and adolescents. The diagnosis of T1DM can be made throughout childhood but it is more likely below 15 yrs of age. The onset is usually acute and severe and insulin is required for survival.

2) **Type 2 diabetes (T2DM):** It is the commonest type of diabetes. It usually occurs after the age of forty years but occurs frequently even at lower age among Indians.
T2DM was previously known as non-insulin dependent diabetes mellitus. The onset is usually insidious and may be mild to severe.

**When is a person at high risk for diabetes?**
- age of or above 30 years
- overweight (BMI is more than 23 kg/m²).
- physically inactive (exercises less than 3 times a week)
- high blood pressure.
- impaired fasting glucose or impaired glucose tolerance.
- triglyceride and/or cholesterol levels are higher than normal.
- parents/siblings or grandparents have or had diabetes.
- had diabetes or even mild elevation of blood sugars during pregnancy.

**When to suspect diabetes?**
- Symptoms of uncontrolled hyperglycemia: excess thirst, excess urination, excess hunger with loss of weight
- Frequent infections
- Non-healing wounds
- Fatigue
- Tuberculosis

The criteria for diagnosis of Type 2 diabetes mellitus is shown in Table 2.1.

**Table 2.1: Criteria for diagnosis of T2DM using venous blood samples is by Fasting Glucose (mg/dl) and 2-hour Post-Glucose Load (mg/dl)**

<table>
<thead>
<tr>
<th></th>
<th>Fasting Glucose (mg/dl)</th>
<th>2-hour Post-Glucose Load (mg/dl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes Mellitus</td>
<td>&gt;=126</td>
<td>&gt;=200</td>
</tr>
<tr>
<td>Impaired Glucose Tolerance</td>
<td>&lt; 110</td>
<td>&gt;140 to &lt;200</td>
</tr>
<tr>
<td>Impaired Fasting Glucose</td>
<td>&gt;=110 to &lt;126</td>
<td></td>
</tr>
</tbody>
</table>


**Management of Diabetes**

Management of T2DM should be initiated as soon as diagnosis is established even if the patient is asymptomatic. Initial assessment and management of the patients has to be carried out at Primary Health Centre and Community Health Centre (CHC) level or at secondary care level.

**When to recommend hospitalisation**
- Uncontrolled infection,
- Severe cellulitis,
- Unresponsive UTI or other deep seated infections including bad diabetic foot needing intravenous antibiotics,
- Recurrent UTI not responding to oral antibiotics,
- Presence of ketones in urine
Diabetes patient education and diet counselling

Patient education on diabetes management and life style modifications is the cornerstone of effective diabetes control and management and prevention of complications. The visit schedule for counselling of diabetes is shown in Table 2.2.

Table 2.2: Visit schedule for counselling

<table>
<thead>
<tr>
<th>Initial Visits</th>
<th>Follow-up Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What is Diabetes?</td>
<td>• Importance of glycaemic control</td>
</tr>
<tr>
<td>• Why does it occur?</td>
<td>• Prevention of complications</td>
</tr>
<tr>
<td>• Lifestyle measures: Diet, Exercise</td>
<td>• Foot care</td>
</tr>
<tr>
<td>• Detailed lifestyle advice</td>
<td>• Pre-conceptional counselling regarding the importance of good glucose control</td>
</tr>
<tr>
<td>• Use of Oral Drugs</td>
<td>prior to pregnancy</td>
</tr>
<tr>
<td>• Advice on identifying signs and symptoms of hypoglycaemia and hyperglycaemia and their management</td>
<td></td>
</tr>
<tr>
<td>• Patient should be informed about the importance of factors other than glucose control: cholesterol, blood pressure, stopping smoking/tobacco, etc</td>
<td></td>
</tr>
</tbody>
</table>

Complications of Diabetes mellitus

Diabetes complications are classified broadly into two categories:

1) Microvascular complications includes:
   • Damage to eyes (retinopathy) leading to blindness,
   • Damage to kidneys (nephropathy) leading to renal failure
   • Damage to nerves (neuropathy) leading to impotence
   • Diabetic foot disorders (which include severe infections leading to amputation)

2) Macrovascular complications includes:
   • Cardiovascular diseases such as heart attack and stroke
   • Insufficiency in blood flow to legs.

2.3.2 Hypertension

Abnormally elevated blood pressure is a pathological condition which increases the workload on the heart. This condition is termed as high blood pressure or hypertension. The criteria for diagnosis of hypertensive is shown in Table 2.3.

Table 2.3: Criteria for diagnosing high blood pressure (mm of Hg) [JNC-8]

<table>
<thead>
<tr>
<th>Category</th>
<th>Systolic</th>
<th>Diastolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Less than 120</td>
<td>Less than 80</td>
</tr>
<tr>
<td>Pre hypertensive</td>
<td>120–139</td>
<td>80–89</td>
</tr>
<tr>
<td>Hypertensive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Non-Communicable Diseases and Management Under National Health Programmes

<table>
<thead>
<tr>
<th>Category</th>
<th>Systolic</th>
<th>Diastolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>140–159</td>
<td>90–99</td>
</tr>
<tr>
<td>Stage 2</td>
<td>160 or higher</td>
<td>100 or higher</td>
</tr>
<tr>
<td>Stage 3</td>
<td>180 or higher</td>
<td>110 or higher</td>
</tr>
</tbody>
</table>

**Source:** Paul A. James et al. 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC 8)

**Management of hypertension:**

*The Risk assessment should cover:*

1) Assessment of medical history:
   a) Risk factors
      • Lack of physical activity (or sedentary lifestyle).
      • Obesity or being overweight
      • Abdominal obesity (Waist circumference more than 90 cm in male and 80 cm in females)
      • High sodium intake/high salt intake
      • Excess alcohol consumption
   b) Family history
   c) Symptoms of consequences of hypertension
   d) Frequent intake of pain relieving drugs (NSAIDS)
   e) Steroid intake for asthma
   f) Breathing difficulty particularly on exertion
   g) Swelling of feet
   h) Urinary difficulties, history of passing stones in the past

2) Physical examination:
   a) BP measurement
   b) Measurement of body weight and height to obtain BMI
   c) Measurement of Waist circumference
   d) Palpating all peripheral pulses
   e) Auscultation for bruit (renal, carotid, abdominal and others)
   f) Eye evaluation if ophthalmology facility is available

**The management should include the following:**

- Life-style management (refer to section on lifestyle modification)
- Drug Therapy

**Complications of hypertension**

Complications occur as a result of persistent elevation of blood pressure for a longer duration of period. The impact of raised blood pressure is on various organs of the body and can lead to organ damage.
The following are the organ-wise impact of the hypertension:

- Complications affecting the heart: Left ventricular hypertrophy, diastolic dysfunction, CHF, abnormalities of blood flow and cardiac arrhythmias.
- Complications affecting the brain: Brain infarction and Haemorrhage.
- Complications affecting the eye: Generalised narrowing of the retinal arterioles and in retina as microaneurysms, haemorrhages, hard exudates, and cotton-wool spots.
- Complications affecting kidneys: Macroalbuminuria (a random urine albumin/creatinine ratio > 300 mg/g) or microalbuminuria (a random urine albumin/creatinine ratio 30–300 mg/g).

### 2.3.3 Cardiovascular Diseases

Cardiovascular disease (CVD) is a class of diseases that involve the heart or blood vessels. Cardiovascular disease includes coronary artery diseases (CAD) such as angina and myocardial infarction (commonly known as a heart attack). The cerebrovascular diseases commonly known as stroke is also common.

#### Risk factors

Age, gender, tobacco use, physical inactivity, excessive alcohol consumption, unhealthy diet, obesity, family history of cardiovascular disease, raised blood pressure (hypertension), raised blood sugar (diabetes mellitus), raised blood cholesterol (hyperlipidemia), psychosocial factors, poverty and low educational status, and air pollution.

#### Coronary Heart Disease

Chest pain (angina) is the commonest symptom.

- Typical angina: Substernal pressure radiating to neck, Jaw, arm with duration<20–30 minutes which may be associated with dyspnea, palpitations, nausea vomiting and which increases with exertion, decreases with rest.
- MI: Has increased angina intensity and duration >30 min. Twenty five per cent of MIs are clinically silent.

Associated symptoms: Weakness, nausea/vomiting, sweating, apprehension, anxiety, sense of impending doom.

#### Features not characteristics of myocardial ischemia:

- Sharp pain brought by respiratory movement or cough
- Pain that may be localised by the tip of one finger
- Very brief episode of pain that lasts a few seconds
- Pain reproduced by movement or palpation over the chest
- Constant pain that lasts for many hours without other ischemic symptoms

### 2.3.4 Stroke

A stroke means that part of the brain is suddenly damaged. If an artery in the brain becomes blocked by a thrombus, it causes a stroke. If an artery in the brain leaks then too it damages the brain and causes a stroke.
Non-Communicable Diseases and Management Under National Health Programmes

Identification of an acute event

- Sudden onset of weakness of one half of body or one part of body
- Sudden onset of inability or difficulty in speech
- Sudden onset of imbalance
- Sudden onset of blindness
- Sudden onset of dizziness or spinning
- Sudden severe headache
- Sudden loss of consciousness

Management

Patients of stroke presenting within 6 hours of onset of symptoms should be referred to a secondary care for initial assessment and management. The follow-up of patients presenting with a completed stroke not requiring acute care (such as respiratory distress) can be managed at the PHC level.

2.3.5 Obesity

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.

- Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person’s weight in kilograms divided by the square of his height in meters (kg/m²).
- The criteria based on World Health Organization is given below:

  
<table>
<thead>
<tr>
<th>Range</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 18.5 kg/m²</td>
<td>Underweight</td>
</tr>
<tr>
<td>18.5 – 24.9 kg/m²</td>
<td>Normal</td>
</tr>
<tr>
<td>25.0 – 29.9 kg/m²</td>
<td>Preobese</td>
</tr>
<tr>
<td>30.0 – 34.9 kg/m²</td>
<td>Obese Class I</td>
</tr>
<tr>
<td>35.0 – 39.9 kg/m²</td>
<td>Obese Class II</td>
</tr>
<tr>
<td>&gt;= 40.0</td>
<td>Obese Class III</td>
</tr>
</tbody>
</table>

However, the revised criteria for obesity for Asians based on BMI is as follows:

  
<table>
<thead>
<tr>
<th>Range</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 18.5 kg/m²</td>
<td>Under weight</td>
</tr>
<tr>
<td>18.5 – 22.9 kg/m²</td>
<td>Normal or lean</td>
</tr>
<tr>
<td>23 – 24.9 kg/m²</td>
<td>Overweight</td>
</tr>
<tr>
<td>&gt;= 25.0</td>
<td>Obesity</td>
</tr>
</tbody>
</table>

Raised BMI is a major risk factor for noncommunicable diseases such as:

- heart disease
- stroke
- diabetes;
- musculoskeletal disorders (especially osteoarthritis – a highly disabling degenerative disease of the joints);
- Some cancers (including endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon).

The risk for these non-communicable diseases increases, with increases in BMI.

Treatment of the overweight and obese patient is a two-step process:

1) Assessment requires determination of the degree of obesity and the absolute risk status.

2) Management includes the reduction of excess weight by diet control and physical activity and maintenance of this lower body weight, as well as the institution of additional measures to control any associated risk factors.

- Waist circumference is the most practical tool a clinician can use to evaluate a patient’s abdominal fat before and during weight loss treatment.

To measure waist circumference, locate the upper hip bone and the top of the right iliac crest. Place a measuring tape in a horizontal plane around the abdomen at the level of the iliac crest. Before reading the tape measure, ensure that the tape is not too tight, not too loose and does not compress the skin, and is parallel to the floor. The measurement is made at the end of a normal expiration.

Men who have waist circumferences greater than 90 cm, and women who have waist circumferences greater than 80 cms, are at higher risk of diabetes, dyslipidemia, hypertension, and cardiovascular disease because of excess abdominal fat. Individuals with waist circumferences greater than these values should be considered one risk category above that defined by their BMI. The relationship between BMI and waist circumference for defining risk is as defined in the Table 2.4.

**Management**

A combination of diet modification, increased physical activity, and behaviour therapy can be effective.

**Dietary Therapy:** Dietary therapy includes instructions for modifying diets to reduce weight. The diet should be low in calories, but it should not be too low (less than 800 kcal/day). In general, diets containing 1,000 to 1,200 kcal/day should be selected for most women; a diet between 1,200 kcal/day and 1,600 kcal/day should be chosen for men.

**Physical Activity:** Increased physical activity may help reduce body fat and prevent the decrease in muscle mass often found during weight loss. All adults should set a long-term goal to accumulate at least 30 minutes or more of moderate-intensity physical activity on 5, and preferably all days of the week.

**Behaviour Therapy:** Specific behavioural strategies include the following: self-monitoring, stress management, stimulus control, problem-solving, contingency management, cognitive restructuring, and social support. Behavioural therapies may be employed to promote adoption of diet and activity adjustments; these will be useful for a combined approach to therapy.
Integrated approach for the NCDs

Let us now read about Integrated approach for NCDs. In the context of NCDs, four of the most prominent chronic diseases – cardiovascular disease, cancer, chronic obstructive pulmonary disease, and type 2 diabetes – account for 80% of the NCD mortality and are linked by shared, common, and preventable biological risk factors, notably high blood pressure, high blood cholesterol, and overweight, as well as by related major behavioural risk factors: unhealthy diet, physical inactivity, and tobacco use. So the action to prevent these major chronic diseases should focus on controlling these risk factors in an integrated manner through motivation with the counselling of the patients or the high risk people.

Check Your Progress 1

1) Name four major NCDs.
   ................................................................................................................
   ................................................................................................................

2) List micro vascular complication of Diabetes Mellitus.
   ................................................................................................................
   ................................................................................................................

3) List risk factors for NCD.
   ................................................................................................................
   ................................................................................................................

4) Explain the Integrated approach for the NCDs.
   ................................................................................................................
   ................................................................................................................

2.4 BLINDNESS

Let us now go through the blindness in detail:

2.4.1 Categories of Visual Impairment

Blindness’ refers to a condition where a person suffers from any of the following conditions, namely

- Total absence of sight; or persons who does not have light perception or persons who have light perception but cannot count fingers at a distance of 1 meter even with spectacles (best possible correction)
- Visual acuity not exceeding 6/60 (Snellen’s Chart) in the better eye with correcting lenses; or
- Limitation of the field of vision subtending an angle of 20 degree or worse.
Table 2.4: Categories of visual impairment:

<table>
<thead>
<tr>
<th>Categories of Visual Impairment</th>
<th>Visual Acuity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum Less than</td>
</tr>
<tr>
<td>Low vision</td>
<td>6/18</td>
</tr>
<tr>
<td>Blindness</td>
<td>6/60</td>
</tr>
<tr>
<td></td>
<td>3/60 (finger counting at 3 meters)</td>
</tr>
<tr>
<td></td>
<td>1/60 (finger counting at 1 meter)</td>
</tr>
<tr>
<td></td>
<td>No light perception</td>
</tr>
</tbody>
</table>


2.4.2 National Programme for Control of Blindness

Main causes of blindness are as follows: Cataract (62.6%), refractive error (19.70%), corneal blindness (0.90%), glaucoma (5.80%), surgical complication (1.20%), posterior capsular opacification (0.90%), posterior segment disorder (4.70%), others (4.19%). Estimated National Prevalence of Childhood Blindness/Low Vision is 0.80 per thousand.

Objectives

- To reduce the backlog of blindness through identification and treatment of blind at primary, secondary and tertiary levels based on assessment of the overall burden of visual impairment in the country.
- Develop and strengthen the strategy of NPCB for “Eye Health” and prevention of visual impairment; through provision of comprehensive eye care services and quality service delivery.
- Strengthening and upgradation of Regional Institute of Ophthalmology (RIOs) to become centre of excellence in various sub-specialities of ophthalmology.
- Strengthening the existing and developing additional human resources and infrastructure facilities for providing high quality comprehensive Eye Care in all Districts of the country.
- To enhance community awareness on eye care and lay stress on preventive measures:
- Increase and expand research for prevention of blindness and visual.

2.5 NATIONAL PROGRAMME FOR PREVENTION AND CONTROL OF DEAFNESS

There is a large number of hearing impaired young and old people in India which amounts to a severe loss of productivity, both physical and economic. In an effort to tackle the high incidence of deafness in the country, in view of the preventable nature of this disability.

Objectives

- To prevent the avoidable hearing loss on account of disease or injury.
- Early identification, diagnosis and treatment of ear problems responsible for hearing loss and deafness.
Non-Communicable Diseases and Management Under National Health Programmes

- To medically rehabilitate persons of all age groups, suffering with deafness.
- To strengthen the existing inter-sectoral linkages for continuity of the rehabilitation Programme, for persons with deafness.
- To develop institutional capacity for ear care services by providing support for equipment and material and training personnel.

2.6 NATIONAL TOBACCO CONTROL PROGRAMME

Tobacco use is one of the main risk factors for a number of chronic diseases, including cancer, lung diseases, and cardiovascular diseases.

Objectives

- To bring about greater awareness about the harmful effects of tobacco use and Tobacco Control Laws.
- To facilitate effective implementation of the Tobacco Control Laws.
- To control tobacco consumption and minimise the deaths caused by it.

The various activities planned to control tobacco use are as follows:

- Training and Capacity Building
- IEC activity
- Monitoring Tobacco Control Laws and Reporting
- Survey and Surveillance

2.7 THYROID DISEASES

The thyroid hormones, triiodothyronine (T₃) and its prohormone, thyroxine (T₄), are tyrosine-based hormones produced by the thyroid gland that are primarily responsible for regulation of metabolism. T₃ and T₄ are partially composed of iodine.

Hyperthyroidism is the condition that occurs due to excessive production of thyroid hormone by the thyroid gland.

Signs and symptoms

Some of the symptoms of hyperthyroidism include:

- nervousness
- irritability
- increased perspiration
- heart racing
- hand tremors
- anxiety
- difficulty sleeping
- thinning of the skin
- fine brittle hair
- muscular weakness – especially in the upper arms and thighs.

Major clinical signs include

- weight loss (often accompanied by an increased appetite)
- anxiety
• intolerance to heat
• hair loss (especially of the outer third of the eyebrows)
• muscle aches
• weakness
• fatigue
• hyperactivity
• irritability
• high blood sugar
• excessive urination
• excessive thirst
• delirium, tremor
• pretibial myxedema (in Graves’ disease)
• emotional liability
• sweating

**Diagnosis**

The diagnosis of hyperthyroidism is confirmed by blood tests that show a decreased thyroid-stimulating hormone (TSH) level of below 0.05 uIU/ dl and elevated $T_4$ and $T_3$ levels.

In addition to testing the TSH levels, many doctors test for $T_3$, Free $T_3$, $T_4$, and/or Free $T_4$ for more detailed results.

**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.

**Symptoms**

- Fatigue
- Feeling cold
- Poor memory and concentration
- Constipation, dyspepsia
- Weight gain with poor appetite
- Shortness of breath
- Hoarse voice
- In females, heavy menstrual periods (and later light periods)
- Abnormal sensation
- Poor hearing

**Signs**

- Dry, coarse skin
- Cool extremities
- Myxedema (mucopolysaccharide deposits in the skin)
- Hair loss
- Slow pulse rate
Non-Communicable Diseases and Management Under National Health Programmes

- Swelling of the limbs
- Delayed relaxation of tendon reflexes
- Carpal tunnel syndrome
- Pleural effusion, ascites, pericardial effusion

Patients suspected of thyroid disorders should be referred to doctor for further assessment.

2.8 INJURIES AND ACCIDENTS

Let us now read the various aspects of injuries and accidents.

2.8.1 Operational Guidelines for Trauma Care Facility on National Highways

Road traffic injuries are important problem in the country. Trauma Care that if basic life support, first aid and replacement of fluids can be arranged within first hour of the injury (the golden hour), lives of many of the accident victims can be saved. The critical factor for this strategy is to provide initial stabilization to the injured within the golden hour.

Strategic activities to achieve this objective include:

- Initial stabilisation by trained manpower
- Rapid transportation, and
- Developed medical facilities to treat such cases

Road traffic accidents: Urban transport, land use patterns, and recreation areas are linked to road traffic injuries, as well as to exposure to air pollution and noise.

2.8.2 Risk Factors for Road Traffic Injuries

The important risk factors are mentioned in Box 2.1.

**Box 2.1: Risk factors for road traffic injuries**

1) Alcohol intake
2) Lack of body protection as helmets and seat belts
3) High speeding
4) Underage driving

There are primary and environmental factor related to road traffic accident as discussed below:

**Primary factors in accidents:**

Human factors:

- Age
- Sex
- Education
- Medical conditions – Sudden illness, heart attack, impaired vision
Non-Communicable Diseases-1

- Fatigue

- Psychological factors– Lack of experience, risk-taking, impulsiveness, defective judgement, delay in decision, aggressiveness, poor perception and family dysfunction

- Lack of body protection– Helmets and safety belts

Environmental factors:

- Relating to road– Defective narrow rods, poor lighting, lack of familiarity
- Relating to vehicle– Excessive speed, overloaded, low driving standards
- Bad weather
- Inadequate enforcement of laws
- Mixed traffic as slow and fast moving, pedestrians and animals

All these above factors increase the vulnerability and risk situation for an accident. Other precipitating factors are alcohol and drug usage as well as the traffic conditions, emotion, tensions can lead to injuries and varied accidents.

**Referral and Treatment**

- Those with a systolic BP of over 140 and a diastolic BP of over 90 mm of Hg, or random blood sugar of 140 mg/dl and above would be referred to a Medical officer at the nearest facility, for confirmation, conducting relevant laboratory investigations, and initiation of treatment.

- You have to follow up with the individual and with the concerned PHC to ensure confirmation of diagnosis for individuals diagnosed with positive response for the questions on carcinoma cervix/breast, epilepsy, thyroid disorders or COPD, or where a suspicious oral lesion, initiation of treatment or referral to the next level. Subsequent guidelines would deal with details on developing strategies for these and other NCDs as well.

- Once the diagnosis of HT/Diabetes is established the patient must receive at least a month’s supply from the PHC. A three-month supply, with the ANM/ASHA visiting the patient each month for ensuring compliance, checking on diet and lifestyle modification, and measuring the blood pressure/blood glucose. Alternatively, a three-month drug supply could be stocked with the ANM, to be given each month.

- The patient will need to go the PHC for the first follow up at the end of the first three months after diagnosis, and sooner if required.

- An annual specialist consultation at the nearest nodal CHC with an NCD clinic, is also recommended, based on the decision of the MO at the PHC.

- For those individuals who are already on treatment under the care of a private practitioner, they could be offered the choice of taking drugs from the public health system but these individuals would be visited regularly by the frontline workers, monitored for compliance with treatment/lifestyle changes and recorded in the health card.

- Community follow up of these individuals would be by the ASHA making visits to enable positive behaviour modifications, treatment compliance, and encouraging patients to go the sub-centre for regular check-up of BP/blood glucose.
2.9 NATIONAL MENTAL HEALTH PROGRAMME

Persons with mental illness should be treated like other persons with health problems and the environment around them should be made conducive to facilitate recovery, rehabilitation and full participation in society keeping in view the heavy burden of mental illness in the community.

Objectives:

- To ensure availability and accessibility of minimum mental health care for all in the foreseeable future, particularly to the most vulnerable and underprivileged sections of population.
- To encourage application of mental health knowledge in general health care and in social development.
- To promote community participation in the mental health services development and to stimulate efforts towards self-help in the community.

2.10 NATIONAL PROGRAMME FOR HEALTH CARE OF THE ELDERLY (NPHCE)

The programme was initiated to provide promotional, preventive, curative and rehabilitative services in an integrated manner for the elderly in various Government health facilities.

This will include health promotion, preventive services, diagnosis and management of geriatric medical problems (out and in-patient), day care services, rehabilitative services and home based care as needed.

Objectives: Main objectives of the programme are to:

- provide preventive, curative and rehabilitative services to the elderly persons at various level of health care delivery system of the country.
- strengthen referral system, to develop specialized man power and to promote research in the field of diseases related to old age.

Check Your Progress 2

1) What are the signs and symptoms of Hyperthyroidism.

................................................................................................................
................................................................................................................
................................................................................................................

2) Enlist risk factor for road injuries.

................................................................................................................
................................................................................................................
................................................................................................................

3) List activities to control tobacco use.

................................................................................................................
................................................................................................................
................................................................................................................

4) List objectives of National Programme for Health Care of the Elderly.

................................................................................................................
................................................................................................................
................................................................................................................
2.11 LET US SUM UP

The major non-communicable diseases which contributes to the majority of burden of disease are due to epidemiological transition. For the prevention and control of NCDs a national programme on cancer, diabetes, cardiovascular diseases and stroke (NPCDCS) and related programme has been launched and now will cater the whole of the country. This unit focuses on the description of major NCDs, their prevention strategies and referral to higher centres.

2.12 MODEL ANSWERS

Check Your Progress 1

1) Four major NCDs are **Cardiovascular Diseases (CVD)**, such as **Heart attacks, Diabetes, Chronic Respiratory Diseases** (Chronic Obstructive Pulmonary Diseases and Asthma) and **Cancer**.

2) Microvascular complications includes
   - Damage to eyes (retinopathy) leading to blindness
   - Damage to kidneys (nephropathy) leading to renal failure
   - Damage to nerves (neuropathy) leading to impotence
   - Diabetic foot disorders (which include severe infections leading to amputation)

3) Risk factor for NCDs are:
   - tobacco use and exposure,
   - unhealthy diet,
   - physical inactivity,
   - harmful use of alcohol,
   - indoor and ambient air pollution,
   - stress,
   - poverty (as a cause and consequence),
   - poor health seeking behaviours, and
   - low access to health-care services.

4) In the context of NCDs, four of the most prominent chronic diseases—cardiovascular disease, cancer, chronic obstructive pulmonary disease, and type 2 diabetes – account for 80% of the NCD mortality and are linked by shared, common, and preventable biological risk factors, notably high blood pressure, high blood cholesterol, and overweight, as well as by related major behavioural risk factors: unhealthy diet, physical inactivity, and tobacco use. So the action to prevent these major chronic diseases should focus on controlling these risk factors in an integrated manner through motivation with the counselling of the patients or the high risk people.

Check Your Progress 2

1) **Signs and symptoms**

Some of the symptoms of hyperthyroidism include
   - nervousness
Non-Communicable Diseases and Management Under National Health Programmes

- irritability
- increased perspiration
- heart racing
- hand tremors
- anxiety
- difficulty sleeping
- thinning of the skin
- fine brittle hair
- muscular weakness – especially in the upper arms and thighs.

**Major clinical signs include**

- weight loss (often accompanied by an increased appetite)
- anxiety
- intolerance to heat
- hair loss (especially of the outer third of the eyebrows)
- muscle aches
- weakness
- fatigue
- hyperactivity
- irritability
- high blood sugar
- excessive urination
- excessive thirst
- delirium, tremor
- pretibial myxedema (in Graves’ disease)
- emotional liability
- sweating

2) There are primary and environmental factor related to road traffic accident.

**Primary factors in accidents:**

- Age
- Sex
- Education
- Medical conditions – Sudden illness, heart attack, impaired vision
- Fatigue
- Psychological factors – Lack of experience, risk-taking, impulsiveness, defective judgement, delay in decision, aggressiveness, poor perception and family dysfunction
- Lack of body protection – Helmets and safety belts

**Environmental factors:**

- Relating to road – Defective narrow rods, poor lighting, lack of familiarity
- Relating to vehicle—Excessive speed, overloaded, low driving standards
- Bad weather
- Inadequate enforcement of laws
- Mixed traffic as slow and fast moving, pedestrians and animals

3) Activities to control tobacco use
- Training and Capacity Building
- IEC activity
- Monitoring Tobacco Control Laws and Reporting
- Survey and Surveillance

4) Main objectives of the programme are to:
- provide preventive, curative and rehabilitative services to the elderly persons at various level of health care delivery system of the country.
- strengthen referral system, to develop specialised man power and to promote research in the field of diseases related to old age.

2.13 REFERENCES


10) Paul A. James et al. 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC 8).

