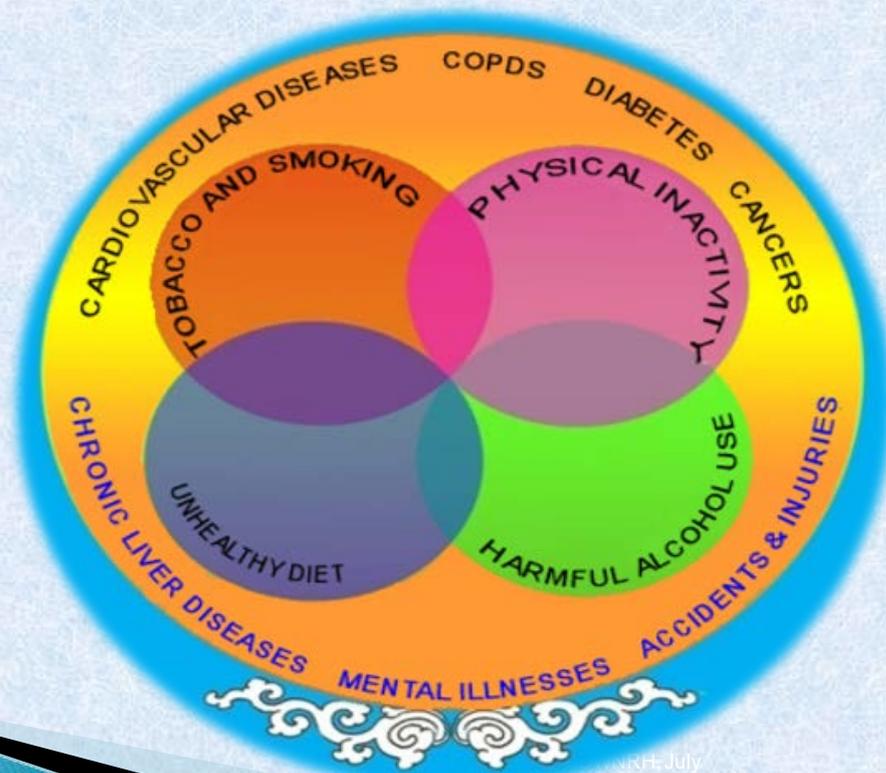


# Package of Essential NCD (PEN) protocol for BHU's



Non-Communicable Diseases Division  
Department of Public Health  
Ministry of Health  
Bhutan

## Preface

The Royal Government of Bhutan is concerned about the emergence of non-communicable diseases (NCDs) among the Bhutanese population. Evidence from the morbidity data of the country show an increasing trend of alcohol related liver disease, diabetes, cancers and heart diseases. The Bhutanese population may additionally be substantially exposed to lifestyle related risk factors from alcohol consumption, physical inactivity, an unhealthy diet and smoking, all of which are causes of preventable NCDs. Currently, no population based studies are available except a STEP Survey for prevalence of risk factors and **non-communicable** diseases in urban population in Thimphu conducted by Ministry of Health in 2007). The survey revealed that 30.8 % of adult urban dwellers were current drinkers and 35.8% were reported drinking alcohol on 4 or more days of the past week; 2.6% % were hypertensive; 52.8 % had BMI of greater or equal to 25mg/m<sup>2</sup> (overweight) and 12.1 % obese (BMI >=30mg/m<sup>2</sup>). About 66.6 % of adults consumed less than the recommended amount of fruits and vegetables and large proportion had sedentary lifestyles. 8.2% had raised blood glucose level while 44.3% had raised cholesterol level.

These protocols are for delivery of a minimum set of essential interventions addressing the four major NCDs. Due to lack of appropriate prevention and care many people are unnecessarily suffering from preventable NCDs and their complications. Health care costs are rising because the cost of treatment of complications (e.g. coronary bypass surgery, amputations, heart attacks and strokes) In most regions of the world the four major NCDs (cardiovascular disease, cancer, diabetes and chronic respiratory diseases) contribute to at least 70% of the NCD burden. Protocols address these NCDs only. Only evidence based and cost effective interventions, feasible for application in primary health care in low resource settings have been selected. Protocols take cognizance of the fact that most major NCDs are not symptomatic until late in the development of the disease. A syndromic approach alone therefore is not appropriate for NCDs because such an approach will not detect NCDs early in the course of disease to avoid complications. Symptoms that have more discriminatory ability for diagnoses of major NCDs have been selected for symptom based protocols.

The integrated multifactorial risk approach is more appropriate for low resource settings because it is more cost effective and it improves health outcomes. A multifactorial approach enables policy makers to target those who are at highest risk of developing heart attacks, strokes, amputations and kidney failure. Patient oriented rather than a disease oriented approach is needed as NCDs are chronic and present for routine care or with exacerbations as emergencies in the long term. Once the health care providers develop skills to effectively implement these protocols the portfolio can be expanded to other NCDs and other interventions for major NCDs paying due consideration to issues of equity. Screening programs are not meaningful unless those detected can have access to necessary services in Primary Health Care. In many such settings, even referral will be difficult and delayed due to lack of transport facilities and accessibility. In this situation, whatever treatment that is feasible has to be provided to the patient if there is a delay in transfer.

<b>Sl.No.</b>	<b>Chapter No.</b>	<b>Content</b>	<b>PageNumber</b>
1	Ch.1:	Prevention of CVD (stroke,MI), Diabetes and hypertension	- 1
2.	Ch.2:	Early detection of cancer	- 3
3.	Ch.3:	Health education and counseling	- 4
4.	Ch.4:	Counseling on cessation of tobacco	- 6
5.	Ch.5:	Counseling on cessation of alcohol	- 7
6.	Ch.6:	Chest pain	- 8
7.	Ch.7:	Stable angina and myocardial infarction	- 10
8.	Ch.8:	Breathlessness and cough	- 11
9.	Ch.9:	Swelling of legs	- 12
10.	Ch.10:	Swelling of one leg	- 13
11.	Ch.11:	Loss of weight	- 14
12.	Ch.12:	Treatment of cancer pain	- 15
13.	Ch.13:	Unconsciousness or semi consciousness	- 17
14.		Dosage of Inj.Adrenaline	- 18
15.	Ch.14:	Transient Ischiamic Attack (TIA) and stroke	- 19
16.		Glassgow Coma Scale (GCS)	- 20
17.	Ch.15:	Heart Failure	- 21
18.	Ch.16:	Follow up of stable case of asthma/CoPD	- 22
19.	Ch.17:	Lower Respiratory Tract Infection (LRTI)	- 24
20.	Ch.18:	Follow up of Rheumatic Heart Diseases (RHD)	- 25
21.	Annexure I:	Guidelines for screening of NCDs	- 26
22.	Annexure II:	Information for health workers on lifestyle modification	- 27
23.	Annexure III:	International Society of Hypertension (ISH)	- 37

## Chapter 1: Prevention of Cardiovascular Diseases (Stroke, MI), Diabetes and Hypertension

Apply this Protocol for all who attends OPD:

- **Age > 35 years**
- **Overweight and Obese**

### Ask

- Chest pain and/or breathlessness on exertion, pain in calf on exertion, swelling of legs
- Known heart disease, hypertension, stroke, Transient Ischemic Attack (TIA), diabetes, kidney disease
- Medicines that the patient is taking
- History of tobacco use (yes/no)
- Family history of premature Cardio Vascular Diseases (stroke <40/IHD<55yrs)
- Family history of diabetes, or kidney disease
- Alcohol consumption (yes/no)
- Occupation (physical inactivity or active),
- Engaged in more than 30 minutes of physical activity daily at least 5 days a week (yes/no)

### Assess

- Blood pressure
- BMI and Waist circumference (umbilicus level)  $\geq 80$ cm in women and 90 cm in men
- Fasting or random blood glucose (DM= fasting=  $>126$  mg/dl or random  $\geq 200$ mg/dl)
- Urine albumin
- Pedal edema
- Presence of foot ulcers, sensation of feet if known DM

### Action-Refer if

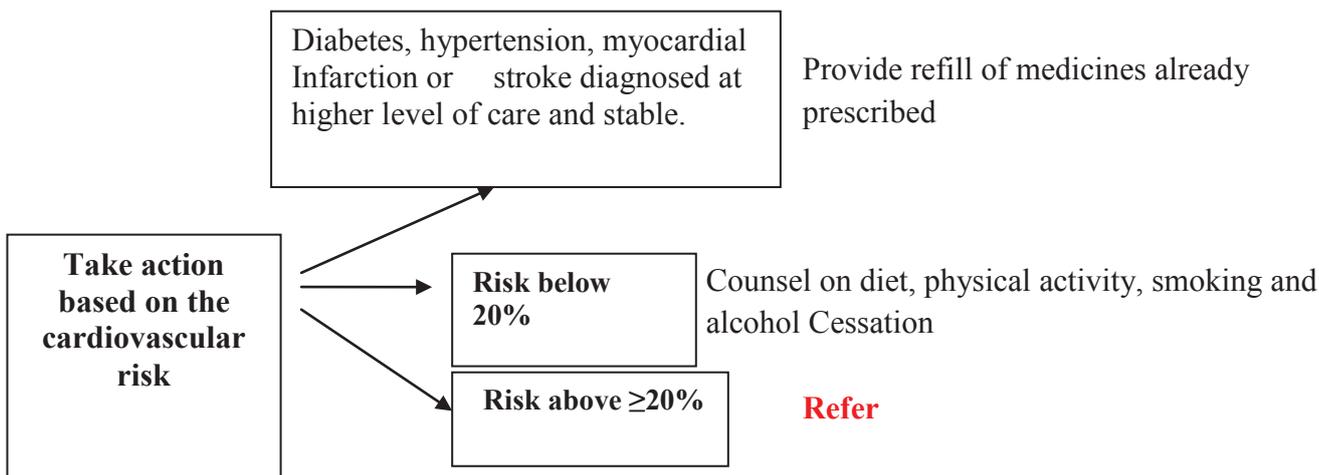
- $SBP \geq 140$  or  $\geq DBP 90$  mmHg in **people <40 yrs**
- Raised BP  $\geq 140/90$  (in DM above 130/80mmHg) in spite of treatment with 2 or 3 agents
- **Persistent**  $SBP \geq 160$  or  $DBP \geq 100$ mm Hg in three separate occasions requires antihypertensive and lifestyle advice
- History of chest pain aggravated by exertion
- History of pain in calf aggravated by exertion
- Past history of heart attack or stroke if unstable
- All new cases of diabetes with following problems,
  - 1.patients with ulcers/numbness and tingling of feet
  - 2.patients with severe infection
  - 3.patients with recent poor vision or no annual eye examination
- Positive urine albumin
- Persistent/severe breathlessness and/or swelling of legs

**(FIRST VISIT)**

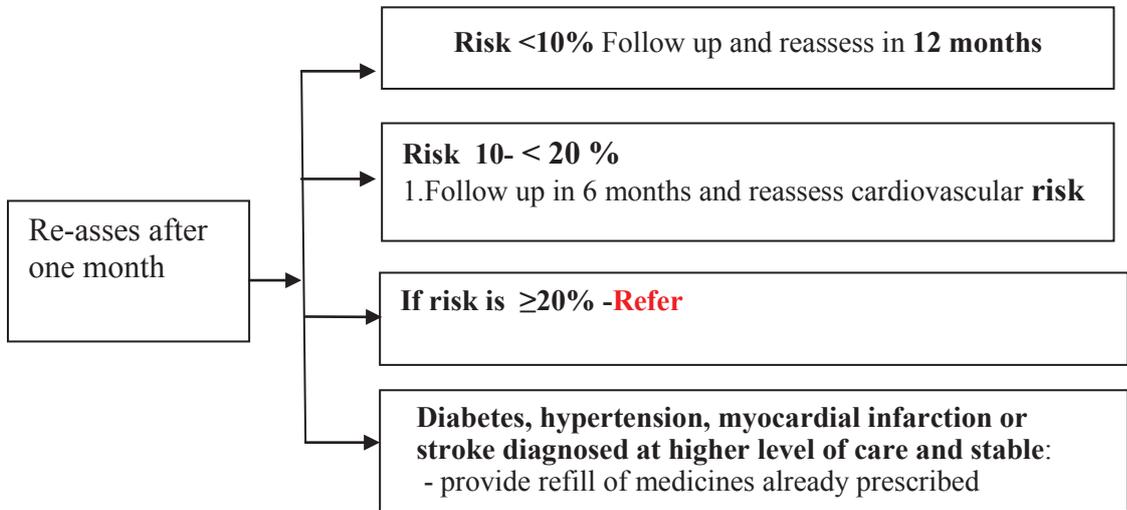
**In those not referred proceed to estimate cardiovascular risk**

- Use the WHO/ISH risk charts relevant to the WHO sub-region
- Use age, gender, smoking status, systolic blood pressure, diabetes (and blood cholesterol if available)

**N.B. if age 50-59 yrs select age group box 50, if 60-69 years select age group box 60 etc., for people age < 40 years select age group box 40.**



**(SECOND VISIT)**



**Subsequent visits**

**Action for subsequent visits**

- If BP remains  $\geq 140/90$ , start low dose diuretic (hydrochlorothiazide 12.5 mg)  
**Hydrochlorothiazide 12.5 mg daily by mouth and increased to 25-50 mg daily if necessary**
- Counsel on diet, physical activity, smoking & alcohol cessation (Protocol 3 and 4)
- Examine feet in diabetic patients
- Follow referral criteria for all visits
- Follow-up diabetic and/or hypertension patients every month
- Refer diabetic patients for eye exam every year

## Chapter: 2: Early detection of cancer

### Apply this protocol:

- If features listed are recognized at routine consultations
- If people complain of the listed problems
- To proactively detect cancer

*It is difficult to diagnose cancer on clinical grounds alone. Primary Care Workers should be familiar with the typical presenting features of cancer and be able to readily identify these features when patients consult them.*

### Action 1

**ASK**

### Look for symptoms or signs suggestive of cancer

#### Symptoms

- Unexplained loss of weight
- Low grade fever and night sweats
- Passing blood in urine
- Persistent cough or hoarse voice for more than 3 weeks
- Post-coital bleeding, unexplained vaginal bleeding, excessive vaginal discharge
- Change in bowel habits (unexplained) blood in stools
- Nose bleed, permanent blocked nose, unexplained deafness

### Action 2

**ASSESS**

#### Signs

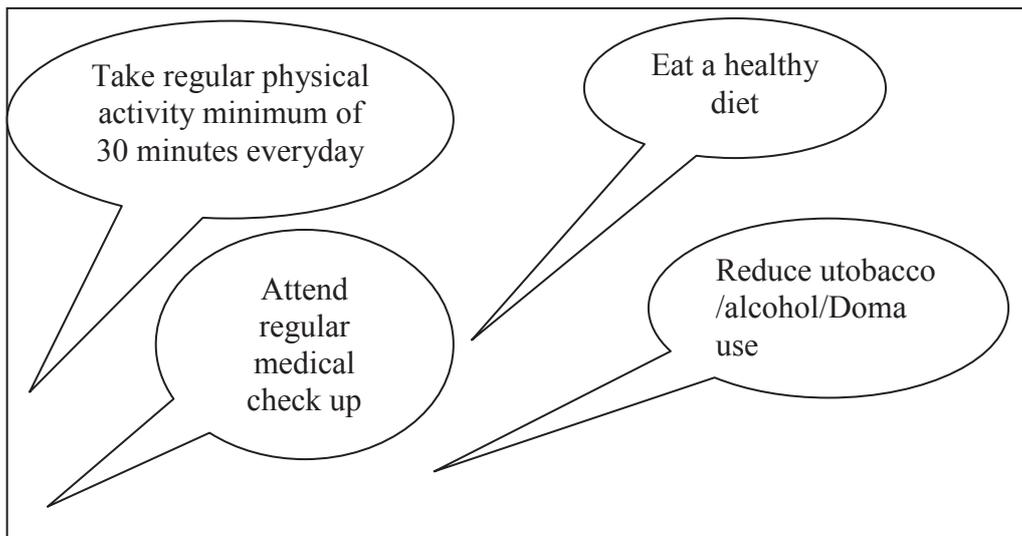
- Lump in the body for more than 3 weeks (neck, armpit, abdomen, groin)
- Breast lump, breast asymmetry, blood stained nipple discharge, skin retraction, and eczematous change
- Mouth lesion; white or red lesion, growth or ulceration for more than 3 weeks
- Birth marks/moles: change in color, size and shape
- Skin lesion: lesion or sore that does not heal

### Action 3

**REFER**

Collect above information and **refer** for further assessment and confirmation of diagnosis. Please do not indicate to the patient that he/she has cancer as the diagnosis has to be confirmed at RRH.

### Chapter:3: Health Education and Counseling.



#### **Avoid: Tobacco and Alcohol & Doma**

- Encourage all nonsmokers not to start smoking
- Strongly advise all smokers to stop smoking and support them in their Efforts (Chapter 4)
- Individuals who use other forms of tobacco should be advised to quit
- Alcohol abstinence should be reinforced.
  - People should avoid alcohol for health reasons
  - Men who take more than 2 drinks per day and Women who take more than 1 drink per day should be advised to reduce.
- One drink = half pint (220 ml) of beer/lager (5% alcohol), 100 ml of wine (10% alcohol), 25 ml of spirits (40% alcohol)
- Advise patients not to use alcohol absolutely when additional risks are present, such as:
  - driving or operating machinery
  - pregnant or breast feeding
  - taking medications that interact with alcohol
  - having medical conditions made worse by

***Note: Refer to specific guidelines for details of advice and counseling***

## **Eat a Healthy diet**

### **Salt (sodium chloride)**

1. Restrict to less than **5 grams** (1 teaspoon) per day
2. Reduce salt when cooking, limit processed and fast foods

### **Fruits and vegetables**

1. **5 servings** of fruits and vegetable per day.

*( 1 serving is equivalent to 1 orange, apple, mango, banana or 3 tablespoons of cooked vegetables)*

### **Fatty food**

1. Limit fatty meat, dairy fat and cooking oil (less than two tablespoons per day)
2. Replace palm, butter and dalda oil with olive, soya, corn, rapeseed or safflower oil (refine oils).
3. Replace other meat with chicken (without skin)

### **Fish**

Fresh fish is healthier than other meats

***AVOID TOBACCO, ALCOHOL & DOMA***

***Eat more vegetables and fruits***

## **Take regular Physical activity**

- Progressively increase physical activity to moderate levels (such as brisk walking); at least 30 minutes per day on five days of the week
- Control body weight and avoid overweight by reducing high calorie food and taking adequate physical activity

## **Adherence to treatment**

If the patient is prescribed a medicine/s

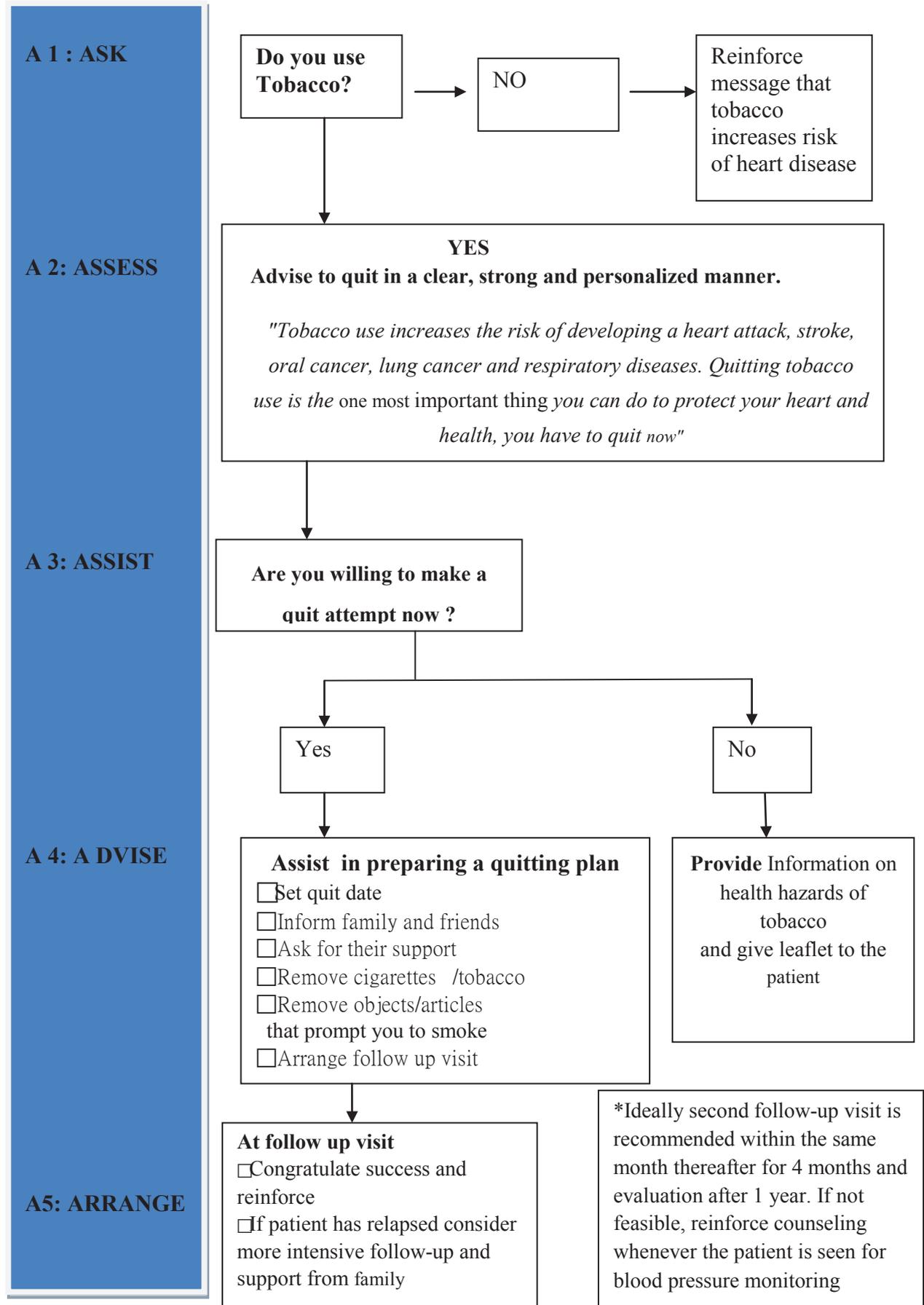
### **EXPLAIN**

- teach the patient how to take it at home:
  1. Explain the difference between medicines for long term control (e.g. blood pressure) and medicines for quick-relief (e.g. for wheezing)
  2. Tell the patient the reason for prescribing the medicine/s keeping an adequate supply of the medications
  3. the need to take the medicines regularly as advised even if there are no symptoms

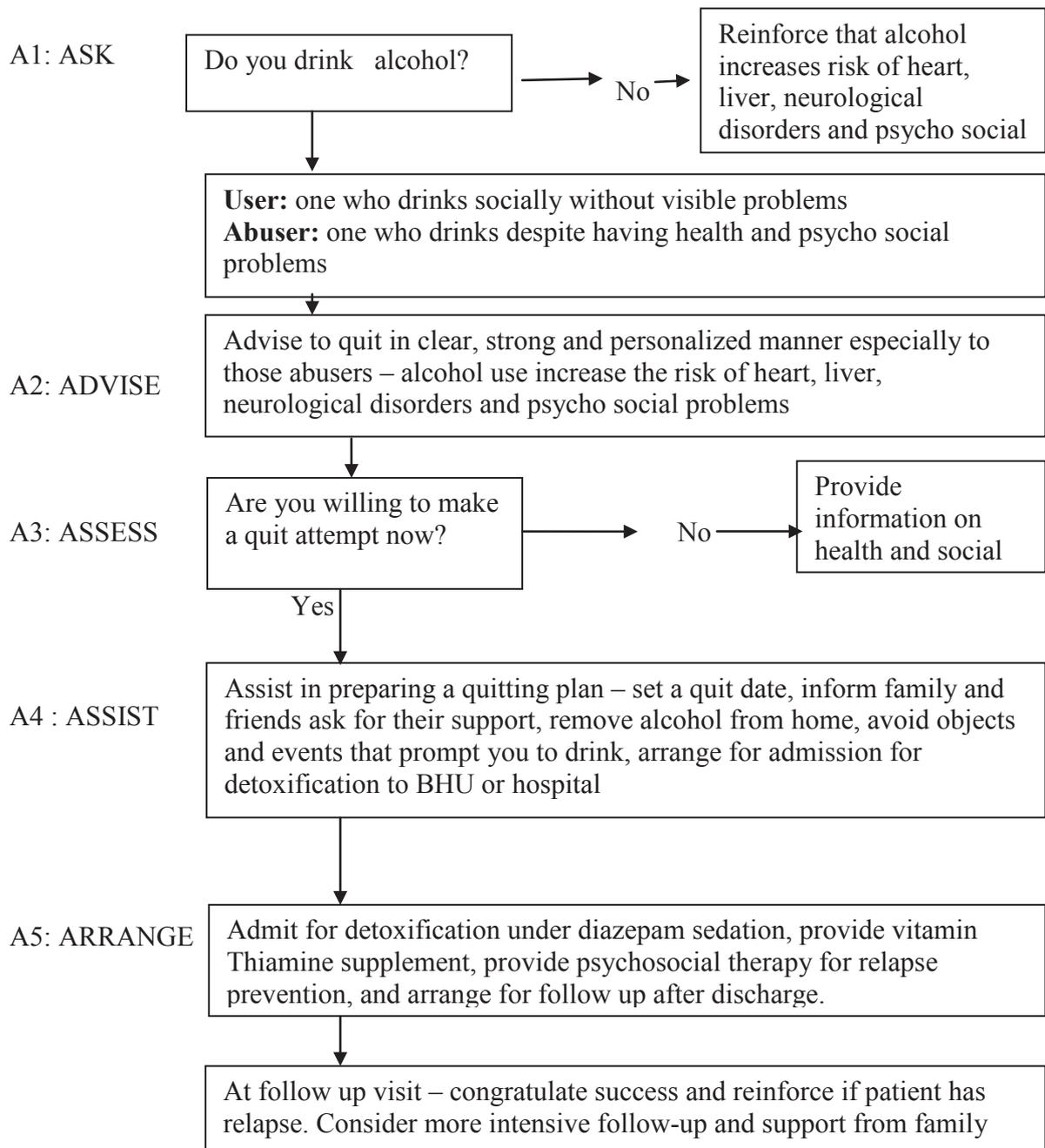
### **SHOW**

- Show to the patient the appropriate dose
- Explain how many times a day to take the medicine
- Label and package the tablets
- Check the patient's understanding before she/he leaves the health centre

**Chapter 4: Counseling on Cessation of Tobacco (5 As)**



## Chapter 5: Counseling on Cessation of Alcohol use, 5 A's steps

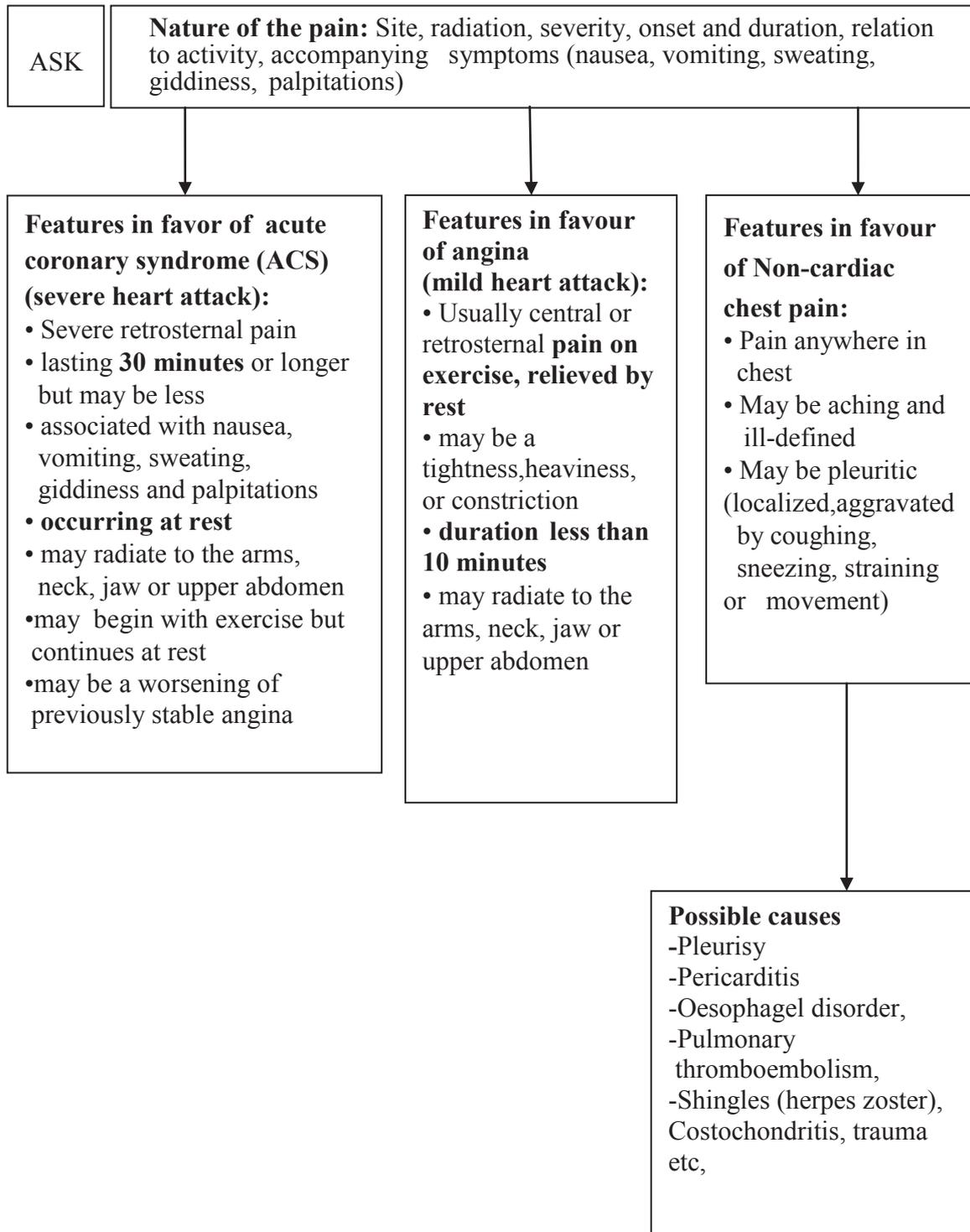


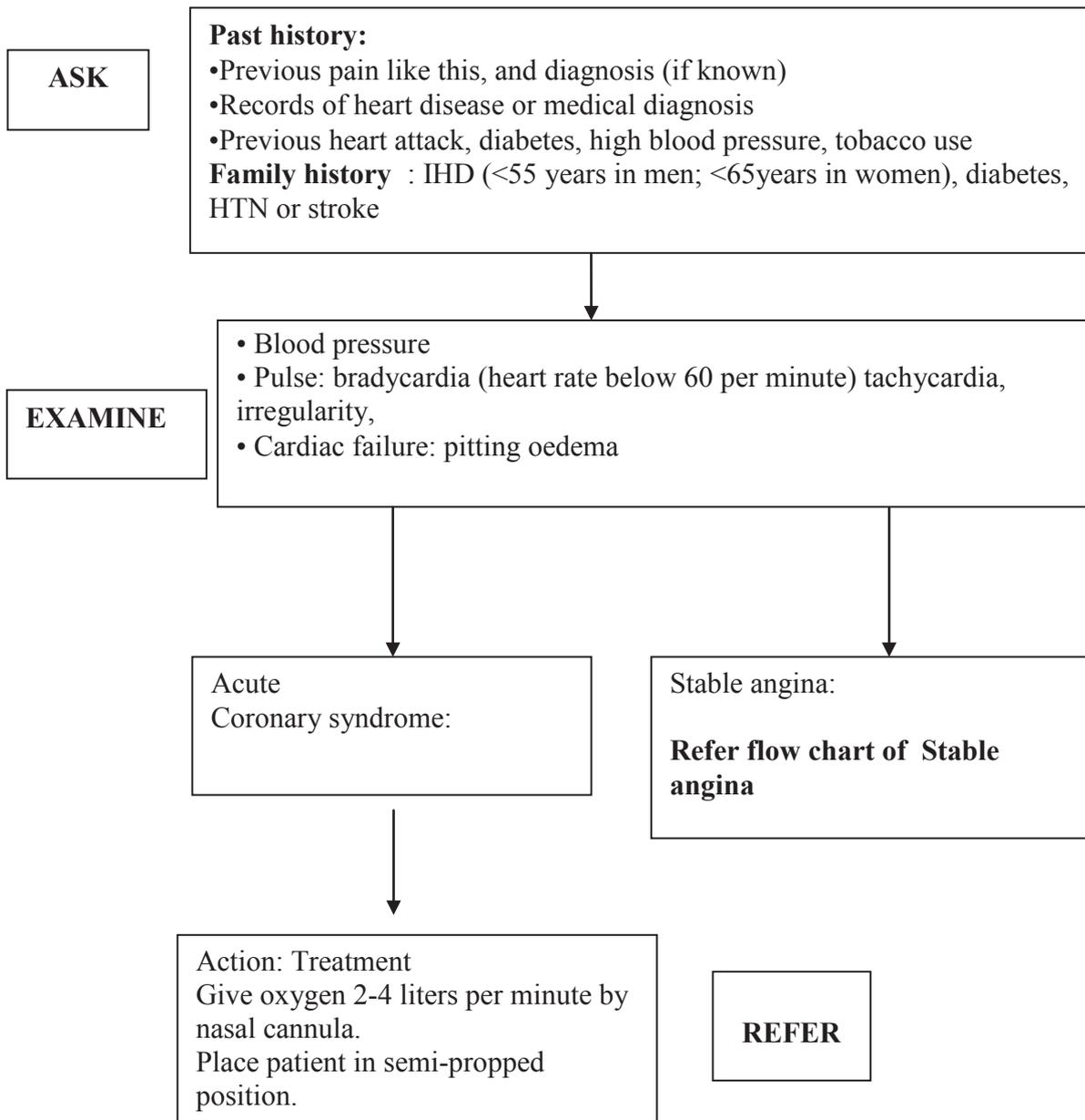
1. Tablets diazepam 10 mg tds X 3 days, 5mg tds X

3 days, 5mg Hs X 3 days;

2. Tablet Chlordiazepoxide 75mg 1 bd X 10 days (available only at DH)

## Chapter 6: Approach to Chest pain





FOOTNOTE: Acute coronary syndrome (ACS) can be suspected based on the history and clinical features described above.

## Chapter 7: Stable angina, recent or post myocardial infarction

### Stable Angina

- Apply protocol 3 and 4 for counseling and health education

#### Refill:

- **Aspirin** by mouth 75-150 mg once daily
- **Isorbide dinitrate** sublingually 2.5mg-10mg repeated as required or Glyceryl Nitrate sublingually 0.5mg-1mg repeated as required. tablets for immediate relief of chest pain
- **Atenolol** as first line therapy for the relief of symptoms (50-100 mg daily)  
If the patient is intolerant to beta-blockers or is not adequately controlled with beta-blockers, treat with long-acting calcium channel blockers (e.g

#### Amplodipine 5 -10 mg daily by mouth)

- **Enalapril** 5-20mg once daily by mouth.
- **Atorvastatin** 20-40mg once daily at night.

**Post myocardial infarction:** Apply protocol 3 and 4 for counseling and health education

#### Refill:

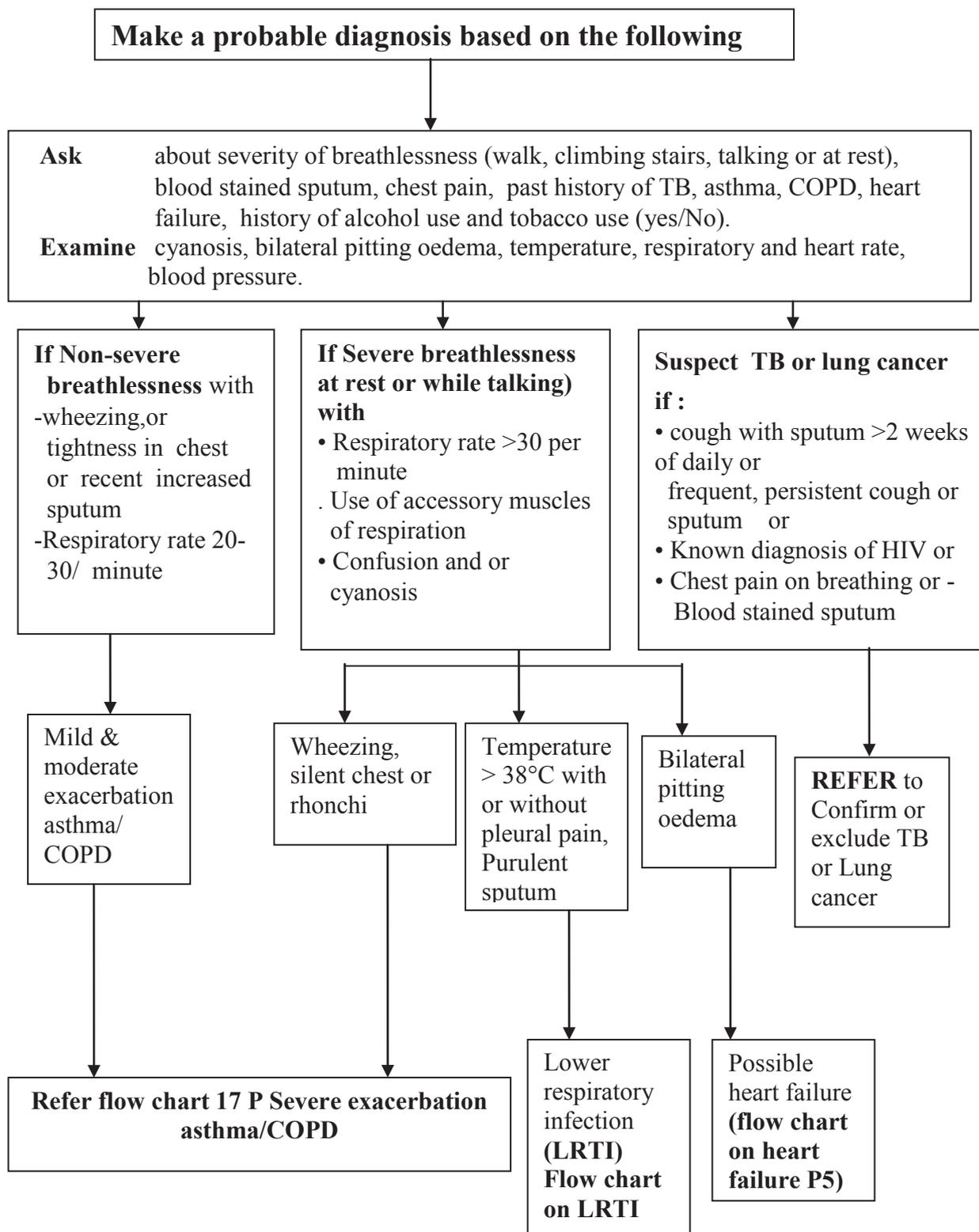
- **Soluble aspirin** 75 to 150 mg once daily
- Atenolol, by mouth, 25-50mg once daily at night.
- **ACE inhibitor** if heart failure or large infarct (e.g.enalapril by mouth 10-20 mg once daily)
- **Atorvastatin** (10-40 mg once daily at night)
- For immediate relief of chest pain Isosorbide dinitrate, sublingually 2.5mg - 10mg repeated as required

Patients who have had recent myocardial infarction (within 30 days) need to be followed up every 1-2 weeks

### Referral criteria for patients with **stable angina** and recent or post myocardial infarction

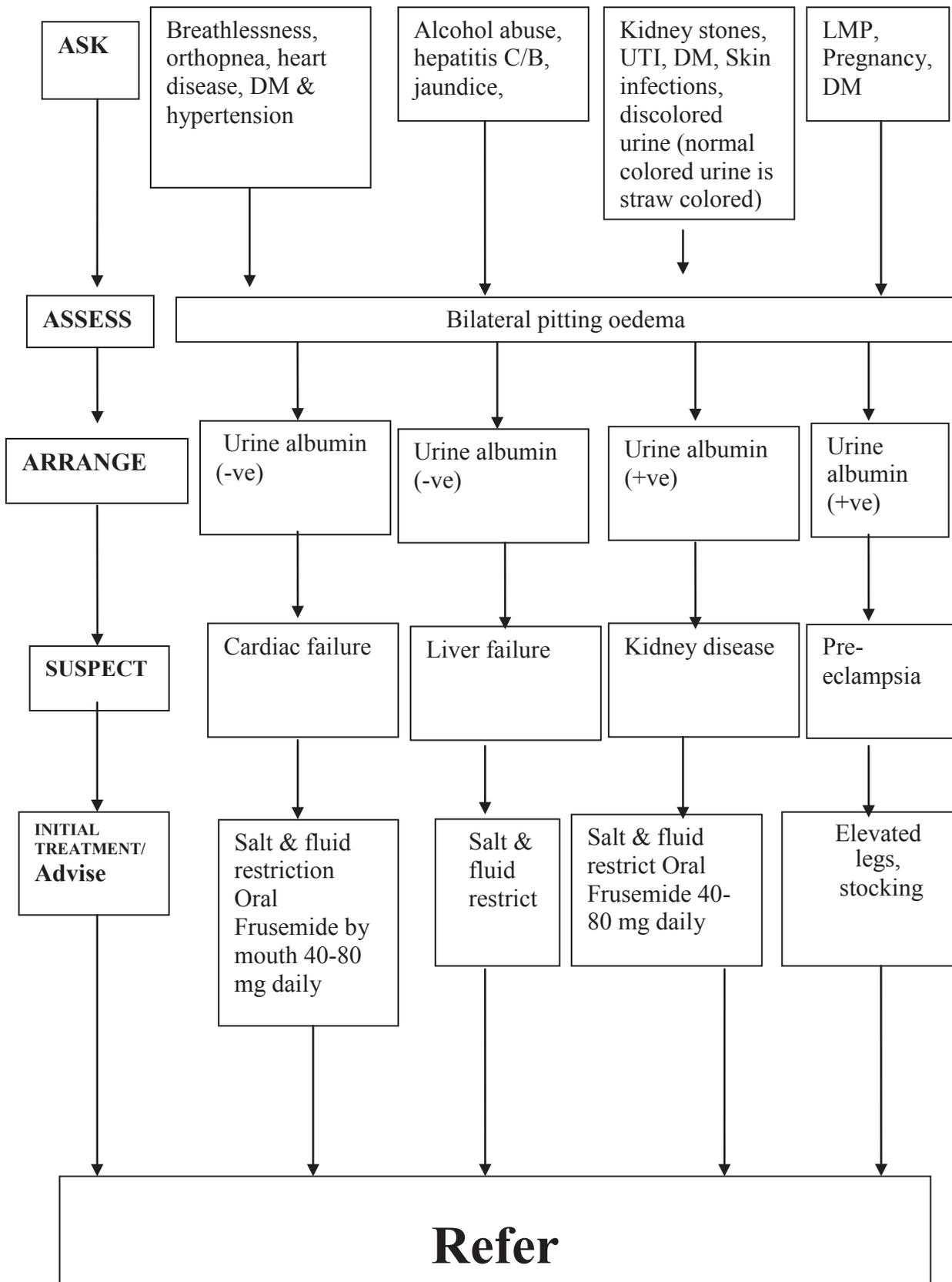
- Persistent pain limiting daily life activities in patients with stable angina or past myocardial infarction
- Anginal pain in patients with recent myocardial infarction
- Heart failure
- Arrhythmias
- Further assessment of risk factors if tests are not available onsite

**Chapter 8: Breathlessness, cough and wheezing**

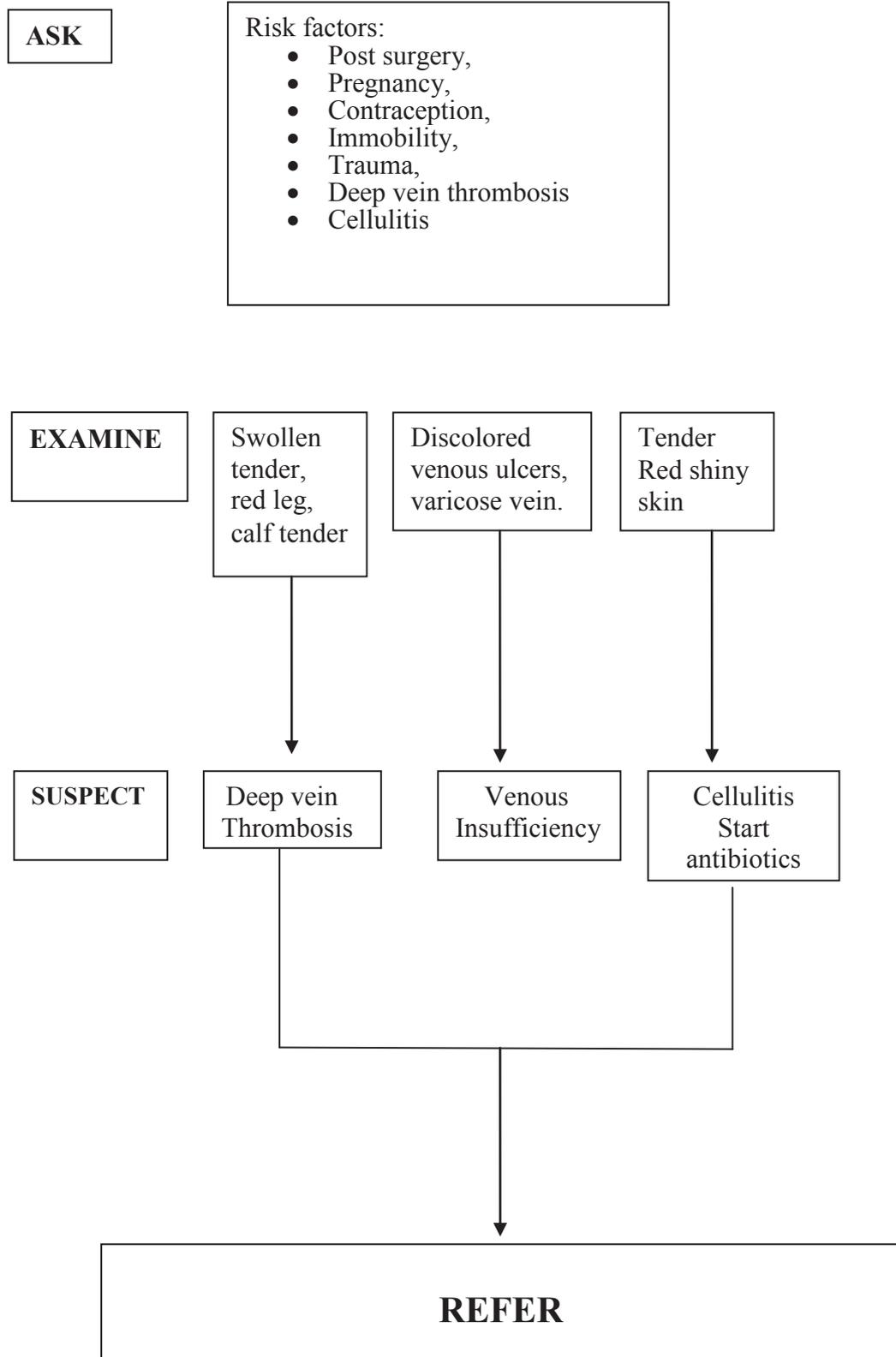


*Note: Normal respiration rate of adult is 16 to 20/minute*

**Chapter 9: Swelling of legs**

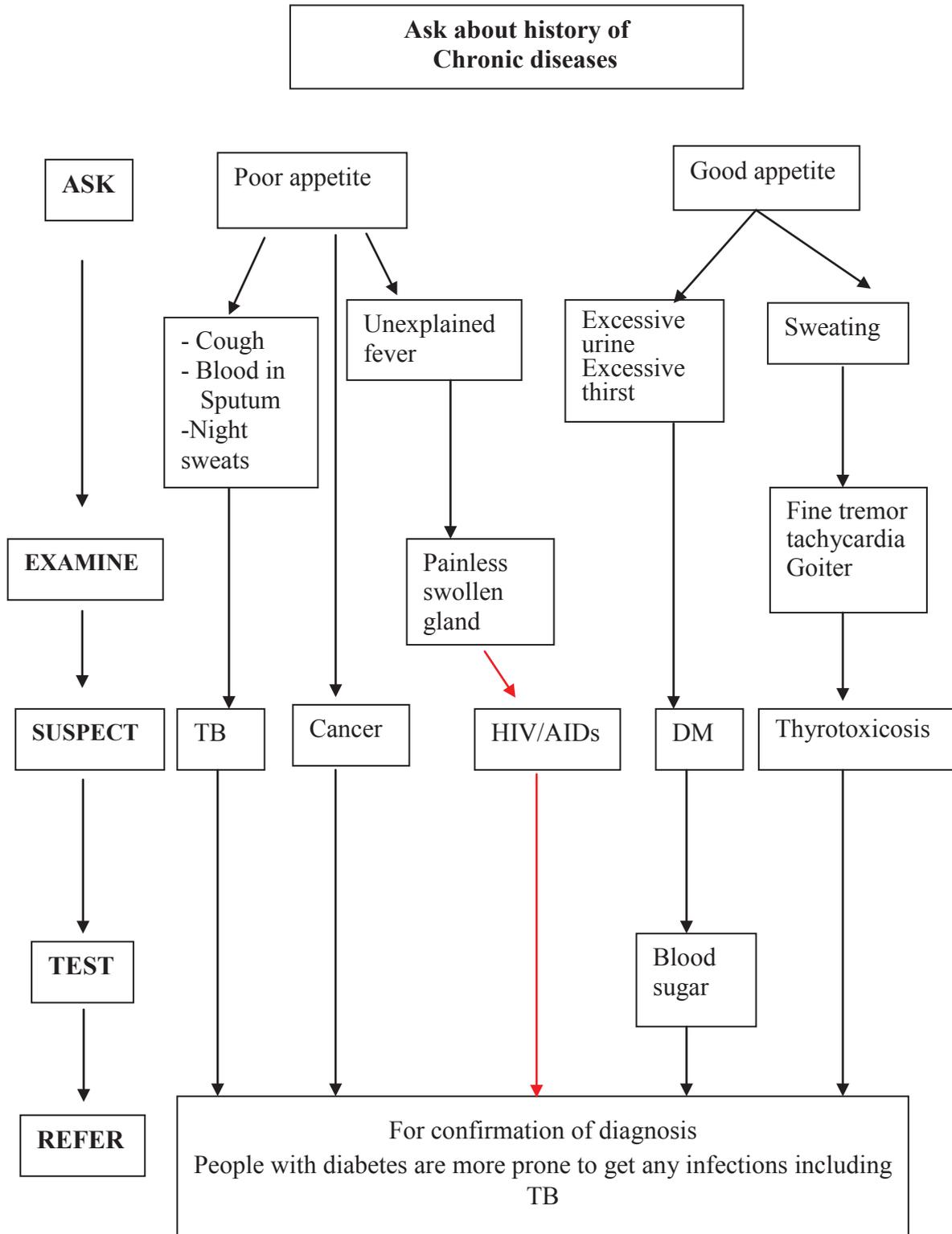


## Chapter 10: Swelling of ONE leg

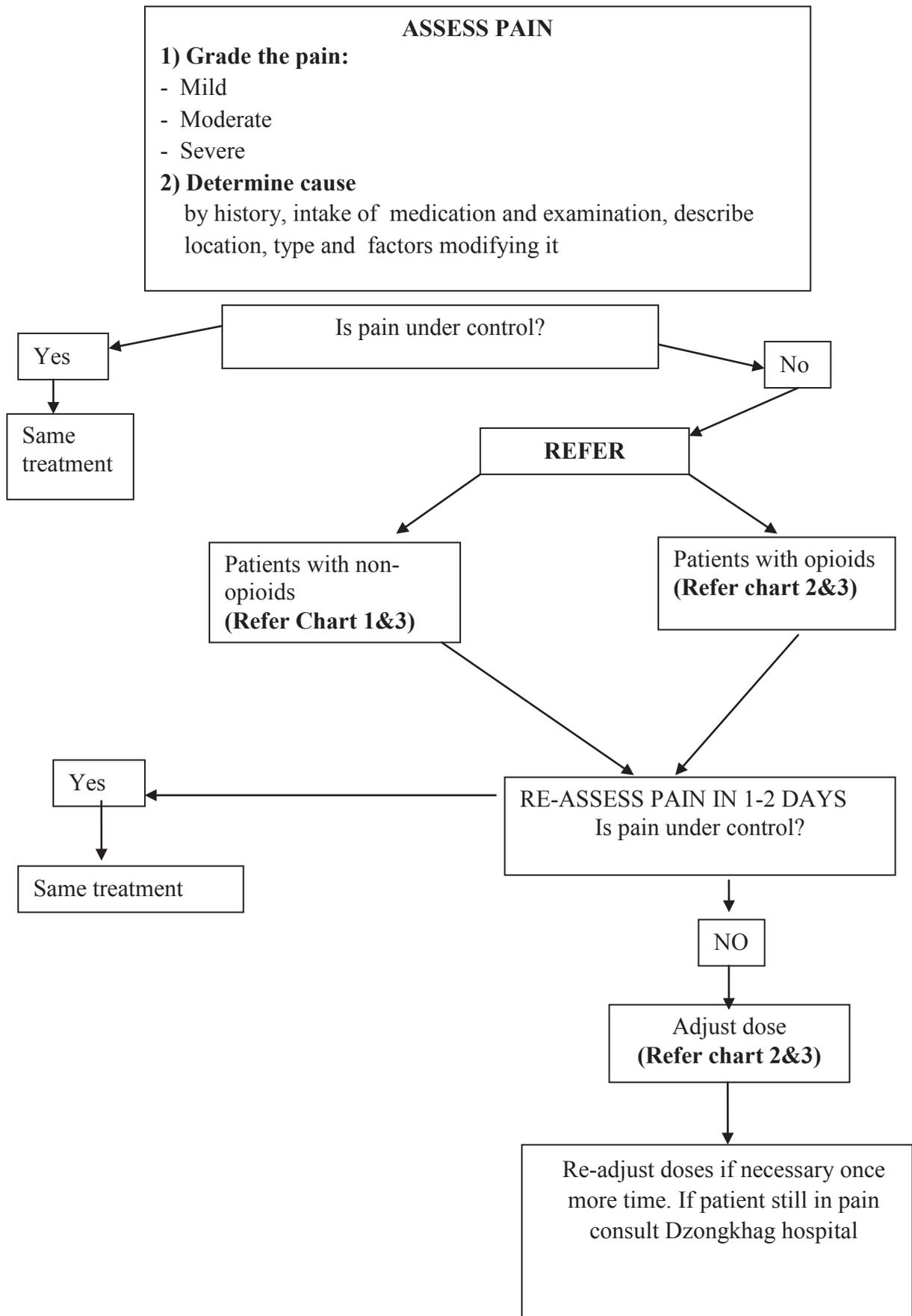


## Chapter 11: Loss of weight

Unintentional wt lost > 10% of usual body weight in the last six month or > 5% in the past month



## Chapter 12: Treatment of Cancer pain



<u>Chart 1</u>	<u>Chart 2</u>	<u>Chart 3</u>
<p><b>Request trained physician to prescribe opioid</b></p> <p>Always give laxative to avoid constipation</p>	<p><b>Adjust dose of opioids supervised by trained physician or nurse</b></p> <p><b>Oral codeine*:</b> increase total daily dose of opioid by 30%; if maximum 60 mg 4-6 hourly dose has been reached switch to morphine</p> <p><b>Oral morphine*:</b> Increase total daily dose by 30%.</p>	<p><b>Assess and treat common side effects of opioids</b></p> <p><b>Constipation :</b> increase Fluids. Give laxatives: ( 5 to 15 mg at night)</p> <p><b>Nausea and or vomiting:</b> Give antiemetic (Promethazine) Maxeron</p> <p><b>Delirium, drowsiness:</b> <b>If symptoms</b></p> <p><b>If symptom persist</b> <b>REFER</b></p>

*\*Always use form III to get these drugs*

**Note : If pain persists, counsel and consult the hospital**

## Chapter 13: Unconsciousness or semi consciousness

<b>Action 1</b>	<ul style="list-style-type: none"><li>- Place unconscious patients in lateral recovery position (unless neck trauma suspected)</li><li>- Maintain A B C and,</li><li>- Stop bleeding by pressure</li></ul>
<b>Action 2 ASK</b>	<p><b>Ask (accompanying persons) for:</b></p> <ul style="list-style-type: none"><li>- Recent trauma</li><li>- Convulsion</li><li>- History of epilepsy,</li><li>- Hypertension,</li><li>- Medication for DM</li><li>- Alcohol &amp; substance abuse,</li><li>- Pesticide/herbicide handling,</li><li>- known allergy,</li><li>- Insect sting,</li><li>- Snake bite</li></ul>
<b>Action 3 ASSESS</b>	<p><b>Check for:</b></p> <ul style="list-style-type: none"><li>- <b>TPR,</b></li><li>- <b>Blood pressure,</b></li><li>- <b>Blood glucose,</b></li><li>❖ One –sided weakness</li><li>❖ Presence/absence of response to painful stimulus (e.g. pinch)</li><li>❖ Breathing difficulty</li><li>❖ Observe seizures/convulsions</li><li>❖ Assess stage of pregnancy,</li><li>❖ Stiff neck,</li><li>❖ Swelling of lips, tongue or skin</li></ul>
<b>Action 4 ACT</b>	<p><b>REMEMBER : Convulsions/seizure</b></p> <p><b>A – Airway</b></p> <p><b>B – Breathing</b></p> <p><b>C – Control bleeding</b></p> <ul style="list-style-type: none"><li>- Start IV fluid, stabilize</li><li>- Give Diazepam 10 mg IV and <b>refer</b></li></ul>

**Suspected anaphylaxis if SBP<90 mm Hg**

- Place in supine position and insert airway
- Give adrenalin i.m. (side of thigh) 0.01mg/kg, up to max dose of 0.5mg, If no response, repeat adrenalin every 5 minutes
- Give Dexamethasone, adult 4-8mg IM upto 20 mg if required & child dose 1-3mg IM 6 hourly

**Suspect hypoglycemia if Blood glucose is ≤ 40 mg/dl**

- If able to drink, give one large tablespoon (20-30 g) glucose mixed in water or 1 glass of fruit juice, honey or a sugar drink,
- IF unconscious/unable to drink, give 5% glucose IV 500ml if feasible- refer to hospital if no response within 10 minutes

**Fever>38°C and/or stiff neck**

- Flow chart for meningitis/malaria

**Suspected herbicide/pesticide poisoning**

- 1.If agent known, administer antidote if available before **referring** to hospital,
- 2.Gastric lavage and give Activated charcoal

**Snakebite**

Antivenom if available,  
**Refer to hospital**

**Paralysis**

Maintain airway, **Refer to hospital**

**Adrenaline (epinephrine) dosage by IM injection using epinephrine (1:10,000)**

Age	Volume
<1 year	0.05ml
2 years	0.2ml
3-4 years	0.3ml
5 years	0.4ml
6-12 years	0.5ml
Above 13 years	0.5-1ml

Doses may be repeated every 10 minutes intervals according to blood pressure, pulse and respiratory function.

- Glucose by IV infusion ,

## Chapter 14: Transient ischemic attack (TIA) and stroke

### Apply this protocol if the patient presents with:

- Sudden onset of weakness or sensory loss of one side of the body, or of a limb,
- Sudden difficulty of speaking or understanding
- Sudden disturbance of vision
- Sudden severe, unusual headache
- Sudden dizziness or unsteadiness of gait

### Ask:

- When did it happen? Where were you? What did you do?
- Do you have weakness or numbness?
- Can you speak as usual?
- Can you see as usual?
- Do you have headache?
- Are your symptoms still present, or have they disappeared?
- Have you had TIA or stroke before?
- Do you have diabetes, high blood pressure, or cardiac disease?
- Do you smoke or have you smoked in the past?  
Yes /no
- Do you drink alcohol? Yes/No
- Do you have old prescription
- Have you had head injury or other recent trauma?

### Examine:

- Level of consciousness by Glasgow Coma Scale (GCS) Refer chart
- Blood pressure and pulse

**If the patient has had Persistent neurological deficits for >24 hours)**

**REFER urgently**

**If neurological deficits have disappeared within 24 hours**

### Treatment:

Give aspirin (First dose 300 mg, then 75 to 150 mg daily)

**Refer for assessment as soon as possible:** (for CT scan, Ultrasound of carotid arteries, ECG and cardiac work-up as necessary)

### Definition:

Stroke is defined by the WHO as “a clinical syndrome consisting of rapidly developing clinical signs of focal (or global in case of coma) disturbance of cerebral function lasting more than 24 hours or leading to death with no apparent cause other than a vascular origin: a **transient ischemic attack (TIA)** is defined as stroke symptoms and signs that resolve within 24 hours”.

## Glasgow Coma Scale (Eye-Motor-Verbal)

Score	Eye	Motor Response	Verbal response
6		Obeys verbal command	
5		Localised pain	Oriented/converse
4	Spontaneous eye opening	Flexion withdrawal	Disoriented/converse
3	To loud voice	Decorticate rigidity	Inappropriate words
2	To pain	Decerebrate rigidity	Incomprehensible
1	Nil	Nil	Nil

Mild (13-15):	Moderate Disability (9-12)	Severe Disability (3-8)	Vegetative State (Less than 3)
Brief loss of consciousness with spontaneous quick recovery	1.Loss of consciousness more than 30 minutes, 2.Physical or cognitive impairments which may or may not resolve 3. Benefit from Rehabilitation	1.Coma 2. unconscious state. 3.No meaningful response, 4. no voluntary activities	1.Sleep wake cycles 2.Arousal but no interaction with environment 3.No localized response to pain

**Refer all types of unconscious cases**

## Chapter 15: Heart failure

ASK

- Reduced exercise capacity
- Breathlessness
- Known heart disease
- Tobacco use (yes/no)
- Alcohol use yes/no
- Medicines used

ASSESS

### Examine

- Blood pressure, heart rate and rhythm
- Medicines used Oedema (ankles, sacrum, ascitis)
- Respiratory rates, crepitation/rales,
- Tenderness/enlargement of the liver
- Jugular venous pressure

TEST

### Initial investigations if possible,

#### otherwise refer:

- Blood tests: blood glucose
- Urine albumin

TREAT

### Refill

- Initiate Diuretic - Hydrochlorothiazide 25 -50 mg daily

**Not heart failure:  
Look for other causes of  
Clinical problem**

*Note: Apply protocol 3 and 4 for counseling and health education (Avoid excess salt intake)*

**Refer to hospital for further assessment and management**

## Chapter 16: Follow up of stable cases of asthma / COPD

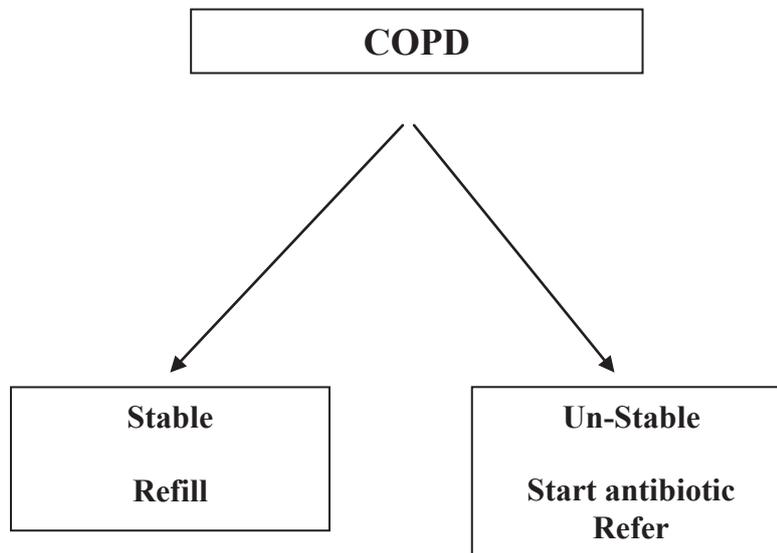
**ASK**

**Assess level of ASTHMA CONTROL**

	<b>Acceptable control All of these</b>	<b>Uncontrolled Any of these</b>
Daytime asthma symptoms	2 or less times per week	3 or more times a week
Use of inhaled beta-agonist	2 or less times per week	3 or more times a week
Night-time asthma symptoms	2 or less times per month	3 or more times a month
Limitation of daily activities	None or minimal	Often limits daily activities

### **\*Advice to patients and family**

- Eliminate cockroaches from the house (not when the patient is present)
- Use synthetic mattresses and pillows or cover them with a synthetic cloth.
- Remove carpets from the house, especially from sleeping areas
- Shake and expose mattresses, pillows, bedspreads and blankets to the sun.
- Advice on cleaning without raising dust: Sprinkle the floor with water before sweeping,
  - Clean furniture with a moist cloth.
  - Clean the blades of fans to get rid of dust
  - Avoid storing books, toys, cloth, shoes and other items that accumulate dust, in sleeping areas
- Smoking and indoor air pollution are the major risk factors for COPD.
- It is essential that COPD patients stop smoking and avoid dusts, tobacco smoke, and other types of smoke
- Keep the area where meals are cooked well ventilated by opening windows and doors.
- If possible or build an oven in the kitchen with chimney that vents the smoke outside.
- Use masks for respiratory protection or stop working in areas with occupational dust or pollution



**Categorize and treat according to severity as below**

Severity category	Moderate	Severe	Complicated by Co-morbidities
Symptoms and signs	Breathless at normal activity	Breathless at rest	Breathless at rest Pitting oedema

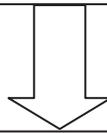
### **Treatment**

<p><b>Mild Exacerbation</b></p> <p>1. If temperature is &gt;38°C and/or sputum is purulent give: - Erythromycin or Amoxicillin (if referral is difficult)</p>	<p><b>Moderate Exacerbation</b></p> <p>1. If temperature is &gt;38°C and/or sputum is purulent give: - Erythromycin or Amoxicillin (if referral is difficult) - Assess response to treatment in <b>two hours</b></p>	<p><b>Severe Exacerbation</b></p> <p>1. Supplemental oxygen over 4 liters/min (30%) by nasal canula to maintain saturation &gt;90%</p> <p><b>2. REFER AS SOON AS POSSIBLE</b></p> <p>3. If temperature is &gt;38o C and/or sputum is purulent give: - Erythromycin (250 -500 mg every 6 hours) or - Amoxicillin (250 -500 mg every 8 hours) - Assess response to treatment in one hour</p>
---	--	--

## Chapter: 17 Lower Respiratory Tract Infection (LRTI)

### Treat with

1. Supplemental oxygen over 4 liters/min (30%) by nasal canula to maintain saturation >90% (if available)
2. Pain and fever relievers (paracetamol 1-2 tablets 4 times daily) warm fluid intake
3. If suspected bacterial infection: Prescribe Cotrimoxazole or Amoxicycline if **referral** is difficult
4. If suspected viral infection: No antibiotics necessary. Arrange follow-up to ensure improvement:



### Assess after 2 days further:

**Refer** to **higher level of care** if more than one of the following:

- o Confusion
- o Respiratory rate > 30 per minute or more
- o Systolic blood pressure < 90 mm Hg
- o Diastolic blood pressure < 60 mm Hg
- o Age > 65 years

## Chapter18: Follow up of Rheumatic Heart Diseases (RHD)

<b>Antibiotics – prophylactic treatment</b>			
<b>Drugs</b>	<b>Mode of administration</b>	<b>Dose</b>	<b>Duration</b>
Benzathine penicillin	Single Intramuscular injection every 3-4 weeks	For adults and children $\geq 30$ kg in weight: 1.2 million IU  For children $<30$ kg in weight : 600 000IU	Life long or advised as per the Medical Specialists
Penicillin V	By mouth	250 mg twice daily	
Erythromycin	By mouth	250 mg twice daily	

*Note: Advise review after 5 years of injection*

### **DURATION of antibiotic prophylaxis**

<b>Category of patient</b>	<b>Duration after last attack</b>
Rheumatic fever with carditis and residual heart disease ( persistent valvular disease)	10 years or until 40 years of age (whichever is longer) Sometime life long prophylaxis 1C
Rheumatic fever with carditis but no residual heart disease ( no valvular disease)	For 10 years or until 21 years of age (whichever is longer) 1C
Rheumatic fever without carditis	5 years or until 21 years of age (whichever is longer) 1C
After valve surgery	Lifelong

- Source –UpToDate

## **Annex I: Guidelines for screening for NCDs**

1. Any person preferably 35-65 years and previously undiagnosed for NCD should be an eligible candidate for screening.
2. Risk behaviors such as smoking, unhealthy diet, physical inactivity and use of alcohol, should be assessed and intervened accordingly.
3. BMI assessment, blood pressure, fasting capillary blood sugar should be checked among previously undiagnosed persons. Total cholesterol may be checked depending on the facilities available.
4. Clinic session should be conducted at least once a week wherever busy OPD load, if not should be done on daily basis
5. Screening and follow up of clients are to be carried out according to the WHO/ISH risk Reduction Chart
6. Treatment and follow up should be carried out according to the guidelines provided
7. Information management should be carried out accordingly to the instruction give by NCD Unit Ministry of Health (under discussion)

## **Annexure –II: Information Guide for Health Workers on Lifestyle Modification**

Chronic non communicable diseases are associated with many risk behaviors. These can be modified with supportive policies and environmental and personal motivation to adopt healthy behaviors. Health workers at the primary level can support personal motivation through creating general awareness and appropriate individual guidance on healthy lifestyles. There are 4 key risk factors that are associated with chronic NCDs; smoking, alcohol, unhealthy diet and physical inactivity. This guide will provide health workers with the necessary scientific information on risk factors for non communicable diseases.

### **11 areas that are considered important for life style modification.**

1. Stop smoking
2. Stop alcohol use
3. Maintain adequate body mass index
4. Engage in regular physical activity
5. Take five servings of fruits and vegetables per day
6. Restrict added salt consumption to one teaspoon per person per day
7. Restrict sugar consumption
8. Minimize consumption of foods containing trans fatty acids
9. Engage in activities that will promote mental health
10. Know your health status
11. Adhere to treatment regimen prescribed to you

#### **1. Stop smoking**

No one should smoke at all since it causes harm to those who smoke, as well as, to those who passively inhale smoke. This includes the use of smoke tobacco products such as bidi, cigar, cigarette etc.

##### **Why should we quit or abstain from smoking?**

Tobacco smoke contains high levels of carbon monoxide, not to mention 4000 other harmful chemicals (50 of which are carcinogenic). Carbon monoxide affects the heart by reducing the amount of oxygen the blood is able to carry. Oxygen is needed for the heart, lungs, brain and vital organs to function effectively. Another harmful substance in cigarettes is Polonium-210, a radioactive element, which clings to the lungs and continually emits a dose of radiation. Animal studies of Polonium-210 have shown that it causes cancer.

People who use tobacco are more likely to have heart attacks, high blood pressure, blood clots, strokes, hemorrhages, aneurysms and other disorders of the cardiovascular system.

- There is a strong relationship between smoking, heart attacks, strokes and lung cancer.
- Cigarette smoking is identified as a major cause of stroke by increasing clotting factors in the blood, decreasing HDL cholesterol levels, increasing triglyceride levels and damaging the lining of blood vessels. The risk of stroke increases as the number of cigarettes smoked increases.
- As soon as a person quits smoking, his /her body begins to repair the damage caused by tobacco use. Within a few days or weeks, exercise endurance and cardiovascular capacity improved and HDL (protective, “good” cholesterol) increases. Among people who quit smoking, the risk of death from coronary heart disease is 50% lower than that of people who continue to smoke after one year of abstinence.

### **Tips & Facts**

- Encourage all non smokers not to start smoking
- Strongly advise all smokers to stop smoking and support in their efforts
- Individuals who use other forms of tobacco should be advised to quit
- Other forms of tobacco- khaini, surti, Baba chewing & Sniffing etc
- Currently there is legislature banning sale of tobacco products and smoking in all enclosed public places

### **Key component of legislations**

- Prohibition of tobacco and alcohol advertisements
- Prohibition of the sale of any tobacco products
- Prohibited to smoke in public places

### **2.Stop alcohol use**

People should not be advised to start taking alcohol for health reasons.

- Alcohol abstinence should be reinforced
- Individuals who take more than 2 drinks of alcohol per Day should be advised to reduce alcohol consumption Or totally abstain.  
(1 drink=8gms of alcohol=1 pint beer, 25 ml of spirits,)
- People who takes lower quantity of alcohol may also progress to heavy use of occasional binge drinking with consequent harmful effect.
- Those with the following conditions are at additional risk when alcohol is consumed:
  - Driving or operating machinery

#### ***Harmful effects of alcohol:***

- Increases Blood Pressure
- Alcohol Dementia
- Liver failure
- Cirrhosis of the Liver
- Liver cancer
- Impotence and sub fertility

- Pregnant or breast feeding
- Taking medication that interact with alcohol (eg. Metronidazole, Tolbutamide, Warfarin, Phenytoin sodium, cimetidine, ranitidine, Nitroglycerine etc)
- Having difficulties controlling drinking

**Myths on use of alcohol:**

- Alcohol reduces stress
- Taking a small amount is heart healthy
- Taking small amount reduces physical fatigue

**3.Maintain adequate body mass index**

**Do you know your BMI?**

- You need to know your weight in kilos and height in meters to calculate BMI
- You can use a BMI chart or calculate your BMI
- $BMI = \text{Weight (kg)} / \text{height (m)} \times \text{height (m)}$

**How do you interpret you BMI?**

- BMI<18.5-undernourished or underweight
- BMI18.5-23.0-desirable
- BMI 23.0-24.9-at risk of becoming overweight
- BMI25.0-29.9- overweight
- BMI27.0-29.9-overweight and risk of obesity
- BMI>30.0-obese

Life style modification should be advocated for those who have BMI>23.0

**What are the health effects of being overweight or obese?**

Obesity is a serious and growing public health problem. Obesity shows a strong relationship with major cardiovascular risk factors such as high blood pressure, type 2 diabetes and dyslipidaemia.

**If under nourished:**

- People are more prone to get infections
- Females may have problems during child birth
- It reduces work output and feel fatigued
- When should one get their BMI assessed?
- You should get your BMI checked at least every year

**How do you maintain a good BMI?**

- If your BMI is <18.5, you need to take additional food and to achieve desirable BMI consult a doctor
- If your BMI is in the overweight and obese range, you need to cut down on your food especially fat sugar, as well as, increase your daily activities and exercises.

**What is an alternate way of knowing if you are overweight or obese?**

- Waist circumference can be used
- >90cm(36”) for males and >80cm (32”) for female is not good

- What advise can you give on food practices for those who are overweight or obese?
- Foods that can be easily avoided/minimized
- Cut down on daily use of sugar (e.g. minimize sugar added to tea or coffee)
- Food or beverages containing high content of sugar (sweets, fizzy drinks, cordials, treacle, etc)
- Fatty foods (fried chips, pork and processed meats, deep fried foods, pastries, fried rice, ground nuts, etc)
- Minimum use of butter and margarine and also selecting trans fat free margarine
- Minimum use of full cream milk and milk product

**Reduce the quantity of the following**

- Rice (even red rice)
- Flour or rice preparations (bread, roti, Momo, Shabale)
- Starchy fruits (bananas, plantains, dates, etc)
- Starchy vegetables (yams and potato, etc) Margarine

**Foods that should be increased in quantity**

- Green vegetables ( beans, green leaves)

**4.Engage in regular physical activity**

**a. Why do we need regular physical activity?**

- Physical inactivity increases the risk of dying from coronary heart disease and diabetes
- Exercise can improve the condition of the heart
- Physical activity promotes mental health, reduces stress and anxiety
- Regular exercise with aging can keep you fit and less dependent on others
- Regular exercise is important to maintain ideal body weight
- Exercise strengthens bones and muscles, improves joint flexibility
- Exercise is especially good for preventing osteoporosis, bone fractures & hunching

**b. How much physical activity should we be engaged in?**

- Minimum of 30 min of physical activity, 5 days a week

Engage in the following activity daily:

- Walking
- Use stairways instead of lifts
- Cleaning the house and compound

**Engage activities such as drawing water chopping fire wood, pounding rice**

**5.Take five servings of fruits and vegetables per day**

**a. Why should we eat give servings of fruits and vegetables?**

- There is strong evidence that continued use of more than 400g of fruits and vegetables in daily diet reduces cancer risk and cardiovascular mortality.
- Fruits and vegetables are rich in fiber
- They help to reduce the blood glucose level and cholesterol levels
- Fruits and vegetables prevent constipation
- In additional, fruits and vegetables are rich in vitamins and minerals

- Fruits and vegetables are rich in antioxidants like beta carotene, vitamin C & E which protect us from chronic illnesses.

**b. How much fruits and vegetables should we eat?**

- We should eat 5 servings of fruits and vegetables per day (400-500g)
- One serving is equivalent to
  - One small orange
  - Half a mango
  - One small banana
  - One small apple
  - ¼ medium sized papaya
  - Or 3 tablespoons of cooked vegetables

**c. What is the best way to consume vegetables and fruits?**

- Fresh as much as possible
- Boiled or steamed instead of frying and cooking
- Coconut oil should be used sparingly in cooking as it has short chain saturated fatty acids which promote the production of cholesterol inside the body. (When cooking vegetables, use only one type of coconut oil or milk. It is better to cook oil containing food like meat and fish in water with spices.)

**6.Restrict added salt consumption to one teaspoon per person per day**

**a. Why do we need salt?**

- Sodium present in salt is required for variety of functions of the body
- Some of these functions include maintenance of fluids of the body and functioning of nerves and muscles
- Body cannot make its own salt

**b. How do we get salt?**

- Salt is present naturally in food items consumed
- 80% of the salt requirement is obtained from food where salt is naturally available
- In addition, salt is added while cooking
- Some food items have high salt content due to added salt eg; dry fish, tinned fish, processed meat, pickles, sauces, malted drinks, suja, ezay, etc.

**c. How much salt should we get per day?**

- The recommended daily amount of salt is 5g per day (1 teaspoon of salt per day per person)

**d. What will happen with high salt intake?**

- High salt intake can lead to high blood pressure, stroke and stomach cancer

**e. How to reduce salt consumption ?**

- Do not add salt to food given to children less than one year of age. (This will prevent them from getting used to salt taste).
- Reduce the daily consumption of food items that contain high amounts of salt.
- Reduce the use of salt when cooking food by adding high amounts of salt. Herbs .e.g Do not add salt when cooking rice as a habit.
- Do not serve salt separately at the table.
- Suggest practical ways to judge salt consumption and avoid over use. E.g keep aside

- Do not take Suja frequently

## **7. Restrict sugar consumption**

### **a. What is refined sugar?**

- Refined sugar is a carbohydrate that tastes sweet.
- It does not provide any other micronutrients in significant quantity
- Sugar is digested to glucose and absorbed inside the body

### **b. Do we need refined sugar?**

- Since other carbohydrates are converted to glucose in the body, we do not need Sugar separately.
- Therefore we can easily cut down on refined sugar when we want to restrict calories.

### **c. What will happen with high sugar intake?**

- High sugar intake will lead to becoming overweight.
- High sugar intake will lead to diabetes which will have complications such as eye nerve and kidney damage.
- High sugar intake will cause damage to vessels and may promote development of Strokes and heart attacks

### **d. How much sugar should we have per day?**

- The recommended maximum amount of sugar per person per day is 3 tablespoons. It may be contained in sugary food and the food items prepared with added sugar.
- Refined sugars should be restricted or minimized by those who are overweight or Obese.

### **e. What are the food items having high content of sugar?**

- Tea/coffee/milk with added sugar
- Deserts with added sugar-E.g. ice cream
- Biscuits – One chocolate biscuit has four teaspoons of sugar
- Sweets – milk toffees, etc.
- Fizzy drinks – 200 ml bottle will have 4-6 teaspoons of sugar

### **f. How to reduce sugar consumption?**

- Do not add sugar to food given to children less than one year of age. (This will prevent Them from getting used to high sugar taste.)
- Reduce the amount of sugar added to tea/coffee to only tea spoon or less.
- Instead of sugary desserts, select deserts made out of fruits/vegetables. (Prepare Desserts with reduced amount of sugar)
- If you take sweet desserts, take smaller servings.

## **8. Minimize consumption of foods containing trans fatty acids**

### **a. What are trans fatty acids?**

Trans fats are chemically altered unsaturated fats. It is commonly available and widely consumed through preparations that have polyunsaturated fats such as table margarines. Some polyunsaturated fats such as sunflower oil, vegetable oil (excluding coconut) and olive oil are converted to trans fatty acids during overheating.

**b. Why are they harmful?**

Trans fatty acids have the effect of increasing LDL (bad cholesterol) and lowers HDL (good cholesterol) and increases the risk of cardiovascular diseases ( heart attacks, strokes and peripheral vascular disease.

**c. What is the recommended amount?**

- Ideally, less than 1.1gm per person per day ( or less than three grams per day) e.g one thin spread of margarine on a slice of bread may contain approx.1.2g of margarine which can have 1gm of fatty acids.

**d. What are the foods containing trans fatty acids?**

- Margarine (**hard sticks**), fried food, pastries, biscuits, cake, bakery items, etc

**e. How can we reduce consumption?**

- By reducing the quantity of any oil used for shallow frying
- Never use polyunsaturated fats for deep frying e.g. sunflower oil and vegetable oil (excluding coconut oil).
- Coconut oil can be used for deep frying, however when shallow frying with coconut oil it is important not to overheat the oil to the point of smoking, **as this will produce trans fats and free radicals.**
- Read labels, look for the % of trans fat in 1g (if there is more than 1% in 1g, this food should be avoided)
- If using margarine, buy soft margarine as opposed to hard sticks which contain more trans fats.

**Use facts on fats.**

- None of the commonly used fats of vegetable origin have cholesterol in their natural form
- Animal fats such as lard, ghee, pork, red meat and egg yolk will have cholesterol in the natural form.
- Some vegetable oils are less likely to produce cholesterol inside the body e.g polyunsaturated fats like Sunflower oil, vegetable oil and olive oil
- Polyunsaturated fats like sunflower oil, vegetable oil and olive oil should not be used for deep frying, but can be used for shallow frying. If there is overheating, even in shallow frying, there is production of Trans fats that are harmful (cholesterol promoting and carcinogenic)
- Coconut oil and palm oil have a higher proportion of short chain saturated fats and will produce cholesterol inside the body.
- Any fat should be used in moderation, but minimized for those who are overweight and/or have high Cardiovascular risk.

**9. Engage in activities that will promote mental health.**

Mental health-is a state of well-being where the individual realizes his or her own abilities, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community (WHO 2001)

What is mental stress?-It is the psychological burden experience by an individual

**a. Why do we need activities that promote mental health?**

- It reduces anger
- It reduces accidents
- It improves family and work place harmony
- It reduces job stress, improves management and leadership skills
- It reduces exam stress
- Mind is important to promote our health
- Stress contributes to high blood pressure and increases cardiovascular Mortality
- Activities that promote mental health help us to enjoy our life
- Competitive sports also can lead to stress.
- Poor mental wellbeing is associated with other risk behaviours such as alcohol, Tobacco consumption, bad eating habits such as indulging in oily, salty or sweet foods And physical inactivity

**b. What could be practiced to improve mental health?**

- Daily meditation/prayers
- Listening to music
- Physical exercise especially activities such as walking, tai chi and yoga
- Leisure activities that vary from person to person
- Laughter
- Early to bed early to rise
- Nature therapy-Enjoying the environment, star gazing
- Pet therapy
- The methods to be suggested should be relevant to the individual
- Spending time with your family and children, going for a movie or a trip

**c. How often should we be engaged in activities that promote mental health?**

- We should practice activities that promote mental health on a regular basis in order for it to have an impact on our mental health status.
- We should start with small periods of such exercise and gradually increase up to at Least one hour per day.

Field workers should know

- When and how to seek help from the Health service
- What to do with persons with active suicide ideation

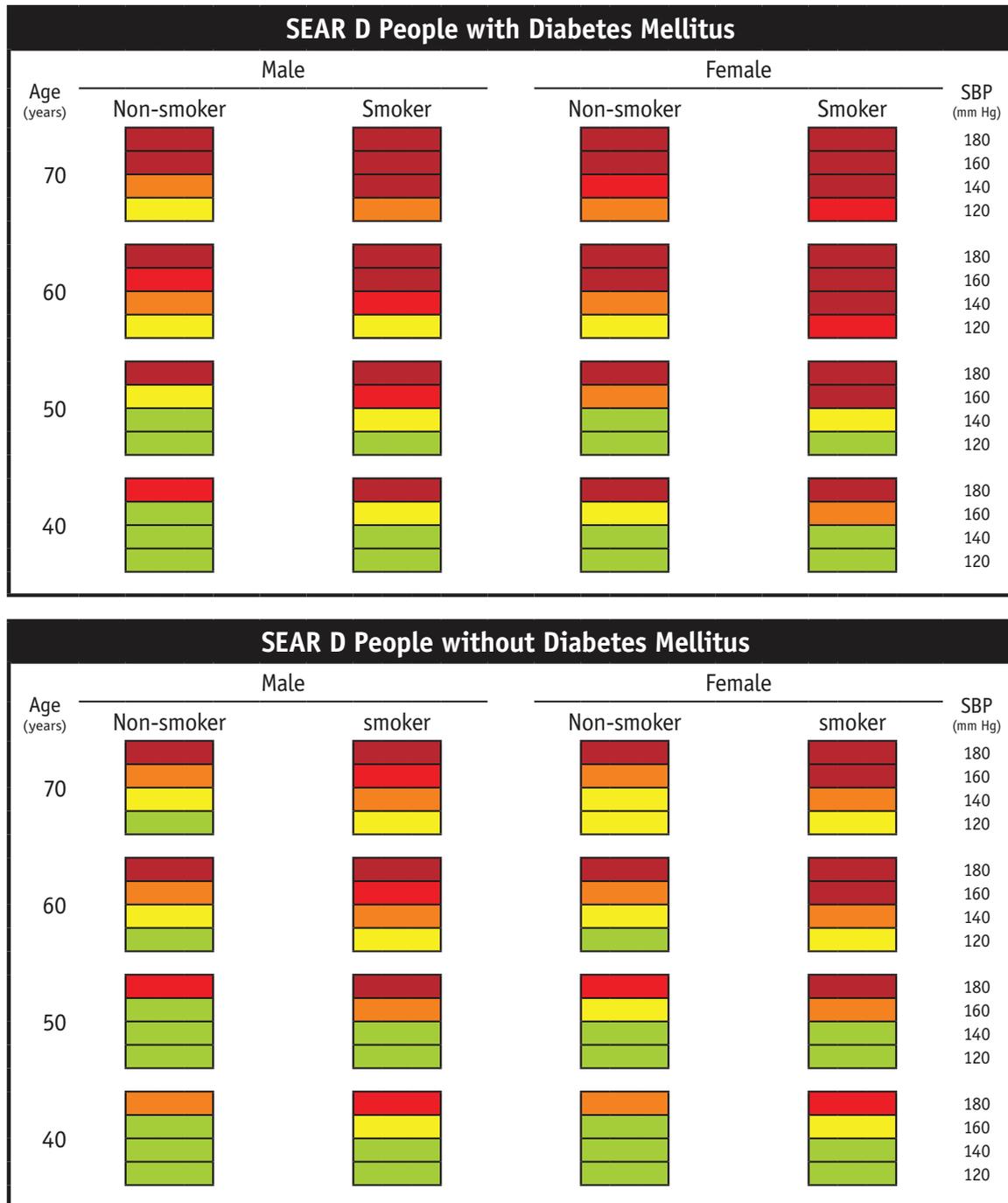
**10. Know your health status**

All healthcare workers should actively promote people to know their own health status.

- a. It is important to know your health status because there are affordable and simple measures to improve your health status.
- b. Every person should get themselves screened for NCDs and risk factors at 35 years of age and again at least every 3-4 yr intervals.
- c. This should include history taking, examination and a few simple investigations.
- d. This is offered free of charge at your local hospital.

**Figure 24. WHO/ISH risk prediction chart for SEAR D.** 10-year risk of a fatal or non-fatal cardiovascular event by gender, age, systolic blood pressure, smoking status and presence or absence of diabetes mellitus.

**Risk Level**    ■ <10%    ■ 10% to <20%    ■ 20% to <30%    ■ 30% to <40%    ■ ≥40%



This chart can only be used for countries of the WHO Region of South-East Asia, sub-region D, in settings where blood cholesterol CANNOT be measured. (Bangladesh, Bhutan, Republic of Korea, India, Maldives, Myanmar, Nepal)

- e. If there are other risk factors such as family history, then even at younger age screening could be done.

**What are the risk factors that should make you get yourself screened?**

- Age > 40 yrs
- Smokers
- Obesity (based on waist circumference/BMI)
- Raised BP (140/90 in non diabetics, 130/80 in diabetics)
- History of premature cardiovascular disease in first degree relatives
- History of diabetes in first degree relatives

**11. Adhere to treatment regimen prescribed to you.**

**a. If the patient is prescribed medicine(s):**

- Teach the patient how to take it at home
- Explain the difference between medicines for long-term control (e.g. blood pressure) and medicines for quick relief (e.g. for wheezing)
- Tell the patient the reason for prescribing the medicine(s)
- Assure safety of medication-dispel myths on side effects such as organ damage
- Explain the importance of lifelong treatment
- Show the patient the appropriate dose
- Explain how many times a day to take the medicine
- Encourage use of pill box for those on long term medication
- Label and package the tablets
- Check the patient's understanding before the patient leaves the health centre
- Explain the importance of keeping an adequate supply of the medications and the need to take the medicines regularly as advised
- Explain the side effects, if any, of drugs & while taking medication (such as hypoglycemia)
- Explain the need of continuing treatment although the condition (BP, sugar levels ) has improved and not to stop treatment without medical advice.
- Explain the need of checking kidney, heart functions & eye checkups at regular intervals. ( Ask clinician)
- For diabetics, explain proper foot care
- Advise about familial tendencies and importance of screening family members.
- Females need to control medical conditions before getting pregnant
- Explain the importance of the diagnosis card and show when to go for treatment.

## Annexure III: International Society of Hypertension (ISH) Chart

### 1. Introduction

These charts indicate 10-year risk of a fatal or non-fatal major cardiovascular event (myocardial infarction or stroke), according to age, sex, blood pressure, smoking status, total blood cholesterol and presence or absence of diabetes mellitus for 14 WHO epidemiological sub-regions. There are two sets of charts. One set can be used in settings where blood cholesterol can be measured. The other set is for settings in which blood cholesterol cannot be measured. Both sets are available according to the 14 WHO epidemiological sub-regions. Each chart can only be used in countries of the specific WHO epidemiological sub-region, e.g. The charts for South East Asia sub-region B (SEAR B) can only be used in Indonesia, Sri Lanka and Thailand.

The list of WHO/ISH risk prediction charts by epidemiological sub-regions and the Member States in which they can be used are shown in table 1.

**Table 1. List of WHO/ISH risk prediction charts by epidemiological sub-regions<sup>1</sup> and WHO Member States**

**SEAR B** Indonesia, Sri Lanka, Thailand

**SEAR D** Bangladesh, Bhutan, Republic of Korea, India, Maldives, Myanmar, Nepal

1 Mortality strata: **A:** very low child mortality and very low adult mortality; **B:** low child mortality and low adult mortality; **C:** low child mortality and high adult mortality; **D:** high child mortality and high adult mortality; **E:** high child mortality and very high adult mortality.

### 2. Instructions on how to use WHO/ISH

(World Health Organization/International Society of hypertension) risk prediction charts

The charts provide approximate estimates of cardiovascular disease (CVD) risk in people who do not have established coronary heart disease, stroke or other atherosclerotic disease. They are useful as tools to help identify those at high cardiovascular risk, and to motivate patients, particularly to change behaviour and, when appropriate, to take antihypertensive, lipid-lowering drugs and aspirin.

#### How do you use the charts to assess cardiovascular risk?

- First make sure that you select the appropriate charts using information,
  - If blood cholesterol cannot be measured due to resource limitations, use the charts that do not have total cholesterol
  - Before applying the chart to estimate the 10-year cardiovascular risk of an individual, the following information is necessary
- Presence or absence of diabetes<sup>1</sup>
  - Gender
  - Smoker or non-smoker
  - Age
  - Systolic blood pressure<sup>2</sup>
  - Total blood cholesterol (if in mg/dl divide by 38 to convert to mmol/l)

Once the above information is available proceed to estimate the 10-years cardiovascular risk as follows.

**Step 1** Select the appropriate chart depending on the presence or absence of diabetes<sup>1</sup>

**Step 2** Select male or female tables

**Step 3** Select smoker or non smoker boxes<sup>3</sup>

**Step 4** Select age group box (if age is 50-59 years select 50, if 60-69 years select 60 etc)

**Step 5** Within this box find the nearest cell where the individual's systolic blood pressure (mm Hg) and total blood cholesterol level (mmol/l)<sup>4</sup> cross. The colour of this cell determines the 10-year cardiovascular risk.

1. A person who has diabetes is defined as someone taking insulin or oral hypoglycaemic drugs, or with a fasting plasma glucose concentration above 7.0 mmol/l (126 mg/dl) or a postprandial (approximately 2 hours after a main meal) plasma glucose concentration above 11.0 mmol/l (200 mg/l) on two separate occasions). For very low resource settings urine sugar test may be used to screen for diabetes if blood glucose assay is not feasible. If urine sugar test is positive a confirmatory blood glucose test need to be arranged to diagnose diabetes mellitus.
2. Systolic blood pressure, taken as the mean of two readings on each of two occasions, is sufficient for assessing risk but not for establishing a pretreatment baseline.
3. All current smokers and those who quit smoking less than 1 year before the assessment are considered smokers for assessing cardiovascular risk.
4. The mean of two non-fasting measurements of serum cholesterol by dry chemistry, or one non-fasting laboratory measurement, is sufficient for assessing risk.

### **Practical points**

Please note that CVD risk may be higher than indicated by the charts in the presence of the following:

1. already on antihypertensive therapy
2. premature menopause
3. approaching the next age category or systolic blood pressure category
4. obesity (including central obesity);
5. sedentary lifestyle;
6. family history of premature coronary heart disease (CHD) or stroke in first degree relative (male < 55 years, female < 65 years);
7. raised triglyceride level (>2.0 mmol/l or 180 mg/dl);
8. low HDL (high density lipoprotein) cholesterol level (< 1 mmol/l or 40mg/dl in males, <1.3 mmol/l or 50 mg/dl in females);
9. raised levels of C-reactive protein, fibrinogen, homocysteine, apolipoprotein B or Lp(a), or fasting glycaemia, or impaired glucose tolerance;
10. Microalbuminuria (increases the 5-year risk of diabetics by about 5%) (38, 83, 85);
11. Raised pulse rate.
12. Socioeconomic deprivation

## **Risk levels**

The colour of the cell indicates the 10-year risk of combined myocardial infarction and stroke risk (fatal and non-fatal) as shown below.

10-year combined myocardial infarction and stroke risk (fatal and non-fatal)

- Green <10%
- Yellow 10% to <20%
- Orange 20% to <30%
- Red 30% to <40%
- Deep Red > 40%