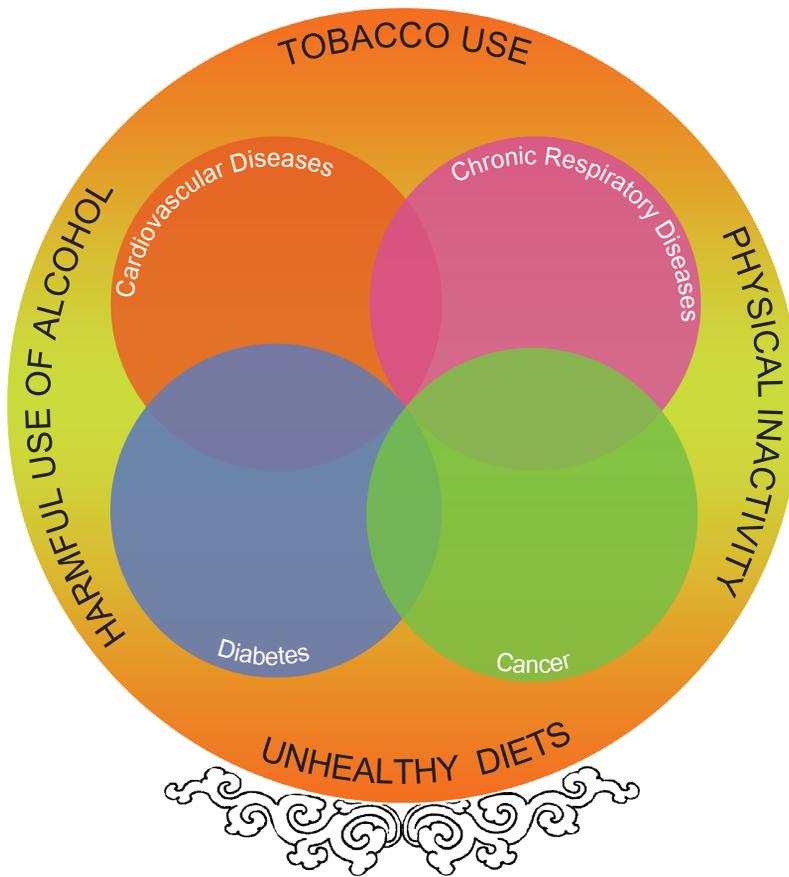


Package of Essential NCD (PEN) Interventions for Hospitals



Life Style Related Disease Programme
Non Communicable Disease Division
Department of Public Health
Ministry of Health



World Health
Organization

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This guideline is based on the WHO Package of Essential NCD (PEN) intervention protocols.

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We would also like to thank WHO for their technical support.

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. The NCD risk factor STEPs survey was conducted in 2014 for 2812 respondents of age 18-69 years. The survey revealed that 29% of men and 14% of women are binge drinkers, 36% have raised blood pressure and one out of three with HBP is not treated and 27% men and 40% women are overweight. About 66.7 % of adults consumed less than the recommended amount of fruits and vegetables and large proportion had sedentary lifestyles. 6.4 % had raised blood glucose and Bhutanese consumes about 9gms of salt.

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.

The piloting of Package of Essential NCD (PEN) intervention was carried out in Bumthang and Paro dzongkhags in 2009 to 2010 by integrating into the Primary Health Care (PHC) system. It has revealed the improvement of the outcomes in the PHC settings. It has indicated that proper screening, counseling, treatment and follow up have great impact in reduction of NCD risks.

In general Bhutanese people consume more than recommended quantity of salt in different way which is found to be leading to high blood pressure. The modest reductions in dietary salt could substantially reduce cardiovascular risk. There is an urgent need for scaling up of public health interventions for prevention of NCDs and promotions of healthy life styles amongst our people. Habits are human's second nature and at times not easily changed. Since 90% of the NCDs are both preventable and treatable, I hope starting with the health care providers, that more Bhutanese people will keep physically active, adopt healthy dietary choices and maintain status quo among non tobacco users and non-alcoholic groups. The only sustainable and cost effective method is prevention. With these guidelines, I urge all our colleagues to strictly and constantly adapt for the wellbeing of our fellow citizens.

I acknowledge the sincere dedications and commitment rendered by all the health workers of the country for serving TSA WA SUM through their efforts to help our people to lead a healthy lifestyle.

Tashi Delek !



(Tandin Wangchuk)

Minister

Ministry of Health

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CHAPTER 1:

Prevention of heart attacks, strokes and kidney disease, integrated management of diabetes and hypertension (assessment and management of cardiovascular risk using hypertension, diabetes and tobacco use as entry points)

Apply this Protocol to all the following:

- age > 18 years
- smokers
- waist circumference ≥ 80 cm in women and 90 cm in men
- raised BP
- diabetes
- family history of premature CVD
- family history of diabetes, or kidney disease

ACTION 1:

Ask about: (FIRST VISIT)

- Known heart disease, stroke, TIA, diabetes, kidney disease chest pain and or, breathlessness on exertion, pain in calf on exertion
- Medicines that the patient is taking
- Current tobacco use (yes/no)
- Alcohol consumption (yes/no)
- Occupation (sedentary or active),
- Engaged in more than 30 minutes of physical activity daily at least 5 days a week (yes/no)

ACTION 2:

Assess: (FIRST VISIT)

- Waist circumference (Normal: Male-90cm and female-80cm)
- Palpation of heart, peripheral pulses and abdomen,
- Auscultation of heart and lungs
- Blood pressure
- Fasting or random blood glucose (DM= fasting ≥ 7 mmol/L(126mg/dl) or random ≥ 11.1 mmol/L) (200mg/dl) and after food $\rightarrow 11.1$ mmol/l or 200mg/dl)
- Urine albumin & sugar
- Presence of foot ulcers, sensation of feet if known DM

ACTION 3:
Referral criteria for all visits: (FIRST VISIT) if there is no facility

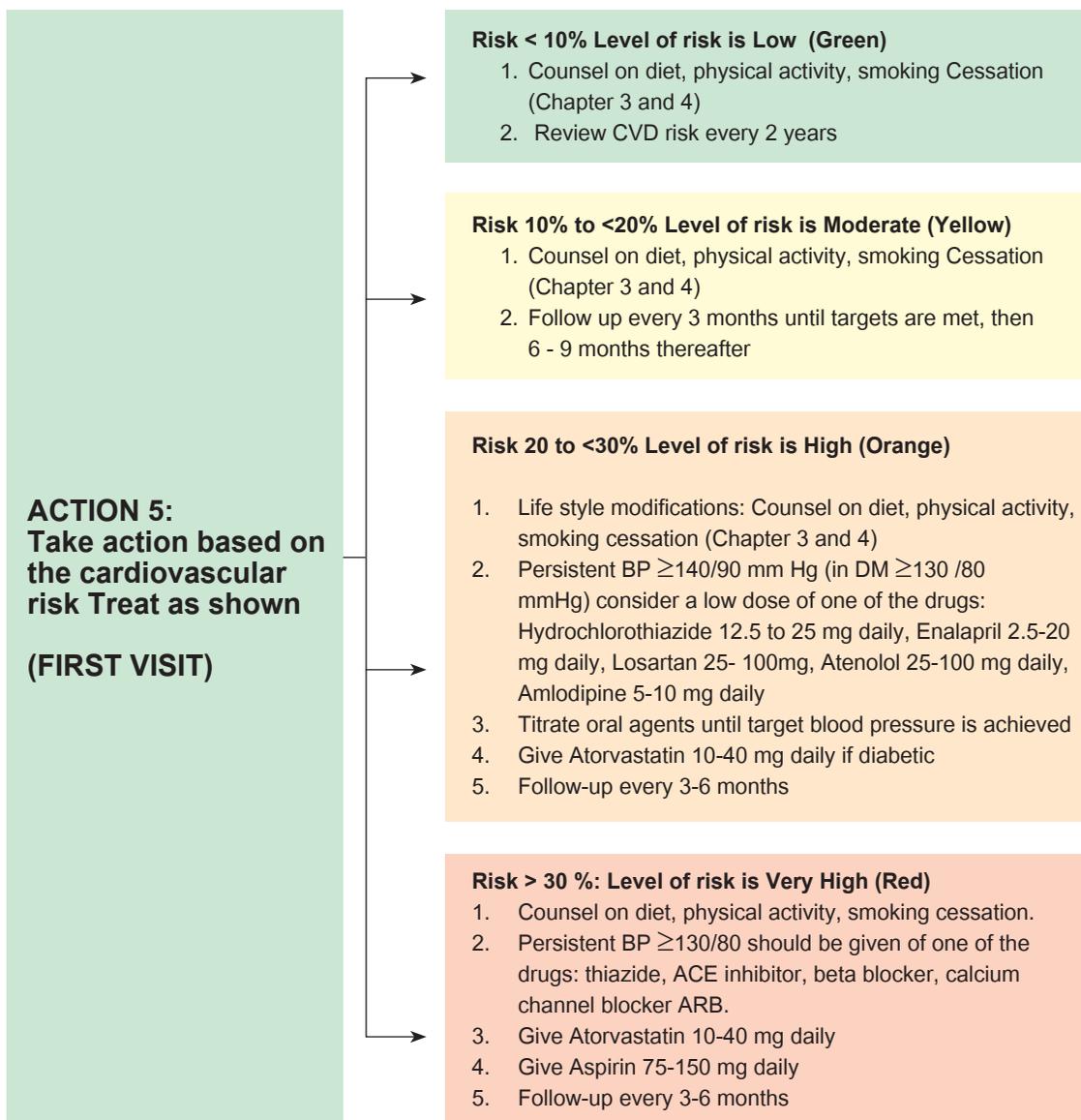
- BP >140/ 90 mmHg in people <40 yrs (to exclude secondary hypertension)
- Known heart disease, stroke, TIA,DM, Kidney diseases (for assessment as necessary)
- Angina, claudication
- Worsening of heart failure
- Raised BP >140 /90 (in DM above 130/80mmHg) in spite of treatment with 2 or 3 agents
- If a albuminuria >2+
- Newly diagnosed diabetes in lean persons of <30 years (**if no insulin**)
- FBS - DM with blood glucose >14 mmol/l despite maximal metformin and sulphonylurea
- DM patients with severe infection and/or foot ulcers
- DM with recent deterioration of vision or no eye exam for 2 years
- **Fasting blood: Total Hypercholesterolemia with one or more of the above risk factors=above 5.0mmol/L (190mg/dl) (for discussion)**

ACTION 4:
In those not referred, proceed to estimate cardiovascular risk (FIRST VISIT)

- Use the WHO/ISH risk charts relevant to the WHO sub-region (Annexure III)
- 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.

1. All individuals with persistently raised BP \geq 160/100 mmHg should be given antihypertensive treatment,
2. All individuals with persistent fasting blood glucose > 6 mmol/l despite diet control should be given Metformin,
3. All patients with established diabetes and cardiovascular disease (coronary heart disease, myocardial infarction, transient ischaemic attacks, cerebrovascular disease or peripheral vascular disease), if stable, should continue the treatment already prescribed and be considered as with risk >30%,
4. All individuals with total cholesterol at or above 8 mmol/l(320mg/dl) should be given life styles advise and statins



Drug dosages:

- Hydrochlorothiazide by mouth 12.5 mg daily increased to 25 mg daily if necessary.
- Acetylsalicylic acid by mouth 75-150 mg once daily.
- Amlodipine by mouth 5-10 mg daily.
- Atenolol, by mouth 50-100 mg once daily.
- Enalapril by mouth 5-20 mg once daily
- Losartan by mouth 25-100mg daily
- Atorvastatin by mouth 20-40 mg once daily at night
- Metformin by mouth initially 500 mg with breakfast at least 1 week then 500 mg with breakfast and evening meal. If necessary, increase up to a maximum of 2 gm daily in divided doses.

(SECOND VISIT)

Repeat actions 2,3 and 4, follow referral criteria for all (see action 3) treat as shown below.

Risk 10% to 20 % If risk is < 20 %

Counsel on diet, physical activity, smoking cessation
Repeat BP measurement every 6 months
(Chapter 3 and 4) Review every 12 months

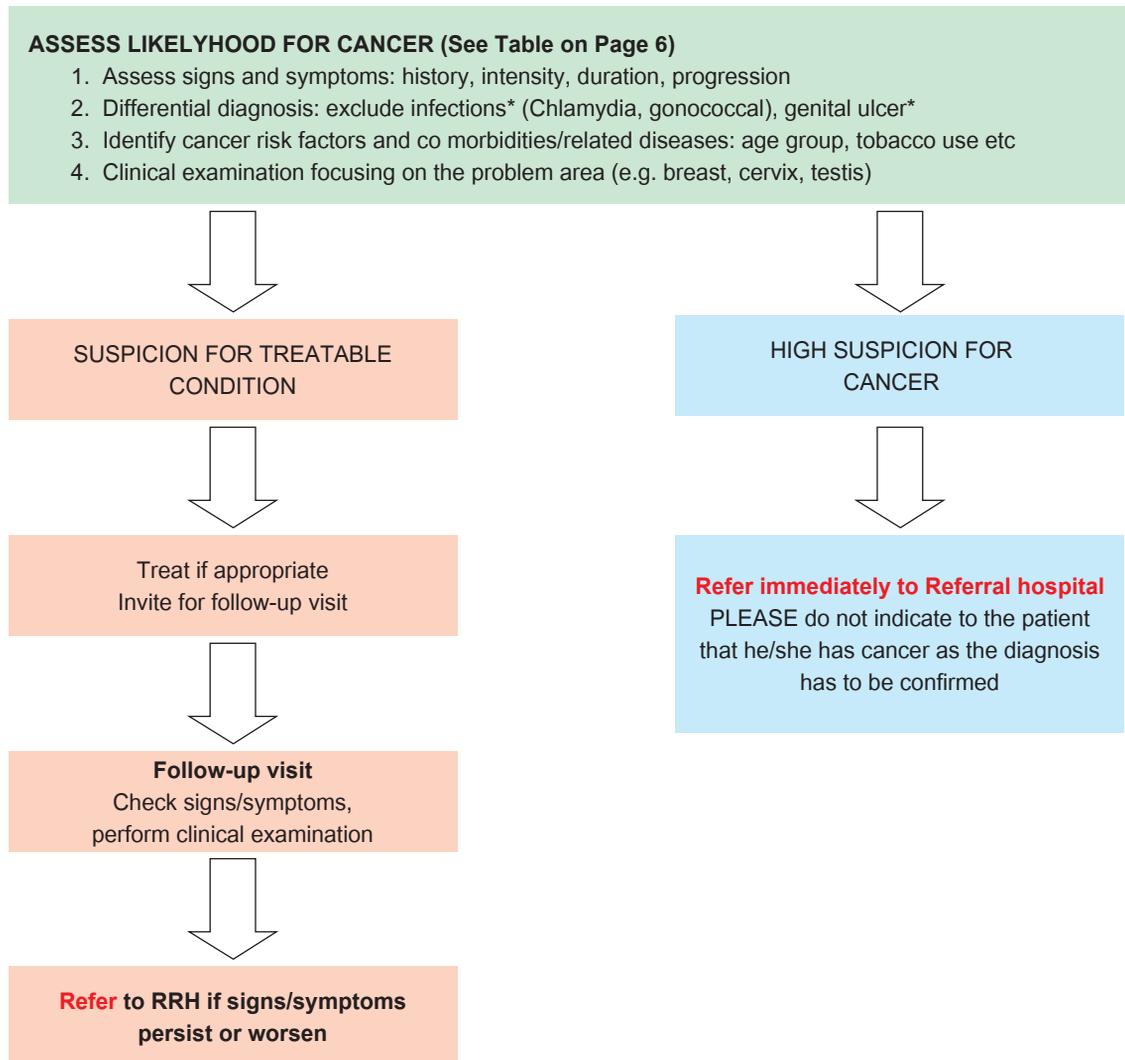
If risk is 20 to <30% continue as in Action 4 and follow up in every 3 months.

If risk is still >30% after 3-6 months of prescribed interventions at first visit, **Refer to RRH**

Advice to patients and family

- 1. If you are on any diabetes medication that may cause your blood glucose level to go too low carry sugar or sweets with you*
- 2. Have your blood glucose level, blood pressure and urine checked regularly*
- 3. If feasible, have your eyes checked every year,*
- 4. Avoid walking barefoot or without socks*
- 5. Wash feet in lukewarm water and dry well especially between the toes*
- 6. Do not cut calluses or corns, nor use chemical agents on them*
- 7. Look at your feet every day and if you see a problem or an injury go to your health worker*
- 8. Avoid table salt and reduce salty foods such as pickles, salty fish, fast food, processed food, canned food and stock cubes (risk for stomach cancer)*

CHAPTER 2: Cancer



The cancer prevalence will vary according to geographical, socioeconomic conditions and also urban vs rural. Therefore, the local programme should assess the burden of the different cancer types and adapt the algorithm as appropriate* complement with the WHO Guidelines for the management of sexual transmitted infections (WHO 2003)

NOTE: It is difficult to diagnose cancer on clinical grounds alone. Primary care workers should be familiar with typical presenting features of cancer and be able to readily identify these features when patients consult them

Symptoms for specific cancer sites when early detection may lead to improvement

Ask = A: perceivable by patients:

Examine = B: perceivable by health professionals

Early symptoms	Possible Cancer site	Action by Physicians
<p>A: Changes in size, shape, feel of breast, A, B: Breast lump or thickening in on breast or armpit, - nipple/skin retraction, nipple discharge, eczema like breast skin - axillary lump</p>	Breast	Refer to Regional Referral Hospital (RRH)
<p>A: Vaginal bleeding (postcoital, intermenstrual, postmenopausal), chronic Vaginal discharge in women who have not done PAP smear</p>	Cervix	Exclude infection Visual Inspection with Acetic acid (VIA) REFER to nearest colposcopy centre
<p>A, B: Abdomonal pain, distension, discomfort, indigestion,</p>	Ovary	Ultrasound Refer
<p>A : Persistent diarrhea and/or constipation, change in bowel habits, obstruction - rectal bleeding, weight loss</p>	Colorectal	Look for: -iron deficiency anaemia -Exclude infection and haemorrhoid faecal Occult Blood test Refer for colonoscopy
<p>A, B : Persistent Keratosis (lip) - Lump in neck - Ulcer or growth in mouth/or tongue>3 weeks - Bad breath, mobility of teeth B: Red or white patch in mouth A: persistent cough or hoarse voice>3 weeks A, B: One-sided deafness, dysphagia, otalgia, cranial nerve palsies, epistaxis, nasal obstruction</p>	<p>Oral</p> <p>larynx</p> <p>Nasopharynx</p>	<p>- Smoking or chewing tobacco cessation - refer if persistent > 2 weeks(Dental, ENT)</p>
<p>A, B: Red-purple skin lesions, B: skin infiltration</p>	Kaposi sarcoma	Refer to RRH

A, B: - New and/or growing mole - Bleeding, change in colour and shape of existing mole (asymmetrical), mole contains different colours, is inflamed or has a red edge (A, B ,C,D rules) - Persistent keratosis or sore that does not heal	Melanoma Other Skin cancers	Refer for biopsy
A,B: Urinary frequency, irregular urine flow, hesitancy, strong urine sensation combined with difficulty starting urination	Prostate	Rectal exam
A,B: White spot in the pupil, convergent strabismus in a child, loss of vision, protrusion of ocular globe	Retinoblastoma	Refer to RRH
A,B: Swelling on one testicle	Testis	Exclude infection
A,B : Passing blood in urine, painless, strangury	Bladder	Refer to RRH
A,B: Anaemia, bleeding, recurrent infection, fever and night sweats, painless swelling, may be enlarge liver and spleen, painless enlarged lymph nodes in neck, axilla,	Haematological malignancies	CBC & CXR Refer
A,B: pain and swelling of limbs, unexplained fractures, non healing ulcers	Bone tumors	X-Ray Refer
A,B: Upper abdomen pain, dysphagia, acidity, indigestion,	Stomach	Refer for endoscopy
A,B: Jaundice and pain, mass in the upper abdomen, ascites,	Liver, Pancreas, Gall bladder	Ultrasound, LFT,RFT, Refer

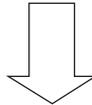
Cancers sites for which symptoms appear only at **advanced stage** of the disease or not improved by early detection are:

1. **Stomach** weight loss, dysphagia, dyspepsia, abdominal pain, early satiety, indigestion, acidity and burping, repeated diarrhea, constipation, iron deficiency anaemia, Virchow`s node)
2. **Lung** (chronic cough > 3 weeks, dyspnoea, recurrent pneumonia, haemoptysis, hoarse voice, chest pain)
3. **Oesophagus** dysphagia)
4. **Gallbladder/biliary tract** jaundice)
5. **Liver** (hypoglycaemia, intraperitoneal haemorrhage, raised serum alpha-fetoprotein (! differential diagnosis: ovarian and testicular cancer), ascites, hepatomegaly)17.
6. **Central Nervous System** (glioblastoma) (A, B)- headache,, convulsion, vomiting, early morning headache (A) – epilepsy neuropsychiatric manifestation.

Assessment and referral of women with suspected cervical cancer

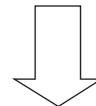
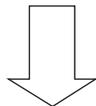
Women who present the following persistent and unexplained signs and symptoms should seek consultation at hospitals

1. Abnormal vaginal bleeding (i.e. after coitus, between menstrual periods, post menopause)
2. Foul- smelling discharge
3. Abnormal PAP smear report
4. Any of the above and those with palpable abdominal mass



Assess S & S (i.e. history, intensity, duration, progression)

- a. Identify relevant risk factors: multi parity, early marriage, No PAP smear screen
- b. Speculum examination
- c. Differential diagnosis: abortion complications, DMPA induced bleeding, infections (e.g. chlamydiae, gonococcal. etc). genital ulcers, cervical inflammation, uterine polyps and fibroid, cervical polyps, dysfunctional uterine bleeding



Women presenting with 1 to 3

Women presenting with 4

Without clinically detected cervical growth or ulceration

With clinical detected cervical growth or ulceration

Refer for colposcopy

Refer if condition is not manageable at RRH if persists or worsens

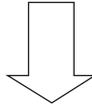
Refer immediately to NRH

Note: Referral of women with 1)2) or 3) may lead to a diagnosis of "early invasive cervical cancer".

Assessment and referral of women with suspected breast cancer

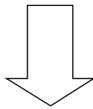
Women with following signs and symptoms should seek consultation at hospitals

- Breast lump, or any change in the shape or consistency of the breast
- Breast lump that enlarges and/or is fixed and hard
- Other breast problems (i.e. eczematous skin changes, nipple retraction, peau d'orange, ulceration, unilateral nipple discharge-particularly bloody discharge, lump in axilla) with or without palpable lump in breast

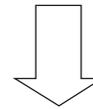


Assess likelihood for breast cancer

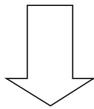
- Assess signs and symptoms (i.e. history, intensity, duration, progression)
- Identify relevant breast cancer risk factors (such as age, family history, previous history of breast cancer, chest irradiation, parity)
- Clinical examination of both breasts, axilla and neck
- Differential diagnosis: benign breast diseases (e.g. fibroadenoma, fibroadenosis, mastitis, abscess, etc)



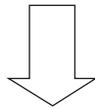
Women < 30 years old



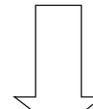
Women 30 years old and above



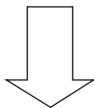
Presenting with a)



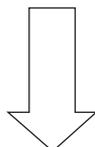
Presenting with:
a)+ relevant risk
factors, or b) or c)



Presenting with: a) b) or c)



Invite for follow-up visit
after next menstrual
period



Referral to RRH/NRH for Immediate Surgical

Note: Referral of women with small breast lumps may lead to diagnosis of "early breast cancer"

Cancer pain management

Palliative Care is an approach that improves the quality of life of patients and their families facing the problems associated with life threatening illness like cancer, through prevention by means of early prevention and impeccable assessment and treatment of pain and others problems, physical, psychosocial and spiritual

Pain is often undertreated in cancer patients. 80 % of pain can be controlled by oral analgesics and adjuncts according to WHO protocol. Types of pain are somatic, visceral and neuropathic.

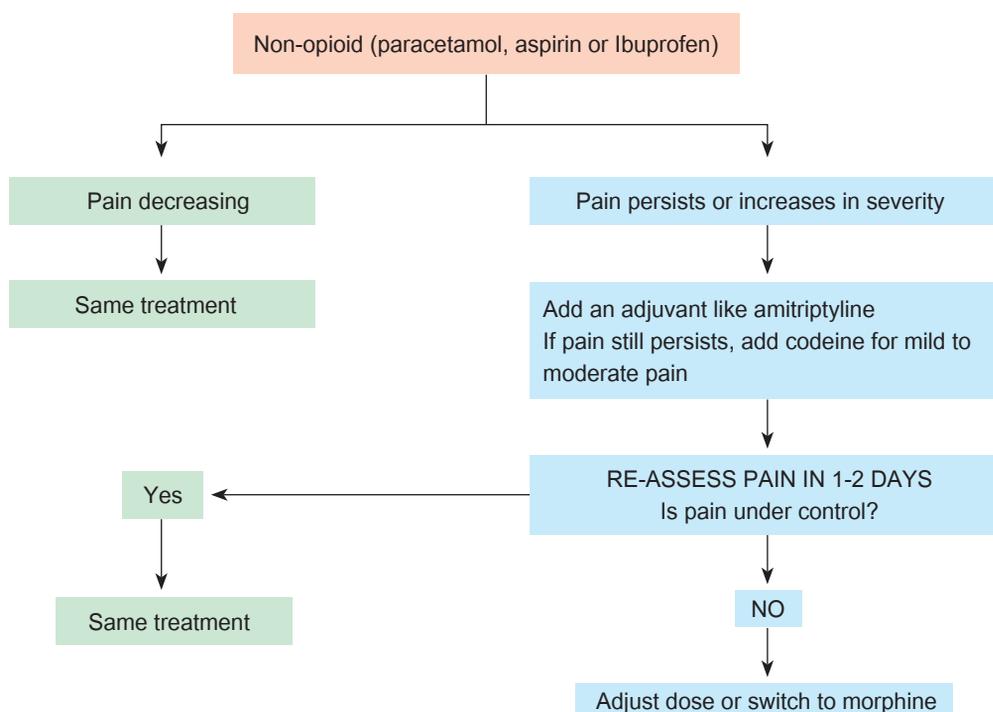
There is no such thing as an established dose for all patients. Medical personnel and care givers need to establish, with the patient, their need for medication, based on the severity of pain and tolerance by the patient. The right dose is the dose that relieves pain; it will gradually need to be increased according to breakthrough pain.

How to give medicines for pain

1. Start with a non-opioid, such as paracetamol, aspirin or Ibuprofen add an adjuvant like Amitriptyline, diazepam, dicyclomine.
2. If the pain persists, add opioid for mild to moderate pain, e.g. codeine. When opioids are prescribed, you should systematically give a laxative to prevent constipation. Add an anti-emetic if there is nausea.
3. If the pain is still not controlled, give morphine instead of codeine.
4. If pain is not controlled with morphine, refer to pain specialists at JDWNRH. Some patients may need palliative radiation/surgery.

Note: in most countries, opioids require medical prescription and supervision.

WHO pain relief chart



Flow chart on treatment of Cancer pain (Contd)

Assess Pain	Prescribe opioids	Adjust dose of opioids	Assess and treat common side effects of opioids
<p>1) Grade the pain:</p> <ul style="list-style-type: none"> - Mild - Moderate - Severe <p>- hand fingers:</p> <ul style="list-style-type: none"> - pain, - very mild pain, - very severe pain <p>2) Determine cause by history, intake of medication and examination, describe location, type and factors modifying it</p>	<p>Always give laxative to avoid constipation</p> <p>Moderate pain</p> <ul style="list-style-type: none"> - Start dose: Codeine 30mg every 4hrs -*Prescribe rescue dose for breakthrough pain <p>Severe pain</p> <p>Oral morphine:</p> <ul style="list-style-type: none"> - Start dose: 2.5-5mg every 4 hrs, - Range: according to need of pt. - Prescribe rescue dose, - There is no maximum daily dose 	<p>Oral codeine:</p> <p>increase total daily dose of opioid by 30%; if maximum dose has been reached switch to morphine</p> <p>Oral morphine: increase total daily dose by 30%.</p>	<p>Constipation: increase Fluids. Give laxatives: Senna or Lactulose at night</p> <p>Nausea and or vomiting: Give antiemetic (Promethazine)</p> <p>Delirium, drowsiness: Reduce total daily dose of opioid by 50% under supervision of trained physician. If symptoms persist consult with specialists or refer</p>

*Rescue dose for breakthrough pain is 1/6th of the total 24 hrs dose of opioids

Caution for morphine use: Respiratory disorders like COPD, Renal failure, elderly and frail patients.

CHAPTER 3: Health Education and Counseling. (Can be applied to all)

Take regular physical activity minimum of 30

Eat a healthy diet

Attend regular medical check up

Reduce or stop tobacco, alcohol and Doma

Stop Tobacco and Alcohol and educate the patient

- 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 not be advised to start taking 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.

No more than 5 drinking days per week.

- One unit = half pint of beer/lager (5% alcohol), 100 ml of wine (10% alcohol), 25 ml of spirits (40% alcohol)
- Advise patients **not to use** alcohol 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 alcohol
 - having difficulties in controlling drinking

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** (400-500 grams) 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, coconut oil and dalda with refined oils like olive, soya, corn, and rapeseed or safflower oil.
3. Excessive consumption of red meat is a risk factor for colon/breast cancer. Replace other meat with chicken (without skin)

Fish

Eat fish at least **three** times per week, preferably oily fish such as tuna, mackerel, salmon

STOP TOBACCO, DRUGS AND ALCOHOL

Take regular Physical activity

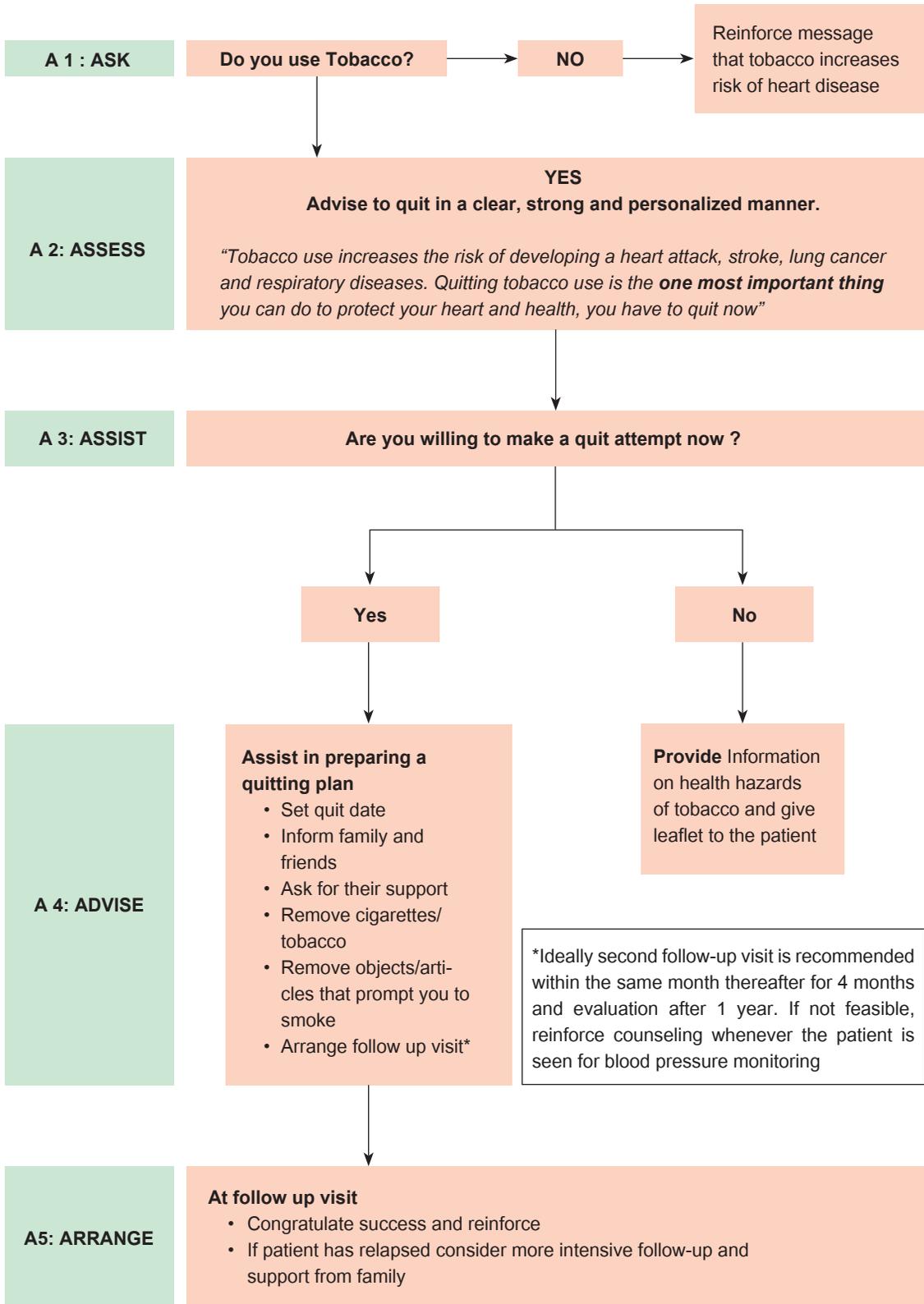
- Progressively increase physical activity to moderate levels (such as brisk walking); at least 30 minutes per day on five days of the week
- Control body weight and avoid overweight by reducing high calorie food and taking adequate physical activity

Adherence to treatment

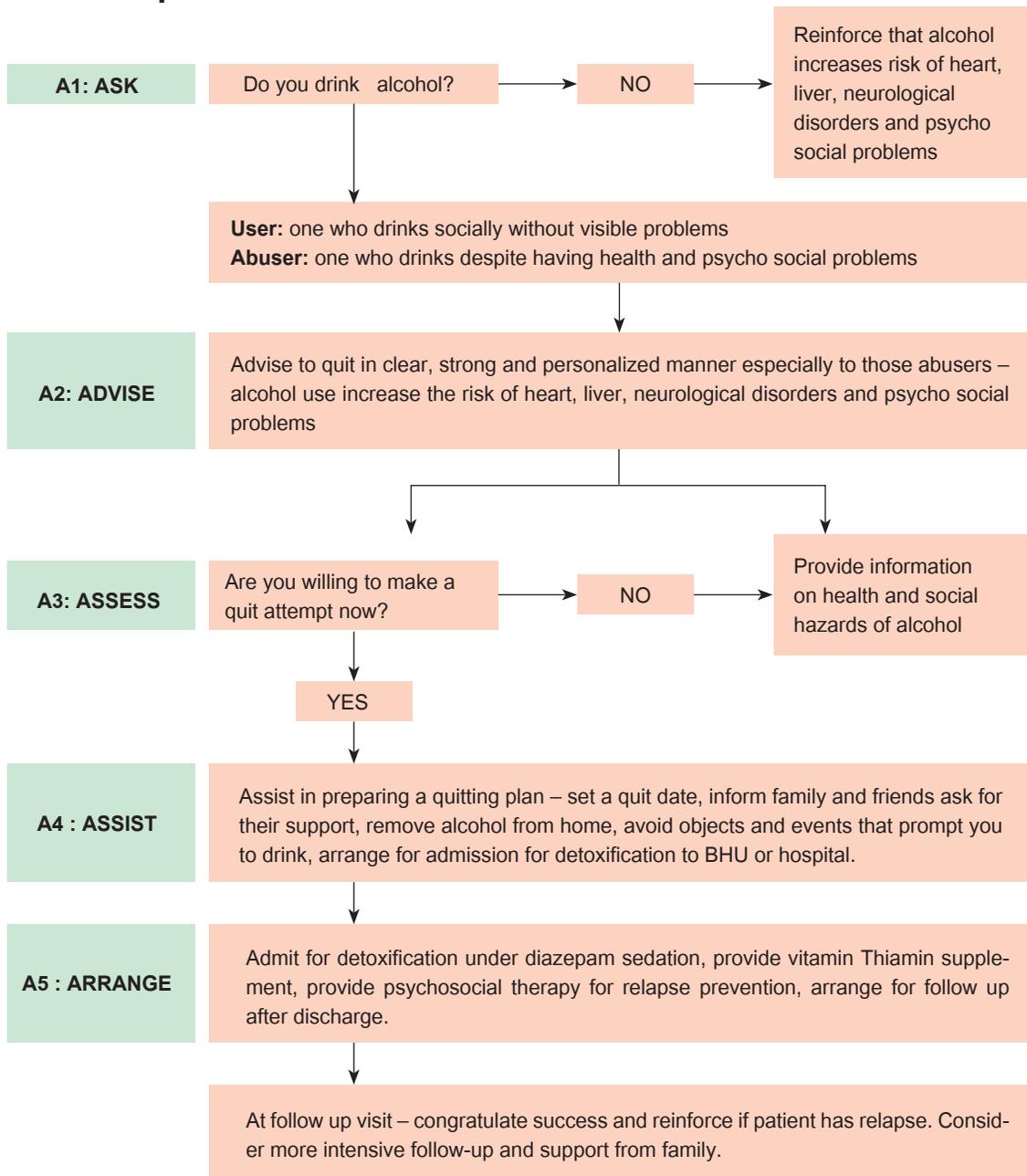
If the patient is prescribed medicine/s

- 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 patient the reason for prescribing the medicine/s
- 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
- Explain the importance of
 - keeping an adequate supply of the medications
 - the need to take the medicines regularly as advised
 - even if there are no symptoms

CHAPTER 4: Counseling on Cessation of Tobacco (5 As)



CHAPTER 5 : Counseling on Cessation of Alcohol use, The 5 steps – 5As

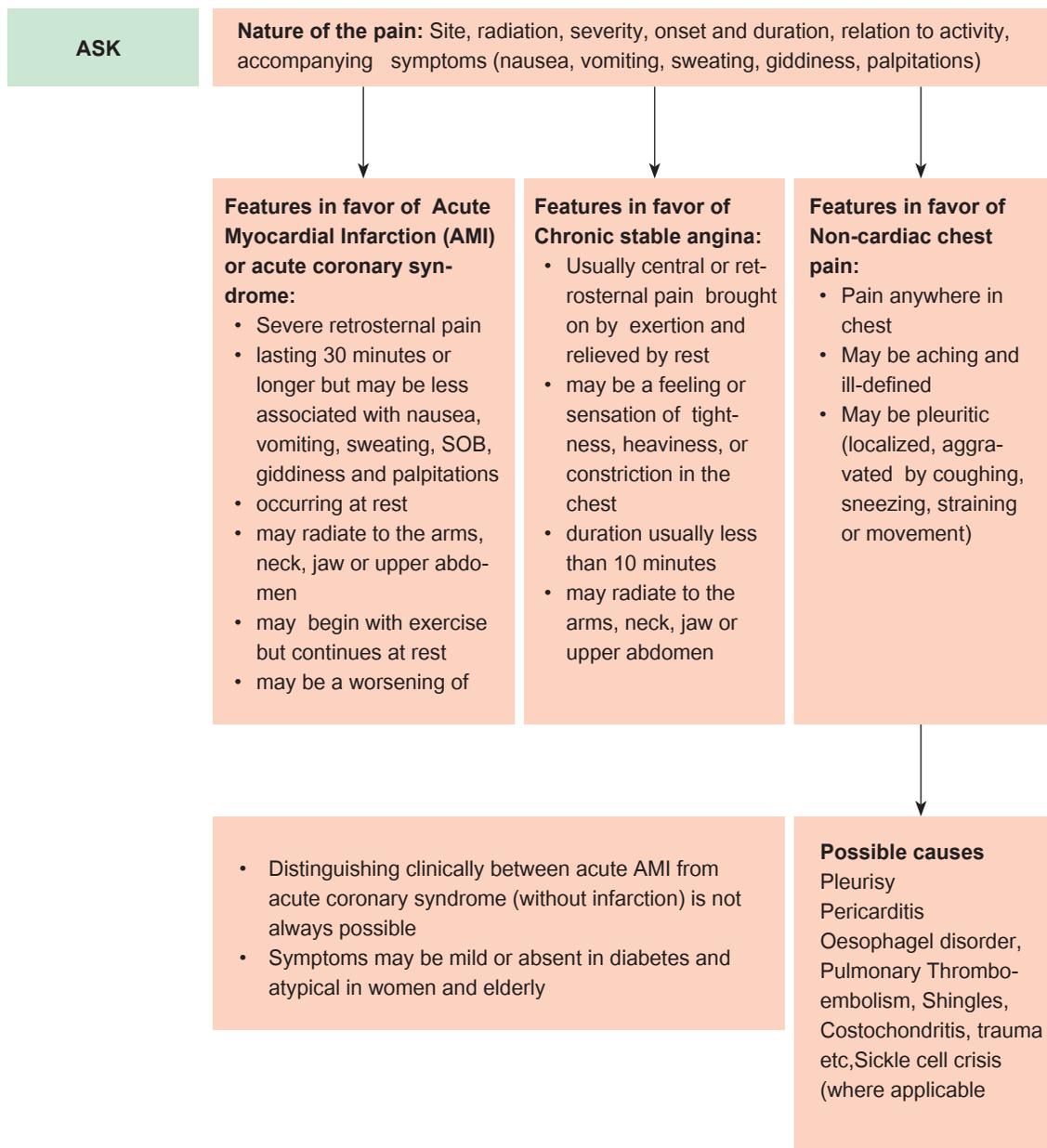


Detoxification regimen:

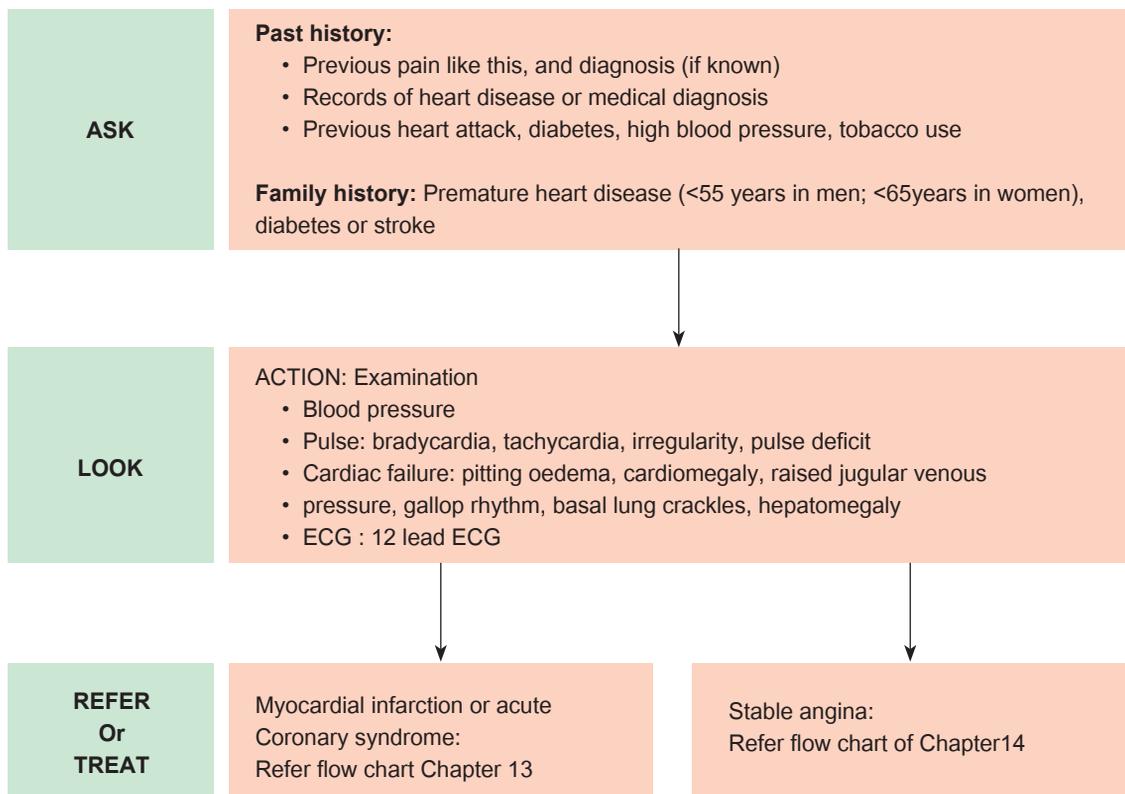
1. Tablets diazepam 20 mg tds X 2 days, 15mg tds X 2 days, 10 mg tds X 2 days, 5mg tds for 2 days & 5mg hs for 2days;
2. Tablet Thiamine 75mg 1 bd for 3-6months

NB: The above regime is not the fixed regimen, physicians must exercise their clinical judgments to titrate the dose as per the severity of the symptoms. Inpatients with total bilirubin level more than 4 mg/dl or features of hepatic encephalopathy. (Further, refer to ***Mental Health Manual and Standard Treatment Guideline for Alcohol and Drug Dependence***)

CHAPTER 6: Probable diagnosis based on features of chest pain

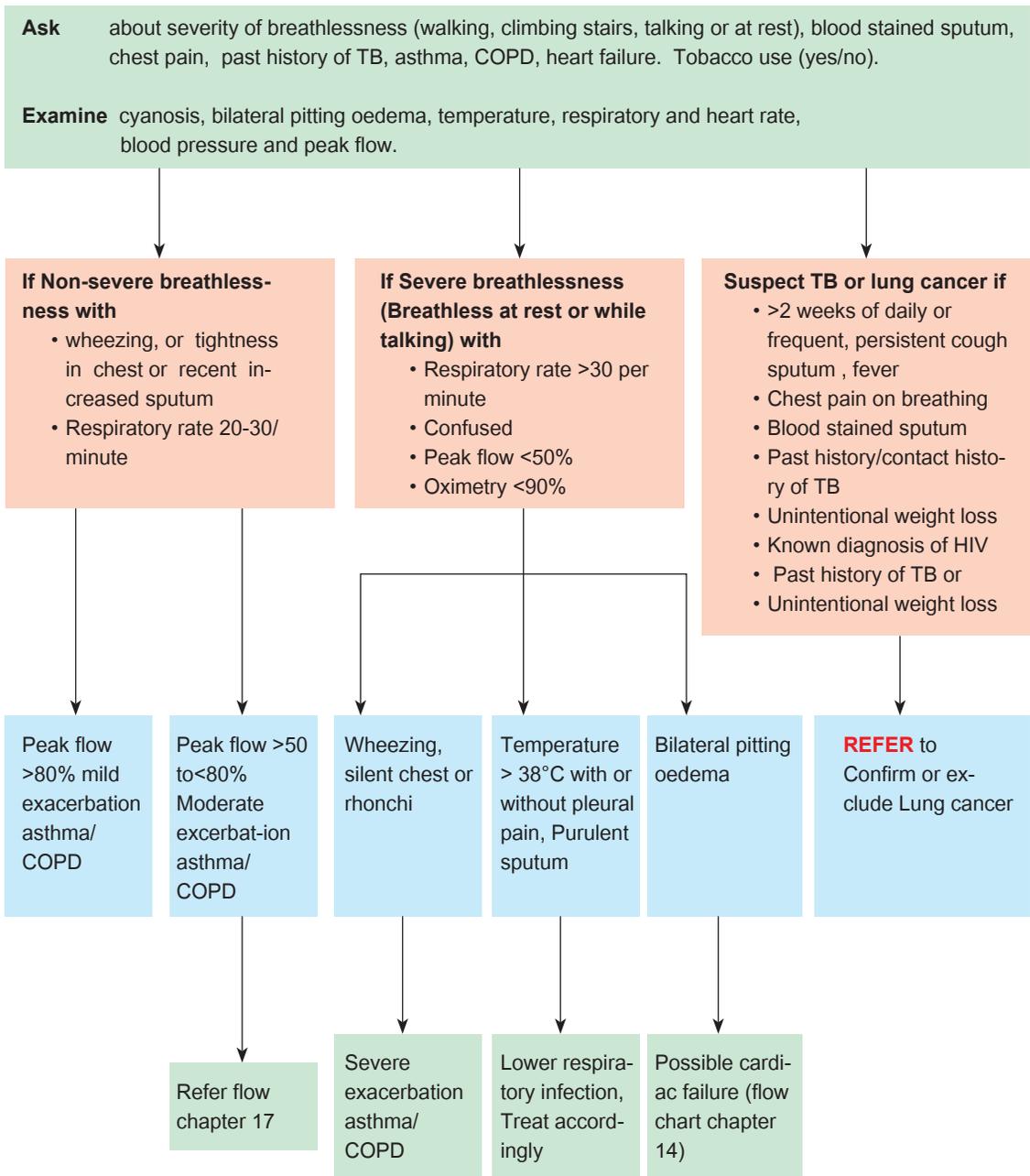


Probable diagnosis based on features of chest pain (contd)

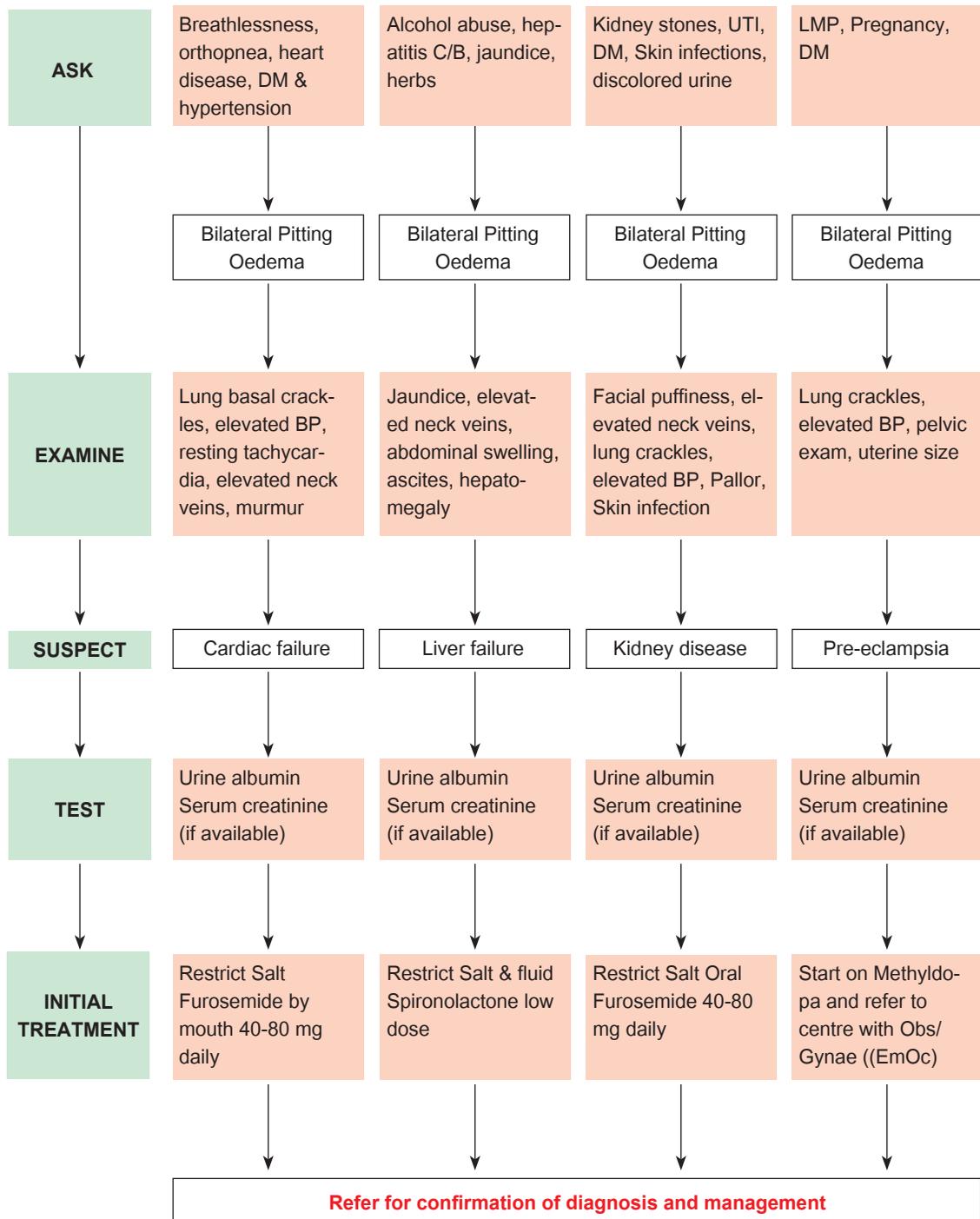


CHAPTER 7: Breathlessness, cough and wheezing

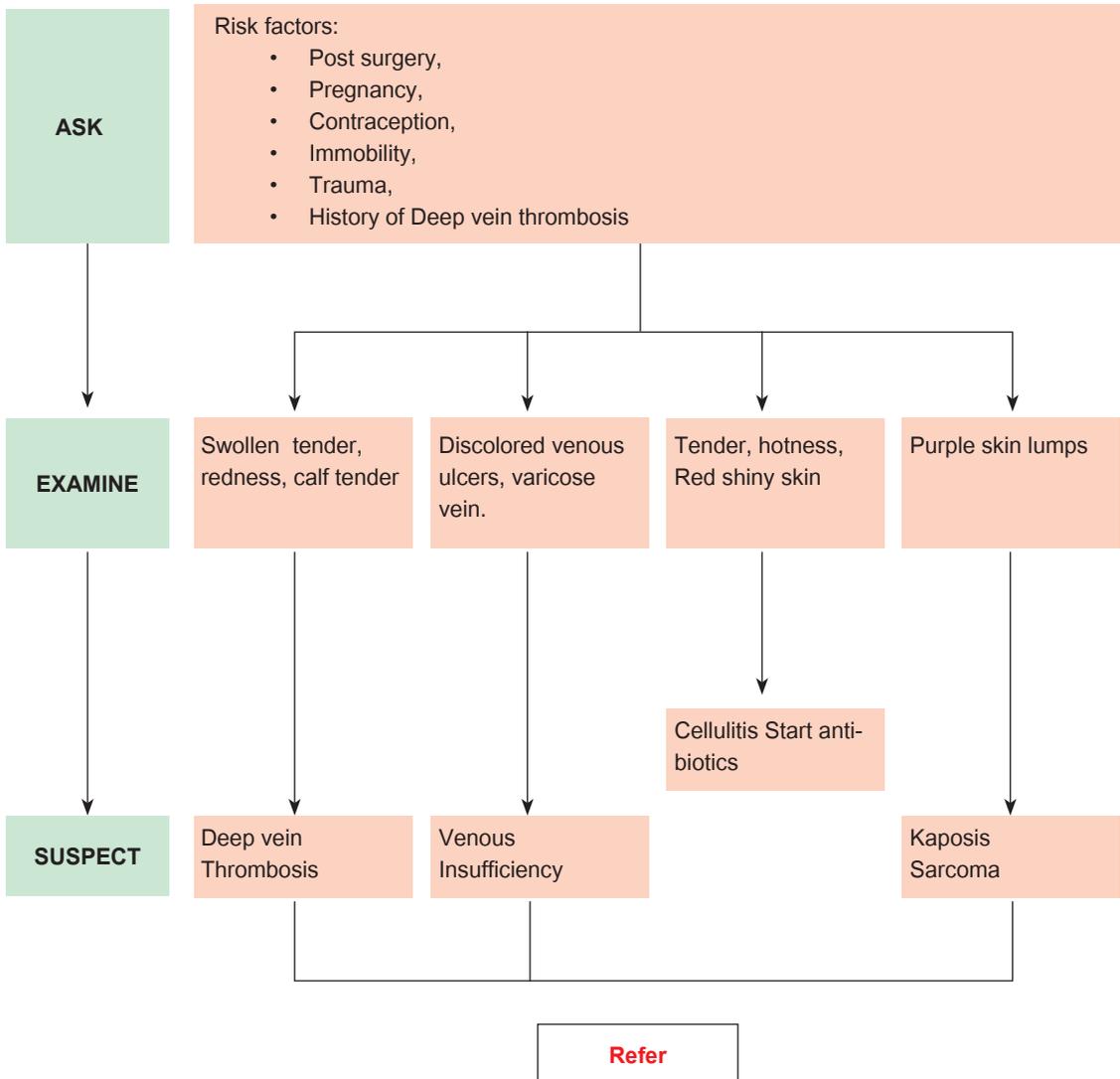
Make a probable diagnosis based on the following



CHAPTER 8: Swelling of legs

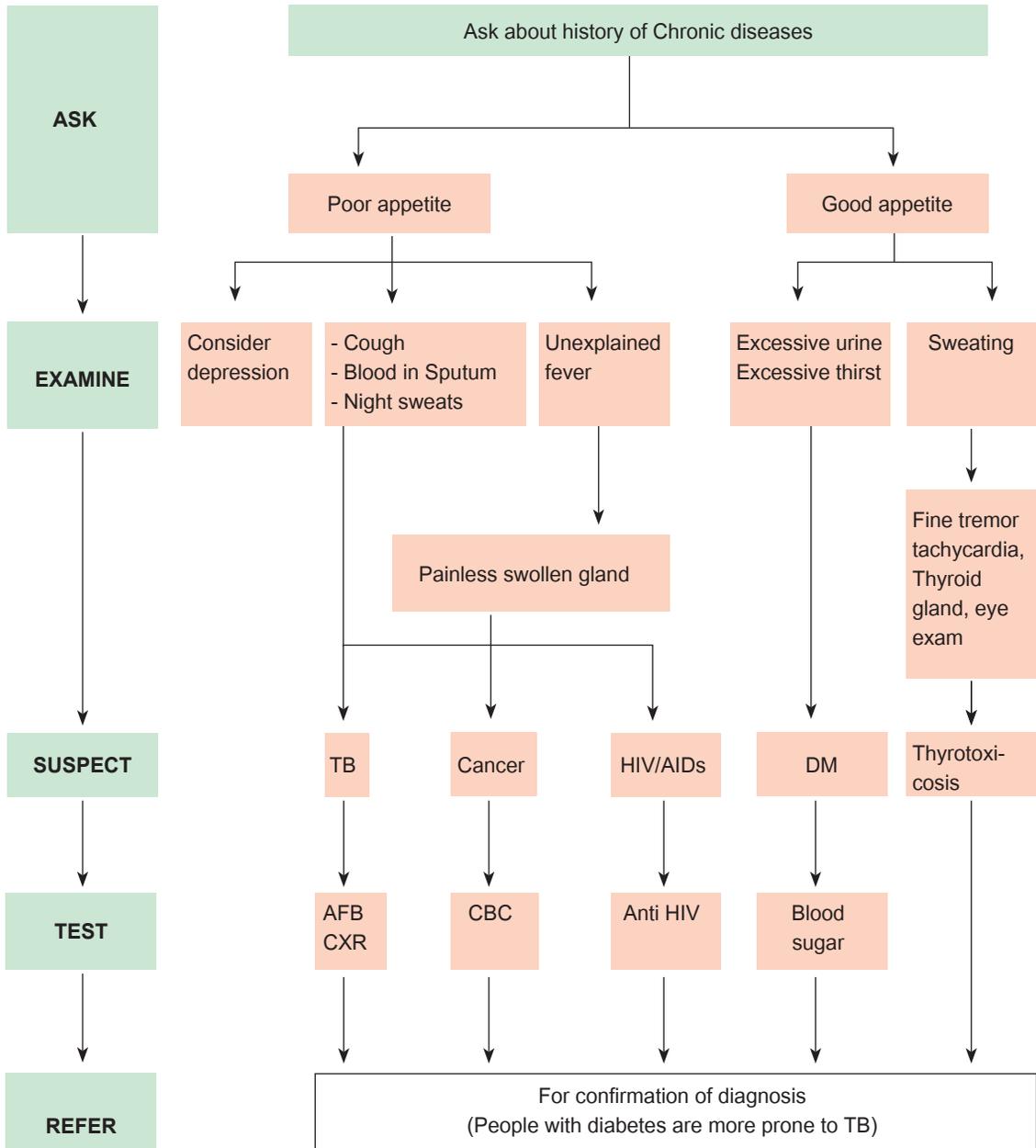


CHAPTER 9: Swelling of ONE leg



CHAPTER 10: Loss of weight

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



CHAPTER 11: Unconsciousness or semi consciousness

ACTION 1:

- Place unconscious patients in left lateral recovery position (unless neck trauma suspected)
- Maintain CAB,
- Secure IV line
- Control bleeding, if any

ACTION 2: Ask the accompanying persons for:

- Recent trauma
- Convulsion
- History of epilepsy,
- Hypertension,
- Medication for DM
- Alcohol & substance abuse,
- Pesticide/herbicide handling,
- known allergy,
- Insect sting,
- Snake bite
- History of fever
- Psychiatric illness

ACTION 3: Physical examination & investigation Check for:

- TPR,
- Blood pressure,
- GCS,
- Pupillary examination
- One –sided weakness and presence/absence of response to painful stimulus (e.g. pinch)
- Breathing difficulty
- Seizures/convulsions
- Pregnancy/Postpartum,
- Stiff neck,
- Swelling of lips, tongue or skin urticaria

Test

- Blood glucose, serum electrolyte
- Urine ketone if available

Unconsciousness or semi consciousness (continued)

ACTION 4:

Trauma with SBP<90

- Resuscitation , stabilization and **Refer**

Convulsions/seizure

- If convulsions/seizure in pregnancy, give Mg sulphate i.v. 4 g over 5-15 min; otherwise give diazepam 10mg IV/rectally, **Refer** (unless known epilepsy)

Suspected anaphylaxis with SBP<90

- Place in supine position and insert airway
- Give adrenalin 500 micrograms (0.5ml) i.m.
- Give 0.9% NaCl IV
- If no response, repeat adrenalin every 5 minutes for 3 doses
- Dexamethasone IV. 8 mg, Promethazine IV 25mg

Blood glucose \leq 50 mg/dl or (2.8 mmol/l)*

- If able to drink, give one large table-spoon (20-30 g) glucose mixed in water or 1 glass of fruit juice, honey or a sugar drink, if no response within 15 min repeat
- if unconscious/unable to drink, give glucose IV if feasible
- **Refer if no response within 10 minutes**

* Blood glucose level:

Low: if \leq 50 mg/dl or 2.8 mmol/l

High: if 180mg/dl/l or 10mmol/l

Very High: 350 mg/dl or 19.4mmol/l

Urine ketones +++ and/or

BG \geq 18mmol/l

Normal Saline IV 0.9% 1 liter in half hour

Give rapid insulin 10 IU IV/IM

Refer

Fever $>$ 38°C and/or stiff neck

Consider for meningitis/ malaria and treat appropriately

Suspected herbicide/pesticide poisoning

If agent known, administer antidote if available before referring to hospital

Snake bite:

Antivenom if available, **Refer**

Paralysis

Maintain airway, **Refer**

Flow chart on Unconsciousness or semi consciousness (continued)

Adult:

- Adrenaline (epinephrine) by IM injection using epinephrine 1 in 1000 dose may be repeated several times if necessary at 5 minutes intervals according to blood pressure, pulse and respiratory function.
- Diazepam slow IV injection (at rate of 5mg/minute), adult 10-20mg, repeated if necessary after 30-60 minutes
- Magnesium sulphate by IV initially 4 g over 5-15 minutes, recurrence of seizures may require additional IV inj. of 2 g
- Dexamethasone 8mg IV
- Glucose by IV infusion of 25% glucose solution into a large vein (100ml),
- Start IV infusion with Normal Saline 0.9% isotonic solution (0.5-1litre during the first hour)

CHAPTER 12: 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
- Diagnosis cards or any other documents
- Have you had head injury or other recent trauma?

Examine:

- Level of consciousness
- Neurological deficit: weakness or sensory loss of face, arm, or leg, haemianopia, aphasia, neglect, dysphagia other findings
- Auscultation of heart for murmur and carotid in neck
- Blood pressure and pulse
- Blood glucose

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

**REFER urgently to
RRH/NR hospital**

If neurological deficits have
disappeared within 24 hours

Treatment:

- Give aspirin (First dose 300 mg, then 75 to 150 mg daily)
- Antihypertensive if blood pressure is 140/95 mm Hg or more,
- Hydrochlorothiazide, by mouth 12.5 mg daily increased to 25-50 mg daily if necessary
- Amlodopine, by mouth 5-10 mg daily
- Enalapril by mouth 5-20 mg once daily
- Atorvastatin by mouth 20-40 mg once daily at night

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

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”. There are limitations to these definitions. The symptoms of TIA usually resolve within minutes or a few hours at most and anyone with continuing neurological signs when first assessed should be assumed to have had a stroke. **“Brain Attack”** is sometimes used to describe any neurovascular event and may be a clearer and less ambiguous term to use.

CHAPTER 13: Acute coronary syndrome (Unstable angina/ Acute Myocardia Infarction) (also see chapter 5)

Action: Confirm acute myocardial infarction
• ECG : 12 lead ECG

Action: Treatment

1. Give oxygen 2-4 liters per minute by nasal cannula
2. Place patient in semi-propped position. If breathless, prop-upright
3. Soluble aspirin 150-300 mg (preferably chewed) immediately
4. For severe chest pain, give parenteral morphine 5-10 mg by slow IV (2mg/minute) with Promethazine 25 mg IM isosorbide dinitrate Sublingually 2.5-10mg repeated as required or glyceryl trinitrate, sublingually 0.5mg-1mg repeated as required if pain persist,
5. If blood pressure remains above >160/100 mm Hg consider an antihypertensive (see chapter1)
6. If breathlessness is due to **acute left ventricular failure**, give slow furosemide by IV of 20-50mg. If necessary increase by 20mg every after 2 hours

Action: **Refer to RR hospital when stable as soon as possible**

For possible thrombolysis in patients with suspected acute myocardial infarction (if within less than 12 hours from onset of pain) and facilities available for further assessment

FOOTNOTE: Diagnosis of acute myocardial infarction can be made in the presence of any 2 of the following:

- 1) Symptoms of myocardial infarction
- 2) Positive cardiac biomarkers (Qualitative Troponin T test using test strips in primary care)
- 3) Positive electrocardiogram

CHAPTER 14: Stable angina, recent or past myocardial infarction

Stable Angina

- Apply protocol 3 and 4 for counseling and health education

Medicines

- **Acetylsalicylic acid**, by mouth 75-150mg once daily
- **Isorbide dinitrate** sublingually 2.5mg-10mg repeated as required or glyceryl nitrate sublingually 0.5mg-1mg repeated as required.
- **Atenolol** 50-100 mg once 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** 5-10mg once daily by mouth.
- **Atorvastatin** 20-40mg once daily at night.

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

Medicines

- **Soluble aspirin** 75 to 150 mg daily
- **Atenolol by mouth** 50-100mg once daily at least for one year
- **ACE-inhibitor** if heart failure or large infarct (e.g enalapril 10-20 mg daily)
- **Atorvastatin** (10-40 mg daily)
- 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

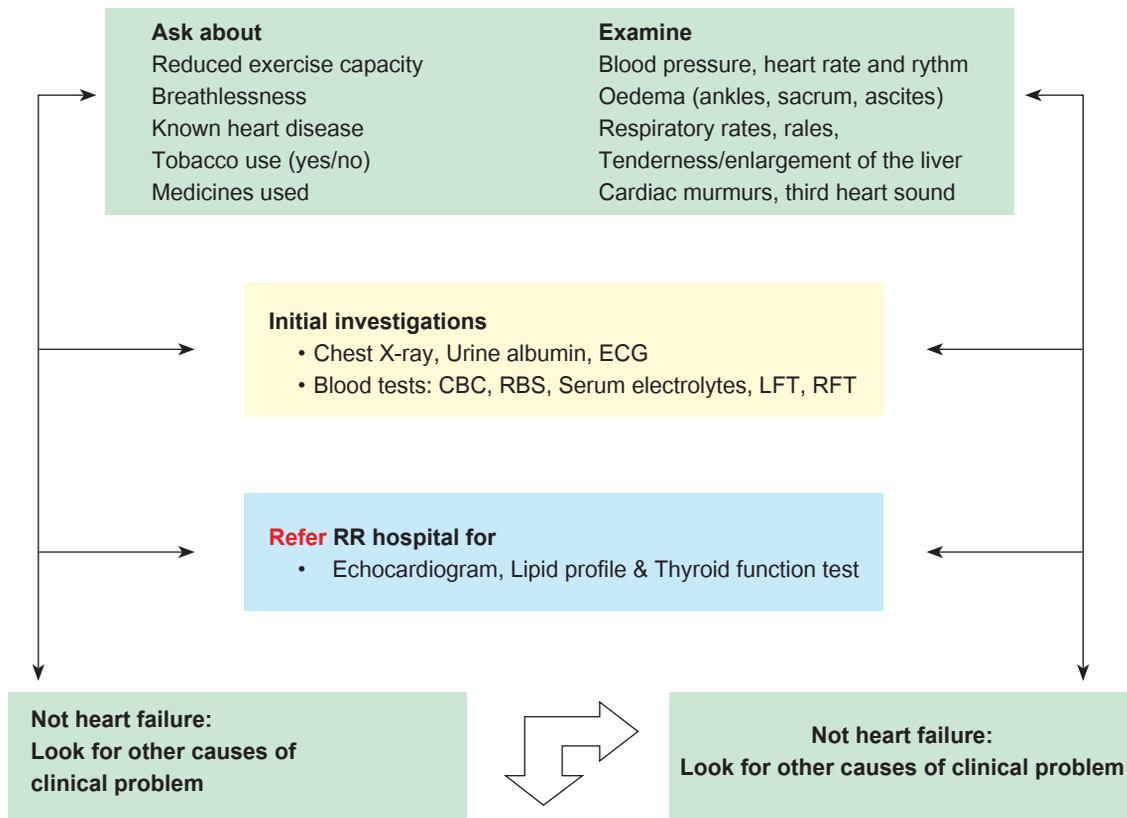
Cautions/Contraindications

Aspirin:	History of peptic ulcer, cerebral haemorrhage, allergy and major trauma
Atenolol:	Asthma, chronic obstructive pulmonary disease, cardiac failure, heart block or bradycardia (pulse < 50 beats/min)
Calcium channel blockers:	Cardiac failure
ACE inhibitors:	Known allergy, pregnancy or intolerance due to cough, hyperkalemia, bilateral renal artery stenosis

Referral criteria for patients with stable angina and recent or past 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 on site

CHAPTER 15: Chronic cardiac failure



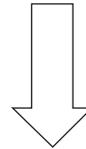
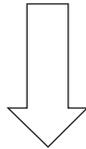
1. Treat
2. Assess fluid overload
3. Prescribe diuretics if fluid overload:
 1. Occasionally Hydrochlorothiazide 12.5-25 mg daily
 2. In more severe cases use furosemide, by mouth initially 40mg, maintenance 20-40mg once daily
 3. Additional treatments (e.g. spironolactone by mouth 25-50mg daily may be added to furosemide in selected patients,
 4. Check electrolyte and renal function test before initiating ACE inhibitor
 5. Beta-blockers - optimal dose selection depending on the stage of heart failure
 6. Apply chapter 3 and 4 for counseling and health education (Avoid excess salt and fluid intake)

CHAPTER 16: Follow up of stable cases of asthma / COPD

ASK

Asthma and COPD both present with cough, difficult breathing, tight chest and/or wheezing
Differentiate between Asthma and COPD

Consider COPD if	Consider COPD if
<ul style="list-style-type: none"> • A previous diagnosis of asthma • Symptoms since childhood or early adulthood • History of hay fever, eczema and/or allergies • Intermittent symptoms with asymptomatic periods in between • Symptoms frequently worse at night or early morning hours, • Symptoms triggered by respiratory infection, weather changes or stress, • Symptoms respond to salbutamol 	<ul style="list-style-type: none"> • A previous diagnosis of COPD • Symptoms start (usually after the age of 40 years) • Symptoms slowly worsen over a long period of time. • Long history of daily or frequent cough and sputum production usually starting before shortness of breath • Symptoms are persistent rather than only at night or during the early hours of the morning • History of heavy smoking > 20 cigarettes /day for >15 years • Consider if exposed to heavy and prolonged exposure to burning fossil fuels in an enclosed space, or high exposure to dust in an occupational settings

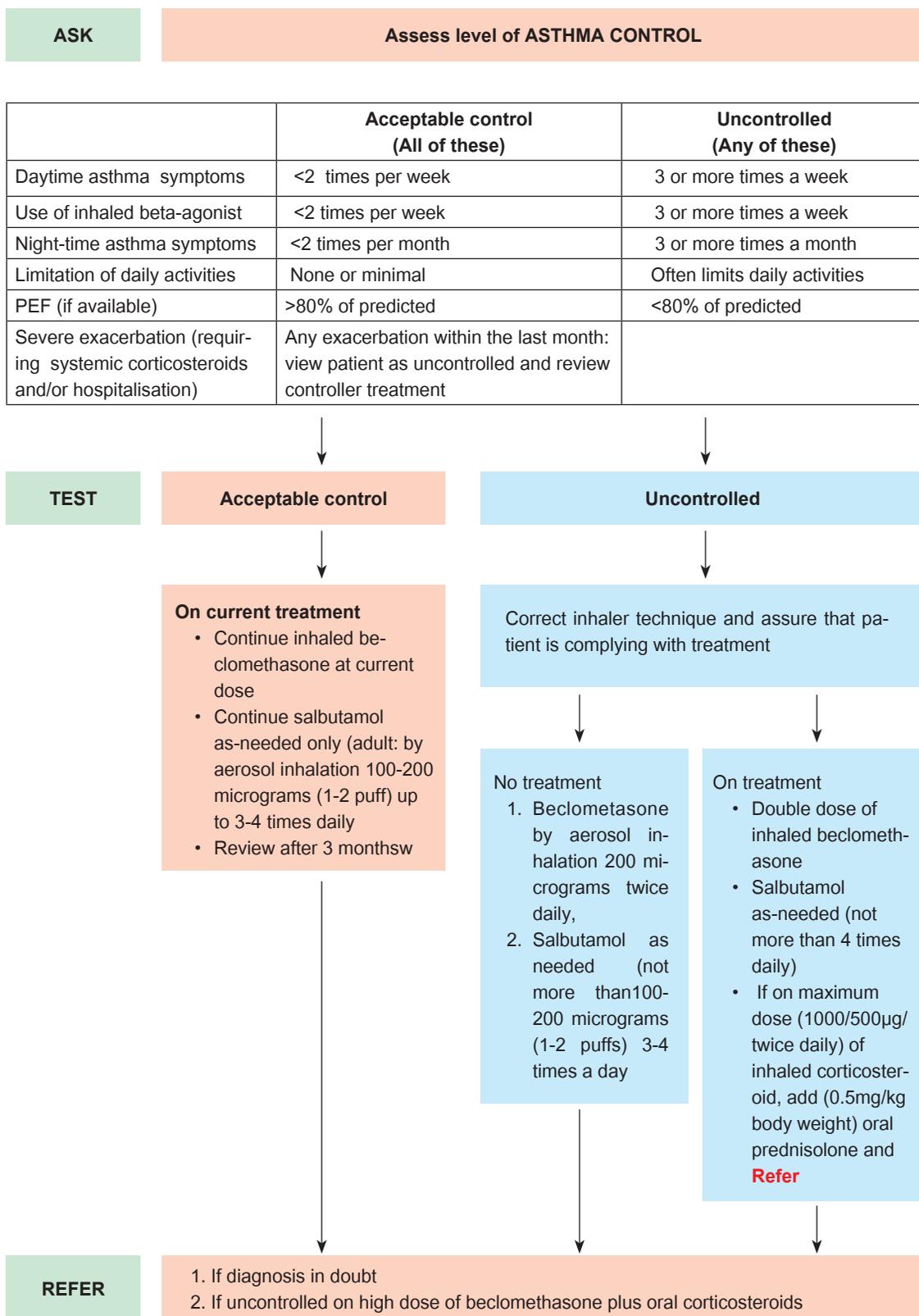


TEST

Measure Peak Expiratory Flow Rate (PEFR)

1. Give salbutamol 2 puffs and re measure in 15 minutes
2. If PEFR improves by 20 %, diagnosis of asthma is very probable
3. Smaller response makes a diagnosis of COPD more likely

Follow up of stable cases of asthma / COPD (Contd)



Follow up of stable cases of asthma / COPD (contd)

Asthma: Advice to patients and family

- Avoid trigger factors for asthma attacks.
- 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: Wet mopping the floor before dry 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

Use of metered-dose inhaler for asthma

- Teach and check the correct use of metered-dose inhaler
- Use a spacer with mouth piece, unless the patient cannot tolerate or use it because of breathlessness-in these cases, use a spacer with mask
- Check whether the patient coordinates inhalation while activating the inhaler

Stable COPD

Categorize and treat according to severity as below

Severity category	Moderate	Severe	Complicated by comorbidities
Symptoms and signs	Breathless at normal activity	Breathless at rest	Breathless at rest Pitting oedema
Treatment	Inhaler Salbutamol 2 puffs up to 4 times daily	Inhaler Salbutamol 2 puffs up to 4 times daily Inhaler Ipratropium 2 puffs up to 4 times daily Tab. Theophylline (if available: 300 mg twice daily) Inhaler Beclomethasone 200-400 µg twice daily REFER	Inhaler Salbutamol 2 puffs up to 4 times daily Inhaler Ipratropium 2 puffs up to 4 times daily Tab. Theophylline (if available: 300 mg twice daily) Inhaler Beclomethasone 200-400 µg twice daily Diuretics if signs of heart failure (Furosemide 40 mg) REFER

Advice to patients and family

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 cooking with wood or carbon do outside the house or use smokeless stove.
- If possible, build an oven in the kitchen with bricks and chimney that vents the smoke outside
- Use masks for respiratory protection or stop working in areas with occupational dust or pollution.

CHAPTER 17: Exacerbation of asthma and COPD

Treatment : Antibiotic should be given to all exacerbations

Mild Exacerbation

1. Salbutamol by aerosol inhalation upto 4 puffs every 20 minutes for 1 hour and reassess (1 puff=100 micrograms)

2. If temperature is $>38^{\circ}\text{C}$ and/or sputum is purulent give: Erythromycin or Amoxicillin

Moderate Exacerbation

1. Salbutamol by aerosol inhalation upto 8 puffs every 20 minutes for 1 hour and reassess.

2. If temperature is $>38^{\circ}\text{C}$ and/or sputum is purulent give: Erythromycin or Amoxicillin (if referral is difficult)

3. Assess response to treatment in two hours in 2 hours

Severe Exacerbation

1. Salbutamol nebulization 1mg every 15 minutes for 1 hour

2. Supplemental oxygen over 4 liters/min by nasal canula to maintain saturation $>90\%$

3. Prednisolone by mouth 1 mg per kg per body weight daily at least five days or until recovery,

4. Consider addition of ipratropium bromide (40 micrograms) 2 puffs three to four times daily or nebulised ipratropium solution

5. If oral steroids cannot be swallowed or retained, IV hydrocortisone 100mg 6 hrly or dexamethasone IV 8mg 8 hourly

7. If temperature is $>38^{\circ}\text{C}$ and/or sputum is purulent give:
- Erythromycin 500 mg every 6 hours or
- Amoxicillin 500 mg every 8 hours for 5 days

8. Assess response to treatment in 1 hour

Advise to the patient and families (Regarding prevention)

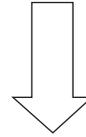
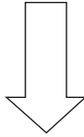
1. Avoid cigarette smoking and triggers/ risk factors for asthma, if known
2. Avoid dusty and smoke filled rooms
3. Avoid occupations that involve agents capable for causing occupational asthma
4. Reduce dust as far as possible by using damp cloths to clean furnitures, sprinkling the before sweeping, cleaning blades of the fans regularly and minimizing soft toys in the sleeping areas
5. It may help to eliminate cockroaches from the house (when the patient is away) and shake and expose mattresses, pillows, blankets, etc. to sunlight

Regarding treatment

1. Knows what to do if their asthma deteriorates
2. Understands the benefit from using inhalers rather than tablets, and why adding a spacer is helpful
3. Is aware that inhaled steroids take several days or even weeks to be fully effective

Exacerbation of asthma and COPD (Contd)

Assess response to treatment



Good response

Peak flow improved, respiratory rate decreased (normal < 20 per minute) Discharge home: **follow-up in 1 week.**

1. Ensure that patient will have salbutamol inhaler for home use: advise 2 (100-200 micrograms) puffs every 4 hours for breathlessness or wheezing
3. Prednisolone 1mg/Kg body weight by mouth daily at least five days

Poor response: If decreased peak flow; or confused or drowsy, or worsened breathlessness **REFER urgently**
If no response after 2 hours of treatment with salbutamol **REFER**

While awaiting transport,

1. Administer oxygen (more than 4 litres/minute) to keep saturation >90% if possible
2. Continue salbutamol nebulisation every 20 minutes or continuous if severe respiratory distress

Follow up after 1 week

1. Assess symptoms (breathlessness, wheeze) and signs (respiratory rate, lung exam, pulse oximetry)
2. If No improvement, treat as moderate/severe exacerbation (as above)
3. If poor response to therapy, refer
4. If good response, continue long term treatment and follow up

CHAPTER 18: Prevention of recurrences of rheumatic fever and rheumatic heart disease

Diagnosis	<ul style="list-style-type: none"> ✓ carditis ✓ polyarthritis
Major manifestations	<ul style="list-style-type: none"> ✓ chorea ✓ erythema marginatum ✓ subcutaneous nodules
Minor manifestations	<ul style="list-style-type: none"> ✓ clinical: fever, arthralgia ✓ laboratory: elevated acute phase reactants (erythrocyte sedimentation rate or leukocyte count and C-reactive Protein) electrocardiogram: prolonged P-R interval
Supporting evidence of a preceding streptococcal infection within the last 45 days.	Elevated or rising antistreptolysin-O or other streptococcal antibody, or a positive throat culture or rapid antigen twest for group A streptococci, or recent scarlet fever.
Primary episode of RF.	Two major or one major and two minor manifestations plus evidence of a preceding group A streptococcal infection.
Recurrent attack of RF in a patient without established rheumatic heart disease. ^a	Two major or one major and two minor manifestations plus evidence of a preceding group A streptococcal infection
Recurrent attack of RF in a patient with established rheumatic heart disease.	Two minor manifestations plus evidence of a preceding group A streptococcal infection ^b
Rheumatic chorea. Insidious onset rheumatic carditis ^b	Other major manifestations or evidence of group A streptococcal infection not required.
Chronic valve lesions as RHD (patients presenting for the first time with pure mitral stenosis or mixed mitralvalve disease and/ or aortic valve disease) ^c	Do not require any other criteria to be diagnosed as having rheumatic heart disease

^a Infective endocarditis should be excluded.

^b Some patients with recurrent conditions may not fulfill these criteria.

^c Congenital heart disease should be excluded

Prevention of recurrences of rheumatic fever and rheumatic heart disease (contd)

	Mode of administration	Dose
Benzathine penicillin G.	Single intramuscular injection every 3–4 weeks.	For adults and children >30 kg in weight: 1 200 000 units. For children <30 kg in weight: 600 000 units.
Penicillin V.	By mouth	250 mg twice daily
Erythromycin	By mouth	250 mg twice daily

DURATION of antibiotic prophylaxis	
Category of patient	
Patient without carditis	For 5 years or until 18 years of age (whichever is longer)
Patient with carditis (mild mitral regurgitation or healed carditis)	For 10 years or until 25 years of age (whichever is longer)
More severe valvular disease	Lifelong
After valve surgery	Lifelong

Annexure I: Evidence tables

1. Prevention of heart disease, stroke, kidney disease and complications of diabetes

(see Guideline 2: Prevention of cardiovascular disease: guidelines for assessment and management of cardiovascular risk. Geneva, World Health Organization, 2007.)

2. Secondary prevention of heart attacks and strokes

(see Guideline 1: Prevention of recurrent heart attacks and strokes in low- and middle-income populations: evidence- based recommendations for policy-makers and health professionals. Geneva, World Health Organization, 2003)

3. Management of heart failure

Pharmacological intervention	Level of evidence	Recommendations (grade)
Diuretics	1+	Diuretic therapy should be considered for heart failure patients with syndrome or oedema. (B)
Angiotensin converting enzyme inhibitors	1++	Angiotensin converting enzyme inhibitors should be considered in patients with all NYHA functional classes of heart failure (due to left ventricular systolic dysfunction) (A)
4. Management of Asthma and COPD		
Salbutamol	1++	Use high dose inhaled salbutamol as first line agent in acute asthma and administer as soon as possible (A)
	1+	In severe asthma and in asthma that is poorly responsive to initial bolus dose of salbutamol consider continuous nebulisation (A)
	1++	Prescribe inhaled salbutamol as short term reliever therapy for all (adults) with symptomatic asthma (A)
Steroids	1++	Give oral steroids in adequate doses in all cases of acute asthma (A)
	1+	Steroids are the recommended preventer drugs for adults and children with asthma for achieving overall treatment goals (A)
	1+	In the absence of significant contraindications oral steroids should be considered in patients with COPD managed in the community who have an exacerbation with a significant increase in breathlessness which interferes with daily activities (B)
Antibiotics	1+	Antibiotics should be used to treat exacerbations of COPD associated with a history of purulent sputum (A)

Ipratropium bromide	1++	Add nebulized ipratropium bromide to salbutamol treatment for patients with acute severe or life threatening asthma or those with a poor initial response to salbutamol therapy (B)
5. Signs and symptoms in detection of cancer		
Cancer site High-risk age group	Described early signs/ symptoms in medical literature	Evidence
Breast (high –risk age group: 45-65 years)	Changes in size, shape, feel of breast, breast lump or thickening in on breast or armpit (A, B)	Breast cancer survival higher due to early diagnosis (Carter, Allen & Henson, 1989; Porta et al., 1991; Richards et al., 1999; Sant et al., 2003)
Cervix (high-risk age group:>35 years)	Vaginal bleeding (postcoital, intermenstrual, postmenopausal), discharge(A)	Cervical cancer survival higher due to early diagnosis (Horn et al., 2007)
Implementation of an intervention programme on knowledge and practice of cervical screening increased screening activities (Lebanon) (Arevian , Noureddine & Kabakian-Khasholian, 2006)		Community-based education programme raised women`s awareness of cervical cancer and screening (USA) (Michielutte et al., 1989)
Colorectal (high-risk age group:>45 years)	Persistent diarrhoea and/or constipation, change in bowel habits, obstruction (A) Rectal bleeding, weight loss (A, B) Iron deficiency anaemia, ascites (B)	Colon cancer and rectal cancer survival improved by early diagnosis (Cicolallo et al., 2005; Porta et al., 1991) Raising populations awareness lead to early detection of colorectal cancer (Finland) (Hakkinen et.al., 1997)
Oral (high-risk age group: 50-60 years)	Lesions (lip) (A, B) Node or lump in neck, painful throat, difficulty swallowing, bleeding, otalgia (oropharynx) (A, B)	Higher survival due to early diagnosis of cancer of the oral cavity (Sargeran et al., 2008)
Prostate (high-risk age group : 70+ years)	Urinary frequency, irregular urine flow, hesitancy, strong urine sensation combined with difficulty starting urination (A)	Higher prostate cancer survival due to early diagnosis (Vis et al., 2007) Prostate cancer awareness programme resulted in a more favorable stage distribution among prostate cancer patients compared to the national average (USA) (DeAntoni et al., 1992)
(A) Perceivable by patients; (B) perceivable by health professionals		

6. Cancer pain treatment

The WHO analgesic ladder is universally used for cancer pain relief. Its use is strongly recommended although there is moderate quality of evidence and further research is required. Two recent Cochrane Reviews provide evidence on the efficacy of the pain treatment steps recommended in WHO's ladder. Only RCTs were reviewed,

Main conclusions:

Regarding **the first step of the ladder** for managing mild pain, the review strongly suggests that the use of NSAID alone is superior to placebo for treating mild pain, at least for short-term use.

The **second step of the ladder** involves the treatment of mild to moderate pain and recommends the addition of a mild opioid. The review findings have disclosed either no significant difference, or at most a slight but statistically significant advantage, compared with either single entity. Further research is needed. The authors advise to increase to a maximum acceptable dose of the NSAID before addition of, or replacement with, an opioid.

The majority of studies demonstrated no difference between different NSAIDs in terms of efficacy. The studies retrieved in the review were of insufficient duration to demonstrate that the long-term use of NSAIDs is safe and effective in patients with cancer.

NSAIDs or paracetamol alone combined with opioids for cancer pain (McNicol ED et al., 2005)

(Wiffen & McQuay, 2007)

Limitations:

Heterogeneity of study methods and outcomes precluded meta-analyses. Short duration of studies undermines generalization of findings on efficacy and safety.

Main conclusions:

Morphine has been used for many years to relieve pain.

Oral morphine in either immediate release or modified release form remains the analgesic of choice for moderate or severe cancer pain.

In this review, morphine was shown to be an effective analgesic. Pain relief did not differ between modified release morphine and immediate release morphine. Daily doses in studies ranged from 100 mg to 250 mg.

Adverse effects were common but only 4% of patients discontinued treatment because of intolerable adverse effects.

Limitations:

The randomized trial literature for morphine is small given the importance of this medicine.

Most trials recruited fewer than 100 participants and did not provide appropriate data for meta-analysis.

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
12. Cancer prevention

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 (1 drink=8gms of alcohol=1 pint beer, 25 ml of spirits,)
- Or totally abstain.
- A person 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
 - Pregnant
 - Hypertension
 - Nursing mother

Harmful effects of alcohol:

- Increases Blood Pressure
- Alcohol Dementia
- Liver failure
- Cirrhosis of the Liver
- Liver cancer
- Impotence and sub fertility
- Taking medication that interact with alcohol (eg. Metronidazole, Tolbutamide, Warfarin, Phenytoin sodium, cimetidine, ranitidine, Nitroglycerine etc)
- Having difficulties controlling drinking

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
- $BMI = \text{Weight (kg)} / \text{height (m)}^2$

How do you interpret you BMI?

- BMI < 18.5 - undernourished or underweight
- BMI 18.5 - 23.0 - desirable
- BMI 23.0 - 24.9 - at risk of becoming overweight
- BMI 25.0 - 29.9 - overweight
- BMI 27.0 - 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 is ideal body weight (IBW)?

IBW is the best weight for an adult. You can calculate the IBW by using this formula: $22 \times \text{height (meters)}^2$ (reference: LEMMENS HJ, Brodsky JB, Berbststein DP, Estimating ideal body weight – a new formula obs Surg 2005 15:1082-3)

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 $>90\text{cm}(36\text{'})$ for males and $>80\text{cm}(32\text{'})$ for female is not good

Myths on use of alcohol:

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

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, puri, 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 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
- Engage in the following activity daily:
 - Walking
 - Use stairways instead of lifts
 - Cleaning the house and compound
- 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.
- 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 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 less than 20 gms or 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 desserts 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 and dalda.
- 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 or deep fry
- 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 radical.
- 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.

Useful 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 experienced 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 atleast one hour per day.

10. Know your health status

- All healthcare workers should actively promote people to know their own health status.
- It is important to know your health status because there are affordable and simple measures to improve your health status.
- 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.
- This should include history taking, examination and a few simple investigations.
- This is offered free of charge at your local hospital.

Field workers should know

- When and how to seek help from the Health service
 - What to do with persons with active suicide ideation
- If there are other risk factors such as family history, then even at younger age screening could be done.

11. Adhere to treatment regimen prescribed to you.

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.

12. Cancer prevention

- UGIE for people with chronic epigastric pain,
- HPV vaccination for all girls of age 12,
- Hep.B vaccination,
- PAP smear screening for all women,
- Mamography for women after 50 years/younger if there is family history,

Annexure III: WHO/ISH (International Society of Hypertension) risk prediction chart for SEAR D.

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.

WHO/ISH Risk prediction chart for 14 WHO epidemiological sub-region

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 behavior 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 diabetes¹
- Gender
- Smoker or non-smoker
- Age
- Systolic blood pressure²
- 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 diabetes¹

Step 2 Select male or female tables

Step 3 Select smoker or non smoker boxes³

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

Step 5 Within this box find the nearest cell where the individuals systolic blood pressure (mm Hg)

and total blood cholesterol level (mmol/l)⁴ cross. The color 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.

WHO/ISH Risk prediction chart

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, <1.3mmol/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 color 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)

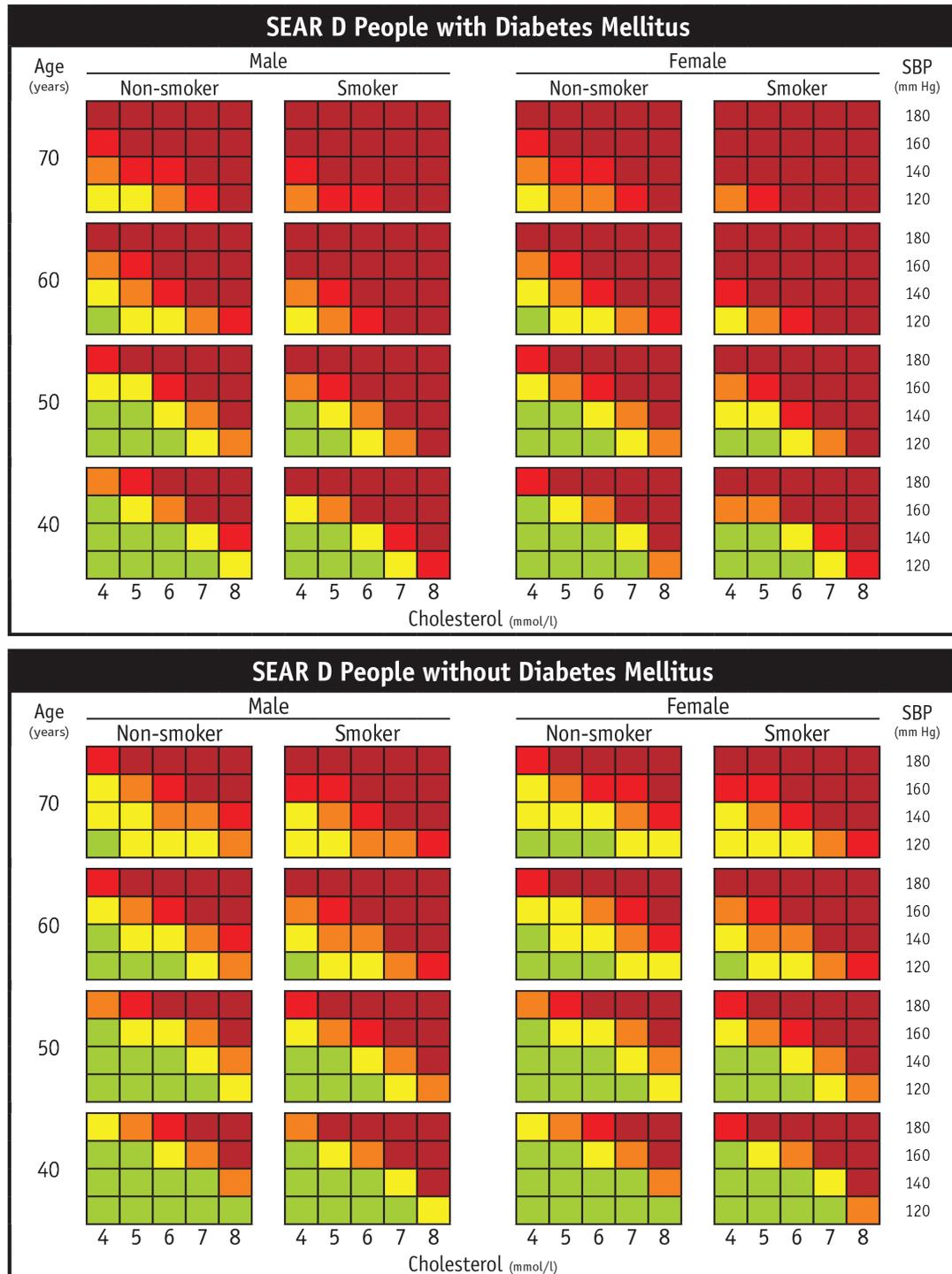
■ Green <10% ■ Yellow 10% to <20% ■ Orange 20% to <30% ■ Red 30% to <40% ■ Deep Red > 40%

WHO/ISH Risk prediction charts

for 14 WHO epidemiological sub-regions

Figure 22. 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, total blood cholesterol, smoking status and presence or absence of diabetes mellitus.

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



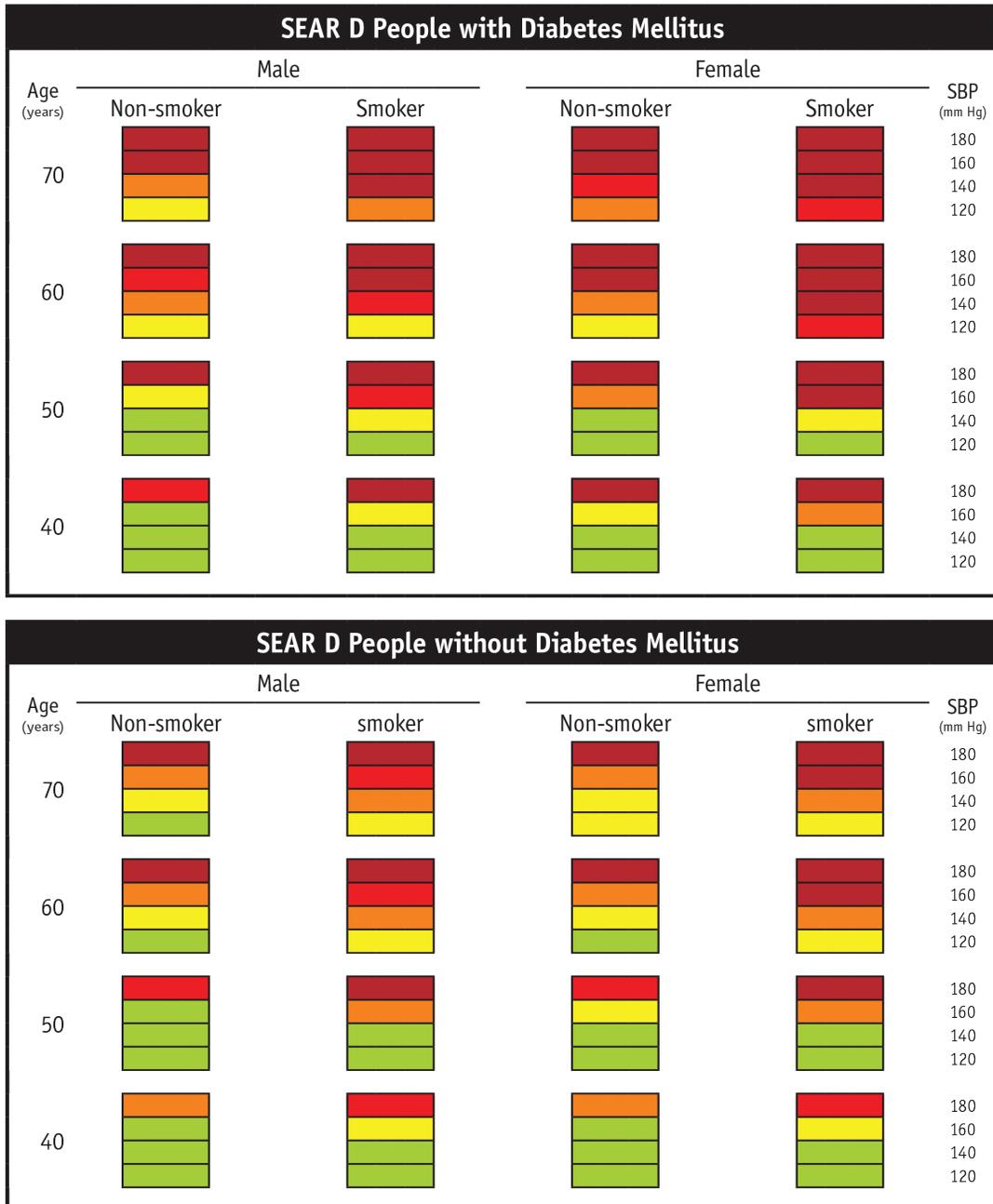
This chart can only be used for countries of the WHO Region of South-East Asia, sub-region D, in settings where blood cholesterol can be measured (Bangladesh, Bhutan, Republic of Korea, India, Maldives, Myanmar, Nepal).

WHO/ISH Risk prediction charts

for 14 WHO epidemiological sub-regions

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)

Annexure IV: List of items required for NCD clinics

1. Digital weighing scale
2. Height measuring scale
3. Waist circumference measuring tape
4. Digital BP measuring tape
5. ISH risk prediction chart (with cholesterol and without cholesterol)
6. BMI chart
7. Glucometer

