Package of Essential NCD (PEN) Interventions for Hospitals

Life Style Related Disease Programme
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This guideline is based on the WHO Package of Essential NCD (PEN) intervention protocols.

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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 >=7mmol/L(126mg/dl) or random>=11.1mmol/L) (200mg/dl) and after food->11.1mmol/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 ≥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
ACTION 5: Take action based on the cardiovascular risk. Treat as shown (FIRST VISIT)

Risk < 10% Level of risk is Low (Green)
1. Counsel on diet, physical activity, smoking cessation (Chapter 3 and 4)
2. Review CVD risk every 2 years

Risk 10% to <20% Level of risk is Moderate (Yellow)
1. Counsel on diet, physical activity, smoking Cessation (Chapter 3 and 4)
2. Follow up every 3 months until targets are met, then 6 - 9 months thereafter

Risk 20 to <30% Level of risk is High (Orange)
1. Life style modifications: Counsel on diet, physical activity, smoking cessation (Chapter 3 and 4)
2. Persistent BP $\geq 140/90$ mm Hg (in DM $\geq 130/80$ mmHg) consider a low dose of one of the drugs: Hydrochlorothiazide 12.5 to 25 mg daily, Enalapril 2.5-20 mg daily, Losartan 25-100mg, Atenolol 25-100 mg daily, Amlodipine 5-10 mg daily
3. Titrate oral agents until target blood pressure is achieved
4. Give Atorvastatin 10-40 mg daily if diabetic
5. Follow-up every 3-6 months

Risk > 30%: Level of risk is Very High (Red)
1. Counsel on diet, physical activity, smoking cessation.
2. Persistent BP $\geq 130/80$ should be given of one of the drugs: thiazide, ACE inhibitor, beta blocker, calcium channel blocker ARB.
3. Give Atorvastatin 10-40 mg daily
4. Give Aspirin 75-150 mg daily
5. Follow-up every 3-6 months

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.

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

ASSESS LIKELYHOOD FOR CANCER (See Table on Page 6)

1. Assess signs and symptoms: history, intensity, duration, progression
2. Differential diagnosis: exclude infections* (Chlamydia, gonococcal), genital ulcer*
3. Identify cancer risk factors and co morbidities/related diseases: age group, tobacco use etc
4. Clinical examination focusing on the problem area (e.g. breast, cervix, testis)

SUSPICION FOR TREATABLE CONDITION

- Treat if appropriate
- Invite for follow-up visit

Follow-up visit
- Check signs/symptoms, perform clinical examination

Refer to RRH if signs/symptoms persist or worsen

HIGH SUSPICION FOR CANCER

- Refer immediately to Referral hospital
- PLEASE do not indicate to the patient that he/she has cancer as the diagnosis has to be confirmed

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

<table>
<thead>
<tr>
<th>Early symptoms</th>
<th>Possible Cancer site</th>
<th>Action by Physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A:</strong> Changes in size, shape, feel of breast, <strong>A, B:</strong> Breast lump or thickening in on breast or armpit, nail, nipple/ skin retraction, nipple discharge, eczema like breast skin, axillary lump</td>
<td>Breast</td>
<td>Refer to Regional Referral Hospital (RRH)</td>
</tr>
<tr>
<td><strong>A:</strong> Vaginal bleeding (postcoital, intermenstrual, postmenopausal), chronic Vaginal discharge in women who have not done PAP smear</td>
<td>Cervix</td>
<td>Exclude infection Visual Inspection with Acetic acid (VIA) REFER to nearest colposcopy centre</td>
</tr>
<tr>
<td><strong>A, B:</strong> Abdominal pain, distension, discomfort, indigestion,</td>
<td>Ovary</td>
<td>Ultrasound Refer</td>
</tr>
<tr>
<td><strong>A:</strong> Persistent diarrhea and/or constipation, change in bowel habits, obstruction, rectal bleeding, weight loss</td>
<td>Colorectal</td>
<td>Look for: iron deficiency anaemia Exclude infection and haemorrhoid faecal occult Blood test Refer for colonoscopy</td>
</tr>
<tr>
<td><strong>A, B:</strong> Persistent Keratosis (lip) - Lump in neck - Ulcer or growth in mouth/or tongue &gt; 3 weeks - Bad breath, mobility of teeth</td>
<td>Oral</td>
<td>- Smoking or chewing - tobacco cessation - refer if persistent &gt; 2 weeks (Dental, ENT)</td>
</tr>
<tr>
<td><strong>B:</strong> Red or white patch in mouth</td>
<td>Larynx</td>
<td></td>
</tr>
<tr>
<td><strong>A:</strong> persistent cough or hoarse voice &gt; 3 weeks</td>
<td>Nasopharynx</td>
<td></td>
</tr>
<tr>
<td><strong>A, B:</strong> One-sided deafness, dysphagia, otalgia, cranial nerve palsies, epistaxis, nasal obstruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A, B:</strong> Red-purple skin lesions, skin infiltration</td>
<td>Kaposi sarcoma</td>
<td>Refer to RRH</td>
</tr>
</tbody>
</table>
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 (1 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.

| 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)  
- Persistant keratosis or sore that does not heal | Melanoma | Refer for biopsy |
<table>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Other Skin cancers</strong></td>
<td>Melanoma</td>
<td>Refer for biopsy</td>
</tr>
<tr>
<td>A,B:</td>
<td>Urinary frequency, irregular urine flow, hesitancy, strong urine sensation combined with difficulty starting urination</td>
<td>Prostate</td>
<td>Rectal exam</td>
</tr>
<tr>
<td>A,B:</td>
<td>White spot in the pupil, convergent stabismus in a child, loss of vision, protrusion of ocular globe</td>
<td>Retinoblastoma</td>
<td>Refer to RRH</td>
</tr>
<tr>
<td>A,B:</td>
<td>Swelling on one testicle</td>
<td>Testis</td>
<td>Exclude infection</td>
</tr>
<tr>
<td>A,B :</td>
<td>Passing blood in urine, painless, strangury</td>
<td>Bladder</td>
<td>Refer to RRH</td>
</tr>
<tr>
<td>A,B:</td>
<td>Anaemia, bleeding, recurrent infection, fever and night sweats, painless swelling, may be enlarge liver and spleen, painless enlarged lymph nodes in neck, axilla,</td>
<td>Haematological malignancies</td>
<td>CBC &amp; CXR Refer</td>
</tr>
<tr>
<td>A,B:</td>
<td>pain and swelling of limbs, unexplained fractures, non healing ulcers</td>
<td>Bone tumors</td>
<td>X-Ray Refer</td>
</tr>
<tr>
<td>A,B:</td>
<td>Upper abdomen pain, dysphagia, acidity, indigestion,</td>
<td>Stomach</td>
<td>Refer for endoscopy</td>
</tr>
<tr>
<td>A,B:</td>
<td>Jaundice and pain, mass in the upper abdomen, ascites,</td>
<td>Liver, Pancreas, Gall bladder</td>
<td>Ultrasound, LFT, RFT, Refer</td>
</tr>
<tr>
<td>A,B:</td>
<td>Passing blood in urine, painless, strangury</td>
<td>Bladder</td>
<td>Refer to RRH</td>
</tr>
</tbody>
</table>

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**Other Skin cancers**

**Prostate**

**Rectal exam**

**Retinoblastoma**

**Refer to RRH**

**Testis**

**Exclude infection**

**Bladder**

**Refer to RRH**

**Haematological malignancies**

**CBC & CXR Refer**

**Bone tumors**

**X-Ray Refer**

**Stomach**

**Refer for endoscopy**

**Liver, Pancreas, Gall bladder**

**Ultrasound, LFT, RFT, Refer**
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)

- Identify relevant risk factors: multi parity, early marriage, No PAP smear screen
- Speculum examination
- 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

Without clinically detected cervical growth or ulceration

Refer for colposcopy

Women presenting with 4

With clinical detected cervical growth or ulceration

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
- a) Breast lump, or any change in the shape or consistency of the breast
- b) Breast lump that enlarges and/or is fixed and hard
- c) 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
- Presenting with a)
  - Invite for follow-up visit after next menstrual period
- Presenting with: a) + relevant risk factors, or b) or c)

Women 30 years old and above
- Presenting with: a) b) or c)

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 adjutants 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-opiod, 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 JDWRNH. Some patients may need palliative radiation/surgery.

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

WHO pain relief chart

- Non-opioid (paracetamol, aspirin or Ibuprofen)
  - Pain decreasing
    - Same treatment
  - Pain persists or increases in severity
    - Add an adjuvant like amitriptyline
    - If pain still persists, add codeine for mild to moderate pain
    - RE-ASSESS PAIN IN 1-2 DAYS
      - Is pain under control?
        - Yes
          - Same treatment
        - NO
          - Adjust dose or switch to morphine
**Flow chart on treatment of Cancer pain (Contd)**

<table>
<thead>
<tr>
<th>Assess Pain</th>
<th>Prescribe opioids</th>
<th>Adjust dose of opioids</th>
<th>Assess and treat common side effects of opioids</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1) Grade the pain:</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Mild</td>
<td>Always give laxative to avoid constipation</td>
<td>Oral codeine: increase total daily dose of opioid by 30%; if maximum dose has been reached switch to morphine</td>
<td>Constipation: increase Fluids. Give laxatives: Senna or Lactulose at night</td>
</tr>
<tr>
<td>- Moderate</td>
<td><strong>Moderate pain</strong></td>
<td></td>
<td>Nausea and or vomiting: Give antiemetic (Promethazine)</td>
</tr>
<tr>
<td>- Severe</td>
<td>- Start dose: Codeine 30mg every 4hrs</td>
<td>Oral morphine: increase total daily dose by 30%.</td>
<td>Delirium, drowsiness: Reduce total daily dose of opioid by 50% under supervision of trained physician. <strong>If symptoms persist consult with specialists or refer</strong></td>
</tr>
<tr>
<td>- hand fingers:</td>
<td>- <em>Prescribe rescue dose for breakthrough pain</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- pain,</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- very mild pain,</td>
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<td></td>
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<tr>
<td>- very severe pain</td>
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<tr>
<td><strong>2) Determine cause</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>by history, intake of medication and examination, describe location, type and factors modifying it</td>
<td>Severe pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral morphine:</td>
<td>- Start dose: 2.5-5mg every 4 hrs,</td>
<td></td>
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</tr>
<tr>
<td>- Range: according to need of pt.</td>
<td>- *Prescribe rescue dose, There is no maximum daily dose</td>
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</table>

*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 vegetables 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 refine 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

### 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)

A1: ASK
Do you use Tobacco?

NO

Reinforce message that tobacco increases risk of heart disease

YES

Advise to quit in a clear, strong and personalized manner.

“Tobacco use increases the risk of developing a heart attack, stroke, lung cancer and respiratory diseases. Quitting tobacco use is the one most important thing you can do to protect your heart and health, you have to quit now”

A2: ASSESS

Are you willing to make a quit attempt now?

A3: ASSIST

Assist in preparing a quitting plan
- Set quit date
- Inform family and friends
- Ask for their support
- Remove cigarettes/tobacco
- Remove objects/artifacts that prompt you to smoke
- Arrange follow up visit*

At follow up visit
- Congratulate success and reinforce
- If patient has relapsed consider more intensive follow-up and support from family

A4: ADVISE

Yes

Provide Information on health hazards of tobacco and give leaflet to the patient

No

Ideally second follow-up visit is recommended within the same month thereafter for 4 months and evaluation after 1 year. If not feasible, reinforce counseling whenever the patient is seen for blood pressure monitoring
CHAPTER 5: Counseling on Cessation of Alcohol use, The 5 steps – 5As

A1: ASK
Do you drink alcohol? NO

Reinforce that alcohol increases risk of heart, liver, neurological disorders and psycho social problems

User: one who drinks socially without visible problems
Abuser: one who drinks despite having health and psycho social problems

A2: ADVISE
Advise to quit in clear, strong and personalized manner especially to those abusers – alcohol use increase the risk of heart, liver, neurological disorders and psycho social problems

A3: ASSESS
Are you willing to make a quit attempt now? NO

Provide information on health and social hazards of alcohol

YES

A4: ASSIST
Assist in preparing a quitting plan – set a quit date, inform family and friends ask for their support, remove alcohol from home, avoid objects and events that prompt you to drink, arrange for admission for detoxification to BHU or hospital.

A5: ARRANGE
Admit for detoxification under diazepam sedation, provide vitamin Thiamin supplement, provide psychosocial therapy for relapse prevention, arrange for follow up after discharge.

At follow up visit – congratulate success and reinforce if patient has relapse. Consider more intensive follow-up and support from family.

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 2 days;
2. Tablet Thiamine 75mg 1 bd for 3-6 months

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

**Nature of the pain:** Site, radiation, severity, onset and duration, relation to activity, accompanying symptoms (nausea, vomiting, sweating, giddiness, palpitations)

**Features in favor of Acute Myocardial Infarction (AMI) or acute coronary syndrome:**
- Severe retrosternal pain
- Lasting 30 minutes or longer but may be less associated with nausea, vomiting, sweating, SOB, giddiness and palpitations
- Occurring at rest
- May radiate to the arms, neck, jaw or upper abdomen
- May begin with exercise but continues at rest
- May be a worsening of

**Features in favor of Chronic stable angina:**
- Usually central or retrosternal pain brought on by exertion and relieved by rest
- May be a feeling or sensation of tightness, heaviness, or constriction in the chest
- Duration usually less than 10 minutes
- May radiate to the arms, neck, jaw or upper abdomen

**Features in favor of Non-cardiac chest pain:**
- Pain anywhere in chest
- May be aching and ill-defined
- May be pleuritic (localized, aggravated by coughing, sneezing, straining or movement)

**Possible causes**
- Pleurisy
- Pericarditis
- Oesophageal disorder, Pulmonary Thromboembolism, Shingles, Costochondritis, trauma etc
- Sickle cell crisis (where applicable)

- Distinguishing clinically between acute AMI from acute coronary syndrome (without infarction) is not always possible
- Symptoms may be mild or absent in diabetes and atypical in women and elderly
Probable diagnosis based on features of chest pain (contd)

**Past history:**
- Previous pain like this, and diagnosis (if known)
- Records of heart disease or medical diagnosis
- Previous heart attack, diabetes, high blood pressure, tobacco use

**Family history:** Premature heart disease (<55 years in men; <65 years in women), diabetes or stroke

**ACTION:** Examination
- Blood pressure
- Pulse: bradycardia, tachycardia, irregularity, pulse deficit
- Cardiac failure: pitting oedema, cardiomegaly, raised jugular venous pressure, gallop rhythm, basal lung crackles, hepatomegaly
- ECG: 12 lead ECG

**REFER Or TREAT**
- Myocardial infarction or acute Coronary syndrome: Refer flow chart Chapter 13
- Stable angina: Refer flow chart of Chapter 14
CHAPTER 7: Breathlessness, cough and wheezing

Make a probable diagnosis based on the following:

**Ask** about severity of breathlessness (walking, climbing stairs, talking or at rest), blood stained sputum, chest pain, past history of TB, asthma, COPD, heart failure. Tobacco use (yes/no).

**Examine** cyanosis, bilateral pitting oedema, temperature, respiratory and heart rate, blood pressure and peak flow.

If **Non-severe breathlessness** with
- wheezing, or tightness in chest or recent increased sputum
- Respiratory rate 20-30/minute

Peak flow
>80% mild exacerbation asthma/COPD

Refer flow chapter 17

If **Severe breathlessness** (Breathless at rest or while talking) with
- Respiratory rate >30 per minute
- Confused
- Peak flow <50%
- Oximetry <90%

Temperature >38°C with or without pleural pain, Purulent sputum

Lower respiratory infection, Treat accordingly

Bilateral pitting oedema

Suspect TB or lung cancer if
- >2 weeks of daily or frequent, persistent cough sputum, fever
- Chest pain on breathing
- Blood stained sputum
- Past history/contact history of TB
- Unintentional weight loss
- Known diagnosis of HIV
- Past history of TB or Unintentional weight loss

Refer to
Confirm or exclude Lung cancer

Wheezing, silent chest or rhonchi

Severe exacerbation asthma/COPD

Refer flow chapter 17

Temperature >38°C with or without pleural pain, Purulent sputum
CHAPTER 8: Swelling of legs

**ASK**
- Breathlessness, orthopnea, heart disease, DM & hypertension
- Alcohol abuse, hepatitis C/B, jaundice, herbs
- Kidney stones, UTI, DM, Skin infections, discolored urine
- LMP, Pregnancy, DM

**EXAMINE**
- Bilateral Pitting Oedema
  - Lung basal crackles, elevated BP, resting tachycardia, elevated neck veins, murmur
  - Jaundice, elevated neck veins, abdominal swelling, ascites, hepatomegaly
  - Facial puffiness, elevated neck veins, lung crackles, elevated BP, Pallor, Skin infection
  - Lung crackles, elevated BP, pelvic exam, uterine size

**SUSPECT**
- Cardiac failure
- Liver failure
- Kidney disease
- Pre-eclampsia

**TEST**
- Urine albumin
- Serum creatinine (if available)
- Urine albumin
- Serum creatinine (if available)
- Urine albumin
- Serum creatinine (if available)
- Urine albumin
- Serum creatinine (if available)

**INITIAL TREATMENT**
- Restrict Salt Furosemide by mouth 40-80 mg daily
- Restrict Salt & fluid Spironolactone low dose
- Restrict Salt Oral Furosemide 40-80 mg daily
- Start on Methyldopa and refer to centre with Obs/Gynae ((EmOc)

Refer for confirmation of diagnosis and management
CHAPTER 9: Swelling of ONE leg

**ASK**

- Risk factors:
  - Post surgery,
  - Pregnancy,
  - Contraception,
  - Immobility,
  - Trauma,
  - History of Deep vein thrombosis

**EXAMINE**

- Swollen tender, redness, calf tender
- Discolored venous ulcers, varicose vein
- Tender, hotness, Red shiny skin
- Purple skin lumps

**SUSPECT**

- Deep vein Thrombosis
- Venous Insufficiency
- Kaposis Sarcoma

- Cellulitis: Start antibiotics

**Refer**
CHAPTER 10: Loss of weight

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

ASK

Ask about history of Chronic diseases

EXAMINE

Poor appetite

Consider depression

- Cough
- Blood in Sputum
- Night sweats

Unexplained fever

Good appetite

Sweating

- Cough
- Blood in Sputum
- Night sweats
- Excessive urine
- Excessive thirst

For confirmation of diagnosis
(People with diabetes are more prone to TB)

SUSPECT

TB

Cancer

HIV/AIDs

DM

Thyrotoxicosis

TEST

AFB

CXR

CBC

Anti HIV

Blood sugar

REFER

Fine tremor

Tachycardia, Thyroid gland, eye exam

Unexplained fever

Sweating

Painless swollen gland

Consider depression

TB

Cancer

HIV/AIDs

DM

Thyrotoxicosis
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 <= 50 mg/dl or (2.8 mmol/l)**
- 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 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 <= 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>=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 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
- Amlodipine, 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

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

REFER urgently to RRH/NR hospital

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 ischiamic 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 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 glycercyl 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
  - **Amiodipine** 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

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Cautions/Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin</td>
<td>History of peptic ulcer, cerebral haemorrhage, allergy and major trauma</td>
</tr>
<tr>
<td>Atenolol</td>
<td>Asthma, chronic obstructive pulmonary disease, cardiac failure, heart block or bradycardia (pulse &lt; 50 beats/min)</td>
</tr>
<tr>
<td>Calcium channel blockers</td>
<td>Cardiac failure</td>
</tr>
<tr>
<td>ACE inhibitors</td>
<td>Known allergy, pregnancy or intolerance due to cough, hyperkalemia, bilateral renal arterystenosis</td>
</tr>
</tbody>
</table>

### 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

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

Examine
- Blood pressure, heart rate and rhythm
- Oedema (ankles, sacrum, ascites)
- Respiratory rates, rales
- Tenderness/enlargement of the liver
- Cardiac murmurs, third heart sound

**Initial investigations**
- Chest X-ray, Urine albumin, ECG
- Blood tests: CBC, RBS, Serum electrolytes, LFT, RFT

**Refer RR hospital for**
- Echocardiogram, Lipid profile & Thyroid function test

**Not heart failure:**
- Look for other causes of clinical problem

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

<table>
<thead>
<tr>
<th>Consider COPD if</th>
<th>Consider COPD if</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A previous diagnosis of asthma</td>
<td>• A previous diagnosis of COPD</td>
</tr>
<tr>
<td>• Symptoms since childhood or early adulthood</td>
<td>• Symptoms start (usually after the age of 40 years)</td>
</tr>
<tr>
<td>• History of hay fever, eczema and/or allergies</td>
<td>• Symptoms slowly worsen over a long period of time.</td>
</tr>
<tr>
<td>• Intermittent symptoms with asymptomatic periods in between</td>
<td>• Long history of daily or frequent cough and sputum production usually starting before shortness of breath</td>
</tr>
<tr>
<td>• Symptoms frequently worse at night or early morning hours,</td>
<td>• Symptoms are persistent rather than only at night or during the early hours of the morning</td>
</tr>
<tr>
<td>• Symptoms triggered by respiratory infection, weather changes or stress,</td>
<td>• History of heavy smoking &gt; 20 cigarettes/day for &gt; 15 years</td>
</tr>
<tr>
<td>• Symptoms respond to salbutamol</td>
<td>• 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</td>
</tr>
</tbody>
</table>

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)

**ASK**
Assess level of ASTHMA CONTROL

<table>
<thead>
<tr>
<th>Acceptable control (All of these)</th>
<th>Uncontrolled (Any of these)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daytime asthma symptoms</td>
<td></td>
</tr>
<tr>
<td>&lt;2 times per week</td>
<td>3 or more times a week</td>
</tr>
<tr>
<td>Use of inhaled beta-agonist</td>
<td></td>
</tr>
<tr>
<td>&lt;2 times per week</td>
<td>3 or more times a week</td>
</tr>
<tr>
<td>Night-time asthma symptoms</td>
<td></td>
</tr>
<tr>
<td>&lt;2 times per month</td>
<td>3 or more times a month</td>
</tr>
<tr>
<td>Limitation of daily activities</td>
<td></td>
</tr>
<tr>
<td>None or minimal</td>
<td>Often limits daily activities</td>
</tr>
<tr>
<td>PEF (if available)</td>
<td></td>
</tr>
<tr>
<td>&gt;80% of predicted</td>
<td>&lt;80% of predicted</td>
</tr>
<tr>
<td>Severe exacerbation (requiring systemic corticosteroids and/or hospitalisation)</td>
<td>Any exacerbation within the last month: view patient as uncontrolled and review controller treatment</td>
</tr>
</tbody>
</table>

**TEST**

**Acceptable control**
- On current treatment
  - Continue inhaled beclomethasone at current dose
  - Continue salbutamol as-needed only (adult: by aerosol inhalation 100-200 micrograms (1-2 puff) up to 3-4 times daily
  - Review after 3 months

**Uncontrolled**
- Correct inhaler technique and assure that patient is complying with treatment

**REFERENCE**
- No treatment
  1. Beclometasone by aerosol inhalation 200 micrograms twice daily,
  2. Salbutamol as needed (not more than 100-200 micrograms (1-2 puffs) 3-4 times a day

- On treatment
  - Double dose of inhaled beclometasone
  - Salbutamol as-needed (not more than 4 times daily)
  - If on maximum dose (1000/500µg/twice daily) of inhaled corticosteroid, add (0.5mg/kg body weight) oral prednisolone and Refer

**REFER**
- 1. If diagnosis in doubt
- 2. If uncontrolled on high dose of beclometasone plus oral corticosteroids
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**

<table>
<thead>
<tr>
<th>Severity category</th>
<th>Moderate</th>
<th>Severe</th>
<th>Complicated by comorbidities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms and signs</td>
<td>Breathless at normal activity</td>
<td>Breathless at rest</td>
<td>Breathless at rest Pitting oedema</td>
</tr>
<tr>
<td>Treatment</td>
<td>Inhaler Salbutamol 2 puffs up to 4 times daily</td>
<td>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</td>
<td>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)</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Mild Exacerbation</th>
<th>Moderate Exacerbation</th>
<th>Severe Exacerbation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salbutamol by aerosol inhalation upto 4 puffs every 20 minutes for 1 hour and reassess (1 puff=100 micrograms)</td>
<td>1. Salbutamol by aerosol inhalation upto 8 puffs every 20 minutes for 1 hour and reassess.</td>
<td>1. Salbutamol nebulization 1mg every 15 minutes for 1 hour</td>
</tr>
<tr>
<td>2. If temperature is &gt;38°C and/or sputum is purulent give: Erythromycin or Amoxicillin</td>
<td>2. If temperature is &gt;38°C and/or sputum is purulent give: Erythromycin or Amoxicillin (if referral is difficult)</td>
<td>2. Supplemental oxygen over 4 liters/min by nasal canula to maintain saturation &gt;90%</td>
</tr>
<tr>
<td></td>
<td>3. Assess response to treatment in two hours in 2 hours</td>
<td>3. Prednisolone by mouth 1 mg per kg per body weight daily at least five days or until recovery,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Consider addition of ipratropium bromide (40 micrograms) 2 puffs three to four times daily or nebulised ipratropium solution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. If oral steroids cannot be swallowed or retained, IV hydrocortisone 100mg 6 hrly or dexamethasone IV 8mg 8 hourly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. If temperature is &gt;38°C and/or sputum is purulent give:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Erythromycin 500 mg every 6 hours or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Amoxicillin 500 mg every 8 hours for 5 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Assess response to treatment in 1 hour</td>
</tr>
</tbody>
</table>

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
2. 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

<table>
<thead>
<tr>
<th>Diagnosis</th>
</tr>
</thead>
</table>
| ✓ carditis  
| ✓ polyarthritis  

<table>
<thead>
<tr>
<th>Major manifestations</th>
</tr>
</thead>
</table>
| ✓ chorea  
| ✓ erythema marginatum  
| ✓ subcutaneous nodules  

<table>
<thead>
<tr>
<th>Minor manifestations</th>
</tr>
</thead>
</table>
| ✓ 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 twist 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.  
| 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  

| Rheumatic chorea. Insidious onset rheumatic carditis  
| 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 mitral valve disease and/or aortic valve disease)  
| 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)

<table>
<thead>
<tr>
<th>Mode of administration</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzathine penicillin G.</td>
<td>Single intramuscular injection every 3–4 weeks. For adults and children &gt;30 kg in weight: 1 200 000 units. For children &lt;30 kg in weight: 600 000 units.</td>
</tr>
<tr>
<td>Penicillin V.</td>
<td>By mouth</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>By mouth</td>
</tr>
</tbody>
</table>

250 mg twice daily

<table>
<thead>
<tr>
<th>DURATION of antibiotic prophylaxis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category of patient</td>
</tr>
<tr>
<td>Patient without carditis</td>
</tr>
<tr>
<td>Patient with carditis (mild mitral regurgitation or healed carditis)</td>
</tr>
<tr>
<td>More severe vavular disease</td>
</tr>
<tr>
<td>After valve surgery</td>
</tr>
</tbody>
</table>
Annexure I: Evidence tables

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

2. Secondary prevention of heart attacks and strokes
   

3. Management of heart failure

<table>
<thead>
<tr>
<th>Pharmacological intervention</th>
<th>Level of evidence</th>
<th>Recommendations (grade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diuretics</td>
<td>1+</td>
<td>Diuretic therapy should be considered for heart failure patients with syndrome or oedema. (B)</td>
</tr>
<tr>
<td>Angiotensin converting enzyme inhibitors</td>
<td>1++</td>
<td>Angiotensin converting enzyme inhibitors should be considered in patients with all NYHA functional classes of heart failure (due to left ventricular systolic dysfunction) (A)</td>
</tr>
</tbody>
</table>

4. Management of Asthma and COPD

<table>
<thead>
<tr>
<th>Pharmacological intervention</th>
<th>Level of evidence</th>
<th>Recommendations (grade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salbutamol</td>
<td>1++</td>
<td>Use high dose inhaled salbutamol as first line agent in acute asthma and administer as soon as possible (A)</td>
</tr>
<tr>
<td></td>
<td>1+</td>
<td>In severe asthma and in asthma that is poorly responsive to initial bolus dose of salbutamol consider continuous nebulisation (A)</td>
</tr>
<tr>
<td></td>
<td>1++</td>
<td>Prescribe inhaled salbutamol as short term reliever therapy for all (adults) with symptomatic asthma (A)</td>
</tr>
<tr>
<td>Steroids</td>
<td>1++</td>
<td>Give oral steroids in adequate doses in all cases of acute asthma (A) Steroids are the recommended preventer drugs for adults and children with asthma for achieving overall treatment goals (A)</td>
</tr>
<tr>
<td></td>
<td>1+</td>
<td>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)</td>
</tr>
<tr>
<td></td>
<td>1+</td>
<td>Antibiotics should be used to treat exacerbations of COPD associated with a history of purulent sputum (A)</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>1+</td>
<td></td>
</tr>
<tr>
<td><strong>Ipratropium bromide</strong></td>
<td>1++</td>
<td>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)</td>
</tr>
</tbody>
</table>

### 5. Signs and symptoms in detection of cancer

<table>
<thead>
<tr>
<th><strong>Cancer site</strong></th>
<th><strong>Described early signs/ symptoms in medical literature</strong></th>
<th><strong>Evidence</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast (high-risk age group: 45-65 years)</td>
<td>Changes in size, shape, feel of breast, breast lump or thickening in on breast or armpit (A, B)</td>
<td>Breast cancer survival higher due to early diagnosis (Carter, Allen &amp; Henson, 1989; Porta et al., 1991; Richards et al., 1999; Sant et al., 2003)</td>
</tr>
<tr>
<td>Cervix (high-risk age group: &gt;35 years)</td>
<td>Vaginal bleeding (postcoital, intermenstrual, postmenopausal), discharge (A)</td>
<td>Cervical cancer survival higher due to early diagnosis (Horn et al., 2007)</td>
</tr>
<tr>
<td>Colorectal (high-risk age group: &gt;45 years)</td>
<td>Persistent diarrhoea and/or constipation, change in bowel habits, obstruction (A) Rectal bleeding, weight loss (A, B) Iron deficiency anaemia, ascites (B)</td>
<td>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)</td>
</tr>
<tr>
<td>Oral (high-risk age group: 50-60 years)</td>
<td>Lesions (lip) (A, B) Node or lump in neck, painful throat, difficulty swallowing, bleeding, otalgia (oropharynx) (A, B)</td>
<td>Higher survival due to early diagnosis of cancer of the oral cavity (Sargeran et al., 2008)</td>
</tr>
<tr>
<td>Prostrate (high-risk age group: 70+ years)</td>
<td>Urinary frequency, irregular urine flow, hesitancy, strong urine sensation combined with difficulty starting urination (A)</td>
<td>Higher prostrate cancer survival due to early diagnosis (Vis et al., 2007) Prostrate cancer awareness programme resulted in a more favorable stage distribution among prostrate cancer patients compared to the national average (USA) (DeAntoni et al., 1992)</td>
</tr>
</tbody>
</table>

(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.

**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.

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

(Wiffen & McQuay, 2007)
**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 lifestyle 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=Weight (kg)/height (m)x 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 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, Berbstein 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 >90cm (36") for males and >80cm (32") 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 addition, 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 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 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 60 etc)
Step 5 Within this box find the nearest cell where the individuals systolic blood pressure (mm Hg)
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), orfasting 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.

<table>
<thead>
<tr>
<th>10-year combined myocardial infarction and stroke risk (fatal and non-fatal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0% to &lt;10% (Green)</td>
</tr>
<tr>
<td>10% to &lt;20% (Yellow)</td>
</tr>
<tr>
<td>20% to &lt;30% (Orange)</td>
</tr>
<tr>
<td>30% to &lt;40% (Red)</td>
</tr>
<tr>
<td>&gt;40% (Deep Red)</td>
</tr>
</tbody>
</table>
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.

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).
**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.

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>&lt;10%</th>
<th>10% to &lt;20%</th>
<th>20% to &lt;30%</th>
<th>30% to &lt;40%</th>
<th>≥40%</th>
</tr>
</thead>
</table>

### SEAR D People with Diabetes Mellitus

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Male</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Female</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>Non-smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Non-smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Non-smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>40</td>
<td>Non-smoker</td>
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<td></td>
<td></td>
<td></td>
<td>Smoker</td>
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</tbody>
</table>

### SEAR D People without Diabetes Mellitus

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Male</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Female</th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>Non-smoker</td>
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<td></td>
<td></td>
<td></td>
<td>smoker</td>
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<tr>
<td>60</td>
<td>Non-smoker</td>
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<td>smoker</td>
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<tr>
<td>50</td>
<td>Non-smoker</td>
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<td>smoker</td>
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</tr>
<tr>
<td>40</td>
<td>Non-smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>smoker</td>
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</tbody>
</table>

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