1

NAURU PEN Protocols 1 and 2

Client Encounter

ASK

PAST MEDICAL HISTORY OF CARDIOVASCULAR DISEASE

- Have you ever been diagnosed with heart attack (angina, myocardial infarction), heart failure, stroke, transient ischemic attacks or kidney disease?

NO OR DON'T KNOW

YES

This client HAS CARDIOVASCULAR DISEASE. *Classify client as having* ***above 30% CVD risk.*** *It is not necessary to use the risk charts. This patient needs* ***urgent intervention.***

1. **Are you taking your medications exactly as prescribed by your doctor?**
2. **Assess *client's condition*. Is the client's condition stabilized?**
   - **Ask for any changes in severity of symptoms**
   - **Measure blood pressure**
   - **Look for pitting oedema**
   - **Palpate apex beat for heaving and displacement**
   - **Auscultate heart (rhythm and murmurs)**
   - **Examine abdomen for tender liver**
   - **In DM clients, examine feet, sensations, pulses, and ulcers.**

YES to 1 & 2

- **Continue maintenance medications. Refer for periodic reassessments in specialist care.**
- **Provide Lifestyle Advice (See *PROVIDE COUNSELING TO EVERYBODY PROTOCOL 2* box)**
- **Provide Counseling on Adherence to Treatment (See COUNSELLING ON ADHERENCE TO TREATMENT box on page 4)**

NO to 1 &/or 2

- **REFER to a specialist facility.**
- **Once the condition of the client is assessed and stabilized, the client can be followed up in a primary care facility but the client will need periodic assessments in specialist care.**

Recommendations for the prevention of recurrent CHD (heart attacks) and CeVD (strokes) events may be found on pp 22-28, Prevention of Cardiovascular Disease – Pocket Guidelines for Assessment and Management of Cardiovascular Risk)

SCREEN FOR BEHAVIORAL RISK FACTORS

SMOKING/TOBACCO USE:

- Did you use tobacco during the last 12 months?
- Were you exposed to tobacco smoke during the last 12 months?

HARMFUL USE OF ALCOHOL

- Have you ever consumed an alcoholic drink such as beer, wine, spirits, or home brew within the past 30 days?
- Have had 5 drinks in one occasion during the past 30 days?

PHYSICAL INACTIVITY/SEDENTARINESS

- Do you do at least 2 ½ hours a week of moderate-intensity physical activity?
- Do you spend more than 5 hours sitting down daily?

UNHEALTHY DIET

- Do you eat 5 servings of vegetables and fruits (excluding starchy root crops) daily?
- Do you eat processed or fried foods, canned meat, and instant noodles during most days of the week?
- Do you take sugar-sweetened beverages such as soda, flavored milk/tea, & juice during most days of the week?

SCREEN FOR OVERWEIGHT & CENTRAL OBESITY

Overweight is defined as a BMI value equal to or above 25 (Use BMI Chart or calculate BMI)

BMI = weight (kg) ÷ height (m)^2

Or weight (kg) ÷ height (cm) ÷ height (cm) x 10,000

Central adiposity is defined as a waist circumference equal to or above ***100cm*** *for males and* ***90cm*** *for females*

SCREEN FOR RAISED BLOOD PRESSURE

RAISED BLOOD PRESSURE *is defined as blood pressure reading of equal to or greater than 120/80 (mm Hg)*

Always get the average of two readings obtained at least two minutes apart.

PROVIDE COUNSELING TO EVERYBODY (PROTOCOL 2)

TAKE REGULAR PHYSICAL ACTIVITY

- All individuals should be strongly encouraged to take at least 30 minutes of moderate physical activity (e.g. brisk walking) a day, through leisure time, daily tasks and work-related physical activity.
- Progressively increase physical activity to moderate levels such as brisk walking at least 150 minutes per week

CONTROL WEIGHT

- All individuals who are overweight or obese should be encouraged to lose weight through a combination of a reduced-energy diet (dietary advice) and increased physical activity.

EAT A HEART HEALTHY DIET

Salt (sodium chloride)

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

Fruits and vegetables

- 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

- All individuals should be strongly encouraged to reduce total fat and saturated fat intake.
- Total fat intake should be reduced to about 30% of calories, saturated fat to less than 10% of calories
- Limit fatty meat, dairy fat and cooking oil (less than two tablespoons per day)
  Replace other meat with chicken (without skin)

Sugar-sweetened beverages (soda, flavoured milk, juice)

- Avoid sugary drinks. Drink water instead.

STOP TOBACCO AND AVOID HARMFUL USE OF ALCOHOL

- All nonsmokers should be encouraged not to start smoking.
- Strongly advise all smokers to stop smoking and support them in their efforts.
- Individuals who use other forms of tobacco should be advised to quit.
- People should not be advised to start taking alcohol for health reasons
- Advise clients 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

2 TARGETED CARDIOVASCULAR (CVD) RISK SCREENING

APPLY THE INCLUSION CRITERIA

- Is client's age 40 years old or above?
- Is client an active or passive smoker?
- Does client have central adiposity/obesity?
- Is client's blood pressure equal to or above 140/90
- Was client previously diagnosed as having diabetes mellitus (including gestational diabetes)?
- Does client have a parent or a brother or a sister with premature cardiovascular disease (heart attack, angina, heart failure, stroke or transient ischemic attack)?
- Does client have a parent or a brother or a sister with history of diabetes mellitus or kidney disease?

Premature if occurring before 55 years old in males and before 65 years old in females

NO TO ALL → ***There is no need to proceed further. Advise follow-up cardiovascular risk assessment after 2 or 3 years or at age 40, whichever occurs first.***

YES TO ANY

This client has risk factor/s and may have not yet developed clinically manifest cardiovascular disease (CVD).

Apply WHO PEN Protocol 1 ***Prevention of Heart Attacks, Strokes and Kidney Disease through Integrated Management of Diabetes and Hypertension***

- *to search for all cardiovascular risk factors and clinical conditions that may influence prognosis and treatment;*
- *to determine the presence of target organ damage (heart, kidneys and retina);*
- *to identify if client is at high risk and in need of urgent intervention; and*
- *to identify if client needs special investigations or referral (e.g. with secondary hypertension).*

SCREEN FOR ANGINA, HEART ATTACK, STROKE or TRANSIENT ISCHEMIC ATTACKS (TIA)

1. Have you had any pain or discomfort or any pressure or heaviness in your chest? — NO
   YES ↓
2. Do you get the pain in the center of the chest or left chest or left arm? — NO
   YES ↓
3. Do you get it when you walk uphill or hurry?
4. Do you slowdown if you get the pain while walking?
5. Does the pain go away if you stand still or if you take a tablet under the tongue?
6. Does the pain go away in less than 10 minutes if you stand still or take a tablet under the tongue?
7. Have you ever had severe chest pain across the front of your chest lasting for half an hour or more?
8. Have you ever had any of the following: difficulty in talking, weakness of arm and/or leg on one side of the body or numbness on one side of the body?

★ ***If the answer to Questions 3 or 4 or 5 or 6 or 7 is YES, client may have angina or heart attack and needs to see the doctor.(See referral criteria)***

★ ***If the answer to Question 8 is YES, the client may have had a TIA or stroke and needs to see the doctor. (See referral criteria)***

PERFORM PHYSICAL EXAMINATION

- Palpate apex beat for haeving and displacement
- Auscultate heart (rhythm & murmurs) & lungs (bilateral basal crepitations)
- Examine abdomen (tender liver)
- In DM clients examine feet; sensations, pulses, and ulcers

SCREEN FOR RAISED BLOOD GLUCOSE

Is client a known diabetic?

NO → Does the client have any two of the following symptoms?
- Excessive or increased hunger
- Excessive or increased thirst
- Excessive or abnormally large production or passage of urine (at least 2.5 or 3L over24 hours)
- Unexplained weight loss

YES ↓

Perform a blood glucose test to determine the presence of ***RAISED BLOOD GLUCOSE*** *which is defined as:*

FBS value equal to or greater than 110mg/dL or 6.1mmol/L (last meal was taken at least 8 hours ago); or
RBS value equal to or greater than 200mg/dL or 11.1mmol/L (last meal was within the past 8 hours)

If blood glucose test is not available, determine presence of ***POSITIVE URINE GLUCOSE TEST*** *defined as:*
Urine glucose test result above 15mg/dL (or trace or higher)

If urine glucose test is positive, a confirmatory blood glucose test needs to be done to diagnose diabetes.

A person who has diabetes is defined as someone taking insulin or oral hypoglycaemic drugs, or with a fasting plasma glucose value above 7.0 mmol/L or 126 mg/dL) or a postprandial (approximately 2 hours after a main meal) plasma glucose value above 11.0 mmol/L or 200mg/dL on <u>two separate occasions</u>.

YES ← Client is unlikely to have diabetes.

NO ↓

SCREEN FOR URINE PROTEIN

For newly diagnosed DM, ***SCREEN FOR URINE KETONES***

Use urinalysis strip within one hour of urine collection

SCREEN FOR RAISED BLOOD CHOLESTEROL ***(if available)***

Perform a blood cholesterol test to determine the presence of ***RAISED BLOOD CHOLESTEROL*** *which is defined as:*

Total Cholesterol value equal to or greater than 200mg/dL or 5.3mmol/L

Fasting is not necessary. Point of care devices can be used in measuring total cholesterol if laboratory services are not available.

<u>If cholesterol assay cannot be done</u>, use the mean cholesterol level of the population, or a value of 5.2mmol/l, or use the "Without Cholesterol" charts.

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APPLY THE REFERRAL CRITERIA

Does the client have any of the conditions below?

- ★ **BP >200/>120 mm Hg (URGENT REFERRAL)**
- ★ **BP ≥140 or ≥ 90 mmHg in people < 40 yrs (to exclude secondary hypertension)**
- ★ **Known heart disease, stroke, transient ischemic attack, DM, kidney disease (for assessment, if this has not been done)**
- ★ **New chest pain or change in severity of angina or symptoms of transient ischemic attack or stroke**
- ★ **Target organ damage (e.g. angina, claudication, haeving apex, cardiac failure)**
- ★ **Cardiac murmurs or arrhythmia**
- ★ **Raised BP ≥140/90 (in DM above 130/80mmHg) while on treatment with 2 or 3 agents**
- ★ **Any proteinuria**
- ★ **Newly diagnosed DM with urine ketones 2+ or in lean persons of <30 years**
- ★ **Total cholesterol >8mmol/l**
- ★ **DM with poor control despite maximal metformin with or without sulphonylurea**
- ★ **DM with severe infection and/or foot ulcers**
- ★ **DM with recent deterioration of vision or no eye exam in 2 years**
- ★ **High cardiovascular risk**

YES TO ANY

Client needs to be seen by a physician

- ***If urgent, arrange immediate referral to a higher level facility including transportation, as necessary.***
- ***Explain to the client the reason for referral.***
- ***Complete a Referral Form.***
- ***Advise client to report back for follow up to the primary health care facility after his/her condition has stabilized.***

NO TO ALL

ESTIMATE CARDIOVASCULAR (CVD) RISK (In those not referred)

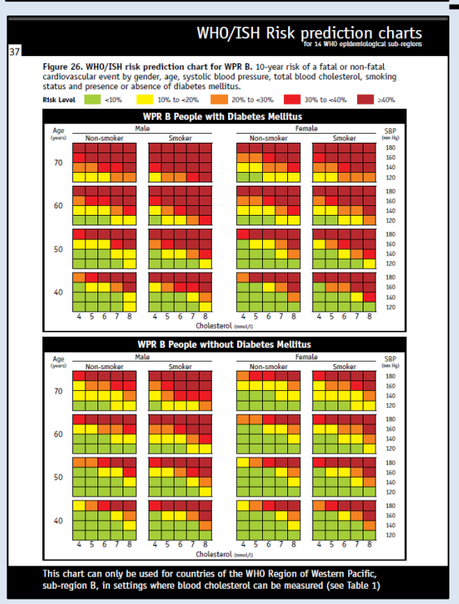
- If the client is already on treatment, use **pretreatment** levels of risk factors (if information is available) to assess and record the pretreatment risk. Also assess the current risk using current levels of risk factors.
- Risk charts **UNDERESTIMATE** the risk in those with
  - already on antihypertensive therapy *(move one cell up)*
  - premature menopause *(move one cell to the right)*
  - approaching the next age category *(move up to the next age)* or systolic blood pressure category *(move one cell up)*
  - obesity, including central obesity *(move one cell up and to the right)*
  - **sedentary lifestyle** *(move one cell up and to the right)*
  - family history of premature CHD or stroke in first degree relative *(move one cell up and to the right)*
  - raised triglyceride level of >2.0 mmol/L or 180 mg/dL *(move one cell to the right)*
  - low HDL cholesterol level of < 1 mmol/L or 40mg/dL in males, < 1.3 mmol/L or 50 mg/dL in females *(move one cell to the right)*
  - raised levels of C-reactive protein, fibrinogen, homocysteine, apolipoprotein B or Lp(a) *(raise one color)* or fasting glycaemia, or impaired glucose tolerance *(use with diabetes chart)*
  - microalbuminuria *(raise one color)*
  - raised pulse rate*(move one cell up)*
  - socioeconomic deprivation *(move one cell up)*

CARDIOVASCULAR RISK MANAGEMENT

Prevention of CVD in Persons with CVD Risk Factors according to Individual Total Risk

GOALS

- Quit tobacco use or not start the habit
- Make healthy food choices
- Be physically active
- Reduce body mass index, waist–hip ratio/waist circumference
- Lower blood pressure
- Lower blood cholesterol and low density lipoprotein cholesterol (LDL-cholesterol)
- Control glycaemia



10-YEAR RISK OF CARDIOVASCULAR EVENT

Cardiovascular event may be heart attack, angina, stroke, or transient ischemic attack.

RISK < 10%

Individuals in this category are at low risk. Low risk does not mean "no" risk.
Conservative management focusing on lifestyle intervention
Follow up every 12 months.

RISK 10% to < 20%

Individuals in this category are at moderate risk of fatal or non-fatal vascular events.
Follow up every 3 months until targets are met, then 6 to 9 months thereafter.

RISK 20% to < 30%

Individuals in this category are at high risk of fatal or non-fatal vascular events.
Monitor risk profile every 3-6 months

RISK ≥ 30%

Individuals in this category are at very high risk of fatal or non-fatal vascular events.
Monitor risk profile every 3 months

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ANTI-HYPERTENSIVES

All individuals with blood pressure at or above 160/100 mmHg, or lesser degree of raised blood pressure with target organ damage, should have drug treatment and specific lifestyle advice to lower their blood pressure and risk of cardiovascular disease.
All individuals with blood pressure below 160/100 mmHg, or with no target organ damage need to be managed according to the cardiovascular risk (10 year risk of cardiovascular event <10%, 10 to <20%, 20 to <30%, ≥30%)

RISK < 10%	Individuals with persistent blood pressure ≥140/90 mmHg should continue lifestyle strategies to lower blood pressure and have their blood pressure and total cardiovascular risk reassessed every 2–5 years depending on clinical circumstances and resource availability.
RISK 10% to < 20%	Individuals with persistent blood pressure ≥140/90 mmHg should continue lifestyle strategies to lower blood pressure and have their blood pressure and total cardiovascular risk reassessed annually depending on clinical circumstances and resource availability.
RISK 20% to < 30%	Individuals with persistent blood pressure ≥140/90 mmHg who are unable to lower blood pressure through lifestyle strategies with professional assistance within 4–6 months should be considered for one of the following drugs to reduce blood pressure and risk of cardiovascular disease: **Hydrochlorothiazide**, **Lisinopril/Ramipril**, **Nifedipine SR/Amlodipine** or **Atenolol/Metoprolol**. **Hydrochlorothiazide, Lisinopril/Ramipril,** and **Nifedipine SR/Amlodipine** are recommended as first-line therapy.
RISK ≥ 30%	Individuals with persistent blood pressure ≥130/80 mmHg should be given one of the following drugs to reduce blood pressure and risk of cardiovascular disease: **Hydrochlorothiazide**, **Lisinopril/Ramipril**, **Nifedipine SR/Amlodipine** or **Atenolol/Metoprolol**.. **Hydrochlorothiazide, Lisinopril/Ramipril,** and **Nifedipine SR/Amlodipine** are recommended as first-line therapy.

- **If under 55 years, low dose Hydrochlorothiazide (HCTZ) and/or Lisinopril or Ramipril**
- **If over 55 years, Nifedipine SR or Amlodipine and/or low dose Hydrochlorothiazide (HCTZ)**
- **If intolerant to Lisinopril or Ramipril or for women in child bearing age consider Atenolol**
- **Hydrochlorothiazide and/or Nifedipine SR are more appropriate as initial treatment for certain ethnic groups. Medications for compelling indications should be prescribed, regardless of race/ethnicity**
- **More than one drug is frequently required to lower BP to optimum levels. Combine Atenolol with HCTZ; Atenolol with Amlodipine; Amlodipine with Lisinopril/Ramipril; or Lisinopril/Ramipril with HCTZ. Low dose combination therapies can maximize effectiveness and help minimize side effects**
- **Lisinopril or Ramipril should be considered as medicine of first choice in the management of hypertension if patient also has heart failure, myocardial infarction or diabetes nephropathy or retinopathy**
- **Test serum creatinine and potassium before prescribing Lisinopril or Ramipril**
- **If with asthma, don't give Atenolol; and if with gout, don't give HCTZ**
- **Test serum creatinine and potassium before prescribing Lisinopril or Ramipril**

LIPID-LOWERING DRUGS (STATINS)

All individuals with total cholesterol at or above 8 mmol/l (320 mg/dl) should be advised to follow a lipid-lowering diet and given a statin to lower the risk of cardiovascular disease.
All other individuals need to be managed according to the cardiovascular risk (10 year risk of cardiovascular event <10%, 10 to < 20%, 20 to <30%, ≥30%)

RISK < 10%	Should be advised to follow a lipid-lowering diet.
RISK 10% to < 20%	Should be advised to follow a lipid-lowering diet.
RISK 20% to < 30%	Adults >40 years with persistently high serum cholesterol (>5.0 mmol/l) and/or LDL cholesterol >3.0 mmol/l, despite a lipid-lowering diet, should be given **Simvastatin** 20mg to 40mg or **Atorvastatin** 10mg to 20mg once daily at bedtime.
RISK ≥ 30%	Individuals in this risk category should be advised to follow a lipid-lowering diet and given **Simvastatin** 20mg to 40mg or **Atorvastatin** 10mg to 20mg once daily at bedtime. Serum cholesterol should be reduced to less than 5.0 mmol/l (LDL cholesterol to below 3.0 mmol/l) or by 25% (30% for LDL cholesterol), whichever is greater

HYPOGLYCEMIC DRUGS

- Give **Metformin** at a dose of 500mg every 12 hours with meals for type 2 DM if not controlled by diet only (FBS>7mmol/l), and if there is no renal insufficiency, liver disease or hypoxia.
- Titrate **Metformin** to target glucose value to the maximum dose of **1gm** twice daily.
- Give **Glibenclamide 2.5 -5mg orally as a single dose**, increasing to a maximum dose of **10mg** twice daily or **Gliclazide 40-80mg** daily increasing to a maximum of **160mg twice daily** to patients who have contraindications to Metformin or if Metformin does not improve glycaemic control.
- If acceptable sugar control cannot be achieved with oral drugs, add **Isophane (intermediate acting insulin) 10 units at night**. Titrate the dose by 2 units to a maximum dose of 30 units per day until the fasting glucose levels are between 5 to 7 mmol/l. Monitor fasting blood glucose level each morning. If still uncontrolled, refer the patient for further assessment.

ADDITIONAL ACTIONS FOR INDIVIDUALS WITH DM

- Give Lisinopril 5mg up to a maximum dose of 80mg once a day or Ramipril 2.5mg daily up to a maximum dose of 10mg twice daily for those with BP ≥130/80 mmHg
- Give Simvastatin 20mg or Atorvastatin 10mg at bedtime to all with type 2 DM aged ≥ 40 yrs
- Give advice on foot hygiene, nail cutting, treatment of calluses, appropriate footwear and assess feet at risk of ulcers using simple methods (inspection, pin-prick sensation)
- Follow up every three (3) months

ADVICE SPECIFIC FOR INDIVIDUALS WITH DM

- Advise overweight patients to reduce weight by reducing their food intake.
- Advise all patients to give preference to low glycaemic-index foods (e.g. beans, lentils, oats and unsweetened fruit) as the source of carbohydrates in their diet
- If you are on any DM medication that may cause your blood glucose to go down too low, carry sugar or sweets with you.
- If you have DM, eyes should be screened for eye disease (diabetic retinopathy) by an ophthalmologist at the time of diagnosis and every two years thereafter, or as recommended by the ophthalmologist
- Avoid walking barefoot or without socks
- Wash feet in lukewarm water and dry well especially between the toes
- Do not cut calluses or corns, and do not use chemical agents on them
- Look at your feet every day and if you see a problem or an injury, go to your health worker

COUNSELLING ON ADHERENCE TO TREATMENT

- **If the patient is prescribed a 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**
- **Show 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 the patient leaves the health center**
- **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**

ON FOLLOW-UP VISIT

- ★ **Ask about new symptoms**
- ★ **Ask about adherence to medications, to advise on tobacco and alcohol use, physical activity, healthy diet, foot care, etc.**
- ★ **Assess (physical examination)**
- ★ **Estimate cardiovascular risk**
- ★ **Refer, if necessary**
- ★ **Counsel all and manage as shown in protocol**