

INTEGRATED MANAGEMENT OF DIABETES & HYPERTENSION



Diabetes Project



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OF
DIABETES & HYPERTENSION

August 2014
First Printing

Global Strategy for prevention and control of noncommunicable diseases-Three pillars

Printing History

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Surveillance
Mapping the epidemic of NCDs



Prevention
Reducing the level of exposure to risk factors



Management
Strengthen health care for people with NCDs



The purposes of this interventions are

By using inexpensive medications

- **Prevention of:**

- Heart attack
- Stroke
- Diabetes Mellitus

- **Treatment of:**

- Diabetes Mellitus
- Hypertension
- Dyslipidaemia

- **Counseling for:**

- Cessation of smoking
- Avoidance of harmful use of alcohol
- Healthy Diet
- Regular Exercise

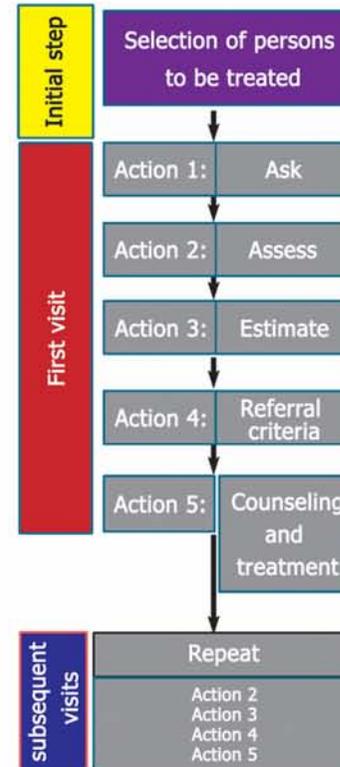
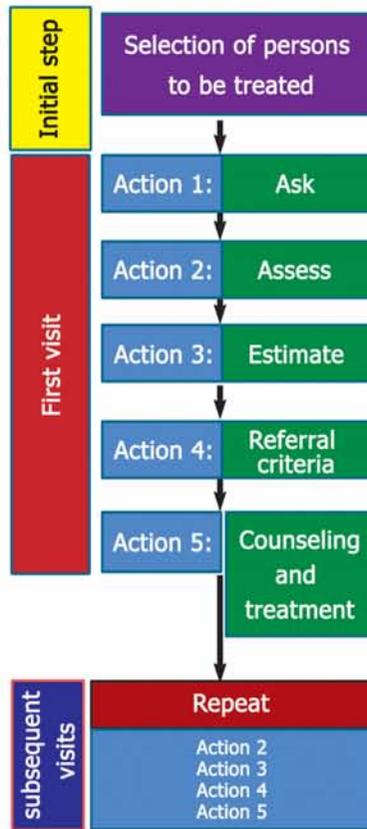
Tools for Package of Essential Non-communicable diseases

Tools

- WHO CVD risk score
- Locally-adapted Guideline
- Glucometer
- BP cuff + Stethoscope
- Measuring tapes
- Weighing machine
- ECG – in referral centre
- Ophthalmoscope – in supervision trip

Medicines

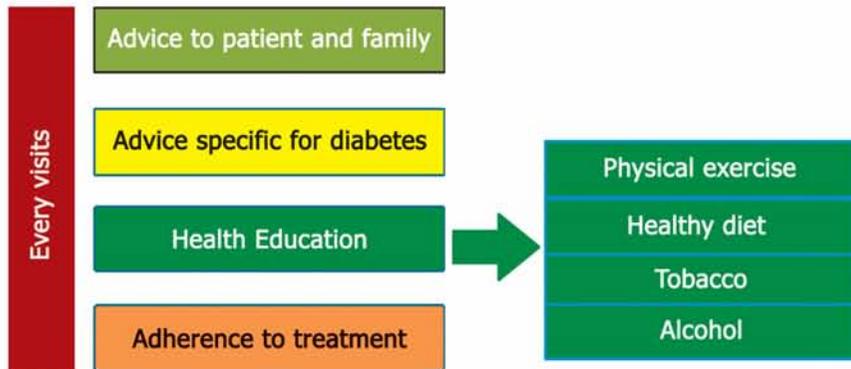
- Gliclazide
- Metformin
- Amlodipine
- Atenolol
- Enalapril
- Aspirin
- Atorvastatin

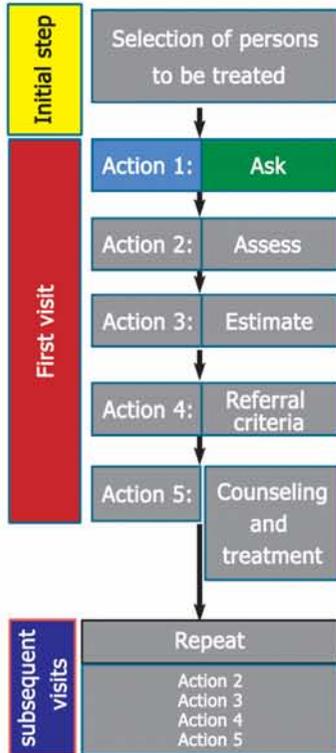


Selection of persons to be treated

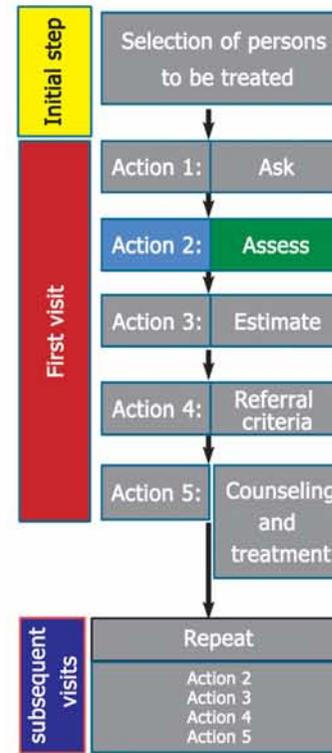
This protocol can be used as entry points and can be applied to any of the categories of people listed below

- age > 40 years
- smokers
- waist circumference ≥ 90 cm in women and 100 cm in men
- known hypertension
- known diabetes
- history of premature CVD in first degree relatives
- history of diabetes or kidney disease in first degree relatives





- | Action 1: | Ask about: |
|---|------------|
| <ul style="list-style-type: none"> ❖ Known heart disease, stroke, TIA, diabetes, kidney disease ❖ Chest pain and/or breathlessness on exertion, breathlessness on lying flat, pain in calf on walking ❖ Medicines that the patient is taking ❖ Current tobacco use (yes/no) ❖ Alcohol consumption (yes/no) (if `Yes`, frequency and amount) ❖ Occupation (sedentary or active) ❖ Engaged in more than 30 minutes of physical activity at least 5 days a week (yes/no) ❖ Family history of premature heart disease or stroke in first degree relatives | |



- | Action 2: | Assess (Physical exam including the following): |
|---|---|
| <ul style="list-style-type: none"> ❖ Waist circumference (≥ 90 cm in women and 100 cm in men) ❖ Blood pressure, pitting oedema ❖ Palpation of apex beat, Auscultation of heart ❖ Auscultation of lungs (bases for crepitations) ❖ Examination of abdomen ❖ If DM – test sensation of feet, foot pulses and ulcers Fasting or random blood glucose (DM= fasting ≥ 7mmol/L (126 mg/dl) or random ≥ 11.1mmol/L (200 mg/dl)) ❖ Urine protein ❖ Urine ketones in newly diagnosed DM ❖ Total cholesterol (if available) ❖ Point of care devices can be used in diagnosing diabetes if laboratory services are not available | |

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.

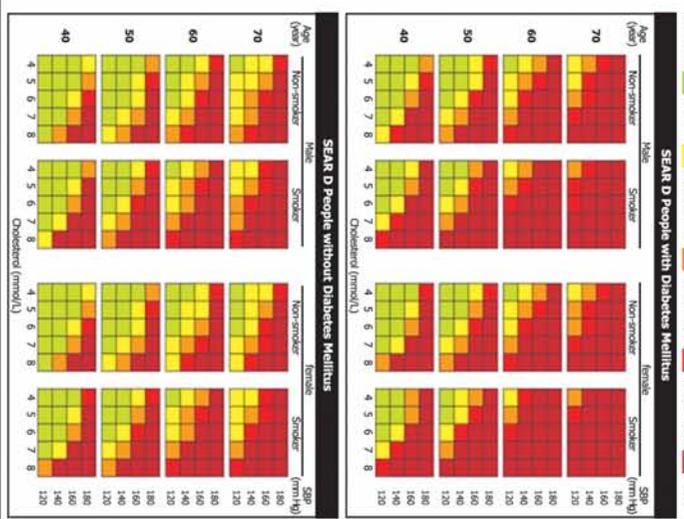
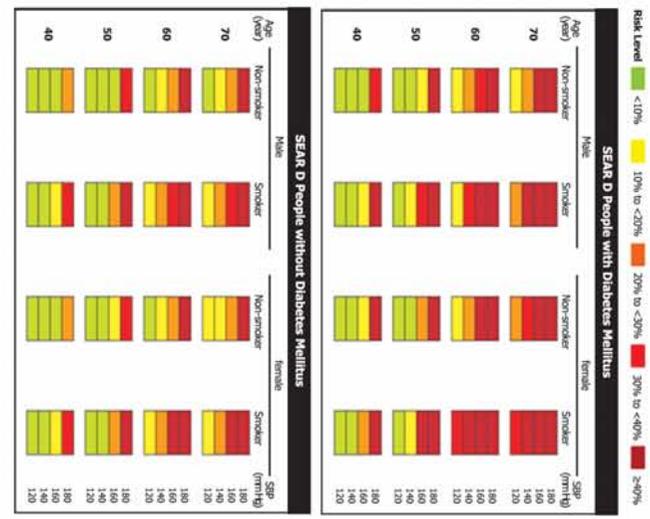


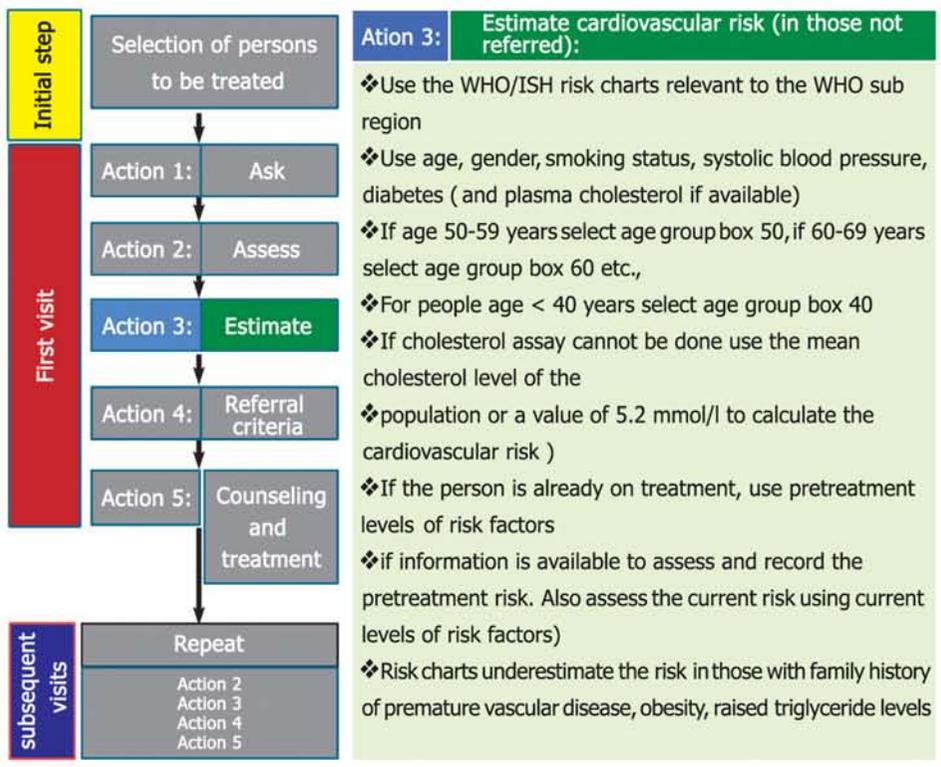
Figure 24. WHO/ISH risk prediction chart for SEAR D. 10-year risk of a fatal or non-fatal cardiovascular event by gender, age, systolic blood pressure, smoking status and presence or absence of diabetes mellitus.

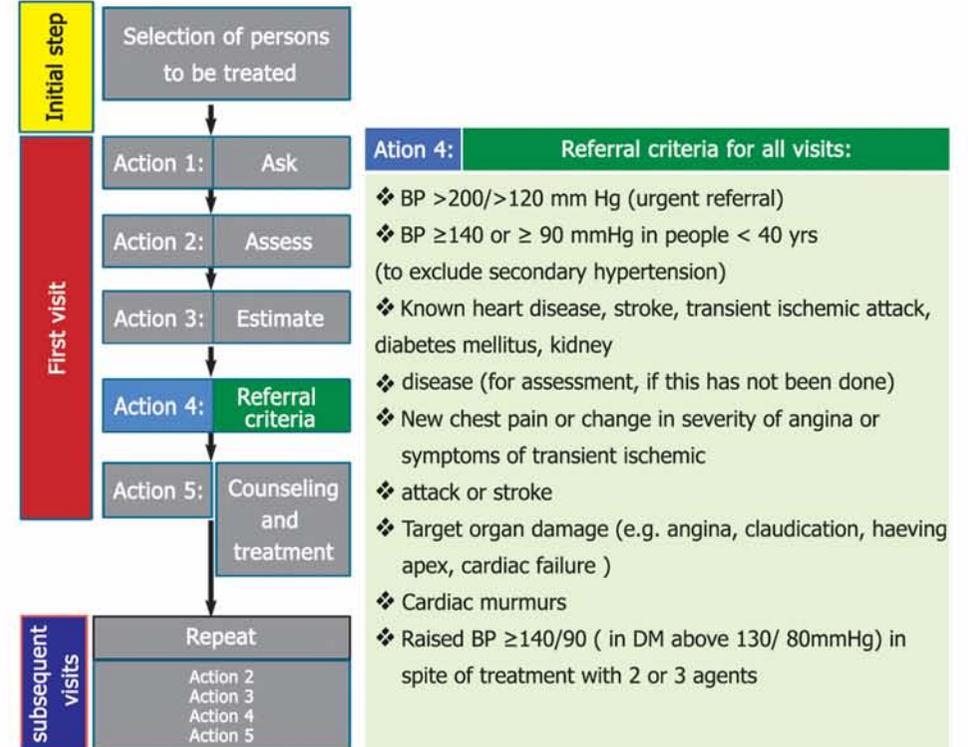
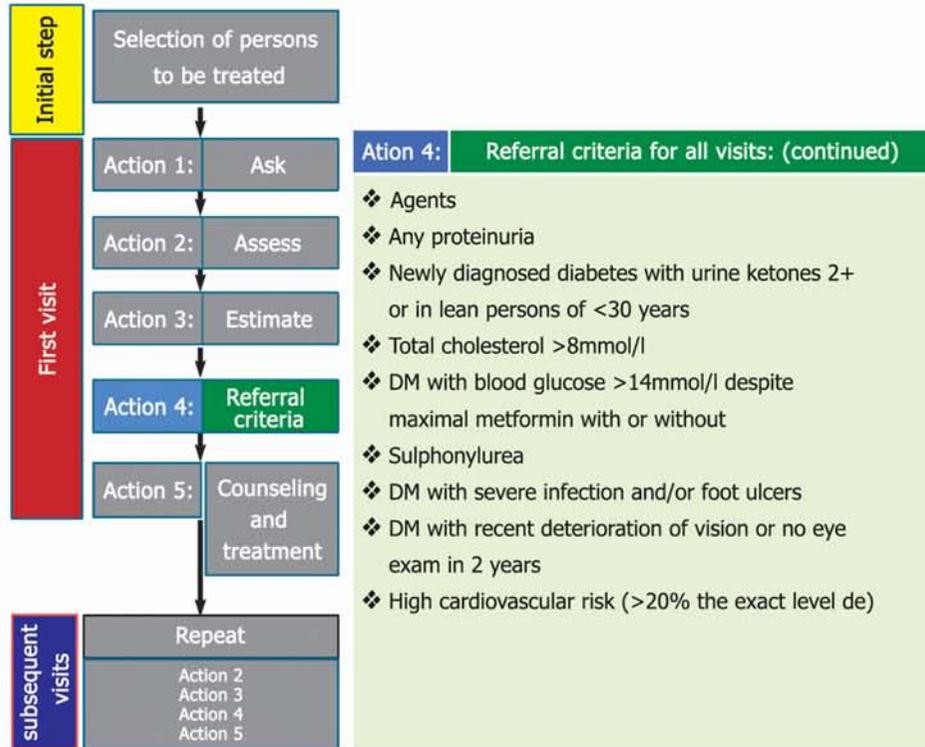


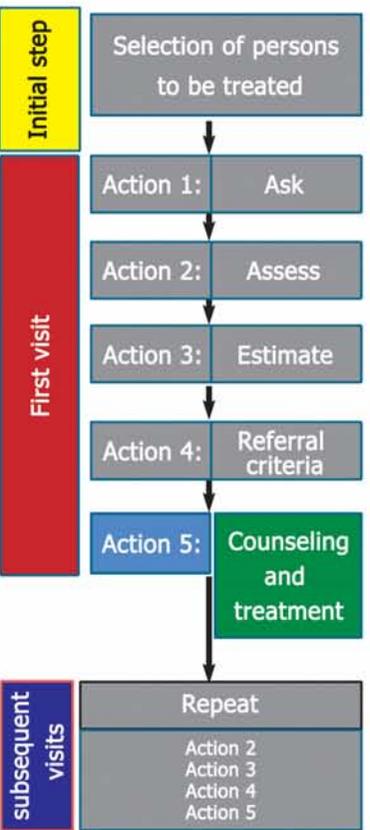
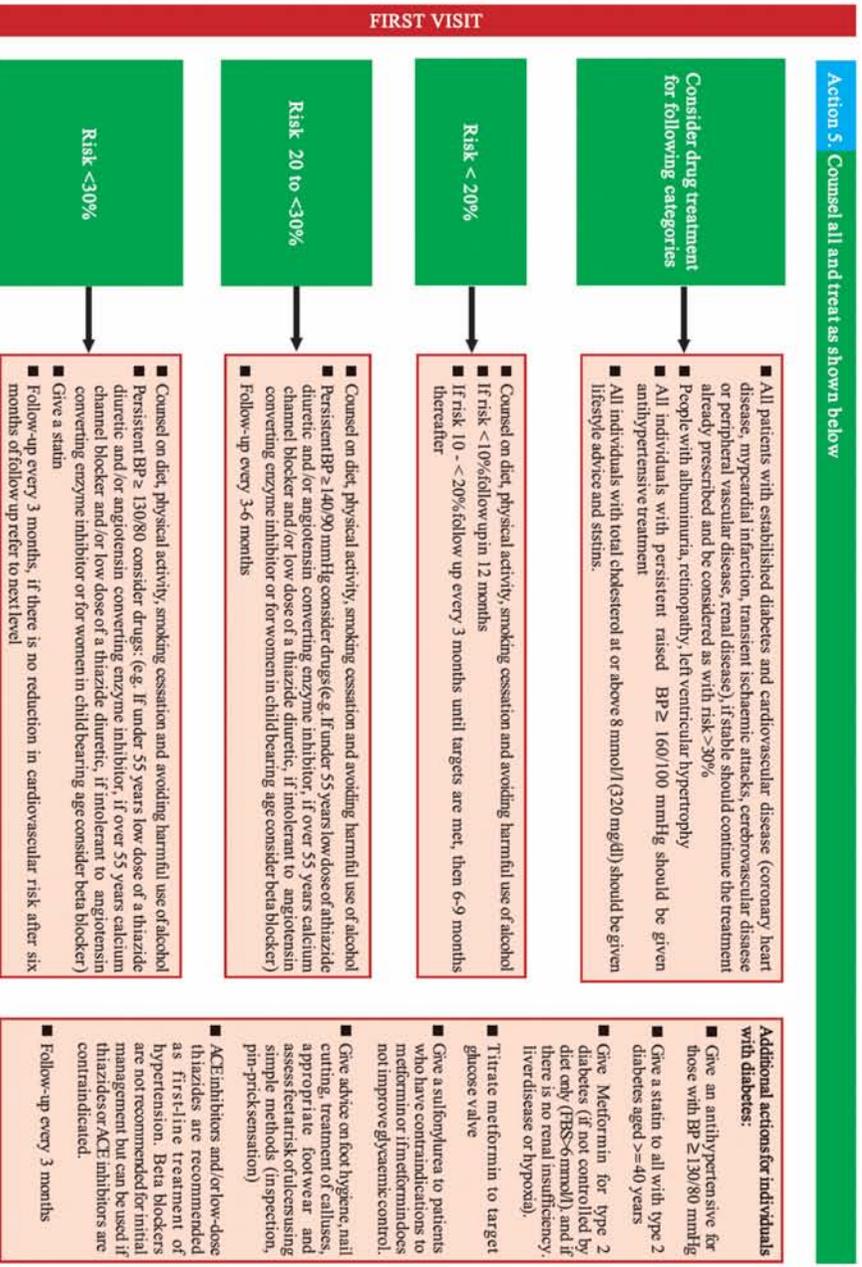
This chart can only be used for countries of the WHO Region of South-East Asia, sub-region D, in settings where blood cholesterol can be measured (Bangladesh, Bhutan, Republic of Korea, India, Maldives, Myanmar, Nepal).

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).

Prevention of CVD/Kandawyl Palace
Hotel/Ciplapia



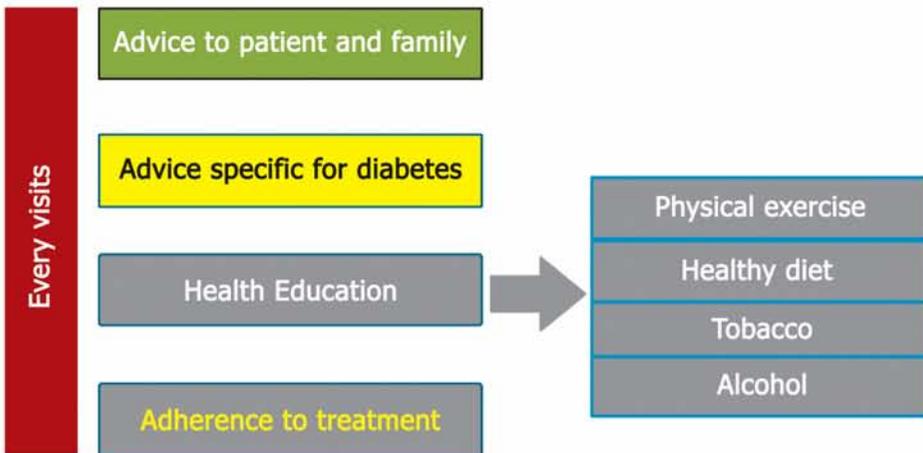




subsequent visits

Repeat

- Action 2 Assess (Physical exam)
- Action 3 Estimate cardiovascular risk
- Action 4 Refer if necessary
- Action 5 Counsel all and treat as shown in protocol

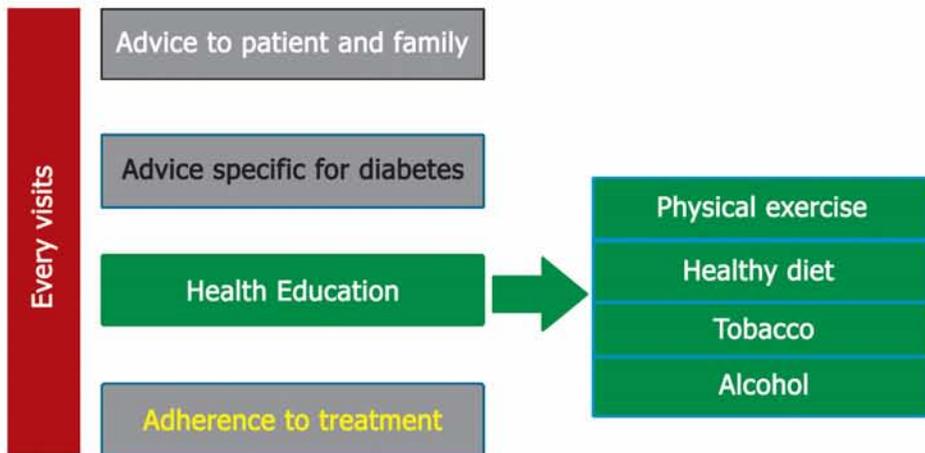


Advice to patients and family

- Avoid table salt and reduce salty foods such as pickles, salty fish, fast food, processed food, canned food and stock cubes
- Have your blood glucose level, blood pressure and urine checked regularly

Advice specific for diabetes

- 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 diabetes medication that may cause your blood glucose to go down too low carry sugar or sweets with you
- If you have diabetes, 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



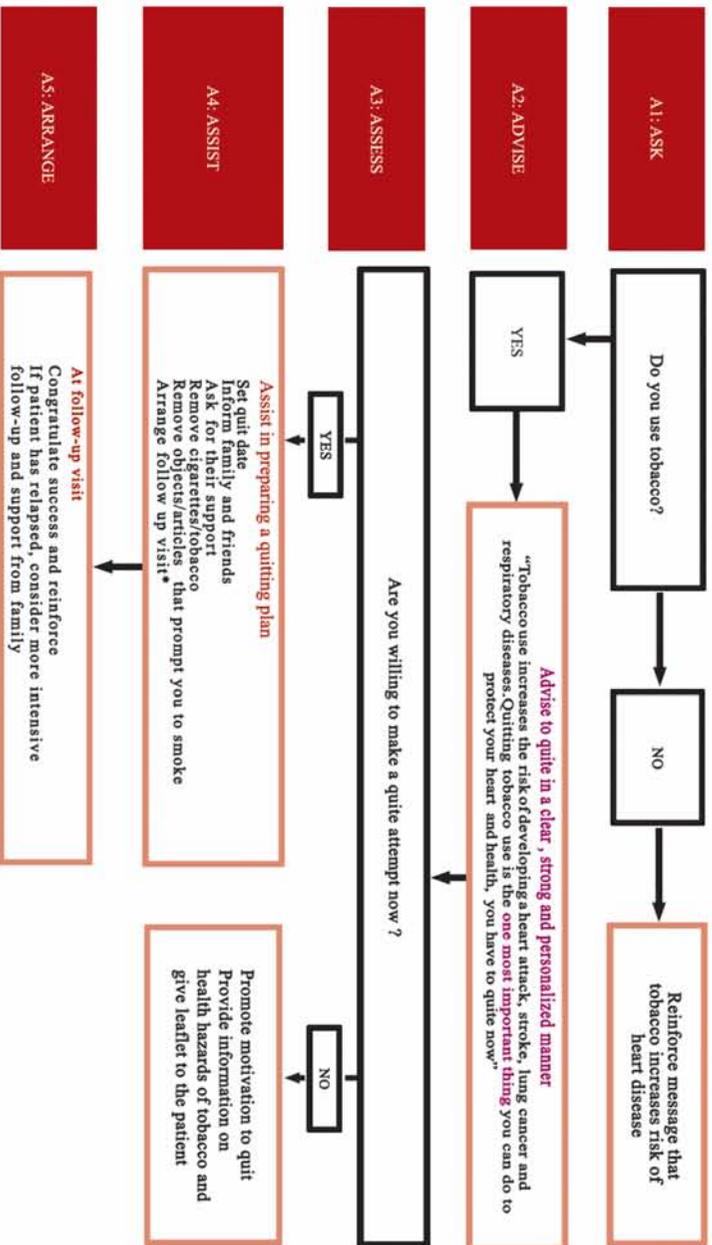
Take regular physical activity

- Progressively increase physical activity to moderate levels (such as brisk walking); at least 30 minutes per day on 5 days of the week
- Control body weight and avoid overweight by reducing high calorie food and taking adequate 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 vegetable per day
1 serving is equivalent to 1 orange, apple, mango, banana or 3 tablespoons of cooked vegetables
- **Fatty food**
Limit fatty meat, dairy fat and cooking oil (less than two tablespoons per day)
Replace palm and coconut oil with olive, soya, corn, rapeseed or safflower oil
Replace other meat with chicken (without skin)
- **Fish**
Eat fish at least 3 times per week, preferably oily fish such as tuna, mackerel, salmon

Counselling on cessation of tobacco use - The 5 steps



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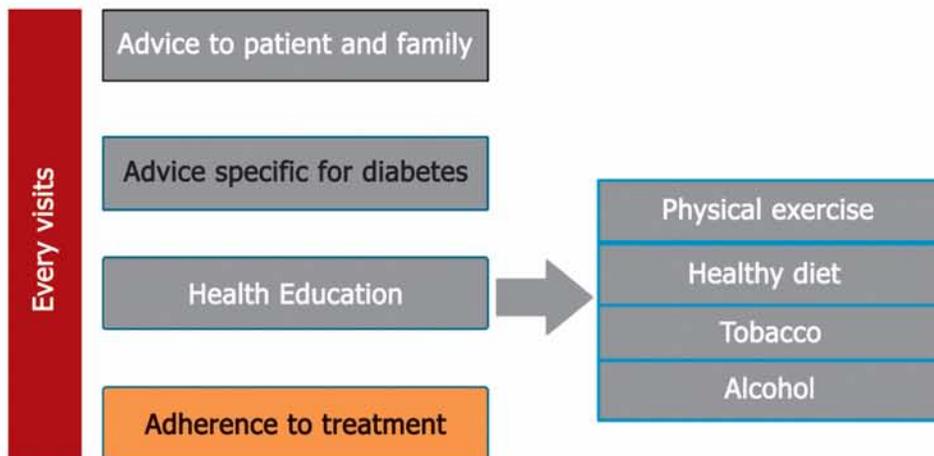
Eat a heart healthy diet

- Alcohol abstinence should be reinforced.
- People should not be advised to start taking alcohol for health reasons
- Those men who take >2 drinks per day and women who take > 1 drink per day should be advised to reduce
- One unit=half pint of beer/lager (5% alcohol),100 ml of wine (10% alcohol), spirits 25 ml (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

Stop Tobacco

- Encourage all non-smokers 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

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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 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

Glicazide (Sulfonylureas)

Indication

Used for the treatment of Type 2 diabetes mellitus.

Contraindication

Contraindicated in the presence of Keto acidosis.

Should be avoided in

- Acute porphyria
- Pregnancy
- Breast-feeding

Side effect

GI disturbance (nausea, vomiting, diarrhoea and constipation), hypoglycemia weight gain.

Disturbance in liver function (Cholestatic, hepatitis and hepatic failure)

Rarely allergic skin reaction

Dosage

Initially 40-80 mg daily, adjusted according to response; up to 160 mg as a single dose, with break-fast; higher dose divided; max 320 mg daily.

Glicazide MR 30-60 mg , maximum dose 120 mg..

Metformin (biguanides)

Indication

Used in Type 2 Diabetes Mellitus with obese patient.

Contraindication

Contraindicated in

- Keto acidosis
- Plan for Iodine containing X-ray contract media

Should be avoided in Renal Impairment, severe heart failure and liver failure.

Side Effect

- Anorexia, nausea, vomiting , diarrhnea, abdominal pain, taste disturbance

Dosage

Adult and Child over 10 years initially 500mg with breakfast for at least 1 week then 500 mg with breakfast and evening meal for at least 1 week then 500mg with breakfast, lunch and evening meal, usual maximum 2g daily in divided doses.

Amlodipine

Indication

Hypertension, prophylaxis of angina

Contraindication

Cardiogenic shock, unstable angina, significant aortic stenosis.

Side Effect

- GI disturbance (abdominal pain, nausea),palpitation,Flushing, oedema, headache, dizziness,sleep disturbances, fatigue.

Dosage

- In Hypertension and angina
- Initially 5 mg one daily max 10 mg once daily

Atenolol

Indication

Hypertension, Angina, Arrhythmias

Contraindication

Asthma, Uncontrolled Ht failure, marked bradycardia, hypotension, second or third – degree AV block, cardiogenic shock, metabolic acidosis, severe peripheral arterial disease.

Side Effect

- GI disturbance,Bradycardia,Heart failure,Hypotension,Peripheral vasoconstriction ,Bronchospasm,Dyspnoea,Headache,Fatigue,Sleep disturbance, Parasthesia, Dizziness, Vertigo

Dosage

- In hypertension, 25-50 mg daily (Higher doses rarely necessary)
- In angina, 100mg daily in 1 or 2 doses
- In arrhythmias ,50-100 mg daily

Enalapril

Indication

- Hypertension, symptomatic heart failure
- Prevention of symptomatic heart failure in patients with asymptomatic left ventricular dysfunction.

Contraindication

- Patients with ACE inhibitors hypersensitivity
- should be avoided in pregnancy (They may adversely affect fetal and neonatal blood pressure control and renal function skull defects and oligohydramnios)
- Breast feeding

Side Effect

- Profound hypotension, renal impairment and a persistent dry cough.
- GI disturbance- Nausea, Vomiting, Dyspepsia, Diarrhoea, constipation, Abdominal pain.

Dosage

- In Hypertension - Used alone, initially 5 mg once daily. Used in addition to diuretic (a thiazide diuretic or a calcium channel blocker) or in renal impairment, Lower initial doses may be required. Usual maintenance dose 20 mg once daily; max -40 mg once daily.
- In Heart failure and asymptomatic ventricular dysfunction - Initially 2.5mg once daily under medical supervision, increased gradually over 2-4 weeks to 10-20 mg daily if tolerated.

Asprin

Indication

Secondary prevention of thrombotic cerebrovascular or cardiovascular disease.

Contra Indication

- Contraindicated in
- In children and adolescents under 16 years (Reye's syndrome)
 - Hypersensitivity to Asprin and other NSAIDS
 - Avoided in severe hepatic impairment (increased risk of gastro-intestinal bleeding in severe renal impairment)
 - Pregnancy
 - Breast feeding

Side Effect

Bronchospasm, Gastro intestinal irritation and Gastro-intestinal bleeding. Dosage 80 mg once daily with food.

Atonvastatin

Indication

- Hypercholesterolaemia
- Hyperlipidaemia in patient who have not responded adequately to diet and other appropriate measure
- Prevention of cardiovascular events in patients at high risk of a first cardiovascular event.

Contra Indication

- Should be avoided in Pregnancy

Side Effect

- Adverse muscle effects (Myalgia, myopathy, myositis, rhabdomyolysis)
- GI disturbance

Dosage

- Primary Hypercholesterolaemia and combined hyperlipidaemia usually 10 mg once daily.

