# China Cardiovascular disease prevention and control deskguide

## Identify and manage cardiovascular disease or risk

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## Contents

# Identify cardiovascular disease or risk

Steps in CVD risk identification screening at the township hospital

**1: Select from the resident health records all adult aged 40-75 years** who are permanent residents in the township and :

**Exclude from screening those know to have:**

- mental illnesses or other disabilities which mean they cannot communicate with family doctors well or regularly;
- severe diseases, e.g. late stage cancer;
- hospitalized and not living in the community;
- will move out the township in the next two years;
- have shown serious adverse effects to the recommended drugs; or
- pregnant or breastfeeding women.

NB. Check for any missing information at the first visit.

**2: Review the resident health records, to check:**

If people have a calculated 10-year CVD risk of 20% or higher,

**or**

If people having a recorded medical history of coronary heart disease, ischaemic or haemorrhagic cerebro-vascular disease, or peripheral vascular disease.

***How to calculate the 10-year CVD risk***

1. Look for the necessary indicators for risk calculation such as age, smoking status, systolic BP, total cholesterol.
2. If possible, supplement the missing values through further check-up;
3. Calculate the CVD risk using the Excel based tool developed from the Asian Equation.

**3: Record the name, address and cell phone number of the client and contacts**

**4: Contact these people and seek their consent for treatment;**

**5: Recruit people who have provided the consent form for treatment;**

# First visit

1. Further identify symptoms, history or record of CVD.
2. Identify any exclusion criteria (as above)
3. Give preventive lifestyle education and treatment.

**History**

Ask about the presenting symptoms, their duration, site, character and associated symptoms. Ask about other symptoms or concerns. Ask about smoking, existing disease (e.g. diabetes or high BP) and current medications.

***If <u>any</u> symptom suggestive of CVD***; check if a history, signs or record of:

- A Heart attack? *Chest pain more than half hour at rest?*
- Angina? *Chest pain for few minutes on exercise, going away at rest?*
- Heart Failure? *Short of breath? Ankle swelling?*
- A Stroke? *Sudden one sided weakness? Slurred speech or visual loss?*
- A Transient ischemic attack? *A mini-stroke (lasting less than 24 hours)?*
- Claudication? *Pain in the back of lower leg or buttocks on walking?*
- Coronary artery bypass surgery? Angioplasty? or Thrombolysis?

**Examination**

Measure BP, BMI and test urine for glucose. If available check total cholesterol.
All patients should have these checked at least once a year.
If currently ill, or otherwise indicated, check pulse, breathing rate, temperature, BP heart and lungs (if severely ill, refer urgently, see page17).

***Calculate the CVD risk unless has been done in the last year (see box above).***

## Explain "high cardiovascular risk" to the patient

- Most patients will feel well and so may not understand the need for medication
- Explain that their risk of 20% or higher means that they are more likely to develop cardiovascular disease (angina, heart attack, stroke) than the average person
- E.g. A risk of 20% or higher means that almost 1 in 5 people (18.3%) with this risk score will develop heart disease or stroke in the next 10 years
- **However** that risk can be greatly reduced by <u>lifestyle changes</u> and taking tablets…. see below.

# Manage high risk

**For patients assessed to be high risk (or existing CVD):**

1. Check if they are already taking medications

2. Ask about their current eating, smoking, drinking and physical activity habits and give advice, see pages 6-8

3. Tell them their ideal weight (height x height in metres x 23). 18.5～23.9 for Chinese

4. Give preventive treatment (except if drug needed therapeutically)
    a. two from either;
        i. hydrochlorothiazide 12.5mg
        ii. **Either** enalapril 10mg, **or** lisinopril 10mg
        iii. atenolol 50mg
    b. simvastatin 20mg;
    c. folic acid 0.8mg;
    d. aspirin 100mg (if/when BP < 140/90 mmHg)

5. Screen for diabetes with a random blood glucose (or if not available to a urine glucose). If raised repeat random, or better a fasting, blood glucose. If any 2 tests are high diagnose diabetes; and manage see page below and clinical deskguide.

6. Refer to ‘therapeutic prescribing in general’, page 14 and drug information table, page 12-13.

7. Give a first follow-up appointment in one month

8. If adherence good, continue follow up at 3, 6 and then 12 months (However, tell the patient to return sooner if they develop any new symptoms)

# Healthy eating

| *Have more:* | *Have less:* |
|---|---|
| Fresh fruit and vegetables | |
| Regular meals: breakfast, lunch, dinner | Salt (add less to cooking) |
| Fish or chicken | Red meat (saturated fat) |
| Home cooked food | Street or fast food |
| Grilled, boiled or steamed food | Fried food |
| Unrefined, brown maize, rice (high fibre) | Sugar or refined cereals |

# Physical activity

**Be active!**

Try to include 30 minutes per day of walking, cycling or some other activity that gets you slightly out of breath or sweaty.

Physical activity keeps your heart healthy, helps you to lose weight (or stay a healthy weight) and beats stress to give a sense of wellbeing.

# Weight control

| |
|---|
| **Overweight:** BMI 24-26.9 |
| **Obese:** BMI between 27-29.9 |
| **Seriously obese:** BMI ≥ 30 |

Healthy eating and increased activity can achieve and maintain ideal weight.

Weight is <u>especially important</u> in patients with CVD, hypertension or diabetes.

If the BMI remains high, re-emphasise the need for lifestyle change.

**Education, diet and activity**

Educate and counsel on healthy eating and increased daily activity for the whole family (as above for patients with diabetes and high BP).

Review after three months (earlier if symptomatic or has complications).

# Alcohol

- Alcohol is not as harmful when you drink within recommended limits:
  - The maximum recommended per day is;
    - 2 units* for men,
    - 1 unit* for women

    *1 unit = small glass of wine, ½ pint of beer or 25ml spirit

- It can cause low blood glucose, and so it can be dangerous, especially for diabetics taking glucose-lowering medication
- It is more harmful if you drink on an empty stomach
- When drunk in excess or over a long period:
  - Alcohol can be addictive
  - It can cause liver and heart disease
  - It can cause bleeding in the stomach, especially in those taking aspirin
  - It increases the risk of certain cancers

# Stop smoking

At initial consultation

**Ask if the patient smokes**

No: Praise them and emphasise the dangers of smoking

Yes: Continue as below

**Assess their motivation to stop**

Have they thought of stopping?

Have they ever tried to stop in the past?

(If so, how long for? What led them to start smoking again?)

Do they feel ready to try stopping now?

**Educate**

**For the patient who is not yet thinking of stopping:**

Emphasise the dangers of smoking:

- If you continue to smoke, you are more likely to have heart attacks, strokes, kidney disease and impotence (men),
- Giving up the habit is the most important thing you can do to protect your health
- Smoking is also bad for the health of those around you (e.g. children)

Explain that you can provide support to help them stop smoking if they choose to.

**For the patient who is ready and willing to stop:**

- Be positive, give encouragement
- Agree with them a date to stop = “quit date”
- Explain it is hard to stop, best to ask non-smoking family and friends to help
- Advise them to avoid the company of smokers, especially at first
- Arrange follow-up, reinforce success

**If the patient fails to stop:**

Start the process again; begin by re-assessing their motivation
Give more frequent (eg. monthly) follow up
Seek more support from the family and friends

*Drugs Give, if available and affordable, give nicotine replacement therapy (NRT) or bupropion.*

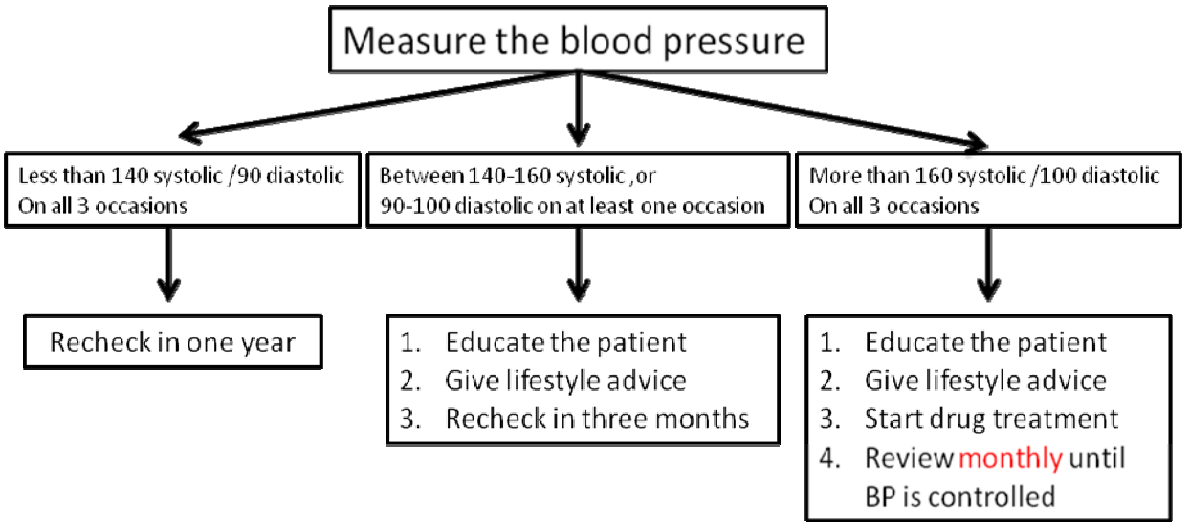
# Blood Pressure Control

**If on at least two BP readings are >140/90** (but not above the threshold as below)**,** give the standard CVD risk prevention and check BP at follow-ups.

**If the BP is above the treatment threshold** give therapeutic anti-hypertension treatment. See table below, noting that the treatment threshold is lower if known diabetes or cardiovascular disease. The target BP which is good "control" is lower for those with diabetes.

| | Treatment threshold | Target |
|---|---|---|
| **Any other patient** | ≥160/100 | <140/90 |
| **Cardiovascular disease** | ≥140/90 | <140/90 |
| **Diabetes + renal disease** | ≥130/80 | <130/80 |

For patients, other than those with diabetes or existing cardiovascular disease, follow the flow chart according to the BP measurements




**Explain** to <u>all</u> patients why they need BP treatment <u>even if they feel well</u>:

a. If left untreated, high blood pressure leads to heart attacks, stroke, visual problems, impotence and kidney failure
b. It can be controlled with lifestyle changes and medication, which must be taken every day – and is usually life long.
c. **Give lifestyle advice**–pages 6-8
d. They will need regular follow-ups including BP, blood, urine tests

**Arrange follow-up** as per flow chart. Repeat the actions on this page at the next appointment, using the new BP measurement.

# Therapeutic treatment for high blood pressure

**For patients found to have high BP when already on preventive treatment:**

(ie High CVD Risk score but no previous diagnosis of high BP)

- Increase the dose of the ACEi step by step until the BP is controlled, or until side effects or maximum dose (if available check creatinine at each step).
- If required add other drugs as above until the BP is controlled.
- **Stop** aspirin 75mg until BP is within target, then **restart**
- **Increase** to full dose statin (simvastatin 40mg)
- If BP is still not controlled despite four drugs, as below, at max dose - **refer**

**For patients with high BP but NOT already on preventive treatment:**

1. If < 55 years of age start ACEi

    E.g. **Enalapril** (starting dose 5mg, up to max 40mg) **or**

    **Lisinopril** (starting dose 10mg, up to max 80mg)

If BP still raised on maximum dose, add Amlodipine or other calcium channel blocker.

2. If > 55 years start with a calcium channel blocker

    e.g. Amlodipine (starting dose 5mg, up to max 10mg**)**

If BP still raised on maximum dose, add an ACEi

If required add Diuretic

    E.g. **Hydrochlorothiazide** (starting dose 12.5mg, up to max 25mg)

3. Add Alpha blocker

    E.g. **Doxazosin** (starting dose 4mg up to max 8mg)

Or (not as well as) add Beta blocker (unless COPD, asthma or heart failure)

    E.g. **Atenolol** (starting dose 50mg up to max 100mg)

    **Metoprolol** (starting dose 50mg, then 100mg, 150mg, max 200mg)

4. If BP is still not controlled despite four drugs at maximum dose - **Refer**

**For all patients requiring therapeutic drug treatment for high BP:**

Add full dose **statin** (simvastatin 40mg) and **folic acid** (10mg), both daily

Then, only once BP is controlled, add **Aspirin** 75mg daily

**For patients diagnosed with angina or a previous heart attack;**

Add a beta blocker eg. atenolol or metoprolol at step 1

Review medications as usual (see table page 12-13)

If you think the patient needs an alternative or new drug, refer.

# Cardiovascular drugs: Information table

| **Drug type/**Name (Doses, frequency) | **Contraindications** | **Common side effects** | **Recommendations if intolerant:** |
|---|---|---|---|
| **Statin**<br>Simvastatin<br>(20-80 mg od)<br>Atorvastatin<br>(10-80 mg od) | Pregnancy | · Sickness<br>· Diarrhoea<br>· Muscle ache<br>· Weakness | If muscle ache:<br>Stop drug, test blood for<br>· Liver function<br>· Creatinine Kinase.<br>If above normal range refer<br>Alternative = Niacin |
| **Anti-platelet**<br>Aspirin<br>(75 mg od) | Asthma<br>Stomach ulcer<br>History of bleeding e.g. vomiting blood or black stools<br>Breast-feeding | · Sickness<br>· Stomach pain<br>· Bleeding (e.g. vomiting blood/black stools) | If unwell refer **urgently** (page )<br>If vomiting blood or black stools refer.<br>Alternative = Clopidogrel 75mg/d. Use for secondary prevention only |
| **ACE Inhibitor**<br>Enalapril<br>(5-40 mg od)<br>Lisinopril<br>(10-80 mg od) | Pregnancy<br>Breast feeding<br>Kidney disease<br>ACEI related angiodema | · Dizziness<br>· Persistent dry cough<br>· Minor ankle swelling<br>· swelling of lips and tongue | Stop drug if dizzy/collapse<br>Alternative = Losartan 25-100 mg/d (for patients with cough)<br>If swelling of lips/tongue: **stop drug and refer immediately** |
| **Beta-blocker**<br>Atenolol<br>(50-100 mg od) | Asthma<br>Chronic Obstructive Pulmonary Disease | · Slow pulse<br>· Low blood pressure<br>· Low blood glucose in | · Stop drug if dizzy/collapse<br>· May need to adjust sulphonylureas or insulin medications |

| | | | |
|---|---|---|---|
| Metoprolol<br>(50 -200 mg od) | Pulse rate <60 beats/min<br><br>Heart failure (breathless and swollen ankles) | diabetic patients (see page 21)<br><br>• Worsening of heart failure | • Stop drug If diabetic loses awareness of 'hypo' and occurs frequently<br><br>• Stop drug if **acute** heart failure (e.g. breathless at rest, low BP)<br><br>• NB. If tolerated, Beta-blockers should be prescribed to all patients with angina or previous heart attack |
| **Thiazide diuretic**<br><br>Hydrochlorothiazide<br>(12.5-25mg od) | Pregnancy<br>Gout | • Dry mouth, weakness, muscle pain and cramps<br><br>• Lethargy | Check urea and electrolytes.<br>Stop if ;<br>• High urea<br>• High creatinine<br>• High/Low sodium<br>• Low potassium<br>Stop in severe gout<br>Alternative = frusemide (20-40mg/d) Give only if urea and electrolytes normal. |
| **Folic acid**<br>(10mg od) | NB Must not be given without Vitamin B12 supplements in pernicious anaemia (B12 deficiency) | • <u>Rarely</u> can cause sickness and diarrhoea | Stop or decrease dose |

# Therapeutic prescribing in general

For the CVD at risk alone just give the preventive drugs (set low dose of) drugs as above.

For patients with BP >160/100, or diabetes or renal disease, then give the therapeutic dose treatment.

- When starting any new drug, refer to the information tables to check for contraindications first. If present do not prescribe that drug - look for an alternative.

- When starting therapeutic treatment, start with the low dose and increase gradually until is controlled, including:

    - Only increase the dose of <u>one drug at a time</u>
    - The patient may increase the dose at home without an appointment, if planned (e.g. metformin, ACEi)
    - Explain to the patient that they may double the dose after one or two weeks if they have no new symptoms. After another two weeks, they may double the dose again if necessary.
    - After explaining doses, give clear written instructions to the patient

- When starting or increasing the dose of any tablet, warn patients of possible side effects.

- At the next appointment, always ask if the patient has experienced any new symptoms (check these against the side effects in the table)

- Decide with the patient whether they can tolerate the side effects, whether to decrease the dose, or stop and try a different drug.

- Woman of childbearing age, ask if they are pregnant, planning pregnancy or are breast feeding. If yes – obtain advice from a specialist. If no ask whether they are taking any contraception before you prescribe.

# Signs and Symptoms of Cardiovascular Disease

- If any patient, but especially those with a high CVD risk, mentions any of the following symptoms, suspect a cardiovascular disease:
    - Chest pain
    - Breathlessness
    - Ankle swelling
    - Weakness
    - Loss of speech
    - Pain in the legs

- You must find out more information from the history and examination to help you make a diagnosis, using pages 17-22.
- If you suspect cardiovascular disease you should refer the patient to a specialist. See below to decide whether to refer immediately, or for a routine appointment

# General referral guidelines

There are 2 categories of referral;

1. Immediate
2. Routine

**Immediate referrals**

- All severely ill patients (according to vital signs; see page 17)
- Suspected heart attack (see page 17)
- Suspected acute heart failure (see page 18)
- Suspected stroke (see page 19)
- Suspected ischaemic limb (see page 19)
- Unconscious or drowsy
- Sudden swelling of the lips/tongue +/- noisy or difficult breathing
- Vomiting blood

**Routine referrals**

- Patients in whom you suspect a cardiovascular disease (e.g. angina, chronic heart failure) if they do not look ill and no red flag signs (see below)
- Patients with uncontrolled BP or blood glucose despite maximum treatment
- Women who are pregnant or trying to become pregnant who have diabetes, high BP or cardiovascular disease
- Any other illness that you cannot diagnose, or cannot treat

# “Red flags”

# Signs of severe illness

- Breathing Rate >20/min (adults)
- Pulse Rate more than 100/min or less than 40/min
- Temperature ≥38°C, if source of infection unclear or other red flag present
- Low blood pressure of less than 90mmHg systolic
- High blood pressure of more than 200mmHg systolic or 120mmHg diastolic
- Unconscious or drowsy patient
- Pale, sweaty, cold to touch

**If any of the above are present, refer the patient immediately to hospital**

# Chest Pain

*Is there also fever, breathlessness or cough?*

If 2 out of the above 3 are present, the diagnosis is most likely a **chest infection** or **pneumonia**. Consider **TB** if symptoms present for more than 2 weeks.

*Is the pain in the centre of the chest? Does the pain go into the left arm or throat?*

Yes -The pain may be related to the heart. Ask further questions below.

*Did the pain start during exercise (e.g. walking up hill) and go away with rest?*

Yes – This is most likely to be **angina**.

*Did the pain start when resting? Did it last more than 15 minutes?*

Yes – this could be a **heart attack**. The patient may also feel sick, sweaty or breathless. Give aspirin 300mg if no contraindications and transfer to hospital immediately.

# Breathlessness

*Is the breathlessness present when resting?*

This is a sign of severe illness. Refer immediately to hospital (see page 15).It could indicate many conditions including pneumonia, heart attack or acute heart failure

*Is there also fever or cough?*

If one of the above is also present, this could be a **chest infection** or **pneumonia**. If present for more than 2 weeks, consider **TB**.

*Is there wheeze when you listen to the chest? Are they a smoker?*

If yes - this could be **asthma** or **chronic obstructive pulmonary disease**.

*Is there also chest pain?*

This could be related to the heart, see chest pain above for further questions.

*Does the patient get breathless when lying flat? Does it wake them at night?*

If yes to either – this could be **chronic heart failure**

# Leg Swelling

*Is the swelling in one leg only? Is it hot, swollen and painful?*

This could be **infection** of the skin or a **blood clot**.

*Is the swelling of both ankles, moderate and with no other symptoms?*

This could be a drug side effect e.g. ACEi (see table page 12).

*Are there blue or purple coloured veins visible? The skin may be discoloured/ dry itchy.*

This could be varicose veins.

*Is the swelling of both ankles, and is the patient also breathless?*

This could be **heart failure**. See breathlessness above.

# Pain in the legs

*Is there pain in one leg only? Is the leg hot, swollen and tender to touch?*

This could be **infection** of the skin or a **blood clot**.

*Is one or are both legs painful on walking? And does the pain ease after a few minutes of rest?*

This is most likely due to narrowing of the blood vessels in the legs; **peripheral vascular disease**. It can cause similar pain in the buttocks.

*Has one leg become suddenly painful, cold, pale and numb?*

This may be **acute limb ischaemia** (the blood supply to the limb is blocked). The patient usually has a history of peripheral vascular disease. It is an emergency needing immediate referral to hospital.

# One-sided weakness or loss of speech

*Is there sudden weakness of one arm, or the arm and leg on the same side?*

*and, or*

*Is there a sudden loss of speech, or is the speech slurred?*

*and, or*

*Is there sudden loss of vision on one side?*

- These symptoms are most likely be caused by a **stroke**.
- If symptoms resolve within 24 hours then it is called a mini-stroke, but there is a high risk of further episodes which could be permanently disabling
- NB. In stroke the vital signs may remain normal

**Actions:**

Do not allow the patient anything to eat or drink

Do not give any medication orally

**Refer all patients with one-sided weakness or speech loss immediately to the county general hospital**

**NB. If the patient is taking glucose lowering drugs, the symptoms could be due to hypoglycaemia. Treat as for unconscious patient with diabetes on page 22. If no improvement – refer to hospital immediately

# Diabetes

Diabetes and CVD are conditions linked by common risk factors. Clients with CVD are more likely to get diabetes. Diabetes requires strict control to minimise worsening CVD.

**Screen for diabetes in all people with CVD risk/ existing CVD, also:**

- If are overweight/ obese
- If complains of;

  passing large volumes of urine, thirsty, feeling tired often, recurrent infections e.g. skin, urinary tract, genital thrush

**Screen with a random blood glucose**

**If high do a fasting blood glucose (or repeat the random glucose)**

**Two high blood glucose** values confirm **diabetes**

(raised 2xRBG or 2xFBG, or 1xRBG and 1xFBG) confirm diabetes if:

| |
|---|
| **Random Blood Glucose (RBG)** > 11 mmol/l |
| **Fasting Blood Glucose (FBG)** > 7.0 mmol/l |

**Educate the diabetic patient**

Explain that diabetes is a disease of blood sugar control which can lead to heart attacks, stroke, kidney problems and poor vision. These can be prevented with good blood glucose control

**Management** is similar to others with CVD, only even more important to:

- Adopt a healthy lifestyle

  Stop smoking, daily activity, healthy diet
- After 3 months, recheck the blood glucose. If remains high, start medication
- Start medication; metformin, according to the details in the supplementary clinical deskguide - or refer to the county general hospital
- Ensure the patient is reviewed every 3 months, or sooner if any concerns

NB. See details ‘Diagnosis and management of diabetes’ in the clinical desk guide.

# Treatment adherence

- At every appointment, check you have the correct details for the patient (Name, address, date of birth, mobile phone number, relative contact details)
- At every appointment, ask if tablet taking is regular, and if any tablets have been missed.
- Do not criticise!

**If adherence is good**
Give encouragement to the patient and continue as for a follow-up appointment
Discuss the importance of taking tablets regularly and attending appointments.

**If adherence is poor**
Find out exactly which tablets and what doses they are taking, if any.
Try to understand why they have stopped taking the tablets (Reasons may include side effects, false beliefs, social pressures etc)
Continue management according the condition, as follows:

**Restarting treatment after it has been interrupted; for**

1. **CVD risk management**
   Ask if any new symptoms – if so refer to pages 15-22
   Check BP
   Recalculate risk score – page 3
   Repeat education
   Restart preventive treatment
   Arrange next follow-up visit in one month.
   6 monthly follow-up thereafter if adhering to treatment

2. **High BP**
   Ask if any new symptoms – if so refer to pages 15-22
   Check BP
   Repeat education
   Restart treatment from step one (lowest dose ACEi) - see page 10
   Review weekly, reinforcing lifestyle advice / increasing dose until BP controlled
   6 monthly follow-up thereafter if adhering to treatment

3. **Diabetes**
   Recheck blood glucose and BP.
   If glucose is high, ie RBG >200mg/dL(11.1 mmol/l) or FBG >126mg/dL (7.0 mmol/l) or $HBA_{1C}$ > 7%, and the patient describes symptoms of diabetes; restart with education, diet, daily activity *and* metformin.
   If glucose controlled despite no treatment, restart from step one: lifestyle advice
   Follow-up *monthly*, increasing drug doses / adding further drugs as required.
   3 monthly follow-up thereafter if controlled and adhering to treatment

# Missed appointments

**Take action** if the patient does not come for appointment or some days later:

- Call mobile phone number, encourage them to return.
- If can't contact, or don't return, ask someone eg. a community health worker, to home visit if feasible
- When they return try to find out why they did not attend (e.g. money, transport, family duties, don't believe they need to take tablets)