World Health Organization

WHO PEN Protocol 1

Prevention of Heart Attacks, Strokes and Kidney Disease through Integrated Management of Diabetes and Hypertension (Best Buy)

When could this Protocol be used?

- The protocol is for assessment and management of cardiovascular risk using hypertension, diabetes mellitus (DM) and tobacco use as entry points
- It could be used for routine management of hypertension and DM and for screening, targeting the following categories of people:
  - age > 40 years
  - smokers
  - waist circumference (≥ 90 cm in women ≥100 cm in men)
  - known hypertension
  - known DM
  - history of premature CVD in first degree relatives
  - history of DM or kidney disease in first degree relatives

Follow instructions given in Action 1 to Action 4, step by step

FIRST VISIT

Action 1. Ask about:

- Diagnosed heart disease, stroke, TIA, DM, kidney disease
- Angina, breathlessness on exertion and lying flat, numbness or weakness of limbs, loss of weight, increased thirst, polyuria, puffiness of face, swelling of feet, passing blood in urine etc
- Medicines that the patient is taking
- Current tobacco use (yes/no) (answer yes if tobacco use during the last 12 months)
- 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

References

World Health Organization. *Prevention and control of noncommunicable diseases ; Guidelines for primary health care,* 2012

World Health Organization. *Scaling up action against noncommunicable diseases. How much will it cost?,* 2011

World Health Organization. *Prevention of cardiovascular diseases; Pocket guidelines for assessment and management of cardiovascular risk,* 2008

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FIRST VISIT

Action 2. Assess (physical exam and blood and urine tests):

- Waist circumference
- Measure blood pressure, look for pitting odema
- Palpate apex beat for haeving and displacement
- Auscultate heart (rhythm and murmurs)
- Auscultate lungs (bilateral basal crepitations)
- Examine abdomen (tender liver)
- In DM patients examine feet; sensations, pulses, and ulcers
- Urine ketones (in newly diagnosed DM) and protein
- Total cholesterol
- Fasting or random blood sugar (diabetes= fasting blood sugar≥7 mmol/l (126 mg/dl)) or random blood sugar ≥11.i mmol/l (200 mg/dl))

(Point of care devices can be used for testing blood sugar if laboratory facilities are not available)

Action 3. Estimate cardiovascular risk (in those not referred):

- Use the WHO/ISH risk charts relevant to the WHO subregion (Annex and CD)
- Use age, gender, smoking status, systolic blood pressure, DM (and plasma cholesterol if available)
- If age 50-59 years 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
- If cholesterol assay cannot be done use the mean cholesterol level of the population or a value of 5.2 mmol/l to calculate the cardiovascular risk)
- If the person 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 family history of premature vascular disease, obesity, raised triglyceride levels

Action 4: Referral criteria for all visits:

- 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
- 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

If referral criteria are not present go to Action 5

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FIRST VISIT

Action 5. Counsel all and treat as shown below

Risk < 20%

- Counsel on diet, physical activity, smoking cessation and avoiding harmful use of alcohol
- If risk < 10% follow up in 12 months
- If risk 10 - < 20% follow up every 3 months until targets are met, then 6-9 months thereafter

Risk 20 to <30%

- Counsel on diet, physical activity, smoking cessation and avoiding harmful use of alcohol
- Persistent BP ≥ 140/90 mm Hg consider drugs (see below ** Antihypertensive medications)
- Follow-up every 3-6 months

Risk > 30%

- Counsel on diet, physical activity, smoking cessation and avoiding harmful use of alcohol
- Persistent BP ≥ 130/80 consider drugs (see below ** Antihypertensive medications)
- Give a statin
- Follow-up every 3 months, if there is no reduction in cardiovascular risk after six months of follow up refer to next level

Important practice points

Consider drug treatment for following categories

- All patients with established DM and cardiovascular disease (coronary heart disease, myocardial infarction, transient ischaemic attacks, cerebrovascular disease or peripheral vascular disease), renal disease. If stable, should continue the treatment already prescribed and be considered as with risk >30%
- People with albuminuria, retinopathy, left ventricular hypertrophy
- All individuals with persistent raised BP ≥ 160/100 mmHg; antihypertensive treatment
- All individuals with total cholesterol at or above 8 mmol/l (320 mg/dl); lifestyle advice and statins

**** Antihypertensive medications**

- If under 55 years low dose of a thiazide diuretic and/or angiotensin converting enzyme inhibitor
- If over 55 years calcium channel blocker and/or low dose of a thiazide diuretic
- If intolerant to angiotensin converting enzyme inhibitor or for women in child bearing age consider a beta blocker
- Thiazide diuretics and/or long-acting calcium channel blockers are more appropriate as initial treatment for certain ethnic groups. Medications for compelling indications should be prescribed, regardless of race/ethnicity
- Test serum creatinine and potassium before prescribing an angiotensin converting enzyme inhibitor

Additional actions for individuals with DM:

- Give an antihypertensive for those with BP ≥ 130/80 mmHg
- Give a statin to all with type 2 DM aged ≥ 40 years
- Give Metformin 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
- Give a sulfonylurea to patients who have contraindications to metformin or if metformin does not improve glycaemic control.
- Give advise on foot hygiene, nail cutting, treatment of calluses, appropriate footwear and assess feet at risk of ulcers using simple methods (inspection, pin-prick sensation)
- Angiotensin converting enzyme inhibitors and/or low-dose thiazides are recommended as first-line treatment of hypertension. Beta blockers are not recommended for initial management but can be used if thiazides or angiotensin converting enzyme inhibitors are contraindicated.
- Follow up every 3 months

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FIRST VISIT

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 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

SECOND VISIT

Repeat

- Ask about: new symptoms, adherence to advise on tobacco and alcohol use, physical activity, healthy diet, medications etc
- 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