Appendix 1: flowcharts for cardiovascular disease prevention

The risk assessment and treatment flowcharts for cardiovascular disease (CVD) prevention care used in this project are based on international guidelines of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure [1], the European Society of Hypertension/European Society of Cardiology [2] and the World Health Organization/International Society of Hypertension [3-5], adapted to the local context as explained below. The flowchart for diabetes care is based on guidelines by WHO, the American Diabetes Association [3, 5-7] and a flowchart designed by Gill et al. for diabetes care in rural South Africa [7]. Drug choices indicated in the flowcharts are based on local availability and costs.

Women in fertile period

In pregnant women, the first choice of treatment is alpha methyldopa and labetolol combination therapy [2]. Angiotensin Converting Enzyme Inhibitors (ACEI) have shown to be teratogenic and Angiotensin II Receptor Blockers (ARBs) have not been proven to be safe during pregnancy. A large proportion of the women in the setting of this project do not take birth control measures, therefore ACEI (and ARBs but these are not first line therapy in this setting) are contra indicated for all women in the fertile age (18-45 years) unless they take birth control measures. The first choice therapy for these women is a calcium channel blocker, if at high risk for CVD combined with methyldopa. If blood pressure is not controlled, hydralazine (labetolol is not available in this setting) is recommended as additional therapy. Pregnant women are excluded from QUICK-I, they will receive standard care according to guidelines.

Antiplatelet therapy

Low dose of antiplatelet therapy is recommended for primary prevention in high risk groups provided that blood pressure is controlled. WHO guidelines state that the benefit of antiplatelet therapy could be lower in populations where hemorrhagic stroke is more prevalent than ischemic heart disease [3]. It is expected that the study population consist predominantly of patients with hypertension. The risk of adding aspirin for all high risk patients is considered too high because of the risk of hemorrhagic stroke. It will be left to the doctors’ judgment if treatment with antiplatelet therapy is beneficial in individual cases. For secondary stroke prevention, WHO recommends low dose aspirin in presumed ischemic stroke. Hemorrhagic stroke is a contraindication for antiplatelet therapy. In the setting of this project, differentiation between hemorrhagic and ischemic stroke is not possible. Antiplatelet therapy is therefore not standard treatment for secondary stroke prevention. Again, the decision to start antiplatelet therapy in individual cases will be left to the doctors judgment [8].
CVD risk assessment and treatment

Stage 1 hypertension
SBP 140-159 or DBP 90-99

Nifedipine SR 20mg b.d.

BP not on target? increase dose or add new drug

ADD Captopril 12.5 mg b.d

Stage 2 hypertension
SBP ≥ 160 mmHg or DBP ≥ 100 mmHg

Captopril 12.5 mg b.d
Nifedipine SR 20mg b.d.

BP not on target? increase dose or add new drug

ADD simvastatin 20 mg o.d.

Captopril 12.5 mg b.d
Nifedipine SR 20mg b.d.

BP not on target? increase dose or add new drug

ADD simvastatin 20 mg o.d.

Hypertension with compelling indications

ACEI: Angiotensin Converting Enzyme Inhibitor
AP: Angina pectoris
DBP: Diastolic blood pressure
SBP: Systolic blood pressure
MI: Myocardial infarction
RF: Risk factors
TC: Total Cholesterol
TOD: target organ damage

*TOD/RF screening (also see pink box): Blood tests: potassium, creatinine, lipid profile, fasting glucose
Urine tests: microalbuminuria/proteinuria
ECG

Visit frequency every 2 weeks during treatment installation/increase of dosage. If stable once per month

WOMEN IN FERTILE AGE: NO ACEI (Captopril)
Treat with Methyldopa (start 250 mg b.d.) and Nifedipine SR (start 20mg b.d.)

PREGNANT WOMEN (cut off 160/110 mmHg): NO ACEI, quit statins during pregnancy.
Treat with Methyldopa (start 250 mg b.d.). If not on target: add Nifedipine SR (start 20mg b.d.). or Hydralazine 20 mg t.d

Compelling indications:
- Heart Failure
- Post myocardial infarction/Angina pectoris
- Diabetes
- Chronic Kidney Disease
- Recurrent stroke prevention
- High coronary disease risk: 3 out of 5 of the following risk factors: smoking, dyslipidemia, family history, premature CVD (age < 55 M <65 F), microalbuminuria, left ventricular hypertrophy.

Figure 1: CVD risk assessment and treatment. Choices of drugs are based on international guidelines [1-5] and local availability.
Figure 2: Diabetes treatment. Choices of drugs are based on international guidelines [3, 5-7] and local availability.
References


