

Suggested treatment for selected cardiac disorders at secondary-level health care facilities in low-resource countries

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Table 1. Suggested treatment for chronic cardiovascular disorders

Condition	Drug	Dose*	Remarks
Post-MI CHD (uncomplicated)	<ul style="list-style-type: none"> Aspirin ACE inhibitors Beta-blockers Statins Nitrates 	<ul style="list-style-type: none"> 75–150 mg Enalapril 10 mg or equivalent Atenolol 50 mg or equivalent Atorvastatin 10–20 mg or equivalent Nitrates (may be required for post-MI angina) 	<ul style="list-style-type: none"> Needs individual titration Needs individual titration Needs individual titration For symptomatic relief in case of chest pain
Chronic stable angina (uncomplicated)	<ul style="list-style-type: none"> Aspirin Beta-blockers Nitrates Additional antianginal drugs, if required Statins ACE inhibitors 	<ul style="list-style-type: none"> 75–150 mg Atenolol 50 mg or equivalent As required Calcium-channel blockers Atorvastatin 10–20 mg or equivalent Enalapril 10 mg or equivalent 	<ul style="list-style-type: none"> Needs individual titration For symptomatic relief in case of chest pain Needs individual titration Needs individual titration Needs individual titration
Congestive heart failure (uncomplicated)	<ul style="list-style-type: none"> ACE inhibitors or angiotensin II receptor blockers Beta-blockers Diuretics Nitrates Digoxin Spironolactone 	<ul style="list-style-type: none"> Maximally tolerated dose Carvedilol/bisoprolol/metoprolol (maximally tolerated dose) Furosemide (as required) As required 25–50 mg 	<ul style="list-style-type: none"> Needs individual titration In advanced cases of heart failure
Hypertension (uncomplicated)	<p><i>(When pharmacological treatment is indicated)</i></p> <ul style="list-style-type: none"> Beta-blockers Calcium-channel blockers Thiazides ACE inhibitors Angiotensin II receptor blockers 	<ul style="list-style-type: none"> Atenolol 50 mg or equivalent Amlodipine 5 mg Hydrochlorothiazide 25 mg or Indapamide or equivalent Enalapril 10 mg or equivalent Losartan 50–100 mg or equivalent 	<ul style="list-style-type: none"> Chosen depending on the underlying problem, combinations/multiple treatment may be required Dose titration required
RHD—mitral stenosis (uncomplicated)	<ul style="list-style-type: none"> Antiarrhythmic drugs Diuretics Secondary penicillin prophylaxis penicillin V/erythromycin orally if penidure NA Anticoagulants Balloon mitral valvotomy/surgery 	<ul style="list-style-type: none"> Digoxin 0.25 mg OD Furosemide 40 mg OD Penidure 1.2 mU once in 3 weeks or Warfarin/dicoumarol (dose titrated) Required in most as a therapeutic measure 	<ul style="list-style-type: none"> In case of atrial fibrillation, heart failure In cases with atrial fibrillation or history of embolism

MI: myocardial infarction; CHD: coronary heart disease; ACE: angiotensin-converting enzyme; RHD: rheumatic heart disease

*Only suggested, can be modified as per the requirement/infrastructure and discretion of the physician

Table 2. Suggested treatment for acute cardiovascular disorders

Condition	Drug	Dose*	Remarks
Acute ST elevation MI (uncomplicated)	<ul style="list-style-type: none"> Inj. streptokinase Nitroglycerine/nitrates Morphine Metoprolol Aspirin Heparin 	<ul style="list-style-type: none"> 1.5 mU once As required for 24–48 hours 2–5 mg (3–4 times) 25–50 mg 2 times a day 325 mg initial dose and later 150 mg OD 5000 units initial dose and 1000 units/hour (maximum) for 48–72 hours 	<ul style="list-style-type: none"> Needs individual titration Indefinite duration If required
	<ul style="list-style-type: none"> Atorvastatin Enalapril or any other equivalent ACE inhibitor 	<ul style="list-style-type: none"> 10 mg OD 1.25–5 mg initially 	<ul style="list-style-type: none"> Indefinite duration Titrated dose
Non-ST elevation acute coronary syndrome (uncomplicated)	Heparin	24,000 IU/day for 24–72 hours	<ul style="list-style-type: none"> Low molecular-weight heparin expensive but does not need monitoring
	<ul style="list-style-type: none"> Inj. morphine Inj. nitroglycerine Metoprolol Atorvastatin Aspirin Clopidogrel 	<ul style="list-style-type: none"> 15–20 mg 50 mg (total dose) 50–100 mg BD 10–20 mg OD 150 mg OD 75 mg OD 	<ul style="list-style-type: none"> Dosage depends on individual requirement Needs individual titration Needs individual titration Needs individual titration
Congestive heart failure—acute (uncomplicated)	<ul style="list-style-type: none"> Oxygen inhalation Inj. frusemide Inj. nitroglycerine Inj. dopamine/dobutamine Ramipril 	<ul style="list-style-type: none"> As required As required (40 mg upwards) Titrated dose As required for symptomatic relief 5–10 mg or as tolerated 	

MI: myocardial infarction; ACE: angiotensin-converting enzyme

*Only suggested, can be modified as per the requirement/infrastructure and discretion of the physician

Table 3. Requirements for the management of acute cardiovascular disorders

Condition	Staff requirement	Duration of stay	Investigations (number)	Other investigations	Remarks
Acute ST elevation MI, non-ST elevation MI (uncomplicated)	<ul style="list-style-type: none"> In an ICU with 10–15 beds, for each shift (2–3/day) One resident physician—continuous One nurse for 2 beds Two orderlies One ECG technician on call One senior doctor on call 	<ul style="list-style-type: none"> In CCU 3–5 days In hospital 5–7 days 	<ul style="list-style-type: none"> Cardiac enzymes (3) Lipid profile (1) Haemogram (1) LFT (1) RFT (1) Coagulation parameters—as required ECG (5 for whole duration) ECHO (1 or as required) Blood sugar (1) 	<ul style="list-style-type: none"> At discharge TMT—1 (variable) ECHO—1 Angiogram—variable 	50%–70% may require further referral for revascularization
Congestive heart failure due to valvular, hypertensive or ischaemic disease (uncomplicated)	<ul style="list-style-type: none"> In Intensive Care Unit with 10–15 beds, for each shift (2–3/day) One resident physician—continuous One nurse for 2 beds Two orderlies One ECG technician on call One X-Ray technician on call One senior doctor on call 	5–7 days	<ul style="list-style-type: none"> ECHO 1–2 X-ray (1–3) ECG (3) Lipid profile (1) LFT (1) RFT (3) Blood sugar (1) Haemogram (1) Cardiac enzymes (1) 		

MI: myocardial infarction; ICU: intensive care unit; LFT: liver function tests; RFT: renal function tests; ECG: electrocardiogram

Table 4. Requirements for the management of chronic cardiovascular disorders

Condition	Staff requirement	Frequency of visits to OPD	Time taken in the OPD	Investigations	Frequency/year	Remarks
RHD—mitral stenosis (uncomplicated)	<ul style="list-style-type: none"> • One doctor • 1–2 nurses • 1 counsellor/dietician • 1 ECG technician • 2–3 orderlies 	Once in 3 months	10 minutes	<ul style="list-style-type: none"> • ECHO • ECG • X-ray • Serum electrolytes • Prothrombin time 	1 2 1 2 3–4 times or more in a year (if on anticoagulants)	Many will require referral to a tertiary-level health facility for therapeutic valvuloplasty
Chronic stable angina (uncomplicated)	<ul style="list-style-type: none"> • One doctor • 1–2 nurses • 1 counsellor/dietician • 1 ECG technician • 2–3 orderlies 	2–4 visits a year (variable)	10 minutes	<ul style="list-style-type: none"> • ECG • X-ray • ECHO • Lipid profile • RFT • Serum electrolytes 	2–3 times a year 1 variable 2/year (variable) 2–4 times/year (variable) 2–4 times/year (variable)	
Post-MI CHD (uncomplicated)	<ul style="list-style-type: none"> • One doctor • 1–2 nurses • 1 counsellor/dietician • 1 ECG technician • 2–3 orderlies 	3–4 visits/year (variable)	10 minutes	<ul style="list-style-type: none"> • ECG • X-ray • ECHO • Lipid profile • RFT • Serum electrolytes 	2–3/year (variable) 1 (variable) 2 2–3/year (variable) 2–3/year (variable) 2–3/year (variable)	Variable proportion (30%–40%) may refer for revascularization

RHD: rheumatic heart disease; ECG: electrocardiogram; RFT: renal function tests; MI: myocardial infarction; CHD: coronary heart disease