



Practical Pharmacology

As per the Competency Based Medical Education Curriculum (NMC)

**Pramila V Yadav
Pradnya Deolekar
Kavitha Dongerkery
Mayakalyani Srivathsan**

6th
Edition

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Clinical Pharmacology Section

Practical 9: Rational, correct and legible generic prescription writing for a given condition and communicating the same to the patient.

Exercise: Write a prescription for the following conditions.

7.1: CARDIOVASCULAR SYSTEM

1. **Mr Harish, 60 years of age is a known case of congestive cardiac failure (CCF). He presents to the OPD with signs of acute CCF. Prescribe suitable drugs for this patient.**

Rx:

- Tab Enalapril 5 mg once daily for 15 days
- Tab Metoprolol ER (25 mg) half tablet once daily for 15 days

Non-pharmacological treatment:

- Salt and water restriction
- Weight reduction with regular exercise

Follow up: After 15 days for evaluation and dose adjustment, if required.

Dispense: 15 tablets of enalapril 5 mg and 8 tablets of metoprolol 25 mg ER

Doctor sign and stamp
Registration no.

Important points

- The dose can be gradually increased to the maximum tolerated dose. (Metoprolol ER 200 mg/day, enalapril 40 mg/day).
- Electrolyte monitoring should carry out throughout the therapy
- Potassium supplements, potassium-sparing diuretics and ACE inhibitors (increase serum K) and diuretics (decrease potassium). use these drugs cautiously.

2. Prescribe for a patient with heart failure with LVF (>40%) with fluid retention.

Rx:

- Tab Enalapril 5 mg 1 tablet once daily for 15 days
- Tab Metoprolol ER (25 mg) half tablet once daily for 15 days
- Tab Furosemide 20 mg twice daily for 15 days

Non-pharmacological treatment:

- Salt and water restriction
- Weight reduction with regular exercise

Follow up: After 15 days with serum electrolytes for evaluation and dose adjustment if required.

Dispense: 15 tablets of enalapril 15 mg, 8 tablets of metoprolol ER 25 mg, and 30 tablets of furosemide 20 mg

**Doctor sign and stamp
Registration no.**

Important points

- The dose can be gradually increased to the maximum tolerated dose. (Metoprolol ER 200 mg/day, enalapril 40 mg/day, furosemide 600 mg/day in the clinically severe edematous state).
- Electrolyte monitoring should be continued throughout the therapy
- Potassium supplements, potassium-sparing diuretics and ACE inhibitors (increase serum K) and diuretics (decrease potassium). Use these drugs cautiously.

3. Patient M had difficulty breathing at rest, forgetfulness, mild fatigue, feeling chilled requiring blankets, increased urinary frequency, incontinence, and swelling in her bilateral lower extremities that is new onset and worsening. Subsequently, she has not ambulated from bed for several days except to use the restroom due to feeling weak, fatigued, and short of breath. She was diagnosed with heart failure with LVEF <35% Write a prescription for CCF (moderate)

Moderate CCF:

Rx:

- Tab Enalapril 5 mg 1 tablet once daily
- Tab Metoprolol 50 mg ER once daily
- Tab Furosemide 20 mg twice daily till edema subsides
- Tab Spironolactone 25 mg once daily

Non-pharmacological treatment

- Salt and water restriction
- Weight reduction with regular exercise

Follow up: After 15 days with serum electrolytes for evaluation and dose adjustment if required.

Dispense: 15 tablets of enalapril 5 mg, 15 tablets of metoprolol 50 mg ER, 30 tablets of furosemide 20 mg and 15 tablets of spironolactone 25 mg

Doctor sign and stamp

Registration no.

Important points

- The dose can be gradually increased to the maximum tolerated dose.
- (Metoprolol ER 200 mg/day, Enalapril 40 mg/daily).
- Electrolyte monitoring should be continued throughout the therapy
- Potassium supplements, potassium-sparing diuretics and ACE inhibitors (increase serum K) and diuretics (decrease potassium). Use these drugs cautiously.

4. A 62-year-old male smoker with type 2 diabetes mellitus and hypertension presents with a 4-month history of exertional chest pain. Physical examination shows a blood pressure of 152/90 mm Hg but is otherwise unremarkable. The ECG is normal, and laboratory tests show a fasting blood glucose value of 110 mg/dL, glycosylated hemoglobin 6.0%, creatinine 1.1 mg/dL, total cholesterol 160, LDL 135 mg/dL, HDL 38, and triglycerides 147 mg/dL. His exercise stress test is positive. Write a prescription for the patient. (Angina Pectoris)

Rx:

- Tab Isosorbide mononitrate 10 mg 1 tablet twice daily
- Tab Metoprolol ER 25 mg 1 tablet once daily
- Tab Aspirin 75 mg 1 tablet once daily
- Tab Atorvastatin 10 mg 1 tablet once daily for 15 days

Non-pharmacological treatment

- No smoking or alcohol
- Moderate exercise
- Weight reduction

Follow up: After 15 days for evaluation and dose adjustment if required.

Dispense: 30 tablets of isosorbide mononitrate 10 mg, 15 tablets of metoprolol 25 mg ER, aspirin 75 mg and atorvastatin 10 mg each

Doctor sign and stamp

Registration no.

Important points

- Instead of isosorbide mononitrate, isosorbide dinitrate 40 mg once daily can be prescribed.

- Dose of isosorbide dinitrate for prophylaxis can be increased to max 120 mg/day, atorvastatin 80 mg/day,
- Maximum dose of metoprolol ER 25 mg is 200 mg/day, or atenolol can be increased to max 100 mg/day
- Instead of atenolol and isosorbide dinitrate, calcium channel blockers, such as diltiazem ER can be prescribed.

5. A 57-year-old male presents to OPD with exertional chest pain. Physical examination shows a blood pressure of 152/90 mm Hg but is otherwise unremarkable. Physical examination shows a blood pressure of 152/90 mm Hg but is otherwise unremarkable. The ECG is normal. What will be advised for this patient? (Acute Angina Pectoris)

Rx:

- Tab Nitroglycerine 0.5 mg 1 tablet kept under the tongue (sublingual) until every 5 minutes, till a maximum of 10 minutes (can add two more tablets at 5-minute intervals)
- Tab Aspirin 325 mg stat and tab Clopidogrel 300 mg stat
- When the acute attack subsides, start prophylaxis with
- Tab Isosorbide dinitrate 10 mg 1 tablet twice daily for 5 days
- Tab Metoprolol ER 25 mg 1 tablet once daily for 15 days
- Tab Aspirin 75 mg once a day lifelong
- Tab Atorvastatin (10 mg) 1 tablet once daily for 15 days

Follow up: After 15 days for evaluation and dose adjustment if required.

**Doctor sign and stamp
Registration no.**

Important points

- Nitroglycerine may cause postural hypotension so it should be given in lying down or sitting position.
- Instead of tab Nitroglycerine, tab Isosorbide dinitrate 5 mg tablet sublingually can also be used.
- If there is no relief then suspect acute myocardial infarction or unstable angina and transfer the patient to the ICCU.
Maximum dose of isosorbide dinitrate for prophylaxis: 120 mg/day
Maximum dose of atorvastatin for prophylaxis: 80 mg/day

6. Mathura a 35-year-old executive is diagnosed with essential hypertension. The average BP from 3 consecutive readings is 158/100 mm Hg. Prescribe suitable drugs for this patient. (Mild hypertension)

Rx:

Tab Enalapril 5 mg 1 tablet once daily for 15 days

Non-pharmacological treatment

- Salt and water restriction
- Weight reduction with regular exercise

- To quit smoking if smoker
- Reduce alcohol intake

Follow up: After 15 days for evaluation and dose adjustment, if necessary.

Dispense: 15 tablets of enalapril 5 mg

Doctor sign and stamp
Registration no.

Important points

- Instead of enalapril, ramipril can be prescribed.
- If patients experience dry cough then replace enalapril with olmesartan 20 mg once day for 15 days.
- Instead of ACE inhibitor ARBs, such as telmisartan, olmesartan can be prescribed.
- Uptitration should be gradual.
- Treatment may have to be continued for life long.

7. **Mr Raj a 50-year-old man is diagnosed with essential hypertension. The average BP from 3 consecutive readings is 162/110 mm Hg. Prescribe suitable drugs for this patient. (Moderate hypertension)**

Rx:

- Tab Enalapril 5 mg 1 tablet once daily for 15 days
- Tab Amlodipine 5 mg 1 tablet once daily for 15 days

Non-pharmacological treatment

- Salt and water restriction
- Weight reduction with regular exercise
- To quit smoking is smoker
- Reduce alcohol intake

Follow up: After 15 days for evaluation and dose adjustment, if necessary.

Dispense: 15 tablets of enalapril 5 mg and amlodipine 5 mg each

Doctor sign and stamp
Registration no.

Important points

- Instead of enalapril, ramipril can be prescribed.
- If patients experience dry cough then replace enalapril with olmesartan 20 mg once a day for 15 days.
- Instead of ACE inhibitor ARBs, such as telmisartan, olmesartan can be prescribed.
- Uptitration should be gradual.
- Treatment may have to be continued for life long.

- 8. Mr Avi a 45-year-old man recently diagnosed as hypertensive was receiving enalapril, he developed severe dry brassy cough after 10 days. Prescribe an alternative antihypertensive for him.**

Rx:

Tab Telmisartan 20 mg 1 tablet once daily for 15 days

Non-pharmacological treatment

Salt and water restriction, weight reduction with regular exercise to quit smoking if smoker, reduce alcohol intake.

Follow up after 15 days for evaluation and dose adjustment, if necessary.

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- 9. Prescribe for a patient with mild hypertension with no associated diseases.**

Rx:

Tab Hydrochlorothiazide 25 mg half tablet once daily for 15 days

Non-pharmacological treatment

- Salt and water restriction
- Weight reduction with regular exercise
- To quit smoking, if smoker
- Reduce alcohol intake

Follow up: After 15 days for evaluation and dose adjustment, if necessary.

Dispense: 15 tablets of hydrochlorothiazide 25 mg

Doctor sign and stamp
Registration no.

Important points

- Instead of hydrochlorothiazide, tab Enalapril, tab Telmisartan or tab Atenolol can be prescribed.
- Uptitration should be gradual.
- Treatment may have to be continued for life long.

- 10. Prescribe suitable drugs for essential hypertension (130/94 mmg Hg) patient having stable exertional angina**

Rx:

Tab Metoprolol ER (extended release) 25 mg 1 tablet once daily.

Non-pharmacological treatment

- Salt and water restriction
- Weight reduction with regular exercise
- To quit smoking, if smoker
- Reduce alcohol intake.

Follow up: After 15 days for evaluation and dosage adjustment.

Dispense: 15 tablets of metoprolol 25 mg

Doctor sign and stamp
Registration no.

Important points

- Maximum dose of metoprolol: 200 mg/day
- Instead of metoprolol, calcium channel blockers (amlodipine) can be given.

11. Prescribe suitable drugs for essential hypertension patients having post myocardial infarction

Rx:

- Tab Ramipril 2.5 mg 1 tablet once daily
- Tab Metoprolol 25 mg ER 1 tablet once daily
- Tab Spironolactone 25 mg 1 tablet once daily (only if ejection fraction <35%)
- Tab Aspirin 75 mg once day life long

Non-pharmacological treatment

- Salt and water restriction
- Weight reduction with regular exercise

Follow up: After 15 days for evaluation and dosage adjustment.

Dispense: 15 tablets of ramipril 2.5 mg, metoprolol ER 25 mg, spironolactone 25 mg

Doctor sign and stamp
Registration no.

Important points

- Maximum dose of ramipril: 20 mg/day
- Maximum dose of metoprolol: 200 mg/day

12. Write a prescription for pregnancy-induced hypertension.

Rx:

Tab Labetalol 100 mg 1 tablet twice a day

Follow up: After 15 days for evaluation and dosage adjustment.

Dispense: 15 tablets of labetalol 100 mg

Doctor sign and stamp
Registration no.

Important points

- Maximum dose of labetalol: 2400 mg/day
- If uncontrolled tab Nifedipine SR (30 mg) one tablet daily
- Maximum dose of nifedipine SR: 200 mg/day
- Alpha methyl dopa is safe in pregnancy but unavailable in the market
- ARB's and ACE inhibitors are contraindicated in pregnancy.

- 13. A 45-year-old man with a 2-month history of progressive headache presented to the emergency department with nausea, vomiting, visual disturbance, and confusion for 1 day. He denied fever, weakness, numbness, shortness of breath, and flu-like symptoms. He had a significant medical history of hypertension and was on a β -blocker in the past, but a year ago, he stopped taking medication due to an unspecified reason. Physical examination was unremarkable, and at the time of triage, his BP was noted as 210/123 mm Hg. The clinical presentation, elevated BP, and brain MRI findings were suggestive of a hypertensive emergency, more specifically hypertensive encephalopathy. Prescribe suitable drugs for this patient**

Hypertensive crisis

Rx:

Nicardipine infusion rate of intravenous of 5 mg/h. The maximum infusion rate is 30 mg/h. Inj Nitroglycerine 5–10 μ g/min IV infusion titrate as per BP response

**Doctor sign and stamp
Registration no.**

Important points

- Till recent past sodium nitroprusside has to be titrated carefully. (Aim must be to reduce DBP to 100–110 mm of Hg gradually over 24 hours.
- Instead of the above treatment inj Nitroglycerine 5–10 μ g/min IV infusion or inj Labetalol 20–80 mg IV bolus every 10 minutes to max total dose of 300 mg can be prescribed.
- Instead, sublingual nifedipine, inj Diazoxide or inj Hydralazine can also be prescribed.

- 14. Lisa is a 49-year-old woman with a history of type 2 diabetes, obesity, hypertension, and migraine headaches. Physical examination reveals a BP of 154/98 mm Hg and a pulse of 78 bpm. Prescribe suitable drugs for this patient. (Mild hypertension with diabetes)**

Rx:

Tab Enalapril 5 mg 1 tablet once daily for 15 days

Non-pharmacological treatment

- Salt restriction (up to 5 mg salt per day caloric restriction for weight control)
- Restriction in intake of cholesterol and saturated fats
- Reducing or eliminating alcohol intake
- Relief of stress
- Regular exercise

Practical Pharmacology

Salient Features

- This book follows the format laid out by NMC in the new CBME curriculum for pharmacology—integrating knowledge with relevant clinical skills.
- Concepts have been simplified and delivered in a bite-sized manner to improve the student's understanding of the subject matter without being overwhelmed by it.
- Diagrams, photographs, flowcharts, and tables are given wherever applicable to help with last-minute revisions.
- Instructions for filing an adverse drug reaction (ADR) form are accompanied by examples for a better understanding of ADR reporting.
- Solved examples of dose-calculation sums are provided.
- Basic concepts and principles in ethics are explained.
- Key points in communication exercises are elaborated to help students in the practical examination.

Pramila V Yadav MBBS MD (Pharmacology) is currently working as a Professor and Head, Department of Pharmacology, MGM Medical College, Vashi, Navi Mumbai, Maharashtra, India. She completed her MBBS from GS Medical College and KEM Hospital in 1996 and MD Pharmacology from TNMC College (Nair Hospital), Mumbai, Maharashtra in 2000. With over two decades worth of experience in academia, she has an unparalleled zeal for teaching. She has also been serving as an examiner for various universities. She has not only contributed articles in various reputed national and international journals but has also co-authored several books on pharmacology for medical, dental, and allied health sciences.

Pradnya Deolekar MBBS MD (Pharmacology) is currently working as a Professor, Department of Pharmacology, Dr DY Patil Medical College, Navi Mumbai, Maharashtra, India, also has over two decades worth of experience in academics. She has also contributed articles in various reputed journals, both national and international and has co-authored several books on pharmacology.

Kavitha Dongerkery MBBS MD (Pharmacology) is currently working as an Associate Professor, Department of Pharmacology, Dr DY Patil Medical College, Navi Mumbai, Maharashtra, India. She has contributed articles in various reputed journals, both national and international and has co-authored a book for postgraduate students.

Mayakalyani Srivathsan MBBS MD (Pharmacology) is currently working as a Senior Resident, Department of Pharmacology, Dr DY Patil Medical College, Navi Mumbai, Maharashtra, India.

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