d information on nursing books, visit our website **www.jaypeebrothers.com,** for detailed information on nursing books, visit our website **www.jaypeebrothers.com**



NURSING
Drug Dosages
and their Calculations

GL Chattri

Foreword
Mahesh Maheshwari

JAYPEE

CONTENTS

SECTION 1: NURSING DRUG DOSES

1. Analgesics **3**
A. Analgesics—Non-narcotics 3
B. Analgesics—Narcotics 9

2. Anti-Alzheimer's Agents **13**

3. Antianginals **15**
A. Antianginals—Beta-Blockers 15
B. Antianginals—Calcium Channel Blockers 16
C. Antianginals—Nitrates 18

4. Antianxiety Agents **20**
A. Antianxiety Agents—Benzodiazepines 20
B. Antianxiety Agents—Selective Serotonion Reuptake Inhibitors 21
C. Antianxiety Agents—Miscellaneous 21

5. Antiarrhythmic **23**
A. Antiarrhythmic—Class IA 23
B. Antiarrhythmic—Class IB 24
C. Antiarrhythmic—Class IC 26
D. Antiarrhythmic—Class II 26
E. Antiarrhythmic—Class III 27
F. Antiarrhythmic—Class IV 28
G. Antiarrhythmic—Miscellaneous 28

6. Antiasthmatics **29**
A. Antiasthmatics—Adrenergics 29
B. Antiasthmatics—Anticholinergics 32
C. Antiasthmatics—Corticosteroids 33
D. Antiasthmatics—Leukotriene Antagonists 36
E. Antiasthmatics—Mast Cell Stabilizers 37
F. Antiasthmatics—Xanthines 38

7. Antibiotics **40**
A. Antibiotics—Aminoglycosides 40
B. Antibiotics—Carbapenems 42
C. Antibiotics—Cephalosporins 43
First Generation Cephalosporins 44
Second Generation Cephalosporins 44
Third Generation Cephalosporins 45
Fourth Generation Cephalosporins 48

D. Antibiotics—Fluoroquinolones 48
E. Antibiotics—Imidazoles 51
F. Antibiotics—Macrolides 52
G. Antibiotics—Penicillins 54
H. Antibiotics—Tetracyclines 57
I. Antibiotics—Miscellaneous 58

8. Anticholinergics 62

9. Anticoagulants 66

10. Anticonvulsants 68
A. Anticonvulsants—Barbiturates 68
B. Anticonvulsants—Benzodiazepines 69
C. Anticonvulsants—Hydantoins 71
D. Anticonvulsants—Valproates 72
E. Anticonvulsants—Miscellaneous 72

11. Antidepressants 76
A. Antidepressants—Selective Serotonin Reuptake Inhibitors (SSRIs) 76
B. Antidepressants—Tetracyclic 78
C. Antidepressants—Tricyclic 78
D. Antidepressants—Miscellaneous 79

12. Antidiabetics 81
A. Antidiabetics—Alpha Glycoside Inhibitors 81
B. Antidiabetics—Biguanides 82
C. Antidiabetics—Meglitinides 82
D. Antidiabetics—Sulfonylureas 83
E. Antidiabetics—Thiazolidinediones 84

13. Antidiarrheals 85

14. Antidotes/Poisoning 87

15. Antiemetics 91
A. Antiemetics—5-HT_3 Antagonists 91
B. Antiemetics—Phenothiazines 93
C. Antiemetics—Miscellaneous 94

16. Antifungals 97

17. Antihistamines 100

18. Antihypertensives 103
A. Antihypertensives—Ace Inhibitors 103
B. Antihypertensives—Adrenergics 105
C. Antihypertensives— Centrally Acting Antiadrenergics 105
D. Antihypertensives— Peripherally Acting Antiadrenergics 106
E. Antihypertensives—Angiotensin Receptor Antagonists 107
F. Antihypertensives—Beta-Blockers 108
G. Antihypertensives—Calcium Channel Blockers 109

H. Antihypertensives—Diuretics 109
I. Antihypertensives—Vasodilators 110

19. Antimigraine Drugs 111
A. Antimigraine Drugs—Alpha-adrenergic Blockers 111
B. Antimigraine Drugs—5-HT_1 Agonists 112

20. Antiobesity Drugs 113

21. Antiparkinson Agents 115
A. Antiparkinson Agents—Anticholinergic 115
B. Antiparkinson Agents—Antiviral 116
C. Antiparkinson Agents—Dopamine Agonists 116
D. Antiparkinson Agents—MAO Inhibitors 118

22. Antiplatelet Agents 119

23. Antipsychotics 121
A. Antipsychotics—Phenothiazines 121
B. Antipsychotics—Miscellaneous 122

24. Antiretrovirals 125
A. Non-nucleoside Reverse Transcriptase Inhibitors 125
B. Nucleoside Reverse Transcriptase Inhibitors 126
C. Protease Inhibitors 127

25. Antithyroid Drugs 130

26. Antituberculars 131

27. Antitussives/Expectorants 134

28. Antiulcers 138
A. Antiulcer—Antacids 138
B. Antiulcer—H_2 Antagonists 139
C. Antiulcer—Proton Pump Inhibitors 140
D. Antiulcer—Miscellaneous 142

29. Antivirals 143

30. Bone Resorption Inhibitors 146

31. Cholinergics 148

32. Diuretics 150
A. Diuretics—Loop Diuretics 150
B. Diuretics—Potassium Sparing Diuretics 151
C. Diuretics—Thiazide and Thiazide-like Diuretics 153
D. Diuretics—Carbonic Anhydrase Inhibitor 154
E. Diuretics—Osmotic Diuretics 154

33. Electrolyte Supplements/Minerals 156

34. Hematinics and Hematopoietics 160
A. Hematinics and Hematopoietics—Hormones 160
B. Hematinics and Hematopoietics—Iron Supplements 161
C. Hematinics and Hematopoietics—Vitamins 162

35. Hormones **164**
36. Immunosuppressants **171**
37. Inotropic/Pressor Agents **175**
38. Laxatives **179**
39. Lipid Lowering Agents **182**
A. HMG-CoA Reductase Inhibitors 182
B. Miscellaneous 183
40. Neuromuscular Blocking Agents **184**
41. Sedatives/Hypnotics **186**
A. Sedatives/Hypnotics—Barbiturates 186
B. Sedatives/Hypnotics—Benzodiazepines 186
C. Sedatives/Hypnotics—Miscellaneous 187
42. Skeletal Muscle Relaxants **188**
43. Thrombolytics **190**
44. Thyroid Hormones **192**
45. Vaccines **193**
46. Vitamins **197**
A. Fat-soluble Vitamins 197
B. Water-soluble Vitamins 200
47. Miscellaneous **203**

SECTION 2: CALCULATION OF DRUG DOSAGES

48. Learning Basic Mathematics **207**
49. Weights and Measures **212**
50. Methods of Calculating Drug Dosages **213**
51. Calculating Pediatric Drug Dosages **214**
52. Calculating Maintenance Fluid Requirements in Children **216**
53. IV Drip Rate Calculation **217**
54. Administering Medicines to Children **218**
55. Solving Problems **219**

Appendix 1: Practically Useful Charts and Tables 225
Appendix 2: Methods of Administration of Medications 230
Index 235

SYMBOLS AND ABBREVIATIONS

ACE	Angiotensin Converting Enzyme
Adm	Administration
AF	Atrial Fibrillation
AIDS	Acquired Immunodeficiency Syndrome
AOM	Acute Otitis Media
APD	Action Potential Duration
APTT	Activated Partial Thromboplastin Time
ARDS	Adult Respiratory Distress Syndrome
ARF	Acute Renal Failure
Assess	Assessment
AV	Atrioventricular
AZT	Azathioprine
BD	Twice Daily
BM	Bone Marrow
BP	Blood Pressure
BPD	Bronchopulmonary Dysplasia
BPH	Benign Prostatic Hypertrophy
BT	Bleeding Time
CAP	Community Acquired Pneumonia
CBC	Complete Blood Count
CD4	Helper T4 Lymphocyte Cells
CHD	Congenital Heart Disease
CHF	Congestive Heart Failure
C/I	Contraindications
CK	Creatinine Kinase
CMV	Cytomegalovirus
CNS	Central Nervous System
CO	Cardiac Output
COPD	Chronic Obstructive Pulmonary Disease
CP	Cerebral Palsy
CPK	Creatinine Phosphokinase
CPR	Cardiopulmonary Resuscitation
CPS	Complex Partial Seizures
CR	Cardiorespiratory
CRF	Chronic Renal Failure
C/S	Culture and Sensitivity

CSF	Cerebrospinal Fluid
CTZ	Chemoreceptor Trigger Zone
CV	Cardiovascular
CxR	Chest X-Ray
DM	Diabetes Mellitus
DNS	Dextrose Normal Saline
DO	Desired Outcome
DUB	Dysfunctional Uterine Bleeding
D_5W	Dextrose 5% Water
$D_{10}W$	Dextrose 10% Water
EC	Enteric Coated
ECG	Electrocardiogram
EEG	Electroencephalogram
e.g.	For Example
EPS	Extrapyramidal Symptoms
ERP	Effective Refractory Period
ET	Endotracheal
FA	Folic Acid
FDP	Fibrinogen Degradation Products
FS	Focal Seizures
GA	General Anesthesia
GABA	Gamma Aminobutyric Acid
GERD	Gastroesophageal Reflux Disease
GI	Gastrointestinal
GIT	Gastrointestinal Tract
gm	Gram
G6PD	Glucose 6 Phosphate Dehydrogenase
GTCS	Generalized Tonic Clonic Seizures
GU	Genitourinary
GUTI	Genitourinary Tract Infection
HA	Headache
Hb	Hemoglobin
HDL	High Density Lipoproteins
HDN	Hemorrhagic Disease of Newborn
HIV	Human Immunodeficiency Virus
H/O	History of
HR	Heart Rate
hr	Hour
HS	At Bedtime
HSV	Herpes Simplex Virus

IBS	Irritable Bowel Syndrome
ICH	Intracranial Hemorrhage
ICP	Intracranial Pressure
IM	Intramuscular
I/O	Input and Output
IOP	Intraocular Pressure
ITP	Idiopathic Thrombocytopenic Purpura
IU	International Unit
IV	Intravenous
IVP	Intravenous Push
JVP	Jugular Venous Pressure
Kg	Kilogram
L	Liter
LFT	Liver Function Test
LRTI	Lower Respiratory Tract Infection
m^2	Square Meter
MAO	Monoamine Oxidase
max	Maximum
mcg/μg	Microgram
MDI	Metered Dose Inhaler
mEq	Milli Equivalent
mg	Milligram
MI	Myocardial Infarction
min	Minute
ml	Milliliter
mm^3	Cubic Millimeter
MS	Multiple Sclerosis
mth	Month
NB	Newborn
NC	Nursing Considerations
NEC	Necrotising Enterocolitis
NG	Nasogastric
NMS	Neuroleptic Malignant Syndrome
NS	Normal Saline
NSAID	Nonsteroidal Anti-Inflammatory Drug
N/V	Nausea and Vomiting
OA	Osteoarthritis
OCD	Obsessive Compulsive Disorder
OD	Once Daily
OM	Otitis Media

Oz	Ounce
PDA	Patent Ductus Arteriosus
PFT	Pulmonary Function Test
PID	Pelvic Inflammatory Disease
PO	Per Oral/By Mouth
PP	Peripheral Pulses
PS	Partial Seizures
PSE	Portosystemic Encephalopathy
PSVT	Paroxysmal Supraventricular Tachycardia
PTH	Parathyroid Hormone
PVC	Premature Ventricular Contractions
q	Every
QID	Every Four Hourly
RC	Rectal
RFT	Renal Function Test
RL	Ringer Lactate
R/O	Rule Out
ROP	Retinopathy of Prematurity
RR	Respiratory Rate
RSV	Respiratory Syncytial Virus
RTI	Respiratory Tract Infection
SA	Sinoatrial
SC	Subcutaneous
S/E	Side Effects
SJS	Stevens Johnson Syndrome
SL	Sublingual
SLE	Systemic Lupus Erythematosus
SPS	Simple Partial Seizures
S/S	Signs and Symptoms
SSRIs	Selective Serotonin Reuptake Inhibitors
SSTI	Skin and Soft Tissue Infection
STD	Sexually Transmitted Disease
SVT	Supraventricular Tachycardia
SVTA	Supraventricular Tachyarrhythmia
SWI	Sterile Water for Injection
TB	Tuberculosis
TDS	Thrice Daily
TG	Triglycerides
TIA	Transient Ischemic Attack
U/O	Urine Output

URTI	Upper Respiratory Tract Infection
UTI	Urinary Tract Infection
VF	Ventricular Fibrillation
wk	Week
wt	Weight
>	Greater than
≥	Greater than or Equal to
<	Lesser than
≤	Lesser than or Equal to
–ve	Negative
+ve	Positive
%	Percent
/	Per
+	With, Positive (as applicable)
±	With or Without

Chapter

3 Antianginals

Includes: (A) Beta-blockers
(B) Calcium channel blockers
(C) Nitrates

(A) ANTIANGINALS—BETA-BLOCKERS

Includes: 1. Atenolol 2. Labetalol
3. Metoprolol 4. Propranolol

Action: Decreases myocardial oxygen consumption by decreasing heart rate.

Side Effects: Common side effects are; fatigue, headache, dizziness, nausea, drowsiness, diarrhea, postural hypotension, erectile dysfunction, bronchospasm. Serious side effects include; bradycardia, CHF, pulmonary edema, arrhythmias.

General Nursing Considerations

- **Assess:** BP, HR, ECG, I/O, daily weight, edema, chest pain. History of asthma, DM, impaired renal function; signs and symptoms of hypoglycemia, CHF
- **Administration:** Take pulse prior to giving drug, if heart rate <50/min, notify this to the doctor. They can be given with or without meals. Sudden withdrawal may precipitate or worsen angina, rebound HT, MI
- **Advise:** To take drug same time per day. Do not stop abruptly. Avoid activities requiring alertness. Change position slowly to minimize orthostatic hypotension. Sensitivity to cold may be increased. Inform if there is difficulty in breathing, wheezing, cold hands and feets, dizziness or confusion. Diabetic patient should monitor blood sugar daily. Avoid excessive intake of alcohol, coffee, tea or cola
- **Desired Outcome:** Decrease in BP and frequency of angina, prevention of MI, increase in activity tolerance.

1. Atenolol

Uses: Hypertension, angina pectoris, prevention of MI.

Dosage:

- Adults: PO: Antianginal; 50–100 mg once daily. Antihypertensive; 25–100 mg once daily for 6–9 days

JAYPEE BROTHERS

- Children: PO: Initial 0.8–1 mg/kg/dose, can be titrated upto maximum of 100 mg/day.

Brands: 25, 50, 100 mg Tabs; Atecard, Aten, Betacard.

2. Labetalol

Uses: HT.

Dosage:

- Adults: PO: Initial 100 mg twice daily may be increased every 2–3 days by 100 mg as needed. IV: Initial 20 mg, 10 minutes later 20–40 mg may be given if required
- Children: PO: 4 mg/kg/day divided every 12 hours. IV: 0.2–1 mg/kg/day.

Brands: 10 mg Tabs; 5 mg/ml Inj; Lobet.

Nursing Consideration: IV can be given at the rate of 2 mg/min.

3. Metoprolol

Uses: HT, angina pectoris, prevention of MI.

Dosage:

- Adults (PO): Antihypertensive/Antianginal; 25–100 mg/day divided every 12 hours. MI; 25–50 mg every 6 hours for 48 hours, then 100 mg twice daily for 3 months
- Adults: (IV) MI; 5 mg every 2 minutes for 3 doses followed by oral doses.

Brands: 25, 50, 100 mg Tabs; 1 mg/ml Inj; Betaloc, Metolar.

Nursing Considerations: Give IV slowly over 2–5 minutes.

4. Propranolol

Uses: HT, angina pectoris, arrhythmias, prevention of MI.

Dosage:

- Adults: PO: Antianginal; 80–320 mg/day divided every 6 hours. Antihypertensive; 40 mg twice daily. Antiarrhythmic; 10–30 mg, 3–4 times/day. Prevention of MI; 180–240 mg/day in divided doses
- Adults: IV: Antiarrhythmic; Initial 1–3 mg, may be repeated after 2 minutes and 4 hours if needed
- Children: PO: Antihypertensive/Antiarrhythmic; 0.5–1 mg/kg/day divided every 6 hours
- Children: IV: 10–100 μg/kg (0.01–0.1 mg/kg) by slow IV.

Brands: 10, 40 mg Tabs; Ciplar, Corbeta. 1 mg/ml Inj; Properol.

Nursing Consideration: IV can be given at the rate of 0.5–1 mg/min.

(B) ANTIANGINALS—CALCIUM CHANNEL BLOCKERS

Include: 1. Diltiazem 2. Felodipine
3. Nifedipine 4. Verapamil

Action: Acts by dilating coronary arteries, some agents also slow down heart rate and suppresses ventricular tachyarrhythmias.

JAYPEE BROTHERS

Uses: HT, angina pectoris, vasospastic angina. Diltiazem and verapamil in addition also used for supraventricular tachyarrhythmias.

Side Effects: Common side effects are: Headache, flushing, peripheral edema. Serious side effects include; CHF, arrhythmias, SJS.

General Nursing Considerations

- **Assess:** BP, HR, ECG, I/O, daily weight, serum potassium, chest pain. Signs and symptoms of CHF
- **Administration:** PO can be given with or without meals. As these drugs cause peripheral vasodilation, any excessive hypotensive response and increased heart rate may precipitate angina.
- **Advise:** Do not stop drug abruptly. Restrict exercise and avoid activities requiring alertness. Change position slowly to minimize orthostatic hypotension. Report dyspnea, swelling of extremities, headache, dizziness, hypotension. Combine other methods of lowering BP—low sodium diet, decrease weight, stop smoking and alcohol. Avoid long periods of standing, excessive heat, hot showers, may exacerbate drop in BP
- **Desired Outcome:** Decrease in BP, chest pain, need for nitrate therapy; increase in activity tolerance; suppression of arrhythmias.

1. Diltiazem

Dosage:

- Adults: PO: 30–120 mg 3–4 times/day
- Children: PO: 1.5–2 mg/kg/day divided every 8 hours

Brands: 30, 60, 90 mg Tabs; Dilcal, Dilzem.

2. Felodipine

Dosage: Adults: PO: 5 mg/day may be increased every 2 weeks to maximum of 10 mg/day

Brands: 2.5, 5, 10 mg Tabs; Felogard, Plendil.

3. Nifedipine

Dosage:

- Adults: PO: 10–30 mg 3 times/day
- Ped: PO: 0.25–0.5 mg/kg/dose (Max: 10 mg/day).

Brands: 5, 10 mg Tabs; Nifedine. 10, 20 mg Cap; Calcigard, Depin.

4. Verapamil

Dosage:

- Adults: PO: 80–120 mg, 3 times/day. IV: 5–10 mg may be repeated after 15–30 minutes.
- Children: > 16 years: PO: 4–8 mg/kg/day divided every 6–8 hours
  1–16 years: IV: 0.1–0.3 mg/kg/dose may be repeated after 30 minutes

Brands: 40, 80 mg Tabs; 2.5 mg/ml Inj; Calaptin.

JAYPEE BROTHERS

(C) ANTIANGINALS—NITRATES

Include: 1. Isosorbide dinitrate 2. Isosorbide mononitrate
3. Nitroglycerine

Action: Causes coronary arteries dilatation and systemic vasodilatation.

Uses: Treatment and prevention of angina.

Side Effects: Headache, dizziness, nausea, dry mouth, tachycardia, hypotension, blurred vision.

General Nursing Considerations

- **Assess:** BP, HR, ECG, I/O, chest pain, any precipitating factors (stress, activity). History of anemia, administer with extreme caution
- **Administration:** SL tablets should be held under tongue. Drinking and eating should be avoided until its dissolves. Tolerance may develop on chronic use, manifested by absence of response to usual dose (discontinue temporarily and reinstitute later on). PO doses are taken empty stomach with water
- **Advise:** Do not stop abruptly. Change position slowly. Avoid activities requiring alertness. Take last dose before 7 pm to prevent development of tolerance. Report dry mouth and blurred vision. Avoid changing brands. Carry SL tablets in a glass bottle, tightly capped. If pain is not relieved in 5 minutes by first tablet, take upto 2 SL tablets at 5 minutes intervals. Take SL tablets 5–15 minutes prior to situation causing pain (sexual intercourse, cold exposure, stress), use paracetamol for headache. Remove patch at bedtime and apply on arising. Avoid alcohol, nitrate; syncope, severe shock like state may occur
- **Desired Outcome:** Decrease in angina and increase in activity tolarance.

1. Isosorbide

Dosage:

- Isosorbide dinitrate: Adults:
  PO: Prevention of angina: 5–20 mg, 2–3 times/day
  SL: Acute attack of angina: 2.5–5 mg, may be repeated every 5–10 minutes for 3 dose in 15–30 minutes. Prophylaxis of angina: 2.5–5 mg SOS
- Isosorbide mononitrate: Adults: PO: 5–20 mg twice daily.

Brands:

- Dinitrate: 5, 10 mg Tab; Sorbitrate. 20, 40 mg Cap; Cardicap
- Mononitrate: 10, 20, 40 mg Tabs; Angitab, Monopark.

2. Nitroglycerine

Dosage:

- Adults: PO: 2.5–9 mg every 8–12 hours
  SL: 0.3–0.6 mg, may be repeated every 5 minutes for 3 doses
  IV: 5 μg/minutes, can be increased slowly up to 20 μg/minutes
  Oint: 1–2 inch every 8 hours (1 inch = 15 mg)
  Patch: 0.1–0.6 mg/hours (Max: 0.8 mg/hour)

JAYPEE BROTHERS

- Children: IV: Initial dose of 0.25–0.5 μg/kg/minutes can be increased slowly up to 5 μg/kg/minutes.

Brands: 0.5 mg Tabs; Angised. 2.5, 6.5 mg Cap; NGlong. 5 mg/ml Inj; Nitroject. 5,10 mg patch; Nitroderm TTS. 2% oint; Myovin.

Nursing Consideration: For IV, use glass bottles only and special tubing provided with it. It can be given diluted in D5W/NS to a max concentration of 400 μg/ml.

JAYPEE BROTHERS

or detailed information on nursing books, visit our website **www.jaypeebrothers.com,** for detailed information on nursing books, visit our website **www.jaypeebrot**

NURSING
Drug Dosages and their Calculations

Salient Features

- This book is designed to be a practical and convenient guide to dose calculations and administration of medications in adults and pediatric patients, along with basic information of each drug (action, uses, brands and side effects)
- Present drug information in a consistent and user-friendly format
- Second section contains information about calculation of drug doses under practically useful headings (learning basic mathematics, calculating pediatric drug dosages, administering medicines to children, IV drip rate calculation, etc.)
- One more important part covered is nursing consideration which contains information about nursing staff and patient and/or families of patient to know about drug uses on day-to-day bases (assessment, administration, advice and desired outcome)
- Contains many charts required at bedside daily
- This book will be very useful for the nursing students, practicing nurses and other health care providers
- Nurses will be more confident in understanding drugs, calculating and administering medicine, and will be able to provide better care to their patients.

GL Chattri MBBS MD MHA is one of the well-known Pediatricians in Jabalpur, Madhya Pradesh, India. He is a Consultant Pediatrician and Neonatologist. He is working as a Senior Consultant in Metro Multispecialty Hospital and Seth Mannulal Jagannath Hospital, Jabalpur, Madhya Pradesh, India. He has received his MBBS degree from Netaji Subhash Chandra Bose Medical College, Jabalpur, Madhya Pradesh, India in 1998 and MD degree from Chacha Nehru Bal Chikitsalaya and Maharaja Yeshwantrao Hospital, Indore, Madhya Pradesh, India in 2001. Since then he has dedicated himself for the services of mankind and looking after the well-being of little ones. He has authored Pediatric Drug Doses and also contributed few more books for medical students and also contributing to Parents' Awareness columns in many magazines.



Available at all medical bookstores
or buy online at www.jaypeebrothers.com

JAYPEE BROTHERS
Medical Publishers (P) Ltd.
www.jaypeebrothers.com

Join us on facebook.com/JaypeeMedicalPublishers

ISBN 978-93-86261-07-6