

PHARMACOLOGY NOTES

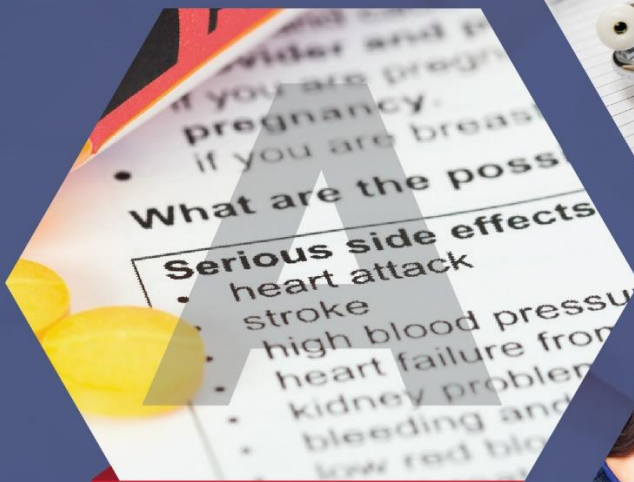
NURSING IMPLICATIONS FOR
CLINICAL PRACTICE



Administration



Therapeutic Effects



Adverse Effects



Teaching

GLORIA VELARDE

PHARMACOLOGY NOTES

NURSING IMPLICATIONS FOR CLINICAL PRACTICE

Overview

There are currently nine (9) units comprising this *Pharmacology Notes* resource. Units are broken down by body system and published individually for ease of retrieval:

Unit A: Autonomic Nervous System (ANS) Pharmacology

Unit B: Cardiovascular (CV) System Pharmacology

Unit C: Hematological System Pharmacology

Unit D: Central Nervous System (CNS) Pharmacology

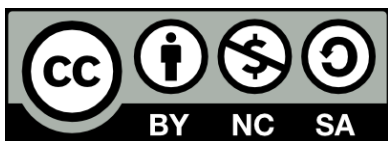
Unit E: Skeletal System: Bone and Joint Pharmacology

Unit F: Immune System Pharmacology

Unit G: Digestive System Pharmacology

Unit H: Endocrine System Pharmacology

Unit I: Respiratory System Pharmacology



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UNIT A

AUTONOMIC NERVOUS SYSTEM PHARMACOLOGY

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Autonomic Nervous System (ANS)

Anatomy and Physiology/Pathophysiology Review

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Pharmacologic Connections for ANS Drugs

Drug Classes: A-T-A-T

(MC) Major Class or Therapeutic Class (SC) Subclass or Pharmacologic Class (SSC) Selective Subclass – more specific action within Subclass

(MC) Adrenergics

(MC) Adrenergic-Blockers

(MC) Cholinergics

(SC) Direct-acting

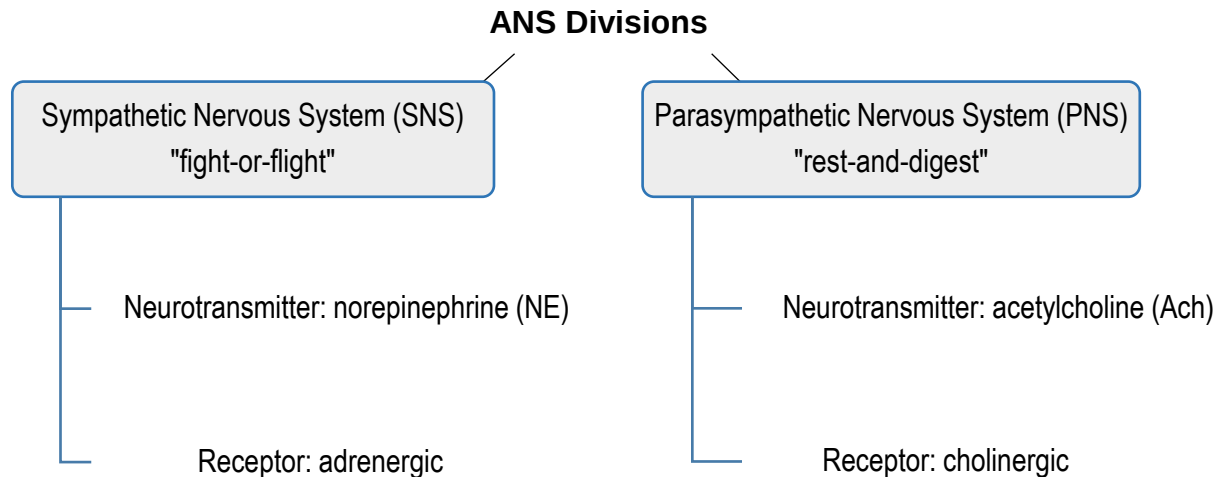
(SC) Indirect-acting or Acetylcholinesterase Inhibitors

(MC) Cholinergic-Blockers

Autonomic Nervous System (ANS)

I. ANATOMY AND PHYSIOLOGY/PATHOPHYSIOLOGY REVIEW

A. ANS Divisions

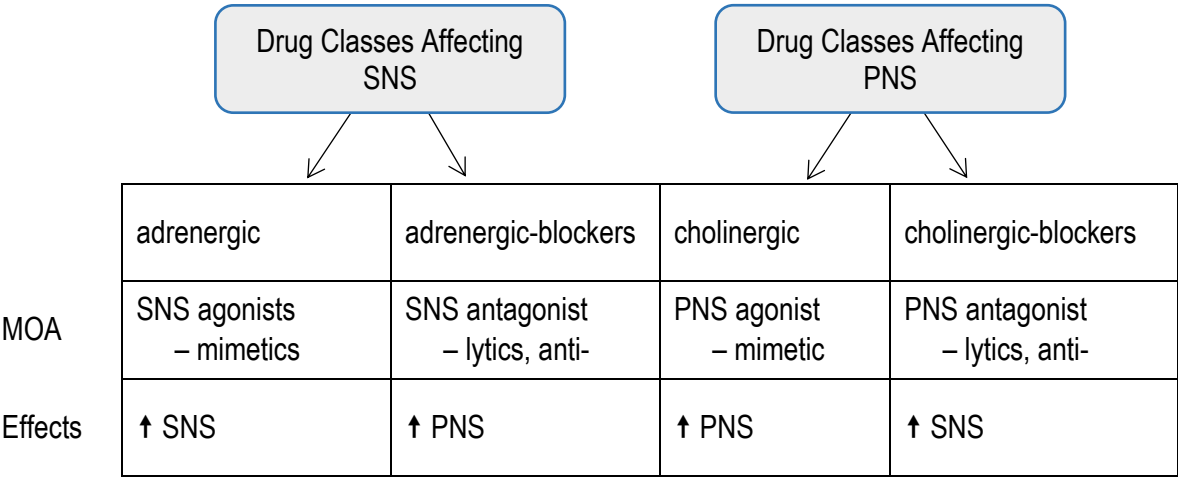


B. ANS Functions

1. Sympathetic Division	2. Parasympathetic Division
Actions on target organs: ↑ blood flow to stimulate vital organs and ↓ blood flow to depress non-vital organ functions • Dilates pupil of eye • Inhibits salivary gland secretion • Relaxes bronchi in lungs • Accelerates heart • Inhibits activity of stomach and intestines • Inhibits activity of pancreas • Stimulates glucose release from liver; inhibits gallbladder • Stimulates adrenal medulla • Inhibits emptying of bladder • Promotes ejaculation and vaginal contractions	Actions on target organs: ↑ blood flow to stimulate non-vital organs and ↓ blood flow depress vital organ functions • Constricts pupil of eye • Stimulates salivary gland secretion • Constricts bronchi in lungs • Slows heart • Stimulates activity of stomach and intestines • Stimulates activity of pancreas • Stimulates gallbladder • Promotes emptying of bladder • Promotes erection of genitalia

II. PHARMACOLOGY

A. Pharmacologic Connections for ANS Drugs



Nursing Implications: ANS Pharmacology

Major Class	MOA	Prototype – generic	Prototype – trade	A – Admin	T – ✓ Therapeutic Effects – General (MC)	A – ✓ Adverse Effects – Common	T – Teaching – General
Adrenergics	Binds with adrenergic receptors → mimics SNS by enhancing effects of norepinephrine	epinephrine	Adrenalin	Route: Inj/IV Contraindications: H/O heart dz, glaucoma, hepatitis	Cardiac arrest: • ↑BP • ↑HR Asthma attack: • ↑RR • ↑oxygen level	“Too much” SNS stimulation: • CV-HTN, dysrhythmias • resp-dyspnea • neuro-tremors, irritability, seizures; blurred vision, photophobia (2° mydriasis) • GI: ↓ motility • GU: ↓ renal function	• Proper use of Epi-Pen • Report: SOB, palpitations, dizziness, chest pain, urinary retention • F/U: CVR status • Use caution w/ OTC meds • Be aware of drug-drug interactions
Adrenergic-Blockers	Blocks adrenergic receptors → blocks SNS by blocking effects of norepinephrine (selective α_1 adrenergic antagonist)	prazosin	Minipress	Route: PO • ✓ BP/P before giving • Hold if P < 60 • Give @ HS for 1st dose or dizziness	HTN: • ↓BP Dysrhythmias: • ↓HR, regular rhythm Angina: • ↓Chest pain; ↓HF BPH: • improved bladder emptying	“Too much” PNS stimulation: • CV: hypotension; HR – too low or high • dizziness, light-headedness • nasal congestion • sexual dysfunction	• ✓ BP daily • Safety precautions • Report: dizziness, palpitations, SOB • Do <u>not</u> abruptly stop • Avoid alcohol

Major Class	MOA	Prototype – generic	Prototype – trade	A – Admin	T – √ Therapeutic Effects – General (MC)	A – √ Adverse Effects – Common	T – Teaching – General
Cholinergics (direct-acting)	Binds w/ cholinergic receptors → mimics PNS by enhancing effects of acetylcholine (ACh)	bethanechol	Urecholine, DuVoid	Route: PO/inj • ✓ vs Contraindications: • GI/GU obstruction • asthma, COPD • seizure disorders • recent CV instability	Urinary retention: • ↑ bladder emptying • delayed GI emptying: • ↑ peristaltic activity Glaucoma: • ↓ IOP	“Too much” PNS stimulation: • CV: hypotension, bradycardia • CNS: dizziness • GI: N/V/D/abd. cramping • GU: urinary frequency • repro: sexual dysfunction • MS: muscle cramping • ↑ secretions • cholinergic crisis → neuromuscular blockade ⇒ respiratory depression *ANTIDOTE: atropine	Same teaching as adrenergic-blockers: • direct-acting: give on empty stomach • indirect-acting: report adverse effects; dose – highly individualized
Cholinergics (indirect-acting)	Inhibits action of acetylcholinesterase → ↓ breakdown of ACh → prolongs action of ACh (SC) anticholinesterase or acetylcholinesterase inhibitors	pyridostigmine neostigmine	Mestinon Prostigmin		Myasthenia gravis: • ↑ muscle strength Alzheimer’s dz: • ↓ sx improved cognition Antidote for skeletal muscle OD		
Cholinergic-Blockers	Blocks cholinergic receptors → blocks PNS by blocking effects of acetylcholine	oxybutynin	Ditropan	Route: PO ✓ BP (see above)	Overactive bladder: • ↓ urinary frequency, urgency GI: ↓ abd. pain, cramping ↓ BMs	“Too much” SNS stimulation: • CV: HTN, tachycardia • CNS: excitement delirium • Vision: blurry • GI: constipation • GU: urinary retention • Dry mouth	• ✓ VS • Safety • Report: persistent adverse effects • ↑ fiber/fluids • Treat dry mouth – ice, oral care • Be aware of drug-drug interactions
		atropine	Atro-Pen, Atrophaire	Route: IH, parenteral Contraindications: • GI/GU obstruction • Glaucoma • CHD • Myasthenia gravis	CV: ↑ HR Resp: improved breathing Secretions: ↓		