Pharmacological Principles

Presentation guide

CC = Statement of the competence for a core competence
E = Elements of the competence for a specific statement of competence
P = Performance criteria for competency; associated with a specific element of the competence

Core Competence CC.4

*Explain the pharmacological principles as they pertain to respiratory therapy*

E.1  Explain the fundamental characteristics associated with the application of medications

P1.1  Discuss the basic sources of medications
P1.2  Define the following as they pertain to medications: chemical, experimental, generic official and trade.
P1.3  Outline the characteristics of the following formulations: oral, injectable, aerosol, micronized powder, suppository, sublingual and topical
P1.4  Explain the advantages and disadvantages of the following routes of administration: enteral, parenteral, topical and inhalational

E.2  Explain the pharmacokinetics of medications

P2.1  Define the following terms: affinity, agonist, partial agonist, competitive and non-competitive and antagonist drugs
P2.2  Explain the concept of half-life and clearance of a drug
P2.3  Define tolerance and tachyphylaxis
P2.4  Describe drug elimination
P2.5  Describe pharmacological receptor
P2.5  Identify cellular sites where pharmacologic receptors are found
P2.6  Define the following pharmacological terms: toxicity, median effective does and median lethal dose
P2.7  Explain drug potency and efficacy
P2.8  Explain the concept of therapeutic index and relate this to the safety of the drug
E.3 Compare the pharmacologic response of adrenergic and cholinergic drugs

P3.1 Describe drug classification based on the Autonomic Nervous System (ANS) divisions
P3.2 Describe the location and action of adrenergic receptors
P3.3 Compare adrenergic and anti-adrenergic drug action
P3.4 Describe the location and action of cholinergic receptors
P3.5 Compare cholinergic and anti-cholinergic drug action

E.4 Describe the indications, mechanism of action, routes of administration and side effects particular to each class of medications

P4.1 Describe sympathomimetic bronchodilators
P4.2 Describe parasympathomimetic bronchodilators
P4.3 Describe xanthine bronchodilators
P4.4 Describe mucolytic agents
P4.5 Describe anti-inflammatories
P4.6 Describe anti-asthmatic medications
P4.7 Describe anti-histamine drugs
P4.8 Describe antibiotic, anti-viral and anti-fungal drugs
P4.9 Describe diuretics

E.5 Describe the indications, mechanism of action, routes of administration and side effects particular to specific classes of cardiovascular medications

P5.1 Describe cardiotonic therapeutic agent
P5.2 Describe antianginal therapeutic agents
P5.3 Describe diuretic therapeutic agents
P5.4 Describe antiarrhythmic therapeutic agents
P5.5 Describe the mode of action of antihypertensive agents
P5.6 Describe antithrombotic and thrombolytic therapeutic agents

E.6 Describe the indications, mechanism of action, routes of administration and side effects particular to drugs utilized in anesthesia

P6.1 Describe the general principles of intravenous anesthetic drugs, including their pharmacokinetics
P6.2 Describe the narcotic antagonists
P6.3 Describe benzodiazepines, barbiturates and benzodiazepine antagonists
P6.4 Describe depolarizing and non-depolarizing muscle relaxants, including their neuromuscular transmission, structure, metabolism and excretion
P6.5 Describe cholinesterase inhibitors, including their physical structure and role as reversal agents
P6.6 Describe muscarinic antagonists, including their physical structure and their use in conjunction with cholinesterase inhibitors
P6.7 Describe local anesthetics
E.7  Explain the pharmacokinetics and pharmacodynamics of inhalational anesthetic agents

P7.1 Discuss inhalational anesthetic agents
P7.2 Discuss diffusion hypoxia, solubility, second gas effect, compartments of anesthesia, balanced anesthesia and interaction with CO₂ absorbents
P7.3 Describe the characteristics of inhalational anesthetics agents
P7.4 Describe the factors which alter the effects of inhaled anesthetic agents
P7.5 Explain the effects of inhalational agents on the pulmonary ventilation
P7.6 Explain the effects of inhalational agents on the cardiovascular system