• This is an introductory chapter, please read briefly

- 1. List commonly used benzodiazepine medications
  - 1. Alprazolam
  - 2. Chlordiazepoxide
  - 3. Clonazepam
  - 4. Diazepam
  - 5. Flurazepam
  - 6. Lorazepam
  - 7. Midatholam
  - 8. Triazolam
- 2. Describe mechanism of action of Benzodiazepines and Barbiturates
- 3. Describe clinical uses and side effects/toxicities of:
  - 1. Benzodiazepines
    - i. Illicit/Criminal use of Benzodiazepines
  - 2. Barbiturates
- 4. Describe treatment of intoxication with Benzodiazepines and Barbiturates if such exist
- 5. Name benzodiazepines that are preferably used in patients with liver damage, because of their extrahepatic metabolism.
- 6. Describe tolerance and dependence associated with Benzodiazepines and Barbiturates
- 7. Explain which types of benzodiazepines have high addiction potential and why
- 8. Name locations on GABAa receptor that serve as receptors for Barbiturates / Benzodiazepines
- 9. Describe how Benzodiazepines / Barbiturates affect CYP enzymes, if there are any contraindications to use of this drugs explain them.
- 10. List commonly used Barbiturates
  - 1. Phenobarbital
  - 2. Secobarbital
  - 3. Thipental
  - 4. Pentobarbital
  - 5. (Butabarbital and Amobarbital)
- 11. Describe clinical use and mechanism of action of Flumazenil
- 12. Describe mechanism of action and clinical uses of the following drugs:
  - 1. Zolpidem
  - 2. Zaleplon
  - 3. Eszopiclone
- 13. Explain mechanism of action, clinical uses, contraindications (if present) and side effects of:

- 1. Buspirone
- 2. Ramelteon
- 3. Tasimelteon
- 4. Suvorexant

- 1. Describe metabolism, metabolic enzymes, toxic metabolites produced produced and toxicities and acid-base disturbances caused by:
  - a. Ethanol
  - b. Methanol
  - c. Ethylene Glycol
- 2. Describe mechanism of action and clinical uses of:
  - a. Fomepizole
  - b. Disulfiram
- 3. Describe the treatment of Methanol, Ethanol and Ethylene glycol intoxication
- 4. Chronic effects of Ethanol:
  - a. Tolerance and dependence
  - b. Effects on liver
  - c. GI system
  - d. Neurologic manifestations of chronic alcohol use
    - i. Wernicke's encephalopathy
    - ii. Korsakoff psychosis
    - iii. Name which of this 2 is reversible and which is irreversible
  - e. Explain why Thiamine should be given first to alcoholic patients before transfusing Glucose/Dextrose
  - f. Effects on endocrine system, Cardiovascular and immune system
  - g. Risk of Neoplasia
  - h. Fetal alcohol syndrome
- 5. Describe clinical use and mechanism of action of Acamprosate, Naltrexone (in connection to alcoholism)
- 6. Describe alcohol withdrawal syndrome

- 1. Describe mechanism of action, clinical uses, side effects and possible drug-drug interactions of (if such exist, effects on cyp450 enzymes):
  - a. Carbamazepine
  - b. Oxcarbazepine
  - c. Phenytoin
  - d. Fosphenytoin
  - e. Lamotrigine
  - f. Valproic acid

- g. Clonazepam
- h. Ethosuximide
- i. Gabapentin
- j. Pregabalin
- k. Vigabatrin
- l. Felbamate
- m. Tiagabine
- n. Levetiracetam
- o. Topiramate
- 2. Describe the management of status epilepticus, which drugs and how are used for this indication
- 3. List which antiepileptic drugs are not metabolized by liver, but rather are excreted by kidney
- 4. Describe role of Benzodiazepines and Barbiturates in management of seizures
- 5. Describe life threatening toxicities and withdrawal associated with antiepileptic drugs
- 6. Recollect following associations:
  - a. Rufinamide
    - i. Blocks sodium channels
    - ii. Is used for treatment of Lennox-Gastaut syndrome and focal seziures
  - b. Retigabine
    - i. Activates potassium channels
    - ii. As a side effect/toxicity causes retinal damage

- 1. List and describe stages on anesthesia
- 2. Explain how blood solubility determines induction and recovery times of anesthesia
- 3. Explain what Minimal Anesthetic Alveolar concentration (MAC) is
- 4. Explain hos lipid solubility and MAC determine potency of general anesthetics
- 5. Describe lipid & blood solubility of:
  - a. Halothane
  - b. Nitrous oxide
- 6. Explain how Inspired gas partial pressure, respiratory rate and pulmonary blood flow affect effects/induction of inhaled anesthetics
- 7. Explain what arteriovenous concenytration gradient is and what does it depict
- 8. Explain blood-gas partition coefficient and how it determines/describes properties of inhalation anesthetics
- 9. Describe and explain effects of inhaled anesthetics on:
  - a. CNS
  - b. Cardiovascular system
  - c. Respiratory system
- 10. Describe toxicities of inhaled anesthetics
  - a. Malignant hyperthermia

- 11. Name which inhaled anesthetic is a bronchial irritant and causes bronchoconstriction
- 12. Which inhaled anesthetic is associated with liver damage/failue

- 1. Differentiate amides and esthers
- 2. Describe mechanism of action
- 3. Explain the use dependence
- 4. Differentiate sensitivity of nerve fibers to local anesthesia depending on their size and myelination
- 5. Describe clinical use of local anesthetics
- 6. Describe the action of local anesthetics in infected tissue
- 7. Explain the use of alpha agonist together with local anesthetics
- 8. List the side effects of local anesthetics

#### **Chapter 28**

- 1. Explain the pathophysiology behind Parkinson's disease \_ name the involved neurotransmitters
- 2. Levodopa \_ mechanism of action, on and off phenomenon, side effects
- 3. Explain the mechanism of action of carbidopa and why it should be used with levodopa
- 4. Name dopamine agonists used in the treatment of Parkinson's disease; name their side effects.
- 5. Name the monoamine oxidase inhibitors, explain their role in treatment of Parkinson's disease, list their side effects.
- 6. Name the COMT inhibitors, explain their role in Parkinson's disease, list their side effects.
- 7. Amantadine \_ mechanism of action, clinical indications, side effects.
- 8. Name antimuscarinic drugs used for the treatment of Parkinson's disease, explain their therapeutic effect, list their side effects.
- 9. Describe the treatment of physiologic and essential tremors.
- 10. Explain the pathophysiology of Huntington's disease. Describe its treatment.
- 11. Describe the treatment of Tourette syndrome.
- 12. Describe the treatment of drug-induced dyskinesias(Acute dystonia, tardive dyskinesia). Name the drug group which is associated to their development.
- 13. Describe the mechanism of action of deutetrabenazine and valbenazine.
- 14. Describe the treatment of Wilson's disease.
- 15. Describe the treatment of Restless leg syndrome.

- 1. Describe the amine hypothesis and other pathophysiologic factors of major depression
- 2. List classes of Antidepressants

- 3. Selective serotonin reuptake inhibitors
  - 1. List commonly used SSRI (Fluoxetine, fluvoxamine, paroxetine, sertraline, escitalopram, citalopram)
  - 2. Describe pharmacokinetics
  - 3. Describe mechanism of action, clinical uses and side effects/toxicities
  - 4. Describe possible drug interactions
- 4. Selective serotonin norepinephrine reuptake inhibitors
  - 1. List commonly used SNRI (Venlafaxine, desvenlafaxine, duloxetine, levomilnacipran, milnacipran)
  - 2. Describe pharmacokinetics
  - 3. Describe mechanism of action, clinical uses and side effects/toxicities
  - 4. Describe possible drug interactions
- 5. Tricyclic antidepresants
  - 1. List commonly used TCA (Amitriptyline, nortriptyline, imipramine, desipramine, clomipramine, doxepin, amoxapine)
  - 2. Describe pharmacokinetics
  - 3. Describe mechanism of action, clinical uses and side effects/toxicities
  - 4. Describe possible drug interactions
- 6. Monoamine oxidase inhibitors
  - 1. List commonly used MAO inhibitors (Tranylcypromine, phenelzine, isocarboxazid, selegiline (selective MAO-B inhibitor))
  - 2. Describe pharmacokinetics
  - 3. Describe mechanism of action, clinical uses and side effects/toxicities
  - 4. Describe possible drug interactions
- 7. 5-HT2 antagonists
  - 1. Describe mechanism of action, clinical uses and adverse effects of Trazodone and Nefazodone.
- 8. Atypical antidepressants
  - 1. Describe mechanism of action, clinical uses and adverse effects of Bupropion, Mirtazapine, Vilazodone, Vortioxetine.
- 9. Describe pharmacotherapies for smoking cessation

- 1. List the classes of antipsychotic drugs: differences in the mechanisms of action and chemical structure.
- 2. Describe pharmacokinetic of antipsychotic drugs
- 3. Describe relative receptor blocking actions of antipsychotic drugs.
- 4. Describe relative potency of typical antipsychotic drugs
- 5. List most commonly used typical (1<sup>st</sup> generation) antipsychotics
  - 1. haloperidol,
  - 2. pimozide,
  - 3. trifluoperazine,
  - 4. fluphenazine,

- 5. thioridazine,
- 6. chlorpromazine
- 6. List most commonly used atypical (2<sup>nd</sup> generation) antipsychotics
  - 1. aripiprazole,
  - 2. asenapine,
  - 3. clozapine,
  - 4. olanzapine,
  - 5. quetiapine,
  - 6. iloperidone,
  - 7. paliperidone,
  - 8. risperidone,
  - 9. lurasidone,
  - 10. ziprasidone
- 7. Describe clinical uses of antipsychotic drugs treatment of schizophrenia and other psychiatric and neurologic indications.
- 8. Describe effect of antipsychotics on positive and negative symptoms of schizophrenia
- 9. Describe extrapyramidal adverse effects of antipsychotic drugs ADAPT
  - 1. Acute Dystonia
  - 2. Akathisia
  - 3. Parkinsonism
  - 4. Tardive dyskinesia
- 10. Describe treatment of extrapyramidal adverse effects
- 11. Describe autonomic effects of antipsychotic drugs
- 12. Describe endocrine and metabolic effects of antipsychotics
- 13. Describe relative sedative effect of antipsychotics
- 14. Describe cardiac, ophthalmologic, neurologic and hematologic side effects of different antipsychotic drugs
- 15. Describe neuroleptic malignant syndrome and its treatment
- 16. Describe overdose symptoms of antipsychotics and management approaches
- 17. Describe Pharmacokinetics of lithium
- 18. Describe effects of different drugs on pharmacokinetic of lithium
- 19. Describe mechanism of action of lithium.
- 20. Describe clinical use of lithium
- 21. Name other drugs used for treatment of manic-depressive disorder
- 22. Describe adverse effects of lithium
- 23. Describe teratogenic effect of lithium

- 1. Opioid receptor subtypes and 2 ionic mechanisms that result from their activation.
- 2. Major opioid agonists, rank them in terms of analgesic efficacy, and identify specific dynamic or kinetic characteristics.
- 3. Cardinal signs and treatment of opioid drug overdose and of the withdrawal syndrome.
- 4. Acute and chronic adverse effects of opioid analgesics.

- Opioid receptor antagonist and a mixed agonist-antagonist.
  Opioids used for antitussive effects and for antidiarrheal effects.