

## Neuraminidase Inhibitors

### I. Medications

- A. Oseltamivir
- B. Zanamivir

### II. Applications

- A. Influenza treatment & prophylaxis

### III. Mechanism

- A. Inhibits neuraminidase (enzyme for viral budding)

### IV. Adverse Effects

- A. Resistance

## Amantadine & Rimantadine

### I. Medications/Applications

- A. Amantadine
  1. Parkinson's disease
  2. Influenza
- B. Rimantadine
  1. Influenza

### II. Mechanism

- A. NMDA receptor inhibitor
  1. ↑ dopamine release
  2. Blocks dopamine uptake
- B. Disrupts M2 protein on influenza virus
  1. Inhibits cell entry

### III. Adverse Effects

- A. Restlessness
- B. Agitation
- C. Confusion

## Adefovir

### I. Application

- A. Hepatitis B

### II. Mechanism

- A. Incorporates into viral DNA, prevents chain elongation
- B. Nucleotide analog

### III. Adverse Effects

- A. Nephrotoxicity

## Entecavir

### I. Applications

- A. Hepatitis B

### II. Mechanism

- A. Nucleoside analog
  1. Inhibits transcription base priming
  2. Inhibits reverse transcription of mRNA
  3. Inhibits DNA synthesis

### III. Adverse Effects

- A. Nephrotoxicity

## Telbivudine

### I. Applications

- A. Hepatitis B

### II. Mechanism

- A. Thymidine analog
  1. Competes for viral reverse transcriptase, limits chain elongation

### III. Adverse Effects

- A. Nephrotoxicity

## HCV Protease Inhibitors

### I. Medications

- A. Boceprevir
- B. Telaprevir

### II. Mechanism

- A. Inhibits protease enzyme

### III. Applications

- A. Hepatitis C
  1. Combined with ribavirin or interferon

### IV. Adverse Effects

- A. Anemia
- B. Rapid resistance in monotherapy

## Purine/Pyrimidine Analogs for Herpes Infections

### I. Medications

- A. Acyclovir
  1. HSV 1&2, VZV, EBV
- B. Ganciclovir
  1. CMV retinitis & prophylaxis
- C. Famciclovir
  1. HSV 1&2, VZV
- D. Cidofovir
  1. CMV retinitis in AIDS

### E. Trifluridine

1. HSV keratoconjunctivitis

### F. Valacyclovir

1. HSV 1&2, VZV

### II. Mechanism

1. Incorporates/inhibits viral DNA synthesis and replication

### III. Adverse Effects

- A. Cidovovir: Nephrotoxicity, neutropenia

## Foscarnet

### I. Applications

- A. CMV retinitis
- B. Acyclovir resistant HSV

### II. Mechanism

- A. Rev. inhibits viral DNA/RNA polymerase

### III. Adverse Effects

- A. Nephrotoxicity
- B. Seizure

## Nucleoside & Nucleotide Reverse Transcriptase Inhibitors

### I. Medications

- A. Abacavir
- B. Didanosine
- C. Emtricitabine
  - 1. Hepatitis B
- D. Lamivudine
  - 1. Hepatitis B
- E. Stavudine
- F. Tenofovir
- G. Zidovudine

### II. Applications

- A. HIV

### III. Mechanism

- A. Inhibits DNA chain elongation
  - 1. Phosphorylated by cell enzymes, incorporated into viral DNA, terminating synthesis

## Non-nucleoside Reverse Transcriptase Inhibitors

### I. Medications

- A. Efavirenz
- B. Etravirine
- C. Nevirapine
- D. Rilpivirine

### II. Applications

- 1. HIV

### III. Adverse Effects

- A. Nevirapine: TEN/Stevens-Johnson, Fatal hepatotoxicity
- B. Drug-drug interactions

## HIV Protease Inhibitors

### I. Medications

- A. Atazanavir
- B. Darunavir
- C. Fosamprenavir
- D. Indinavir
- E. Lopinavir
- F. Nirmatrelvir
- G. Nelfinavir
- H. Ritonavir
- I. Saquinavir
- J. Tipranavir

### II. Applications

- A. HIV
- B. Nirmatrelvir/Ritonavir: COVID-19

### III. Mechanism

- A. Inhibits HIV aspartyl protease
  - 1. HIV aspartyl protease cleaves viral polypeptide into enzymes & proteins

### IV. Adverse Effects

- A. Central/base of neck adiposity, thinning of extremities
- B. Inhibits CYP450
- C. Resistance – mutations of protease gene

## HIV Entry Inhibitors

### I. Medications

- A. Enfuvirtide
- B. Maraviroc

### II. Applications

- A. HIV

### III. Mechanism

- A. Binds surface proteins, changing conformation of HIV to enter cell
- B. Enfuvirtide: gp41
- C. Maraviroc: CCR5

### IV. Adverse Effects

- A. Maraviroc: Alternate HIV gp41 coreceptor (CXCR4)

## Integrase Inhibitors

### I. Medications

- A. Dolutegravir
- B. Elvitegravir
- C. Raltegravir

### II. Applications

- A. HIV

### III. Mechanism

- A. Inhibits integrase enzyme
  - 1. Binds metal ions
  - 2. Prevents HIV insertion of proviral DNA into host DNA

### IV. Adverse Effects

- A. Raltegravir
  - 1. Rhabdomyolysis
  - 2. Suicidal ideation
- B. Resistance – mutations of integrase gene