

# Bullet Point Nursing

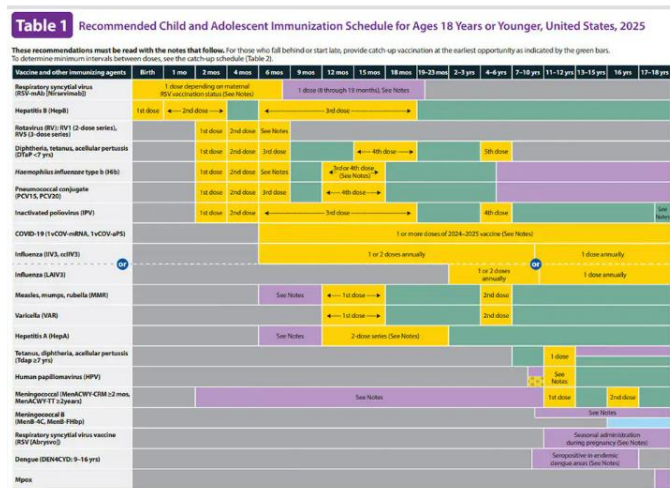
## Infectious disease pharmacology

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### Vaccines:

Type	Pathogen form	Examples
Live-Attenuated	Weakened live pathogen	MMR, Varicella, Rotavirus
Inactivated	Killed pathogen	HAV, Influenza
Recombinant	Pathogen components	HBV, HPV, PNA
mRNA	Genetic instructions	COVID19
Toxoid	Inactivated toxin	TDAP

- Almost always given parenterally
- Report adverse events to the Vaccine Adverse Event Reporting System (VAERS)
- Some vaccines require boosters
  - Titers may indicate need for a booster
- Many vaccines require multiple doses



- <https://www.cdc.gov/vaccines/hcp/immunization-schedules/index.html>

### Drug class: Azole antifungals

- Drug:
  - Fluconazole (Diflucan)
  - Miconazole
  - Ketoconazole
- MOA: Interferes with specific fungal activity
- Indications: Candidiasis and other fungal infections
- SE/AE: Cardiac and blood effects, SJS/TEN, hepatotoxicity
- Ketoconazole and miconazole are available in several formulas OTC
- High dose ketoconazole is also used for Cushing disease

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- Not recommended in pregnancy

## Drug class: Polyene

- Drug:
  - Amphotericin
- MOA: Causes cell membrane permeability leading to lost cell contents and cell death
- Indications: Severe systemic fungal infections
- SE/AE: Nephrotoxicity and hematologic effects
  - Most patients get an infusion reaction including fever, chills, nausea and headache
- Black box warning: Only to be used for severe systemic fungal infections
- Nystatin is another antifungal that is given topically or via oral suspension
  - This medication is often used for oral candidiasis (Thrush)

*Many viral infections do not require treatment*

## Drug class: Antivirals

- Drugs:
  - Acyclovir
  - Valacyclovir
- MOA: Suppresses synthesis of viral DNA
- Indications: HSV and VZV
- SE/AE: GI effects
- Most effective within 72 hours of symptom onset
- Does not cure HSV, only treats the symptoms

## Drug name: Oseltamivir (Tamiflu)

- MOA: Inhibits an influenza enzyme (neuraminidase)
- Indications: Influenza
- Most effective within 48 hours of symptom onset

## Drug class: Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTIs)

- Drug:
  - Tenofovir (TDF)
  - Zidovudine (ZDV)
- MOA: Suppress synthesis of viral DNA
- Indications: HIV and HBV
- Black box warnings: Lactic acidosis and hepatotoxicity with steatosis
  - ZDV also has black box warning for myopathy and bone marrow suppression
- SE/AE: Can cause many adverse effects including SJS/TEN, hematologic, cardiac, and metabolic

## Drug class: Nonnucleoside Reverse Transcriptase Inhibitors (NNRTIs)

- Drug:
  - Efavirenz (EFV)

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- Delavirdine
- MOA: Suppress replication of viral DNA
- Indications: HIV
- SE/AE: CNS symptoms, SJS/TEN, hepatotoxicity
- Not recommended in pregnancy
- Patient education: Take at bedtime and on an empty stomach

## **Drug class: Protease Inhibitors (PI)**

- Drug:
  - Ritonavir
- MOA: Prevent HIV maturation
- Indications: HIV
- SE/AE: Hyperglycemia, hyperlipidemia, bone loss, and more

## **Drug class: Integrase Strand Transfer Inhibitors**

- Drug:
  - Raltegravir
  - Dolutegravir
- MOA: Interferes with integration of HIV into DNA
- Indication: HIV
- SE/AE: Insomnia, fatigue, depression

## **Drug name: Tenofovir/emtricitabine (Truvada, Descovy)**

- Combination drug used for Preexposure Prophylaxis (PrEP)
- SE/AE: Decreased bone mass and kidney injury
- Requires routine HIV testing – cannot be given as monotherapy for HIV positive patients
- Black Box warning: Can exacerbate HBV. Can lead to medication resistance if used as monotherapy for HIV positive patients

## **Antiretroviral therapy notes:**

- Most patients take a combination of several medications such as NRTIs with a PI
- It is critically important that patients take their medications on time without missing a dose
- HIV treatment targets viral load (HIV RNA) and CD4 T-cell count
- Terminology: Antiretroviral therapy (ART) refers to treatment against a retrovirus such as HIV
- ART therapy continues for life and current therapies results in relapse upon cessation of treatment
- Healthcare workers may require prophylactic treatment if exposed to HIV

## **Drug class: Anthelmintic**

- Drug:
  - Ivermectin
  - Mebendazole
- MOA: Increases cell permeability

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- Indications: Worms and other uses

## **Drug class: Antimalarial**

- Drug:
  - Chloroquine
  - Hydroxychloroquine
- MOA: Multiple actions against malaria
- Indications: Malaria treatment and prevention
- SE/AE: Cardiomyopathy, hypoglycemia, myopathy, mental health effects, retinal issues
- Patient education: Avoid sun exposure
- First line treatment for malaria

## **Drug name: Metronidazole (Flagyl)**

- MOA: Impairs DNA function
- Indications: Anaerobic bacterial infections, trichomoniasis, amoebic dysentery
- Many other off-label uses
- SE/AE: SJS/TEN, blood disorders,
- Both antiprotozoal and antibacterial
- Can act like disulfiram in causing unpleasant interactions with alcohol
- Black Box warning: Carcinogenic in animals

## **Drug class: Anti-infective**

- Drug:
  - Bacitracin
- MOA: Inhibits bacterial cell wall synthesis
- Indication: Prevention of bacterial infection
- Directions: Apply topically up to three times daily
- This drug is also available via ophthalmic and systemic routes

## **Drug class: Pediculicide**

- Drugs:
  - Permethrin (Nix)
  - Pyrethrin (Rid)
- MOA: Kills lice and scabies
- Indications: Scabies and lice
- For scabies the entire body should be covered, excluding mucous membranes, and left covered for 8-14 hours
- For lice, wash hair, apply product and leave on for ten minutes, remove nits with nit comb

## **Drug class: Immunosuppressants**

- Drugs:
  - Cyclophosphamide (Cytoxan)
  - Cyclosporine

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- Many monoclonal antibodies (MABs)
  - Steroids
- MOA: Varies methods of suppressing the immune system
- Indications: Prevent transplant rejection, autoimmune diseases, cancer
- SE/AE: Many side effects including infection (May require practicing reverse isolation)
- Educate patients to report a fever and avoid contact with anyone who is sick

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## References

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