Anti-Infectives

NAPNES Guidelines

Presented by

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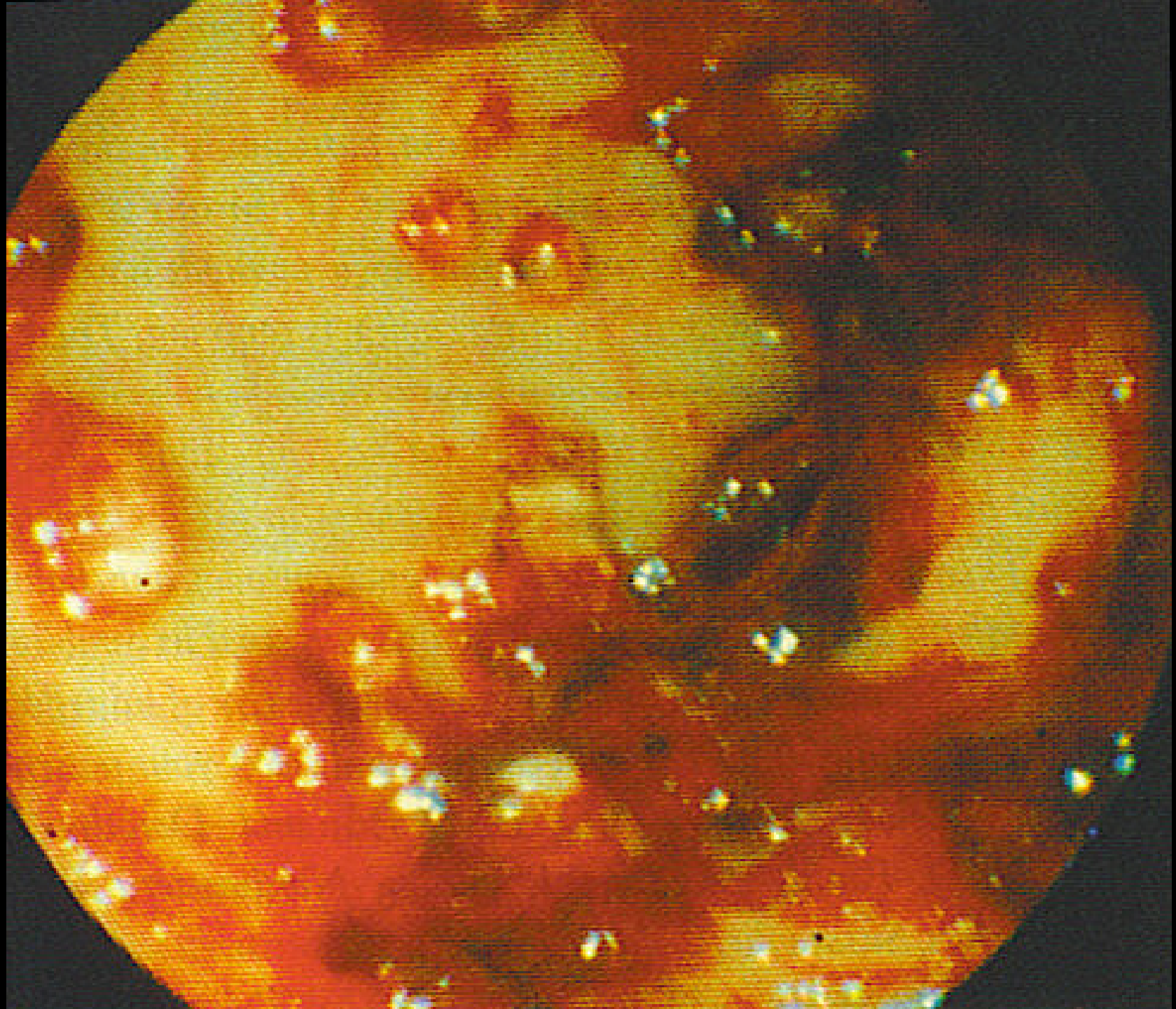
Anti-Infectives

Terms

- Antibacterial
- Anti-infective
- Bacteriostatic
- Bactericidal
- Agranulocytosis
- Thrombocytopenia
- Aplastic anemia
- Leukopenia
- Uticaria
- Anaphylactic shock
- Angioedema
- Pseudomembranous colitis
- Pruritis
- Stevens-Johnson syndrome
- Stomatitis
- Bacterial resistance



Anti-Infectives

Sulfonamides

- 1st antibiotic drugs developed
- Use declined
  - After introduction of more effective drugs
- Remain important in treatment of certain type of infections
- Examples:
  - Sulfasalazone **(Azulfidine)**
  - Sulfamethizole **(Septra, Bactrim)**
  - Silver sulfadiazine **(Silvadene)**

Anti-Infectives
Sulfonamides

- Actions
  - Bacteriostatic
- Common Uses
  - Urinary tract infections
  - 2nd & 3rd degree burns (topical)
  - Ulcerative colitis
- Usual dosage of selected sulfa drugs
  - Sulfasalazone (Azulfidine) = 1 – 4 g/d (divided doses) initially, then 500mg QID (2g/d)
  - TMP/SMZ (Bactrim) = 160mg TMP/800mg SMZ po q 12hr

Anti-Infectives
Sulfonamides

- Major adverse reactions
  - Agranulocytosis
  - Thrombocytopenia
  - Aplastic anemia
  - Leukopenia
  - Anaphylaxis
  - Crystalluria
  - Stevens-Johnson syndrome
  - Skin/urine color change
  - Burning sensation/pain (topical)

Anti-Infectives
Sulfonamides

- Nursing Implications
  - Monitor vital signs – report changes (for all drugs)
  - Evaluate patient response
  - Topical administered q 1 -2 hrs for burns
    - Apply 1/16 inch thick w/sterile glove
  - Administer on empty stomach
  - Instruct pt to drink full glass of water & to drink 8 large glasses of water until finished with therapy
  - Monitor for s/s Stevens-Johnson syndrome
  - Monitor for s/s of leukopenia
    - Fever, sore throat, cough
  - Monitor for s/s of thrombocytopenia
    - Easy bruising, unusual bleeding
  - Warn pt of possible skin color change

Anti-Infectives

Penicillins

- Discovered by Sir Arthur Fleming in 1928
  - Used clinically in 1941
  - 4 classes & examples
    - Natural penicillins (PCNs)
      - Penicillin V **(Pen-Vee K)**
    - Penicillinase-resistance PCNs
      - Dicloxacillin sodium **(Dynapen)**
    - Aminopenicillins
      - Amoxicillin **(Amoxil)**
    - Extended-spectrum PCNs
      - Piperacillin sodium **(Pipracil)**

Anti-Infectives
Penicillins

- Actions
  - Bactericidal
  - Bacteriostatic
  - Culture and sensitivity
    - Utilized to identify organism

Anti-Infectives
Penicillins

- Uses
  - Infectious disease
    - UTIs
    - Septicemia
    - Meningitis
    - Intra-abdominal infection
    - STDs – gonorrhea, syphilis
    - Pneumonia & other respiratory infections
  - Prophylaxis

Anti-Infectives
Penicillins

- Usual dosage of selected PCN drugs
  - Penicillin V **(Pen-Vee K)**
    - 125 – 500 mg po q6h or q8h
  - Dicloxacillin sodium **(Dynapen)**
    - 125 – 250 mg po q6h
  - Amoxicillin **(Amoxil)**
    - 250 – 500 mg po q8h or 875 mg po BID
  - Piperacillin sodium **(Pipracil)**
    - 3 -4 g q4-6h IV or IM, max dose 25 g/d

Anti-Infectives
Penicillins

- Major adverse effects
  - Hypersensitivity reactions
  - Superinfection
    - Pseudomembranous colitis – common bacterial superinfection
    - Candidiasis/moniliasis – common fungal superinfection
  - Anaphylactic shock
  - Thrombocytopenia
  - Leukopenia
  - Glossitis
  - Stomatitis
  - Phlebitis (with IV administration)

Anti-Infectives
Penicillins

- Nursing Implications
  - Inquire about allergies
  - Record VS
  - Ongoing assessment
    - Effectiveness
    - Reactions
  - Observe pt for at least 30 minutes after IM
  - Give on empty stomach with full glass of H2O

Anti-Infectives

Cephalosporins

- Structurally & chemically related to PCN
  - Wider range of bacterial activity
- Divided first, second, & third generations
  - Increases in activity against certain organisms
- Examples
  - 1st generation – cephalexin (Keflex)
  - 2nd generation – cefaclor (Ceclor)
  - 3rd generation – ceftriaxone (Rocephin)

Anti-Infectives
Cephalosporins

- Actions
  - Bactericidal
- Common uses
  - Pharyngitis, tonsillitis, otitis media
  - Lower respiratory tract infections
  - UTIs
  - Septicemia
  - gonorrhea

Anti-Infectives
Cephalosporins

- Usual dosage of selected cephalosporins
  - Cephalexin **(Keflex)**
    - 1-4 q/d po in divided doses
  - Cefaclor **(Ceclor)**
    - 250 mg po q8h
  - Ceftriaxone **(Rocephin)**
    - 1-2 q/d IM, IV QID, BID; maximum, 4 g/d; perioperative, 1 g IV; gonorrhea, 250 mg IM as a single dose

Anti-Infectives
Cephalosporins

- Major adverse effects
  - Stevens – Johnson syndrome
  - Aplastic anemia
    - Anemia due to deficient RBC production
  - Epidermal necrolysis
    - Death of the epidermal layer of the skin
  - Nephrotoxicity – especially older adults or pts with renal impairment
  - Thrombophlebitis/phlebitis
    - IV administration
  - Bacterial superinfections

Anti-Infectives
Cephalosporins

- Nursing Implications
  - Assess VS and s/s of infection
  - Determine allergies
  - Culture and sensitivity – if ordered
  - Observe for s/s of anaphylaxis
  - Administer around clock w/o regard to po intake
  - Monitor for thrombophlebitis

Anti-Infectives
Cephalosporins

- Patient teaching
  - Take around clock
  - s/s of superinfection
  - When to notify HCP
    - Diarrhea
      - Puss
      - Mucous
      - blood

Anti-Infectives

Tetracyclines

- Examples
  - Doxycycline **(Vibramycin)**
  - Minocycline **(Minocin)**
- Actions
  - Bacteriostatic
  - bactericidal

Anti-Infectives
Tetracyclines

- Common uses
  - Cholera
  - Rocky Mountain spotted fever
  - Typhus
  - Situations in which PCN cannot be used
  - Combo tx of *Helicobacter pylori*
    - w/bismuth subsalicylate (Pepto Bismol)

Anti-Infectives
Tetracyclines

- Usual dosage of selected drugs
  - Doxycycline **(Vibramycin)**
    - 100 mg po q12h 1st day, then 100-200mg/d po
    - 200 mg IV 1st day then 100-200 mg/d IV
  - Minocycline **(Minocin)**
    - 200 mg po initially then 100mg
    - IV q12h 100-200 mg initially then 50 mg PO QID

Anti-Infectives
Tetracyclines

- Major adverse effects
  - Photosensitivity reaction
    - Exaggerated sunburn reaction
  - Permanent yellow-gray-brown discoloration of teeth
    - Children younger than 9 yrs (should not receive)
  - Superinfections

Anti-Infectives
Tetracyclines

- Nursing implications
  - Give on empty stomach
  - Do not give with dairy products
    - Except doxycycline (Vibramycin) and minocycline (Minocin)
  - Give with full glass of water

Anti-Infectives
Macrolides

- Examples
  - Erythromycin **(E-Mycin)**
  - Azithromycin **(Zithromax)**
  - Clarithromycin **(Biaxin)**
  - Telithromycin (Ketek)
- Actions
  - Bacteriostatic or bactericidal
    - Susceptible bacteria

Anti-Infectives
Macrolides

- Common uses
  - URIs
  - Prophylaxis
    - Dental/other procedures
    - Allergies to PCN
  - Acne vulgaris/skin infections

Anti-Infectives
Macrolides

- Usual dosage of selected drugs
  - Erythromycin **(E-Mycin)**
    - 250 mg po q6h or 333 mg q8h
  - Azithromycin **(Zithromax)**
    - 500 mg po 1st day then 250 mg/d po X 4 d
  - Clarithromycin **(Biaxin)**
    - 250 – 500 mg po BID
  - Telithromycin (Ketek)
    - 800 mg qd for 5, 7, or 10 days
      - Depending on type of infection

Anti-Infectives
Macrolides

- Adverse effects
  - GI tract effects
    - N & V, diarrhea, abdominal cramping
    - Esp; erythromycin
  - Allergic reactions
  - Pseudomembranous colitis

Anti-Infectives
Macrolides

- Nursing implications
  - Give erythromycin on empty stomach
  - Clarithromycin (Biaxin) & azithromycin (Zithromax)
    - Given w/o regard to meals
      - Except liquid suspension
        - » Empty stomach

Anti-Infectives

Lincosamides

- Higher potential for toxicity
  - Used only for tx of serious infections
    - When PCN & macrolides ineffective
- Example
  - Clindamycin **(Cleocin)**
- Action
  - Bactericidal
- Common uses
  - Serious infections

Anti-Infectives
Lincosamides

- Adverse effects
  - Abdominal pain, esophagitis, N&V, diarrhea
  - Skin rash
  - Blood dyscrasias
  - Pseudomembranous colitis
    - Mild to severe
- Nursing implications
  - Take on empty stomach
    - Except clindamycin (Cleocin)

Anti-Infectives
Fluoroquinolones

- Examples
  - Ciprofloxacin **(Cipro)**
  - Levofloxacin **(Levaquin)**
  - Moxifloxacin **(Avelox)**
- Actions
  - Bactericidal
- Common uses
  - Lower respiratory tract infections
  - UTIs
  - Skin infections
  - STDs

Anti-Infectives
Fluoroquinolones

- Common dosages
  - Ciprofloxacin **(Cipro) –** 250-750mg po q12h, 200-400mg IV q12h
  - Levofloxacin **(Levaquin) –** 250-500mg/d po, IV
  - Moxifloxacin **(Avelox) –** 400 mg po qd
- Adverse effects
  - N&V, diarrhea, abd pain
  - Headache
  - Dizziness
  - **Photosensitivity reaction**
    - More serious

Anti-Infectives
Fluoroquinolones

- Nursing implications
  - Increase fluid intake
  - Give on empty stomach
  - None given IM
  - Do not give moxifloxacin (Avelox) with antacids
  - Report any s/s of tendonitis
    - Pain or soreness in leg, shoulder, back of heel

Anti-Infectives
Aminoglycosides

- Examples
  - Gentamicin (Garamycin)
  - Neomycin (Neo-Tabs)
  - Streptomycin *(Generic)*
  - Tobramycin (Nebcin)
- Actions
  - Bactericidal
- Common uses
  - Pre-op bowel prep
  - Hepatic coma

Anti-Infectives
Aminoglycosides

- Adverse effects
  - Nephrotoxicity
    - Proteinuria, hematuria
  - Ototoxicity
    - Tinnitus, dizziness, roaring in ears, vertigo
    - Hearing loss
      - Permanent
      - May occur or after drug therapy
  - Neurotoxicity
    - Numbness, skin tingling, circumoral & peripheral paresthesia,
    - Tremors, muscle twitching, convulsions, muscle weakness,
    - Neuromuscular blockade

Anti-Infectives
Aminoglycosides

- Nursing Implications
  - Report s/s of respiratory depression
  - Assess for s/s nephro/oto/neurotoxicity
    - Measure I&O, encourage fluid intake
    - Monitor creatinine and BUN
    - Changes in hearing
    - Numbness, tingling around mouth or extremities

Other Antibiotics

- dapsone
  - Anti-tubercular
- linezolid (Zyvox)
  - VRE & MRSA
- metronidazole (Flagyl)
  - Anaerobic organisms
- nitrofurantoin (Macrodantin)
  - Primarily used for UTI
- quinupristin and dalfopristin (Synercid)
  - Serious infections

Other Antibiotics (cont'd)

- vancomycin
  - Natural, bactericidal antibiotic
  - Destroys cell wall
  - Treatment of choice for MRSA, and other gram-positive infections
  - Must monitor blood levels to ensure therapeutic levels and prevent toxicity
  - May cause ototoxicity and nephrotoxicity

Other Antibiotics

- vancomycin (cont'd)
  - Should be infused over 60 minutes
  - Monitor IV site closely
  - Redman’s syndrome may occur
    - Decreased BP, flushing of neck and face
    - Antihistamine may be ordered to reduce these effects
  - Ensure adequate hydration (2 L fluids/24 hr) if not contraindicated to prevent nephrotoxicity

Antibiotics: Nursing Implications

- Before beginning therapy, assess drug allergies; hepatic, liver, and cardiac function; and other lab studies
- Be sure to obtain thorough patient health history, including immune status
- Assess for conditions that may be contraindications to antibiotic use or that may indicate cautious use
- Assess for potential drug interactions

Antibiotics: Nursing Implications

It is ESSENTIAL to obtain cultures from appropriate sites BEFORE beginning antibiotic therapy

Antibiotics: Nursing Implications

- Patients should be instructed to take antibiotics exactly as prescribed and for the length of time prescribed; they should not stop taking the medication early when they feel better
- Assess for signs and symptoms of superinfection: fever, perineal itching, cough, lethargy, or any unusual discharge

Antibiotics: Nursing Implications

For safety reasons, check the name of the medication carefully because there are many agents that sound alike or have similar spellings

Antibiotics: Nursing Implications

- Each class of antibiotics has specific side effects and drug interactions that must be carefully assessed and monitored
- The most common side effects of antibiotics are nausea, vomiting, and diarrhea
- All oral antibiotics are absorbed better if taken with at least 6 to 8 ounces of water

Antibiotics: Nursing Implications

Sulfonamides

- Should be taken with at least 2000 mL of fluid per day, unless contraindicated
- Due to photosensitivity, avoid sunlight and tanning beds
- These agents reduce the effectiveness of oral contraceptives
- Oral forms should be taken with food or milk to reduce GI upset

Antibiotics: Nursing Implications

Penicillins

- Any patient taking a penicillin should be carefully monitored for an allergic reaction for at least 30 minutes after its administration
- The effectiveness of oral penicillins is decreased when taken with caffeine, citrus fruit, cola beverages, fruit juices, or tomato juice

Antibiotics: Nursing Implications

Cephalosporins

- Orally administered forms should be given with food to decrease GI upset, even though this will delay absorption
- Some of these agents may cause a disulfiram (Antabuse)-like reaction when taken with alcohol

Antibiotics: Nursing Implications

Macrolides

- These agents are highly protein-bound and will cause severe interactions with other protein-bound drugs
- The absorption of oral erythromycin is enhanced when taken on an empty stomach, but because of the high incidence of GI upset, many agents are taken after a meal or snack

Antibiotics: Nursing Implications

Tetracyclines

- Milk products, iron preparations, antacids, and other dairy products should be avoided because of the chelation and drug-binding that occurs
- All medications should be taken with 6 to 8 ounces of fluid, preferably water
- Due to photosensitivity, avoid sunlight and tanning beds

Antibiotics: Nursing Implications

Aminoglycosides

- Monitor peak and trough blood levels of these agents to prevent nephrotoxicity and ototoxicity
- Symptoms of ototoxicity include dizziness, tinnitus, and hearing loss
- Symptoms of nephrotoxicity include urinary casts, proteinuria, and increased BUN and serum creatinine levels

Antibiotics: Nursing Implications

Quinolones

- Should be taken with at least 3 L of fluid per day, unless otherwise specified
- Intake of alkaline foods and drugs, such as antacids, dairy products, peanuts, and sodium bicarbonate should be limited

Antibiotics: Nursing Implications

Monitor for therapeutic effects

- Improvement of signs and symptoms of infection
- Return to normal vital signs
- Negative culture and sensitivity tests
- Disappearance of fever, lethargy, drainage, and redness

Monitor for adverse reactions

Antibiotics: Nursing Implications

- Antibiotic (antimicrobial) resistance
  - http://www.fda.gov/cvm/antiresistvideo.htm
  - MRSA
    - Methicillin resistant staphylococcus aureus
  - VRE
    - Vancomycin resistant enterococcus

MRSA

- **What is MRSA?**
  - MRSA refers to a type of bacteria (Staphylococcus aureus) that is resistant to many antibiotics. It is a common cause of hospital-acquired infections.
- **Who gets MRSA?**
  - Anyone can get MRSA, but it is found most often in hospitalized patients.
- **What are the symptoms associated with MRSA infection?**
  - MRSA infections can cause a broad range of symptoms depending on the part of the body that is infected. These may include surgical wounds, burns, catheter sites, eye, skin and blood. Infection often results in redness, swelling and tenderness at the site of infection. Sometimes, people may carry MRSA without having any symptoms.
- **How is it transmitted?**
  - The staph bacteria is generally spread through direct contact with the hands of a health care worker or patient who is infected or carrying the organism.
- **How long can an infected person carry MRSA?**
  - Some people can carry MRSA for days to many months, even after their infection has been treated.
- **What is the treatment for MRSA?**
  - Although MRSA cannot be effectively treated with antibiotics such as methicillin, nafcillin, cephalosporin or penicillin, it can usually be treated with an antibiotic called vancomycin. Recently, however, a few strains of Staphylococcus aureus have even developed some degree of resistance to vancomycin. The vancomycin-resistant strains may be more difficult to treat. Newer antibiotics are being developed to address this problem.

VRE

- **What is VRE?**
  - Enterococci are bacteria that are naturally present in the intestinal tract of all people. Vancomycin is an antibiotic to which some strains of enterococci have become resistant. These resistant strains are referred to as VRE.
- **Are VRE infections serious?**
  - In general, enterococci are not very harmful or virulent. This applies to both antibiotic-resistant as well as nonresistant or sensitive strains. However, when VRE infects the urinary tract, surgical wounds or the bloodstream of hospitalized patients, it may be difficult to treat and, occasionally, may be life threatening. New antibiotics to treat VRE are under development.
- **Who gets VRE?**
  - Serious VRE infections usually occur in hospitalized patients with serious underlying illnesses such as cancer, blood disorders, kidney disease or immune deficiencies. People in good health are not at risk of infection, but health care workers may play a role in transmitting the organism, if careful hand washing and other infection control precautions are not practiced.
- **How is VRE spread?**
  - VRE is usually spread by direct contact with hands, environmental surfaces or medical equipment that has been contaminated by the feces of an infected person.

Anti-Infectives
Antitubercular drugs

- Tuberculosis
  - Caused *Mycobacterium tuberculosis*
  - Transmitted by air droplets
    - Cough & sneezing
  - Primarily affects lungs
    - Other organs can also be affected (extrapulmonary)

Anti-Infectives

Antitubercular drugs

- Treatment
  - Do not cure
  - Render pt noninfectious to others
- Prophylactic
  - Prevent spread
- Classifications
  - Primary (1st line)
  - Secondary (2nd line)

Anti-Infectives

Antitubercular drugs

- Examples
  - Isoniazid **(INH)**
  - Rifampim **(Rifadin)**
  - Isoniazid/Rifampim **(Rifamate)**
- Action
  - Bacteriostatic
    - Most drugs
  - Bactericidal
    - INH

Anti-Infectives
Antitubercular drugs

- Common uses
  - Treat active Tb
  - Prophylaxis
  - Standard treatment
    - 2 phases
      - Initial phase - ~ 2 months
      - Continuing phase - ~ 4 months

Anti-Infectives
Antitubercular drugs

- Adverse effects
  - Hypersensitivity reactions
  - Optic neuritis
  - Hematologic changes
  - Jaundice
  - Severe hepatitis
    - Sometimes fatal
  - Peripheral neuropathy
  - Rifampin only
    - Reddish-orange discoloration of body fluids

Anti-tubercular drugs
Nursing Implications

- Obtain a thorough medical history and assessment
- Perform liver function studies in patients who are to receive isoniazid or rifampin (especially in elderly patients or those who use alcohol daily)
- Assess for contraindications to the various agents, conditions for cautious use, and potential drug interactions

Anti-tubercular drugs
Nursing Implications

Patient education is *critical*

- Therapy may last for up to 24 months
- Take medications exactly as ordered, at the same time every day
- Emphasize the importance of strict compliance to regimen for improvement of condition or cure

Anti-tubercular drugs
Nursing Implications

Patient education is *critical* (cont'd)

- Remind patients that they are contagious during the initial period of their illness—instruct in proper hygiene and prevention of the spread of infected droplets
- Emphasize to patients to take care of themselves, including adequate nutrition and rest

Anti-tubercular drugs
Nursing Implications

- Patients should not consume alcohol while on these medications or take other medications, including OTC, unless they check with their physician
- Diabetic patients taking INH should monitor blood glucose levels because hyperglycemia may occur
- INH and rifampin cause oral contraceptives to become ineffective; another form of birth control will be needed

Anti-tubercular drugs
Nursing Implications

- Patients who are taking rifampin should be told that their urine, stool, saliva, sputum, sweat, or tears may become reddish orange; even contact lenses may be stained
- Pyridoxine may be needed to combat neurologic side effects associated with INH therapy
- Oral preparations may be given with meals to reduce GI upset, even though recommendations are to take them 1 hour before or 2 hours after meals

Anti-tubercular drugs
Nursing Implications

Monitor for side effects

- Instruct patients on the side effects that should be reported to the physician immediately
- These include fatigue, nausea, vomiting, numbness and tingling of the extremities, fever, loss of appetite, depression, jaundice

Anti-tubercular drugs
Nursing Implications

Monitor for therapeutic effects

- Decrease in symptoms of TB, such as cough and fever
- Lab studies (culture and sensitivity tests) and CXR should confirm clinical findings
- Watch for lack of clinical response to therapy, indicating possible drug resistance

Anti-Infectives

Leprostatic drugs

- Leprosy
  - Chronic, communicable disease
  - Spread by prolonged, intimate contact
  - Affects peripheral nerves and skin
- Examples
  - Clofazimine **(Lamprene)**
  - Dapsone *(generic)*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Anti-Infectives

Antiviral drugs

- Examples
  - Amantadine (**Symmetrel),** Oseltamivir **(Tamiflu),** Zanamivir **(Relenza)**
  - Acyclovir **(Zovirax)**, famciclovir **(Famvir),** valacyclovir **(Valtrex)**
  - Lamivudine **(Epivir),** didanosine **(Videx)**
- Actions
  - Inhibit viral DNA or RNA replication in the virus
    - Viral death

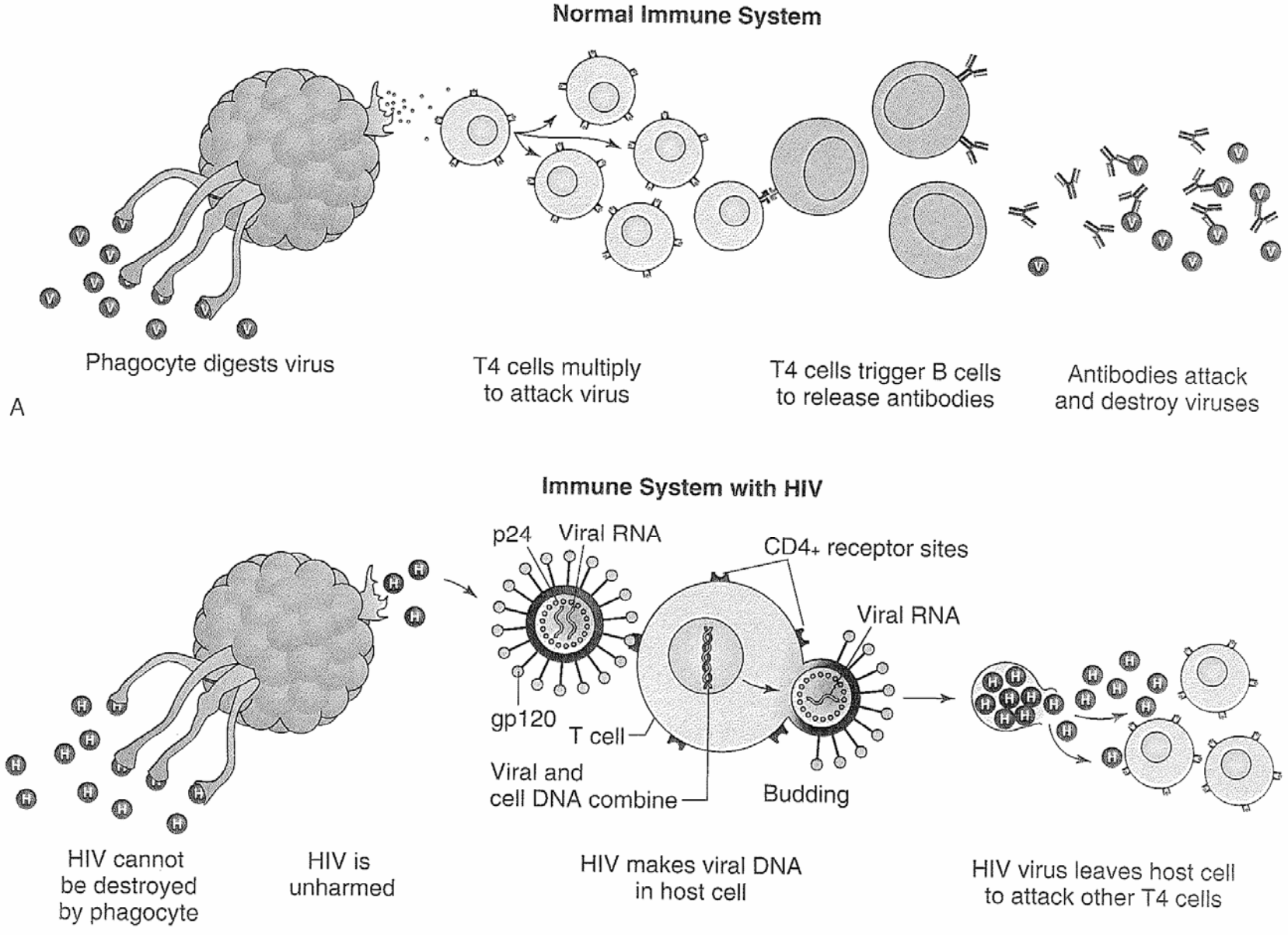


Figure 54-1 *(A)* Normal immune system. *(B)* HIV contains several proteins: gp 120 protein around it and viral RNA and p24 protein inside. The gp 120 proteins attach to CD4+ receptors of T lymphocytes; HIV enters the cell and makes viral DNA; the enslaved host cell produces new viruses that bud, which destroys the host cell's membrane, causing cellular death and allowing the virus to leave to attack other CD4+ T-lymphocyte cells.

Anti-Infectives

Antiviral drugs

- Common uses
  - Influenza, respiratory syncytial virus (RSV)
  - Herpes simples virus (HSV) I & II
  - Herpes zoster
  - Cytomegalovirus (CMV)
  - Human immunodeficiency virus (HIV)

Anti-Infectives
Antiviral drugs

- Adverse effects
  - GI effects
  - Rapid IV
    - Crystalluria
    - Phlebitis
  - CNS effects
  - Psychosis
  - Hepatotoxicity
  - Flu-like symptoms
  - Hematologic changes

Anti-Infectives
Antiviral drugs

- Nursing Implications
  - Pt education
    - Proper administration
  - Monitor for SE

Antivirals: Nursing Implications

- Before beginning therapy, thoroughly assess underlying disease and medical history, including allergies
- Assess baseline VS and nutritional status
- Assess for contraindications, conditions that may indicate cautious use, and potential drug interactions

Antivirals: Nursing Implications

- Be sure to teach proper application technique for ointments, aerosol powders, etc.
- Emphasize handwashing before and after administration of medications to prevent site contamination and spread of infection
- Patients should wear a glove or finger cot when applying ointments or solutions to affected areas

Antivirals: Nursing Implications

- Instruct patients to consult their physician before taking any other medication, including OTCs
- Emphasize the importance of good hygiene
- Inform patients that antiviral agents are not cures but do help to manage symptoms

Antivirals: Nursing Implications

- Instruct patients on the importance of taking these medications exactly as prescribed and for the full course of treatment
- With zidovudine:
  - Inform patients that hair loss *may* occur so that they are prepared for this rare adverse reaction
  - This medication should be taken on an empty stomach

Antivirals: Nursing Implications

Monitor for side effects

- Effects are varied and specific to each agent

Antivirals: Nursing Implications

Monitor for therapeutic effects

- Effects will vary depending on the type of viral infection
- Effects range from delayed progression of AIDS and ARC to decrease in flulike symptoms, decreased frequency of herpes-like flare-ups,or crusting over of herpetic lesions

Anti-Infectives
Antifungal drugs

- Superficial mycotic (fungal) infections
  - Tinea pedis (athlete’ s foot)
  - Tinea cruris (jock itch)
  - Tinea corporis (ringworm)
  - Onychomycosis (nail fungus)
  - Yeast infections
    - Candida albicans
      - Vulvovaginal infections
- Deep (systemic) mycotic infections
  - Develop inside body
  - Treatment difficult and prolonged

Anti-Infectives

Antifungal drugs

- Examples
  - Amphotericin B **(Amphocin)**
  - Fluconazole **(Diflucan)**
  - Ketoconazole **(Nizoral)**
  - Itraconazole (**Sporanox)**
  - Nystatin *(generic)*
- Actions
  - Fungicidal (kills fungi)
  - Fungistatic (slow fungi multiplication)

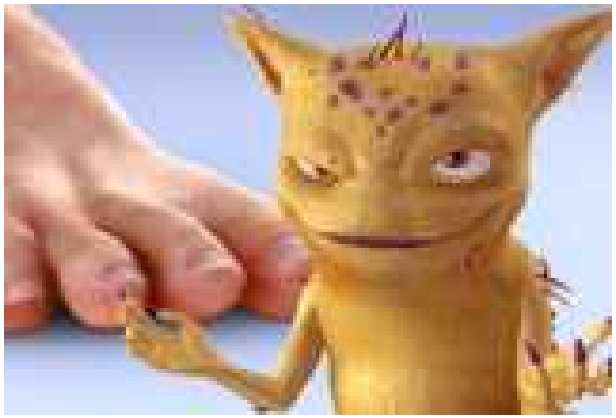
Anti-Infectives
Antifungal drugs

- Uses
  - Superficial and deep fungal infections
- Adverse effects
  - Topical
    - Local effects – irritation, burning, stinging
  - Systemic (Amphotericin)
    - Saved for life-threatening infections
    - Given IV for several months
    - Serious reactions can occur
      - Fever, shaking, chills, HA, malaise, anorexia, n/v, anemia
      - Renal damage

Anti-Infectives

Antifungal drugs

- Nursing Implications
  - Pt education
  - Monitor for adverse effects
  - Manage adverse effects



Antifungal Agents: Nursing Implications

- Before beginning therapy, assess for hypersensitivity, possible contraindications, and conditions that require cautious use
- Obtain baseline VS, CBC, liver function studies, and ECG
- Assess for other medications used (prescribed and OTC) in order to avoid drug interactions

Antifungal Agents: Nursing Implications

- Follow manufacturer's directions carefully for reconstitution and administration
- Monitor VS of patients receiving IV infusions every 15 to 30 minutes
- During IV infusions, monitor I&O and urinalysis findings to identify adverse renal effects

Antifungal Agents: Nursing Implications

Amphotericin B

- To reduce the severity of the infusion-related reactions, pretreatment with an antipyretic (acetaminophen), antihistamines, and antiemetics may be given
- A test dose of 1 mg per 20 mL 5% dextrose in water infused over 30 minutes should be given
- Use IV infusion pumps and the most distal veins possible

Antifungal Agents: Nursing Implications

- Tissue extravasation of fluconazole at the IV site may lead to tissue necrosis—monitor IV site carefully
- Oral forms of griseofulvin should be given with meals to decrease GI upset
- Monitor carefully for side/adverse effects

Antifungal Agents: Nursing Implications

Monitor for therapeutic effects

- Easing of the symptoms of infection
- Improved energy levels
- Normal vital signs, including temperature

Anti-Infectives

Antiparasitic drugs

- Parasites
  - Helminthiasis
    - Invasion of body by helminths (worms)
  - Malaria
    - Invasion by protozoan
    - Transmitted through mosquito bite
  - Amebiasis
    - Invasion of body by ameba

Anti-Infectives

Antiparasitic drugs

- Antihelmintic drugs
  - Examples
    - Albendazole **(Albenza)**
    - Pyrantel **(Antiminth)**
  - Uses
    - Destroys roundworm, pinworms, whipworms, hookworms, tapeworms

Anti-Infectives

Antiparasitic drugs

- Antimalarial drugs
  - Examples
    - Chloroquine **(Aralen)**
    - Quinine *(generic)*
  - Uses
    - Suppression – the prevention of malaria
    - Treatment – management of malarial attack

Anti-Infectives

Antiparasitic drugs

- Amebicides
  - Examples
    - Chloraquine **(Aralen)**
    - Metronidazole **(Flagyl)**
  - Uses
    - Kill intestinal and extraintestinal amebas

Antiparasitic Agents: Nursing Implications

- Before beginning therapy, perform a thorough health history and medication history, and assess for allergies
- Check baseline VS
- Check for conditions that may contraindicate use, and for potential drug interactions

Antiparasitic Agents: Nursing Implications

- Some agents may cause the urine to have an asparagus-like odor, or cause an unusual skin odor, or a metallic taste; be sure to warn the patient ahead of time
- Administer *all* agents as ordered and for the prescribed length of time
- Most agents should be taken with food to reduce GI upset; atovaquone should be taken with food, often fatty food, to increase plasma drug levels

Antimalarial Agents: Nursing Implications

- Assess for presence of malarial symptoms
- When used for prophylaxis, these agents should be started 2 weeks before potential exposure to malaria, and for 8 weeks after leaving the area
- Medications are taken weekly, with 8 ounces of water

Antimalarial Agents: Nursing Implications

- Instruct patient to notify physician immediately if ringing in the ears, hearing decrease, visual difficulties, nausea, vomiting, profuse diarrhea, or abdominal pain occurs
- Alert patients to the possible recurrence of the symptoms of malaria so that they will know to seek immediate treatment

Antiparasitic Agents: Nursing Implications

Monitor for side effects

- Ensure that patients know the side effects that should be reported
- Monitor for therapeutic effects and adverse effects with long-term therapy