

## Chapter Six

### Empirical Antibiotic Therapy

1- A 75 year old man with end stage cancer disease is hospitalized because of meningeal signs. Gram smear of CSF shows gram positive diphtheroids. What empirical therapy do you suggest?

- A- Cefotaxime
- B- FQ + Aminoglycosides
- C- Aztreonam + Aminoglycosides
- D- Ampicillin + Aminoglycosides

2- When should dexamethasone be administered for acute bacterial meningitis?

- A- In H-flu meningitis of children
- B- In pneumococcal meningitis with Vancomycin
- C- In meningococcal meningitis
- D- in staph aureus meningitis of brain surgeries

3- A 20 year old patient develops chills and fever and drowsiness since two days ago. CSF examination shows bacterial meningitis. He is allergic to penicillin. What drug should be given?

- A- Imepinem
- B- Penicillin + hydrocortisone
- C- Ceftriaxone
- D- None of the above

4- A 70 year old man has vomiting and drowsiness. After confirming there's no contraindications for LP, the CSF fluid is examined. WBC=800, PMN=80%, sugar=40mg, protein=150 mg. What is the choice of antibiotic before the result of CSF culture is ready?

- A- Ceftriaxone + Metronidazole
- B- Clindamycin + Ceftriaxone + Ampicillin
- C- Ceftriaxone + Vancomycin + Ampicillin
- D- Ceftriaxone + Vancomycin

5- A 25 year old man with lymphoma develops meningeal signs. LP shows a high pressure CSF, WBC=800, PMN=90%, low sugar, high protein. Gram positive bacilli can be seen in the smear. What drug do you administer?

- A- Ceftriaxone + Amikacin
- B- Cotrimoxazole + Erythromycin
- C- Ampicillin + Gentamycin
- D- Vancomycin + Rifampin

6- A man (from a village, two hours away from the nearest clinic) comes with meningeal signs. He has the signs and symptoms of high ICP. What should be done before referring the patient to a hospital?

- A- LP
- B- Cephalotin 2 grams IV
- C- Ampicillin 2 grams IV
- D- No action is needed

7-A 5 year old child complains of sore throat and dysphagia and dyspnea. He shows stridor and drooling. He assumes upright position bending forward. What is the most probable diagnosis?

- A- Retropharyngeal abscess
- B- Acute laryngitis
- C- Epiglottitis
- D- Ludwig's angina

8- What is the first diagnostic test to do for this case of question 7?

- A- Lateral neck x-ray
- B- Chest x-ray
- C- Bronchoscopy
- D-throat exam

9-A drug abuser comes to ED with chills and fever. He proves to suffer endocarditis. His blood culture shows staph aureus resistant to Methicillin. What other antibiotic is appropriate for this case?

- A- Amoxicillin
- B-Pipracillin
- C- Gentamycin
- D- Vancomycine

10-What is the drug of choice for streptococcus Viridans endocarditis?

- A- Penicillin +Chloramphenicol
- B- Cefalotin
- C- Ampicillin
- D-Penicillin + aminoglycoside

11- A 30 year old woman with mitral stenosis has to undergo upper endoscopy. What should be done to prevent endocarditis?

- A- gentamycin 15mg/kg +Ampicillin 2 grams
- B- Amoxicillin 2 grams PO
- C- Clindamycin 600 mg PO
- D- No need for prevention

12-A 19 year old man has some pustular lesions in his face. The lesions started by some insect bites, but later turned into papules and later to blisters. He is not feverish or ill. The lesions are painless. What should be prescribed?

- A- Cephalexin
- B-Topical steroid ointment
- C- Antihistamines PO
- D- Steroid PO

13-A drug abuser has severe and sudden pain in the thighs. In exam you find the thigh to be edematous with hemorrhagic exudates on the site. He is ill and feverish. X ray image shows gas in the tissue. What antibiotic should be prescribed with debridement?

- A- Cefotaxime + Metronidazole
- B- Nafcilin + Amikacin
- C- Penicillin + clindamycin
- D- Piperacillin + sulbactam

14-A man complains of diarrhea, abdominal pain, tenesmus and fever. What is the first diagnostic test?

- A- Stool culture
- B- Stool smear
- C- Blood culture
- D- All of the above

15-A man has just returned from a trip to Southern Iran. He complains of watery diarrhea of high frequency. There is no fever, pain, or dysentery. The stool is gray and mucoid. He also has vomiting and thirst.

T= 37 c

PR= 100/min

BP=100/70 mmHg

Reduced skin turgor

What should be done for him?

- A- IV fluid, isolation and IV Ceftriaxone
- B- Chloramphenicol, Diphenoxylate, IV fluid, stool exam
- C- ORS and washing hands
- D- ORS, stool exam, Tetracycline, washing hands

16- A six year old boy complains of watery diarrhea and vomiting. You hospitalize him. He has no abdominal pain or fever. He is tachycardic and has filliform pulse.

What should be done?

- A- IV Ringer Lactate
- B- Tetracycline PO 2 grams Stat
- C- ORS PO for each episode of diarrhea
- D- IV NS+ DW5%

17-A 60 year old diabetic complains of abdominal pain and diarrhea. The diarrhea is watery 5-8 times a day. He has moderate dehydration signs:

BP=100/60 mmHg

T=38.3 c

PR=96/min

RR=30/min

CBC=> WBC=15000/mm<sup>3</sup>, PMN=80%, Lymph=20%

Stool Exam=>WBC=35-40, RBC=45. What should be prescribed for him?

- A- He should be hospitalized, hydrated, and after having his stool specimen for culture, IV antibiotic should be initiated.
- B- He should drink fluid, and if the fever continues, he should return.(no need for hospitalization)
- C- ORS and Cotrimoxazole tab 2 tab/12 hour should be prescribed. (no need for hospitalization)
- D- IV NS +DW5% and then tab Cotrimoxazole.(no need for hospitalization)

18-A 47 year old man with past history of epilepsy complains of chills and fever and foully sputum. Crackles can be heard over the right lung ,middle lobe. CBC=> WBC= 14000 with left shift. What should **not** be prescribed?

- A- Ceftriaxone + Clindamycin
- B- Ceftriaxone + Erythromycin
- C- Coamoxyclav
- D- Metronidazole + Amoxycillin

19- A 21 year old female student develops non productive cough , fever, and head ache since ten days ago. Amoxiclav did not provide any relief. Crackles can be heard over the right lung, lower lobe. She has some target lesions on the skin. CXR shows reticulonodular opacities of the lower right lung. What is the best choice of treatment?

- A- Aminoglycosides
- B- 3<sup>rd</sup> generation Cephalosporine
- C- Glycopeptide
- D- Macrolides

20- Streptococcus is the most resistant to... ?

- A- Macrolides
- B- Tetracycline
- C- Cotrimoxazole
- D- Clindamycin

21- In a patient hospitalized by the diagnosis of pneumonia, sputum culture reveals psuedomonas aerogenosa. What drug is **not** a good choice for this bacteria?

- A- Ceftazidime
- B- Cefepime
- C- Ampicillin/sulbactam
- D- Imipenem

22-A patient of head and chest trauma develops pneumonia 7 days after ICU hospitalization. Clindamycin is initiated. 28 hours after antibiotic administration, sputum culture shows psuedomonas count of 100000. What should be done?

- A- Add ceftazidime + Aminoglycozides
- B- Discontinue Clindamycin and start ceftazidime + Aminoglycozides
- C- Continue with clindamycin + Ceftazidime
- D- Discontinue Clindamycin and start Ciprofloxacin

23- An 80 year old man has undergone total hip replacement. On his fifth day of hospitalization he develops respiratory distress, fever, pulmonic infiltration, and coughs. LMWH is given to prevent PE. What should be done next?

- A- Lung Angiography
- B- Sputum smear and bacterial culture
- C- 3<sup>rd</sup> generation Cephalosporines
- D- Continuation of Heparin

24- A 50 year old man with hairy cell leukemia, on no treatment, develops fever, cough, and emesis. He looks ill. Fine rales can be heard over the lungs. Both lungs show infiltrations. No pleural effusion can be seen. What antibiotic do you suggest?

- A- High dose Erythromycin
- B- Cefalotin and Gentamycin
- C- Crystal Penicillin
- D- Ceftizoxime

25- A 65 year old man develops coughs and fever and productive sputum 3 days after recovery from the flu. RR=30/min, PR=120/min, T=38.5c.

Rales can be heard over the lower right lung. CXR shows consolidations of lower right lung. What is the best empirical therapy?

- A- Ciprofloxacin + Cefotaxime
- B- Clindamycin + Ceftazidime
- C- Azithromycin + Metronidazole
- D- Ceftriaxone + Nafcillin

26- A 67 year old man diabetic complains of fever, productive sputum, pleuritic chest pain since three days ago. He looks ill. T= 38 C, RR=32, PR=145 bpm.

Rales can be heard over the upper left lung. Sputum exam shows gram positive diplococcus. CXR shows left lobe consolidations. What is the best choice antibiotic?

- A- Hospitalization + Ceftriaxone IV
- B- Metronidazole + Ciprofloxacin
- C- Erythromycin PO
- D- Amoxiclav

Match the following animal bites with their appropriate antibiotic regimen:

27- cat, dog, man, monkey

28- snakes

29- rodents

A- Amoxiclav 250-500 mg /tds

B- Ceftriaxone 1-2 gr IV/BD

C- Penicillin 500 PO /BD

30- A 23 year old, recently married woman comes with the chief complaint of dysuria and frequency. No flank tenderness or fever can be found. Her U/A shows 10-12 WBC HPF with RBC=5-7. U/C shows staph growth. What should be done?

- A- No treatment is necessary
- B- Doxycycline for one week
- C- Doxycycline for 7-14 days for the woman and her husband
- D- Cotrimoxazole or 1<sup>st</sup> generation Cephalosporines for 3 days

## Empirical Ab-mdm

31- What is the first choice antibiotic for a breastfeeding mother with cystitis. (The newborn is under phototherapy)?

- A- Ciprofloxacin
- B- Cotrimoxazole
- C- Nalidixic Acid
- D- Cephalexin

32-A patient has fever, CVA tenderness, leukocytosis, pyuria and bacteriuria. He is hospitalized and is treated by Ceftizoxime. Four days of therapy doesn't eradicate the fever so a sonography imaging is done and polycystic kidney disease can be detected. What is the best treatment?

- A- DC of Ceftizoxime + start of Ciprofloxacin
- B- Continuation of Ceftizoxim
- C- DC of Ceftizoxim + Start of Cephazoline and Gentamycin
- D- Adding Gentamycin

33- An 18 year old man complains of penile discharge after coitus. Smear shows gram negative diplococcus in leukocytes. What do you suggest?

- A- Spectinomycin 2 grams IM
- B- Ceftriaxone 250 mg IM + Doxycycline 100 mg /BD for 7 days
- C- Penicillin procaine IM + Erythromycin 2 grams for 7 days
- D- Ceftriaxone 250 mg IM

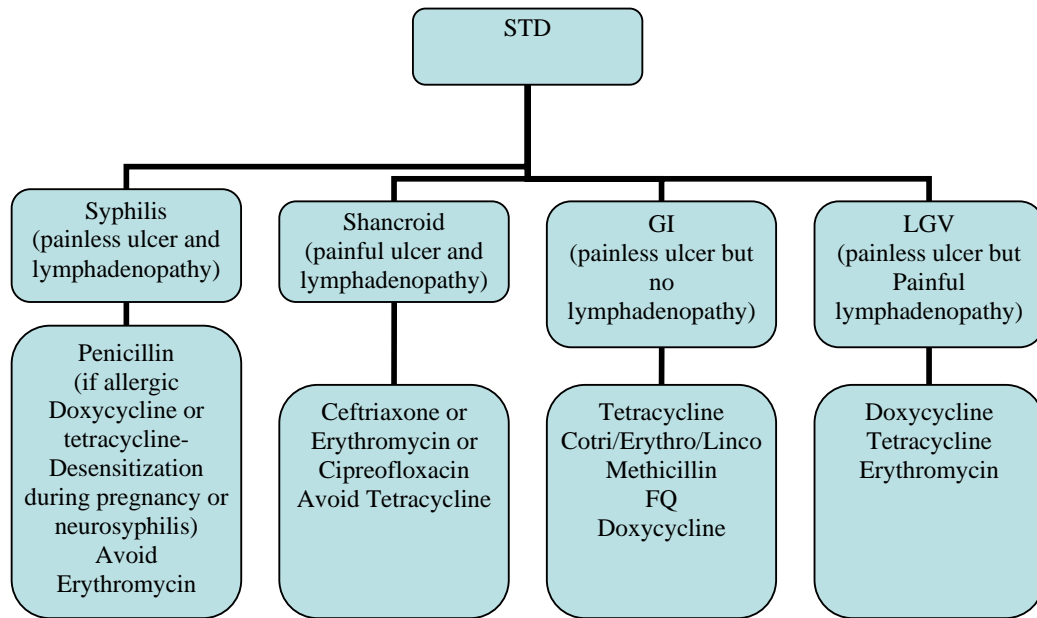
34-A young man comes with the chief complaint of painful genital ulcer and painful left groin adenopathy. What should be prescribed for this case?

- A- penicillin G
- B- Acyclovir
- C- Ciprofloxacin
- D- Metronidazole

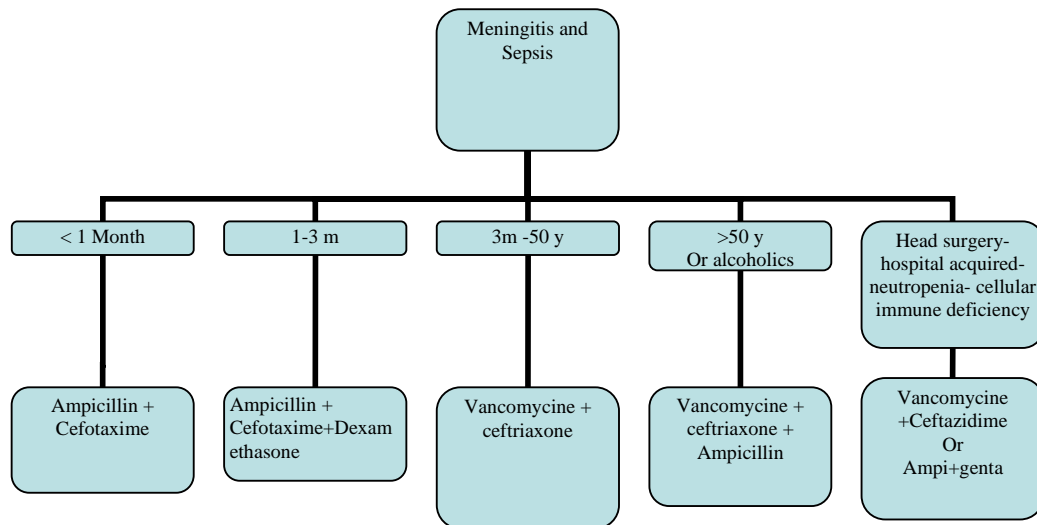
35-A patient suffering syphilis is injected Penicillin. After 4 hours he develops fever, chills, myalgia, tachycardia, and tachypnea. What should be done for him?

- A- Blood culture and Amikacin
- B- DC of Penicillin and start of Doxycycline
- C- Continuation of penicillin+ Aspirin
- D- DC of Penicillin and start of cortisone

Empirical Ab-mdm

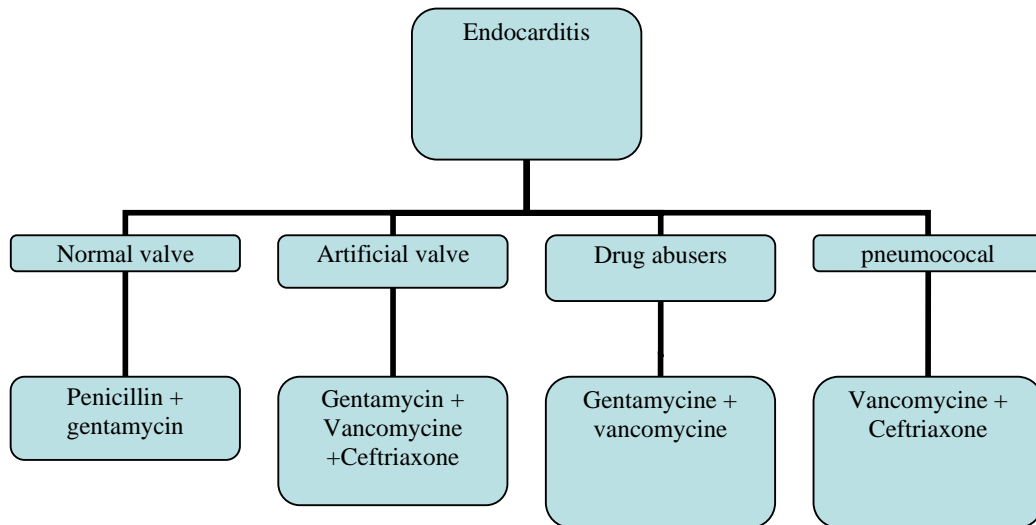


**Table6-1: Genital Ulcer Antibiotic Therapy**

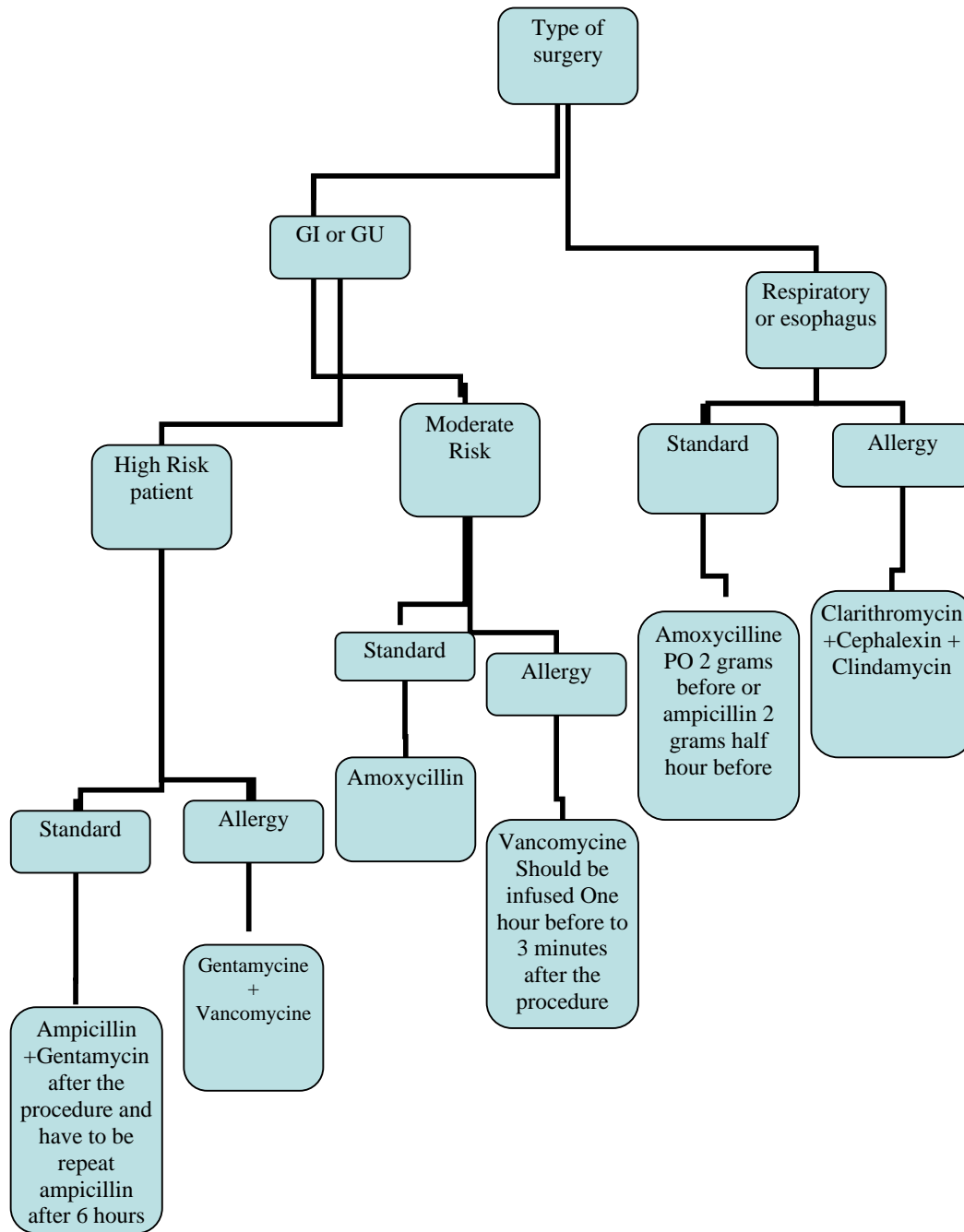


**Table 6-2: Meningitis and Sepsis Empirical Therapy**

Empirical Ab-mdm

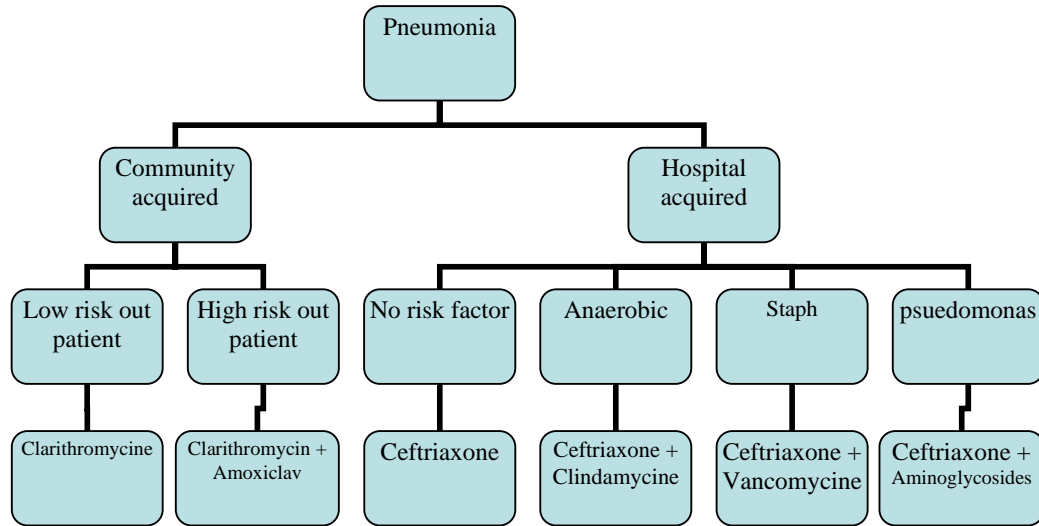


**Table6-3: Endocarditis Empirical Therapy**

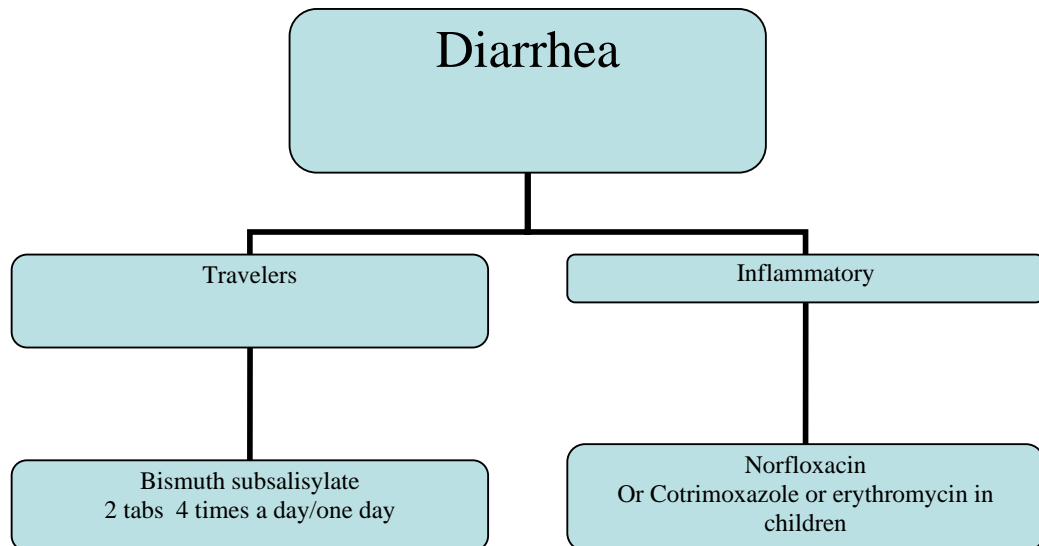


**Table 6-4: Endocarditis prophylaxis**

## Empirical Ab-mdm



**Table6-5: Pneumonia Empirical therapy**



**Table6-6: Empirical therapy of diarrhea.**

**Summary:**

<b>Central Nervous System Infections</b>	If meningococcal disease is suspected, give a single injection of benzylpenicillin (adult dose 1.2g; child 1-9 years 600 mg; infant 300 mg) by intramuscular or intravenous injection, before transporting urgently to hospital.
--	--

**Table6-7: Central Nervous System Infections**

<b>Infection</b>	<b>Suggested oral adult dose</b>
Antibiotic associated colitis	Metronidazole 400 mg tid <b>or</b> Vancomycine 125 mg qid

**Table6-8:Gastrointestinal Infections**

<b>Infection</b>	<b>Suggested oral adult dose</b>
boils, impetigo, wound infections	Flucloxacillin 250-500 mg qid <b>or</b> Clarithromycin 250-500 mg bd (penicillin allergy)
cellulitis	Penicillin V 500 mg qid <b>plus</b> Flucloxacillin 500 mg qid <b>or</b> Clarithromycin 500 mg bd (penicillin allergy)

**Table6-9:Skin and Soft Tissue Infections**

<b>Infection</b>	<b>Suggested oral adult dose</b>
Acute cystitis	Trimethoprim 200 mg bd <b>or</b> Augmentin 625 mg tid <b>or</b> Nitrofurantoin 50 mg qid
Acute pyelonephritis (pre- hospital admission)	Ciprofloxacin 750 mg bd

**Table6-10: Urinary tract infection**

Empirical Ab-mdm

Infection	Suggested oral adult dose
Pharyngitis	Penicillin V 500 mg qid <b>or</b> Clarithromycin 250mg bd (penicillin allergy)
Acute otitis media Acute sinusitis	Amoxicillin 250-500 mg tid <b>or</b> Augmentin 375-625 mg tid <b>or</b> Clarithromycin 500 mg bd (penicillin allergy)
Exacerbation of chronic obstructive lung disease	Amoxicillin 500 mg tid <b>or</b> Augmentin 625 mg tid <b>or</b> Clarithromycin 500 mg bd (penicillin allergy)
Community acquired pneumonia	Amoxicillin 500 mg qid <b>or</b> Augmentin 625 mg qid <b>or</b> Clarithromycin 500 mg bd (penicillin allergy).
	<b>add</b> Clarithromycin 500 mg bd
	<b>add</b> Flucloxacillin 500 mg qid

**Table6-11: Respiratory Tract Infections**

**Answers:**

- |       |       |       |
|-------|-------|-------|
| 1- D  | 13-C  | 25- D |
| 2- A  | 14-B  | 26-A  |
| 3- D  | 15-D  | 27-A  |
| 4- C  | 16- A | 28-B  |
| 5- C  | 17-A  | 29-C  |
| 6- C  | 18-B  | 30-D  |
| 7-C   | 19- D | 31- D |
| 8- A  | 20- C | 32-A  |
| 9-D   | 21- C | 33- B |
| 10-D  | 22-A  | 34-C  |
| 11- D | 23- A | 35-C  |
| 12-A  | 24- A |       |

**References:**

- 1-Anderoli Thomas E, et al. **Cecil Essentials of Medicine**. 5th edition. W.B.Saunders; 2001
- 2-Braunwald Eugene, et al. **Harrison's Principles of Internal Medicine**. 15th edition. McGrawHill; 2001
- 3-Department of Clinical Microbiology. **Empirical Antibiotic Therapy**. Western Infirmary Glasgow.2005. [www.gla.ac.uk/~aspee001/abrx.htm](http://www.gla.ac.uk/~aspee001/abrx.htm)
- 4-Iranian Council for Graduate Medical Education. **Exam questions**.
- 5-Tanago Emil A, et al. **Smith's General Urology**. 16 th edition. McGrawHill; 2004