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Review Paper

Antibiotics Used in The Treatment of Diabetic Foot Infections

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ABSTRACT

Diabetic foot infections are a serious problem in people with diabetes, mainly caused by nerve damage, poor blood flow, and reduced immunity. This review explains how antibiotics are used in treating these infections, including their action, dosage, and safety. Starting treatment early with appropriate antibiotics, followed by adjustments based on test results, along with proper wound care, helps in controlling the infection and preventing complications

INTRODUCTION

Diabetic foot infections are a serious complication of Diabetes Mellitus and can progress to deeper tissues and bone if untreated. Diabetic foot ulcers commonly occur due to Peripheral Neuropathy, abnormal gait, Peripheral Arterial Disease, or impaired immunity. Many of these ulcers become infected and are a major cause of lower limb amputation, leading to high morbidity and reduced quality of life. However, proper wound care, antibiotic therapy, and surgical management can effectively control most infections[1].

Diabetes is a complex metabolic disorder characterized by high blood glucose levels due to insulin resistance or low secretion, or both. The main clinical feature is hyperglycaemia. Diabetes is broadly divided into Type 1 Diabetes Mellitus, caused by little or no insulin production, and Type 2 Diabetes Mellitus, characterized by insulin resistance with insufficient insulin release. Diabetes that develops during pregnancy is known as Gestational Diabetes. Some uncommon forms

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may also occur due to infections, some drugs, endocrine disorders, pancreatic damage, or genetic factors and these are classified as other specific types of diabetes[2].

ETIOLOGY AND PATHOPHYSIOLOGY:

foot infection is mainly caused by long duration of Diabetes, peripheral neuropathy, peripheral arterial disease, chronic hyperglycaemia, foot trauma, ulcers, deformities, obesity, smoking, CKD [3,4]. Diabetic foot ulcers and infections usually occur due to minor unnoticed injuries along with risk factors such as neuropathy, poor blood circulation, and weakened immunity. Neuropathy causes muscle wasting, foot deformities, and loss of sensation, increasing the risk of unnoticed trauma and skin damage. Peripheral arterial disease reduces blood flow, causing ischemia and delayed wound healing. Poor glycaemic control further impairs immune function and promotes infection. Ulcers increase infection risk because breaks in the skin allow microorganisms to invade tissues, leading to complications such as bacteraemia, osteomyelitis, or amputation. Diabetic foot infections range from mild skin infections to severe conditions like necrotizing fasciitis and osteomyelitis. The severity and management of DFIs are commonly assessed using the Infectious Diseases Society of America (IDSA) / International Working Group on the Diabetic Foot (IWGDF) classification system[5].

TREATMENT:

Guidelines from the Infectious Diseases Society of America recommend that treatment of Diabetic Foot Infection should start with empirical antibiotics selected according to the severity of infection and the most probable microorganisms. Later, the therapy should be modified based on culture and sensitivity results. The antibiotic regimen should mainly cover gram-positive bacteria, particularly Methicillin-Resistant Staphylococcus aureus in high-risk patients, while severe or previously treated infections may require broader coverage against gram-negative and anaerobic organisms. Factors such as treatment cost, possible adverse effects, pharmacokinetics, bioavailability, and route of administration should also be considered when choosing antibiotics. Moderate to severe infections are generally managed with intravenous antibiotics for about 2-4 weeks, with longer treatment for bone infections. In many patients, surgical procedures such as incision, drainage, and removal of dead tissue are necessary to control infection and reduce amputation risk, while supportive methods like antibiotic beads, negative pressure wound therapy, and hyperbaric oxygen therapy may help improve healing outcomes[6].

INFORMATION OF DRUGS

BRAND NAME, CATEGORY, PATHOGEN COVERAGE AND DOSAGE:

DRUG	BRAND NAME	CATEGORY	PATHOGEN COVERAGE	DOSAGE	REFERENCE
Amoxicillin-Clavulanate	Augmentin	β-lactam + βlactamase inhibitor	MSSA, Streptococci, Gram-negative bacilli, Anaerobes.	Oral: 500/125 mg q8h - 875/125 mg q12h	[7]
Clindamycin	Dalacin C	Lincosamide	Gram-positive cocci, Anaerobes	Oral: 300 mg q8h - 450 mg q6h	[7]
Dicloxacillin / Cloxacillin	Dynapen / Cloxacap	Penicillin	MSSA, Streptococci	Oral: 250 mg q6h - 500 mg q6h	[7]

Cephalexin	Keflex	1st-generation cephalosporin	MSSA, Streptococci	Oral: 250 mg q6h - 500 mg q6h	**[7]**
Trimethoprim–Sulfamethoxazole	Bactrim, Septra, cotrimoxazole	Sulfonamide combination	MSSA, Stenotrophomonas, Enterobacterales, Toxoplasma	Oral: 160/800 mg q12h - 320/1600 mg q12h IV: 8 – 12 mg/kg q6-12h OD	**[7][8]**
Doxycycline	Vibramycin, Doryx	Tetracycline	MRSA, MSSA, Strep, H. influenzae, Moraxella, atypical, Rickettsia, Lyme	Oral: 100 mg q12h IV: 100 mg q12h	**[7][9]**
Linezolid	Zykov	Oxazolidinone	MRSA, Gram-positive cocci	Oral: 600 mg q12h IV: 600 mg q12h	**[10][11] [12]**
Rifampicin	Rifadin	Rifamycin	Staphylococci	Oral: 450 mg OD – 600 mg OD	**[13]**
Levofloxacin	Levaquin	Fluoroquinolone ne	Gram-negative bacilli, pseudomonas, streptococci	Oral: 500 mg – 750 mg OD IV: 500 – 750 mg OD	**[14][15]**
Delafloxacin	Baxdela	Fluoroquinolone ne (newer)	MRSA, MSSA, Gram-negative bacilli	Oral: 450 mg q12h	**[16]**
Ampicillin/sulbactum	Unasyn	Penicillin Antibiotic + beta lactam inhibitor	MSSA, strep, enterococcus, E. Coli, Klebsiella, H. Influenzae, anaerobes	IV: 1.5 – 3 g IV q6h	**[17][18]**
Cefazolin	Ancef, kefzol	1st generation cephalosporin	MSSA, Strep, E. Coli, Klebsiella, proteus	IV: 1 – 2 g IV q8h	**[19][20]**
Cefepime	Maxipime	4th generation cephalosporin	MSSA, Strep, Enterobacterales, Pseudomonas	IV: 1 – 2 g IV q 8 – 12h	**[21]**
Cefuroxime	Zinacef	2nd generation cephalosporin	MSSA, Strep, H. Influenzae, Neisseria, mod. gram rods	IV: 1.5 g IV q8h	**[22]**
Daptomycin	Cubicin	Lipopeptide	MRSA, MSSA, VRE, not for pneumonia	IV: 4 – 6 mg/kg IV daily	**[23]**
Ertapenem	Invanz	Carbapenem	MRSA, MSSA, Strep, Enterococcus	IV: 1 g IV OD	**[24][25]**
Vancomycin	Vancocin	Glycopetide	MRSA, MSSA, Strep,	IV: 15 – 20 mg/kg IV q8 – 12 h	**[26][27]**

			Enterococcus		
Piperacillin/ Tazobactam	Zosyn	Penicillin and Beta lactamase inhibitor	MSSA, Strep, Enterobacterales, Pseudomonas, Anaerobes	IV: 3.375 – 4.5 g IV q6-12h	**[28][29]**
Nafcillin	Nafcin, Nallpen	Antistaph penicillin	MSSA, Streptococci	IV: 1-2g IV q4h	**[30]**
Metronidazole	Flagyl	Nitroimidazole	Anaerobes, Protozoa	IV: 500mg IV q8h	**[31]**
Meropenem	Merrem	Carbapenem	MSSA, Enterobacterales, Pseudomonas, Anaerobes	IV: 1g IV q8h	**[32]**

SIDE EFFECTS AND CONTRAINDICATIONS:

S.no	**Drugs**	**Side Effects**		**Contraindications**	**Reference**
		Common And Mild	Severe		
1	**Trimethoprim + Sulfamethoxazole**	Gastrointestinal issues Skin reactions Photo sensitivity Neurologic al (Headache, dizziness, insomnia) Fever and joint pains	Severe skin reactions Bleeding or low blood cells count Severe stomach pain Electrolyte imbalance	Drug hypersensitivity or a history of sulfa allergies. Pregnancy (FDA pregnancy category D) because folate synthesis is inhibited which may result in birth defects. Hepatic failure, jaundice and damage to the liver parenchyma. Hematological condition.	**[33][34] [35][36] [37][38] [39][40] [41]**
2	**Doxycycline**	Gastrointestinal issues Photo sensitivity Skin rashes or hives Loss of appetite Vaginal infections Headache	Severe skin reactions Intracranial hypertension Jaundice Bleeding Severe stomach pain Arrhythmias	Liver disease due to rare fatal hepatotoxicity. Pregnancy or breastfeeding due to teratogenicity and permanent teeth discoloration. Use with penicillin or isotretinoin. History of fungal infections. Recent colitis caused by antibiotic use Clostridioides difficile-associated diarrhoea, History of lupus Porphyria Myasthenia gravis	**[42][43] [44][45]**

3	Clindamycin	Gastrointestinal issues Stomach pain Skin rashes or itching Metallic taste in mouth Vaginal irritation or discharge Joint pains	Severe allergic reactions Jaundice Esophageal irritation or ulcers	Colitis/Enteritis: History of colitis, regional enteritis or antibiotic-associated colitis. Severe Diarrhea Risk (CDAD): Clindamycin has a strong association with Clostridium difficile associated diarrhea (CDAD), which can range from mild diarrhea to fatal colitis. Topical/VaginalSpecifics: Contraindicated in patients with a history of regional enteritis, ulcerative colitis or antibiotic-associated colitis.	**[46][47] [48]**
4	**Nafcillin**	Gastrointestinal issues Pain, redness or swelling at injection site Skin rashes or itching Vaginal infections	Severe allergic reactions Severe stomach pain Impaired urination Low blood cells Seizures, twitches or confusion	Penicillin Hypersensitivity: Patients with a history of immediate, accelerated, or delayed allergic reactions. Cephalosporin Hypersensitivity: Due to partial cross-allergenicity among beta-lactam antibiotics, including cephalosporins, nafcillin should be used with caution in patients with a history of significant allergies or asthma. Drug Interactions: Contraindicated with HIV, Cancer meditations and oral Contraceptives.	**[49][50] [51[52]**
5	**Cefazolin**	Gastro-intestinal issues, Pain, swelling or redness at injection site Headache, Loss of appetite, Oral thrush Vaginal infections	Severe allergic reactions Seizures, confusion, unusual muscle movements Jaundice Bleeding	Hypersensitivity: Immediate hypersensitivity reactions anaphylaxis, serious skin reactions to cephalosporins or penicillin. Renal Impairment: Requires dose adjustment in patients with severe renal insufficiency to avoid CNS toxicity. Colitis: Used with caution in patients with a history of gastrointestinal disease, particularly colitis. Drug Interactions: Increased risk of nephrotoxicity when combined with medications like aceclofenac & acemetacin.	**[53][54] [55][56]**
6	**Vancomycin**	Gastrointes tinal issues, Headache, Low potassium levels	Nephrotoxicity Ototoxicity Red man syndrome Severe allergic reactions	Hypersensitivity: Vancomycin allergy. Acute kidney injury (AKI) risk is associated with renal impairment. Pregnancy/Infants: During the first or second trimester of pregnancy, certain formulations containing	**[57][58] [59][60]**

				polyethylene glycol (PEG 400) should be avoided.	
7	**Ampicillin + sulbactum**	Gastrointestinal issues Injection site reactions Vaginal itching or discharge	Severe allergy reactions Jaundice Bleeding	Hypersensitivity: Known allergy to any penicillin or similar beta-lactams. Hepatic Impairment: Previous history of cholestatic jaundice or liver damage associated with amoxicillin.	**[61][62] [63][64]**
8	**Ertapenem**	Gastrointestinal issues Stomach pain Injection site reactions Vaginal inflammation Difficult to sleep or wake up	Severe allergic reactions Seizures, tremors, confusion, hallucinations Arrhythmias Jaundice	Hypersensitivity Reactions: History of anaphylactic reactions to beta lactam antibiotics. Local Anesthetic Allergy: For IM injection, allergy to lidocaine. Central Nervous System Disorders: Use with caution in patients with a history of seizures as carbapenems are associated with seizures. Valproic Acid if taking.	**[65][66] [67][68] [69]**
9	**Ceftriaxone**	Injection site reactions Gastrointestinal issues Blood cells impairment Dizziness Flushing	Severe allergic reactions Pin point red spots on skin Bleeding	History of severe immediate hypersensitivity to penicillin. Due to possible cross reactivity between penicillin and cephalosporins, cefazolin should be avoided in patients with a history of anaphylaxis to penicillin.	**[70][71] [72][73] [74] [75]**
10	**Cefuroxime**	Skin rashes Gastro-intestinal issues Vaginal infections Stomach pain	Severe allergic reactions Jaundice Swelling of feet or ankles Seizures Bleeding	Known hypersensitivity to cefuroxime, other cephalosporins, or other Beta lactam antibiotics. History of severe cutaneous adverse reactions, Renal impairment.	**[76][77] [78][79] [80][81] [82][83] [84]**
11	**Metronidazole**	Metallic taste Gastrointestinal issues Stomach pain Loss of appetite Vaginal infections	Numbness, tingling Confusion or dizziness Slurry speech or memory loss Seizures Severe allergic reactions Jaundice Arrhythmias	ckayne Syndrome: Risk of severe fatal hepatotoxicity. Disulfiram Use: Do not use if disulfiram was taken within the last two weeks. First Trimester Pregnancy: Contraindicated for trichomoniasis during the first trimester.	**[85][86] [87][88] [89][90]**
12	**Levofloxacin**	Gastrointestinal issues Headache Trouble sleeping Vaginal itching or discharge	Pain, swelling or rupture of Tendon Peripheral neuropathy Severe allergic reactions Aortic aneurysm	Tendon Disorders: History of tendinitis or tendon rupture associated with fluoroquinolones. Neurological Conditions: Epilepsy, history of seizures, or conditions predisposing to seizures (e.g., severe brain injury).	**[91][92] [93][94] [95][96] [97][98] [99]**

				Pregnancy and Lactation: Due to potential risks to the foetus and infant, it should generally not be used.	
13	**Delafloxacin**	Gastrointestinal issues Headache Stomach pain Injection site reactions	Pain, swelling or rupture of tendon Peripheral neuropathy CNS effects Severe allergy reactions	Hypersensitivity to Delafloxacin or other Fluoroquinolones.	**[100]** **[101]** **[102]** **[103]** **[104]**
14	**Daptomycin**	Gastrointes tinal issues Headache Insomnia Injection site reactions Skin rashes or itching	Muscle problems Severe allergic reactions Shortness of breath Chest pain Peripheral neuropathy	Daptomycin is contraindicated for patients with a known hypersensitivity reaction to the drug or any component within the formulation. Although daptomycin does not have other contraindications to its use there are significant clinical considerations to remember when caring for patients.	**[105]** **[106]** **[107]**
15	**Linezolid**	Gastrointes tinal issues Headache Dizziness Oral thrush Vaginal infections	Bleeding Neuropathy Serotonin syndrome Lactic acidosis Hypertension	Breastfeeding should be discontinued prior to and throughout administration of linezolid Lactose patients with rare hereditary problems of galactose intolerance the Lapp lactose deficiency and glucose galactose malabsorption.	**[108]** **[109]** **[110]**
16	**Piperacillin + Tazobactam**	Gastrointes tinal issues Headache Insomnia	Severe allergic reactions	Contraindicated in patients with a history of allergic reactions to other penicillin, cephalosporins, or β-lactamase inhibitors.	**[111]** **[112]** **[113]**
17	**Cefepime**	Gastrointes tinal issues Headache Skin rashes or itching Injection site reactions	Severe allergic reactions Neurotoxicity Jaundice	Hypersensitivity: A sudden sensitivity to penicillins, cephalosporins or cefepime. Renal Impairment: If dosage is not modified for creatinine clearance there is a high risk of neurotoxicity (encephalopathy, seizures). Medical Conditions: Use caution if you have a history of gastrointestinal or seizure disorders. Drug Interactions: Using aminoglycosides increase the risk of nephrotoxicity or ototoxicity.	**[114]** **[115]** **[116]** **[117]**
18	**Meropenem**	Gastro-intes tinal issues Headache Injection site reactions	Severe allergic reactions Neurological effects Bleeding Jaundice	Allergic Reactions: History of anaphylactic reactions to any beta-lactam antibiotics. Medication Interaction: Concomitant use with valproic acid/sodium valproate is generally	**[118]** **[119]** **[120]** **[121]** **[122]**

		Skin rashes or itching Vaginal infections		not recommended due to increased seizure risk. CNS Disorders: Use with caution in patients with a history of seizures or central nervous system (CNS) disorders.	
19	**Cephalexin**	Gastro-intes tinal issues Stomach pain Headache Vaginal infections	Severe allergy reactions Jaundice Seizures	Allergic Reactions: Patients who have previously experienced anaphylaxis, hives, severe rash from penicillin or cephalosporins should stay away from cephalexin. Renal Impairment: Patients with severe renal failure require dosage modifications to prevent accumulation because cephalexin is eliminated by the kidneys. Gastrointestinal Disease: use caution if you have a history of colitis. Consult a physician if you are pregnant or nursing, as it should only be used when absolutely necessary.	**[123]** **[124]** **[125]** **[126]** **[127]**
20	**Augmentin Or Mega CV**	Gastrointestinal issues Headache Vaginal infections Tooth discolouration	Severe allergic reactions Nephritis Jaundice	Hypersensitivity reactions Liver disease Renal impairment Drug induced enterocolitis syndrome Phenylketonuria.	**[128]** **[129]** **[130]** **[131]** **[132]**

REVIEW OF LITERATURE:

S. NO	TITLE	AUTHORS	CONCLUSION	REFERENCE
1	The evaluation and treatment of diabetic foot ulcers and diabetic foot infections	Del Core MA *et.* al.,	Diabetic foot ulcers are commonly caused in any diabetic patient due to trauma or pressure. A detailed history is necessary for exact treatment and history should include insulin dependence, duration of diabetes, operative history, existing comorbidities, family and social history. Initial diagnosis or examination should focus on diabetic neuropathy, arterial disease peripherally. So, this meta-analysis of diabetic patients reported that nearly 2- fold increased risk is there of all-cause mortality in Diabetic patients with a DFU than patient with ulceration.	**[133]**
2	Meta analysis of risk factors for amputation in diabetic foot infections	Pinar Sen *et.* al.,	The authors out of 2471 articles concluded that 25 articles were included in final analysis. 6132 patients were identified with diabetic foot infections. Then 1873 patients were amputated. So major risk factors were found to be males, smoking, history of amputation, history of osteomyelitis, peripheral arterial disease, retinopathy, IWGDF grades 3 & 4, Wagner grades 4 & 5, necrosis, neuro-ischemic DFI, severe infection, mean ESR, mean C - reactive protein.	**[134]**

3	Microbiology and anti-microbial therapy for diabetic foot infections	David G Armstrong *et.* al.,	The exact antibiotics need to be selected for the success of treatment, reducing anti-microbial resistance and adverse effects, and even it should be cost effective. Staphylococcus aureus is the main causative organism for diabetic foot infections and many other includes streptococcus, enterococcus, Enterobacteriaceae, and pseudomonas as prevalent organisms. Mild diabetic foot infections are treated with narrow spectrum antibiotics and vice versa. Empirical antibiotics are considered for methicillin resistant S. Aureus or pseudomonas	**[135]**
4	An evidence-based approach to diabetic foot infections	Robert G Frykberg *et.* al.,	Neuropathy, peripheral vascular disease and impaired immune response to infections are very common in diabetic patients. Even other major risk factors seen in patients which led to DFIs and symptoms in patients are kindly observed for exact evidence of DFIs and it should be undertaken for therapy and even multiple factors should also include therapy according to microbiological characteristics on post positive of culture sensitivity.	**[136]**
5	The role of novel antibiotics in the management of diabetic foot infection	Efterpi mougakau *et.* al.,	The complication in selection of suitable antibiotics for diabetic foot infections have raised due to prevalence of bacteria which are multi drug resistant. Among the vital antibiotics cefiderocol and dalbavancin are more appropriate to use in severely infected diabetic people carefully.	**[137]**
6	An overview of diabetic foot ulcers and associated problems with special emphasis on treatments with anti-microbials	Mirza Shahed Baig *et.* al.,	Curing diabetic foot infections is challenging and even more challenging in people with already low immune response. As organisms are becoming more resistant, irrespective of antibiotics other treatment procedures like dressings, topical antibacterial treatment medications and debridement techniques have to be given more preference for treating diabetic foot ulcers and following diabetic foot infections.	**[138]**
7	Debridement of diabetic foot ulcers	David Dayya *et.* al.	The ulcers or infections can be leading to many complications and they are more time taking for healing. Debridement is often used as a key standard and it's done both mechanically (sharp or surgical, wet to dry debridement, aqueous high-pressure lavage, ultrasound and bio surgery, maggot debridement therapy and non-mechanically (autolytic and enzymatic methods).	**[139]**
8	Hybrid imaging of diabetic foot infections	Gad Abikhzer *et.* al.,	Diabetic foot infections are very keen to diagnose and differentiate soft tissue only infection, diabetic neuropathy, osteomyelitis or even a combination of any two from above. So it is challenging for practitioner to diagnose. In that case hybrid imaging is required for accurate diagnosis, various imaging tests are in clinical use which are anatomic and molecular based like US scan, MRI, Radiography (X ray), scintigraphy using single Photon emitting radiotracers, CT scan. Out of all X ray is the initial imaging modality of choice.	**[140]**
9	A comparative analysis of antibiotic	Karolina Kruszewska *et.* al.,	Antibiotic therapy is compared between different groups like ETA+ (compatibility of empiric targeted antibiotic), ETA	**[141]**

	usage in diabetic foot infections against healing time		negative (non compatibility of empiric targeted antibiotic), NEA (no empiric antibiotic) and NTA (no targeted antibiotic). Amoxicillin with clavulanic acid, clindamycin and levofloxacin were most used antibiotics as empiric therapy. Finally, the concluded that the heeling time does not vary between selected subgroups and was longer in obese patients.	
10	Photo catalysis and photo dynamic therapy in diabetic foot ulcers care: a novel approach to infection control and tissue regeneration	Pawel Mikzinski *et.* al.,	Photo catalysis and photo dynamic therapies are mostly on demand for curing or managing diabetic foot ulcers. The therapy is enabling effectively the infection control. Many other techniques like antibacterial photo dynamic therapy, liposomal photocatalytic carriers, nanoparticles and Nanomotors used alone, in combination or in addition of antibiotics, lysozyme or phage enzymes are also helpful and effective even if the patient is with other comorbidities.	**[142]**
11	Clinical comparison of cefuroxime axetil and amoxicillin/ clavulanate in acute bacterial maxillary sinusitis	Alfonso E. Camacho *et.* al.,	In 1992, Alfonso and colleagues published a study, A total of 317 adult patients with a clinically and radiographically confirmed acute bacterial maxillary sinusitis were included in this multi-centre, randomized trial. Among them, 157 were treated with cefuroxime axetil 250mg bid, and 160 were treated with amoxicillin clavulanate 500mg t.i.d., for 10 days. Clinical success was assessable for 239 patients (75%). A satisfactory success, i.e., cure or improvement, was observed for 85% of the cefuroxime axetil recipients and 82% of those on amoxicillin-clavulanate, without a significant difference between the groups ($p = 0.446$). Bacteriological evaluation was possible in 76 patients (24%), due largely to difficulties in obtaining positive results of sinus aspirate cultures. S. pneumoniae (22%), H. species (17%), S. aureus (13%), and H. influenzae (10%) were the main pathogens isolated from pretreatment samples of sinus aspirates. A satisfactory bacteriological response rate of eradication and presumptive eradication of the pathogen was achieved in 84% of the cefuroxime axetil recipients versus 87% of the amoxicillin and clavulanate combination treatment recipients; there was no significant difference ($p = 0.567$). Pathogen eradication rates were equal or superior with cefuroxime axetil against H. influenzae and S. aureus.	**[143]**
12	Efficacy of simulated cefditoren vs amoxicillin-clavulanate free concentrations in countering Intra-statin fts1 gene diffusion in Haemophilus influenza	Natalia González *et.* al.,	A 2011 in vitro pharmacodynamic study by Gonzalez et al. evaluated the effects of simulated free serum concentrations of cefditoren and amoxicillin–clavulanate on H. influenzae, focusing on the spread of β-lactam resistance via the fts I gene. Both β-lactamase-negative and β-lactamase-producing strains showed recombination after exposure to resistant donor DNA, though at different rates. Cefditoren (400 mg BD) demonstrated strong bactericidal activity, achieving >4 $\log_{10}$ CFU/ml reduction and completely eliminating recombined resistant subpopulations within 4 hour, due to high pharmacodynamic exposure (ft>MIC >83%). In contrast, amoxicillin–clavulanate (875/125 mg thrice daily) showed variable effects. While it was bactericidal in non-β-lactamase strains, resistant recombined populations persisted, especially in β-lactamase-producing strains, accounting for up to 32% of	**[144]**

			the population. Overall, cefditoren effectively prevented the emergence of resistant strains, whereas amoxicillin–clavulanate allowed their selection under certain conditions, suggesting that higher ft/MIC ratios may be required to limit resistance development.	
13	Influence of β-lactam resistance phenotype on cefuroxime vs cefditoren susceptibility	Asunción Fenoll *et.* al.,	A total of 307 isolates (Streptococcus pneumoniae – 193; Haemophilus influenzae – 114) from children with acute otitis media were analysed. S. pneumoniae showed reduced susceptibility to amoxicillin and cefuroxime with increasing penicillin resistance. Amoxicillin susceptibility dropped from 100% (penicillin-susceptible) to 34% (penicillin-resistant), while cefuroxime fell from 100% to 0%. In contrast, cefditoren maintained strong activity, inhibiting all S. pneumoniae isolates at ≤0.5 mg/L, including resistant serotypes. For H. influenzae, amoxicillin–clavulanate and cefuroxime showed moderate susceptibility, with some resistant strains (BLNAR and BLPACR). However, all isolates remained highly susceptible to cefditoren (≤0.06 mg/L). Overall, cefditoren demonstrated superior and consistent activity against both pathogens compared to other antibiotics. Thus, in 'Itron, compared to both cefuroxime and amoxicillin clavulanate, cefditoren showed remarkable, consistent, and better antimicrobial activity against both S. pneumoniae and H. influenzae, independent of their underlying β-lactam resistance mechanisms. This study suggests that susceptibility to standard agents of the class cannot predict the efficacy of other agents of the same drug class, while the augmentation of amoxicillin with clavulanic acid does not.	**[145]**
14	Comparative activities of cefuroxime, amoxicillin clavulanate, ciprofloxacin, genoxacin, ofloxacin against aerobic and anaerobic bacteria isolated from bite wounds	Ellie J. C. Goldstein *et. al*.,	A total of 420 clinical isolates from infected human and animal bites were tested and included 308 aerobic and 112 anaerobic bacteria. A broad spectrum of fastidious aerobic and anaerobic bacteria commonly associated with skin and soft tissue infections was included and consisted of isolates from human and animal bites, particularly from dogs, cats, and humans. Antimicrobial susceptibility testing indicated gatifloxacin's broad-spectrum of in vitro activities against the majority of aerobic organisms tested. The eight species and three subspecies of 148 isolates of Pasteurella tested showed susceptibility to gatifloxacin with the drug inhibiting all isolates at concentrations of .016 mg/ml or less. Comparable susceptibility was indicated for species of Actinobacillus-Haemophilus, Eikenella corrodens, Neisseria weaveri, Weeksella zoohelcum, staphylococci, and streptococci with gatifloxacin's MIC_{90}'s of .125 mg/ml or less; although the two	**[146]**

			species of streptococci required a higher level of the drug (gatifloxacin's MIC_{90} of 1 mg/ml). In anaerobes, gatifloxacin was highly active against of aerobic and anaerobic pathogenic bacteria causing bite wounds. Thus, gatifloxacin proved to have a broad spectrum of activity and good in vitro potency against pathogens responsible for bite wounds infections. These findings suggest the potential utility of gatifloxacin in the empirical treatment of bite wound-associated mixed aerobic- anaerobic.	
15	Cefuroxime Axetil-A Review of Its Antibacterial activity, Pharmacokinetic properties and therapeutic efficacy	Caroline M. Perry *et.* al.,	A 1996 review by Perry and Brogden highlighted that cefuroxime axetil has broad-spectrum antibacterial activity and reliable clinical efficacy in community-acquired infections. It showed strong activity against Gram-positive pathogens like Streptococcus pneumoniae and Streptococcus pyogenes, but limited effect against resistant organisms such as MRSA and Enterococci. Against Gram-negative bacteria, it was effective against Haemophilus influenzae and Moraxella catarrhalis, with variable activity against organisms like E. coli and Klebsiella. It had limited efficacy against anaerobes. Clinical trials showed high cure and eradication rates in respiratory infections, with effectiveness comparable to amoxicillin–clavulanate and other antibiotics. Short 5-day therapy was also found to be as effective as 10-day treatment in selected cases. Cefuroxime axetil is highly effective in treating urinary tract, skin and soft tissue infections, gonorrhoea, and early Lyme disease, with >90% cure or improvement rates. It is also useful in step-down therapy (IV to oral) for hospitalized patients with lower respiratory tract infections. Pharmacokinetically, it is rapidly converted to active cefuroxime, achieves reliable serum and tissue levels, and has improved absorption when taken with food. It shows good penetration into respiratory tissues, sinuses, tonsils, and middle ear. Overall, it is well tolerated and provides effective antimicrobial action in community-acquired infections.	[**147**]
16	Cefuroxime vs Augmentin of LRTI	C. Brambilla *et. al*.,	A 1992 international clinical trial by Brambilla evaluated 512 hospitalized adults with lower respiratory tract infections, including pneumonia (n=271) and acute exacerbations of chronic bronchitis or bronchiectasis (n=241). Patients were divided equally into two groups. One group received cefuroxime intravenously (750 mg three times daily) for 2–3 days followed by oral cefuroxime axetil (500 mg twice daily), while the other group received intravenous amoxicillin–clavulanic acid (1.2 g three times daily) followed by oral therapy (625 mg thrice daily). Clinical outcomes were comparable between both regimens. Cure or improvement rates were 87.1% in the cefuroxime group and 85.9% in the amoxicillin–clavulanate group. Similar responses were observed in bronchitis/bronchiectasis (89% vs 91.8%) and pneumonia (85.4% vs 80.6%). Bacteriological evaluation showed that 44% of patients had positive cultures, with common pathogens including Haemophilus influenzae,	**[148]**

			Streptococcus pneumoniae, and Moraxella catarrhalis. Clearance rates were slightly higher with cefuroxime in both bronchitis (82.1% vs 76.4%) and pneumonia (93.5% vs 84.6%), though differences were not significant. At follow-up, clinical success remained similar (81.2% vs 79.5%), with equal relapse rates (10%). Both treatments were well tolerated, with low adverse event rates (5.0% vs 4.3%), mainly gastrointestinal. Overall, intravenous cefuroxime followed by oral cefuroxime axetil was as effective and safe as amoxicillin-clavulanate for treating lower respiratory tract infections.	
17	Comparison of efficiency and tolerability of Amoxicillin/ clavulanic acid 875mg bid with cefuroxime 500mg bid in treatment with chronic and acute exacerbation of chronic sinusitis in adults	Namyslowski, *et.* al.,	Antibiotic regimen provided superior therapeutic outcomes, A total of 231 patients aged 18 years or above with either chronic sinusitis or acute exacerbation of chronic sinusitis were included in the multicentre, randomized, open label clinical trial; where 206 patients (102 received amoxycillin/clavulanic acid and 104 patients received cefuroxime axetil) remained clinically evaluable. A clinical cure by the end of therapy (day 15-18) was achieved by 95% of the clinically evaluable patients receiving amoxycillin/Clavulanic acid (AMX/CA), 875/125 mg twice a day by 88% of patients receiving cefuroxime axetil 500 mg twice a day; and there was no statistically significant difference between the treatment groups (95%Ci-0.6% to +15%). A high cure rates of around 92% an" 86% was also achieved by the intention to treat population receiving AMX/CA and cefuroxime axetil respectively. A higher rate of early clinical improvement (day 3-5) was seen with the AMX/CA group than the cefuroxime axetil group (81% vs 56%), and it proved to be statistically significant (p=0.0137). However, the rate of relapse was found to be significantly higher in the cefuroxime group, with 7% (7/89) o" the clinically evaluable population developing relapse compared with none in the AMX/C' group (p = 0.0049). Bacteriological assessment was carried out in 127 patients (65 AMX/CA and 62 in the cefuroxime" group).	**[149]**
18	Comparison of cefuroxime and amoxicillin clavulanate suspensions in treatment of acute otitis media with effusion in children	S E McLinn, *et.* al.,	A 1994 clinical study by S. E. Melon evaluated the clinical efficacy, "bacteriological response, and safety of cefuroxime axetil compared with amoxicillin–clavulanate in 263 paediatric patients aged 3 months to 11 years with acute otitis media. Among them, 165 received cefuroxime axetil (30 mg/kg/day in two divided doses) and 98 received amoxicillin–clavulanate (40 mg/kg/day in three divided doses). Bacteriological evaluation was possible in 184 patients, yielding 200 isolates. A favourable bacteriological response (eradication or presumed eradication) was achieved in 81% of patients treated with cefuroxime axetil, compared to a lower response in the amoxicillin–clavulanate group. Clinical assessment showed comparable outcomes between the two groups, with satisfactory responses (cure or improvement) in 77% of cefuroxime-treated patients and 74% of those receiving amoxicillin–clavulanate (no significant difference).	**[150]**

			Recurrence or clinical failure within two weeks occurred in 22% and 26% of patients, respectively. Both treatments showed excellent and similar patient compliance. However, safety analysis revealed a significantly lower incidence of adverse events with cefuroxime axetil (18%) compared to amoxicillin–clavulanate (39%). Gastrointestinal side effects, especially diarrhoea, were notably less frequent with cefuroxime (12% vs 31%). Overall, twice-daily cefuroxime axetil was found to be as clinically effective as thrice-daily amoxicillin–clavulanate in treating paediatric acute otitis media, while offering a significantly better safety and tolerability profile.	
19	Comparison of oral cefuroxime and oral Augmentin in treatment of community acquired pneumonia	Francisco Higuera *et.* al.,	A multicentre, investigator-blinded randomized clinical trial evaluated 162 outpatients aged ≥12 years with mild to moderate community-acquired pneumonia. Patients received either cefuroxime axetil (500 mg twice daily; n=84) or amoxicillin–clavulanate (500/125 mg three times daily; n=78) for 10 days. Clinical evaluation was possible in 106 patients (65%). A satisfactory clinical response (cure or significant improvement) was achieved in 100% (55/55) of cefuroxime-treated patients and 96% (49/51) of amoxicillin–clavulanate-treated patients, with no significant difference (p=0.23). Bacteriological assessment was feasible in 74 patients (46%), reflecting difficulty in pathogen isolation. Pre-treatment cultures identified pathogens in 60% of patients, mainly Streptococcus pneumoniae (38%) and Haemophilus influenzae (18%), with 15% of H. influenzae producing β-lactamase. Successful bacteriological outcomes were seen in 94% (32/34) of cefuroxime patients and 93% (37/40) of amoxicillin–clavulanate patients (p=1.00). Failures were rare and mainly associated with S. pneumoniae or H. influenzae infections. Both treatments were well tolerated. Adverse effects occurred in 4% of cefuroxime patients and 8% of amoxicillin–clavulanate patients, mainly gastrointestinal, with no significant difference (p=0.32). Overall, twice-daily cefuroxime axetil was clinically and bacteriologically comparable to thrice-daily amoxicillin– clavulanate, offering similar efficacy with a more convenient dosing regimen.	**[151]**
20	Treatment of gentamicin resistant klebsiella UTI with cephradine, Augmentin, cefuroxime and amikacin	C. A. Hart *et.* al.,	This comparative clinical study included 56 hospitalized patients with urinary tract infections caused by gentamicin-resistant Klebsiella species representing 15 serotypes. Patients were treated with one of five regimens: cephradine (n=8), cephradine plus mecillinam (n=14), amoxicillin–clavulanate (n=9), cefuroxime (n=15), or amikacin (n=10). Most patients were symptomatic, and about two-thirds had catheter-associated infections or underlying urological abnormalities. All treatment regimens achieved initial microbiological clearance, with overall urine sterilization in 82% (46/56) of patients. Clearance rates were 88% for cephradine, 86% for cephradine plus mecillinam, 78% for amoxicillin–clavulanate,	**[152]**

			87% for cefuroxime, and 70% for amikacin. Parenteral therapies (cefuroxime and amikacin) showed faster clearance times (3.8 and 3.4 days, respectively) compared to oral regimens, particularly cephradine plus mecillinam (5.7 days; $p<0.05$). Despite effective treatment, reinfection occurred in 26% of patients within two weeks, especially in those treated with amoxicillin–clavulanate, while the lowest rates were seen with cephradine plus mecillinam. Reinfection was strongly associated with persistent intestinal colonization of resistant Klebsiella ($p<0.01$). All isolates were resistant to common antibiotics like gentamicin, ampicillin, tetracycline, and chloramphenicol, but remained susceptible to amikacin and cefuroxime. Overall, both oral and parenteral therapies effectively cleared infection, but persistent intestinal colonization played a key role in recurrence.	
21	Comparison of cefuroxime axetil and amoxicillin/clavulanate in the treatment of acute bacterial sinusitis	D C Henry 1, *et.* al.,	Due to adverse events, two patients in the cefuroxime axetil group and eight patients in the amoxicillin/clavulanate group left the study (P = 0.06). These findings show that when treating acute sinusitis, cefuroxime axetil 250 mg twice daily is just as effective as amoxicillin/ clavulanate 500 mg three times daily and causes fewer gastrointestinal side effects.	**[153]**
22	Clinical comparison of cefuroxime axetil suspension and amoxicillin/clavulanate suspension in the treatment of paediatric patients with acute otitis media with effusion	W M Gooch *et.* al.,	Due to adverse events, two patients in the cefuroxime axetil group and eight patients in the amoxicillin/clavulanate group left the study (P = 0.06). These findings show that when treating acute sinusitis, cefuroxime axetil 250 mg twice daily is just as effective as amoxicillin/ clavulanate 500 mg three times daily and causes fewer gastrointestinal side effects. Acute sinusitis, amoxicillin/ clavulanate, and cefuroxime axetil.	**[154]**
23	Effectiveness of short-course therapy (5 days) with cefuroxime axetil in treatment of secondary Bacterial infections of acute bronchitis	D Henry *et.* al.,	These findings show that in patients with acute bronchitis, treatment with cefuroxime axetil at 250 mg twice daily for five days is just as effective as treatment for ten days with either the same dose of cefuroxime axetil or amoxicillin-clavulanate at 500 mg three times daily. Furthermore, compared to 10-day treatment with amoxicillin-clavulanate, treatment with cefuroxime axetil for either 5 or 10 days Is associated with significantly fewer gastrointestinal adverse events particularly diarrhoea and nausea.	**[155]**
24	Assessment of Cefuroxime and Cefuroxime Clavulanic Acid Prescription Practices for Infection Management in Routine Indian Healthcare Settings: Expert Insights	Manjula S *et.* al.,	Cefuroxime was found to be very effective in treating lower respiratory tract infections by 78% of ’he 164 clinicians surveyed. Furthermore, 91% of the experts said that clavulanic acid and cefuroxime worked very well together to treat Infections. Cefuroxime + clavulanic acid was recommended by most clinicians as first-line treatment for community acquired pneumonia (58%) uncomplicated skin and soft tissue infections (45%), and complicated urinary tract Infections (88%). Cefuroxime plus clavulanic acid was suggested as the first treatment for 21–30% of patients suspected of having a methicillin-resistant Staphylococcus	**[156]**

			aureus infection, according to 40% of the clinicians. Cefuroxime + clavulanic acid was the antibiotic of choice for treating Pseudomonas aeruginosa infections, according to the majority of respondents (88%).	
25	Comparison between cefuroxime and Amoxicillin+ clavulanate in patients of inguinal hernia undergoing mesh hernioplasty, a randomised control Study	Dr. Girish Pandey	The clinical effectiveness of cefuroxime versus amoxicillin clavulanate for preventing wound infection in patients undergoing open proline mesh hernioplasty in cases of inguinal hernia was assessed in a randomized control study at Heritage Institute of Medical Sciences Varanasi. Overall wound infection rates did not differ significantly between the cefuroxime and amoxicillin clavulanate groups and the cefuroxime group experienced somewhat fewer side effects. For use as a surgical prophylactic cefuroxime seems to be a marginally more effective antibiotic.	**[157]**
26	Comparison of the efficacy and tolerability of amoxycillin/ clavulanic acid 875 mg b.i.d. with cefuroxime 500 mg b.i.d. in the treatment of chronic and acute exacerbation of chronic sinusitis in adults	G Namyslowki *et.* al.,	Amoxycillin/clavulanic acid 875 mg b.i.d. and cefuroxime 500 mg b.i.d. are compared for their effectiveness and tolerability in treating adults with chronic sinusitis and acute exacerbations. In a multicentre, open parallel group, randomized clinical trial, the safety and effectiveness of cefuroxime axetil (500 mg b.i.d. for 14 days) and amoxycillin/clavulanic acid (AMX/CA) (875/125 mg b.i.d. for 14 days) were compared in 206 adults with chronic or acute exacerbation of chronic sinusitis. Both treatments are effective and safe, but AMX/CA is preferred due to its lower relapse rate.	**[158]**
27	Effectiveness of Oral Cephalexin-Clavulanic Acid, Cefuroxime, and Amoxicillin-Clavulanic Acid in the Management of Dental Infections: A Real-World, Retrospective, Electronic Medical Record-Based Study in India	Kalyan Banerjee *et.* al.,	95.5% of patients reported having a toothache, which was followed by swelling (46.8%), tooth sensitivity (35.5%) pus discharge (33.0%), redness, and halitosis (3".4% each). 81.1% of patients had dental caries. Within ten days 98.3% of patients treated with cephalexin CV, 96.8% of patients treated with co-amoxiclav, and 98.9% of patients treated with cefuroxime showed clinical improvement, which is defined as Improvement or partial resolution of infection related clinical signs and symptoms (composite measure of pain, swelling, fever, requirement of additional antimicrobial therapy) according to dentists' judgment. Compared to cefuroxime (4.9 ± 2.1) and 'o-amoxiclav (5.0 ± 2.6), patients receiving cephalexin CV had a numerically shorter time (days) to clinical Improvement (4.6 ± 2.0). Every treatment was well tolerated.	**[159]**
28	Prospective and comparative study between cefuroxime, ceftriaxone and amoxicillin-clavulanic acid in the treatment of community- acquired pneumonia	M E Sanchez *et.* al.,	Based on the random antibiotic treatment they had received (ceftriaxone, cefuroxime, or amoxicillin-clavulanic acid), the patients were divided into three groups. All of the group" under study had similar Initial patient characteristics in terms of epidemiology, clinical description, and critical situation. Streptococcus pneumoniae and Haemophilus Influenzae were the most commonly isolated pathogens, accounting for 36.9% of the cases that were microbiologically documented. Three patients experienced a pneumonia recurrence, and the recovery rate was 92.2%. 5.8% of people died worldwide. The evolution of patients treated with cefuroxime, ceftriaxone, or amoxicillin clavulanic acid did not differ statistically	**[160]**

			significantly; the latter is the preferred empirical treatment for community acquired pneumonia.	
29	A Comparative Analysis of Amoxicillin and Cefuroxime	Ria Fazulbhoy *et.* al.,	This article presents a comparative review of amoxicillin and cefuroxime focusing on their clinical use in bacterial infections such as pneumonia and urinary tract Infections. Current research data and scientific trends are analyzed to highlight differences in efficacy, applications, and safety profiles. The review also addresses their roles in conditions including acute malnutrition, acute bronchitis, renal function disorders, and tooth enamel defects, along with a discussion of administration routes, dosage, advantages, and limitations.	**[161]**
30	A study to find the causes of diabetic foot infections in a selected community	Someshwara Rao, Narayana Pallela, Padmavathi Narahari	Diabetic foot ulcers are a major cause of foot infections, primarily resulting from peripheral neuropathy and loss of protective sensation. Venous ulcers represent the most common type of leg ulcer and frequently occur in older adults, while approximately 15% of individuals with diabetes develop foot ulcers during their lifetime. This study aimed to Identify the contributing factors to foot infections among patients with diabetic neuropathy. Of the infected cases analysed, 142 patients (92%) had diabetic neuropathy, and all exhibited sensory neuropathy at presentation. Infection developed from preexisting callus formation in 33 patients (21%) and from chronic non-healing ulcers in 52 patients (33%). Additionally, 20 patients (13%) with foot deformities developed calluses over bony pressure points due to neuropathy or post-surgical sequelae. These findings emphasize the critical role of patient education, routine foot care, and early preventive interventions in reducing the risk of diabetic foot infections.	**[162]**
31	Diabetic foot infection – An Indian scenario	Ashu Rastogi *et.* al.,	Diabetes mellitus is Increasingly prevalent in India, leading to a rising burden of diabetic foot complications, particularly diabetic foot infections (DFIs). DFIs are a “major cause of morbidity due to their association with prolonged Illness, increased risk of lower limb amputation, higher healthcare costs, and mortality. Delayed medical consultation Is common, as “many patients initially depend on unproven Indigenous treatment methods. A” a result, most patients present with chronic, Infected foot ulcers that are predominantly neuropathic in nature. This “clinical pattern differs from Western populations, where neurovascular ulcers are more common. Microbiological evidence from Indian studies indicates a predominance of Gram-negative bacterial pathogens In DFIs, with Pseudomonas aeruginosa being the most frequently isolated organism. Based on these findings, empirical antibiotic therapy targeting Gram-negative bacteria is recommended for effective initial management of diabetic foot infections.	**[163]**
32	Natural products in the treatment of diabetic foot infection	Mohsen Nazari *et.* al.,	Diabetic foot Infection is a serious complication of diabetes and is becoming harder to treat due to rising ’antibiotic resistance. Natural compounds like eugenol, thymol, carvacrol, curcumin, and aloe vera show antimicrobial and wound healing benefits. They may serve as useful alternatives	**[164]**

			or supplements to antibiotics In managing DFIs. The review also explores challenges in integrating natural products into clinical practice and the potential for their use alongside or in place of traditional antibiotic" therapies. Our findings suggest that natural products could play a crucial role in developing sustainable and effective treatment strategies for DFIs, especially in the face of rising antimicrobial resistance.	
33	Epidemiology of diabetic foot infection in a reference tertiary hospital in India	Sanjith Saseedharan *et.* al.,	This study evaluated the microbiological profile of diabetic foot infections and antibiotic susceptibility patterns in the intensive care unit of a tertiary care hospital, 'with particular emphasis on the prevalence of the blaNDM-like gene among carbapenem resistant Gram-negative bacteria. A total of 289 microbial Isolates were recovered from 178 tissue samples obtained from 261 patients with diabetic foot Infections, comprising 59.7% males and 40.2% females, with a mean age of 58 ± 1" years. No microbial growth was observed in 17.6% of samples." monomicrobial infections accounted for 44.3% of cases, while" 55.7% were polymicrobial. Gram-negative organisms predominated (58.5%), and fungal isolates were detected in a small proportion of cases. Staphylococcus aureus (26.9%) and Pseudomonas aeruginosa (20.9%) were the most frequently Isolated pathogens. Carbapenem resistance was Identified in 16.5% of Enterobacteriaceae and 18.6% of Pseudomonas Isolates, with a subset harboring the blaNDMlike gene. Additionally, 23.7% of Staphylococcus isolates were methicillin resistant.	**[165]**
34	Clinical study management of diabetic foot and its complication	Manivannan Dhanrai *et.* al.,	Diabetic foot infections are frequently polymicrobial in nature and are strongly influenced by poor glycaemic control, impaired immunity, peripheral neuropathy, and reduced peripheral blood flow, all of which increase the risk of severe infection. This study aimed to evaluate the effectiveness of different treatment strategies and their clinical outcomes in patients with diabetic foot disease. Ulcers were the most common presenting lesion, accounting for 44% of cases, followed by gangrene (24%) and cellulitis (20%). The dorsum of the foot was the most frequently affected site (32%), followed by the forefoot (28%) and toes (22%). Minor or trivial trauma was identified as the initiating factor in more than half of the patients. A high proportion of patients (82%) presented with active infection. Microbiological analysis revealed Staphylococcus aureus as the most commonly isolated pathogen, accounting for 30% of culture-positive cases. These findings emphasize the need for early detection, appropriate antimicrobial therapy, and preventive foot care in diabetic patients.	**[166]**
35	Diabetic foot infection treatment and care	Emanuele Cigna *et.* al.,	Diabetic foot Infections require prompt and appropriate management to prevent limb loss and other severe complications. In this study, a multidisciplinary, four step treatment protocol involving wound cleansing, targeted antibiotic therapy, and surgical interventions demonstrated favorable outcomes. Among 37 patients managed using this approach, only 8% ultimately required amputation. Standard	**[167]**

			treatment included wound dressings, antibiotic therapy, and surgical debridement when indicated. Fifteen patients underwent skin grafting, supported by adjunctive therapies such as chemical debridement, laser therapy, and vacuum-assisted closure (VAC) therapy, with some receiving VAC combined with hyaluronic acid. Limb amputation was initially performed in 12 limbs; however, following comprehensive wound management, only three patients required final amputation. These cases were associated with severe vascular disease, advanced infection, and deep tissue necrosis. Overall, the study highlights the effectiveness of a coordinated, team-based approach in significantly reducing amputation rates in diabetic foot infections.	
36	Preventing and treating diabetic foot infection	Chenita Caster *et.* al.,	Diabetic foot Infections are a frequent and challenging complication of diabetes, often Involving multiple microbial pathogens that complicate diagnosis and treatment. Effective management typically requires a multidisciplinary approach. Pharmacists play a crucial role by optimizing antimicrobial therapy and providing patient education on glycemic control, foot care practices, appropriate medication use, and lifestyle modification. Commonly prescribed antibiotics for diabetic foot Infections include carbapenems, ciprofloxacin, amoxicillin, and clindamycin, selected based on Infection severity and culture sensitivity. The potentially debilitating consequences of diabetic foot Infections highlight the importance of strict glucose management and routine foot surveillance to Identify early signs of injury or infection. As medication experts, pharmacists contribute through pharmacological and nonpharmacological counselling, disease-state education, and collaboration with other healthcare professionals. Community and ambulatory care pharmacists are particularly well positioned to support continuity of care, promote adherence, and improve clinical outcomes and quality of life for patients with diabetes and diabetic foot infections.	[**168**]

CONCLUSION

Diabetic foot infections (DFIs) are complex, multifactorial conditions requiring comprehensive management. This review highlights that a wide range of antibiotics including beta lactams, cephalosporins, fluoroquinolones, carbapenems, and newer agents are effective when selected based on infection severity and pathogen profile. Tables demonstrate varied microbial coverage, dosing regimens, and safety considerations, emphasizing the importance of individualized therapy. Common pathogens include Staphylococcus aureus, gram-negative bacilli, and anaerobes, often in polymicrobial infections. Adverse effects and contraindications further influence drug choice. Optimal outcomes depend on timely diagnosis, culture-guided therapy, wound care, and surgical intervention. A multidisciplinary and patient-specific approach is essential to enhance healing and prevent complications.

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