H. influenzae, and *S. pneumoniae*. It has also been used for the treatment of anthrax, brucellosis, *Burkholderia* infections, chlamydial infections, clostridial infections, erlichiosis, rickettsial infections, and typhoid fever. Adverse reactions include aplastic anemia, myelosuppression, and gray baby syndrome. Chloramphenicol inhibits the CYP2C19 and CYP3A4 drug-metabolizing enzymes and consequently increases levels of many classes of drugs.

APPROACH TO PROPHYLAXIS OF INFECTION

Antibacterial prophylaxis is indicated only in selected circumstances (Table 170-6) and should be supported by well-designed studies or expert panel recommendations. In all cases the risk or severity of the infection to be prevented should be greater than the adverse consequences of antibacterial therapy, including the potential for selection of resistance. In addition, the timing and duration of antibacterial treatment should be targeted for maximal effect and minimal required exposure. Prophylaxis of surgical site infections targets bacteria that may contaminate the wound during the surgical procedure, including the skin flora of the patient or operating team and the air in the operating room. Delivery of the antibacterial drug within 1 h before the surgical incision is most effective. For prolonged procedures, redosing may be necessary to maintain effective blood and tissue levels until the wound is closed. In patients with nasal carriage of *S. aureus*, preoperative decolonization with nasal mupirocin reduces the rate of *S. aureus* surgical site infections and is generally recommended for high-risk procedures such as cardiac surgery and orthopedic implantation of prosthetic devices. For dental procedures, preprocedure antibacterial drugs are given to prevent transient bacteremia and the seeding of certain high-risk cardiac lesions. Prophylaxis is also used in nonprocedural settings in certain patients who have recurrent infections or who are at risk of serious infection from a specific exposure (e.g., close contact with a patient with meningococcal meningitis). Extension of prophylaxis beyond the period of infection risk (24 h in the case of surgical procedures) does not add further benefit and may increase the risk of resistance selection or *C. difficile* disease.

ANTIMICROBIAL STEWARDSHIP

In an era of increasing prevalence of multidrug-resistant bacteria and with a substantial amount of inappropriate antimicrobial use, the need for rational antimicrobial prescribing has never been greater. *Antimicrobial stewardship* describes the practice of promoting the selection of the appropriate drug, dosage, route, and duration of antimicrobial therapy. Antimicrobial stewardship programs implement a variety of strategies to (1) improve patient care through appropriate

TABLE 170-6 PROPHYLAXIS OF BACTERIAL INFECTIONS IN ADULTS

Condition	Antibacterial Agents[a]	Timing or Duration of Prophylaxis
Surgical		
Clean (cardiac, thoracic, neurologic, orthopedic, vascular, plastic)	Cefazolin (vancomycin,[b] clindamycin)	1 h before incision; redose with long procedures
Clean (ophthalmic)	Topical neomycin–polymyxin B–gramicidin, topical moxifloxacin	Every 5–15 min for 5 doses immediately prior to procedure
Clean-contaminated (head and neck)	Cefazolin + metronidazole, ampicillin-sulbactam[c] (clindamycin)	1 h before incision; redose with long procedures
Clean-contaminated (hysterectomy, gastroduodenal, biliary, unobstructed small intestine, urologic)	Cefazolin, ampicillin-sulbactam[c] (clindamycin + aminoglycoside, aztreonam, or fluoroquinolone)	1 h before incision; redose with long procedures
Clean-contaminated (colorectal, appendectomy)	Cefazolin + metronidazole, ampicillin-sulbactam,[c] ertapenem (clindamycin + aminoglycoside, aztreonam, or fluoroquinolone)	1 h before incision; redose with long procedures
Dirty (ruptured viscus)	Therapeutic regimen directed at anaerobes and gram-negative bacteria (e.g., ceftriaxone + metronidazole)	1 h before incision; redose with long procedures; continue for 3–5 days after procedure
Dirty (traumatic wound)	Therapeutic regimen: cefazolin (clindamycin ± aminoglycoside, aztreonam, or fluoroquinolone)	1 h before incision; redose with long procedures; continue for 3–5 days after procedure
Nonsurgical		
Dental, oral, or upper respiratory procedures in patients with high-risk cardiac lesions (prosthetic valves, congenital heart defects, prior endocarditis)	Amoxicillin PO, ampicillin IM (clindamycin PO, IV)	Oral agents 1 h before procedure; injection 30 min before procedure
Recurrent *S. aureus* skin infections[d]	Mupirocin[e]	Intranasal application for 5 days
Recurrent cellulitis associated with lymphatic disruption[d]	Benzathine penicillin IM monthly, oral penicillin or erythromycin twice daily	Undefined
Recurrent cystitis in women[d]	Nitrofurantoin, TMP-SMX, fluoroquinolone	After sexual intercourse *or* 3 times weekly for up to 1 year
Bite wounds	Amoxicillin-clavulanate (doxycycline, moxifloxacin)	3–5 days
Recurrent spontaneous bacterial peritonitis in cirrhotic patients[d]	Fluoroquinolone[f]	Undefined
Recurrent pneumococcal meningitis in patient with CSF leak or humoral immune defect[d]	Penicillin	Undefined
Exposure to patient with meningococcal meningitis	Rifampin, ciprofloxacin	2 days (rifampin), single dose (ciprofloxacin)
High-risk neutropenia (ANC, ≤100/μL for >7 days)[d]	Levofloxacin or ciprofloxacin[f]	Until neutropenia resolves or fever dictates use of other antibacterials

[a]Regimens in parentheses are alternatives for patients allergic to β-lactams. [b]Vancomycin may be given together with cefazolin to patients known to be colonized with methicillin-resistant *Staphylococcus aureus*. [c]Cefoxitin or cefotetan may also be considered. [d]Not considered routine for all patients, but an acceptable consideration among alternative approaches. [e]Usually coupled with bathing with chlorhexidine-containing skin antiseptic. [f]Choice of fluoroquinolone prophylaxis must be balanced against the risk of selection of resistance.

Abbreviations: ANC, absolute neutrophil count; CSF, cerebrospinal fluid; TMP-SMX, trimethoprim-sulfamethoxazole.