TABLE 170-2 RISKS ASSOCIATED WITH USE OF ANTIBACTERIAL DRUGS IN PREGNANCY AND LACTATION

Pregnancy Category[a]	Antibacterial Drug	Fetal Risk Recommendation[b]	Breast-Feeding Risk Recommendation[b]
B	Azithromycin	Limited human data. Animal data suggest low risk.	Limited human data; probably compatible
	Cephalosporins (including cephalexin, cefuroxime, cefixime, cefpodoxime, cefotaxime, ceftriaxone)	Compatible	Compatible
	Clindamycin	Compatible	Compatible
	Ertapenem	No human data; probably compatible	Limited human data; probably compatible
	Erythromycin	Compatible (excluding estolate salt)	Compatible
	Meropenem	No human data. Animal data suggest low risk.	No human data; probably compatible
	Metronidazole	Human data suggest low risk.	Interrupt breast-feeding for 12–24 h after single 2-g dose. Limited human data; potential toxicity in divided doses
	Nitrofurantoin	Human data suggest risk in third trimester.	Limited human data; probably compatible. Higher risk associated with younger infants and those with G6PD deficiency
	Penicillins (including amoxicillin, ampicillin, cloxacillin)	Compatible	Compatible
	Quinupristin-dalfopristin	Compatible. Maternal benefit must far outweigh risk to embryo/fetus.	No human data; potential toxicity
	Vancomycin	Compatible	Limited human data; probably compatible
C	Chloramphenicol	Compatible	Limited human data; potential toxicity
	Fluoroquinolones	Human data suggest low risk.	Limited human data; probably compatible
	Clarithromycin	Limited human data. Animal data suggest high risk.	No human data; probably compatible
	Imipenem/cilastatin	Limited human data. Animal data suggest low risk.	Limited human data; probably compatible
	Linezolid	Compatible. Maternal benefit must far outweigh risk to embryo/fetus.	No human data; potential toxicity
	Telavancin	No human data. Animal studies have revealed evidence of teratogenicity.[c]	No human data. Animal studies have revealed evidence of teratogenicity.[c]
	Tedizolid	Limited data. Embryo-fetal studies in mice, rats, and rabbits have demonstrated fetal developmental toxicities. Use only if benefit outweighs risk.	Excreted in the breastmilk of rats; unknown in humans; caution use
	Dalbavancin	Limited human data. At high doses in animal studies, delayed fetal maturation, increased embryo and offspring death. Use only if benefit outweighs risk.	Excreted in the breastmilk of animals; unknown in humans; caution use
	Oritavancin	Limited human data. Studies in rats and rabbits demonstrated no harm at 25% of recommended human dose. Use only if benefit outweighs risk.	Excreted in the breastmilk of rats; unknown in humans; caution use
C/D	Amikacin	Human data suggest low risk.	Compatible
	Gentamicin	Human data suggest low risk.	Compatible
D	Kanamycin	Human data suggest risk.	Limited human data; probably compatible
	Streptomycin	Human data suggest risk.	Compatible
	Sulfonamides	Human data suggest risk in third trimester.	Limited human data; potential toxicity. Avoid in ill, stressed, premature infants and in infants with hyperbilirubinemia or G6PD deficiency.
	Tetracyclines	Contraindicated in second and third trimesters	Compatible
	Tigecycline	Human data suggest risk in second and third trimesters.	No human data; potential toxicity

[a]***Category B:*** *Either* animal reproduction studies have failed to demonstrate a risk to the fetus, and there are no adequate and well-controlled studies in pregnant women; *or* animal studies have shown an adverse effect, but adequate and well-controlled studies in pregnant women have failed to demonstrate a risk to the fetus in any trimester. ***Category C:*** Animal reproduction studies have shown an adverse effect on the fetus, and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks. ***Category D:*** There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks. [b]Fetal risk recommendation and breast-feeding risk recommendation adapted from GG Briggs et al, eds: *Drugs in Pregnancy and Lactation*, 9th ed. Philadelphia, Lippincott Williams and Wilkins, 2011; and the U.S. Food and Drug Administration (Drugs@FDA).
[c]A registry has been established to monitor pregnancy outcomes of pregnant women exposed to telavancin. Physicians are encouraged to register pregnant patients, or pregnant women may enroll themselves by calling 1-855-633-8479.

Abbreviation: G6PD, glucose-6-phosphate dehydrogenase.

side chains among the agents of this family determine the spectrum of activity. All β-lactams exert a bactericidal effect by inhibiting bacterial cell-wall synthesis. The β-lactams are classified as time-dependent killing agents; therefore, their clinical efficacy is best correlated with the proportion of the dosing interval during which the drug levels remain above the MIC for the pathogenic organism.

Penicillins and β-Lactamase Inhibitors Penicillin, the first β-lactam, was discovered in 1928 by Alexander Fleming. Natural penicillins, such as penicillin G, are active against non-β-lactamase-producing gram-positive and gram-negative bacteria, anaerobes, and some gram-negative cocci. Penicillin G is used for penicillin-susceptible streptococcal infections, pneumococcal and meningococcal meningitis, enterococcal endocarditis, and syphilis. The antistaphyloccocal penicillins, which have potent activity against methicillin-susceptible *S. aureus* (MSSA), include nafcillin, oxacillin, dicloxacillin, and flucloxacillin. Aminopenicillins, such as ampicillin and amoxicillin, provide added coverage beyond penicillin against gram-negative cocci, such as *Haemophilus influenzae*,