

# Recommended Antibiotic Regimens for Elderly Patients With Selected Life-Threatening Infections

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The following tables present recommended antibiotic regimens for elderly people with life-threatening bacterial pneumonias, urinary tract infections, infected decubitus ulcers, and septicemia associated with total parenteral nutrition (TPN), and estimates of the cost of the treatments. The tables were prepared for OTA

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**Table G-1.—Recommended Antibiotic Regimens for Elderly Patients With Life-Threatening Bacterial Pneumonias**

Setting	Usual pathogen(s)	Antibiotic(s) <sup>a,b</sup>	Maximum daily dose	Cost per day <sup>c</sup>	Minimum duration <sup>d</sup>	Cost per course	
Community . . . . .	<i>Streptococcus pneumoniae</i>	[3rd-generation cephalosporin <sup>e</sup> ]	— <sup>e</sup>	[\$50.70-\$ 168.12] <sup>e</sup>	7 days	\$354.90-\$1,175.54	
	Mixed flora	[chloramphenicol]	4.0g	[\$14.76]		\$103.32	
	<i>Hemophilus influenzae</i> Gram-negative bacilli	plus aminoglycoside <sup>f</sup>	— <sup>f</sup>	\$13.40-\$57.06 <sup>f</sup>		plus \$187.60-\$399.42	
Nursing home . . . . .	Mixed flora	Antipseudomonal penicillins	— <sup>g</sup>	\$76.57-\$138.40 <sup>g</sup>	14 days <sup>h</sup>	\$1,072-\$1,937.60	
	<i>Streptococcus pneumoniae</i>	or [3rd-generation cephalosporin <sup>e</sup> ]	— <sup>e</sup>	[\$50.70-\$ 168.12] <sup>e</sup>		or \$709.80-\$2,353.68	
	Gram-negative bacilli	or trimethoprim (TMP) sulfamethoxazole (SMX) <sup>h,i</sup>	TMP 1.2g SMX 6.0g	[\$9.10]		plus \$127.40	
		plus aminoglycoside <sup>f</sup>	— <sup>f</sup>	\$13.40-\$57.06 <sup>f</sup>		plus \$315.00-\$798.84	
Hospital	Not immunocompromised. . . . .	<i>Gram-negative bacilli</i>	[3rd-generation cephalosporin <sup>e</sup> ]	— <sup>e</sup>	[\$50.70-\$ 168.12] <sup>e</sup>	14 days	\$709.80-\$2,353.68
		<i>Staphylococcus aureus</i>	plus aminoglycoside <sup>f</sup>	— <sup>f</sup>	\$13.40-\$57.06 <sup>f</sup>		plus \$315.00-\$798.84
		<i>Streptococcus pneumoniae</i> Mixed flora					
	Immunocompromised . . . . .	As above plus <i>Legionella pneumophila</i>	[3rd-generation cephalosporin <sup>e</sup> ] plus aminoglycoside <sup>f</sup>	— <sup>e</sup> — <sup>f</sup>	[\$57.70-\$ 168.12] <sup>e</sup> \$13.40-\$57.06 <sup>f</sup>	14 days	plus \$709.80-\$2,353.68 plus \$315.00-\$798.84
			plus [erythromycin] plus [TMP-SMX]	4.0g — TMP 1.2g SMX 6.0g	[\$39.16] plus [\$9.10]		plus \$548.24 plus \$127.40

<sup>a</sup>Th antibiotic(s) listed first is (are) the drug(s) of choice.  
<sup>b</sup>The first antibiotic listed within the brackets [ ] is an alternate choice for penicillin-allergic patients with a history of a delayed hypersensitivity-type reaction. The second antibiotic listed within the brackets [ ] is an alternate choice for patients with a history of anaphylactic reaction or interstitial nephritis from either penicillin or cephalosporin.  
<sup>c</sup>Total cost to patient is purchase cost plus 5 percent (inventory carrying cost) + \$2.40 (dispensing fee).  
<sup>d</sup>Th recommended minimum duration (days) is an "average" duration for the empirically selected parenteral antibiotics only.  
<sup>e</sup>Third-generation cephalosporins (maximum daily dose and cost per day) include cefotaxime (12 g; \$127.44), cefoperazone (12 g; \$134.10), moxalactam (12 g; \$168.12), ceftizoxime (12 g; \$134.22), ceftazidime (6 g; \$78.80), and ceftroxone (2 g; \$50.70).  
<sup>f</sup>Aminoglycosides (maximum daily dose and cost per day) include amikacin (1.5 g; \$57.06), gentamicin (5 mg/kg; \$13.40), netilmicin (6.5 mg/kg; \$24.02), and tobramycin (5 mg/kg; \$32.01) (all based on 60 kg. patient).  
<sup>g</sup>Antipseudomonal penicillins (maximum daily dose and cost per day) include carbenicillin (40 g; \$76.57), ticarcillin (24-30 g; \$87.92), piperacillin (24 g; \$108.24), mezlocillin (24 g; \$77.16), and azlocillin (24 g; \$138.40).  
<sup>h</sup>n,t currently approved by the Food and Drug Administration for this indication.

SOURCES: Usual pathogen and recommended antibiotics: D.W. Bentley, "Bacterial Pneumonia in the Elderly: Clinical Features, Diagnosis, Etiology and Treatment," *Gerontology* 30:297, 1964; and C.J. Rozas and A.L. Goldman, "Responses to Bacterial Pneumonia," *Geriatrics* 37:61, 1982. Maximum daily dose: S.M. Norris, and G.L. Mandell, "Tables of Antimicrobial Agent Pharmacology, Principles and Practices of Infectious Diseases," G.L. Mandell, R.G. Douglas, Jr., and J.E. Bennett (eds.) (New York, NY: John Wiley & Sons, 1985). Cost per day: Strong Memorial Hospital Pharmacy, Rochester, NY. Minimum duration: D.W. Bentley, "Infectious Diseases," *Clinical Geriatrics*, 1. Rossman (ed.) (Philadelphia, PA: J.B. Lippincott, 1966, in press).

**Table G-2.—Recommended Empiric Antibiotic Regimens for Elderly Patients With Life-Threatening Urinary Tract Infections**

Setting	Usual pathogen(s)	Antibiotic(s) <sup>a,b</sup>	Maximum daily dose	Cost per day <sup>c</sup>	Minimum duration <sup>d</sup>	Cost per course
Community, nursing home, or hospital . . . . .	<i>Escherichia coli</i> <i>Klebsiella sp.</i> <i>Proteus sp.</i> <i>Pseudomonas aeruginos</i> <sup>e</sup> <i>Enterococcus</i> Polymicrobial	Ampicillin or [vancomycin]	12.0 g 2.0 g	\$22.84 or [83.10]	14 days	\$319.76 or \$1,163.40 plus
		plus aminoglycoside <sup>e</sup>	—e	\$13.40-\$57.06 <sup>e</sup>		\$315.00-\$798.40
		or antipseudomonas penicillins	—f	\$76.57-\$38.40 <sup>f</sup>		\$1,072.00-\$1,937.60
		[3rd-generation cephalosporins] <sup>g</sup>	—g	\$50.70-\$168.12 <sup>g</sup>		\$709.30-\$353.68

<sup>a</sup>The antibiotic(s) listed first is (are) the drug(s) of choice.  
<sup>b</sup>The first antibiotic listed within the brackets [] is an alternate choice for penicillin-allergic patients with a history of a delayed hypersensitivity-type reaction. The second antibiotic listed within the brackets is an alternate choice for patients with a history of anaphylactic reaction or interstitial nephritis from either penicillin or cephalosporin.  
<sup>c</sup>Total cost to patient is purchase cost plus 5 percent (inventory carrying cost) + \$2.40 (dispensing fee).  
<sup>d</sup>The recommended minimum duration (days) is an "average" duration for the empirically selected parenteral antibiotics only.  
<sup>e</sup>Aminoglycosides (maximum daily dose and cost per day) include amikacin (1.5 g; \$57.06), gentamicin (5 mg/kg; \$13.40), netilmicin (6.5 mg/kg; \$24.02), and tobramycin (5 mg/kg; \$32.01) (all based on 60 kg, patient).  
<sup>f</sup>Antipseudomonas penicillins (maximum daily dose and cost per day) include carbenicillin (40 g; \$76.57), ticarcillin (24-30 g; \$87.92), piperacillin (24 g; \$106.24), mezlocillin (24 g; \$77.16), and azlocillin (24 g; \$138.40).  
<sup>g</sup>Third-generation cephalosporins (maximum daily dose and cost per day) include cefotaxime (12 g; \$127.44), cefoperazone (12 g; \$134.10), moxalactam (12 g; \$168.12), ceftizoxime (12 g; \$134.22), ceftazidime (6 g; \$78.80), and ceftroxone (2 g; \$50.70).  
 SOURCES: Usual pathogen and recommended antibiotic: R. Gleckman, N. Blagg, D. Hibert, et al., "Community-Acquired Bacteremic Urosepsis in the Elderly Patients: A Prospective Study of 34 Consecutive Episodes," *Journal of Urology* 128:79, 1982; D. Kaye, "Urinary Tract Infections in the Elderly," *Bulletin of the New York Academy of Medicine* 56:209, 1980; A.R. Ronald, "Current Concepts in the Management of Urinary Tract Infections in Adults," *Medical Clinic of North America* 68:355, 1984; and E.T. Sherman, V. Tucci, L.S. Libow, et al., "Nosocomial Urinary Tract Infections in a Skilled Nursing Facility," *Journal of the American Geriatrics Society* 28:456, 1980. Maximum daily dose: S.M. Norris, and G.L. Mandell, "Tables of Antimicrobial Agent Pharmacology, Principles and Practices of Infectious Diseases," G.L. Mandell, R.G. Douglas, Jr., and J.E. Bennett (eds.) (New York, NY: John Wiley & Sons, 1985). Minimum duration: D.W. Bentley, "Infectious Diseases," *Clinical Geriatrics*, I. Rossman (ed.) (Philadelphia, PA: J.B. Lippincott, 1986, in press). Cost per day: Strong Memorial Hospital Pharmacy, Rochester, NY.

**Table G.3.— Recommended Antibiotic Regimens for Elderly Patients With Life-Threatening Infected Decubitus Ulcers**

Setting	Usual pathogen(s)	Antibiotic(s) <sup>a,b</sup>	Maximum daily dose	Cost per day <sup>c</sup>	Minimum duration <sup>d</sup>	Cost per course
Community, nursing home, or hospital . . . . .	<i>Proteus sp.</i> <i>Escherichia coli</i> <i>Pseudomonas aeruginosa</i> <i>Staphylococcus aureus</i> <i>Bacteroides fragilis</i> Polymicrobial	[Clindamycin] or [metronidazole] or [chloramphenical]	4.8 g 4.0 g —	\$120.32 or [44.64] or [14.76]	14 days	\$1,684.48 or \$624.96 or \$206.64 plus
		plus aminoglycoside <sup>e</sup>	—e	\$13.40-\$57.06 <sup>e</sup>		\$315.00-\$798.84
		or antipseudomonas penicillins	—f	\$76.57-\$138.40 <sup>f</sup>		\$1,072.00-\$1,937.60
		[3rd-generation cephalosporins] <sup>g</sup>	—g	\$50.70-\$168.12 <sup>g</sup>		\$709.80-\$2,353.68

<sup>a</sup>The antibiotic(s) listed first is (are) the drug(s) of choice.  
<sup>b</sup>The first antibiotic listed within the brackets [] is an alternate choice for penicillin-allergic patients with a history of a delayed hypersensitivity-type reaction. The second antibiotic listed within the brackets is an alternate choice for patients with a history of anaphylactic reaction or interstitial nephritis from either penicillin or cephalosporin.  
<sup>c</sup>Total cost to patient is purchase cost plus 5 percent (inventory carrying cost) + \$2.40 (dispensing fee).  
<sup>d</sup>The recommended minimum duration (days) is an "average" duration for the empirically selected parenteral antibiotics only.  
<sup>e</sup>Aminoglycosides (maximum daily dose and cost per day) include amikacin (1.5 g; \$57.06), gentamicin (5 mg/kg; \$13.40), netilmicin (6.5 mg/kg; \$24.02), and tobramycin (5 mg/kg; \$32.01) (all based on 60 kg, patient).  
<sup>f</sup>Antipseudomonas penicillins (maximum daily dose and cost per day) include carbenicillin (40 g; \$76.57), ticarcillin (24-30 g; \$87.92), piperacillin (24 g; \$106.24), mezlocillin (24 g; \$77.16), and azlocillin (24 g; \$138.40).  
<sup>g</sup>Third-generation cephalosporins (maximum daily dose and cost per day) include cefotaxime (12 g; \$127.44), cefoperazone (12 g; \$134.10), moxalactam (12 g; \$166.12), ceftizoxime (12 g; \$134.22), ceftazidime (6 g; \$78.80), and ceftroxone (2 g; \$50.70).  
 SOURCES: Usual pathogen and recommended antibiotics: A.W. Chow, and D.R. Burdge, "Pressure Sores," *Infections in the Elderly*, R.A. Gleckman and N.M. Gantz (eds.) (Boston, MA: Little Brown & Co., 1983); and D.W. Bentley, unpublished observations. Maximum daily dose: S.M. Norris, and G.L. Mandell, "Tables of Antimicrobial Agent Pharmacology, Principles and Practices of Infectious Diseases," G.L. Mandell, R.G. Douglas, Jr., and J.E. Bennett (eds.) (New York, NY: John Wiley & Sons, 1985). Cost per day: Strong Memorial Hospital Pharmacy, Rochester, NY. Minimum duration: D.W. Bentley, "Infectious Diseases," *Clinical Geriatrics*, I. Rossman (ed.) (Philadelphia, PA: J.B. Lippincott, 1986, in press).

Table G-4.-Recommended Antibiotic Regimens for Elderly Patients With Life-Threatening Total-Parenteral-Nutrition-Associated Septicemia

Setting	Usual pathogen(s)	Antibiotic(s) <sup>ab</sup>	Maximum daily dose	Cost per day <sup>c</sup>	Minimum <sup>a</sup> duration	Cost per course
Community or hospital . . . . .	<b><i>Candida albicans</i></b> <i>Candida sp.</i> <i>Staphylococcus epidermidis</i> Gram-negative bacilli	Penicillinase-resistant penicillins or [3rd-generation cephalosporin]	— <sup>e</sup>	\$46.20-\$74.76 <sup>c</sup>	10 days	\$460.20-\$740-76
		[vancomycin] or amphotericin B	2 g 1 mg/kg (60 kg)	\$83.10 or \$20.98		\$500.70& ,680.12 \$830.10 or \$209.80

<sup>a</sup>The antibiotic(s) listed first is (are) the drug(s) of choice.

<sup>b</sup>The first antibiotic listed within the brackets [] is an alternate choice for penicillin-allergic patients with a history of a delayed hypersensitivity-type reaction. The second antibiotic regimen listed within the brackets is an alternate choice for patients with a history of anaphylactic reaction or interstitial nephritis from either penicillin or cephalosporin.

<sup>c</sup>Total cost to patient is purchase cost plus 5 percent (inventory carrying cost) + \$2.40 (dispensing fee).

<sup>d</sup>The recommended minimum duration (days) is an "average" duration for the empirically selected parenteral antibiotics only.

<sup>e</sup>Penicillinase-resistant penicillins include methicillin (12 g; \$74.76), oxacillin (12 g; \$62.66), and nafcillin (9 g; \$46.20).

<sup>f</sup>Third-generation cephalosporins (maximum daily dose and cost per day) include cefotaxime (12 g; \$127.44), cefoperazone (12 g; \$134.10), moxalactam (12 g; \$168.12), ceftizoxime (12 g; \$134.22), ceftazidime (6 g; \$78.60), and ceftroxone (2 g; \$50.70).

SOURCES: Usual pathogen and recommended antibiotics: D.W. Bentley, unpublished observations. Maximum daily dose: S.M. Norris, and G.L. Mandell, "Tables of Antimicrobial Agent Pharmacology, Principles and Practices of Infectious Diseases, G.L. Mandell, R.G. Douglas, Jr., and J.E. Bennett (eds.) (New York, NY: John Wiley & Sons, 1965). Cost per day: Strong Memorial Hospital Pharmacy, Rochester, NY. Minimum duration: D.W. Bentley, "Infectious Diseases," *Clinical Geriatrics*, 1. Rossman (ed.) (Philadelphia, PA: J.B. Lippincott, 1986, in press).