

- air travel
 - aircraft crashes, 236*f*, 237–38
 - cabin air pressure and chronic disease, 606–7
 - children, hazards and risks for, 586
 - COVID-19 transmission in, 345
 - death during, 239–40
 - illness and death reporting and public health interventions, 630–33, 631*t*, 632*b*
 - in-flight medical emergencies, 608, 610–12
 - in-flight transmission of
 - communicable diseases, 607–8
 - international business travelers, 638–39
 - jet lag, 616–18
 - medical supplies on aircraft, 610*b*, 610–11
 - medical tourism risks, 562
 - norovirus outbreaks, 406
 - overview, 605–6
 - with pets, 603
 - preflight medical considerations, 606
 - during pregnancy, 574
 - preparing aircrew, 608
 - respiratory infections and, 810
 - scuba diving and, 202
 - with service animals, 603–4
 - special risks related to, 15–16
 - thromboembolic disease, 607, 613–15
 - travelers with chronic diseases, 167*t*
 - travelers with disabilities, 157–61
 - tuberculosis transmission in, 315
 - when breastfeeding, 575, 578–79
 - aircrew
 - fitness to fly, 643–44
 - general health measures, 640–43
 - health myths and realities, 645–46
 - overview, 640
 - preparing for international travel, 608
 - airports, accommodations for travelers with disabilities in, 161–62
 - Albania, 41
 - albendazole, 495, 533, 793–94
 - alcohol consumption
 - adverse clinical effects associated with, 175*t*
 - by aircrew, 644
 - alcohol use disorder, 176*b*, 176–77
 - driving impaired by, 622*t*
 - excessive alcohol use, 175–76
 - international student travel and, 669
 - overview, 175
 - Alcoholics Anonymous (AA), 114, 176–77
 - Algeria, 41
 - Alkhurma virus, 448, 449
 - alkylating agents, 148
 - AllCare Plus Pharmacy, 489
 - allergies, 19–20, 815*t*
 - adventure travel and, 681, 683*b*
 - African safaris and, 698
 - cruise ship travel and, 626–28
 - highly allergic travelers, 171*b*, 171–74, 172*b*, 173*b*
 - to vaccine components, 27–29, 136, 172, 288, 391–92, 398, 412, 430, 460
 - alphaviruses, 342, 800*t*. *See also* chikungunya virus
 - altitude illness, 16, 655
 - acclimatization as preventing, 204
 - adventure travel and, 681, 683*b*
 - in children, 586–87
 - China travel and, 754*b*, 755–56
 - complementary or integrative health approaches, 121–22
 - destinations of risk, 205
 - discussing in pretravel consultation, 20*t*
 - drug interactions in treatment of, 36–37, 36*t*
 - India travel and, 763
 - medications to prevent and treat, 207–8, 208*t*
 - Mexico travel and, 735
 - Nepal travel and, 768
 - Peru travel and, 742
 - during pregnancy, 573
 - prevention, 208–10, 209*t*
 - risk to travelers, 204–5, 205*t*
 - self-treatment options, 19*b*
 - syndromes, 205–7
 - Tanzania travel and, 712*b*, 712–13
 - alum, water clarification with, 98–100
 - alveolar echinococcosis (AE), 482–83
 - amebiasis, 665, 812–13
 - fever in returned travelers, 800*t*
 - general discussion, 471–72
 - during pregnancy, 572
 - screening asymptomatic returned travelers for, 794, 795
 - travelers' diarrhea, 85, 86, 90, 97
 - amebic liver abscess, 471–72, 572, 781*t*
 - American Academy of Allergy, Asthma, and Immunology (AAAAI), 174
 - American Academy of Ophthalmology (AAO), 188
 - American Academy of Pediatrics (AAP), 322, 597, 598*t*, 841
 - American College of Chest Physicians (ACCP), 614
 - American College of Emergency Physicians (ACEP), 623
 - American Medical Association (AMA), 562–63, 563*b*
 - American Optometry Association (AOA), 188
 - American Samoa (US), 41, 211, 342, 356, 592
 - American Society of Hematology (ASH), 614
 - American Society of Tropical Medicine and Hygiene (ASTMH), 10
 - American trypanosomiasis (Chagas disease)
 - Brazil travel and, 719
 - general discussion, 540–41
 - Mexico travel and, 735
 - screening asymptomatic returned travelers for, 794
 - screening internationally adopted children for, 598*t*, 600
 - amnesic shellfish poisoning (ASP), 231
 - ampicillin, 285, 326
 - anaphylaxis, 171*b*, 172, 681, 683*b*, 684
 - anaplasmosis, 299*t*. *See also* rickettsial infections
 - clinical presentation, 304
 - diagnosis, 304
 - epidemiology, 303
 - infectious agent, 297–98
 - transmission, 298, 299*t*
 - treatment, 304–5
- Ancylostoma duodenale*. *See* hookworm infections
- Andes virus, 450
 - Andorra, 41
 - aneruptive fever, 299*t*. *See also* rickettsial diseases
 - angiostrongyliasis, 473–74, 800*t*
 - Angola
 - African trypanosomiasis in, 537
 - malaria information for, 41
 - Marburg virus in, 450–51
 - multidrug-resistant tuberculosis in, 317*t*
 - tetanus in, 312
 - yellow fever information for, 41, 454*t*, 455, 463*t*, 663
 - Anguilla (UK), 41
 - animal health certificates, 225
 - Animal Plant and Health Inspection Service (APHIS), USDA, 227, 603
 - animal products, bringing into US, 224, 227, 253
 - animals. *See also* African safaris; bites and scratches from animals; insect bites; One Health approach; service animals; zoonotic diseases; zoonotic exposures
 - bringing into US, 224–27
 - rescuing, 656
 - reservoirs and mechanisms, 218*t*
 - rickettsial disease hosts, 299*t*
 - at wet markets in China, 756
 - antacids, 33, 35
 - Antarctica, 41
 - anthelmintic drugs, 495
 - anthrax
 - clinical presentation, 251–52
 - cutaneous, 250, 251, 822
 - diagnosis, 252–53
 - epidemiology, 250–51
 - infectious agent, 250
 - prevention, 253
 - transmission, 250
 - treatment, 253
 - vaccinations, 247*t*, 253
 - anthrax meningitis, 251, 252
 - antibiotics. *See also* antimicrobial resistance
 - after animal bites and scratches, 220, 823
 - for anthrax, 253
 - for bacterial skin infections, 818
 - for *Bartonella* infections, 256
 - for breastfeeding patients, 577
 - for brucellosis, 258
 - for campylobacteriosis, 261
 - for children, 581–82
 - for cholera, 264
 - cholera vaccine and, 265
 - Clostridioides difficile* and, 812
 - diarrheagenic *E. coli* and, 269–71
 - for diphtheria, 267
 - for *Helicobacter pylori*, 272

- for immunocompromised travelers, 155
- interactions with antimalarial drugs, 31, 33
- interactions with other drugs, 34–36, 35*t*
- interactions with vaccines, 31
- for latent tuberculosis infection, 320
- for legionellosis, 274–75
- for leptospirosis, 277
- for Lyme disease, 279
- for melioidosis, 281–82
- for meningococcal disease, 285, 288–89
- for nontyphoidal salmonellosis, 307
- for pertussis, 290
- photosensitivity reactions to, 182
- for plague, 293
- for pneumococcal disease, 294
- for Q fever, 296–97
- for rickettsial diseases, 304–5
- risk management issues, 136
- risks related to use, 806–7
- for shigellosis, 310
- for tetanus, 313
- for travelers' diarrhea, 18–19, 87–89, 88*t*, 90*b*, 90, 92–93
- for tuberculosis disease, 320
- for typhoid fever and paratyphoid fever, 326–27
- typhoid vaccination and, 329
- vaccination and use of, 27
- in vaccines, allergic reactions to, 27–28
- for yersiniosis, 331
- antibody rapid diagnostic tests, 785*t*, 786
- antibody-containing blood products, 26–27. *See also* immune globulin
- anticoagulants, 31, 33, 35, 614, 615
- anticonvulsants, 33, 34, 36
- antidiarrheals, 33
- antiemetics, 31, 582
- antifungal therapy, 544, 546, 806, 819–20
- antigen rapid diagnostic tests, 347, 388, 785*t*, 786
- Antigua and Barbuda, 41
- antihelminthic agents, 474, 793–94
- anti-hepatitis C virus protease inhibitors, 34
- antihistamines, 31, 33, 230, 629, 643–44
- antimalarial prophylaxis. *See* malaria chemoprophylaxis
- antimetabolites, 148
- antimicrobial resistance
 - campylobacteriosis, 261
 - cholera, 264
 - Escherichia coli*, 271
 - and fever in returned travelers, 802, 803*b*
 - fluoroquinolones, 582
 - gonorrhea, 686–87, 706
 - infectious agents and epidemiology, 804–6
 - medical tourism and, 562, 737
 - overview, 804
 - pneumococcal disease, 294
 - posttravel evaluation, 784, 807–8
 - prevention, 806–7
- Salmonella*, 307
- sexually transmitted infections, 688–89, 828, 832
- Shigella*, 309–10
- travelers, role in, 1
- travelers' diarrhea prevention and, 87
- travelers' diarrhea treatment and, 89, 92–93
- tuberculosis, 317–18, 317*t*, 320
- typhoid fever and paratyphoid fever, 326–27
- antimotility drugs, 89, 90*b*, 582
- antipsychotics, 826, 827*b*
- antiretrovirals
 - antimalarial drug interactions, 31–33, 34, 154
 - for HIV, 381–82
 - initiating vaccination after, 145
 - interactions with other drugs, 37, 155
 - and latent tuberculosis infection treatment, 320
- antitoxins, 253, 267
- antivenoms, 748
- antiviral medications
 - for B virus, 340
 - for chronic hepatitis B infection, 370
 - for COVID-19, 347
 - for hepatitis C, 377
 - for influenza, 388–90, 389*t*, 811
 - for orthopoxvirus infections, 436–37
 - and vaccinations, 27
- aquatic injuries, 235, 236*f*, 237
- Arabian Peninsula, MERS in, 400, 401, 702, 809
- arboviruses
 - Burma travel and, 747
 - in children, 580–81
 - Dominican Republic travel and, 724
 - fever in returned travelers, 800*t*, 803*b*
 - Haiti travel and, 728
 - incubation period, 777–79, 780*t*
 - long-term traveler risk for, 663
 - Mexico travel and, 734
 - Peru travel and, 741
 - screening asymptomatic returned travelers for, 791
- arenaviruses, 446. *See also* viral hemorrhagic fever diseases
- animal reservoirs and mechanisms, 218*t*
- clinical presentation, 451
- epidemiology, 449
- infectious agents, 448
- transmission, 448, 449
- treatment, 451
- Argentina, 41, 269, 298–302, 299*t*, 450, 454*t*, 560
- Argentine hemorrhagic fever (Junin virus), 448, 449, 451, 452
- Armenia, 41
- aromatherapy, 124
- artemether-lumefantrine, 508, 508*t*
- arterial gas embolism (AGE), 200–1, 201*t*
- arthropods. *See* insect bites;
- vectorborne diseases
- Aruba [Netherlands], 42, 186*b*, 186, 280–81, 620*t*
- ascariasis (roundworm infections)
 - in children, 586
- general discussion, 494–95
- India travel and, 762
- posttravel evaluation, 783, 792, 794
- in refugees, presumptive treatment of, 837
- Ascension Island (UK), 80
- Asia
 - angiostrongyliasis in, 473
 - anthrax infection in, 250, 251
 - antimicrobial resistance in, 805
 - avian influenza in, 387
 - brucellosis in, 257
 - campylobacteriosis in, 260, 261
 - carbapenemase-producing bacteria in, 806
 - chikungunya virus in, 341, 816
 - cholera in, 262, 263
 - common causes of fever in, 799*t*
 - counterfeit drugs in, 557
 - cutaneous larva migrans in, 478
 - cutaneous leishmaniasis in, 496, 822
 - cyclosporiasis in, 479
 - cysticercosis in, 481
 - dengue in, 350, 353*f*, 781–82
 - diphtheria in, 266
 - echinococcosis in, 482–83
 - giardiasis in, 491–92
 - gnathostomiasis in, 820
 - hand, foot, and mouth disease in, 358
 - Henipavirus* in, 361
 - hepatitis A in, 363
 - hepatitis C in, 375
 - hepatitis E in, 379, 663
 - HIV in, 381
 - Japanese encephalitis in, 393–94, 593, 662
 - leptospirosis in, 276
 - liver flukes in, 488
 - lung flukes in, 490
 - Lyme disease in, 278–79, 819
 - lymphatic filariasis in, 486
 - lyssaviruses* in, 414
 - malaria in, 501–2, 505*f*, 519–22
 - melioidosis in, 280
 - MERS in, 401
 - multidrug resistance in, 802
 - plague in, 292
 - recreational water precautions, 96
 - rickettsial diseases in, 299*t*, 303
 - rubella in, 426
 - sarcocystosis in, 526
 - screening for children adopted from, 599
 - shigellosis in, 309
 - taeniasis in, 534
 - tetanus in, 312
 - tick-borne encephalitis in, 438–39
 - tuberculosis in, 315–17
 - typhoid and paratyphoid fever in, 325, 326, 673
 - viral hemorrhagic fever diseases in, 449
 - visceral leishmaniasis in, 499
 - Zika virus in, 468
- aspergillosis, 760
- aspirin, 569
- asplenia, 145, 154, 285, 823
- assignees, 636*t*. *See also* international business travelers

- assistive devices for travelers with disabilities, 160
- asthma, 19, 35, 173*b*, 196, 209*t*, 231, 681, 755
- Asthma and Allergy Foundation of America (AAFA), 174
- Astrakhan spotted fever, 299*t*. *See also* rickettsial diseases
- astrovirus, 85
- asymptomatic eosinophilia, 783
- asymptomatic HIV infection, 145–46
- asymptomatic *Mycobacterium tuberculosis* infections, 322–23
- asymptomatic returned travelers, screening
- deciding to screen, 790–91
 - general guidelines, 795–97, 796*t*
 - nonparasitic infections, 791–92
 - overview, 790
 - parasitic infections, 792–95
- atovaquone-proguanil, 4–5
- for aircrew, 642
 - for breastfeeding patients, 519, 577
 - changing medications due to side effects, 520*t*
 - for children, 518, 584
 - HIV infection and, 154
 - for immunocompromised travelers, 154–55
 - interactions with other drugs, 31–33, 32*t*
 - interactions with vaccines, 31
 - for last-minute travelers, 110
 - for long-term travelers, 664
 - malaria chemoprophylaxis, 510, 511*t*, 514*t*, 517, 518, 519*t*, 520*t*
 - malaria self-treatment, 508, 508*t*
 - for military personnel, 659
 - for pregnant travelers, 518, 571, 665
- Australia
- amnesic shellfish poisoning in, 231
 - angiostrongyliasis in, 473
 - Buruli ulcer in, 822
 - echinococcosis in, 482–83
 - finding health care providers in, 554*b*
 - hand, foot, and mouth disease in, 358
 - Hendra virus in, 361
 - Japanese encephalitis in, 393, 396*t*
 - meliodiosis in, 280, 281
 - meningococcal disease in, 283
 - motor vehicle crash death rate in, 620*t*
 - non-rabies *lyssaviruses* in, 414
 - plague vaccine in, 293
 - Q fever in, 296
 - rickettsial diseases in, 299*t*, 303
 - shellfish poisoning in, 231
 - shigellosis in, 309
 - travelers' diarrhea risk in, 269
 - UV filters in sunscreens available in, 184*b*
 - yellow fever and malaria information for, 42
- Austria, 42, 438–39, 620*t*
- autoimmune disease, 141*t*, 167*t*, 182, 183, 461, 618
- avian influenza, 223
- animal reservoirs and mechanisms, 218*t*
- Burma travel and, 746
- clinical presentation, 387
 - diagnosis, 388
 - epidemiology, 385, 386*f*, 387
 - infectious agent, 384
 - posttravel evaluation, 783
 - prevention, 391, 392, 649–50
 - respiratory infection caused by, 809, 810
 - transmission, 384
 - treatment, 390
- Aviation Medical Assistance Act (AMAA), 611
- ayahuasca, 742–43
- Azerbaijan, 42, 317*t*
- azithromycin, 264
- for antibiotic resistant campylobacteriosis, 261
 - antimicrobial resistance, 802
 - for breastfeeding patients, 577
 - for cat scratch disease, 256
 - for children, 581–82
 - for diarrheagenic *E. coli*, 271
 - for immunocompromised travelers, 155
 - interactions with other drugs, 35, 35*t*
 - for nontyphoidal salmonellosis, 307
 - for pneumococcal disease, 294
 - Shigella* resistant to, 310
 - for shigellosis, 310
 - for travelers' diarrhea, 87, 88, 88*t*, 90*b*, 90, 572
 - for typhoid and paratyphoid fever, 326–27
 - typhoid and paratyphoid fever resistance to, 326–27
- azoles, 820
- Azores (Portugal), 42
- B**
- B cell–depleting agents, 148
- B virus, 218*t*, 220, 339–40, 696, 763–64, 783, 823
- bacillary angiomatosis, 255
- Bacillus anthracis*. *See* anthrax
- bacillus Calmette-Guérin (BCG) vaccine, 142*t*, 247*t*, 320, 649, 761
- bacteria. *See also* antimicrobial resistance
- animal reservoirs and mechanisms, 218*t*
 - causes of respiratory illnesses, 809
 - causing travelers' diarrhea, 85, 86, 812
 - counseling LGBTQ+ travelers on, 118
 - febrile travelers with rashes, 817
 - fever in returned travelers, 800*t*, 802, 803*b*
 - in international business travelers, 636–37
 - intestinal colonization and extraintestinal infections, 804–5
 - lymphocutaneous or sporotrichoid spread of infection, 818–19
 - rapid diagnostic tests, 788*t*, 811
 - screening internationally adopted children for, 599
 - shellfish consumption and, 231–32
 - vaccine-preventable diseases, 247*t*
- water disinfection to remove, 100*f*, 100–1, 101*t*, 102, 103
- waterborne, 97
- bacterial sexually transmitted infections, 829*t*. *See also* sexually transmitted infections
- bacterial skin infections (pyodermas), 814, 817–18, 821
- Bahamas, 43, 620*t*
- Bahrain, 43, 401
- Bali, 217
- baloxavir, 27, 388–90, 389*t*
- barotrauma, 199*b*, 199–200, 606–7, 811
- Bartonella* infections, 218*t*, 254–56, 741, 797*t*
- basal cell carcinomas (BCCs), 182, 183
- bats
- bringing into US, 224, 225
 - diseases spread by, 218*t*, 220, 221
 - preventing bites from, 416
 - products made from, 227
 - rabies transmission through, 414
 - viral hemorrhagic fever diseases and, 449
- beach umbrellas, 187*b*, 188–89
- bed bugs, preventing bites from, 124, 215–16, 216*b*
- Belarus, 43, 197, 317*t*, 438–39, 488
- Belgium, 43, 231, 438–39, 561
- Belize, 43
- “bends, the” (decompression sickness), 200, 201, 201*t*, 202
- Benin, 43, 454*t*, 463*t*, 692
- benznidazole, 541
- Bermuda (UK), 43
- beverage precautions, 86, 89, 95*b*, 95, 224
- Bhutan, 43, 396*t*
- bilharzia. *See* schistosomiasis
- binge drinking, 175–76
- biologic agents, 148, 149*t*
- birds, diseases spread by, 218*t*. *See also* zoonotic diseases; zoonotic exposures
- bisexual travelers. *See* LGBTQ+ travelers
- bismuth subsalicylate (BSS), 33, 86–87, 572, 577, 582
- bites and scratches from animals. *See also* insect bites; rabies
- on African safaris, 696–97
 - bacterial skin infections from, 818
 - Brazil travel and, 719–20
 - Burma travel and, 747–48
 - in children, 585, 593
 - China travel and, 754*b*, 756
 - Dominican Republic travel and, 724
 - Haiti travel and, 729
 - Haji pilgrimage and, 702
 - India travel and, 763–64
 - management, 220
 - Mexico travel and, 735
 - Nepal travel and, 768–69
 - overview, 217
 - Peru travel and, 742

- posttravel evaluation, 783
prevention, 217–19, 425, 593
rabies transmission through, 414, 416–17
skin infections from, 815*t*, 823
South Africa travel and, 707
Tanzania travel and, 713
Thailand travel and, 773–74
unprovoked, 220
black fly-borne diseases, 211, 524–25.
 See also onchocerciasis
black henna, 819
Blastocystis species, 118, 794–95
blastomycosis, 218*t*, 809
bleeding, and fever in returned
 travelers, 800*t*, 803*b*
blood culture, in typhoid fever and
 paratyphoid fever diagnosis,
 325–26
blood donation after travel to malaria-
 endemic areas, 523, 523*t*
blood products. *See also* immune
 globulin
 antibody-containing, 26–27
 safety of in China, 757–58
blood safety, 555, 757–58
blood smear microscopy, 502–6, 507
bloodborne pathogens
 aircrew risk for, 643
 Burma travel and, 744
 China travel and, 752
 discussing in pretravel consultation,
 20*t*
 Haji pilgrimage and, 701
 health care workers and, 650–51, 652*b*
 international student travel, 669–70
 screening asymptomatic returned
 travelers for, 791–92, 796–97
boating injuries, 237
body fluid-transmitted infections, 650–
 51, 652*b*
boiling, water disinfection by, 98, 103*t*
boils, 818
Bolivia, 44, 203, 205, 255, 269, 454*t*, 496
Bolivian hemorrhagic fever (Machupo
 virus), 448, 449
Bonaire (Netherlands), 45, 186*b*, 186
boosters, 247*t*
 cholera vaccine, 265
 diphtheria vaccine, 267
 Japanese encephalitis vaccine,
 395–98
 meningococcal vaccine, 288
 overview, 26
 pertussis vaccine, 290, 291
 polio vaccine, 410, 592, 596
 tetanus vaccine, 313
 yellow fever vaccine, 153, 458
Bordetella pertussis. *See* pertussis
Borrelia burgdorferi sensu lato complex.
 See Lyme disease
Bosnia and Herzegovina, 45, 438–39
botanicals, as insect repellents, 123
botfly, 821
Botswana, 45, 251, 450, 692, 694*f*
Boutonneuse fever (Mediterranean
 spotted fever), 297–98, 299*t*, 303,
 304, 817
bovine colostrum, 87
bovine tuberculosis, 315, 320. *See also*
 tuberculosis
brain-derived rabies vaccines, 421–22
Brainerd diarrhea, 813
Brazil
 availability and quality of medical
 care, 720–21
 destination overview, 715, 716*f*
 environmental hazards and risks,
 719–20
 infectious disease risks, 715–19
 leishmaniasis in, 496, 499, 718
 lymphatic filariasis in, 486, 718
 malaria information for, 45, 718
 medical tourism in, 560, 721
 melioidosis in, 280–81
 natural background radiation in, 197
 onchocerciasis in, 524
 rickettsial diseases in, 298–302,
 718–19
 safety and security in, 720
 schistosomiasis in, 530, 718
 sunscreen use in, 186*b*
 travelers' diarrhea in, 269, 717
 vaccinia virus in, 434
 yellow fever information for, 45, 454*t*,
 455, 719
 Zika virus in, 468, 626, 677, 719
Brazilian hemorrhagic fever (Sabia
 virus), 448, 449
Brazilian spotted fever. *See* Rocky
 Mountain spotted fever
breakthrough varicella (modified
 varicella), 444
breast pumps, 576, 578, 579
breastfeeding
 air travel when, 575, 578–79
 by aircrew members, 646
 anthrax treatment and prevention
 when, 253
 breast pump safety, 579
 hepatitis B vaccination when, 374
 malaria chemoprophylaxis during,
 510, 517–18, 519
 medications, vaccines and other
 exposures, 576–78
 overview, 575
 polio vaccination when, 412
 precautions for, 94
 reducing risk for illness by, 581
 traveling with breastfeeding child, 575
 traveling without breastfeeding child,
 575–76
 yellow fever vaccination while, 461
 Zika virus exposure and, 468, 470
British Indian Ocean Territory, 45
brucellosis
 animal reservoirs and mechanisms,
 218*t*
 China travel and, 752
 fever in returned travelers, 800*t*
 general discussion, 257–59
 health care workers and, 650
 One Health approach, 223, 224
Brunei, 45–48, 396*t*
bubonic plague, 292, 293. *See also*
 plague
budget travelers, 126–29
Bulgaria, 48, 438–39
bunyaviruses, 447, 448, 449–50, 451.
 See also viral hemorrhagic fever
 diseases
buprenorphine, 177
Bureau of Consular Affairs (CA), 232–33
Burkholderia pseudomallei. *See*
 melioidosis
Burkina Faso, 48, 454*t*, 463*t*, 531
Burma (Myanmar)
 availability and quality of medical
 care, 749
 destination overview, 744, 745*f*
 diphtheria in, 266
 environmental hazards and risks,
 747–48
 infectious disease risks, 744–47
 Japanese encephalitis in, 396*t*
 liver flukes in, 488
 malaria in, 519–22
 multidrug-resistant tuberculosis in,
 317*t*
 safety and security, 748
 travelers' diarrhea risk in, 269
 yellow fever and malaria information
 for, 48
Buruli ulcer, 822
Burundi, 48, 302, 375, 454*t*, 463*t*
bus travel, 622*t*. *See also* road and
 traffic safety
bushmeat, 224, 227
business travelers. *See* international
 business travelers
- C**
- Cambodia, 48, 326, 396*t*, 488, 519–22,
 530
camel-to-human transmission of
 MERS, 400, 401, 402*b*, 403
Cameroon, 48, 434, 454*t*, 463*t*, 537,
 654
campylobacteriosis, 224
 animal reservoirs and mechanisms,
 218*t*
 antimicrobial resistance, 804, 806
 in children, 582
 cruise ship travel and, 624
 general discussion, 260–61
 travelers' diarrhea caused by, 85,
 87, 88
Canada
 anthrax infection in, 250
 avian influenza in, 387
 cutaneous leishmaniasis in, 496
 cyclosporiasis in, 479
 finding health care providers
 in, 554*b*
 medical tourism in, 560
 motor vehicle crash death rate in,
 620*t*
 physician-assisted suicide in, 561
 rickettsial diseases in, 298–302
 shellfish poisoning in, 231
 shigellosis in, 309
 travelers' diarrhea risk in, 269
 yellow fever and malaria information
 for, 48
 yersiniosis in, 330–31
Canary Islands (Spain), 48, 228–29



- cancer
- aircrew risk for, 645
 - carcinogenicity of sunscreens, 185*b*
 - chemotherapeutic agents, 148, 151
 - colorectal, 813
 - gastric, *H. pylori* infection and, 272
 - history of, and approach to immunizations, 141*t*
 - immunization of patients, 153
 - medical tourism for treatment of, 560
 - meliodosis risk, 281
 - nontyphoidal salmonellosis risk, 307
 - online resources for travelers with, 165*t*
 - photosensitivity reactions to treatment, 182
 - skin, 182–83, 645
 - special considerations for travelers with, 167*t*
 - venous thromboembolism and, 613*t*
 - yellow fever vaccination and, 459
- Candida auris*, 806, 808
- canine rabies, 414. *See also* rabies
- cannabis, 177, 644, 669
- Cape Verde, 48–49
- Capnocytophaga canimorsus*, 218*t*, 823
- carbapenemase-producing bacteria, 805–6, 807
- carbapenem-resistant Enterobacteriales (CRE), 562, 566, 802, 805, 808
- carbapenems, 326–27, 804–5
- carbon monoxide, 196, 238
- Caribbean
- African tick-bite fever in, 298
 - angiostrongyliasis in, 473
 - antimicrobial resistance in, 805
 - chikungunya in, 341, 626, 816
 - cholera in, 262, 263
 - ciguatera poisoning in, 228–29
 - common causes of fever in, 799*t*
 - cutaneous larva migrans in, 478
 - cyclosporiasis in, 479
 - dengue in, 350, 351*f*
 - diarrheagenic *Escherichia coli* in, 269
 - giardiasis in, 491–92
 - leptospirosis in, 276
 - malaria in, 501–2, 519
 - meliodosis in, 280–81
 - neurotoxic shellfish poisoning in, 231
 - recreational water precautions, 96
 - rickettsial diseases in, 299*t*
 - schistosomiasis in, 530
 - typhoid fever and paratyphoid fever in, 325
 - Zika virus in, 626
- Carrión disease, 254, 255, 256, 741
- casual consensual sex, 686*b*, 686, 689
- cat flea rickettsiosis, 298, 299*t*
- cat scratch disease (CSD), 254, 255–56
- catastrophic incidents at mass gatherings, 677, 703
- cats
- bringing into US, 224, 225–26
 - diseases spread by, 218*t*, 220, 536
 - preventing cat scratch fever, 256
 - skin infections after bites from, 823
- caves, inhalation and ingestion hazards in, 221
- Cayman Islands (UK), 49
- CD4+ T-lymphocyte counts, 145, 147, 153, 461
- Cedar virus, 360
- ceftriaxone
- for nontyphoidal salmonellosis, 307
 - for shigellosis, 310
 - for typhoid fever and paratyphoid fever, 326–27
 - typhoid fever and paratyphoid fever resistance to, 326–27
- celiac disease, 165*t*, 813–14
- cellular phones
- for adventure travel, 684
 - humanitarian aid worker access to, 657
 - and road safety, 622*t*
- cellulitis, 763–64, 815*t*, 817–18, 823
- Centers for Disease Control and Prevention (CDC)
- anthrax diagnosis, 252
 - antimicrobial resistance, guidance for, 808
 - bringing animals and animal products into US, 224, 225–26, 227
 - brucellosis information, 258
 - CDC Yellow Book maps, 7*f*, 7–9, 8*f*, 9*f*
 - cholera information, 264
 - COVID-19 vaccines, 110, 572
 - CryptoNet, 476
 - death during travel, 239
 - dengue information, 356
 - echinococcosis diagnosis, 483
 - Free-Living and Intestinal Amebas laboratory, 472
 - help for posttravel evaluation, 784
 - Henipavirus* diagnosis, 361
 - hepatitis A diagnosis, 363
 - hepatitis B diagnosis, 370
 - hepatitis C diagnosis, 377
 - hepatitis E diagnosis, 379
 - illness and death reporting and public health interventions, 630–33, 631*t*
 - immigrants, refugees and other migrants, 833, 836, 841
 - importing human remains, 240
 - influenza information, 384, 390
 - information about mold and respirators, 196
 - insect repellents, 211–12
 - Japanese encephalitis information, 394
 - leptospirosis information, 277
 - liver fluke diagnosis, 489
 - malaria diagnosis, 502
 - malaria treatment, 507
 - Measles Virus Laboratory, 429
 - meliodosis testing, 281
 - meningococcal disease advisories, 285–88
 - MERS diagnosis, 402–3
 - monkeypox diagnosis, 436
 - mosquito bite prevention, 214
 - Mycotic Diseases Branch, 546
 - norovirus diagnosis, 407
 - onchocerciasis diagnosis, 525
 - orthopoxvirus infection diagnosis, 436
 - Picornavirus Laboratory, 358–59
 - plague diagnosis, 292–93
 - poliomyelitis diagnosis, 410
 - Q fever information, 296
 - quarantine stations, 631, 632, 633
 - rabies diagnosis, 415
 - Travelers' Health website, 8–9, 14–15, 679*b*, 680
 - tuberculosis information, 322
 - vaccine-preventable bacterial diseases, 247*t*
 - visceral leishmaniasis diagnosis, 500
 - yellow fever recommendations, 464–67, 719
- Central African Republic, 49, 312, 434, 454*t*, 463*t*, 537, 654, 664
- Central America
- American trypanosomiasis in, 540, 600
 - angiostrongyliasis in, 473
 - anthrax infection in, 250
 - brucellosis in, 257
 - chikungunya in, 341, 626, 816
 - coccidioidomycosis in, 543–44
 - common causes of fever in, 799*t*
 - counterfeit drugs in, 557
 - cutaneous leishmaniasis in, 496, 822
 - cyclosporiasis in, 479
 - cysticercosis in, 481
 - dengue in, 350, 351*f*
 - echinococcosis in, 482–83
 - giardiasis in, 491–92
 - hantaviruses in, 450
 - Henipavirus* in, 361
 - hepatitis A in, 363
 - hepatitis E in, 379
 - leptospirosis in, 276
 - lung flukes in, 490
 - malaria in, 501–2, 503*f*, 519
 - mucosal leishmaniasis in, 497
 - myiasis in, 821
 - rabies in, 414
 - rickettsial diseases in, 298–302, 299*t*
 - Rocky Mountain spotted fever in, 817
 - screening for children adopted from, 599
 - shigellosis in, 309
 - taeniasis in, 534
 - travelers' diarrhea risk in, 269
 - typhoid fever and paratyphoid fever in, 325
 - visceral leishmaniasis in, 499
 - Zika virus in, 468, 626
- central nervous system (CNS)
- B virus involvement, 339–40
 - and fever in returned travelers, 800*t*
 - and scuba diving, 198–99
 - special considerations for travelers with disorders of, 167*t*
- cephalic tetanus, 312
- cephalosporins, 285, 294, 310, 572, 802, 804–5
- cercarial dermatitis (swimmer's itch), 822
- Certificate in Travel Health (CTH), 11, 137
- Chad, 49, 454*t*, 537
- Chagas disease. *See* American trypanosomiasis
- chancroid, 823, 829*t*, 832. *See also* sexually transmitted infections
- Channel Islands (UK), 80
- Chapare virus, 448, 449

- chemical (organic) UV filters in
sunscreens, 183–84, 185*b*, 185–86,
186*b*
- chemical disinfection of water, 99*t*,
101–3, 103*t*
- chemical exposure when breastfeeding,
576–77
- chemical warfare agent antidotes, 648*b*
- chemotherapeutic agents, 148, 151
- Chernobyl nuclear power plant
(Ukraine), 197
- chickenpox. *See* varicella; varicella
vaccines
- chikungunya virus, 110, 469, 799
- African safaris and, 695
- aircrew risk for, 643
- Brazil travel and, 718
- Burma travel and, 747
- in children, 580–81
- China travel and, 753
- cruise ship travel and, 626
- Dominican Republic travel and, 724
- febrile travelers with rashes, 816
- fever in returned travelers, 799*t*, 800*t*,
803*b*
- general discussion, 341–43
- Haiti travel and, 728
- incubation period, 780*t*
- India travel and, 762
- long-term traveler risk for, 663
- Mexico travel and, 734
- Peru travel and, 741
- posttravel evaluation, 782
- rapid diagnostic tests, 788
- screening asymptomatic returned
travelers for, 791
- chilblains (pernio), 194
- child pornography, 687
- children. *See also* breastfeeding;
international adoption; pregnancy
- acute mountain sickness in, 206
- American trypanosomiasis treatment
for, 541
- anaphylaxis risks, 171*b*
- anthrax treatment and prevention
for, 253
- aquatic activities, supervision during,
237
- arboviral infections in, 580–81
- assessing and preparing for
international travel, 580*b*, 580
- Brazil, road and traffic safety in, 720
- cat scratch disease in, 255
- cholera treatment for, 264
- cholera vaccination for, 264–65
- congenital toxoplasmosis, 536
- COVID-19 in, 819
- cryptosporidiosis in, 475, 476
- dengue in, 355
- dengue vaccine for, 211, 356, 592–93
- diarrhea and vomiting in, 581–84
- diarrheagenic *E. coli* treatment, 271
- feeding infants, 94–95
- giardiasis in, 492
- hand, foot, and mouth disease in,
358, 359
- hepatitis A in, 363
- hepatitis A vaccination, 366, 367
- hepatitis B vaccination, 371
- hepatitis B virus in, 370
- identification for, 588
- influenza in, 385*b*, 385, 387, 388–90
- influenza vaccination, 390–91
- insect repellents for, 211–12, 213*b*, 213
- insurance for, 588
- Japanese encephalitis in, 393–94
- Japanese encephalitis vaccination,
395
- lifejacket use, 237
- liver flukes in, 488
- malaria and, 584–85, 585*b*
- malaria chemoprophylaxis for, 510,
513, 514*t*, 518, 519
- measles in, 429
- measles vaccination, 429–30
- meningococcal disease in, 283, 284
- meningococcal vaccines for, 285,
286*t*, 288
- mental health of LGBTQ+ youth, 120
- motion sickness in, 628–29
- mumps vaccination, 405
- neonatal tetanus, 312
- noninfectious hazards and risks,
586–88
- nontyphoidal salmonellosis in, 307
- noroviruses in, 406–7
- pertussis in, 290, 291
- pertussis vaccines for, 290–91
- pneumococcal disease in, 294
- pneumococcal vaccines, 294–95
- polio vaccination, 411–12
- Q fever in, 296–97
- rabies exposure in, 416, 585–86
- rabies vaccination, 421
- scabies in, 528–29
- sex trafficking and sexual exploitation
of, 687–88
- shigellosis in, 309
- soil and water contact, 586
- sunscreens for, 186
- tetanus vaccination for, 313
- tick-borne encephalitis in, 439,
593–94
- tick-borne encephalitis vaccination,
441, 441*t*, 594
- travel health kits when traveling with,
107*b*, 107
- travel stress, 588
- travelers' diarrhea in, 90–91, 577
- tuberculosis testing for, 322
- vaccine recommendations for, 589–94
- varicella (chickenpox) in, 443–44
- varicella vaccination, 445
- varicella-zoster immune globulin for,
445–46
- visiting friends and relatives travel,
673
- yellow fever in, 454
- yellow fever vaccination, 459, 460
- Chile
- Carrión disease in, 255
- cutaneous leishmaniasis in, 496
- hantaviruses in, 450
- rickettsial diseases in, 299*t*, 303
- shellfish poisoning in, 231
- travelers' diarrhea risk in, 269
- yellow fever and malaria information
for, 49
- China
- angiostrongyliasis in, 473
- antimicrobial resistance in, 806
- availability and quality of medical
care, 757–58
- avian influenza in, 387
- destination overview, 749–51, 750*f*
- environmental hazards and risks, 755–56
- finding health care providers in, 554*b*
- giant panda reserves in, 754*b*
- hepatitis E in, 379
- infectious disease risks, 751–55
- Japanese encephalitis in, 396*t*
- Langya virus in, 360
- liver flukes in, 488
- Lyme disease in, 278–79
- malaria in, 49, 519–22
- measles in, 836
- medical tourism in, 758
- meliodosis in, 280
- motor vehicle crash death rate in, 620*t*
- multidrug-resistant tuberculosis in, 317*t*
- natural background radiation in, 197
- popular tourist destinations in, 751*b*
- rickettsial diseases in, 299*t*, 303
- safety and security, 757
- schistosomiasis in, 530
- shellfish poisoning in, 231
- tick-borne encephalitis in, 438–39
- viral hemorrhagic fever diseases in, 449
- wet markets in, 756
- yellow fever information for, 49
- chlamydia, 688. *See also* sexually
transmitted infections
- clinical presentation, 828, 829*t*
- counseling LGBTQ+ travelers on, 118
- diagnosis, 829*t*
- epidemiology, 828, 829*t*
- prevention, 832
- rapid diagnostic tests, 785*t*, 787*t*
- screening asymptomatic returned
travelers for, 791–92, 796*t*
- screening immigrants, migrants and
refugees for, 839*t*
- screening internationally adopted
children for, 600
- treatment, 829*t*
- chloramphenicol, 304–5, 326
- chlorine compounds, chemical
disinfection of water with, 101–2
- chlorine dioxide, chemical disinfection
of water with, 99*t*, 102–3, 103*t*
- chloroquine
- for breastfeeding patients, 519, 577
- changing medications due to side
effects, 520*t*
- for children, 518, 584
- and cholera vaccine, 265
- for immunocompromised travelers,
154–55
- interactions with other drugs, 32*t*, 33
- interactions with vaccines, 31
- for long-term travelers, 664
- malaria chemoprophylaxis, 510–13,
511*t*, 514*t*, 517, 518, 519*t*, 520*t*
- malaria resistant to, 519
- malaria sensitive to, 519
- for pregnant travelers, 518, 571, 665
- use in people infected with HIV, 154

- cholangiocarcinoma (CCA), 488
- cholera
- Burma travel and, 746
 - in children, 582
 - clinical presentation, 263
 - diagnosis, 263–64
 - Dominican Republic travel and, 722
 - epidemiology, 263
 - federal public health authority, 630–31, 631*t*
 - fever in returned travelers, 802*t*
 - Haiti travel and, 727
 - India travel and, 759
 - infectious agent, 262
 - Mexico travel and, 731
 - Peru travel and, 739–40
 - prevention, 262, 264–65, 709
 - rapid diagnostic tests, 263–64, 787*t*
 - Tanzania travel and, 709
 - Thailand travel and, 770–72
 - transmission, 262
 - treatment, 264
- cholera vaccines, 247*t*
- for aircrew, 641
 - antibiotics and, 27
 - coadministration with yellow fever vaccine, 458
 - general discussion, 264–65
 - Haiti travel and, 727
 - for health care workers, 647–48
 - for immunocompromised adults, 142*t*, 151
 - interactions between drugs and, 31
 - for last-minute travelers, 109
 - pretravel consultation, 17*t*
 - risk management issues, 136
 - typhoid vaccination and, 329
- Christmas Island [Australia], 49
- chronic diseases. *See also* disabilities, travelers with; immunocompromised travelers
- addressing in pretravel consultation, 19–20, 20*t*
 - and adventure travel, 681–82
 - in aircrew, 643
 - cabin air pressure and, 606–7
 - checklist for travelers with, 164*b*
 - in children, 590
 - in complete travel history, 778*t*
 - and cruise ship travel, 623, 626–28
 - finding health care providers overseas, 553–54
 - and fitness to fly of refugees, 837
 - general approach to in travel medicine, 163–64
 - Hajj pilgrimage and, 702–3
 - in health care workers, 648*b*
 - in humanitarian aid workers, 656
 - influenza risk and, 385*b*
 - in international business travelers, 637
 - managing during travel, 162*b*, 163
 - and mass gatherings, 679
 - melioidosis risk and, 281
 - MERS in patients with, 402
 - online resources for travelers with, 158*t*, 165*t*
 - overview, 163
 - pneumococcal disease and, 294
 - pneumococcal vaccines and, 295
 - in posttravel evaluation, 782
 - preflight medical considerations, 606
 - preparing travelers with for vaccination, 146
 - and prevention of severe altitude illness or death, 209, 209*t*
 - and risk for adverse effects of UV exposure, 182
 - screening for before visiting friends and relatives travel, 675*b*
 - specific conditions, traveling with, 164–66, 167*t*
- chronic hepatitis B infection, 370, 371*t*
- chronic lymphocytic leukemia, 147
- chronic pain, online resources for travelers with, 165*t*
- chronic Q fever, 296–97
- chronic typhoid fever and paratyphoid fever, 327
- ciguatera fish poisoning, 228–30, 729
- ciprofloxacin, 88*t*, 309–10, 326
- circadian rhythms, effect of travel on, 616–18
- circulating vaccine-derived poliovirus [cVDPV], 409, 410–11, 412
- civets, 224, 226, 227
- civil surgeons, 835*b*
- clarification, water disinfection by, 98–100
- clay, water disinfection with, 101
- climate extremes. *See* temperature extremes
- Clinical Assessment for Refugees [CareRef], 838
- clonorchiasis, 488, 489
- closed captioning for travelers with disabilities, 161
- Clostridioides difficile*, 87, 89, 271, 582, 812, 813–14
- Clostridium perfringens*, 85, 624
- Clostridium tetani*. *See* tetanus
- clothing
- for adventure travel, 683–84
 - African trypanosomiasis prevention, 539
 - heat-related illness, protecting against, 193
 - insect repellents, using on, 212–14, 213*b*
 - Lyme disease prevention, 279
 - malaria prevention, 584
 - melioidosis prevention, 282*b*
 - stings and envenomations, preventing, 221
 - sun-protective, 187*b*, 187–88, 588
- cnidarian envenomation, 819
- coagulation, water disinfection by, 98–100
- coca leaf, for altitude illness, 121–22
- coccidioidomycosis (Valley fever), 155, 818–19
- Brazil travel and, 717
 - fever in returned travelers, 799*t*, 800*t*
 - general discussion, 543–44
 - Mexico travel and, 733
 - respiratory infection caused by, 809
- Cocos [Keeling] Islands [Australia], 49
- cold-related illness and injury, 193–95, 683*b*, 683
- colds, 122–23
- colistin resistance, 804–5, 806
- colloidal silver, 123
- Colombia
- Carrión disease in, 255
 - cutaneous leishmaniasis in, 496
 - malaria in, 49–51
 - medical tourism in, 560
 - melioidosis in, 280–81
 - motor vehicle crash death rate in, 620*t*
 - rickettsial diseases in, 298–302
 - vaccinia virus in, 434
 - yellow fever information for, 49–51, 454*t*
- colorectal cancer, 813
- commercial sex workers (CSW), 723. *See also* sexually transmitted infections
- communication
- equipment for, 648*b*, 684
 - of risk, in pretravel consultation, 16
 - role in travel medicine, 135
- community-acquired pneumonia, 252, 294
- commuters, 636*t*. *See also* international business travelers
- Comoros, 51, 450
- complement deficiencies, 146, 285
- complementary or integrative health approaches
- claims versus science, 121–25, 122*b*
 - overview, 121
 - talking to travelers about, 126
 - untested therapies in other countries, 125
- compounding pharmacies, 584
- comprehensive expedition policies, 682
- condoms, 689, 717–18, 747, 832. *See also* sexually transmitted infections
- congenital rubella syndrome (CRS), 426, 427
- congenital toxoplasmosis, 536
- congenital Zika virus infection, 468, 469, 719
- Congo. *See* Democratic Republic of the Congo; Republic of the Congo
- Consular Mortuary Certificate, 241
- contact allergies, 173*b*. *See also* allergies; highly allergic travelers
- contact dermatitis, 819, 822
- Cook Islands (New Zealand), 51
- coronavirus disease 2019 (COVID-19), xxi, 8–9, 252, 580*b*, 635, 799
- African safaris and, 695
 - air travel and, 605, 607–8, 810
 - aircrew and, 641–42
 - animal reservoirs and mechanisms, 218*t*
 - Brazil travel and, 717
 - Burma travel and, 746
 - China travel and, 751, 752–53
 - clinical presentation, 346
 - complementary or integrative health approaches, 123
 - cruise ship travel and, 624, 625
 - at destination, awareness of, 553

- diagnosis, 346–47, 811
- Dominican Republic travel and, 723
- epidemiology, 344–46
- federal public health authority, 630–31
- fever in returned travelers, 802*t*
- Haiti travel and, 728
- Hajj pilgrimage and, 699, 701–2
- health care workers and, 649–50
- humanitarian aid workers and, 655
- immunocompromised travelers,
 reducing risk for, 155–56
- incubation period, 780*t*
- India travel and, 760
- infectious agent, 344
- influenza activity during COVID
 pandemic, 384–85
- international business travelers and,
 639
- last-minute travelers and, 108
- long COVID, 346
- macular skin lesions in, 819
- mass gatherings and, 676, 677–78
- Mexico travel and, 733
- Nepal travel and, 767
- One Health approach, 222, 223
- Peru travel and, 740–41
- pets, testing for, 603
- posttravel evaluation, 783
- pregnancy and, 571–72
- prevention, 347–49, 348*b*
- rapid diagnostic tests, 785*t*, 786–87,
 787*t*, 788*t*
- respiratory infection caused by,
 809–10
- screening asymptomatic returned
 travelers for, 790, 791, 796*t*
- seasonality of, 810
- sentinel surveillance, 345–46
- South Africa travel and, 705–6
- strongyloidiasis and, 792–93
- Tanzania travel and, 711
- Thailand travel and, 770, 772
- transmission, 344
- travel during pandemic, 114–15, 115*b*,
 128–29
- travel preparation checklist, 348*b*
- travel-associated risk, 345
- traveler perception of risk and, 23–24
- travelers, role in, 1
- treatment, 347, 811
- coronavirus disease 2019 (COVID-19)
 vaccines, 335*t*, 589, 641, 647–48,
 679, 811
- for adoptive parents and families,
 595–96
- for African safari travel, 693
- for aircrew, 641
- for children, 590
- in China, 751, 753
- for cruise ship travel, 625
- fake, 557–58
- Hajj pilgrimage requirements, 700
- for immunocompromised travelers,
 143*t*, 155
- for India travel, 759
- for internationally adopted children,
 836
- overview, 348
- for pregnant travelers, 569–70
- pretravel, 16, 17*t*, 110, 128
- spacing of, 25
- coronaviruses, 218*t*, 225, 226, 809, 810.
 See also coronavirus disease 2019;
 Middle East respiratory syndrome
- corticosteroids, 37, 141*t*, 148, 151, 356,
 431, 820
- Corynebacterium* species. See
 diphtheria
- cosmetic tourism, 560
- Costa Rica, 51, 280–81, 298–302, 299*t*,
 496, 560, 620*t*
- Côte D’Ivoire (Ivory Coast), 51, 434, 450,
 454*t*, 463*t*, 537
- counterfeit medical products, 557*b*,
 557–59, 558*b*
- Country Reports on Human Rights
 Practices, 119–20
- cowpox, 433, 434, 435*t*, 436
- Coxiella burnetii*. See Q fever
- creeping eruption. See cutaneous larva
 migrans
- crime
 African safaris and, 697
- Brazil travel and, 720
- China travel and, 757
- Dominican Republic travel and, 725
- Haiti travel and, 730
- India travel and, 764
- Mexico travel and, 736
- Peru travel and, 742–43
- safety and security overseas, 233, 234
- South Africa travel and, 707–8
- Tanzania travel and, 713
- Thailand travel and, 774
- Crimean-Congo hemorrhagic fever
 (CCHF) virus, 631*t*, 696, 707
- clinical presentation, 451
- epidemiology, 449–50
- infectious agents, 448
- prevention, 452
- transmission, 448, 449
- treatment, 451
- Croatia, 51, 438–39
- Cronobacter* infection, 95, 581
- cruise ship travel
 COVID-19 and, 155–56, 345
- death during, 240
- illness and death reporting and public
 health interventions, 630–33, 631*t*,
 632*b*
- illness and injury during, 623–24
- infectious diseases and, 624–26
- medical facilities on ships, 623
- noninfectious health risks, 626
- norovirus outbreaks, 406, 407
- overview, 623
- during pregnancy, 574
- with service animals, 604
- travel health insurance for, 549
- travel preparation, 626–28, 627*b*
- travelers with disabilities, 162
- crusted scabies, 528, 529
- cryptococcosis, 218*t*, 760, 786, 809
- CryptoNet (CDC), 476
- cryptosporidiosis
 diagnosis, 812–14
- food precautions, 94, 224
- general discussion, 475–77
- immunocompromised travelers, 155
- Peru travel and, 740
- during pregnancy, 572
- recreational water and, 96
- screening internationally adopted
 children for, 598*t*, 599
- travelers’ diarrhea, 85, 90
- water disinfection to prevent, 97, 99*t*,
 101*t*, 102–3
- CTropMed examination, 10
- Cuba, 51, 263, 560
- culture shock, 114, 115
- Curaçao (Netherlands), 52
- cutaneous anthrax, 250, 251, 822
- cutaneous diphtheria, 266, 267, 823
- cutaneous gnathostomiasis, 820
- cutaneous larva migrans (CLM), 478,
 586, 734, 814, 815*t*, 818
- cutaneous leishmaniasis (CL), 496–98,
 665, 734, 741, 822
- cyclosporiasis, 85, 86, 90, 479–80, 740,
 766, 812–14
- CYP2D6 enzyme substrates, 33, 37
- CYP3A4 enzyme inducers, 34, 37
- CYP3A4 enzyme inhibitors, 33, 34, 37
- Cyprus, 52, 299*t*
- cystic echinococcosis (CE), 482–83
- cysticercosis, 481, 733, 784, 794
- Cystoisospora*, 812–14
- cytomegalovirus, 800*t*, 816
- Czech Republic, 52, 438–39
- D**
- deaf individuals, 161
- death during travel
 air travel, 608
- general discussion, 239–41
- motor vehicle crashes, 619, 620*t*
- reporting for air and cruise ship
 travel, 630–33, 631*t*, 632*b*
- decompression illness (DCI), 200–1,
 201*t*, 202
- decompression sickness (DCS or “the
 bends”), 200, 201, 201*t*, 202
- deep vein thrombosis (DVT)
 adventure travel and, 681
- air travel and, 607, 613
- general discussion, 612, 614
- after medical procedures, 562
- during pregnancy, 574
- risk management issues, 137
- DEET-containing insect repellents, 211,
 212, 213, 584–85
- Defense Health Agency (DHA)
 Immunization Healthcare Branch
 (IHB), 659
- degraded medical products, 557*b*
- dehydration, 89–90, 190, 202, 583, 615
- delusional parasitosis (DP), 825–26,
 827*b*
- Democratic Republic of the Congo
 (Congo-Kinshasa)
 African trypanosomiasis in, 537
- game parks in, 692, 693*f*, 694*f*
- malaria in, 52
- monkeypox in, 434
- multidrug-resistant tuberculosis in,
 317*t*

- Democratic Republic of the Congo (Congo-Kinshasa) *(cont.)*
- plague in, 292
 - violence against humanitarian aid workers in, 654
 - viral hemorrhagic fever diseases in, 450–51
 - yellow fever information for, 52, 454*t*, 463*t*
- dengue, 110, 342, 469
- African safaris and, 695
 - aircrew risk for, 643
 - Brazil travel and, 718
 - Burma travel and, 747
 - in children, 580–81
 - China travel and, 753
 - clinical presentation, 350–55
 - cross-reactive flavivirus antibodies, 356
 - cruise ship travel and, 626
 - diagnosis, 355*f*, 355–56, 816
 - Dominican Republic travel and, 724
 - epidemiology, 350, 351*f*, 352*f*, 353*f*
 - febrile travelers with rashes, 816
 - fever in returned travelers, 799*t*, 800*t*, 803*b*
 - Haiti travel and, 728
 - Hajj pilgrimage and, 702
 - health care workers and, 650
 - incubation period, 777–79, 780*t*
 - India travel and, 762
 - infectious agent, 350
 - long-term traveler risk for, 663
 - Mexico travel and, 734
 - Nepal travel and, 767
 - Peru travel and, 741
 - phases, 354–55
 - posttravel evaluation, 781–82
 - prevention, 356–57
 - rapid diagnostic tests, 785*t*, 787*t*, 788
 - screening asymptomatic returned travelers for, 791
 - skin infections from, 815*t*
 - Tanzania travel and, 711
 - Thailand travel and, 773
 - transmission, 350
 - treatment, 356, 816
 - vaccine, 211, 335*t*, 356, 592–93
- Denmark, 52, 438–39
- dental care, medical tourism for, 560
- Dermacentor*-borne necrosis and lymphadenopathy (DEBONEL), 299*t*
- dermal exposure, health care workers, 650–51
- dermatologic conditions
- bacterial skin infections, 817–18
 - common causes in returned travelers, 814, 815*t*
 - essential elements of assessment, 814–15, 816*b*
 - fever with rash, 816–17
 - Hajj pilgrimage and, 702
 - India travel and, 761–62
 - miscellaneous skin infections, 823–24
 - overview, 814–15
 - in posttravel evaluation, 782
 - skin lesion morphology, 816*b*, 818–23
- dexamethasone
- for altitude illness, 206, 207–8, 208*t*, 712–13, 755–56
 - interactions with other drugs, 36*t*, 37
 - for meningococcal disease, 285
 - strongyloidiasis and, 792–93
- diabetes
- adventure travel and, 681
 - altitude illness drugs and medications for, 37
 - Hajj pilgrimage and, 703
 - and heat-related illness, 190
 - melioidosis risk, 281, 282*b*
 - online resources for travelers with, 165*t*
 - and prevention of severe altitude illness or death, 209*t*, 210
 - special considerations for travelers with, 167*t*
- diaper rash, 90–91
- diarrhea. *See also* travelers' diarrhea
- antimicrobial resistant bacteria causing, 804
 - Brainerd, 813
 - in children, 581–84
 - in cholera, 263
 - in cryptosporidiosis, 475–76
 - diarrheagenic *Escherichia coli*, 268–71, 270*t*, 582
 - and fever in returned travelers, 802*t*
 - Hajj pilgrimage and, 701
 - in international business travelers, 636–37
 - nontyphoidal salmonellosis, 306
 - noroviruses, 406, 407
 - persistent, in returned travelers, 812–14
 - in posttravel evaluation, 782
 - regulatory definition of "ill traveler," 632*b*
 - shigellosis, 310
- diarrheic shellfish poisoning (DSP), 231
- diclofenac sodium, 36
- Dientamoeba fragilis*, 85, 118, 812–13
- dietary supplements, 121–26, 122*b*
- diethylcarbamazine (DEC), 486–87, 525, 793–94, 820–21
- diffusely adherent *E. coli* (DAEC), 268, 270*t*
- digoxin, 33
- diphenoxylate, 89, 582
- diphtheria, 809. *See also* tetanus-
- diphtheria vaccine; tetanus-
 - diphtheria-acellular pertussis vaccine
 - cutaneous, 266, 267, 823
 - federal public health authority, 630–31, 631*t*
 - general discussion, 266–67
 - vaccines, 247*t*, 267, 589–90, 595–96, 601, 811
- diphtheria antitoxin (DAT), 267
- diphtheria-tetanus (DT) vaccine, 29, 313
- diphtheria-tetanus-acellular pertussis (DTaP) vaccine, 24
- before African safaris, 693
 - for aircrew, 641
 - for children, 291, 313
 - contraindications and precautions, 313
 - and high-risk animal bites and scratches, 220
 - for immunocompromised adults, 143*t*
 - meningococcal vaccine and, 288
 - spacing of, 26
- disabilities, travelers with
- accommodations for, 160*t*
 - air travel considerations, 157–61, 606
 - airport accommodations, 161–62
 - cruise ship travel, 162, 626–28
 - human rights, 157, 160*t*
 - legal considerations, 234
 - medical considerations, 162*b*, 163
 - online resources for, 158*t*
 - overview, 157
 - service animals, 162
- disinfection of water. *See* water disinfection
- disulfiram, 177
- Divers Alert Network (DAN), 203
- diving. *See* scuba diving
- Division of Viral Hepatitis Diagnostic Reference Laboratory (CDC), 379
- Djibouti, 52
- Do Not Board (DNB) list, 632
- "Do Not Resuscitate" orders, 612
- documentation, in travel medicine, 135
- documents
- for humanitarian aid workers, 657
 - for international student travel, 670
 - for travel health kits, 107*b*
- dog-maintained rabies virus variant (DMRVV), 225, 226
- dogs
- bringing into US, 224, 225, 226
 - diseases spread by, 218*t*, 220, 223
 - preventing bites from, 416
 - rabies transmission through, 414
 - skin infections after bites from, 823
- Dominica, 52
- Dominican Republic
- availability and quality of medical care, 725
 - cholera in, 262, 263, 722
 - destination overview, 721–22, 722*f*
 - diphtheria in, 266
 - environmental hazards and risks, 724
 - infectious disease risks, 722–24
 - lymphatic filariasis in, 486, 724
 - malaria in, 52, 724
 - medical tourism in, 560, 562, 725
 - motor vehicle crashes in, 620*t*, 725
 - safety and security, 725
 - schistosomiasis in, 530, 723
 - shigellosis in, 309–10
 - yellow fever information for, 52
- donovanosis (granuloma inguinale), 829*t*. *See also* sexually transmitted infections
- doxycycline, 182
- for African tick-bite fever, 706–7
 - for *Bartonella* infections, 256
 - for breastfeeding patients, 519, 577
 - for brucellosis, 258
 - changing medications due to side effects, 520*t*
 - for children, 518, 584
 - for cholera, 264
 - for immunocompromised travelers, 154–55
 - interactions with other drugs, 32*t*, 33–34
 - for last-minute travelers, 110

- for leptospirosis, 277
- for long-term travelers, 664
- malaria chemoprophylaxis, 511t, 513, 514t, 517, 518, 519t, 520t
- for military personnel, 659
- for onchocerciasis and *Wolbachia*, 525
- photo-onycholysis and, 183
- for plague, 293
- for pneumococcal disease, 294
- for pregnant travelers, 518, 571, 665
- for Q fever, 296–97
- for rickettsial diseases, 304–5
- drinking water precautions. *See* water disinfection; water precautions
- drivers, hired, 622t
- driving during travel. *See* road and traffic safety
- drowning, 201, 237, 587
- drug–drug interactions
 - altitude illness drugs, 36–37, 36t
 - antimalarial drugs, 31–34, 32t
 - herbal and nutritional supplements, 37
 - HIV medications, 37
 - in immunocompromised travelers, 154–55
 - and latent tuberculosis infection treatment, 320
 - overview, 30
 - risk management issues, 136
 - in travelers with chronic diseases, 164
 - treatment for travelers' diarrhea, 34–36, 35t
- drugs. *See* medications; substance use and substance use disorders
- Drugs and Lactation Database (LactMed), 576
- dual nationals, 234
- dysgammaglobulinemias, 146

E

- ear barotrauma, 199b, 199–200, 606–7
- ear pain in children during air travel, 586
- earthquakes, 729–30, 736, 756, 769
- Easter Island (Chile), 52
- Ebanga, 451
- Ebola virus, 223, 226, 782, 799
 - African safaris and, 696
 - epidemiology, 450
 - federal public health authority, 631t
 - fever in returned travelers, 798, 800t, 803b
 - health care workers and, 647, 648–50
 - infectious agent, 448
 - posttravel evaluation, 783
 - prevention, 452
 - rapid diagnostic tests, 785t, 787t, 788
 - transmission, 448, 449
 - travelers, role in, 1
 - treatment, 451–52
 - vaccine, 142t, 151, 335t, 452, 648–49
- echinacea, 122
- echinococcosis, 482–83
- Ecuador, 52–54, 255, 280–81, 454t, 496, 560, 820
- efavirenz, 154
- Egypt, 54, 375, 385, 387, 450, 486
- ehrlichiosis, 299t. *See also* rickettsial infections
 - clinical presentation, 304

- diagnosis, 304
- epidemiology, 303
- infectious agents, 297
- transmission, 298, 299t
- El Salvador, 54, 280–81, 496
- electrolyte replacement, 193
- electrolytic solutions, disinfection of
 - water with, 99t, 103
- electronic bicycles (E-bikes), 757
- elephantiasis, 486
- emergencies
 - action plan for highly allergic travelers, 172b, 172
 - adventure traveler resources for, 682–83
 - in China, 758
 - immunocompromised traveler planning for, 140–41
 - in-flight, 608, 610–12, 611b
 - for international business travelers, 639
 - during pregnancy, planning for, 568–69
- emergency contact information card, 670
- emergency medical assistance loans, 550
- emergency medical kit (EMK) on aircraft, 610b, 610–11
- emotional support animals, 162, 166, 225, 603
- encephalitis. *See also* Japanese encephalitis virus; tick-borne encephalitis
 - in infants exposed to yellow fever vaccine, 577, 594
 - in measles, 429
 - in rabies, 414–15, 415b, 593
 - rapid diagnostic tests, 788t
- encephalopathy, 313
- Entamoeba* species. *See* amebiasis
- enteric fever, 324–29, 802. *See also* paratyphoid fever; typhoid fever
- enteric infections and diseases
 - African safaris, risk for during, 693–95
 - antimicrobial resistance, 804, 806, 807
 - Brazil travel and, 717
 - Burma travel and, 744–46
 - causing travelers' diarrhea, 85
 - China travel and, 752
 - counseling LGBTQ+ travelers on, 118
 - Dominican Republic travel and, 722–23
 - Haiti travel and, 727–28
 - Hajj pilgrimage and, 701
 - in immunocompromised travelers, 155
 - incubation period, 780t
 - India travel and, 759–60
 - intestinal colonization and extraintestinal infections, 804–5
 - Mexico travel and, 731–33
 - Nepal travel and, 766–67
 - Peru travel and, 739–40
 - South Africa travel and, 705
 - Tanzania travel and, 709–11
 - Thailand travel and, 770–72
 - water disinfection to remove, 101t
- enteroaggregative *E. coli* (EAEC), 268, 269, 270t

- enterobiasis (pinworm infections), 484–85, 794
- Enterococcus* species, 806
- enterocolitis, 331
- enterohemorrhagic *E. coli* (EHEC), 268
- enteroinvasive *E. coli* (EIEC), 268, 269, 270t
- enteropathogenic *E. coli* (EPEC), 268, 269, 270t
- enterotoxigenic *E. coli* (ETEC), 268, 269, 270t
- enteroviruses, 335t, 342, 358, 469, 802t, 816
- envenomations, 220–21, 683b, 720, 735, 819
- environmental allergies. *See* allergies; highly allergic travelers
- environmental hazards and risks. *See also* insect bites; sun exposure; temperature extremes; zoonotic exposures
 - African safaris, 696–97
 - air quality and ionizing radiation, 195–98, 196t, 197t
 - associated with sunscreen use, 186b
 - in Brazil, 719–20
 - bringing animals and animal products into US, 224–27
 - in Burma, 747–48
 - in China, 755–56
 - death during travel, 239–41
 - in Dominican Republic, 724
 - food poisoning from marine toxins, 228–32
 - in Haiti, 729–30
 - Hajj pilgrimage, 702
 - high elevation travel, 203–10, 205t, 208t, 209t
 - in India, 763–64
 - injury and trauma, 235–38, 236f, 238b
 - for international business travelers, 639, 640
 - in Mexico, 735–36
 - in Nepal, 768–69
 - One Health approach to zoonotic diseases, 222–24
 - in Peru, 742
 - during pregnancy, 573
 - pretravel consultation, discussing in, 20t
 - safety and security overseas, 232–35
 - scuba diving-related injuries, 198–203, 199b, 201t
 - in South Africa, 707
 - in Tanzania, 712–13
 - in Thailand, 773–74
- eosinophilia, 473–74, 597, 783, 795, 796t, 800t
- epidemic typhus, 299t, 302–3. *See also* typhus
- epilepsy, 165t
- epinephrine, 171b, 172b, 555, 684
- Epstein-Barr virus, 800t, 816
- Equatorial Guinea, 54, 454t, 537
- Eritrea, 54, 455t
- erysipelas, 817–18
- erythema migrans (EM), 279, 819
- erythema nodosum, 331



Escherichia coli [*E. coli*], 85, 258
 antimicrobial resistance, 804, 805, 806
 in children, 582
 clinical presentation, 269, 270*t*
 cruise ship travel and, 624
 diagnosis, 269
 epidemiology, 269
 infectious agent, 268
 persistent diarrhea in returned
 travelers, 812
 prevention, 271
 transmission, 268
 treatment, 88–89, 269–71
 established provider letter, 164*b*
 Estonia, 54, 438–39
 Eswatini (Swaziland), 54
 Ethiopia, 54–55, 302, 317*t*, 454*t*, 499,
 531, 654
 Europe
 anthrax infection in, 250
 antimicrobial resistance in, 805
 brucellosis in, 257
 chikungunya virus in, 341
 cowpox in, 434
 cutaneous leishmaniasis in, 496
 cyclosporiasis in, 479
 dengue in, 352*f*
 diphtheria in, 266
 echinococcosis in, 482–83
 giardiasis in, 491–92
 hepatitis A in, 363
 hepatitis C in, 375
 hepatitis E in, 378–79
 HIV in, 381
 liver flukes in, 488
 Lyme disease in, 278–79, 819
 malaria in, 501–2
 measles in, 428
 meningococcal disease in, 283
 MERS in, 401
 non-rabies lyssaviruses in, 414
 rickettsial diseases in, 298, 299*t*, 303
 schistosomiasis in, 530
 screening for children adopted from,
 599
 shellfish poisoning in, 231
 study abroad in, 667
 sunscreen use in, 186*b*
 taeniasis in, 534
 tick-borne encephalitis in, 438–39
 travelers' diarrhea risk in, 269
 UV filters in sunscreens available
 in, 184*b*
 viral hemorrhagic fever diseases in, 449
 visceral leishmaniasis in, 499
 yellow fever in, 455
 yersiniosis in, 330–31
 excessive alcohol use, 175–76, 281
 excessive water ingestion, 192
 exercise-associated hyponatremia, 192
 exertional (acute) heat stroke, 191
 expatriates, 636*t*, 797. *See also* long-
 term travelers
 exporting human remains, 241
 expressed breast milk, 575–76, 578–79
 extended-spectrum β -lactamase-
 producing Enterobacteriaceae
 (ESBL-PE), 87, 89, 92–93
 extensively drug-resistant tuberculosis
 (XDR-TB), 647

extensively drug-resistant (XDR) typhoid
 fever, 326–27
 extrapulmonary legionellosis, 274
 eyes, effect of ultraviolet radiation on,
 188
F
 facemasks. *See* masks
 faith-based travelers, 233–34, 764. *See*
also Hajj pilgrimage
 Falkland Islands (Islas Malvinas), 55
 falsified medical products, 557*b*, 557
 family
 of international business travelers,
 638
 preparing for international adoption,
 595–96
 sharing travel information with, 233
 Far Eastern spotted fever, 299*t*
 Faroe Islands (Denmark), 55
 fasciitis, 763–64
 fascioliasis, 488–89, 794, 800*t*
 febrile seizures, 430, 431, 445
 feces inhalation or ingestion, 221–22
 Federal Aviation Administration (FAA),
 239, 586, 603, 643, 646
 federal public health authority, 630–31,
 631*t*
 Federation of State Medical Boards,
 132–33
 fertility tourists, 560–61
 fever. *See also* paratyphoid fever;
 typhoid fever
 in chikungunya virus, 342
 in dengue, 354
 in malaria, 506*b*
 in measles, 429
 posttravel evaluation, 781–82, 783
 rapid diagnostic tests and, 786, 787*t*,
 788*t*
 with rash, 816–17
 regulatory definition of “ill traveler,”
 632*b*
 in returned travelers, 798–802, 800*t*,
 802*t*, 803*b*
 skin infections and, 814–15
 Fiji, 55
 filariasis. *See* lymphatic filariasis
 filoviruses, 225, 447, 448, 449, 450–51.
See also viral hemorrhagic fever
 diseases
 filtration
 of air on planes, 607
 water disinfection by, 99*t*, 100*f*, 100–1,
 101*t*, 102*f*, 103*t*, 587
 financial constraints, travelers with,
 126–29
 Finland, 55, 438–39
 fires
 Hajj pilgrimage and risk for, 703
 injuries related to, 238
 first aid
 adventure travel training in, 682
 B virus, 340
 first aid kits, 140*b*, 713. *See also* travel
 health kits
 fitness for travel, international business
 travelers, 637
 fitness to fly, assessing in refugees, 837

flatworm infections. *See* liver flukes
 flaviviruses, 448, 449. *See also* dengue;
 viral hemorrhagic fever diseases;
 yellow fever; Zika virus
 fleaborne typhus. *See* murine typhus
 fleas, 215, 218*t*
 flight attendants. *See* aircrew
 Flinders Island spotted fever, 299*t*
 flocculation, water disinfection by,
 98–100
 fluoroquinolones
 antimicrobial resistance, 261, 294, 326,
 802, 807
 for breastfeeding patients, 577
 for children, 582
 for diarrheagenic *E. coli*, 271
 for immunocompromised travelers, 155
 interactions with other drugs, 35, 35*t*
 for legionellosis, 274–75
 for nontyphoidal salmonellosis, 307
 photosensitivity reactions to, 182
 for plague, 293
 for pneumococcal disease, 294
 during pregnancy, 572
 risk management issues, 135, 136
 for travelers' diarrhea, 87, 88, 90*b*
 flying. *See* air travel
 folliculitis, 818, 822, 824
 follow-up care
 for international adoption, 596–602,
 597*b*
 in medical tourism, 565–66
 food allergies, 171–72, 173*b*. *See also*
 allergies; highly allergic travelers
 Food Allergy and Research Foundation
 (FARE), 174
 food poisoning, 85, 86, 228–32
 food precautions
 for aircrew, 643
 angiostrongyliasis prevention, 474
 anthrax prevention, 253
 antimicrobial resistance prevention,
 806–7
 to avoid zoonotic diseases, 224
 for children, 581
 cholera prevention, 264
 feeding infants, 94–95
 hepatitis E prevention, 380
 for immunocompromised travelers,
 140*b*
 influenza prevention, 392
 liver fluke prevention, 489
 in long-term travelers, 665
 MERS prevention, 403
 nontyphoidal *Salmonella* prevention,
 307–8
 overview, 94
 during pregnancy, 571
 sarcocystosis prevention, 527
 for Thailand travel, 772
 travelers' diarrhea prevention, 86
 typhoid and paratyphoid fever
 prevention, 327
 foodborne illnesses
 discussing in pretravel consultation,
 20*t*
 in immunocompromised travelers,
 155
 in long-term travelers, 665
 zoonotic diseases, 223, 224

footwear. *See* clothing
 force health protection (FHP), 658
 formula, infant, 94–95, 581, 583
 fractional dosing, yellow fever vaccine, 458
 France
 cutaneous leishmaniasis in, 496
 MERS in, 401
 motor vehicle crash death rate in, 620t
 Q fever in, 296
 ricketsial diseases in, 299t
 schistosomiasis in, 530
 shellfish poisoning in, 231
 tick-borne encephalitis in, 438–39
 visceral leishmaniasis in, 499
 yellow fever and malaria information for, 55
Francisella tularensis, 258, 818–19
 Free-Living and Intestinal Amebas (FLIA) laboratory, 472
 freezing cold injury, 194–95
 French Guiana, 56, 454t, 463t
 French Polynesia, 56
 frequent business travel, 636t, *See also* international business travelers
 friends, sharing travel information with, 233
 frostbite, 194–95, 681, 683b
 frozen breast milk, 578–79
 Fukushima Daiichi nuclear power plant (Japan), 197
 fungal infections, 155. *See also* antimicrobial resistance;
 coccidioidomycosis;
 histoplasmosis
 animal reservoirs and mechanisms, 218t
 aspergillosis, 760
 Brazil travel and, 717
 Candida auris, 806, 808
 causes of respiratory illnesses, 809
 cryptococcosis, 218t, 760, 786, 809
 India travel and, 760–62
 Mexico travel and, 733
 mucormycosis, 761
 rapid diagnostic tests, 788t, 811
 skin infections from, 815t, 818–20
 superficial dermatophytosis, 761–62
 furious rabies, 414–15, 415b
 furocoumarins, 183
 furunculosis, 818

G

Gabon, 56, 375, 434, 450, 454t, 463t, 537
 Gambia, 56, 454t
Gambierdiscus toxicus, 228
 garlic, 122
 gastric cancer, 272
 gastroenteritis, 632b
 gastrointestinal illnesses. *See also* enteric infections and diseases
 causing persistent diarrhea, 813
 cruise ship travel and, 624
 rapid diagnostic tests, 785t, 786, 787t, 788t
 screening internationally adopted children for, 599
 special considerations for travelers with, 167t

gay travelers. *See* LGBTQ+ travelers
 gender-related issues in international student travel, 670
 generalized tetanus, 312
 genital herpes (herpes simplex virus), 688, 828, 831t, 832, *See also* sexually transmitted infections
 genital warts. *See* human papillomavirus; sexually transmitted infections
 Georgia, 56, 375, 434
 GeoSentinel Global Surveillance Network, 2
 Germany, 5, 56, 268, 438–39, 488, 560, 562, 620t
 Ghana, 56, 454t, 463t, 664, 692
 Ghanaian bat virus, 360
 giant panda reserves, in China, 754b
 giardiasis
 counseling LGBTQ+ travelers on, 118
 diagnosis, 813–14
 general discussion, 491–93
 in immunocompromised travelers, 155
 India travel and, 759
 in long-term travelers, 665
 Mexico travel and, 731–33
 persistent diarrhea in returned travelers, 812–13
 Peru travel and, 740
 during pregnancy, 572
 screening asymptomatic returned travelers for, 794–95
 screening internationally adopted children for, 598t, 599
 Tanzania travel and, 710
 travelers' diarrhea, 85, 86, 97
 treatment, 90
 water disinfection to prevent, 101t, 102
 Gibraltar (UK), 56
 Gilbert Islands, 60
 ginger, 125
Ginkgo biloba, 122
 Global Polio Eradication Initiative (GPEI), 409
 global positioning system (GPS), 684
 Global TravEpiNet (GTEN), 2
 glucose-6-phosphate-dehydrogenase (G6PD) deficiency, 84, 110, 136, 517, 519, 577, 601–2, 660, 664
 gnathostomiasis, 820
 goldenseal, 125
 gonorrhea. *See also* sexually transmitted infections
 antimicrobial resistance, 686–87, 706
 China travel and, 753
 clinical presentation, 828, 829t
 counseling LGBTQ+ travelers on, 118
 diagnosis, 829t
 epidemiology, 688–89, 828, 829t
 prevention, 832
 rapid diagnostic tests, 787t
 screening asymptomatic returned travelers for, 791–92, 796t
 screening immigrants, migrants and refugees for, 834–35, 839t
 screening internationally adopted children for, 600
 treatment, 829t
 Good Samaritan laws, 239

gradual (nonexertional) heat stroke, 191
 graduated compression stockings (GCS), 614, 615
 gram-positive bacteria, antimicrobial-resistant, 806
 granuloma inguinale (donovanosis), 829t, *See also* sexually transmitted infections
 grapefruit seed extract, 125
 gravel, water disinfection with, 101, 102f
 Greece, 56–57, 278–79, 299t, 488, 496, 499, 620t
 Greenland, 57, 269
 Grenada, 57
 group A *Streptococcus*, 342, 469, 811
 Guadeloupe, 57, 280–81, 530
 Guam (US), 57, 226
 Guanarito virus (Venezuelan hemorrhagic fever), 448, 449
 Guatemala, 57, 280–81, 479
 Guillain-Barré syndrome (GBS), 86, 260, 313, 387, 391, 468, 817
 Guinea
 African trypanosomiasis in, 537
 malaria in, 57
 tetanus in, 312
 viral hemorrhagic fever diseases in, 449, 450–51, 699–700
 yellow fever information for, 57, 454t
 Guinea-Bissau, 57, 454t, 463t
 Guyana, 57–58, 280–81, 454t, 486

H

Haemophilus ducreyi. *See* chancroid
Haemophilus influenzae type b (Hib) vaccination, 17t, 24, 143t, 145, 589–90, 601, 811
 Haiti
 availability and quality of medical care, 730
 cholera in, 262, 263
 destination overview, 726, 727f
 diphtheria in, 266
 environmental hazards and risks, 729–30
 infectious disease risks, 726–29
 lymphatic filariasis in, 486
 safety and security, 730
 shigellosis in, 309–10
 violence in, 236–37
 yellow fever and malaria information for, 58
 Hajj pilgrimage, 677t
 availability and quality of medical care, 703
 catastrophic incidents at, 677
 destination overview, 698–99, 700f
 environmental hazards and risks, 702
 infectious disease risks, 699–702
 itinerary for, 699
 meningococcal disease during, 283
 meningococcal vaccine requirements, 288, 589, 591, 679, 700–1
 other health considerations, 702–3
 safety and security, 703
 Hale's Medications and Mothers' Milk, 576
 halofantrine, 507



- halogens, disinfection of water with, 99t, 101–2, 103t
- hand, foot, and mouth disease (HFMD), 335t, 358–59
- hand expressing breast milk, 575–76
- hand sanitizers, 94, 581
- handheld radios, 684
- handwashing, 94, 359, 407, 492, 581, 607
- Hansen's disease (leprosy), 819, 835
- hantaviruses, 218t, 448, 449, 450, 451
- Hawaii, 186b, 186, 226, 276, 303, 350, 473
- Heading Home Healthy program, 676
- health care abroad. *See also* medical tourism
 - African safaris and, 697–98
 - antimicrobial resistance in, 805–6, 807, 808
 - avoiding travel when ill, 555
 - Brazil, 720–21
 - Burma, 749
 - China, 757–58
 - for chronic diseases, 166
 - diagnostic testing performed during travel, 788–89
 - Dominican Republic, 725
 - Haiti, 730
 - Hajj pilgrimage and, 703
 - India, 765
 - insurance options, 549–52
 - for long-term travelers, 661–62
 - Mexico, 736–37
 - Nepal, 769
 - obtaining, 553–54, 554b
 - Peru, 743
 - pretravel consultation, 19–20
 - after sexual violence and assault, 687
 - South Africa, 708
 - Tanzania, 713
 - Thailand, 775
- health care providers. *See also* primary care providers
 - checking credentials of, 565
 - in-flight medical emergencies, 608, 610–12, 611b
 - international student travel roles and responsibilities, 668–69
 - locating abroad, 553–54, 554b
 - medical tourism guidance for, 566
 - and travelers with chronic diseases, 163–64
 - visiting friends and relatives travel resources, 676
- health care workers
 - in extreme circumstances, 648b
 - humanitarian aid workers, 655–56
 - infection transmission routes, 647, 650–51
 - overview, 647, 648b
 - personal protective equipment, 649–50
 - postexposure testing and counseling, 651, 652b
 - pretravel vaccination and screening, 647–49, 649b
 - screening asymptomatic returned travelers, 796t
- health care–associated MERS transmission, 400–1, 403
- health certificates, animal, 225
- health insurance, 162b, *See also* supplemental medical insurance
 - for adventure travel, 682
 - and cruise ship travel, 628
 - domestic, and overseas travel, 549, 550b
 - for international trips, 233, 549–52, 551b
 - and medical tourism, 565
 - for travelers with chronic diseases, 164
- Health Insurance Portability and Accountability Act (HIPAA), 132
- hearing loss, travelers with, 161
- heart conditions, 165t, 645, 681
- heat, water disinfection with, 98, 99t, 103t
- heat acclimatization, 193
- heat cramps, 190
- heat edema, 190–91
- heat exhaustion, 191, 681
- heat rash (prickly heat), 191
- heat stroke, 191–92, 192b, 683b
- heat syncope, 191
- heat-related illness
 - adventure travel and, 683b, 683–84
 - African safaris and, 697
 - Burma travel and, 748
 - clinical presentations, 190–92, 192b
 - Hajj pilgrimage and, 699, 702
 - India travel and, 764
 - physiology, 190
 - during pregnancy, 573
 - prevention, 193
 - risk for travelers, 190
- heavy drinking, 175–76
- Helicobacter pylori* (*H. pylori*), 272
- helicopter rescue, in Nepal, 768–69
- helminths (parasitic worms), 101t, *See also* ascariasis; hookworm infections; schistosomiasis; strongyloidiasis; trichuriasis
 - Haiti travel and, 728
 - India travel and, 762
 - posttravel evaluation, 783
 - during pregnancy, 572
 - in refugees, presumptive treatment of, 837
 - screening asymptomatic returned travelers for, 792–94, 795
 - screening immigrants, migrants and refugees for, 839t
 - screening internationally adopted children for, 597
 - soil-transmitted, 494–95, 762, 837, 839t
- hematopoietic stem cell transplant (HSCT), 141t, 147, 153, 458
- hemolytic anemia, 660
- hemolytic uremic syndrome (HUS), 268, 271, 310, 582
- hemorrhage, and fever in returned travelers, 800t, 803b
- hemorrhagic fever viruses. *See* viral hemorrhagic fever diseases
- hemorrhagic fever with renal syndrome (HFRS), 218t, 450, 451
- Hendra virus, 360, 361
- Henipavirus* infections, 360–61
- henna, black, 819
- hepatitis A (HepA) vaccines, 24, 335t, 363, 365t, 832
 - administration, 366
 - for adoptive parents and families, 595–96
 - before African safaris, 693
 - for aircrew, 641
 - allergies to components of, 27–28
 - antibody-containing blood products and, 27
 - for children, 589–90
 - for immunocompromised adults, 143t, 145, 148, 151
 - for India travel, 759
 - indications for use, 365–66
 - for international adoptees, 601
 - for last-minute travelers, 109
 - for long-term travelers, 662
 - other considerations, 367
 - overview, 363–65
 - as postexposure prophylaxis, 367
 - in posttravel evaluation, 780–81
 - precautions and contraindications, 367
 - during pregnancy, 367, 570
 - pretravel consultation, 17t
 - for resource-limited travelers, 127
 - safety and adverse reactions, 366
 - shellfish consumption and, 231–32
 - for Thailand travel, 770
 - for visiting friends and relatives travel, 675b
- hepatitis A immune globulin, 366, 367, 590
- hepatitis A virus (HAV), 799
 - African safaris, risk for during, 693
 - Burma travel and, 746
 - clinical presentation, 363, 831t
 - counseling LGBTQ+ travelers on, 118
 - cruise ship travel and, 626
 - diagnosis, 363, 831t
 - epidemiology, 362–63, 364f, 831t
 - fever in returned travelers, 802t
 - incubation period, 777–79, 781t, 831t
 - infectious agent, 362
 - Mexico travel and, 731
 - Peru travel and, 738, 740
 - postexposure prophylaxis, 367
 - posttravel evaluation, 780–81
 - pregnancy and, 572
 - prevention, 363–67, 365t
 - screening internationally adopted children for, 597, 598t, 601
 - transmission, 362
 - treatment, 363, 831t
 - visiting friends and relatives travel and risk for, 673, 675b
- hepatitis B (HepB) vaccines, 24, 335t, 372t, 832
 - administration, 371–73
 - for adoptive parents and families, 595–96
 - before African safaris, 693
 - for aircrew, 641
 - allergies to components of, 27–28
 - blood safety and, 555
 - for Brazil travel, 715–17
 - for Burma travel, 744

- for children, 589–90, 591
- Dominican Republic travel and, 723
- for immunocompromised adults, 143t, 145, 151–52
- for India travel, 759
- indications for use, 370
- for international adoptees, 601
- for international student travel, 669–70
- for last-minute travelers, 109
- for long-term travelers, 662
- Mexico travel and, 734
- Peru travel and, 738
- during pregnancy, 570
- pretravel consultation, 17t, 561
- for resource-limited travelers, 127
- safety and adverse reactions, 374
- special situations, 373–74
- for Thailand travel, 770
- for visiting friends and relatives travel, 675b
- hepatitis B virus (HBV), 20t, 562
 - Burma travel and, 744
 - China travel and, 752
 - clinical presentation, 370, 831t
 - counseling LGBTQ+ travelers on, 118
 - diagnosis, 370, 371t, 831t
 - Dominican Republic travel and, 723
 - epidemiology, 368–70, 369f, 831t
 - febrile travelers with rashes, 816
 - fever in returned travelers, 800t
 - health care workers and, 649, 650–51, 652b
 - incubation period, 777–79, 781t, 831t
 - infectious agent, 368
 - posttravel evaluation, 780–81
 - prevention, 370–74, 372t
 - rapid diagnostic tests, 785t
 - screening asymptomatic returned travelers for, 791–92, 796t
 - screening immigrants, migrants and refugees for, 837, 838, 839t
 - screening internationally adopted children for, 597–98, 598t
 - transmission, 368
 - treatment, 370, 831t
- hepatitis C virus (HCV), 376f, 562
 - clinical presentation, 377, 831t
 - counseling LGBTQ+ travelers on, 118
 - diagnosis, 377, 831t
 - Dominican Republic travel and, 723
 - epidemiology, 375–77, 831t
 - fever in returned travelers, 800t
 - general discussion, 375–77
 - health care workers and, 649, 650–51, 652b
 - incubation period, 777–79, 831t
 - long-term traveler risk for, 663
 - protease inhibitors, 34
 - rapid diagnostic tests, 785t
 - screening asymptomatic returned travelers for, 791–92, 796t
 - screening immigrants, migrants and refugees for, 839t
 - screening internationally adopted children for, 598–99, 598t
 - treatment, 377, 831t
- hepatitis D virus, 370, 777–79
- hepatitis E virus (HEV)
 - China travel and, 752
 - fever in returned travelers, 800t
 - general discussion, 378–80
 - incubation period, 777–79, 781t
 - India travel and, 759–60
 - long-term traveler risk for, 663
 - Nepal travel and, 766
 - pregnancy and, 572
- herbs, 37, 121–26
- herpes B virus. *See* B virus
- herpes simplex virus (HSV or genital herpes), 688, 828, 831t, 832, *See also* sexually transmitted infections
- herpes zoster (shingles), 24, 442, 443
- high elevation travel. *See also* altitude illness
 - acclimatization, 204b, 204, 712b, 712
 - in China, 754b, 755–56
 - in India, 763
 - in Mexico, 735
 - in Nepal, 768
 - overview, 203–4
 - in Peru, 742
 - during pregnancy, 573
 - risk for cold-related illness, 193
 - in Tanzania, 712b, 712–13
- high-altitude cerebral edema (HACE), 206
- high-altitude headache, 205
- high-altitude pulmonary edema (HAPE), 206–7
- highly allergic travelers, 171b, 171–74, 172b, 173b
- hired drivers, 622t
- Hispaniola, 262, 263, 309–10, 486. *See also* Dominican Republic; Haiti
- histoplasmosis, 16, 155, 811
 - animal reservoirs and mechanisms, 218t
 - Brazil travel and, 717
 - febrile travelers with rashes, 816
 - fever in returned travelers, 799t, 800t
 - general discussion, 545–46
 - India travel and, 760
 - Mexico travel and, 733
 - respiratory infection caused by, 809–10
- homeopathic remedies, 125
- homeopathic vaccines, 123
- homicide, 235, 236f, 236–37
- Honduras, 58, 280–81
- Hong Kong Special Administrative Region (China), 58, 280, 358, 387, 620t, 752, 757
- hookworm folliculitis, 822
- hookworm infections. *See also* cutaneous larva migrans
 - in long-term travelers, 665
 - posttravel evaluation, 783, 792
 - screening asymptomatic returned travelers for, 794
 - soil-transmitted helminths, 494–95, 586, 762
- hot tub folliculitis (*Pseudomonas aeruginosa*), 96
- hot tub folliculitis (*Pseudomonas aeruginosa*), 805–6, 824
- hotels, hazards for children at, 587
- household contacts of
 - immunocompromised travelers, 153–54
- human immunodeficiency virus (HIV), 310, 562, 643
 - Brazil travel and, 717–18
 - Burma travel and, 747
 - China travel and, 753
 - cholera vaccine and, 265
 - clinical presentation, 828
 - Dominican Republic travel and, 723
 - epidemiology, 828
 - febrile travelers with rashes, 816
 - fever in returned travelers, 800t, 803b
 - general discussion, 381–83
 - Haiti travel and, 728
 - health care workers and, 649, 650–51, 652b
- immunization of
 - immunocompromised adults, 151, 153
- incubation period, 777–79, 780t
- India travel and, 761
- international student travel, 669–70
- latent tuberculosis infection
 - treatment and, 320
- LGBTQ+ travelers, counseling on, 118
- long-term traveler risk for, 663
- malaria infection and, 154
- malaria prophylaxis and treatment and, 154
- measles vaccination and, 430
- medications for, interactions with other drugs, 31–33, 35, 37
- meningococcal vaccines and, 285
- Mexico travel and, 734
- Peru travel and, 741
- pretravel consultation, 21b
- prevention, 832
- rapid diagnostic tests, 381, 785t, 786, 787t
- screening asymptomatic returned travelers for, 791–92, 796t
- screening immigrants, migrants and refugees for, 838, 839t
- screening internationally adopted children for, 598t, 599
- self-treatment options, 19b
- and sex while traveling, 686–87, 688, 689
- and sexual violence and assault, 687
- South Africa travel and, 706
- Tanzania travel and, 711
- Thailand travel and, 772
- tuberculosis and, 156, 317–18, 319
- vaccinations for asymptomatic patients, 145–46
- vaccinations for symptomatic patients, 147
- visceral leishmaniasis and, 500
- yellow fever vaccination and, 457b, 458, 459, 461
- zoonotic diseases, 223



human papillomavirus (HPV) (*cont.*)
 immunization of immunocompromised adults, 143*t*
 prevention, 832
 treatment, 831*t*
 vaccine, 17*t*, 24, 589–90, 601, 832
 human remains, 240–41
 human rights, 157, 160*t*
 humanitarian aid workers
 overview, 653*f*, 653, 654*b*
 posttravel evaluation, 657
 preparation for travel, 655–57, 656*b*
 unique challenges related to, 653–55
 Hungary, 58, 438–39
 hurricanes, 729, 736
 hydrocele, 487, 762
 hydroxychloroquine, 510–13, 514*t*, 518, 519*t*
 hypnotic medications, 617
 hypogammaglobulinemia, 146
 hyponatremia, 192
 hypothermia, 193–94, 681, 683*b*

I
 ibuprofen, 208
 icaridin-containing insect repellents, 211
 Iceland, 58, 620*t*
 illicit drugs. *See* substance use and substance use disorders
 immersion [induced] pulmonary edema (IPE), 201
 immersion foot (trench foot), 194
 immersion hypothermia, 194
 immigrants. *See also* visiting friends and relatives travel
 defined, 835*b*
 health examination and intervention requirements for, 833–34, 834*t*
 malaria in, 794
 new-arrival health assessment, 837–40, 839*t*, 841*t*
 overview, 833–34, 834*t*
 pretravel health assessment, 834–36
 immune globulin (IG)
 hepatitis A, 366, 367, 590
 intravenous, 146, 446
 measles, 431, 570
 rabies, 417, 420–21, 421*t*, 423, 424, 707
 spacing of vaccinations and, 26–27
 tetanus, 313, 314, 314*t*
 typhoid vaccination and, 329
 varicella-zoster, 445–46, 570
 immunization. *See* vaccinations
 Immunization Healthcare Branch (IHB) of DHA, 659
 immunocompromised travelers
 approach to immunizations, 141–53, 141*t*, 142*t*, 143*t*
 cholera vaccine and, 265
 COVID-19 in, 348–49
 cryptosporidiosis in, 476
 enteric infections, 155
 hepatitis A vaccination, 366, 590
 hepatitis E in, 379
 household contacts, 153–54
 influenza vaccination, 391
 key patient education points for, 140*b*
 live attenuated vaccines and, 31

malaria prophylaxis and treatment, 154–55
 measles vaccination, 430
 nontyphoidal salmonellosis in, 307
 orthopoxvirus infections in, 435, 436
 overview, 139–40
 poliomyelitis risk, 409
 poliomyelitis vaccination, 411
 posttravel evaluation, 782
 preparing travelers with limited immune deficits, 145–47
 preparing travelers with severe immune compromise, 147–53, 149*t*
 pretravel considerations, 140–41
 rabies vaccination, 420
 reducing risk for other diseases, 155–56
 strongyloidiasis in, 533, 792–93
 tick-borne encephalitis vaccination, 442
 toxoplasmosis in, 536
 tuberculosis in, 317–18, 319
 typhoid vaccination, 329
 vaccine risk management for, 136
 varicella (chickenpox) in, 443, 444
 varicella vaccination, 445
 varicella-zoster immune globulin for, 445–46
 visceral leishmaniasis in, 500
 yellow fever vaccination, 457*b*, 459–60, 461
 immunomodulatory agents, 148, 149*t*, 460
 immunosuppressants
 immunization and use of, 149*t*, 151, 153
 immunocompromise caused by, 148
 interactions with altitude illness drugs, 37
 interactions with antimalarial drugs, 33, 34
 interactions with treatment for travelers' diarrhea, 35
 malaria infection and, 154
 measles vaccination and, 431
 strongyloidiasis and, 533
 transplant-related, 148
 yellow fever vaccination and, 460
 impetigo, 818
 importing animals and animal products, 224–27, 253, 604
 importing human remains, 240–41
 inactivated vaccines
 coadministration with yellow fever vaccine, 457
 for immunocompromised travelers, 146, 147, 148 (*see also* vaccinations)
 influenza, 27, 153–54, 390–91
 poliomyelitis, 570–71, 592, 596
 inactivated Vero cell culture-derived JE vaccine (IXIARO). *See* Japanese encephalitis vaccine
 India
 antimicrobial resistance in, 805
 availability and quality of medical care, 765
 cholera in, 263
 cysticercosis in, 481
 destination overview, 759
 environmental hazards and risks, 763–64

hepatitis E in, 379
 infectious disease risks, 759–63
 Japanese encephalitis in, 396*t*
 lymphatic filariasis in, 486
 malaria information for, 5, 58–59
 medical tourism in, 560, 765
 melioidosis in, 280
 monkey bites in, 217
 motor vehicle crash death rate in, 620*t*
 multidrug-resistant tuberculosis in, 317*t*
 natural background radiation in, 197
 Nipah virus in, 361
 plague in, 292
 rickettsial diseases in, 298, 299*t*, 303
 safety and security, 764–65
 shigellosis in, 309–10
 travelers' diarrhea risk in, 269
 typhoid fever and paratyphoid fever in, 325, 326
 vaccinia virus in, 434
 visceral leishmaniasis in, 499
 yellow fever information for, 58–59
 Indian tick typhus, 299*t*
 Indonesia
 avian influenza in, 385, 387
 diphtheria in, 266
 Japanese encephalitis in, 396*t*
 malaria in, 519
 monkey bites in, 217
 multidrug-resistant tuberculosis in, 317*t*
 rickettsial diseases in, 299*t*, 303
 schistosomiasis in, 530
 travelers' diarrhea risk in, 269
 yellow fever and malaria information for, 59
 INDR0 e.v., 178
 infant formula, 94–95, 581, 583
 infants. *See* children
 infectious disease specialists, 784
 infectious diseases
 aircrew risk for, 645–46
 Brazil travel and, 715–19
 Burma travel and, 744–47
 causing travelers' diarrhea, 85
 China travel and, 751–55
 cruise ship travel and, 624–26
 Dominican Republic travel and, 722–24
 Haiti travel and, 726–29
 Hajj pilgrimage risks, 699–702
 humanitarian aid worker risk for, 655–56
 India travel and, 759–63
 LGBTQ+ travelers, counseling on, 117–18
 long-term traveler risk for, 663–65
 mass gatherings and, 677–78
 Mexico travel and, 731–35
 Nepal travel and, 766–68
 Peru travel and, 738–42
 posttravel evaluation, 783
 in recreational water, 96
 screening immigrants, migrants and refugees for, 839*t*
 screening internationally adopted children for, 597–600, 598*t*
 South Africa travel and, 704–7

- Tanzania travel risks, 709–12
- Thailand travel and, 770–73
- visiting friends and relatives travel and risk for, 671–73, 672*b*
- Infectious Diseases Society of America (IDSA), 10–11
- inflammatory bowel disease, 165*t*, 813–14
- influenza, 252, 809
- African safaris and, 695
- air travel and, 810
- Brazil travel and, 717
- clinical presentation, 387
- complementary or integrative health approaches, 122–23
- cruise ship travel and, 624, 625
- diagnosis, 388, 811
- epidemiology, 384–87, 385*b*, 386*f*
- federal public health authority, 630–31, 631*t*
- fever in returned travelers, 802*t*
- health care workers and, 650
- incubation period, 777–79, 780*t*
- India travel and, 761
- infectious agent, 384
- mass gatherings and, 677
- Mexico travel and, 733
- Nepal travel and, 767
- Peru travel and, 740
- posttravel evaluation, 780–81, 783, 799
- prevention, 390–92
- rapid diagnostic tests, 388, 785*t*, 786, 787*t*
- respiratory infection caused by, 809–10
- seasonality of, 384–85, 387, 810
- South Africa travel and, 706
- therapy for, and other vaccinations, 27
- transmission, 384
- treatment, 388–90, 389*t*, 811
- influenza vaccines, 24, 335*t*, 811
- before African safaris, 693
- for aircrew, 641
- allergic reactions to components, 27–28, 29, 391–92
- Brazil travel and, 717
- for children, 589–90, 591
- general discussion, 390–92
- for household contacts of immunocompromised patients, 153–54
- for immunocompromised adults, 142*t*, 143*t*, 147, 148
- for India travel, 761
- during pregnancy, 570
- pretravel consultation, 17*t*
- spacing of, 25
- for Thailand travel, 770
- informed travel, 232–33
- ingestion anthrax, 250, 251
- ingestion hazards, animal-related, 218*t*, 221–22
- inhalation anthrax, 250, 251, 252–53
- inhalation hazards, animal-related, 218*t*, 221–22
- inhaled fungal infections, 155
- injection anthrax, 250, 251, 252
- injections
- route and site for vaccinations, 29
- tips for travelers who need, 555
- injury and trauma. *See also* motor vehicle crashes
- in adventure travel, 237, 680*b*, 680–81
- on African safaris, 696–97
- aircraft crashes, 237–38
- in Brazil, 720
- carbon monoxide poisoning, 238
- in children, 587
- cruise ship travel, 623–24
- fires, 238
- Hajj pilgrimage and, 703
- humanitarian aid workers, 654, 657
- long-term travelers and, 666
- from marine animals, 221
- Mexico travel and, 736
- overview, 235–36, 236*f*
- travel preparation tips, 238*b*, 238
- violence, 235, 236–37
- water and aquatic injuries, 235, 237
- Inmabez, 451
- inorganic [physical] UV filters in sunscreens, 183–84, 185*b*, 186*b*, 186, 588
- insect bites. *See also* zoonotic exposures
- bed bugs, 124, 215–16, 216*b*
- fleas, 215, 218*t*
- insect repellents, 211–13, 213*b*
- mosquitoes, 214
- overview, 211, 221
- prevention, 213–16, 215*f*, 216*b*, 343, 356–57, 498, 500, 509, 539
- sand flies, 215
- skin infections from, 814, 815*t*, 821
- ticks, 214–15, 215*f*
- tsetse flies, 538, 539
- vaccines and prophylaxis, 211
- insect repellents, 509, 532
- for children, 584–85, 585*b*
- combining with sunscreen, 212, 585, 588
- complementary or integrative health approaches, 123–24
- general discussion, 211–14, 213*b*
- insect venom allergies, 172. *See also* allergies; highly allergic travelers
- insects, bringing into US, 224, 226
- integrase inhibitors, 154
- integrative health approaches. *See* complementary or integrative health approaches
- interferon- γ release assay (IGRA), 318–19, 320, 322–23, 600, 792
- international adoption
- follow-up medical examination, 596–602, 597*b*
- infectious diseases screening for, 597–600, 598*t*
- new-arrival health assessment, 841
- noninfectious disease screening, 601–2
- overseas medical examination, 596
- overview, 595
- preparing adoptive parents and families, 595–96
- pretravel health assessment, 836
- vaccinations, 366, 412, 600–1
- International Association for Medical Assistance to Travelers, 554*b*
- international business travelers
- medical clearance for, 137
- versus other travelers, 635–36
- overview, 635, 636*t*
- posttravel care, 639–40
- pretravel considerations, 637–38
- special considerations for, 636–37
- travel health issues during travel and at destination, 638–39
- International Certificate of Vaccination or Prophylaxis (ICVP), 411, 461–64, 462*f*, 463*t*, 464*f*, 592
- International Civil Aviation Organization (ICAO), 160
- International Narcotics Control Board (INCB), 177, 661–62, 662*t*
- international pet rescue and adoption, 225
- International Society for Infectious Diseases (ISID), 11
- International Society of Travel Medicine (ISTM), 11, 137, 554*b*, 661–62, 662*t*
- international student travel
- assessing and preparing adolescents for, 580*b*
- overview, 667, 668*t*
- predeparture preparation, 668–69
- specific issues related to, 669–70
- during and after travel considerations, 671
- international substance use disorder treatment, 178*b*, 178–79
- international travel health programs (ITHPs), 636, 639–40
- intestinal anthrax, 251
- intestinal colonization with antimicrobial-resistant bacteria, 804–5
- intestinal pathogens
- causing travelers' diarrhea, 85
- screening asymptomatic returned travelers for, 794–95
- screening internationally adopted children for, 598*t*, 599
- intestinal sarcocystosis, 526, 527
- intradermal (ID) rabies immunization, 424–25
- intravenous immune globulin (IVIG), 146, 446
- invasive meningococcal disease (IMD), 118. *See also* meningococcal disease
- iodine, disinfection of water with, 101–2
- iodoquinol, 472
- ionizing radiation, 197–98
- IR3535-containing insect repellents, 212, 213, 584–85
- Iran, 59, 197, 269, 401, 449
- Iraq, 59, 326–27, 496
- Ireland, 59, 231, 620*t*
- iron, 33, 331
- irritable bowel syndrome (IBS), 260, 813
- Islamic pilgrimages. *See* Hajj pilgrimage
- Islas Malvinas (Falkland Islands), 55
- Isle of Man (UK), 80
- isolation, 348–49, 407, 452
- isoniazid, 320
- Israel, 59, 496, 620*t*



Israeli tick typhus, 299t
 Italy, 59, 278–79, 299t, 438–39, 450, 488, 496, 499, 620t
 ivermectin, 525, 529, 533, 793–94, 821
 Ivory Coast (Côte D’Ivoire), 51, 434, 450, 454t, 463t, 537
 IXIARO vaccination. *See* Japanese encephalitis vaccine

J

Jamaica, 59, 236–37, 620t
 Japan
 Japanese encephalitis in, 396t
 liver flukes in, 488
 Lyme disease in, 278–79
 motor vehicle crash death rate in, 620t
 radiation exposure in, 197
 rickettsial diseases in, 299t, 303
 shellfish poisoning in, 231
 tick-borne encephalitis in, 438–39
 travelers’ diarrhea risk in, 269
 UV filters in sunscreens available in, 184b
 yellow fever and malaria information for, 59
 yersiniosis in, 330–31
 Japanese encephalitis (JE) vaccines, 4–5, 16, 211, 335t
 for aircrew, 641
 allergic reactions to, 398
 Burma travel and, 747
 for children, 593
 China travel and, 753–54
 general discussion, 394–99, 399t
 for immunocompromised adults, 143t, 152
 for last-minute travelers, 109
 for long-term travelers, 662, 663
 during pregnancy, 570
 pretravel consultation, 17t
 for resource-limited travelers, 128
 scheduling, 28t
 Thailand travel and, 770, 773
 Japanese encephalitis (JE) virus
 Burma travel and, 747
 in children, 580–81
 China travel and, 753–54
 clinical presentation, 394
 cross-reactive flavivirus antibodies, 356
 cruise ship travel and, 626
 diagnosis, 394
 epidemiology, 393–94, 396t
 fever in returned travelers, 800t
 incubation period, 780t
 India travel and, 762
 infectious agent, 393
 Nepal travel and, 768
 prevention, 394–99, 399t
 Thailand travel and, 773
 transmission, 393
 and travelers’ perception of risk, 23
 treatment, 394
 Japanese spotted fever, 299t
 jaundice, and fever in returned travelers, 800t, 802t
 jet lag, 19b, 114, 124, 586, 616–18

Jordan, 59, 401
 Junin virus (Argentine hemorrhagic fever), 448, 449, 451, 452
 JYNNEOS (smallpox/monkeypox) vaccine, 142t, 152, 154

K

Karenia brevis, 230, 231
 Katayama syndrome (acute schistosomiasis), 531, 781t, 799t, 800t. *See also* schistosomiasis
 Kazakhstan, 60, 317t, 438–39, 488
 Keeling (Cocos) Islands (Australia), 49
 Kenya
 game parks in, 692, 693f
 HIV in sex workers in, 686–87
 malaria information for, 60
 Marburg virus in, 450–51, 696
 multidrug-resistant tuberculosis in, 317t
 Rift Valley fever in, 450
 visceral leishmaniasis in, 499
 yellow fever information for, 60, 454t
 kidney disease, 165t
 Kilimanjaro. *See* Tanzania
 Kiribati, 60
Klebsiella pneumoniae, 804, 805–6
 Kosovo, 60
 Kumbh Mela mass gathering, 764
 Kuwait, 60, 401
 Kyasanur Forest disease, 448
 Kyrgyzstan, 60, 317t, 438–39

L

lactation. *See* breastfeeding
 Langya virus, 360, 361
 Laos, 60, 396t, 488, 519–22, 530
 Lassa virus (Lassa fever), 631t
 African safaris and, 696
 animal reservoirs and mechanisms, 218t
 clinical presentation, 451
 epidemiology, 449
 fever in returned travelers, 800t, 803b
 infectious agent, 448
 prevention, 452
 treatment, 451
 last-minute travelers (LMTs), 108–11, 111b
 latent tuberculosis infection (LTBI), 318, 319, 320, 649
 lateral-flow immunochromatographic tests, 785t, 787t, 788
 Latvia, 60, 375, 438–39
 lead exposure, in Mexico, 736
 Lebanon, 60, 401
 legal considerations
 in-flight medical emergencies, 611
 lessening risk for legal action, 135–37
 for LGBTQ+ travelers, 118–20
 local laws during travel abroad, 233–34
 telemedicine, 132–33
Legionella species, legionellosis, and Legionnaires’ disease, 96, 809, 811
 cruise ship travel and, 625–26
 fever in returned travelers, 800t

general discussion, 273–75
 incubation period, 780t
 Mexico travel and, 733
 respiratory infection caused by, 809–10
 leishmaniasis, 818–19
 Brazil travel and, 718
 cutaneous, 496–98, 665, 734, 741, 822
 fever in returned travelers, 799t
 incubation period, 777–79
 India travel and, 762
 Mexico travel and, 734
 mucosal, 496
 posttravel evaluation, 784
 rapid diagnostic tests, 788
 skin infections from, 815t
 visceral, 155, 496, 499–500, 762, 781t, 788, 800t
 leprosy (Hansen’s disease), 819, 835
 leptospirosis, 16, 20t, 96, 342, 469
 animal reservoirs and mechanisms, 218t
 Brazil travel and, 718
 Burma travel and, 747
 China travel and, 753
 Dominican Republic travel and, 723
 febrile travelers with rashes, 816
 fever in returned travelers, 799t, 800t, 803b
 general discussion, 276–77
 incubation period, 780t
 posttravel evaluation, 782
 rapid diagnostic tests, 788
 Thailand travel and, 772–73
 Lesotho, 60
 leukemia, 430–31
 levofloxacin, 88t
 LGBTQ+ (lesbian, gay, bisexual, transgender, queer) travelers
 infectious disease counseling, 117–18
 international student travel, 670
 legal considerations, 118–20, 234
 mental health and substance use, 120–21
 online resources for, 119t
 overview, 116–17, 117b
 safety and security, 120
 Liberia, 63, 434, 449, 450, 454t, 699–700
 Libya, 63
 Liechtenstein, 63, 438–39
 limited budget, travelers on, 126–29
 linear skin lesions, 818–19
 linezolid resistance, 806
 listeriosis, 155, 224, 572, 705
 lithium, 113
 Lithuania, 63, 438–39
 live attenuated influenza vaccines (LAIV), 25, 26, 27, 145, 153–54, 390–91
 live attenuated typhoid vaccine (Ty21a), 327, 328–29, 594, 662
 live attenuated vaccines
 coadministration with yellow fever vaccine, 457
 interactions between drugs and, 31
 risk management issues, 136
 live vaccines
 for children, 589, 590–91

coadministration with yellow fever vaccine, 458

immunocompromised adults and, 142*t*, 146, 147, 148, 149*t*, 151

multiple sclerosis and, 146

during pregnancy, 570

spacing of, 25

typhoid vaccination and, 329

vaccine–vaccine interactions, 30–31

liver abscess, 471–72, 781*t*, 800*t*

liver disease, 167*t*

liver flukes, 488–89, 746

loans, emergency medical assistance, 550

local laws, during travel abroad, 233–34

loiasis (*Loa loa* infection), 486–87, 525, 793–94, 820–21

long COVID, 346

long-term travelers

- accessing care abroad, 661–62
- asymptomatic, screening, 790, 796*t*, 797
- to countries with poliovirus transmission, 592
- infectious diseases not prevented by vaccines, 663–65
- injury, 666
- last-minute travelers, 111
- malaria prevention and prophylaxis for, 509, 510*b*
- mental health, 666
- with open itineraries, 666
- overview, 661
- periodic travel health consultations, 790
- screening after return, 666
- vaccinations for, 662–63

loperamide, 89, 90*b*, 269–70, 271, 582, 643

louseborne typhus. *See* epidemic typhus

Lujo virus, 448, 449

lumefantrine, 34, 154, 508, 508*t*

lung disease, 165*t*

lung flukes, 490–91

lung overinflation injuries from scuba diving, 200

Luxembourg, 63, 561

Lyme disease, 218*t*, 278–79, 819

lymphangitis-associated rickettsiosis, 299*t*

lymphatic filariasis (LF), 665

- Brazil travel and, 718
- Dominican Republic travel and, 724
- general discussion, 486–87
- Haiti travel and, 729
- India travel and, 762
- posttravel evaluation, 782, 783
- screening asymptomatic returned travelers for, 794
- screening internationally adopted children for, 597, 598*t*

lymphocutaneous spread of infection, 818–19, 823–24

lymphocyte-depleting agents, 148, 151

lymphocytic choriomeningitis virus (LCMV), 218*t*, 448, 449, 451

lymphogranuloma venereum, 828, 829*t*

Lyssavirus genus. *See* rabies

M

macaques, B virus and, 339, 340, 763–64, 823

Macau Special Administrative Region (China), 63, 387, 757

Macedonia, 499

Machupo virus (Bolivian hemorrhagic fever), 448, 449

macrolides

- for antibiotic resistant campylobacteriosis, 261
- for antibiotic resistant cholera, 264
- antimicrobial resistance, 294, 804–5
- for breastfeeding patients, 577
- interactions with other drugs, 155
- for legionellosis, 274–75
- for pertussis, 290
- for pneumococcal disease, 294
- risk management issues, 136

macular skin lesions, 819–20

maculatum infection, 299*t*

Madagascar, 63, 292, 450

Madeira Islands (Portugal), 63, 228–29

magnets, 124

maitotoxin poisoning, 228–30

malaria, 325, 342, 469

- African safaris and, 695–96
- blood donation after travel to endemic areas, 523, 523*t*
- Brazil travel and, 718
- Burma travel and, 747
- in children, 584–85, 585*b*
- China travel and, 754
- clinical presentation, 502
- complementary or integrative health approaches, 124
- country-specific information, 38, 41–83
- cruise ship travel and, 626
- diagnosis, 502–7, 506*b*
- Dominican Republic travel and, 724
- in Ebola patients, 452
- epidemiology, 502
- fever in returned travelers, 798, 799*t*, 800*t*, 803*b*
- frequently asked clinical questions about, 506*b*
- Haiti travel and, 729
- Hajj pilgrimage and, 702
- health care workers and, 650
- in immunocompromised travelers, 154–55
- incubation period, 777–79, 780*t*, 798
- India travel and, 762–63
- infectious agent, 501
- in international business travelers, 636–37
- after international student travel, 671
- long-term traveler risk for, 663–65
- map of areas of risk for, 7*f*, 7, 9*f*
- Mexico travel and, 734
- mosquito bites and, 214
- Nepal travel and, 768
- Peru travel and, 742
- posttravel evaluation, 781–82, 783, 784
- during pregnancy, 571, 673
- pretravel consultation, 16, 20*t*
- prevention, 16, 39–40, 508–9, 642, 663–64, 673–74
- rapid diagnostic tests, 507, 785*t*, 786, 787*t*, 788
- in refugees, presumptive treatment of, 837
- reliable supply regimens, 507–8, 508*t*
- screening asymptomatic returned travelers for, 794
- screening immigrants, migrants and refugees for, 839*t*
- screening internationally adopted children for, 599–600
- self-treatment options, 19*b*
- South Africa travel and, 706
- Tanzania travel and, 711
- Thailand travel and, 773
- transmission, 501–2, 503*f*, 504*f*, 505*f*
- treatment, 506*b*, 507–8, 508*t*
- visiting friends and relatives travel and, 672–73

malaria chemoprophylaxis

- for aircrew, 642
- for breastfeeding patients, 519, 577
- changing medications as result of side effects, 520*t*, 522
- for children, 518, 584
- cholera vaccine and, 265
- choosing drug for, 509–10, 510*b*, 511*t*
- country-specific information, 41–83
- differences in guidelines for, 4–5, 6
- dosing information, 514*t*
- drug–drug interactions in, 31–34, 32*t*, 35, 164
- frequently asked clinical questions, 506*b*
- for humanitarian aid workers, 655
- for immunocompromised travelers, 154–55
- interactions with vaccines, 31
- for international business travelers, 638
- for last-minute travelers, 110
- for long-term travelers, 664–65
- malaria acquisition when using, 794
- medications used for, 510–18, 514*t*
- for military personnel, 658, 659–60
- obtaining medications overseas, 523
- overview, 39–40, 211
- posttravel evaluation, 779–80
- during pregnancy, 518–19, 519*t*, 571
- for resource-limited travelers, 128
- South Africa travel and, 706
- Tanzania travel and, 711
- Thailand travel and, 773
- travel to areas with chloroquine-resistant malaria, 519
- travel to areas with chloroquine-sensitive malaria, 519
- travel to areas with limited malaria transmission, 522
- travel to areas with mefloquine-resistant malaria, 519–22
- for travelers with open itineraries, 666
- visiting friends and relatives travel, 674–75

Malawi, 63, 409, 537

- Malaysia
avian influenza in, 387
hand, foot, and mouth disease in, 358
Japanese encephalitis in, 396t
medical tourism in, 560
melioidosis in, 280
Nipah virus in, 361
rickettsial diseases in, 299t, 303
sarcocystosis in, 526, 783
travelers' diarrhea risk in, 269
yellow fever and malaria information for, 63–64
- Maldives, 64
- Mali, 64, 299t, 312, 450, 454t, 463t, 531, 654
- Malta, 64
- Marburg virus, 631t, 803b
African safaris and, 696
epidemiology, 450–51
infectious agent, 448
inhalation exposure, 221
prevention, 452
transmission, 448, 449
- marine animals, 201, 221
- marine toxins, food poisoning from, 228–32
- Marshall Islands, 64, 211, 356, 592
- Martinique, 64, 280–81, 530
- masks, 349, 392, 755
- mass gatherings
characteristics of, 676–77, 677t, 678t
clinician guidance for, 678–80, 679b
health concerns associated with, 677–78, 678t
in India, 764
overview, 676
- Mauritania, 64, 450, 454t
- Mauritius, 64
- Mayotte, 64, 450
- measles (rubeola), 342, 469, 809
air travel and, 810
aircrew risk for, 641
China travel and, 751
cruise ship travel and, 626
febrile travelers with rashes, 816
federal public health authority, 630–31, 631t
fever in returned travelers, 802t
general discussion, 428–31
health care workers and, 650
in internationally adopted children, 601, 836
Mexico travel and, 731
vaccines, 335t, 570, 589–90, 595–96, 601, 811
- Measles Virus Laboratory (CDC), 429
- measles-mumps-rubella (MMR) vaccine, 24, 601
for adoptive parents and families, 596
before African safaris, 693
for aircrew, 641
allergies to components of, 27–28
antibody-containing blood products and, 26–27
for children, 589, 590–91
general discussion, 429–31
hepatitis A vaccination and, 367
for household contacts of immunocompromised patients, 153
for immunocompromised adults, 142t, 146, 147
for India travel, 759
mumps prevention, 405
posttravel evaluation, 780–81
during pregnancy, 570
pretravel consultation, 17t
rubella prevention, 427
spacing of, 25
yellow fever vaccine coadministration, 457
- measles-mumps-rubella-varicella (MMRV) vaccine, 405, 429–31, 445, 591
- mebendazole, 484–85
- Mecca, travel to. *See* Hajj pilgrimage
- mediastinal emphysema, 200
- medical care. *See* health care abroad
- medical certificates for travelers with disabilities, 159
- medical clearance
for adventure travelers, 681
for international assignments, 137
[*see also* international business travelers]
- medical emergencies. *See* emergencies
- medical evacuation insurance, 238b, 553
for African safaris, 697
for children, 588
for cruise ship travel, 628
for Haiti travel, 730
for health care workers, 648b
for humanitarian aid workers, 655
for international student travel, 669
for Nepal travel, 769
overview, 113, 549, 551–52
for Tanzania high altitude travel, 713
for travelers with chronic diseases, 164
- medical examinations for international adoption
follow-up, 596–602, 597b
overseas, 596
- medical facilities, cruise ship, 623
- medical history, 14t
- medical insurance. *See* health insurance
- medical kits. *See* travel health kits
- medical negligence claims, 135–37
- medical screening examinations
for immigrants, 834–35
for internationally adopted children, 836
for refugees, 836
- medical services, online resources for, 111b
- medical supplies on aircraft, 610b, 610–11
- medical tourism
in Brazil, 721
carbapenemase-producing bacteria and, 805–6
categories of, 560–61
in China, 758
in Dominican Republic, 725
follow-up care, 565–66
guidance for US health care providers, 566
in India, 765
in Mexico, 737
overview, 560
in Peru, 743
pretravel consultation, 561–62
risk mitigation, 562–66, 563b, 564t
risks and complications, 562
in South Africa, 708
substance use disorder treatment, 178b, 178–79
in Thailand, 775
- medical waivers for yellow fever vaccination, 152–53, 460, 462–64, 464f
- medical workers. *See* health care workers
- Medicare beneficiaries, 552
- medications. *See also* drug–drug interactions
for adventure guides, 684
for adventure travel health kits, 684–85
for aircrew, 643–44
for alcohol use disorder, 177
allergies to, 172
for altitude illness, 207–8, 208t, 712–13, 755–56
breastfeeding and use of, 576–77
for chronic diseases, 105b, 105, 162b, 163–64, 164b
in complete travel history, 778t
compromising immune system, 148
Hajj pilgrimage and, 702–3
for highly allergic travelers, 172b
for immunocompromised travelers, 140b
interactions between vaccines and, 31
for international business travelers, 639
for mental health issues, 113–14
for motion sickness, 629
obtaining overseas, 523, 555, 557b, 557–59, 558b, 559t, 661, 674–75, 737, 758
off-label use, 136
for opioid use disorder, 177–78
photosensitizing, 182
poorly regulated, avoiding, 557b, 557–59, 558b, 559t, 563
for pregnant travelers, 569
risk management issues, 135–36
scuba diving and, 198–99
in telemedicine, 132
timing when crossing multiple time zones, 616
in travel health kits, 106b
for travelers' diarrhea, 694
traveling with, 19, 104–7, 105b, 106b, 552, 555, 558, 656, 661–62, 662t, 674–75, 758
- Medigap plans, 552
- Mediterranean recluse spider, 822–23
- Mediterranean region
brucellosis in, 257
ciguatera poisoning in, 228–29
cutaneous leishmaniasis in, 496, 822
Lyme disease in, 278–79
malaria in, 502
rickettsial diseases in, 299t, 303

- Shewanella* infection in, 824
- typhus in, 303
- visceral leishmaniasis in, 499
- Mediterranean spotted fever
 - [Boutonneuse fever], 297–98, 299*t*, 303, 304, 817
- Mediterranean spotted fever–like illness, 299*t*
- mefloquine
 - for aircrew, 642
 - for breastfeeding patients, 519, 577
 - changing medications due to side effects, 520*t*
 - for children, 518, 584
 - cholera vaccine and, 265
 - in HIV patients, 154
 - for immunocompromised travelers, 154–55
 - interactions with other drugs, 32*t*, 34
 - for long-term travelers, 664
 - malaria chemoprophylaxis, 511*t*, 513–17, 514*t*, 518, 519*t*, 520*t*
 - malaria resistant to, 519–22
 - mental health issues as contraindication, 113
 - for military personnel, 659
 - for pregnant travelers, 518, 571, 665
 - risk management issues, 135–36
- melanoma, 183
- melatonin, 123, 124, 617–18
- melatonin-receptor agonists, 618
- meliodosis, 280–82, 282*b*, 772–73, 800*t*, 809
- men who have sex with men (MSM), 434, 435, 686, 687, 689, 828. *See also* LGBTQ+ travelers
- MenACWY (quadrivalent meningococcal conjugate) vaccine, 285–88, 286*t*, 591. *See also* meningococcal vaccines
- meningitis
 - anthrax, 251, 252
 - eosinophilic, 473–74
 - meningitis belt in Africa, 283, 284*f*, 591
 - meningococcal, 283–84, 799*t*, 800*t*, 802*t*
 - plague, 292, 293
 - pneumococcal, 294
 - rapid diagnostic tests, 788*t*
- meningococcal disease
 - clinical presentation, 283–84
 - cruise ship travel and, 626
 - diagnosis, 284–85
 - epidemiology, 283, 284*f*
 - fever in returned travelers, 799*t*, 800*t*, 802*t*
 - infectious agent, 283
 - invasive, 118
 - and mass gatherings, 677
 - postexposure prophylaxis, 288–89
 - prevention, 285–88
 - rapid diagnostic tests, 785*t*
 - transmission, 283
 - treatment, 285
- meningococcal vaccines, 24, 247*t*, 286*t*
 - for aircrew, 641
 - for children, 589–90, 591
 - for Hajj pilgrimage, 288, 589, 591, 679, 700–1
 - for health care workers, 647–48
 - for immunocompromised adults, 143*t*, 145
 - for international adoptees, 601
 - for last-minute travelers, 109, 110
 - for long-term travelers, 663
 - overview, 285
 - precautions and contraindications, 288
 - during pregnancy, 570
 - pretravel consultation, 17*t*
 - for resource-limited travelers, 127
 - routine immunization, 285
 - safety and adverse reactions, 288
 - spacing of, 25–26
 - for travelers, 285–88
 - vaccine–vaccine interactions, 30–31
- meningococcemia (meningococcal sepsis), 284, 800*t*, 802*t*, 803*b*, 817
- menstruation, Hajj pilgrimage and, 703
- mental health
 - challenges and barriers to healthy travel, 113–14
 - of health care workers, 648*b*
 - of humanitarian aid workers, 653–54, 655, 657
 - of immigrants and migrants, 840
 - of international business travelers, 638
 - international student travel and, 670, 671
 - of LGBTQ+ travelers, 120–21
 - of long-term travelers, 661, 666
 - mefloquine use and, 513
 - occurrence of problems in travelers, 112
 - overview, 112
 - posttravel issues, 115
 - in pretravel consultation, 112–13
 - of refugees, assessing, 841
 - scuba diving and, 198–99
 - stressors and countermeasures, 114–15, 115*b*
 - treatment, 113
- mercury exposure, 736
- methadone, 177, 178
- methanol poisoning, 724
- methicillin-resistant *Staphylococcus aureus*, 806, 822–23
- metronidazole, 90, 313, 472
- Mexico
 - American trypanosomiasis in, 540, 600, 735
 - availability and quality of medical care, 736–37
 - carbapenemase-producing bacteria in, 805–6
 - coccidioidomycosis in, 543–44, 733
 - cryptosporidiosis in, 475
 - cutaneous leishmaniasis in, 496, 734
 - cyclosporiasis in, 479
 - destination overview, 731, 732*f*
 - environmental hazards and risks, 735–36
 - gnathostomiasis in, 820
 - infectious disease risks, 731–35
 - malaria in, 64–66, 734
 - medical tourism in, 560, 562, 737
 - meliodosis in, 280–81
 - motor vehicle crashes in, 620*t*, 736
 - myiasis in, 821
 - rickettsial diseases in, 298–302, 734–35
 - Rocky Mountain spotted fever in, 817
 - safety and security, 736
 - sunscreen use in, 186*b*, 186, 736
 - travelers' diarrhea in, 269, 733
 - tuberculosis in, 315, 733–34
 - violence in, 236–37
 - yellow fever and malaria information for, 64–66
- Micronesia, Federated States of, 66, 211, 356, 592
- Middle East
 - antimicrobial resistance in, 805
 - avian influenza in, 387
 - brucellosis in, 257
 - cutaneous leishmaniasis in, 496, 822
 - dengue in, 352*f*
 - diphtheria in, 266
 - giardiasis in, 491–92
 - hepatitis C in, 375
 - hepatitis E in, 379
 - malaria in, 501–2, 504*f*
 - MERS in, 400, 401
 - Q fever in, 296
 - rickettsial diseases in, 298, 299*t*
 - schistosomiasis in, 530
 - travelers' diarrhea risk in, 269
 - viral hemorrhagic fever diseases in, 449
 - visceral leishmaniasis in, 499
- Middle East respiratory syndrome (MERS), 402*b*, 647, 649–50, 799
 - animal reservoirs and mechanisms, 218*t*
 - federal public health authority, 630–31
 - fever in returned travelers, 802*t*
 - general discussion, 400–3
 - Hajj pilgrimage and, 701–2
 - health care workers and, 650
 - posttravel evaluation, 783
 - respiratory infection caused by, 809, 810
- migrants. *See also* visiting friends and relatives travel
 - defined, 835*b*
 - health examination and intervention requirements for, 833–34, 834*t*
 - new-arrival health assessment, 837–40, 839*t*, 841*t*
 - overview, 833–34, 834*t*
- miliaria (prickly heat), 191
- military deployments, 658–60
- miltefosine, 497–98, 500
- Minnesota Center for Excellence in Refugee Health, 838
- minocycline, 513
- minors, sex with, 687
- mites, diseases spread by, 218*t*, 528–29
- mobile colistin resistance (*mcr*) gene, 805, 806
- mobile phones
 - for adventure travel, 684
 - humanitarian aid worker access to, 657
 - road safety and, 622*t*
- modified varicella (breakthrough varicella), 444



- Mojiang virus, 360
 mold, 196–97
 Moldova, 66, 317t, 375, 438–39, 488
 Monaco, 66
 Mongolia, 66, 278–79, 299t, 438–39
 monkey bites, avoiding, 217
 monkeypox, 227, 433
 animal reservoirs and mechanisms, 218t
 clinical presentation, 435t, 436
 diagnosis, 436
 epidemiology, 434–35
 infectious agent, 433
 prevention, 437
 screening asymptomatic returned travelers for, 791
 transmission, 434, 689, 831–32
 treatment, 437
 vaccines, 142t, 152, 154, 335t, 437
 monkeys
 diseases spread by, 218t, 220
 skin infections after bites from, 823
 yellow fever transmission, 453
 monoclonal antibodies, 347
 mononucleosis syndrome, 800t
 Montenegro, 66
 Montserrat (UK), 66
 morning sickness, 569
 Morocco, 66, 269, 299t
 mosquito avoidance, 84, 110, 509, 572, 584–85
 mosquito bite prevention, 214
 mosquito nets, 498
 mosquito-borne illnesses, 211
 aircrew risk for, 642–43
 in children, 580–81
 Hajj pilgrimage and, 702
 long-term traveler risk for, 663
 posttravel evaluation, 782
 during pregnancy, 572–73
 pretravel consultation, 110
 Tanzania travel and, 711–12
 motion sickness, 19b, 124–25, 628–29, 629b, 630b
 motor vehicle crashes, 620t, 622t. *See also* road and traffic safety
 African safaris and, 697
 Brazil travel and, 720
 Burma travel and, 748
 children in, 587
 China travel and, 757
 Dominican Republic travel and, 725
 general discussion, 619–22
 Haiti travel and, 730
 Hajj pilgrimage and, 703
 humanitarian aid workers, 654
 India travel and, 764–65
 as leading cause of injury and death, 235, 236f, 236
 Mexico travel and, 736
 South Africa travel and, 708
 Tanzania travel and, 713
 Thailand travel and, 774–75
 Mount Kilimanjaro. *See* Tanzania
 Mozambique, 66, 317t
 mputsi fly (tumbu fly), 821
 mucormycosis, 761
 mucosal leishmaniasis (ML), 496, 497–98
 multidrug resistance. *See also* antimicrobial resistance
 cholera, 264
 and fever in returned travelers, 802
 gonorrhea, 688–89
 and immunocompromised travelers, 140b
 Shigella, 310
 tuberculosis, 317–18, 317t, 649
 typhoid fever and paratyphoid fever, 326–27
 multiple sclerosis (MS), 141t, 146–47, 165t
 multiplex molecular panels, 785t, 786, 788t, 814
 mumps, 809. *See also* measles-mumps-rubella vaccine; measles-mumps-rubella-varicella vaccine
 cruise ship travel and, 626
 general discussion, 404–5
 Mexico travel and, 731
 screening internationally adopted children for, 601
 vaccines, 335t, 589–90, 601
 murine typhus, 297–98, 299t, 303, 304, 734–35
 muscular sarcocystosis, 526–27, 800t
 myalgia, and fever in returned travelers, 800t
 Myanmar. *See* Burma
Mycobacterium species, 319, 818–19, 822, 823–24. *See also* tuberculosis
 Mycotic Diseases Branch (CDC), 546
 myiasis, 815t, 821
- N**
Naegleria fowleri, 96
 naloxone, 177
 Namibia, 66–67, 251, 450, 692, 694f
 Narcotics Anonymous (NA), 114
 nasal saline irrigation, 122
 National Institutes of Health (NIH), 123, 347, 576
 natural disasters
 African safaris and, 697
 in Burma, 748
 in China, 756
 in Haiti, 729–30
 in India, 764
 in Mexico, 736
 in Nepal, 769
 in Thailand, 774
 natural insect repellents, 123–24
 “natural sunscreen” products, 125
 Nauru, 67
Necator americanus. *See* hookworm infections
 necrotizing spider bites, 818, 822–23
 negligence claims, lessening risk for, 135–37
Neisseria gonorrhoeae. *See* gonorrhea
Neisseria meningitidis. *See* meningococcal disease
 neoehrlichiosis and *Neoehrlichia* species, 297, 299t, 303, *See also* rickettsial infections
 neomycin, 27–28
 neonatal tetanus, 312
Neorickettsia species. *See* rickettsial infections; Sennetsu fever
 neotropical echinococcosis (NE), 482–83
 Nepal
 availability and quality of medical care, 769
 cyclosporiasis in, 479
 destination overview, 766, 767f
 environmental hazards and risks, 768–69
 high-elevation travel destinations in, 203, 205
 infectious disease risks, 766–68
 Japanese encephalitis in, 396t
 safety and security, 769
 typhoid fever and paratyphoid fever in, 326
 visceral leishmaniasis in, 499
 yellow fever and malaria information for, 67
 Netherlands, 67, 296, 438–39, 561, 620t
 neurocysticercosis, 481, 784, 794
 neurotoxic shellfish poisoning (NSP), 231
 New Caledonia (France), 67
 New World arenaviruses, 449, 451
 New Zealand, 67, 231, 269, 561
 new-arrival health assessment, 837–42, 839t, 841t
 Nicaragua, 67, 560
 nifedipine, 207, 208, 208t, 755–56
 nifurtimox, 538–39, 541
 Niger, 67, 450, 454t, 463t
 Nigeria, 67–68, 312, 317t, 434, 449, 450, 454t, 654
 Nipah virus, 225, 360, 361
 nitazoxanide, 90, 476
 nitrogen narcosis, 201–2
 Niue (New Zealand), 68
 nodular lymphangitis, 818–19
 nodular skin lesions, 820–21
 nonexertional (gradual) heat stroke, 191
 nonfreezing cold injury, 194
 nonsteroidal anti-inflammatory drugs (NSAIDs), 182, 343
 nontyphoidal salmonellosis, 306–8
 Norfolk Island (Australia), 68
 norovirus, 94
 cruise ship travel and, 624
 fever in returned travelers, 802t
 general discussion, 406–7
 mass gatherings and, 677
 rapid diagnostic tests, 786, 787t
 shellfish consumption and, 231–32
 travelers’ diarrhea, 85, 86
 North America
 anthrax infection in, 250
 brucellosis in, 257
 chikungunya in, 341, 626, 816
 dengue in, 351f
 echinococcosis in, 482–83
 hantaviruses in, 450
 hepatitis E in, 379
 lung flukes in, 490
 Lyme disease in, 819
 paralytic shellfish poisoning in, 231
 rickettsial diseases in, 299t
 Zika virus in, 468
 North Asian tick typhus, 299t

North Korea, 68, 298, 299t, 317t, 396t, 488
 North Macedonia, 68
 Northern Mariana Islands, 68
 Norway, 68, 438–39
 nosodes (homeopathic vaccines), 123
 novel influenza A viruses, 384, 385–87, 388
 nucleic acid amplification tests (NAATs)
 campylobacteriosis, 260–61
 COVID-19, 346–47
 influenza, 388
 rapid diagnostic tests, 785t
 tick-borne encephalitis, 440
 tuberculosis, 319
 varicella (chickenpox), 444
 yellow fever, 455
 Zika virus, 469
 nutritional supplements, 37

O

obstructive sleep apnea (OSA), 209t, 210
 occupational hazards
 for aircrew, 645–46
 for humanitarian aid workers, 655–56
 for international business travelers, 639, 640
 international student travel, 669–70
 Oceania
 dengue in, 353f
 Henipavirus in, 361
 leptospirosis in, 276
 malaria in, 502, 505f
 nontyphoidal *Salmonella* in, 306
 off-label use, 111, 136, 675b
 ofloxacin, 88t
 oil of lemon eucalyptus (OLE), 123, 211–12, 213, 584–85
 Old World arenaviruses, 449, 451
 Oman, 68, 401
 Omsk hemorrhagic fever, 448
 onchocerciasis (river blindness), 486–87, 524–25, 793–94, 821, 822
 oncology tourism, 560
 ondansetron, 582, 629
 One Health approach, 222–24
 open itineraries, long-term travelers with, 666
 opioid drugs, 685
 opioid treatment programs (OTPs), 178
 opioid use disorder (OUD), 177–78
 opisthorchiasis, 488, 489, 746
 oral rehydration solution (ORS), 89–90, 577, 583
 organ transplant recipients, 153, 154–55, 156, 182, 459. *See also* immunocompromised travelers
 organ transplant tourism, 561
 organic (chemical) UV filters in
 sunscreens, 183–84, 185b, 185–86, 186b
 Organization of Teratology Information Specialists (OTIS), 576–77
Orientia species, 297, 299t, 303, 304–5, *See also* rickettsial infections
 oropharyngeal anthrax, 251
 Oroya fever, 255, 256

orthopoxvirus infections, 433–37, 435t, *See also* cowpox; monkeypox; smallpox; vaccinia virus
 oseltamivir, 27, 388–90, 389t
 overdose, reducing risk for, 177
 overseas medical examination for international adoption, 596
 oxygen administration
 for altitude illness, 206, 207, 210
 in-flight, 606
 in treatment of diving disorders, 202–3
 oxygen toxicity, when scuba diving, 202

P

Pacific Islands
 angiostrongyliasis in, 473
 dengue in, 350
 eosinophilic meningitis in, 473
 Japanese encephalitis in, 593
 lymphatic filariasis in, 486
 Zika virus in, 468
 pain
 online resources for travelers with chronic, 165t
 during pregnancy, management of, 569
 Pakistan
 cholera in, 263
 circulating vaccine-derived poliovirus in, 410
 Japanese encephalitis in, 396t
 multidrug-resistant tuberculosis in, 317t
 poliomyelitis in, 409
 tetanus in, 312
 typhoid fever and paratyphoid fever in, 325, 326–27
 viral hemorrhagic fever diseases in, 449
 yellow fever and malaria information for, 68
 Palau, 68, 186b, 186, 211, 356, 592
 Panama, 68–69, 280–81, 298–302, 454t
 pandemics, travel during, 114–15, 115b
 panel physicians, 835b
 Papua New Guinea, 69, 269, 280, 312, 317t, 396t, 519
 papular skin lesions, 821–22
Paracoccidioides species, 809
 paragonimiasis, 490–91, 783, 794
 Paraguay, 69–70, 269, 454t
 parainfluenza virus, 809, 811
 paralytic polio, 410
 paralytic rabies, 414–15, 415b
 paralytic shellfish poisoning (PSP), 231, 232
 paraphenylenediamine, 819
 parasitic infections. *See also* antimicrobial resistance; helminths
 causing travelers' diarrhea, 85, 86, 90, 812–13
 counseling LGBTQ+ travelers on, 118
 delusional parasitosis, 825–26, 827b
 fever in returned travelers, 800t
 health care workers and, 650
 in long-term travelers, 665
 lymphocutaneous or sporotrichoid spread of, 818–19
 posttravel evaluation, 783
 during pregnancy, 572
 pretravel consultation, 20t
 rapid diagnostic tests, 788t
 in recreational water, 96
 in refugees, 837
 screening asymptomatic returned travelers for, 792–95
 screening immigrants, migrants and refugees for, 838, 839t
 screening internationally adopted children for, 599
 sexually transmitted, 832t
 water disinfection to remove, 100f, 100–1, 102, 103
 waterborne, 97
 paratyphoid fever
 antimicrobial resistance, 802
 clinical presentation, 325
 diagnosis, 325–26
 epidemiology, 325
 fever in returned travelers, 799t, 800t
 incubation period, 780t
 India travel and, 760
 infectious agent, 324
 Nepal travel and, 766
 prevention, 327–29
 relapse, reinfection and chronic carriage, 327
 transmission, 325
 treatment, 326–27
 visiting friends and relatives travel and risk for, 673
 parents, preparing for international adoption, 595–96
 parvovirus, 342, 469
Pasteurella species, 218t, 823
 pedestrian hazards, 622t, *See also* road and traffic safety
 pediatric illnesses. *See* children
 penicillin, 267, 285, 313
 pentavalent antimonials, 500
 peramivir, 27, 388–90, 389t
 percutaneous exposure, health care workers, 650–51
 peripheral nervous system (PNS) disorders, 167t
 permethrin cream, 529
 permethrin-treated materials, 212–14, 509, 584
 pernio (chilblains), 194
 personal protective equipment (PPE), 196, 646, 649–50
 pertussis, 290–91, 626, 802t, 809
 pertussis vaccines, 247t, 811. *See also* diphtheria-tetanus-acellular pertussis vaccine; tetanus-diphtheria-acellular pertussis vaccine
 for adoptive parents and families, 595–96
 for children, 589–90
 for international adoptees, 601
 overview, 290–91
 pertussis incidence and, 290

- Peru
 antimicrobial resistance in, 805
 availability and quality of medical care, 743
 Carrión disease in, 255
 cutaneous leishmaniasis in, 496
 destination overview, 738, 739f
 echinococcosis in, 482–83
 environmental hazards and risks, 742
 gnathostomiasis in, 820
 high-elevation travel destinations in, 203, 205
 infectious disease risks, 738–42
 malaria in, 70
 medical tourism in, 560, 743
 melioidosis in, 280–81
 motor vehicle crash death rate in, 620t
 multidrug-resistant tuberculosis in, 317t
 safety and security, 742–43
 yellow fever information for, 70, 454t, 455
- pets
 bringing into US, 224–27, 604
 international pet rescue and adoption, 225
 traveling with, 602–3, 604
- pharmacies
 in China, 758
 compounding, 584
- pharyngeal plague, 292, 293. *See also* plague
- Philippines, 70–73, 231, 236–37, 317t, 396t, 450, 530, 620t
- phosphodiesterase-5 inhibitors, 208, 208t
- photokeratitis (snow blindness), 188
- photo-onycholysis, 183
- photosensitivity disorders, 183
- photosensitizing medications, 182, 822
- physical (inorganic) UV filters in sunscreens, 183–84, 185b, 186b, 186, 588
- physician-assisted suicide (PAS), 561
- phytophotodermatitis, 183, 819
- picaridin-containing insect repellents, 211, 212, 213, 584–85
- Picornavirus Laboratory (CDC), 358–59
- pilots. *See* aircrew
- pinworm infections (enterobiasis), 484–85, 794
- Pitcairn Islands (UK), 73
- plague, 224, 330
 animal reservoirs and mechanisms, 218t
 China travel and, 754–55
 federal public health authority, 630–31, 631t
 fever in returned travelers, 800t, 802t
 general discussion, 292–93
 health care workers and, 650
 vaccine, 247t, 293
Plasmodium species, 84, 501–2. *See also* malaria
- PMD-containing insect repellents, 211–12, 584–85
- pneumococcal disease, 294–95, 800t, 809
- pneumococcal vaccines, 24, 247t, 811
 for aircrew, 641
 for children, 589–90
 for immunocompromised adults, 143t, 145, 148
 for international adoptees, 601
 overview, 294–95
 pretravel consultation, 17t
 spacing of, 25–26
 vaccine–vaccine interactions, 30–31
- pneumonia. *See also* respiratory illnesses
 community-acquired, 252, 294
 meningococcal, 284
 pneumococcal, 294
 treatment, 811
- pneumonic plague, 292, 293, 800t, 802t, *See also* plague
- pneumothorax, 200
- point-of-care (POC) testing. *See* rapid diagnostic tests
- Poland, 73, 438–39, 488
- poliomyelitis
 China travel and, 752
 clinical presentation, 409
 diagnosis, 410
 epidemiology, 408–9
 fever in returned travelers, 802t
 infectious agent, 408
 transmission, 408
 treatment, 410
- poliomyelitis vaccines, 24, 335t, 411t, 589
 for adoptive parents and families, 595–96
 before African safaris, 693
 for aircrew, 641
 allergies to components of, 27–28
 for children, 589–90, 592
 general discussion, 410–12
 Hajj pilgrimage requirements, 701
 for health care workers, 647–48
 for immunocompromised adults, 143t, 153
 for India travel, 759
 for international adoptees, 601
 for last-minute travelers, 109
 during pregnancy, 570–71
 pretravel consultation, 17t
 for resource-limited travelers, 127
- political unrest, 708, 720, 730, 736, 743, 748, 757, 764, 774
- pollution. *See* air quality and air pollution
- Pontiac fever, 273, 274–75
- poorly regulated medications and products, avoiding, 557b, 557–59, 558b, 559t, 563
- pornography, child, 687
- Portugal, 73, 231, 269, 274, 299t, 496, 534, 806
- postexposure prophylaxis (PEP)
 B virus, 340, 823
 for health care workers, 651
 hepatitis A virus, 367
 high-risk animal bites and scratches, 220
 HIV, 382
 influenza, 389t, 390
 malaria, 517, 518
- measles, 431
 meningococcal disease, 288–89
 pertussis, 291
 plague, 293
 in pregnancy, 570
 rabies, 109, 416, 420–22, 421t, 425, 571, 593, 783, 823
 varicella (chickenpox), 445–46
- post-immunization adverse event reporting, 30
- postinfectious irritable bowel syndrome (PI-IBS), 86, 813
- posttraumatic stress disorder (PTSD), 115
- posttravel evaluation, 1
 antimicrobial resistance, 806–7
 common syndromes after travel, 782–83
 complete travel history, 778t
 dermatologic conditions, 814–24, 815t
 fever in returned travelers, 798–802, 800t, 802t, 803b
 general management, 783–84
 history of present illness, 777–82
 humanitarian aid workers, 657
 immigrants, refugees and other migrants, 833–34, 834t
 incubation period of common infections, 777–79, 780t, 781t, 798
- international business travelers, 639–40
- international student travelers, 671
- last-minute travelers, 111b
- long-term travelers, 666
- military personnel, 660
- new-arrival health assessment, 837–42, 839t, 841t
- One Health approach and, 223
- overview, 777
- persistent diarrhea in returned travelers, 812–14
- rapid diagnostic tests, 785–89, 785t, 787t, 788t
- respiratory illnesses, 809–11
- screening asymptomatic returned travelers, 790–97, 796t
- sexually transmitted infections, 828
- symptoms and illness severity, 782
- posttravel mental health issues, 115
- posttravel tuberculosis testing, 319, 323
- powdered infant formula, 581
- praziquantel, 531, 535
- preexposure prophylaxis (PrEP)
 Ebola virus, 452
 HIV, 382
 orthopoxvirus infections, 437
 rabies, 26, 28t, 109, 219, 417, 418t, 420, 420t, 423–25, 571, 593, 663, 697, 719–20
- pregnancy
 air travel during, 574, 606
 aircrew, 646
 anthrax treatment and prevention during, 253
 brucellosis in, 257
 chikungunya virus in, 341, 342
 cholera treatment in, 264
 coccidioidomycosis in, 544
 contraindications to travel during, 568b, 568

- COVID-19 in, 571–72
- cruise ship travel during, 574, 628
- dengue in, 350, 355
- Ebola virus in, 448
- emergency care, planning for, 568–69
- environmental health concerns, 573
- hepatitis A vaccination in, 367
- hepatitis A virus in, 572
- hepatitis B vaccination in, 374
- hepatitis E virus in, 378–79, 572, 759–60
- high elevation travel in, 209t, 210
- humanitarian aid workers, 656
- infectious disease concerns, 571–73
- influenza in, 385b
- insect repellents during, 213
- Japanese encephalitis vaccination, 399
- listeriosis during, 572
- malaria chemoprophylaxis in, 510, 513, 517–19, 519t, 571, 664–65
- malaria in, 571, 673
- measles vaccination during, 431
- medications for traveling when, 569
- meningococcal vaccines during, 288
- motion sickness in, 628–29
- orthopoxvirus infections in, 435
- parasitic infections in, 572
- pertussis in, 291
- pertussis vaccination in, 291
- polio vaccination in, 412
- pretravel consultation, 567–71, 568b
- Q fever in, 296–97
- rabies vaccination during, 421
- rickettsial disease treatment, 304–5
- rubella transmission in, 426, 427
- screening asymptomatic returned travelers, 796t
- tetanus in, 312
- tetanus vaccination in, 313
- toxoplasmosis in, 536, 572
- transportation considerations, 573–74
- travel health kits for, 571
- travelers' diarrhea in, 572
- typhoid vaccination in, 329
- vaccinations during, 569–71
- varicella (chickenpox) transmission in, 443
- varicella vaccination in, 445
- varicella-zoster immune globulin in, 445–46
- vectorborne infections in, 572–73
- venous thromboembolism, 613t
- viral hemorrhagic fever diseases in, 451
- visiting friends and relatives travel during, 673
- water disinfection during, 102
- yellow fever in, 453–54
- yellow fever vaccination in, 458, 461
- Zika virus in, 468, 469, 470, 572–73, 673, 719, 734, 817
- preservatives in vaccines, allergic reactions to, 27–28
- presumptive antirelapse therapy (PART). *See* terminal malaria prophylaxis
- pretravel consultation, 1
- for adoptive parents and families, 595–96
- for adventure travelers, 681–83, 683b
- before African safaris, 693
- for aircrew, 640–44
- assessing individual risk, 15–16
- for children, 580b, 580
- communicating risk in, 16
- complementary health approaches, 126
- educating to change behavior, 20–21, 20t, 21b
- for health care workers, 647–49, 649b
- for highly allergic travelers, 172
- for humanitarian aid workers, 655–57, 656b
- for immigrants, refugees and other migrants, 834–37
- for immunocompromised travelers, 140b, 140–41
- insurance options, discussing, 550, 551b
- for international business travelers, 637–38
- before international student travel, 668–69
- for last-minute travelers, 108–11, 111b
- for long-term travelers, 661, 663–64
- malaria chemoprophylaxis decisions, 509–10, 510b
- malaria risk assessment, 509
- managing risk, 16–19, 17t, 19b
- for mass gatherings, 678–80, 679b
- medical history and travel risk assessment, 14t
- medical tourists, 561–62
- mental health evaluation in, 112–13
- One Health approach and, 223
- overview, 13, 14–15
- for pregnant travelers, 567–71, 568b
- for resource-limited travelers, 126–29
- for scuba divers, 198–99
- sex while traveling, discussing, 686
- sexually transmitted infections, discussing, 828, 832
- special health risks, addressing, 19–20
- telemedicine, 130–32
- travel medicine specialists, 13–14
- for travelers with chronic diseases, 163–64
- for visiting friends and relatives travel, 673–76, 674b, 675b
- yellow fever vaccination, 460
- pretravel tuberculosis testing, 318–19, 322–23
- prickly heat (miliaria or heat rash), 191
- primaquine, 4–5
- for breastfeeding patients, 519, 577
- changing medications due to side effects, 520t
- for children, 518
- G6PD deficiency and, 84
- in HIV patients, 154
- for immunocompromised travelers, 154–55
- for last-minute travelers, 110
- malaria chemoprophylaxis, 511t, 514t, 517, 518, 519t, 520t
- for military personnel, 659–60
- off-label use, 136
- for pregnant travelers, 518, 571, 665
- risk management issues, 136
- primary anthrax meningitis, 251
- primary care providers (PCPs) and delusional parasitosis, 826
- discussing medical tourism with, 561–62
- medical clearance for adventure travelers, 681
- and visiting friends and relatives travel, 673, 674b
- primary malaria prophylaxis for military personnel, 659
- primaquine for, 517
- tafenoquine for, 517–18
- primates. *See also* monkeys
- bringing into US, 224, 226–27
- preventing bites from, 416–17
- products made from, 227
- yellow fever transmission, 453
- probiotics, 87, 122–23, 125
- professional aid workers. *See* humanitarian aid workers
- professional organizations, travel medicine, 10–11
- proguanil, 519t. *See also* atovaquone-proguanil
- prostitution, 720, 723, 761, 772. *See also* sexually transmitted infections
- protease inhibitors, 31–33, 34
- PROTECT Act, 688
- protozoal parasites
- causing travelers' diarrhea, 85, 86, 90
- persistent diarrhea in returned travelers, 812–13
- during pregnancy, 572
- screening asymptomatic returned travelers for, 794–96
- water disinfection to remove, 100f, 100–1, 102, 103
- waterborne, 97
- pruritus, 819
- Pseudomonas aeruginosa* (hot tub folliculitis), 96, 805–6, 824
- psittacosis, 218t, 800t
- psychiatric disturbances, malaria chemoprophylaxis and, 513, 517–18
- psychiatric emergencies, 112, 113
- psychological evacuations, 112. *See also* mental health
- psychotropic medications, 34, 113–14
- public lice, 118. *See also* sexually transmitted infections
- public health interventions, 630–33, 631t, 632b
- Puerto Rico (US), 73, 211, 276, 280–81, 342, 350, 356, 592
- pulmonary barotrauma, 200
- pulmonary edema, 201, 206–7
- pulmonary embolism (PE), 798
- adventure travel and, 681
- air travel and, 607
- differential diagnosis, 810
- after medical procedures, 562
- overview, 612, 613, 614
- risk management issues, 137
- purpura, 819
- pyoderma (bacterial skin infections), 814, 817–18, 821



pyrantel pamoate, 484–85
pyridoxine (vitamin B₆), 125
pyrimethamine, 536

Q

Q fever, 247*t*, 296–97, 562, 800*t*, 809
Qatar, 73, 401
QT-prolonging agents, 33
quadrivalent meningococcal conjugate (MenACWY) vaccine, 285–88, 286*t*. *See also* meningococcal vaccines
quarantine, 349, 630–31, 631*t*
quarantine stations (CDC), 631, 632, 633
Queensland tick typhus, 299*t*
queer travelers. *See* LGBTQ+ travelers

R

rabies, 16

adventure travel and, 683*b*
African safaris and, 697
animal bite avoidance, 416–17
animal reservoirs and mechanisms, 217, 218*t*
animal vaccination against, 225–26
Brazil travel and, 719–20
Burma travel and, 747–48
in children, 416, 585–86
China travel and, 754*b*, 756
clinical presentation, 414–15
diagnosis, 415*b*, 415
Dominican Republic travel and, 724
epidemiology, 414
fever in returned travelers, 800*t*
Haiti travel and, 729
high-risk animal bites and scratches, 220
India travel and, 763–64
infectious agents, 413–14
international pet rescue and adoption and, 225
live animal importation and, 225
Mexico travel and, 735
Nepal travel and, 768–69
One Health approach, 223
Peru travel and, 742
postexposure prophylaxis, 109, 416, 420–22, 421*t*, 425, 571, 593, 783, 823
posttravel evaluation, 783
preexposure prophylaxis, 26, 28*t*, 109, 219, 417, 418*t*, 420, 420*t*, 423–25, 571, 593, 663, 697, 719–20
pretravel consultation, 20*t*
prevention, 416–22, 423–25
South Africa travel and, 707
Tanzania travel and, 713
Thailand travel and, 773–74
transmission, 414
treatment, 416
wound management, 417, 423
rabies immune globulin (RIG), 417, 420–21, 421*t*, 423, 424, 707
rabies vaccine, 335*t*
allergies to components of, 27–28
Burma travel and, 747–48
for children, 593

for immunocompromised adults, 143*t*, 152
interactions between drugs and, 31
for last-minute travelers, 109
missed doses and boosters, 26
for postexposure prophylaxis, 420–22, 421*t*
for preexposure prophylaxis, 417, 418*t*, 420*t*
during pregnancy, 571
pretravel consultation, 17*t*
for resource-limited travelers, 128
scheduling, 28*t*
radiation exposure, 197–98, 574, 645, 646
radios, handheld, 684
ramelteon, 618
rapid diagnostic tests (RDTs)
for cholera, 263–64, 787*t*
for clinical syndromes, 786–87, 787*t*, 788*t*
diagnostic testing performed during travel, 788–89
future directions, 789
for HIV, 381, 785*t*, 786, 787*t*
for influenza, 388, 785*t*, 786, 787*t*
for malaria, 507, 785*t*, 786, 787*t*, 788
overview, 785–86, 785*t*
for respiratory illnesses, 785*t*, 786, 787*t*, 788*t*, 811
for typhoid fever, 326, 789
rash, 815*t*
and fever in returned travelers, 800*t*, 802*t*, 816–17
in measles, 429
in monkeypox, 436
in rubella, 426
in scabies, 528, 529
in smallpox, 435–36
in strongyloidiasis, 533
in varicella (chickenpox), 443–44
rat lungworm, 473–74
reactive arthritis, 86, 260, 310, 331
recluse spiders, 822–23
recombinant influenza vaccine (RIV), 29, 390–91
recombinant zoster vaccine (RZV), 29, 143*t*, 153. *See also* varicella vaccine
recreational water
precautions for, 96, 155
water-related injuries and drowning, 587
recurrent business travelers, 636*t*.
See also international business travelers
recurring last-minute travelers, 111
red tides, 230, 231–32
reduviid bugs, 540
refugees
defined, 835*b*
health examination and intervention requirements for, 833–34, 834*t*
new-arrival health assessment, 841–42
overview, 833–34, 834*t*
pretravel health assessment, 836–37
rehab tourism, 178*b*, 178–79, 561
rehydration, 190, 191, 202, 264, 269–70, 583

relaxation techniques, 124
relief workers. *See* humanitarian aid workers
religious travel, 233–34, 764. *See also* Hajj pilgrimage
religious unrest in India, 764
remains, human, 240–41
remote consultations. *See* telemedicine
renal impairment, 167*t*, 190, 510
repellents, insect. *See* insect repellents
reporting illness and death during travel, 630–33, 631*t*, 632*b*
reproductive health of aircrew, 646
Republic of the Congo (Congo-Brazzaville), 51, 434, 450, 454*t*, 463*t*, 537
rescue, international pet, 225
resource-limited travelers, 126–29
respirators, 196, 320, 349, 650
respiratory diphtheria, 266, 267
respiratory droplet-transmitted infections, health care workers and, 650
respiratory illnesses
African safaris, risk for during, 695
air pollution and, 768
Brazil travel and, 717
Burma travel and, 746–47
China travel and, 752–53
clinical presentation, 810
cruise ship travel and, 624–26
diagnosis, 810–11
Dominican Republic travel and, 723
epidemiologic considerations, 809–10
fever in returned travelers, 800*t*, 802*t*
Haiti travel and, 728
Hajj pilgrimage and, 701–2
India travel and, 760–61
infectious agents, 809
Mexico travel and, 733–34
mold exposure, 196–97
Nepal travel and, 767
overview, 809
Peru travel and, 740–41
posttravel evaluation, 783
pretravel consultation, 20*t*
prevention, 811
rapid diagnostic tests, 785*t*, 786, 787*t*, 788*t*, 811
scuba diving and, 198–99
South Africa travel and, 705–6
special considerations for travelers with, 167*t*
Tanzania travel and, 711
Thailand travel and, 772
treatment, 811
respiratory syncytial virus, 809, 811
Reston virus, 448, 450
returning travelers. *See* posttravel evaluation
Réunion, 73
reverse culture shock, 115
rheumatologic diseases, 167*t*
rhinoviruses, 809
ribavirin, 451
ricketsial diseases, 224
African safaris and, 696
animal reservoirs and mechanisms, 218*t*

- Brazil travel and, 718–19
 clinical presentation, 303–4
 diagnosis, 304
 epidemiology, 298–303
 febrile travelers with rashes, 817
 fever in returned travelers, 799*t*, 800*t*, 803*b*
 incubation period, 780*t*
 India travel and, 763
 infectious agents, 297–98
 Mexico travel and, 734–35
 posttravel evaluation, 781, 782
 prevention, 305
 skin infections from, 815*t*
 South Africa travel and, 706–7
 transmission, 298, 299*t*
 treatment, 304–5
- Rickettsial Zoonoses Branch (CDC), 296
 rickettsialpox, 298, 299*t*, 817
 rickettsiosis, 299*t*, 469
 rifampin, 258, 304–5, 320
 rifamycin SV, 35*t*, 36, 88, 88*t*, 90*b*, 90, 155
- rifaximin, 136
 for children, 582
 for immunocompromised travelers, 155
 interactions with vaccines, 36
 in treatment of diarrheagenic *E. coli*, 271
 in treatment of travelers' diarrhea, 88–89, 88*t*, 90*b*, 90
- Rift Valley fever (RVF) virus, 448, 449, 450, 451, 452, 696
- ringworm (tinea), 761–62, 819–20
- risk perception, 5, 23–24
- river blindness (onchocerciasis), 486–87, 524–25, 793–94, 821, 822
- road and traffic safety, 666
 African safaris and, 697
 Brazil travel and, 720
 Burma travel and, 748
 for children, 587
 China travel and, 757
 Dominican Republic travel and, 725
 general discussion, 619–22, 620*t*, 622*t*
 Haiti travel and, 730
 Hajj pilgrimage and, 703
 India travel and, 764–65
 long-term travelers and, 666
 Mexico travel and, 736
 Nepal travel and, 769
 Peru travel and, 743
 road traffic injuries, 235, 236*f*, 236
 South Africa travel and, 708
 Tanzania travel and, 713
 Thailand travel and, 774–75
- Rocky Mountain spotted fever (RMSF)
 Brazil travel and, 718–19
 clinical presentation, 303, 304
 epidemiology, 298–302
 fever and rash in returned travelers, 817
 infectious agent, 297–98
 Mexico travel and, 734–35
 transmission, 299*t*
- rodents
 bringing into US, 224, 227
 diseases spread by, 218*t*, 220
- Leptospira* species and leptospirosis, 276
 products made from, 227
 and viral hemorrhagic fever diseases, 449
- Romania, 73, 375, 438–39, 488
 Ross River virus, 800*t*
 rotavirus, 85, 786, 787*t*
 rotavirus vaccine, 17*t*, 24, 26, 153, 589–90, 601
- roundworm infections. *See* ascariasis
- route-finding equipment, 684
- rubella, 342, 469
 cruise ship travel and, 626
 general discussion, 426–27
 screening internationally adopted children for, 601
 vaccines, 335*t*, 589–90, 601
- rubeola. *See* measles
- Russia
 avian influenza in, 387
 hepatitis C virus in, 375
 Japanese encephalitis in, 393, 396*t*
 liver flukes in, 488
 Lyme disease in, 278–79
 multidrug-resistant tuberculosis in, 317*t*
 plague vaccine in, 293
 radiation exposure in, 197
 rickettsial diseases in, 299*t*, 303
 screening for children adopted from, 599
 tick-borne encephalitis in, 438–39
 viral hemorrhagic fever diseases in, 449
 yellow fever and malaria information for, 73
- Rwanda, 73, 302, 455*t*, 692, 693*f*
- S**
- Saba (Netherlands), 73
- Sabia virus (Brazilian hemorrhagic fever), 448, 449
- safaris. *See* African safaris
- safe sex, 118, 670. *See also* sexually transmitted infections
- safety. *See also* road and traffic safety
 adventure travel kits, 685*b*, 685
 African safaris, 697
 in Brazil, 720
 breast pump, 576, 579
 in Burma, 748
 of children during air travel, 586
 in China, 757
 discussing in pretravel consultation, 20*t*
 in Dominican Republic, 725
 in Haiti, 730
 Hajj pilgrimage, 703
 of humanitarian aid workers, 654–55
 in India, 764–65
 of LGBTQ+ travelers, 120
 in Mexico, 736
 in Nepal, 769
 in Peru, 742–43
 in South Africa, 707–8
 in Tanzania, 713
 in Thailand, 774–75
 training, before adventure travel, 682
 when overseas, 232–35
- Saint Barthelemy (France), 73
- Saint Helena (UK), 73–74
- Saint Kitts (Saint Christopher) and Nevis, 74
- Saint Lucia, 74, 530
- Saint Martin (France), 74
- Saint Pierre and Miquelon (France), 74
- Saint Vincent and the Grenadines, 74
- salicylates, 36
- Salmonella* species, 306. *See also* paratyphoid fever; typhoid fever
 animal reservoirs and mechanisms, 218*t*
 antimicrobial resistance, 88, 804, 806
 in children, 582
 counseling LGBTQ+ travelers on, 118
 nontyphoidal salmonellosis, 306–8
 shellfish consumption and, 231–32
 travelers' diarrhea, 85
 zoonotic diseases, 223, 227
- salt [sodium chloride] electrolysis, disinfection of water with, 103
- Samoa (formerly Western Samoa), 74
- San Marino, 74
- sand, water disinfection with, 101, 102*f*
- sand fleas, 821
- sand flies, 211, 215, 496, 498, 500
- sandstorms, in China, 755
- São Tomé and Príncipe, 74, 455*t*
- sarcocystosis, 526–27, 783, 800*t*
- sargassum seaweed exposure, 735
- satellite communication devices, 657, 684
- Saudi Arabia. *See also* Hajj pilgrimage
 meningococcal disease in, 283
 meningococcal vaccine requirements, 110, 288, 589, 591
 MERS in, 401, 702
 Rift Valley fever in, 450
 typhoid fever and paratyphoid fever in, 326
 yellow fever and malaria information for, 74
- scabies, 528–29, 815*t*, 821–22
- schistosomiasis, 16, 20*t*, 101*t*
 African safaris, risk for during, 695
 Brazil travel and, 718
 Burma travel and, 747
 in children, 586
 China travel and, 753
 Dominican Republic travel and, 723
 fever in returned travelers, 799*t*, 800*t*
 general discussion, 530–32
 incubation period, 777–79, 781*t*
 in long-term travelers, 665
 posttravel evaluation, 782, 783
 during pregnancy, 572
 recreational water precautions, 96
 in refugees, presumptive treatment of, 837
 screening asymptomatic returned travelers for, 793–94, 795–96, 796*t*, 797
 screening immigrants, migrants and refugees for, 839*t*
 screening internationally adopted children for, 597, 598*t*
 South Africa travel and, 706
 Tanzania travel and, 711
 treatment, 793–94



- scombroid, 230
- scorpions, bites and stings from, 221, 735
- Scotland, 231
- scratches from animals. *See* bites and scratches from animals
- scrub typhus. *See also* rickettsial infections
- clinical presentation, 303, 304, 817
 - epidemiology, 303
 - fever in returned travelers, 799*t*, 800*t*
 - India travel and, 763
 - infectious agent, 297–98
 - transmission, 299*t*
- scuba diving
- and air travel, 202, 607
 - diving disorders, 199*b*, 199–202, 201*t*
 - injuries related to, 237
 - overview, 198
 - preparing for dive travel, 198–99
 - preventing diving disorders, 202
 - Tanzania travel and, 713
 - treatment of diving disorders, 202–3
- seasickness, 626
- security. *See* safety
- security screening for travelers with disabilities, 161
- selective serotonin reuptake inhibitors (SSRIs), 33
- self-treatable conditions, 16–19, 19*b*
- Senegal, 74–75, 450, 454*t*
- Sennetsu fever, 299*t*, 303
- septicemic plague, 292, 293. *See also* plague
- Serbia, 75, 438–39
- service animals, 162, 166, 225, 602–4
- service members, health care for, 658–60
- severe acute respiratory syndrome (SARS) coronaviruses, 97, 225, 226, 630–31, 631*t*. *See also* coronavirus disease 2019
- severe pulmonary hemorrhagic syndrome, 276
- sex and travel, 21*b*, 685–88
- sex tourism, 686–87, 723, 772
- sex trafficking, 686, 687–88
- sexual exploitation of children, 687–88
- sexual violence and assault, 687
- sexually transmitted infections (STIs), 21*b*
- aircrew risk for, 643
 - antimicrobial resistance, 688–89, 828, 832
 - Brazil travel and, 717–18
 - Burma travel and, 747
 - China travel and, 753
 - clinical presentation, 828–32
 - Dominican Republic travel and, 723
 - epidemiology, 688–89, 828, 829*t*, 831*t*, 832*t*
 - fever in returned travelers, 803*b*
 - Haiti travel and, 728
 - India travel and, 761
 - after international student travel, 671
 - LGBTQ+ travelers, counseling, 117–18
 - long-term traveler risk for, 663
 - Mexico travel and, 734
 - overview, 828
- Peru travel and, 741
- prevention, 689, 832
- rapid diagnostic tests, 787*t*
- risk for when traveling, 685–86
- screening asymptomatic returned travelers for, 791–92, 796–97, 796*t*
- screening immigrants, migrants and refugees for, 838, 839*t*
- screening internationally adopted children for, 600
- sex tourism and, 686–87
- sexual violence and assault and, 687
- skin ulcers in, 823
- South Africa travel and, 706
- Tanzania travel and, 711
- Thailand travel and, 772
- treatment, 832
- Seychelles, 75, 292
- shade shelters, 187*b*, 188–89
- shellfish poisoning, 230–32
- Shewanella* infection, 824
- Shiga toxin-producing *E. coli* (STEC), 268, 269, 270*t*, 271
- Shiga toxin-producing *Shigella*, 309, 310
- shigellosis and *Shigella* species
- animal reservoirs and mechanisms, 218*t*
 - antimicrobial resistance, 88, 804, 806
 - in children, 582
 - counseling LGBTQ+ travelers on, 118
 - general discussion, 309–11
 - shellfish consumption and, 231–32
 - travelers' diarrhea, 85, 87, 88
- shingles (herpes zoster), 24, 442, 443
- short-term business travel, 636*t*, *See also* international business travelers
- short-term rescue insurance, 682
- Siberian tick typhus, 299*t*
- Sichuan giant panda reserves, China, 754*b*
- Sierra Leone, 75, 434, 449, 450, 454*t*, 463*t*, 699–700
- sign language interpreters on aircraft videos, 161
- silver, disinfection of water with, 103
- simian retroviruses, 218*t*
- Singapore, 75, 280, 358, 361, 396*t*, 560
- Sint Eustatius (Netherlands), 75
- Sint Maarten (Netherlands), 75
- sinus barotrauma, 200
- skin allergies, 173*b*. *See also* allergies; highly allergic travelers
- skin and soft tissue infections (SSTI), 823–24
- skin damage and skin cancer, 182–83, 645
- skin exposure, health care workers, 650–51
- skin infections. *See* dermatologic conditions
- skin lesion morphology, 816*b*, 818–23
- sleep apnea, 165*t*, 681
- sleep hygiene, 618
- sleep medications, 617, 644
- sleep problems
- aircrew risk for, 646
 - complementary or integrative health approaches, 124
- sleeping sickness. *See* African trypanosomiasis
- Slovakia, 75, 438–39
- Slovenia, 75, 438–39
- smallpox, 432, 435*t*
- clinical presentation, 435–36
 - epidemiology, 434
 - federal public health authority, 630–31, 631*t*
 - infectious agent, 433
 - transmission, 433
 - vaccines, 27–28, 154, 335*t*, 437, 577
- smallpox/monkeypox (JYNNEOS) vaccine, 142*t*, 152, 154
- Smart Traveler Enrollment Program (STEP), 164*b*, 233, 238*b*, 639, 655, 679*b*, 730, 756, 764, 774
- snail fever. *See* schistosomiasis
- snakebites, 220, 221, 720, 735, 748, 764
- snow blindness (photokeratitis), 188
- soil-transmitted helminths (STH). *See also* ascariasis; hookworm infections; strongyloidiasis; trichuriasis
- general discussion, 494–95
 - India travel and, 762
 - in refugees, presumptive treatment of, 837
 - screening immigrants, migrants and refugees for, 839*t*
- soil-transmitted infections
- African safaris, risk for during, 695
 - Brazil travel and, 718
 - Burma travel and, 747
 - in children, 586
 - China travel and, 753
 - Dominican Republic travel and, 723
 - Haiti travel and, 728
 - India travel and, 762
 - Mexico travel and, 734
 - South Africa travel and, 706
 - Tanzania travel and, 711
 - Thailand travel and, 772–73
- solar disinfection (SODIS), 103–4
- Solomon Islands, 75
- Somalia, 75–76, 312, 317*t*, 450, 455*t*, 499, 654
- South Africa
- anthrax transmission in, 251
 - availability and quality of medical care, 708
 - destination overview, 704, 705*f*
 - diphtheria in, 266
 - environmental hazards and risks, 707
 - finding health care providers in, 554*b*
 - game parks in, 692, 694*f*, 704, 705*f*
 - infectious disease risks, 704–7
 - medical tourism in, 708
 - multidrug-resistant tuberculosis in, 317*t*
 - rickettsial diseases in, 298, 299*t*, 706–7
 - safety and security in, 707–8
 - travelers' diarrhea risk in, 269, 705
 - viral hemorrhagic fever diseases in, 449, 450, 707
 - yellow fever and malaria information for, 76

- South African tick typhus. *See* African tick-bite fever
- South America
- American trypanosomiasis in, 540, 600
 - angiostrongyliasis in, 473
 - anthrax infection in, 250
 - antimicrobial resistance in, 805
 - brucellosis in, 257
 - campylobacteriosis in, 260, 261
 - Carrión disease in, 254, 255
 - chikungunya virus in, 341, 626, 816
 - coccidioidomycosis in, 543–44
 - common causes of fever in, 799*t*
 - counterfeit drugs in, 557
 - cutaneous larva migrans in, 478
 - cutaneous leishmaniasis in, 496, 822
 - cyclosporiasis in, 479
 - cysticercosis in, 481
 - dengue in, 350, 351*f*
 - echinococcosis in, 482–83
 - giardiasis in, 491–92
 - hantaviruses in, 450
 - Henipavirus* in, 361
 - hepatitis A in, 363
 - hepatitis E in, 379
 - Japanese encephalitis in, 662
 - leptospirosis in, 276
 - lung flukes in, 490
 - malaria in, 501–2, 503*f*, 519
 - meningococcal disease in, 283
 - mucosal leishmaniasis in, 497
 - myiasis in, 821
 - plague in, 292
 - rabies in, 414
 - recreational water precautions, 96
 - rickettsial diseases in, 298–302, 299*t*, 303
 - Rocky Mountain spotted fever in, 817
 - screening for children adopted from, 599
 - shigellosis in, 309
 - taeniasis in, 534
 - travelers' diarrhea risk in, 269
 - typhoid fever and paratyphoid fever in, 325
 - UV filters in sunscreens available in, 184*b*
 - viral hemorrhagic fever diseases in, 449
 - visceral leishmaniasis in, 499
 - yellow fever in, 454, 455, 463*t*, 466*f*
 - Zika virus in, 468, 626
- South Georgia and South Sandwich Islands (UK), 77
- South Korea, 77, 298, 299*t*, 396*t*, 401, 438–39, 488, 620*t*
- South Sudan, 77, 312, 450, 454*t*, 463*t*, 499, 537, 654
- Spain
- carbapenemase-producing bacteria in, 805–6
 - cutaneous leishmaniasis in, 496
 - Ebola virus in, 450
 - Legionnaires' disease in, 274
 - Lyme disease in, 278–79
 - motor vehicle crash death rate in, 620*t*
 - rickettsial diseases in, 299*t*
 - shellfish poisoning in, 231
 - taeniasis in, 534
 - viral hemorrhagic fever diseases in, 449
 - visceral leishmaniasis in, 499
 - yellow fever and malaria information for, 77
- spatial repellents, 214
- spider bites, 221, 818, 822–23
- splenomegaly, internationally adopted children with, 599–600
- sporotrichoid spread of infection, 818–19, 823–24
- spotted fever group (SFG). *See also* rickettsial infections
- clinical presentation, 303–4
 - diagnosis, 304
 - epidemiology, 298–302
 - fever in returned travelers, 800*t*
 - incubation period, 780*t*
 - infectious agents, 297–98
 - skin infections from, 815*t*
 - transmission, 299*t*
- spray aerosol insecticides, 214
- spray insect repellents, 213*b*
- spray sunscreens, 187
- squamous cell carcinomas (SCCs), 182–83
- Sri Lanka, 77, 303, 396*t*
- stampedes, 703
- Staphylococcus* species
- antimicrobial resistance, 806, 822–23
 - bacterial skin infections, 817–18, 821, 822, 823
- status adjuster, 835*b*
- stings, 220–21, 683*b*, 735
- Streptococcus pneumoniae*. *See* pneumococcal disease; pneumococcal vaccines
- Streptococcus* species
- bacterial skin infections, 817, 818, 821, 822, 823
 - group A, 342, 469, 811
- stressors of travel
- for children, 588
 - and countermeasures, 114–15, 115*b*
 - for humanitarian aid workers, 655, 657
 - overview, 112
- strongyloidiasis, 494, 665
- in children, 586
 - eosinophilia and, 597
 - general discussion, 533
 - in long-term travelers, 665
 - posttravel evaluation, 783
 - in refugees, presumptive treatment of, 837
 - screening asymptomatic returned travelers for, 792–94, 796–97, 796*t*
 - screening immigrants, migrants and refugees for, 839*t*
 - screening internationally adopted children for, 598*t*
 - skin lesions in, 818
 - treatment, 533, 793–94
- study abroad. *See* international student travel
- subacute sclerosing panencephalitis (SSPE), 429
- subcutaneous emphysema, 200
- subcutaneous skin lesions, 820–21
- substance use and substance use disorders
- alcohol, 175–77
 - cannabis, 177
 - HIV transmission and injection drug use, 382
 - humanitarian aid workers, 655
 - international student travel, 669
 - LGBTQ+ travelers, 120–21
 - opioids, 177–78
 - overview, 174–75
 - Peru travel and, 742–43
 - rehab tourism, 561
 - treatment, 178*b*, 178–79
- substandard medical products, 557*b*, 557
- Sudan, 77, 312, 450, 454*t*, 463*t*, 499
- suicide, 235, 236*f*, 236, 561
- sulfadoxine-pyrimethamine, 507
- sun avoidance, 183
- sun exposure
- additional sources of information, 189
 - African safaris and, 697
 - Brazil travel and, 720
 - Burma travel and, 748
 - in children, 587–88
 - complementary or integrative health approaches, 125
 - consequences, 182–83
 - Dominican Republic travel and, 724
 - doxycycline use and, 513
 - Haiti travel and, 729
 - Hajj pilgrimage and, 702
 - immunocompromised travelers, 140*b*
 - India travel and, 764
 - Mexico travel and, 736
 - overview, 181
 - Peru travel and, 742
 - prevention, 183–89, 185*b*, 186*b*, 187*b*
 - risk factors, 181–82
 - safe, recommendations for, 187*b*
 - South Africa travel and, 707
 - sunless tanning, 189
 - Tanzania travel and, 713
 - Thailand travel and, 774
- sun protection factor (SPF), 184–85, 185*b*
- sunburn, 182
- sunglasses, 187*b*, 188
- sunless tanning, 189
- sun-protective garments, 187*b*, 187–88, 588
- sunscreens
- additional sources of information, 189
 - applying, 187*b*, 187
 - broad-spectrum, 184*b*, 185*b*
 - for children, 186, 588
 - choosing, 184*b*, 184–86
 - insect repellents, using with, 212, 585, 588
 - overview, 183–84
 - Peru travel and, 742
 - risks associated with use, 185*b*, 186*b*
 - sun protection factor, 184–85, 185*b*
 - UV filters in, 183–84, 184*b*, 185*b*, 185–86, 186*b*
 - water resistant, 184*b*, 185*b*

sunshade shelters, 187*b*, 188–89
 superficial dermatophytosis, 761–62
 supplemental medical insurance
 for adventure travel, 682
 for African safaris, 697
 for cruise ship travel, 628
 for humanitarian aid workers, 655
 for international student travel, 669
 for international trips, 549–52, 550*b*, 551*b*
 for medical tourism, 565
 for pregnant travelers, 569
 for travelers with chronic diseases, 164
 supplements, 37, 121–26, 122*b*
 surgery
 adventure travel and, 681
 complications after, 562
 for frostbite injury, 195
 medical tourism, 560, 561
 travel after, 562, 607
 Suriname, 77, 454*t*, 530
 Swaziland (Eswatini), 54
 sweat rates, 190
 Sweden, 77, 438–39
 swimmer's ear, 96
 swimmer's itch (cercarial dermatitis), 822
 swimming injuries, 237
 swine-origin variant influenza, 384, 385–87, 391, 392
 Switzerland, 78, 299*t*, 438–39, 561, 620*t*, 682
 sylvatic typhus, 299*t*
 syphilis, 688. *See also* sexually transmitted infections
 clinical presentation, 828, 829*t*
 counseling LGBTQ+ travelers on, 118
 diagnosis, 829*t*
 Dominican Republic travel and, 723
 epidemiology, 828, 829*t*
 febrile travelers with rashes, 816
 prevention, 832
 rapid diagnostic tests, 785*t*, 787*t*
 screening asymptomatic returned travelers for, 791–92, 796*t*
 screening immigrants, migrants and refugees for, 834–35, 839*t*
 screening internationally adopted children for, 598*t*, 600
 skin ulcers in, 823
 treatment, 829*t*
 Syria, 78, 375, 496, 654

T

Taenia solium, 481, 534, 733. *See also* cysticercosis
 taeniasis, 534–35, 733, 793–94
 tafenoquine
 for breastfeeding patients, 519
 G6PD deficiency and, 84
 for last-minute travelers, 110
 for long-term travelers, 664
 malaria chemoprophylaxis, 511*t*, 514*t*, 517–18, 519*t*
 for military personnel, 660
 for pregnant travelers, 518, 665
 risk management issues, 136

Taiwan
 angiostrongyliasis in, 473
 avian influenza in, 387
 driving in, 757
 hand, foot, and mouth disease in, 358
 Japanese encephalitis in, 396*t*
 liver flukes in, 488
 melioidosis in, 280
 motor vehicle crash death rate in, 620*t*
 yellow fever and malaria information for, 78
 Tajikistan, 78, 317*t*, 375
Talaromyces marneffe (formerly *Penicillium marneffe*), 155, 809
 tanning, sunless, 189
 Tanzania
 African trypanosomiasis in, 537, 711
 availability and quality of medical care, 713
 destination overview, 709, 710*f*
 environmental hazards and risks, 712–13
 game parks in, 692, 693*f*
 high-elevation travel destinations in, 203
 infectious disease risks, 709–12
 malaria information for, 78, 711
 Rift Valley fever in, 450
 safety and security in, 713
 yellow fever information for, 78, 455*t*, 711–12
 tapeworms. *See* cysticercosis; taeniasis
 Tecovirimat, 436, 437
 teenagers. *See* children
 telecommunication devices for travelers with disabilities, 161
 telemedicine
 benefits of, 129–30
 legal issues, 132–33
 online resources, 130*t*
 overview, 129
 photographs in, 133*b*
 pretravel consultation, 130–32
 reimbursement, 134
 technology issues, 133–34
 when traveler is abroad, 132
 temperature extremes
 adventure travel and, 683*b*, 683–84
 African safaris and, 697
 Brazil travel and, 720
 Burma travel and, 748
 cold-related illness and injury, 193–95
 Dominican Republic travel and, 724
 Haiti travel and, 729
 Hajj pilgrimage and, 702
 heat-related illness, 190–93, 192*b*
 India travel and, 764
 Mexico travel and, 736
 overview, 190
 Peru travel and, 742
 during pregnancy, 573
 South Africa travel and, 707
 Thailand travel and, 774
 temporary visitors, 835*b*
 terminal malaria prophylaxis
 for military personnel, 659–60
 primaquine for, 517
 tafenoquine for, 518

terrorism, 235, 743, 764, 774
 tetanus
 disease overview, 312–13
 high-risk animal bites and scratches, 220
 prophylaxis for wound management, 314, 314*t*, 823
 tetanus immune globulin (TIG), 313, 314, 314*t*
 tetanus vaccines, 247*t*, 314*t*
 for adoptive parents and families, 595–96
 bite-associated skin infections, 823
 for children, 589–90
 general discussion, 313
 international adoptees, 601
 pretravel, 219
 tetanus-diphtheria (Td) vaccine, 247*t*
 diphtheria prevention, 267
 and high-risk animal bites and scratches, 220
 for immunocompromised adults, 143*t*
 meningococcal vaccines and, 288
 pertussis prevention, 291
 tetanus prevention, 313
 thimerosal in, 29
 tetanus-diphtheria-acellular pertussis (Tdap) vaccine, 247*t*
 for adoptive parents and families, 596
 diphtheria prevention, 267
 and high-risk animal bites and scratches, 220
 for immunocompromised adults, 143*t*
 meningococcal vaccines and, 288
 pertussis prevention, 290, 291
 posttravel evaluation, 780–81
 during pregnancy, 571
 pretravel consultation, 17*t*
 tetanus prevention, 313
 tetracyclines, 264, 304–5
 Thai tick typhus, 299*t*
 Thailand
 angiostrongyliasis in, 473
 availability and quality of medical care, 775
 destination overview, 770, 771*f*
 environmental hazards and risks, 773–74
 hand, foot, and mouth disease in, 358
 HIV in sex workers in, 686–87
 infectious disease risks, 770–73
 Japanese encephalitis in, 396*t*
 liver flukes in, 488
 malaria in, 78, 519–22
 medical tourism in, 560, 775
 melioidosis in, 280, 281
 monkey bites in, 217
 motor vehicle crash death rate in, 620*t*
 multidrug-resistant tuberculosis in, 317*t*
 ricketsial diseases in, 299*t*
 safety and security, 774–75
 travelers' diarrhea risk in, 269
 yellow fever information for, 78
 thimerosal, in vaccines, 29
 threadworm infections. *See* strongyloidiasis

- thromboembolic disease, 607, 612–15, 613t
- thrombolytic agents, 194–95
- thymus disorders, 152, 459
- Tibet, 203
- tick-borne encephalitis (TBE)
- animal reservoirs and mechanisms, 218t
 - in children, 593–94
 - China travel and, 755
 - clinical presentation, 439
 - diagnosis, 440
 - epidemiology, 438–39
 - fever in returned travelers, 800t
 - incubation period, 780t
 - infectious agent, 438
 - posttravel evaluation, 782
 - prevention, 440–42
 - transmission, 438
 - treatment, 440
- tick-borne encephalitis (TBE) vaccine, 211, 335t, 440b
- for children, 594
 - general discussion, 440–42, 441b, 441t
 - for immunocompromised adults, 143t, 152
 - pretravel consultation, 17t
- tickborne lymphadenopathy (TIBOLA), 299t
- ticks
- diseases spread by, 218t
 - Lyme disease, 218t, 278–79, 819
 - Mexico travel and, 734–35
 - posttravel evaluation, 782
 - preventing bites from, 214–15
 - removing, 215f
 - and viral hemorrhagic fever diseases, 448
- Timor-Leste, 78, 396t
- tinea (ringworm), 761–62, 819–20
- tinea versicolor, 820
- tinidazole, 90, 472
- titanium dioxide, 186
- Togo, 78, 454t, 463t
- Tokelau (New Zealand), 80
- Tonga, 80
- toxic exposures, 724, 736
- toxin-mediated illness. *See* food poisoning
- Toxocara canis*, 597, 598t
- toxoplasmosis, 536, 572, 800t
- traffic safety. *See* road and traffic safety
- transgender travelers. *See* LGBTQ+ travelers
- Transportation Security Administration (TSA), 120, 158t, 161, 166, 578
- traumatic events, mental health issues after, 115. *See also* injury and trauma
- travel advisories, 232–33, 238b
- travel health insurance
- for adventure travel, 682
 - for African safaris, 697
 - for children, 588
 - and cruise ship travel, 628
 - discussion checklist, 551b
 - general discussion, 549, 551–52
 - for Haiti travel, 730
 - health care abroad and, 550, 553
 - for humanitarian aid workers, 655
 - for international student travel, 669
 - medical tourism and, 565
 - for pregnant travelers, 569
 - pretravel consultation, 114–15
 - safety and security and, 233
 - for Tanzania high altitude travel, 713
- travel health kits, 238b
- for adventure travel, 684–85, 685b
 - for African safaris, 698
 - commercial medical kits, 107
 - general supplies for, 105b, 105–7, 106b, 107b
 - for Hajj pilgrimage, 703
 - for humanitarian aid workers, 656b, 656
 - for immunocompromised travelers, 140b
 - for last-minute travelers, 111b
 - medications, 104–7, 105b, 106b
 - overview, 19, 104
 - for preexisting medical conditions, 105b, 105, 164b
 - for pregnant travelers, 571
 - for Tanzania high altitude travel, 713
 - when traveling with children, 107b, 107
- travel health providers. *See* travel medicine
- travel insurance
- for adventure travel, 682
 - for children, 588
 - for cruise ship travel, 240
 - general discussion, 549, 550
 - health care abroad and, 553
 - for humanitarian aid workers, 655
 - safety and security and, 233
- travel medicine, xxi. *See also* posttravel evaluation; pretravel consultation
- disease patterns in travelers, 1–2
 - guidelines, reasons for differences in, 4–6
 - improving quality of, 10–11
 - maps, role in, 7f, 7–9, 8f, 9f
 - One Health approach and, 223
 - professional organizations, 10–11
 - risk management issues in, 135–37
 - and travelers' perception of risk, 23–24
 - and visiting friends and relatives travel, 674b
- travel medicine specialists, 13–14
- travelers' diarrhea (TD), 18–19, 19b
- African safaris and, 693–94
 - in aircrew, 643
 - antibiotic benefits and risks, 92–93
 - Brazil travel and, 717
 - in breastfeeding patients, 577
 - Burma travel and, 746
 - in children, 90–91, 577, 581–84
 - China travel and, 752
 - clinical presentation, 86
 - complementary or integrative health approaches, 125
 - country risk for, 269
 - diarrheagenic *Escherichia coli*, 268–71, 270t
 - Dominican Republic travel and, 723
 - drug–drug interactions in treatment of, 34–36, 35t, 164
 - educating travelers about, 93
 - functional definitions, 89b, 89
 - Haiti travel and, 727–28
 - Hajj pilgrimage and, 701
 - in immunocompromised travelers, 155
 - incubation period, 777–79
 - India travel and, 760
 - infectious agents, 85
 - and intestinal colonization, 804–5
 - in long-term travelers, 665
 - Mexico travel and, 733
 - Nepal travel and, 766–67
 - overview, 85
 - persistent diarrhea in returned travelers, 86, 812–13
 - Peru travel and, 740
 - during pregnancy, 572
 - pretravel consultation, 20t
 - prevention, 86–87, 581
 - resource-limited travelers and, 128
 - risk for travelers, 85–86
 - self-treatment options, 19b
 - South Africa travel and, 705
 - Tanzania travel and, 710
 - Thailand travel and, 772
 - treatment, 87–91, 88t, 92–93, 581–84
- Travel.State.Gov website, 232–33
- trench fever (*Bartonella quintana* infection), 254, 255, 256
- trench foot (immersion foot), 194
- Treponema pallidum*. *See* syphilis
- trichinellosis, 527, 783, 800t
- trichomoniasis, 688, 832, 832t. *See also* sexually transmitted infections
- trichuriasis (whipworm infections), 494–95, 586, 762, 792, 794
- triclabendazole, 489
- trimethoprim-sulfamethoxazole (TMP-SMX), 296–97, 326
- Trinidad and Tobago, 80, 454t
- trip cancellation insurance, 555
- Tristan Da Cunha Archipelago (UK), 80
- tropical medicine specialists, 784
- tropical pulmonary eosinophilia (TPE) syndrome, 486
- tropical sprue, 813
- tropical ulcer, 822
- trypanosomiasis, 696, 711, 719, 735, 782, 794, 823. *See also* African trypanosomiasis; American trypanosomiasis
- tsetse flies, 537, 538, 539, 782, 823
- tsunamis, 774
- tuberculin skin test (TST), 25, 318, 319, 320, 322–23, 600, 792
- tuberculosis (TB), 226
- African safaris and, 695
 - air travel and, 810
 - Brazil travel and, 717
 - Burma travel and, 746–47
 - China travel and, 753
 - clinical presentation, 318
 - diagnosis, 318–20
 - Dominican Republic travel and, 723
 - epidemiology, 315–18, 317t
 - federal public health authority, 630–31, 631t
 - fever in returned travelers, 800t



tuberculosis (TB) (*cont.*)
 Haiti travel and, 728
 Hajj pilgrimage and, 701–2
 health care workers and, 649, 650
 immunocompromised travelers and, 156
 incubation period, 777–79, 781*t*
 India travel and, 761
 infectious agent, 315
 long-term traveler risk for, 665
 medical screening examinations for immigrants, 834–35
 Mexico travel and, 733–34
 Nepal travel and, 767
 Peru travel and, 741
 posttravel evaluation, 783
 prevention, 320
 respiratory infection caused by, 810
 screening aircrew for, 643
 screening asymptomatic returned travelers for, 792, 796–97, 796*t*
 screening immigrants, migrants and refugees for, 838, 839*t*
 screening internationally adopted children for, 598*t*, 600
 Thailand travel and, 772
 transmission, 315
 treatment, 320
 vaccines, 247*t*, 320, 601, 649, 761
 tularemia, 218*t*
 tumbu fly (Imputsi fly), 821
 tumor necrosis factor (TNF) blockers, 148, 318
 tungiasis, 821
 Tunisia, 80
 Turkey, 80, 251, 299*t*, 449, 479
 Turkmenistan, 80, 375
 Turks and Caicos Islands (UK), 80
 turtles, bringing into US, 224, 227
 Tuvalu, 80
 2-undecanone-containing insect repellents, 212, 213, 584–85
 Ty21a (live attenuated typhoid vaccine), 327, 328–29, 594, 662
 typhoid fever, 306
 African safaris and, 694–95
 antimicrobial resistance, 802
 Brazil travel and, 717
 Burma travel and, 746
 China travel and, 752
 clinical presentation, 325
 diagnosis, 325–26
 Dominican Republic travel and, 723
 epidemiology, 325
 fever in returned travelers, 799*t*, 800*t*
 Haiti travel and, 728
 incubation period, 777–79, 780*t*
 India travel and, 760
 infectious agent, 324
 Mexico travel and, 733
 Nepal travel and, 766
 Peru travel and, 740
 posttravel evaluation, 780–81, 782
 prevention, 327–29
 rapid diagnostic tests, 326, 789
 relapse, reinfection and chronic carriage, 327
 South Africa travel and, 705
 Tanzania travel and, 710–11

Thailand travel and, 772
 transmission, 325
 and traveler perception of risk, 23
 treatment, 326–27
 visiting friends and relatives travel and, 673
 typhoid vaccines, 247*t*
 administration, 328, 328*t*
 adverse reactions, 328
 for aircrew, 641
 antibiotics and, 27
 for children, 594
 coadministration with yellow fever vaccine, 458
 differences in guidelines for, 5–6
 for immunocompromised adults, 142*t*, 143*t*, 152
 for India travel, 760
 indications, 327–28
 interactions between drugs and, 31
 for last-minute travelers, 109
 for LGBTQ+ travelers, 118
 for long-term travelers, 662
 malaria chemoprophylaxis and, 513
 Mexico travel and, 733
 precautions and contraindications, 329
 during pregnancy, 570
 pretravel consultation, 17*t*
 for resource-limited travelers, 127–28
 risk management issues, 136
 scheduling, 28*t*
 for Thailand travel, 770
 typhus, 342. *See also* rickettsial infections
 clinical presentation, 304
 epidemiology, 302–3
 febrile travelers with rashes, 816
 fever in returned travelers, 800*t*
 infectious agents, 297
 transmission, 299*t*
 U
 Uganda
 African trypanosomiasis in, 537
 game parks in, 692, 693*t*
 malaria information for, 80
 plague in, 292
 Rift Valley fever in, 450
 viral hemorrhagic fever diseases in, 450–51, 696, 699–700
 yellow fever information for, 80, 454*t*, 463*t*
 Ukraine
 diphtheria in, 266
 hepatitis C virus in, 375
 liver flukes in, 488
 multidrug-resistant tuberculosis in, 317*t*
 radiation exposure in, 197
 rickettsial diseases in, 298, 299*t*
 screening for children adopted from, 599
 tick-borne encephalitis in, 438–39
 yellow fever and malaria information for, 80
 ulcerative lesions, 822–23
 ultraviolet (UV) filters in sunscreens, 183–84, 184*b*, 185*b*, 185–86, 186*b*

Ultraviolet Index (UVI), 181–82
 Ultraviolet Protection Factor (UPF), 187–88
 ultraviolet radiation (UVR). *See also* sun exposure
 protection from, 183, 184–85, 188
 sun exposure and, 181–82
 water disinfection by, 99*t*, 103–4
 Umrah pilgrimage, 589, 591, 698, 700*f*.
See also Hajj pilgrimage
 United Arab Emirates (UAE), 80, 274, 299*t*, 303, 401
 United Kingdom (UK)
 amnesic shellfish poisoning in, 231
 Ebola virus in, 450
 finding health care providers in, 554*b*
 Japanese encephalitis in, 393
 Lyme disease in, 278–79
 MERS in, 401
 monkeypox in, 434
 motor vehicle crash death rate in, 620*t*
 perceptions of risk, 5
 shellfish poisoning in, 231
 tick-borne encephalitis in, 438–39
 yellow fever and malaria information for, 80
 United States (US)
 African trypanosomiasis in, 537–38
 American trypanosomiasis in, 540
 angiostrongyliasis in, 473
 anthrax infection in, 250, 251, 252
 avian influenza in, 387
 bringing animals and animal products into, 224–27, 604
 brucellosis in, 257
 carbapenemase-producing bacteria in, 805–6
 cat scratch disease in, 255
 chikungunya virus in, 342
 children with malaria in, 584
 cholera in, 263
 citizen safety and security overseas, 232–35
 coccidioidomycosis in, 543–44
 COVID-19 in, 344, 345–46
 cryptosporidiosis in, 475
 cutaneous leishmaniasis in, 496
 cyclosporiasis in, 479
 dengue in, 350
 differences in travel health guidelines, 4–5
 diphtheria antitoxin in, 267
 echinococcosis in, 482–83
 expressed milk, traveling with, 578
 giardiasis in, 491–92
 hand, foot, and mouth disease in, 358
 hepatitis A in, 363
 hepatitis C in, 375
 hepatitis E in, 378–79
 immigrants, refugees and other migrants, 833–42, 834*t*, 839*t*, 841*t*
 influenza in, 385–87
 Japanese encephalitis in, 393
 laws governing telemedicine, 132–33
 Legionnaires' disease in, 273–74
 leptospirosis in, 276
 Lyme disease in, 278–79
 lymphatic filariasis in, 486

- malaria in, 80–81, 502
 - measles in, 428
 - meliodosis in, 280–81
 - meningococcal disease in, 283–85
 - MERS in, 401, 402*b*, 402–3
 - military deployments, 658–60
 - monkeypox in, 434, 435
 - nontyphoidal salmonellosis in, 306
 - onchocerciasis in, 524
 - pertussis in, 290
 - plague in, 292
 - poliomyelitis in, 408–9
 - Q fever in, 296
 - rickettsial diseases in, 298–303, 299*t*, 817
 - rubella in, 426
 - sex trafficking and sexual exploitation of children laws, 687–88
 - shellfish poisoning in, 231
 - shigellosis in, 309–10
 - soil-transmitted helminths in, 494
 - strongyloidiasis in, 533
 - tick-borne encephalitis in, 439
 - travelers' diarrhea risk in, 269
 - tuberculosis in, 315–17
 - typhoid and paratyphoid fever in, 325, 326, 760
 - varicella (chickenpox) in, 443
 - viral hemorrhagic fever diseases in, 450, 451
 - visceral leishmaniasis in, 499
 - yellow fever in, 80–81, 455
 - Yellow fever vaccine–associated neurologic disease in, 459
 - yersiniosis in, 330–31
 - Zika virus in, 468
 - unprotected sex, 686*b*, 686–87, 689.
See also sexually transmitted infections
 - urinary tract infections, 19*b*
 - Uruguay, 81, 231, 269, 496
 - US Department of Agriculture (USDA), 225, 227, 603
 - US Department of State
 - Country Reports on Human Rights Practices, 119–20
 - emergency medical assistance loans, 550
 - entry, exit, and visa requirements, 383
 - finding health care providers through, 554*b*
 - information for travelers with disabilities, 158*t*, 160*t*
 - obtaining assistance for death of traveler, 240
 - road and traffic safety information, 622
 - safety and security overseas, 232–33, 234–35
 - Smart Traveler Enrollment Program, 164*b*, 233, 238*b*, 639, 655, 679*b*, 730, 756, 764, 774
 - travel advisories, 197, 238*b*
 - US Department of Transportation (DOT), 158*t*, 160, 603–4
 - US Environmental Protection Agency (EPA), 584–85
 - US Fish and Wildlife Service (FWS), 225, 226, 227
 - US Food and Drug Administration (FDA), 4, 183–84, 184*b*, 185*b*, 523*t*, 660
 - Uzbekistan, 81, 317*t*, 375
- V**
- vaccinations
 - for adoptive parents and families, 595–96
 - before African safaris, 693
 - for aircrew, 640–41, 646
 - allergic reactions to, 27–29, 136, 172, 288
 - for animal bites and scratches, 219
 - and antibody-containing blood products, 26–27
 - bacterial diseases preventable with, 247*t*
 - for Brazil travel, 715–17
 - for Burma travel, 744
 - children, recommendations for, 589–94
 - for China travel, 751–52, 753–54
 - Chinese production of, 751–52
 - in complete travel history, 778*t*
 - and cruise ship travel, 627*b*
 - cruise ship travel and, 624–25, 626
 - differences in travel health guidelines, 4–6
 - for dogs, in One Health approach, 223
 - for Dominican Republic travel, 722
 - for Haiti travel, 726–27
 - Hajj pilgrimage requirements, 700–1
 - for health care workers, 647–49, 649*b*
 - homeopathic vaccines, 123
 - for household contacts of immunocompromised travelers, 153–54
 - for humanitarian aid workers, 655
 - for immigrants, pre-arrival, 836
 - for immigrants after arrival, 838–40
 - for immunocompromised travelers, 141–53, 141*t*, 142*t*, 143*t*
 - for India travel, 759
 - injection route and site, 29
 - interactions between drugs and, 31
 - for international business travelers, 638
 - for internationally adopted children, 600–1, 836
 - for last-minute travelers, 108–10, 111
 - for long-term travelers, 662–63
 - for mass gatherings, 679
 - for Mexico travel, 731
 - for military personnel, 658–59
 - missed doses and boosters, 26
 - for Nepal travel, 766
 - overview, 24–25
 - for people with acute illnesses, 27
 - for Peru travel, 738
 - poorly regulated, 557–58
 - post-immunization adverse event reporting, 30
 - posttravel evaluation, 779–81
 - during pregnancy, 569–71
 - pretravel consultation, 16, 17*t*, 20*t*
 - recommendations based on geographic boundaries, 7–8
 - for refugees, pre-arrival, 836–37
 - for resource-limited travelers, 127–28
 - respiratory illness prevention and, 811
 - risk management issues, 136–37
 - scheduling, 27, 28*t*
 - for sexually transmitted infections, 689, 832
 - simultaneous administration of vaccines, 25
 - spacing of, 25–27
 - for Tanzania travel, 709
 - in telemedicine, 132
 - for Thailand travel, 770
 - for travelers with chronic diseases, 167*t*
 - vaccine–vaccine interactions, 30–31
 - against vectorborne diseases, 211
 - for visiting friends and relatives travel, 675*b*, 675–76
 - when breastfeeding, 576, 577
 - Vaccine Adverse Event Reporting System (VAERS), 30
 - vaccine-associated paralytic poliomyelitis (VAPP), 409, 410
 - vaccinia virus, 433, 434, 435*t*, 436
 - vaginal yeast infection, 19*b*, 271
 - Valley fever. See coccidioidomycosis
 - vancomycin-resistant enterococci (VRE), 806
 - Vanuatu, 81
 - varicella (chickenpox), 435–36
 - aircrew risk for, 641
 - clinical presentation, 443–44
 - cruise ship travel and, 624, 626
 - diagnosis, 444
 - epidemiology, 443
 - health care workers and, 650
 - infectious agent, 442
 - Mexico travel and, 731
 - modified, 444
 - postexposure prophylaxis, 445–46, 570
 - pregnancy and, 570
 - prevention, 445
 - screening internationally adopted children for, 601
 - transmission, 443
 - treatment, 444
 - visiting friends and relatives travel and risk for, 675*b*
 - varicella vaccines, 24, 335*t*, 443*b*, 811
 - for adoptive parents and families, 595–96
 - allergies to components of, 27–28
 - antibody-containing blood products and, 26–27
 - antiviral agents and, 27
 - for children, 589–91
 - general discussion, 445
 - and hepatitis A vaccination, 367
 - for household contacts of immunocompromised patients, 153
 - for immunocompromised adults, 142*t*, 146, 147
 - for international adoptees, 601
 - during pregnancy, 570
 - pretravel consultation, 17*t*
 - routine vaccination, 443
 - spacing of, 25
 - varicella–zoster immune globulin, 445–46

- varicella-zoster virus (VZV), 442–43
- variola virus. *See* smallpox
- vectorborne diseases
- African safaris, risk for during, 695–96
 - aircrew risk for, 642–43
 - Brazil travel and, 718–19
 - Burma travel and, 747
 - China travel and, 753–55
 - in complete travel history, 778*t*
 - cruise ship travel and, 626
 - Dominican Republic travel and, 723–24
 - Haiti travel and, 728–29
 - Hajj pilgrimage and, 702
 - India travel and, 762–63
 - insect bites, 211–16, 213*b*, 215*f*, 216*b*
 - in long-term travelers, 665
 - Mexico travel and, 734–35
 - Nepal travel and, 767–68
 - Peru travel and, 741–42
 - posttravel evaluation, 782
 - during pregnancy, 572–73
 - pretravel consultation, 20*t*
 - South Africa travel and, 706–7
 - Tanzania travel and, 711–12
 - Thailand travel and, 773
- vehicle safety. *See* road and traffic safety
- Venezuela, 81–82, 266, 280–81, 299*t*, 454*t*, 524, 530
- Venezuelan hemorrhagic fever (Guanarito virus), 448, 449
- venomous injuries from animals. *See* envenomations
- venous thromboembolism (VTE), 607, 612–15, 613*t*
- verotoxigenic *E. coli* (VTEC). *See* Shiga toxin-producing *E. coli*
- Vi capsular polysaccharide typhoid vaccine (ViCPS), 327, 328–29, 328*t*, 594, 662
- Vibrio* species, 96, 155, 231–32, 823, 824. *See also* cholera
- Vietnam
- antimicrobial resistance in, 805
 - diphtheria in, 266
 - hand, foot, and mouth disease in, 358
 - Japanese encephalitis in, 396*t*
 - liver flukes in, 488
 - malaria in, 82, 519–22
 - multidrug-resistant tuberculosis in, 317*t*
 - yellow fever information for, 82
- violence
- injury and trauma from, 235, 236*f*, 236–37
 - sexual, 687
 - toward humanitarian aid workers, 654
- viral hemorrhagic fever (VHF) diseases
- African safaris, risk for during, 696
 - animal reservoirs and mechanisms, 218*t*
 - clinical presentation, 451
 - diagnosis, 451
 - epidemiology, 449–51
 - federal public health authority, 630–31, 631*t*
 - fever in returned travelers, 800*t*, 802*t*, 803*b*
 - infectious agents, 448
 - prevention, 452
 - South Africa travel and, 707
 - transmission, 448–49
 - treatment, 451–52
- viral sexually transmitted infections, 831*t*. *See also* sexually transmitted infections
- Virgin Islands (British), 82, 280–81
- Virgin Islands (US)
- chikungunya virus in, 342
 - dengue in, 211, 350, 356, 592
 - leptospirosis in, 276
 - meliodosis in, 280–81
 - sunscreen use in, 186*b*, 186
 - yellow fever and malaria information for, 82
- viruses. *See also* antimicrobial resistance
- aircrew risk for, 643
 - animal reservoirs and mechanisms, 218*t*
 - causes of respiratory illnesses, 809
 - causing travelers' diarrhea, 85, 86
 - febrile travelers with rashes, 816–17
 - fever in returned travelers, 800*t*
 - in international business travelers, 636–37
 - rapid diagnostic tests, 788*t*, 811
 - shellfish consumption and, 231–32
 - vaccine-preventable diseases, 335*t*
 - water disinfection to remove, 100*f*, 100–1, 101*t*, 102, 103
 - waterborne, 97
 - when importing live animals, 225
- visceral larva migrans, 586, 783
- visceral leishmaniasis (VL), 155, 496, 499–500, 762, 781*t*, 788, 800*t*
- visiting friends and relatives (VFR) travel
- children, 580–81, 584
 - fever in returned travelers, 798–99
 - to India, 759
 - infectious disease risks, 671–73, 672*b*
 - and malaria risk, 509
 - overview, 671
 - posttravel evaluation, 782
 - pretravel health counseling, 673–76, 674*b*, 675*b*
- vitamin A, 429
- vitamin B₆ (pyridoxine), 125
- vitamin C, 123
- vitamin D, 123, 756
- vitamin E, 122
- volunteer tourism (voluntourism), 654*b*
- vomiting
- in children, 581–84
 - and fever in returned travelers, 802*t*
 - regulatory definition of "ill traveler," 632*b*
- W**
- waived tests, 785–86. *See also* rapid diagnostic tests
- Wake Island (US), 82
- Wallis and Futuna (France), 82
- warfarin, 510
- water and aquatic injuries, 235, 236*f*, 237, 587
- water disinfection
- for children, 587
 - choosing between techniques, 103*t*, 104
 - field techniques for water treatment, 98–104, 99*t*, 100*f*, 101*t*, 102*f*
 - overview, 97–98
- water precautions, 86, 89
- for aircrew, 643
 - angiostrongyliasis prevention, 474
 - antimicrobial resistance prevention, 806–7
 - for children, 581, 587
 - cryptosporidiosis prevention, 476–77
 - drinking water and other beverages, 95*b*, 95
 - excessive ingestion, avoiding, 192
 - giardiasis prevention, 492
 - for immunocompromised travelers, 140*b*
 - Legionnaires' disease prevention, 275
 - leptospirosis prevention, 277
 - liver fluke prevention, 489
 - in long-term travelers, 665
 - meliodosis prevention, 282*b*
 - overview, 94, 95
 - during pregnancy, 571
 - recreational water, 96, 155
 - schistosomiasis prevention, 531–32
 - travelers' diarrhea prevention, 86
- water-associated skin infections, 823–24
- waterborne illnesses, 97. *See also* water disinfection
- African safaris and, 695
 - Brazil travel and, 718
 - Burma travel and, 747
 - in children, 586, 587
 - China travel and, 753
 - Dominican Republic travel and, 723
 - Haiti travel and, 728
 - in immunocompromised travelers, 155
 - India travel and, 762
 - Mexico travel and, 734
 - pretravel consultation, 20*t*
 - South Africa travel and, 706
 - Tanzania travel and, 711
 - Thailand travel and, 772–73
 - zoonotic diseases, 223
- West Nile virus (WNV), 696, 780*t*, 800*t*
- wheelchairs, 160, 161–62
- whipworm infections (trichuriasis), 494–95, 586, 762, 792, 794
- whooping cough. *See* pertussis
- wild poliovirus (WPV), 408–9, 410–11, 412, 592
- Wilderness Medical Society (WMS), 11
- wilderness rescue insurance, 682
- wilderness supplies, 683–85. *See also* adventure travel
- World Health Organization (WHO), 11
- MERS prevention recommendations, 403
 - polio vaccine recommendations, 411, 592
 - rabies diagnosis, 415*b*, 415

- rabies immunization, 423
- yellow fever risk, 454*t*, 455*t*, 464–67
- yellow fever vaccine, 458
- worms. *See* helminths
- wound infections, 763–64
- wound management, 220, 417, 423, 585, 683*b*

X

- XDR [extensively drug-resistant] typhoid fever, 326–27
- XDR-TB [extensively drug-resistant tuberculosis], 647
- xenotransplantation, 561

Y

- yeast infections, 19*b*, 271
- Yellow fever vaccine-associated neurologic disease (YEL-AND), 458–59
- Yellow fever vaccine-associated viscerotropic disease (YEL-AVD), 459
- yellow fever (YF) vaccines, 84, 211, 335*t*
 - administration, 457–58
 - adverse events, 458–59
 - for African safaris, 693, 696
 - for aircrew, 640–41
 - allergic reactions to components, 28, 29, 460
 - antibody-containing blood products and, 26
 - boosters, 153, 458
 - Brazil travel and, 719
 - breastfeeding and, 577
 - CDC recommendations, 38, 39*t*
 - for children, 589, 590, 594
 - contraindications, 457*b*, 459–60
 - country-specific information, 41–83, 589
 - duration of protection, 38–39
 - entry requirements, 38
 - fractional dosing, 458
 - for household contacts of immunocompromised patients, 154
 - for immunocompromised adults, 142*t*, 146–47, 152–53
 - India travel and, 763
 - indications for use, 456–57
 - International Certificate of Vaccination or Prophylaxis, 461–64, 462*f*, 463*t*, 464*f*
 - for last-minute travelers, 110

- for long-term travelers, 662, 663
- other considerations, 461
- overview, 38, 456, 456*t*
- in posttravel evaluation, 780–81
- precautions, 457*b*, 460–61
- during pregnancy, 570
- pretravel consultation, 17*t*
- requirements versus recommendations, 464–67, 465*f*
- for resource-limited travelers, 127
- scheduling, 28*t*
- South Africa travel and, 707
- spacing, 25
- Tanzania travel and, 709
- in telemedicine, 132
- yellow fever (YF) virus
 - African safaris and, 696
 - Brazil travel and, 719
 - in children, 580–81
 - clinical presentation, 455
 - cross-reactive flavivirus antibodies, 356
 - cruise ship travel and, 626
 - diagnosis, 455–56
 - epidemiology, 454, 454*t*, 455*t*
 - federal public health authority, 630–31, 631*t*
 - fever in returned travelers, 798, 799*t*, 800*t*
 - India travel and, 763
 - infectious agent, 453
 - International Certificate of Vaccination or Prophylaxis, 461–64, 462*f*, 463*t*, 464*f*
 - map of areas of risk for, 7, 8*f*, 9*f*
 - Peru travel and, 742
 - posttravel evaluation, 782
 - pretravel consultation, 20*t*
 - prevention, 456–61
 - risk for travelers, 454–55
 - South Africa travel and, 707
 - Tanzania travel and, 711–12
 - transmission, 453–54
 - treatment, 456
 - zoonotic disease vectors, 224
- Yemen, 82, 266, 312, 401, 450, 524
- yersiniosis and *Yersinia* species, 218*t*, 258, 330–31. *See also* plague
- youth. *See* children

Z

- Zambia, 82, 449, 455*t*, 537, 692, 694*f*
- zanamivir, 27, 388–90, 389*t*
- Zanzibar, 709, 710*f*. *See also* Tanzania
- Zika virus, 6, 110, 342, 799

- African safaris and, 695
- aircrew risk for, 643
- Brazil travel and, 719
- breastfeeding and, 577–78
- Burma travel and, 747
- in children, 580–81
- cruise ship travel and, 626
- Dominican Republic travel and, 724
- febrile travelers with rashes, 817
- fever in returned travelers, 799*t*, 800*t*, 803*b*
- general discussion, 468–70
- Haiti travel and, 728
- incubation period, 780*t*
- India travel and, 762
- long-term traveler risk for, 663
- mapping application with recommendations for, 8–9
- mass gatherings and, 677
- Mexico travel and, 734
- Peru travel and, 741
- posttravel evaluation, 782
- during pregnancy, 468, 469, 470, 572–73, 673, 719, 734, 817
- pretravel consultation, 21*b*
- rapid diagnostic tests, 788
- screening asymptomatic returned travelers for, 791, 796–97, 796*t*
- Thailand travel and, 773
- travelers, role in, 1
- Zimbabwe, 83, 317*t*, 450–51, 537, 692, 694*f*
- zinc, 123, 264
- zinc oxide, 186
- zolidem, 644
- zoonotic diseases
 - and international pet rescue and adoption, 225
 - One Health approach to, 222–24
 - vectors for, 224
 - when importing live animals, 225, 226, 227
- zoonotic exposures. *See also* bites and scratches from animals; insect bites; rabies
 - direct and indirect animal contact, 223–24
 - foodborne, 224
 - inhalation and ingestion, 221–22
 - overview, 217, 218*t*
 - stings and envenomations, 220–21, 683*b*, 720, 735
 - when scuba diving, 201
- zoonotic influenza, 384, 385–87, 388, 390, 391, 392
- zoster vaccines, 17*t*, 29, 143*t*, 153. *See also* varicella vaccine



