

INDEX

- A
- AAFP
 - web sites for, 63t
- AAP
 - resources of, 61t
 - web sites for, 63t
- ACIP, 37, 353
 - yellow fever vaccine recommendations, 135
- Acquired immunologic defects, 8
- Active immunity, 2, 10f
- Active immunization
 - hepatitis A, 152–154
 - hepatitis B, 157
 - yellow fever, 116–126
- Acute disseminated encephalomyelitis (ADEM)
 - inactivated mouse brain-derived Japanese encephalitis vaccine
 - adverse events, 243
- Acute-phase proteins, 4–5
- Adaptive immune response, 2, 5
 - yellow fever, 106
- ADEM
 - inactivated mouse brain-derived Japanese encephalitis vaccine
 - adverse events, 243
- Adenoids, 2
- Adjuvants, 12
 - BCG vaccine, 270
- Adolescents
 - BCG vaccine, 263
- Adsorbed rhesus diploid cell rabies vaccine, 202, 204t
- Adverse events, 80
 - international perspective, 83
 - prevention of, 82
 - reporting of, 83
- Advisory Committee on Immunization Practices (ACIP), 37, 353
 - yellow fever vaccine recommendations, 135
- Aedes aegypti* mosquitoes, 100, 101, 115, 298, 303
- Aedes africanus* mosquitoes, 112, 114
- Aedes furcifer* mosquitoes, 115
- Aedes luteocephalus* mosquitoes, 115
- Aedes vittatus* mosquitoes, 115
- Aeromonas*
 - traveler's diarrhea, 276
- Afghanistan
 - cholera, 173
 - poliomyelitis, 361
- Africa
 - cholera, 176
 - hepatitis A, 366
 - hepatitis B, 369
 - meningitis, 188
 - meningitis belt, 347
 - meningococcal epidemic risk areas in, 186f, 187f
 - poliomyelitis, 361
 - rabies, 203, 205
 - yellow fever
 - incidence of, 110, 110f
- After-hours care
 - policies, 90
 - procedure, 90
- Alcohol
 - meningitis, 188
- Alcoholic cirrhosis, 404
- Alhydrogel, 12
- Allergies, 79, 80
 - to vaccine, 75
- Allogeneic bone marrow transplantation
 - meningococcal polysaccharide vaccine, 192
- Alum, 12
- Aluminum hydroxide (alhydrogel), 12
- Aluminum salts, 12
- ALVAC, 247–248
- Amazon basin
 - hepatitis B vaccine, 341
- American Academy of Family Physicians (AAFP)
 - web sites for, 63t
- American Academy of Pediatrics (AAP)
 - resources of, 61t
 - web sites for, 63t
- Anaphylaxis, 82
- Anatomic injection site
 - selection of, 71
- Anergy
 - definition of, 5
- Anopheles* mosquitoes, 313
- Anthrax vaccine, 394
- Antibiotics
 - CVD 103-HgR, 175
 - Ty21a (Vivotif Berna vaccine), 167
- Antibodies
 - detection of, 22–24
 - protective functions of, 25f
 - structure and organization of, 5–7
- Antibody responses
 - avoiding unwanted, 7
- Anticoagulants, 75–76
- Antigen-mediated cytokine secretion assays, 29
- Antigen-presenting cells (APC), 5
- Antimalarial drugs
 - effect on vaccine efficacy, 41, 41t
- APC, 5
- ARILVAX, 120, 122
 - adverse events, 126–127
 - allergic reactions, 130
- Asia
 - hepatitis A, 366
 - hepatitis B, 369
 - Japanese encephalitis vaccine
 - cost-effectiveness of, 247
 - poliomyelitis, 361
 - rabies, 205
- Asplenism, 403
 - meningococcal vaccine, 195
- Atorvastatin
 - yellow fever vaccine-associated viscerotropic
 - adverse events, 128
- Atovaquone-proguanil (Malarone)
 - effect on vaccine efficacy, 41t
- Attenuated 17D vaccine
 - molecular determinants of, 117–119
- Australia
 - cholera, 174
 - Japanese encephalitis, 224t, 226, 241t
 - rabies, 206
 - resources of, 62t
 - web sites for, 63t
- Autoimmune disease, 397
- Avaxim, 153t
- Aventis Pasteur, Inc.
 - web site and telephone number, 94
- B
- Bacille Calmette-Guérin (BCG) vaccine, 9, 14, 347, 379–380, 380t, 393–394
 - administration of, 264–266
 - animal models for, 270–271
 - contraindications to, 264
 - development of, 267
 - efficacy and effectiveness of, 259–260
 - HIV, 399
 - immunocompromised, 394
 - impact of, 258–259
 - improving, 269–270
 - meta-analyses of, 260–263
 - pregnancy, 394, 402
 - recombinant, 269
 - revaccination with, 265
 - target populations for, 263–264
- Bacillus anthracis*, 394
- Bacteria
 - subverting human defenses, 8–9
- Bangladesh
 - Japanese encephalitis, 224t, 226
 - poliomyelitis, 361
 - rabies, 203
 - tuberculosis, 378
 - typhoid fever, 164
- Bat rabies, 206
- Bayer Pharmaceutical Group
 - web site and telephone number, 94
- BCG. *See* Bacille Calmette-Guérin (BCG) vaccine
- Belgium
 - meningitis, 188
- Benin
 - meningitis, 186
- Berna Products Corporation
 - web site and telephone number, 94
- Bhutan
 - Japanese encephalitis, 224t
- Biavax II, 359t
- BIKEN vaccine, 219, 237, 238, 240
 - efficacy of, 242–243
- Bio-Hep-B, 153t
- Biologic warfare
 - rabies virus, 214–215
- BioManguinhos (Brazil), 139
- BioPort Corporation
 - web site and telephone number, 94

- Bioterrorism
vaccines against, 394
- Black vomit, 103
- Bleeding disorders, 75–76
- Blood-borne pathogen standard
Occupational Health and Safety (OSHA), 57
- Blood coagulation
hepatitis A, 152
- Blood donations
yellow fever 17D vaccine, 137
- Blood transfusion
hepatitis B, 158
- Blue Book
World Health Organization (WHO)
ordering information, 130
web site, 38
- B lymphocytes, 3, 21
- BMT
allogeneic
meningococcal polysaccharide vaccine,
192
- Body piercing
hepatitis B, 158
- Bone marrow donations
yellow fever 17D vaccine, 137
- Bone marrow transplantation (BMT)
allogeneic
meningococcal polysaccharide vaccine,
192
recipients, 395
- Borrelia recurrentis*, 107
- Brazil
meningitis, 188, 194, 347
- Brucella abortus* W99, 12
- Brucella melitensis*, 12
- Brunei
Japanese encephalitis, 224t
- Bulgaria
poliomyelitis, 361
- Burkina Faso
cholera, 173
meningitis, 185
- Burma (Myanmar)
Japanese encephalitis, 224t, 226
rabies, 203
tuberculosis, 378
- C
- Cambodia
Japanese encephalitis, 224t
tuberculosis, 378
- Cameroon
meningitis, 186
- Campylobacter*
cholera, 278
- Campylobacter jejuni*, 7, 419
diarrhea, 287–289
recombinant protein vaccines, 289
traveler's diarrhea, 275–276
vaccines in clinical development, 290t
whole cell vaccines, 289
- Canada
cholera, 174
hepatitis B, 157, 369
rabies, 201
resources of, 62t
web sites for, 63t
- Canarypox, 247–248
- Cancer chemotherapy patients, 395
- Capillaries
yellow fever, 105
- Capsular polysaccharides (CPS), 29
conjugate vaccines, 11–12
- CDC. *See also* Centers for Disease Control (CDC)
Blue Sheet (Summary of Health Information
for International Travel), 37
- cDNA clone
17D virus, 139
- CDR, 5–6
- CD4+ T cells, 11
- Centers for Disease Control (CDC)
Blue Sheet (Summary of Health Information
for International Travel), 37
National Immunization Program
web site for, 37
resources of, 60t–61t
Travelers' Health
web site, 36–38
web sites for, 39, 63t
Yellow Book (Health Information for
International Travel), 37, 130
- Central America
hepatitis B, 369
- CF
yellow fever, 108
vaccine, 122
- Chad
cholera, 173
meningitis, 185
- Charts, 79
- Children. *See* Pediatric travelers
- Chile
meningitis, 188, 194
Ty21a, 165–166
- Chimeric yellow-fever–Japanese encephalitis
vaccine, 248
- China
hepatitis B, 157
Japanese encephalitis, 223, 241t, 244
Japanese encephalitis vaccine
cost-effectiveness of, 247
meningitis, 186, 187
rabies, 205
tuberculosis, 378
- Chiron Vaccines
web site and telephone number, 94
- Chloroquine
CVD 103-HgR, 175–176
effect on vaccine efficacy, 41t
malaria prophylaxis
rabies, 212
with yellow fever 17D vaccine, 138
- Cholera
global distribution of, 173f
irregular requirement for vaccination against,
35
- Cholera toxin B (CTB), 280
- Cholera vaccine, 171–172, 277–279, 393
currently available, 174–176, 174t
CVD 908, 170
CVD 909, 170
CVD 103-HgR, 174–176, 174t, 278
antibiotics, 175
children, 176
chloroquine, 175–176
immunocompromised, 175
mefloquine, 176
proguanil, 176
Ty21a (Vivotif Berna vaccine), 168
CVD 908-htrA, 170
efficacy, 413t
future, 177–178
parenteral whole cell vaccine, 173–174
previously available, 173
protective immunity, 172
risks, 172–173, 415
travelers, 172–173
- Ciprofloxacin
with meningococcal vaccine, 192, 192t
- Clostridium tetani*, 363
- Clotting factor deficiency, 404
- Coffee-ground hematemesis (black vomit), 103
- Cold chain, 50–51
- College students, 195, 353–383
adverse reactions, 356–357
disease-specific vaccines, 357–361
health sciences students
developing countries rotations, 382–383
meningitis, 188
- Colombia
meningitis, 188
- Colorvac, 176
- Combined cholera and typhoid vaccine, 178
- Combined hepatitis A and B vaccine, 154–155
- Combined hepatitis A and typhoid vaccine, 155
- Combivir, 383
- Commercially available travel health databases, 39
- Complementarity-determining regions (CDR), 5–6
- Complementary strand deoxyribonucleic acid
(cDNA) clone
17D virus, 139
- Complement cascade
activation of, 4f
pathogen killing by, 3–4
- Complement fixation (CF)
yellow fever, 108
vaccine, 122
- Conformational peptide mimics, 12
- Congenital rubella syndrome (CRS), 360
- Conjugated vaccines
immunosuppression, 349–350
- Conjugate polysaccharide vaccines
meningitis, 193–194
- Consent forms, 66
- Corticosteroids, 396
- Corynebacterium diphtheriae*, 363–364
- Corynebacterium* vaccine, 14
- Cost benefit analysis, 418–429
- Council of State and Territorial Epidemiologists
(CSTE), 374
- CPS, 29
conjugate vaccines, 11–12
- C-reactive protein (CRP), 4
- CRM197, 14
- CRP, 4
- CRS, 360
- Cryptosporidium*
traveler's diarrhea, 276
- CSTE, 374
- CTB, 280
- Cuba
meningitis, 188, 194
- Culex gelidus*, 223
- Culex* mosquitoes
control of, 236
- Culex pipiens*, 245–246
- Culex pseudovishnui*, 223
- Culex tritaeniorhynchus*, 223, 246
- Culex vishnui*, 223
- CVD. *See* Cholera vaccine
- Cyclospora*
traveler's diarrhea, 276
- Cytokines, 3, 4

- Cytokine-secreting cells
 double-ended antibodies, 30f
- Cytokine secretion assays, 29
- Czech Republic
 meningitis, 188
- D
- Dapsone-pyrimethamine (Maloprim)
 effect on vaccine efficacy, 41t
- Databases
 commercially available travel health, 39
- Day care centers
 hepatitis A, 152
- DDA, 270
- DEET (N,N-diethyl-3-methylbenzamide), 236
- Democratic Republic of Congo
 poliomyelitis, 361
 tuberculosis, 378
- Demographic data, 79
- Dengue, 221t
- Dengue 1, 303
- Dengue 2
 dengue fever vaccines, 302
- Dengue 4, 302–303
- Dengue fever vaccines, 298–307
 chimeric vaccines, 301–302
 in development, 299–306
 DNA, 305–306
 inactivated or subunit vaccines, 303–304
 live attenuated viruses, 299–300
 molecularly attenuated viruses, 302–303
 recombinant subunit, 304
 safety issues with, 300
 synthetic peptide, 304–305
 tissue culture-based, 303–304
- Dengue hemorrhagic fever (DHF), 298
- Dengue shock syndrome (DSS), 298
- Denmark
 inactivated mouse brain-derived Japanese
 encephalitis vaccine, 243
 meningitis, 188
- DEN-2 16681 PDK53, 299
- Deoxyribonucleic acid (DNA)
 dengue fever vaccines, 305–306
- Deoxyribonucleic acid (DNA) vaccine, 13, 17–18
 BCG, 269
 Japanese encephalitis, 248
- Departing travelers
 vaccinations for, 34
- Developing countries, 382–383
 DPT, 337f
 hepatitis A, 151
- DHF, 298
- Diabetes mellitus, 404
- Diarrhea
Campylobacter jejuni, 287–289
 vaccines in clinical development, 290t
- Diethyl-3-methylbenzamide, 236
- Dimethyl dioctadecylammonium (DDA), 270
- Diphtheria (DPT), 336f
 immunization, 14
 vaccine, 365t, 389
 adult booster doses, 336–337
 college students, 362–363
 developing countries, 337f
 pediatric travelers vaccines, 335–336
 in postsecondary schools, 354f
- Diphtheria and tetanus toxoids and acellular
 pertussis (DTaP)
 institutional prematriculation immunization,
 355t
 minimum ages and intervals between, 333t
 pediatric travelers vaccines, 335–336
- Diphtheria toxoid, 14
- Disabled vaccines, 14
 Japanese encephalitis, 237t
- Disease outbreaks
 web site, 38
- DNA
 dengue fever vaccines, 305–306
- DNA vaccine, 13, 17–18
 BCG, 269
 Japanese encephalitis, 248
- Documentation, 79
- Double-ended antibodies
 cytokine-secreting cells, 30f
- Doxycycline
 effect on vaccine efficacy, 41t
- D2-PIV, 303–304
- DPT. *See* Diphtheria (DPT)
- Drug abusers
 hepatitis A, 152
 hepatitis B, 157
- DSS, 298
- DTaP. *See* Diphtheria and tetanus toxoids and
 acellular pertussis (DTaP)
- Duck embryo rabies vaccine, 202
- Dukoral, 176
- Dysentery, 283
- E
- Ear piercing
 hepatitis B, 158
- Economic evaluation, 422–423
- Egg allergies
 pediatric travelers, 350
- Egg protein, 75
 allergic reaction to, 129–130
- Egypt
 poliomyelitis, 361
 Ty21a, 165
- Elderly, 11
 Japanese encephalitis, 226
 yellow fever vaccine, 136
- ELISA. *See* Enzyme-linked immunosorbent assay
 (ELISA)
- ELISPOT, 22, 29
- Emergency equipment and training, 58
- Emergency preparedness, 82
- Encephalitis
 following yellow fever vaccination, 121
 yellow fever vaccine, 137
- End stage renal disease (ESRD), 403–404
- Energix B, 153t, 371t
- England
 rabies, 206
- Entamoeba histolytica*
 traveler's diarrhea, 276
- Enteric vaccines
 immunologic considerations, 277–278
- Enterotoxigenic *Escherichia coli* (ETEC), 279–282
 live attenuated vaccines, 281
 subunit vaccines, 281–282
 transcutaneous immunization, 282
 vaccines in clinical development, 290t
- Enterovirus*, 151
- Environmental (nontuberculous) mycobacteria, 262
- Enzyme-linked immunosorbent assay (ELISA),
 21–22, 22–23, 23f, 26–27, 28
 yellow fever, 108
- Enzyme-linked immunospot (ELISPOT), 22, 29
- Epaxal, 153t
- EPI. *See* Expanded Program for Immunization (EPI)
- Equine rabies immunoglobulin (ERIG), 205
 adverse reactions to, 211
 manufacturers of, 206t
- ERIG, 205
 adverse reactions to, 211
 manufacturers of, 206t
- Escherichia coli*, 419
 traveler's diarrhea, 275–276
 oral killed whole cell-B subunit cholera
 vaccine (rBS-WC), 176
- ESRD, 403–404
- ET-37 clonal complex, 190
- ETEC. *See* Enterotoxigenic *Escherichia coli* (ETEC)
- Ethiopia
 meningitis, 186, 347
 tuberculosis, 378
- Europe
 cholera, 174, 176
 meningitis, 188
- Evans Vaccines Ltd.
 web site and telephone number, 94
- Expanded Program for Immunization (EPI), 58
 United Nations, 1
 web sites for, 63t
 WHO, 50
- Expatriates
 hepatitis A, 152
 hepatitis B, 158
- F
- Faget's sign, 102
- Fetal bovine kidney cell rabies vaccine, 202
- Flaccid paralysis
 with Japanese encephalitis, 230
- Flaviviruses, 101, 220–222
 medically important, 221t
 structure and replication strategy of, 221–222
- FluMist, 373
- Fluoroquinolones
 children, 192
 with meningococcal vaccine, 192, 192t
 pregnancy, 192
- Food-borne outbreaks
 of hepatitis A, 151
- Food handlers
 hepatitis A, 152
- Foreign students, 353–383
- Formalin inactivated mouse brain derived vaccine,
 219
- France
 hepatitis B, 157
 malaria, 313
 rabies, 201, 205
- Functional antibody tests, 25–29
- G
- Gambia
 meningitis, 186
- GAVI
 web sites for, 63t
- Genetic defects, 7–8
- GenHevac B, 153t
- German measles. *See* Rubella (German measles)
 vaccine
- Germany
 meningitis, 188
 rabies, 201, 205
- Ghana
 meningitis, 186
- Giardia*

- traveler's diarrhea, 276
Giardia lamblia, 6
 GlaxoSmithKline
 web site and telephone number, 94
 Global Alliance for Vaccines and Immunization (GAVI)
 web sites for, 63t
 Global Forum on TB Vaccine Research and Development
 World Health Organization (WHO), 271
 Greece
 hepatitis A, 366
 meningitis, 188
 Green Cross vaccine, 238
 Greenland
 hepatitis B, 369
 Group B meningococcal vaccines, 28–29
 Group B meningococcus, 16
 Group C electrophoretic type 37 (ET-37) clonal complex, 190
 Guam
 Japanese encephalitis, 226
 Guidelines for management of occupational exposure to HBV, HCV, HIV
 US Preventive Health Service, 57
 Guillain-Barré syndrome, 7, 288
 inactivated mouse brain-derived Japanese encephalitis vaccine, 243
 Guinea
 cholera, 173
 meningitis belt, 347
 H
Haemagogus mosquitoes, 112, 114
Haemophilus influenzae (Hib), 10
 meningitis, 193
 polysaccharide conjugated to tetanus toxoid, 16
 type B vaccine, 342, 388
 countries introducing, 343f
 vaccine
 minimum ages and intervals between, 333t
 Haiti
 typhoid fever, 164
 Hajj pilgrimage, 35
 meningitis, 186, 187, 188, 190
 Hand washing, 68–69
 Haptens, 11
 HAV
 nature of, 151
 Havrix, 153t, 368t
 Hawaii
 rabies, 206
 HBIG, 156–157
 HBsAg, 155
 HBV, 155
 HDCV, 204t
 rabies, 201–202
 Health Canada
 web site, 38
 Health care workers
 BCG vaccine, 263
 hepatitis A, 152
 hepatitis B, 157, 158
 Health sciences students
 developing countries rotations, 382–383
 Hemagglutination inhibition (HI), 26–27
 yellow fever, 108
 Hemagglutination test, 28
 Hemoglobin SC disease, 403
Hepacivirus, 220
Heparnavirus, 151
 Hepatitis, 419
 Hepatitis A, 150–155
 active immunization, 152–154
 epidemiology of, 151
 geographic distribution of, 151, 366t, 367f
 immunocompromised, 392
 low prevalence areas, 151
 passive immunization, 151–152
 populations at risk for, 152
 pregnancy, 392
 Hepatitis A vaccine, 152–154, 153t
 college students, 365–367
 economic evaluation of, 426
 efficacy, 413t
 minimum ages and intervals between, 333t
 pregnancy, 401
 recommended doses of, 368t
 risk, 412
 Hepatitis A virus (HAV)
 nature of, 151
 Hepatitis B, 420
 active immunization, 157
 children, 157, 158
 epidemiology of, 155–156
 geographic distribution of, 155–156, 369f
 multiple sclerosis, 396
 passive immunization of, 156–157
 prevention of, 156
 traveler, 157–159
 Hepatitis B immunoglobulin (HBIG), 156–157
 Hepatitis B surface antigen (HBsAg), 155
 Hepatitis B vaccine, 153t, 155–159, 389
 college students, 356, 367–370
 institutional prematuration immunization, 355t
 minimum ages and intervals between, 333t
 in postsecondary schools, 354f
 pregnancy, 400–401
 recommended dosages of, 371t
 Hepatitis B virus (HBV), 155
 Hepatyrrix, 169
 Herpes simple virus
 reactivation of, 20
 HI, 26–27
 yellow fever, 108
 Hib. *See Haemophilus influenzae* (Hib)
 High-avidity antibodies
 measurement of, 24
 Hispaniola
 hepatitis B, 369
 poliomyelitis, 361
 HIV. *See* Human immunodeficiency virus (HIV)
 HMG CoA
 yellow fever vaccine-associated viscerotropic
 adverse events, 128
 Hodgkin's disease, 403
 Homosexuals
 hepatitis A, 152
 hepatitis B, 157, 158
 Host defense responses
 measurement of, 21–30
 Host factors
 yellow fever, 107
 HRIG, 205–206
 manufacturers of, 206t
 Human diploid cell vaccines (HDCV), 204t
 rabies, 201–202
 Human immunodeficiency virus (HIV), 8, 397–400
 BCG vaccine, 263–264
 causing yellow fever vaccine failure, 125
 vaccine efficacy, 399–400
 yellow fever vaccine, 137
 Human rabies immunoglobulin (HRIG), 205–206
 manufacturers of, 206t
 Hydroxymethylglutaryl coenzyme A (HMG CoA)
 yellow fever vaccine-associated viscerotropic
 adverse events, 128
 Hypersensitivity
 inactivated mouse brain-derived Japanese
 encephalitis vaccine, 243–244
 Hyposplenism
 meningococcal vaccine, 195
 I
 IAC. *See* Immunization Action Coalition (IAC)
 Iceland
 meningitis, 188
 Idiopathic thrombocytopenic purpura (ITP), 403
 IFA
 yellow fever, 108
 Ig. *See* Immune globulin (Ig)
 Illness
 immunizing patients with, 76
 Immune deficiencies, 7–9
 Immune globulin (Ig)
 products, 77
 Immune globulin A (IgA), 6, 21, 26–27
 secretory, 26
 Immune globulin E (IgE), 6
 Immune globulin G (IgG), 6, 10f, 26–27
 ELISA, 23
 Immune globulin G2 (IgG2), 26–27
 Immune globulin M (IgM), 6, 10f, 21
 Immune response. *See* Adaptive immune response
 Immune system
 organization of, 2–7
 Immunity
 active, 2, 10f
 Immunization. *See also* Active immunization
 history, 79
 logbook, 81
 Immunization Action Coalition (IAC)
 resources of, 61t
 web site and telephone number, 94
 web sites for, 64t
 Immunization Monitoring Program, Active (IMPACT), 410
 Immunocompromised, 394–397
 CVD 103-HgR, 175
 routine vaccinations, 388–393
 travel-related vaccinations, 391–393
 Ty21a (Vivotif Berna vaccine), 167
 Immunoglobulin
 hepatitis A, 151–152
 rabies vaccine, 205–206
 Immunologic defects
 acquired, 8
 Immunologic memory, 1, 11
 Immunosuppression
 inactivated mouse brain-derived Japanese
 encephalitis vaccine, 240–242
 yellow fever vaccine, 137
 IMPACT, 410
 Inactivated mouse brain-derived Japanese
 encephalitis vaccine, 238–244
 adverse events, 243–244
 boosters, 240
 efficacy of, 242–243
 immunosuppression, 240–242
 lactation, 240–242
 pregnancy, 240–242
 schedules, 240

- Inactivated polio vaccine (IPV)
 injectable (Salk), 340
- Inactivated poliovirus vaccine (IPV)
 minimum ages and intervals between, 333t
- Inactivated (killed) vaccines, 14
 immunosuppression, 349–350
- India
 BCG vaccine, 260, 262
 cholera, 173
 Japanese encephalitis, 224t, 226, 227, 241t
 meningitis, 186
 meningitis belt, 347
 poliomyelitis, 361
 rabies, 203, 205
 tuberculosis, 378
 typhoid fever, 163–164
- Indirect immunofluorescence assay (IFA)
 yellow fever, 108
- Indonesia
 Japanese encephalitis, 224t, 228
 tuberculosis, 378
- Infant rat meningitis passive protection assay,
 28–29
- Infants. *See also* Pediatric travelers
 meningococcal vaccines, 193
 yellow fever vaccine, 135–136
- Infection control, 57, 68–69
- Infectious disease
 economic aspects of, 420–422
- Influenza vaccines, 11, 373t
 allergy to, 75
 college students, 370–373
 egg allergies, 350
 immunocompromised, 389
 minimum ages and intervals between,
 333t
 multiple sclerosis, 396
 pregnancy, 389, 400
- Influenza virus, 17
- Information sources
 assessment criteria for, 37t
- Information systems, 36
- Informed consent, 80
 international perspective, 66
- Injectable (Salk) inactivated polio vaccine (IPV), 340
- Injectable live attenuated virus vaccines
 rabies, 201
- Injection
 international perspective of, 75
 needle placement for, 71f
- Injection equipment
 selection of, 71
- Innate (natural) response, 2, 3
- Interferon
 for Japanese encephalitis, 235
 type 1
 17D vaccine, 124
 yellow fever, 106
- Interferon-alpha
 for Japanese encephalitis, 232
- Interferon-gamma
 yellow fever, 106
- International Certificate of Vaccination
 World Health Organization (WHO), 80–81
- International Health Regulations
 requirements outside of, 35–36
 revisions for, 34–35
 World Health Organization (WHO), 32–35
 yellow fever, 33–34
- International students
 vaccines, 356
- International Travel and Health (Blue Book)
 World Health Organization (WHO)
 ordering information, 130
 web site, 38
- International Union Against Tuberculosis and Lung
 Disease (IUATLD), 261
- Intestinal infectious disease, 419
- Intradermal injection, 72
 administration of
 policy and procedure, 91
- Intramuscular injection, 72
 administration of, 73f
- IPV
 injectable (Salk), 340
 minimum ages and intervals between, 333t
- Iran
 rabies, 205
- Ireland
 measles, 345
- Israeli military recruits
Shigella vaccines, 286
- Italy
 hepatitis A, 366
 hepatitis B, 157
- Itinerary
 identification of, 42
 risk points in, 43–44
- ITP, 403
- IUATLD, 261
- Ivory Coast
 cholera, 173
- J
- Jamborees
 meningitis, 188
- Japan
 inactivated mouse brain-derived Japanese
 encephalitis vaccine, 243
 Japanese encephalitis, 224t, 241t
- Japanese B encephalitis
 immunocompromised, 391
 pregnancy, 391, 401
 risk, 414–415
- Japanese encephalitis, 221t
 clinical features of, 229–232
 diagnosis of, 232
 distribution of, 220f
 elderly, 226
 epidemic vs. endemic disease, 226–227
 epidemiology of, 227–229
 heterologous anti-influenza antibodies, 236
 high-risk countries
 vaccination policies of, 241t
 histopathology of, 235
 immune response, 235–236
 incidence of, 227–228
 infectious agent for, 220–222
 management of, 232–236
 nonvaccine preventive measures, 236
 outcome of, 233
 pathogenesis of, 234
 risk by country, 224t–225t
 sequelae of, 233f
 travelers information, 242t
 virulence determinants, 234
- Japanese encephalitis vaccine, 219–249, 237t.
See also Inactivated mouse brain-derived
 Japanese encephalitis vaccine
 in Asia
 cost-effectiveness of, 247
 in development, 247–248
 efficacy, 413t
 historic perspective, 219–222
 inactivated cell culture-derived, 244–245
 live attenuated SA14-14-2 vaccine, 245–247
- Japanese encephalitis virus (JEV)
 epidemiology of, 223–229
 enzootic cycle, 223
 geographic distribution, 223–224
 prototypes and genotypes of, 222
 transmission cycle of, 223f
- Jaundice, 150
- Jenner, Edward, 1
- JEV. *See* Japanese encephalitis virus (JEV)
- K
- Kenya
 tuberculosis, 378
- Kidneys
 yellow fever, 105
- Killed vaccines, 14
 immunosuppression, 349–350
- Korea
 Japanese encephalitis, 224t
- Kupffer's cells
 yellow fever, 104
- Kyasanur forest disease virus, 221t
- L
- Lactation
 inactivated mouse brain-derived Japanese
 encephalitis vaccine, 240–242
 yellow fever vaccine, 136–137
- Langat viruses, 236
- Laos
 Japanese encephalitis, 224t
- Late-component complement deficiency
 meningococcal vaccine, 195
- Latex agglutination, 26–27
- Latex allergy, 77–78
- Latin America
 cholera, 172–173, 174, 176
 hepatitis A, 366
- Lectin-sugar-binding protein, 4
- Leptospirosis
 mimicking yellow fever, 107
- Leukocytes, 2
- Lipooligosaccharide (LOS), 29
- Lipopolysaccharides
 meningitis, 189
- Listeria monocytogenes*, 9
- Live attenuated SA14-14-2 vaccine, 245–247
- Live attenuated (disabled) vaccines, 14
 Japanese encephalitis, 237t
- Liver
 yellow fever, 104f
- Liver disease
 hepatitis A, 152
- Live-virus vaccines
 immunosuppression, 349–350
- LOS, 29
- Louse-borne relapsing fever
 mimicking yellow fever, 107
- Lupus erythematosus, 403
- Lymph nodes, 2
 yellow fever, 105
- Lymphoid cells, 3
- Lymphoid system, 2, 2f
- M
- Madagascar
 cholera, 173

- Major histocompatibility complex (MHC), 5
17D vaccine, 124
- Malaria, 38, 420
chemoprophylaxis vs. vaccination, 312t
economic evaluation of, 427
life cycle, 313–316
- Malaria vaccine, 311–327
attenuated sporozoite vaccine, 316–318, 317f, 318f
candidate vaccines, 319–323
carbohydrate, 323
designing, 313–316, 314f
future, 325
genomes to vaccines, 324–325
heterologous (prime-boost), 323
human genome, 324–325
immunity models, 316–317
nucleic acid-based, 321–322
protein-based, 319–321
stage-specific protein expression, 324
surface protein, 324
- Malarone
effect on vaccine efficacy, 41t
- Malaysia
Japanese encephalitis, 224t, 226, 241t
- Mali
cholera, 173
meningitis, 186
- Malnutrition
causing yellow fever vaccine failure, 125
- Maloprim
effect on vaccine efficacy, 41t
- Mannan-binding protein, 4
- Marshall Islands
cholera, 173
- MCC vaccine, 188
- MDR-TB, 266, 378
- Measles (Rubeola), 342–345
countries implementing reduction strategies for, 344f
vaccine, 359t
college students, 357–358
in postsecondary schools, 354f
pregnancy, 390
- Measles, mumps, and rubella (MMR), 359t
HIV, 398
institutional prematriculation immunization, 355t
minimum ages and intervals between, 333t
pregnancy, 402
- Measurements and tests, 20–30
- Mecca hajj, 35
meningitis, 186–188, 190, 346–347, 420
- Medical history, 79
- Medical records, 79
- Medications, 79
- MedImmune, Inc.
web site and telephone number, 94
- Mefloquine
CVD 103-HgR, 176
effect on vaccine efficacy, 41t
Ty21a (Vivotif Berna vaccine), 167
- Memory B cells, 9–10
- MenC polysaccharide
conjugated to diphtheria toxoid, 16
- Meningitis
children, 188
etiology of, 189–190
risks, 188
- Meningitis belt, 185–188, 346–347
- Meningococcal bacteria, 189f
- Meningococcal disease
college students, 373–376
state legislation relating to, 375t
- Meningococcal disease vaccine, 376t
risk, 412
- Meningococcal group B disease, 188
- Meningococcal group C (MenC) polysaccharide
conjugated to diphtheria toxoid, 16
- Meningococcal meningitis, 35
- Meningococcal polysaccharide vaccine, 356
- Meningococcal quadrivalent polysaccharide vaccine
institutional prematriculation immunization, 355t
- Meningococcal serogroup C conjugate (MCC)
vaccine, 188
- Meningococcal vaccine, 185–196, 191–194
efficacy, 413t
immunocompromised, 391
infants, 193
pregnancy, 391, 401
recommendations, 195
- Meningococci
nasopharyngeal carriage of
postexposure antimicrobial prophylaxis against, 192, 192t
- MENINVACT, 193
- Menjugate, 193
- MENOMUNE, 191
adverse events, 191t
- Mentally handicapped institutions
hepatitis A, 152
- Merck & Co.
web site and telephone number, 94
- Meruvax, 359t
- Mexico
typhoid fever, 164
- MHC, 5
17D vaccine, 124
- Micronesia
cholera, 173
- Military personnel
hepatitis A, 152
hepatitis B, 158
meningitis, 188, 195
- Minimum age requirements, 78
- Missionaries
hepatitis A, 152
hepatitis B, 158
- MMR. *See* Measles, mumps, and rubella (MMR)
- M-M-R II, 359t
- Mongolia
meningitis, 186
- Monophosphoryl lipid A (MPL), 270
- Mosquitoes. *See* individual species
- Mouse brain derived vaccine
formalin inactivated, 219
- Mozambique
tuberculosis, 378
- MPL, 270
- M-R-Vax, 359t
- Mucosal immunity, 12–13
- Multidrug-resistant tuberculosis (MDR-TB), 266, 378
- Multiple sclerosis, 396
- Mumps vaccine, 359t
college students, 358–360
immunocompromised, 391
in postsecondary schools, 354f
pregnancy, 391
- Mumpsxvax, 359t
- Murray Valley encephalitis, 221t
- Muslim pilgrims, 35
- Mutacol, 174
- Myanmar
Japanese encephalitis, 224t, 226
rabies, 203
tuberculosis, 378
- Mycobacterium bovis*, 9
- Mycobacterium leprae*, 9
- Mycobacterium paratuberculosis*, 9
- Mycobacterium tuberculosis*, 5, 7, 8–9, 9, 257, 378
reactivation of, 20
- Myocardium
yellow fever, 105
- N
- Nabi
web site and telephone number, 94
- NAI, 318
- Nakayama vaccine, 238
- National Childhood Vaccine Injury Act (NCVIA), 65, 79, 83
- National Clinicians' Post-Exposure Prophylaxis Hotline, 383
- National Health Service
Scotland
web site, 38
- Native outer membrane vesicle (NOMV) vaccine
meningitis, 194
- Natural killer (NK) cells, 3, 5
yellow fever, 106
- Naturally acquired immunity (NAI), 318
- Natural response, 2, 3
- NCVIA, 65, 79, 83
- Needle phobia, 78
- Neisseria gonorrhoea*
adhesion, 27
- Neisseria lactamica*, 6
- Neisseria meningitidis*, 6, 10, 12, 185, 189–190, 373
global epidemiology of, 185–186
opsonophagocytosis, 25–26
outer membrane vesicle (OMV) vaccine, 28
reservoir for, 190
- Nelfinavir, 383
- Neopterin
17D vaccine, 124
- Nepal
Japanese encephalitis, 225t, 226, 241t
meningitis, 186, 187
meningitis belt, 347
rabies, 203
Vi capsular polysaccharide, 168
- Netcare database, 39
- Netherlands, 420
BCG vaccine, 260
measles, 345
meningitis, 188
- Neurotropism, 118
yellow fever, 104
- Neutralization tests
yellow fever, 108
- Neutralizing antibodies
measurement of, 26–28
yellow fever, 107
- New Guinea
Japanese encephalitis, 226
- New Zealand
cholera, 176
meningitis, 188
- Niger
cholera, 173
meningitis, 185

- Nigeria
meningitis, 185
poliomyelitis, 361
tuberculosis, 378
- NK cells, 3, 5
yellow fever, 106
- NOMV vaccine
meningitis, 194
- Nonparenteral vaccines
administration of, 68–69
oral and nasal routes, 69
- Nonsteroidal anti-inflammatory drugs (NSAID)
for Japanese encephalitis, 232
- Non-tuberculous mycobacteria (NTM), 262
- North Korea
Japanese encephalitis, 241t
- Norway
meningitis, 188, 194
- NSAID
for Japanese encephalitis, 232
- NTM, 262
- NYVAC, 247–248
- O
- Occupational Health and Safety (OSHA)
blood-borne pathogen standard, 57
web sites for, 64t
- OMP, 29
meningitis, 189
- Omsk hemorrhagic fever, 221t
- OMV vaccine, 16, 28
meningitis, 194
- Opacity-associated proteins
meningitis, 189
- Opisthotonos
with Japanese encephalitis, 229–230, 230f
- OPSI, 403
- Opsonic activity
avidity, 24
- Opsonins, 4, 26
- Opsonophagocytosis, 25–26
assay, 22, 24f, 26
- OPV, 340, 361–362
- Oral killed whole cell-B subunit cholera vaccine
(rBS-WC), 174t, 176–177
- Oral poliovirus vaccine (OPV), 340, 361–362
- Organ donations
yellow fever 17D vaccine, 137
- Orochol, 174
- OSHA
blood-borne pathogen standard, 57
web sites for, 64t
- O-specific polysaccharide-protein conjugate vaccine
Shigella, 285
- Outer membrane proteins (OMP), 29
meningitis, 189
- Outer membrane vesicle (OMV) vaccine, 16, 28
meningitis, 194
- Overwhelming postsplenectomy infection (OPSI), 403
- P
- Pain control, 69
- Pakistan
Japanese encephalitis, 225t
poliomyelitis, 361
rabies, 203
typhoid fever, 164
- Papua New Guinea
Japanese encephalitis, 225t
- Parenteral vaccines
administration of, 68–69, 69–70
routes for, 71–75, 71f
- Parenteral whole cell typhoid vaccine, 164
- Parenteral whole cell vaccine
cholera vaccines, 173–174
- Parkinson's disease
with Japanese encephalitis, 229–230
- Passive and passive-active immunization
yellow fever, 138–139
- Passive hemagglutination test, 28
- Passive immunity, 13
- Passive immunization
hepatitis A, 151–152
hepatitis B, 156–157
rabies vaccine, 205–206
- Pasteur, Louis, 200
- PATH (Program for Appropriate Technology
in Health)
web sites for, 58, 64t
- Patients
safety of, 56–57
vaccination records of, 81
- Paying
willingness to, 425
- PCV
minimum ages and intervals between, 333t
- Pediatric travelers, 332–350
adoptees, 348–349
BCG vaccine, 263
CVD 103-HgR, 176
fluoroquinolones, 192
hepatitis B, 157, 158
hepatitis B vaccine, 341–342
hypersensitivity, 350
immigrants, 348–349
immunosuppression, 349–350
meningitis, 188
meningococcal meningitis vaccines,
346–347
migrants, 348–349
mumps vaccine, 345
pertussis vaccine, 338–339
pneumococcal vaccines, 346
poliomyelitis vaccine, 339–344
positioning for vaccination, 69
preexposure rabies vaccination, 214–215
rabies, 208–209
rubella vaccine, 345
tetanus vaccine, 338
Ty21a (Vivotif Berna vaccine), 168
varicella (chickenpox) vaccine, 346
Vi capsular polysaccharide, 170
- Pediatric travelers vaccine, 335–348
diphtheria, 335–337
immune responses to, 335
- Penicillin, 13
- People's Republic of China
Japanese encephalitis, 225t
- PEPline, 383
- Personal protective equipment (PPE)
health sciences student rotations, 383
- Pertussis
institutional prematriculation immunization,
355t
- Pertussis vaccine, 390
- Peru
poliomyelitis, 361
- Peru-15, 278–279
- Pestivirus*, 220
- Petechial hemorrhage
yellow fever, 105
- Peyer's patches, 2
- Phagocytosis, 25–26
- Pharmaceutical company
telephone numbers, 94
web sites, 94
- Phenylketonuria
CVD 103-HgR, 176
- Philippines
cholera, 174, 176
Japanese encephalitis, 225t, 226
tuberculosis, 378
typhoid fever, 164
- PHKC rabies vaccine, 202, 204t
- Pilin, 27
- Plague vaccine, 394
pregnancy, 401
- Plasmodium*, 313
- Plasmodium falciparum*, 319
- Plesiomonas*
traveler's diarrhea, 276
- Pneumococcal capsular vaccine, 15
- Pneumococcal conjugate vaccine (PCV)
minimum ages and intervals between, 333t
- Pneumococcal disease, 16–17
- Pneumococcal disease vaccine, 378t
immunocompromised, 389
pregnancy, 389
- Pneumococcal infection
college students, 376–378
- Pneumococcal polysaccharide vaccine (PPV),
377
minimum ages and intervals between, 333t
- Pneumocystis carinii*, 4, 7
- Policies, 49–50
after-hours care, 90
intradermal injection
administration of, 91
postimmunization anaphylaxis, 97–99
vaccine refrigerator, 88
- Poliomyelitis
eradication progress, 339f
- Poliomyelitis-like acute flaccid paralysis
with Japanese encephalitis, 231f
- Poliomyelitis vaccine, 363t
college students, 361–362
HIV, 398–399
immunocompromised, 390
in postsecondary schools, 354f
pregnancy, 390, 402
- Polysaccharide conjugate vaccines, 16–17
- Polysaccharide vaccines
immunosuppression, 349–350
meningitis, 191–193
- PorA OMV vaccine, 194
- Porins
meningitis, 189
- Portal hypertension, 403
- Portugal
hepatitis A, 366
- Postexposure prophylaxis
US Preventive Health Service, 57
- Post-Exposure Prophylaxis Hotline (PEPline), 383
- Postexposure rabies prophylaxis, 209, 209t
contraindications to, 211
failure of, 212
schedules, 210t
- Postimmunization anaphylaxis
policies and procedures, 97–99

- Postsecondary schools
 prematriculation immunization requirements in, 354f
- Postsplenectomy sepsis (PSS), 403
- Postvaccinal encephalitis. *See* Yellow fever vaccine-associated neurotropic disease (YEL-AND)
- Postvaccination patient instructions, 82
- PPD, 5
- PPE
 health sciences student rotations, 383
- PPV, 377
 minimum ages and intervals between, 333t
- Prednisone, 396
- Preexposure rabies vaccination, 207–209
 children, 214–215
 health sciences student rotations, 383
- Pregnancy, 400–402
 BCG vaccine, 264
 causing yellow fever vaccine failure, 125
 fluoroquinolones, 192
 inactivated mouse brain-derived Japanese encephalitis vaccine, 240–242
 measles vaccine, 358
 rarely recommended vaccinations, 393–394
 routine vaccinations, 388–393
 tetanus vaccine, 364
 travel-related vaccinations, 391–393
 Ty21a (Vivotif Berna vaccine), 167
 vaccines
 avoidance during, 401–402
 contraindicated during, 402–403
 Vi capsular polysaccharide, 169
 yellow fever vaccine, 136–137
- Prevention
 benefits of, 425
- Primary hamster kidney cell (PHKC) rabies vaccine, 202, 204t
- Procedure, 49–50
 after-hours care, 90
 vaccine refrigerator, 88–89
- Program for Appropriate Technology in Health
 web sites for, 58, 64t
- Proguanil
 CVD 103-HgR, 176
 effect on vaccine efficacy, 41t
- ProMED
 web site, 38
- Prostitutes
 hepatitis B, 157, 158
- PSS, 403
- Public Health Laboratory Service
 England
 web site, 38
- Purified, inactivated DEN-2 vaccine (D2-PIV), 303–304
- Purified chick embryo cell rabies vaccine, 203, 204t
- Purified duck embryo rabies vaccine, 202, 204t
- Purified polysaccharide vaccines, 15
- Purified protein derivative (PPD), 5
- Purified Vero cell rabies vaccine, 203, 204t
- Q
- Quarantinable disease
 web sites for, 37
- R
- Rabies
 bat, 206
 children, 208–209
 epidemiology of, 206
 global risk of, 208f
 modern treatment of, 207–214
 preexposure rabies vaccination, 207–209
- Rabies-free countries, 207t
- Rabies immunoglobulin (RIG), 205–206
- Rabies patients
 management of, 212–214
- Rabies vaccine, 200–215
 adverse effects of, 210–211
 currently available, 204t
 future of, 214–215
 history of, 200
 immunocompromised, 393
 modern, 201–204
 passive immunization, 205–206
 pregnancy, 393, 401
- Rabies virus
 biologic warfare, 214–215
- Radioimmunoassay (RIA), 28
- Rave concerts
 meningitis, 188
- rBS-WC, 174t
- RBS-WC, 174t, 176–177, 280
- rBS-WC, 176–177
- Recombinant B subunit cholera vaccine (rBS-WC), 174t, 176–177, 280
- Recombinant hemagglutinin (rHA), 17
- Recombinant vaccines, 17
 Japanese encephalitis, 237t
- Recombivax, 153t
- Recombivax HB, 371t
- Recommended vaccinations, 36–38
 compiling list of, 40–46
- Record keeping, 79
- Refrigerator-freezer thermometers, 51
- Refusal forms, 66
- Renal failure, 403–404
- Replication deficient canarypox, 247–248
- Republic of Ireland
 meningitis, 188
- Required vaccines, 32–36
- RES, 2, 2f, 3
- Reticuloendothelial system (RES), 2, 2f, 3
- rHA, 17
- Rhabdomyolysis, 128
- Rheumatoid arthritis, 397, 403
- Rheumatoid disease, 41
- RIA, 28
- Ribonucleic acid (RNA) vaccines, 18
- Rice-water stools
 cholera, 171
- Rifampin
 with meningococcal vaccine, 192, 192t
- RIG, 205–206
- Risks
 communication about, 59–67
- RNA vaccines, 18
- Rose spots, 163
- RTS, S/AS02A, 320
- Rubella (German measles) vaccine, 26–27, 359t
 college students, 360–361
 in postsecondary schools, 354f
- Rubeola. *See* Measles (Rubeola)
- Russia
 Japanese encephalitis, 225t
- S
- SA14-14-2, 237
- Safe Injection Global Network
 web site, 58
- Safety
 of patients, 56–57
- Saipan
 Japanese encephalitis, 226
- Salicylates
 for Japanese encephalitis, 232
- Salk inactivated polio vaccine (IPV), 340
- Salmonella*, 419
 adhesion, 27
 traveler's diarrhea, 275–276
- Salmonella enterica*, 14
- Salmonella enterica* serovar Typhi (*Salmonella typhi*), 162, 163
- Saudi Arabia, 35
 meningitis, 186, 187, 188
 meningitis belt, 347
- SBA, 22, 28
- SBL Vaccin AB, 280
- SC602, 284
- SC5700, 283–284
- SCLAVO
 adverse reactions to, 211
- Screening
 international perspective, 67–68
- Secretary (s) IgA, 26
- Seizures
 with Japanese encephalitis, 229
- Semple vaccine (SV), 200, 201, 203–204
- Senegal
 meningitis, 186
 meningitis belt, 347
- Sequella Global TB Foundation, 271
- Serum bactericidal assay (SBA), 22, 28
- Serum sickness, 13–14
 predicting, 211
- Serum sickness syndrome
 17D vaccine, 129
- Serum vibriocidal antibody response, 172
- Severe combined immunodeficiency, 7
- Sewage workers
 hepatitis A, 152
- Shigella*, 17
 live attenuated vaccines, 283–287
 proteasome intranasal vaccine delivery, 287
 subunit vaccines, 285–287
 traveler's diarrhea, 275–276, 282–287
 vaccines in clinical development, 290t
- Shigella conjugate* vaccine, 277
- Shigella flexneri*, 282–283
- Shigella sonnei*, 282–283
- Shigellosis, 283
- SIADH
 with Japanese encephalitis, 231f
- Sickle cell anemia, 403
- SIGN (Safe Injection Global Network)
 web site, 58
- Singapore
 Japanese encephalitis, 225t
- Site
 abscess, 83
- Skin
 evaluation and preparation of, 70–71
- Skin test
 predicting serum sickness, 211
- SLE, 397
- Sleeping sickness, 219–220
- Slovakia
 meningitis, 188
- Smallpox, 1
 global eradication of, 33
- Smallpox vaccine
 immunocompromised, 394
 pregnancy, 394

- SMB rabies vaccine, 201, 203–204, 204
- Smoking
meningitis, 188
- Solid organ transplant, 396
- Somalia
poliomyelitis, 361
- South Africa
cholera, 173
tuberculosis, 378
Vi capsular polysaccharide, 168
- South America
hepatitis B, 369
rabies, 204, 205, 209
yellow fever
incidence of, 110, 110f
- Southeast Asia
hepatitis B, 157
hepatitis B vaccine, 341
- South Korea
inactivated mouse brain-derived Japanese encephalitis vaccine, 243
Japanese encephalitis, 226, 241t
- Soviet Union
Japanese encephalitis, 223
- Spain
meningitis, 188
- Spleen, 2
yellow fever, 105
- Splenocyte proliferation assays, 29
- Sri Lanka
cholera, 174
Japanese encephalitis, 225t, 226
- St. Louis encephalitis, 221t
immune response, 235
- Staff immunizations, 57
- Staff safety, 56–57
- State health departments, 59
- State immunization record or registry, 81
- State University of New York Health Science Center (Brooklyn)
health sciences student rotations, 382
- Streptococcus pneumoniae*, 6, 10, 15, 22, 376–377
opsonophagocytosis, 25–26
- Students. *See also* College students
foreign, 353–383
- Subcutaneous injection, 72
administration of, 74f
- Sub-Saharan Africa
hepatitis B, 382
hepatitis B vaccine, 341
measles, 342
meningitis, 185, 195
- Subunit vaccines
Shigella, 285–287
- Suckling mouse brain (SMB) rabies vaccine, 201, 203–204, 204
- Sudan
meningitis, 185
poliomyelitis, 361
- Surrogate markers
BCG vaccine, 270
- SV, 200, 201, 203–204
- Syncope, 82–83
- Syndrome of inappropriate antidiuretic hormone secretion (SIADH)
with Japanese encephalitis, 231f
- Syringe
filling of, 70
- Systemic amyloidosis, 403
- Systemic lupus erythematosus (SLE), 397
- T
- Taiwan
Japanese encephalitis, 226, 228, 241t
- Tattoos
hepatitis B, 158
- TBVIAC, 271
- T cells
CD4+, 11
- TCR, 172
- Tembusu viruses, 236
- Tetanus
college student, 362–363
institutional prematriculation immunization, 355t
in postsecondary schools, 354f
- Tetanus-diphtheria injections, 78
- Tetanus vaccine, 365t, 389
college student, 364
- Thailand
inactivated mouse brain-derived Japanese encephalitis vaccine
adverse events, 243
Japanese encephalitis, 225t, 226, 227, 228, 241t
Japanese encephalitis vaccine
cost-effectiveness of, 247
rabies, 205, 209
tuberculosis, 378
- Thalassemia, 403
- T helper cells type 1 class (Th1), 6, 22
- T helper cells type 2 class (Th2), 22
- Thymus, 3
- Tick-borne encephalitis, 221t
- Tick-borne encephalitis vaccine, 394
- Tick-borne viruses, 221t
- Time, 425
- Tissue culture-derived vaccines, 15
- T lymphocytes, 3
17D vaccine, 124
- TMVC database, 39
- TNF-alpha
17D vaccine, 124
- Tonsils, 2
- Toxin-coregulated pili (TCP), 172
- Toxoid vaccines, 14
- Transferrin-binding protein B vaccine, 194–195
- Travax subscription database, 39
- Travel-associated infection
vaccination for
modeling impact of, 427–428
- Travelers
current health status
determination of, 40
current vaccine status
determination of, 40
medication use
determination of, 42–43
- Traveler's diarrhea
epidemiology of, 275–277
Shigella, 282–287
- Travel health clinic
immunization policies and procedures for, 92–93
- Travel-related infections, 419–420
- Travel-related syndromes
differential diagnosis of, 39
- Trip data, 79
- Tuberculin skin testing, 265–266
health sciences student rotations, 383
- Tuberculosis, 5, 257
college students, 378–380
incidence of, 348t
screening
in postsecondary schools, 354f
testing, 77
- Tuberculosis vaccine. *See also* Bacille Calmette Guérin (BCG) vaccine
adverse effects of, 259
candidates, 268–270
constraints to, 271–272
future developments of, 266–267
history of, 258–259
in preclinical development, 268t
safety of, 259
types of, 266
- Tuberculosis Vaccine Initiative Advisory Committee (TBVIAC), 271
- Tumor necrosis factor-alpha (TNF-alpha)
17D vaccine, 124
- Turkey
hepatitis A, 366
- Twinrix, 153t, 371t
- Ty800, 171
- Ty21a (Vivotif Berna vaccine), 165–168, 165t
antibiotics, 167
characteristics of, 165–166
children, 168
contraindications for, 167
CVD 103-HgR, 168
dose/boost, 166–167
efficacy and time to protection of, 167
immunocompromised, 167
interactions with, 167–168
mechanism of action, 166f
mefloquine, 167
pregnancy, 167
side effects of, 167
- Type B encephalitis, 219
- Type 1 interferon
17D vaccine, 124
yellow fever, 106
- Typhim Vi, 169
- Typhoid fever, 162–163
global distribution of, 164f
risks, 163–164
- Typhoid fever vaccines, 162–171
currently available, 164–170, 165t
economic evaluation of, 426
efficacy, 413t
HIV, 399
immunocompromised, 392
new general live oral, 170
new parenteral, 171
pregnancy, 392, 401
previously available, 164
risk, 412
- U
- Uganda
tuberculosis, 378
- United Kingdom (UK)
BCG vaccine, 260
inactivated mouse brain-derived Japanese encephalitis vaccine
adverse events, 243
malaria, 313
meningitis, 188
Meningococcal Carriage Group, 193
National Health Service (NHS), 422–423
- United Nations
Expanded Program for Immunization (EPI), 1

- United Nations International Children's Emergency Fund (UNICEF), 58
web sites for, 64t
- United Republic of Tanzania
tuberculosis, 378
- University dormitories. *See* College students
- University of Rochester (New York)
health sciences student rotations, 382–383
- University of Washington
health sciences student rotations, 383
- US Army soldiers
DEN-2 16681 PDK53, 299
- US Preventive Health Service
guidelines for management of occupational exposure to HBV, HCV, HIV, 57
postexposure prophylaxis, 57
- US Public Health Service (USPHS)
web sites for, 64t
- V
- VAAE
Canada, 410
- Vaccination
adverse effects of
surveillance systems for, 410
anatomic sites for
limited, 78
contraindications to
misconceptions concerning, 96
definition of, 1
immunologic principles of, 1–19
inadequate documentation of, 76
long-term protection of, 9–14
minimum ages and intervals between, 333t–334t
safety of
communication of risk about, 411–415
- Vaccination records
of patients, 81
- Vaccine(s)
administration of
equipment and supplies checklist, 95
patient encounter, 59–78
postcounter considerations, 79–83
pre-encounter quality elements, 49–50
resources for, 58–59, 60t–62t
supplies and equipment, 56
technical aspects of, 48–84
web sites for, 63t–64t
allergies to, 75
altering volume of, 78
anticipating shortages of, 56
in clinical development
for diarrhea prevention, 290t
contraindications, 67
dosing schedule
interruption of, 76
effectiveness of, 11–12
efficacy of, 423–424
inspection and reconstitution of, 69–70
interchangeability of, 77
inventory log form
sample of, 54f
multiple doses of
inadequate time interval for, 76
multiple injections
simultaneous administration of, 77
postadministration complications, 81–83
precautions, 67
requirements and recommendations for, 32–46
risk-benefit ratio, 44–46
safety of, 409–411, 411
selection of, 40t
storage of, 53–55
transport of, 50–51, 55
wastage of, 55
- Vaccine Adverse Event Reporting System (VAERS), 83, 357, 410
- 17D vaccine, 130
web sites for, 64t
yellow fever vaccine-associated neurotropic disease (YEL-AND), 127
- Vaccine Associated Adverse Event (VAAE)
Canada, 410
- Vaccine information statements (VIS), 65–66, 80
- Vaccine-preventable disease
magnitude of threat, 44
web sites, 39t
- Vaccine program
evaluation of, 423–425
- Vaccine refrigerator
policies, 88
procedure, 88–89
- Vaccine refrigerator-freezer unit, 51
- Vaccine supplies
receipt of, 53
- Vaccine temperature control
monitoring of, 51–53
sample of, 52f
- Vaccinia vaccine
Japanese encephalitis, 247–248
pregnancy, 402
- Vaccinomics
malaria, 325, 326f
- VAERS. *See* Vaccine Adverse Event Reporting System (VAERS)
- VAQTA, 153t, 368t
- Varicella vaccine, 381t
college students, 356, 380–382
HIV, 398
institutional prematriculation immunization, 355t
minimum ages and intervals between, 333t
in postsecondary schools, 354f
pregnancy, 390, 402
- Varicella-zoster virus (VZV), 380
- Vasovagal reaction, 82–83
- ViATIM, 169
- Vibrio cholerae*, 162, 171–174
traveler's diarrhea, 276
- Vi capsular polysaccharide, 165t, 168–170
characteristics of, 168–169
children, 170
contraindications for, 169–170
dose/boost, 169
efficacy and time to protection, 169
future, 170
interactions, 170
pregnancy, 169
side effects of, 169
- Vietnam
Japanese encephalitis, 225t, 226, 227, 241t
rabies, 204, 209
tuberculosis, 378
- Viral hemorrhagic fever, 100
- Viral upper respiratory infections
meningitis, 188
- Viruses
subverting human defenses, 8
- VIS, 65–66, 80
- Viscerotropism
yellow fever, 104, 131t–134t
- Vivotif Berna vaccine, 165–168. *See also* Ty21a (Vivotif Berna vaccine)
- Von Economo's encephalitis lethargica, 219–220
- VZV, 380
- W
- Waivers, 66, 80
- Web sites, 36–38, 63t–64t, 94
- Western Europe
hepatitis B, 157
- Western Pacific
Japanese encephalitis, 225t
- West Nile virus, 34, 221t, 232
- White cells (leukocytes), 2
- Whole cell-B subunit cholera vaccine (rBS-WC), 174t, 176–177
- Wild-type yellow fever
protection against, 124
- World Health Organization (WHO), 1
Expanded Programme on Immunization (EPI), 50
Global Forum on TB Vaccine Research and Development, 271
International Certificate of Vaccination, 80–81
International Health Regulations, 32–35
International Travel and Health (Blue Book)
ordering information, 130
web site, 38
resources of, 62t
web sites for, 64t
- WRSS1, 284
- Wyeth Lederle Vaccines
web site and telephone number, 94
- X
- X4073, 171
- X-linked agammaglobulinemia, 7
- Y
- Yellow fever, 111–112, 111t, 221t
active immunization, 116–126
countries requiring vaccination certificates, 135f
diagnosis of, 107–108
disease syndrome, 102–108
endemic zone, 109f
epidemiology of, 108–116
host factors, 107
iceberg phenomenon, 102f
immune response, 106–107
incidence of, 110, 110f
International Health Regulations, 33–34
irregular requirement for vaccination against, 35
liver, 104f
passive and passive-active immunization, 138–139
pathology and pathogenesis, 103–106
travelers, 111–112, 111t
treatment of, 108–109
zone of emergence, 115
- Yellow fever 17D vaccine, 100–101, 104
adverse events, 126–127
rare, 127–130
with chloroquine, 138
clinical trials of, 116
cytokine responses, 124
egg protein
allergic reaction to, 129–130

- manufacturers of, 116, 117t
- simultaneous and combined vaccination, 137–138
- viremia following, 121–122
- Yellow fever vaccine, 34, 100–140. *See also* specific vaccines
 - allergy to, 75
 - antigenic properties of, 119–120
 - contraindications to, 135–137
 - dose and route of administration, 120
 - efficacy, 413t
 - egg allergies, 350
 - egg protein
 - allergic reaction to, 129–130
 - future, 139
 - HIV, 137, 398
 - immune response to, 122–123
 - kinetics of, 123
 - immunocompromised, 392–393
 - immunosuppression, 137
 - improper handling of, 130
 - indications for, 130–135
 - lactation, 136–137
 - minimum age for vaccination, 135–137
 - pregnancy, 136–137, 392–393, 401–402
 - primary failure, 125–126
 - with prior *Flavivirus* immunity, 123–124
 - public health policy, 140
 - revaccination, 123
 - risk, 414
 - safety of, 126–138
 - thermostability of, 120–121
 - in vivo genetic stability, 121
 - YF-VAX, 120, 122
 - adverse events, 126–127
 - allergic reactions, 130
- Yellow fever vaccine-associated neurotropic disease (YEL-AND), 127–128, 414
- Yellow fever vaccine-associated viscerotropic
 - adverse events, 128–129, 131t–134t
- Yellow fever virus
 - cell pathology of, 101
 - dengue fever vaccines, 301–302
 - genome organization of, 118f
 - replication of, 101
 - transmission cycles, 112–116, 114f
 - vaccination timing
 - algorithm for, 113f
- YF-VAX, 120, 122
 - adverse events, 126–127
 - allergic reactions, 130
- Z
- ZH9, 171
- Zimbabwe
 - tuberculosis, 378