

# Index

## A

- A/C. *See* Assist-control positive-pressure ventilation
- Abdominal closure, 274–275
- Abdominal compartment syndrome
  - burns and, 388
- Abdominal hysterectomy, 294–296
- Abdominal injuries
  - abdominal closure, 274–275
  - antimicrobial agent selection and duration, 119
  - biliary tract, 270
  - colon, 271–272
  - CT scans, 264
  - damage control surgery, 178–179
  - diagnosis of, 258
  - diagnostic adjuncts, 259
  - diagnostic peritoneal aspiration, 263–264
  - duodenal, 267–268
  - exposure techniques, 265–266
  - focused abdominal sonography for trauma, 259–263
  - gastric injuries, 266
  - indications for laparotomy, 258
  - liver, 269–270
  - operative planning, 265–266
  - pancreatic, 268–269
  - penetrating, 257
  - rectal, 272–273
  - retroperitoneal, 273–274
  - small bowel, 271
  - splenic, 271
  - wound exploration, 265
- ABO incompatibility, 484–485
- ABO typing, 470–471, 480
- Abrasions, corneal, 208–209
- AC. *See* Hydrogen cyanide
- Acalculous cholecystitis, 164
- Acceleration stress
  - aeromedical evacuation and, 50
- Acclimatization, 404–405
- Acidosis
  - blood transfusions and, 474–476
  - mechanical ventilation and, 145
- Acinetobacter*, carbapenem-resistant, 123
- ACS monitoring, 180–181
- Acute coronary syndrome, 155–159
- Acute hemolytic transfusion reaction, 484–485
- Acute lung injury, 143, 486–487
- Acute mountain sickness, 416–418
- Acute respiratory distress syndrome, 143, 146–147
- Acute tubular necrosis, 165–166, 168
- Acute vaginal hemorrhage, 297–298
- Adnexal injuries, 293, 295
- Adrenal insufficiency, 172
- Advanced Trauma Life Support, 455
- AE. *See* Aeromedical evacuation
- AELT. *See* Aeromedical Evacuation Liaison Team
- Aeromedical evacuation. *See also* Patient evacuation
  - Air Force system, 51–55
    - clearance, 54
    - description of, 47
    - humanitarian transport requests, 58
    - implications of the aviation environment, 49–51
    - intertheater transport checklist, 57
    - local flight surgeon responsibilities, 54
    - medical considerations, 48–49
    - patient movement requirements, 54
    - patient requests, 54–55
    - patient selection, 55–56, 58–59
    - patient stability, 53
    - precedences, 51–55
    - process, 54
    - reporting a patient, 52–53
    - validation, 54
- Aeromedical Evacuation Liaison Team, 52–53
- Aeromedical Staging Facilities, 52
- Air Force
  - aeromedical evacuation system, 51–55
  - basic primary care, 21–22
  - Expeditionary Medical Support, 21–22, 26
  - theater hospitals, 26
- Air splints, 50
- Aircraft carrier battle groups, 22
- Airway management
  - Backward Upward Rightward Pressure maneuver, 64–65
  - difficult airway, 66–67, 94
  - direct laryngoscopy, 64
  - facial injuries and, 183–184
  - heatstroke and, 407

- indications for a definitive airway, 89–90
- initial, 61–62
- laryngeal mask airway, 68
- orotracheal intubation, 63–66
- rapid sequence intubation, 63, 90–94
- secondary airway compromise, 90
- surgical cricothyrotomy, 67–68
- two-person mask ventilation, 62–63
- ventilation, 62–63
- AK-47 rifles, 10
- Albumin, 134
- Albumin volume
  - burn care, 383–384
- ALI. *See* Acute lung injury
- Alkalosis
  - mechanical ventilation and, 145
- Allergic transfusion reactions, 487–488
- Allied contractors
  - triage considerations, 33
- Altitude illness
  - acute mountain sickness, 416–418
  - altitude basics, 414–415
  - descent basics, 415–416
  - high-altitude bronchitis, 419
  - high-altitude cerebral edema, 423–425
  - high-altitude peripheral edema, 419
  - high-altitude pharyngitis, 419
  - high-altitude pulmonary edema, 421–423, 425
  - high-altitude retinal hemorrhage, 419–420
  - subacute mountain sickness, 420–421
  - thromboembolic events, 420
- Amnestics, 92
- Amphibious Ready Group, 22
- Amputations
  - battlefield amputations, 342
  - dressings, 345
  - indications for, 341
  - length preserving amputations, 342–343
  - postoperative management, 347
  - skin retraction prevention, 345
  - skin traction, 345–346
  - special considerations, 344–345
  - surgical technique, 343–344
- AMS. *See* Acute mountain sickness
- Anal lacerations, 291
- Anemia, pediatric, 454
- Anesthesia
  - conclusion of general anesthesia, 95–96
  - difficult airway, 94
  - field anesthesia equipment, 97–100
  - indications for a definitive airway, 89–90
  - induction agents, 92
  - induction of general anesthesia, 90
  - local, 97
  - maintenance of general anesthesia, 94–95
  - neuraxial, 97
  - rapid sequence intubation, 90–94
  - regional, 96–97
  - secondary airway compromise, 90
  - sedatives, 92
- Angiography
  - vascular injuries, 360
- Anhidrotic heat exhaustion, 412–413
- Anthrax, 436, 440
- Antibiotics
  - coverage, 123
  - dosage for infection treatment, 129
  - treatment spectrum, 129
- Anticoagulation
  - vascular injuries and, 374
- Antidote Treatment Nerve Agent Autoinjectors, 445
- Antimicrobial agents
  - burn care, 385
  - duration of use, 119–122
  - selection of, 119–122
- Antipersonnel landmines, 8–9
- Antitank landmines, 13–14
- Anxiolytics, 92
- Aorta injuries, 367–368
- Arch bars, 187
- ARDS. *See* Acute respiratory distress syndrome
- Area support medical company, 19
- ARG. *See* Amphibious Ready Group
- Arm
  - compartment syndrome, 490
  - vascular injuries, 361–362
- Armored vehicle crew casualties, 11–14
- Army
  - augmentation teams, 25–26
  - basic primary care, 19–20
  - Combat Support Hospitals, 24–25
  - medical evacuation precedences, 52
  - point of injury care, 18
- ASFs. *See* Aeromedical Staging Facilities
- Aspiration pneumonitis, 152–153
- Assist-control positive-pressure ventilation, 141
- Ataxia, 424
- Atelectotrauma, 142
- ATLS. *See* Advanced Trauma Life Support
- ATN. *See* Acute tubular necrosis

- ATNAAs. *See* Antidote Treatment Nerve Agent Autoinjectors
- Augmentation teams, 25–26
- Auricular injury, 193
- Axillary artery injuries, 361–362
- B**
- Bacillus anthracis*, 440
- Backward Upward Rightward Pressure maneuver, 64–65
- Bacteremia
  - blood transfusions and, 485
- Bacterial agents, 440
- Bacterial keratitis, 209–210
- Ballistic injuries, 6
- Bandages, 70, 72–73
- Barometric pressure
  - aeromedical evacuation and, 49
- Barotrauma, 142
- Battalion aid stations, 18
- Battlefield transfusions. *See* Transfusions
- Battlefield trauma system model, 497–499
- Biliary tract injuries, 270
- Biological agents, 439
- Biological contamination. *See also* Nuclear, biological, and chemical casualties
  - aeromedical evacuation and, 51
  - bacterial agents, 440
  - biological agents, 439
  - decontamination, 436–437
  - detection of biological warfare agents, 435
  - diagnosis of, 436
  - hemorrhagic fevers, 438–439
  - infection control, 437
  - medical evacuation, 437–438
  - prevention of, 436
  - protection from, 436
  - symptoms of, 439–441
  - treatment of, 439–441
  - triage considerations, 32
  - viral agents, 441
- Biological Identification Detection System, 435
- Biotrauma, 142
- Bladder
  - dysfunction associated with spinal injuries, 315
  - injuries of, 285–286
- Blast injuries, 6, 8, 430
- Blast mines, 13
- Blast waves, 5
- Bleeding. *See* Hemorrhage
- Blindness, flash, 431
- Blood, fresh whole
  - ABO matching, 470–471
  - emergency collection in the field, 478–483, 503–512
  - onsite specimen processing, 511
  - posttransfusion verification, 510–511
  - rapid testing of, 509
  - releasing, 509–510
  - role of care, 469
  - specimen processing, 511
- Blood agents, 447
- Blood donors
  - appropriate criteria, 512
  - bag issue, 505
  - frequency of donations, 512
  - identification of, 480–481
  - medication use, 512
  - performing phlebotomy, 505–508
  - postdonor care, 508–509
  - screening of, 481, 504–505
- Blood products
  - ABO matching, 470–471
  - Rh matching, 471–472
  - role of care, 468–469
  - types of, 468–469
- Blood Support Detachment, 511
- Blood transfusions. *See* Transfusions
- Blood volume, pediatric, 454
- Blowout fractures, 213–214
- Blunt injuries
  - cardiac, 155
  - pelvic, 318–319
  - renal, 278
- Bone fractures
  - amputation considerations, 344
  - bivalving casts, 330
  - burns and, 388
  - external fixation, 330–340
  - extremities, 327–340
  - facial, 186–190
  - hands, 352
  - LeFort fracture classification, 189–190
  - mandible, 186–187
  - maxillofacial, 188–190
  - nasal, 187–188
  - orbital floor, 213–214
  - pelvic, 292
  - skull, 222–223
  - temporary external fixation, 327
  - transportation casts, 327
- Botulinum toxins, 439
- Bounding landmines, 8–9
- Brachial artery injuries, 362
- Brain injuries
  - antimicrobial agent selection and duration, 120
- Brain injury, traumatic. *See* Traumatic brain injury

- Breathing, unassisted  
  definition of, 145–146
- Breathing support. *See also* Airway management  
  burn care, 379
- Brigade support medical company, 19
- Bronchitis, high-altitude, 419
- Brucella*, 440
- Brucellosis, 440
- Burkholderia mallei*, 440
- Burn Center, 391
- Burn Resuscitation Flowsheet, 384
- Burns. *See also* Chemical contamination  
  abdominal compartment syndrome and, 388  
  airway interventions, 379  
  albumin volume, 383–384  
  antimicrobials, 121, 385  
  breathing interventions, 379–380  
  Burn Resuscitation Flowsheet, 384  
  cellulitis, 386  
  chemical, 389  
  circulation management, 380  
  Clinical Practice Guidelines, 392  
  complications, 388  
  corneal abrasions, 386  
  ears, 386  
  edema and, 387  
  electrical injuries, 388–389  
  electrolyte disturbances, 384  
  escharotomy, 387  
  extremity care, 387–388  
  fasciotomy, 388  
  fluid resuscitation, 380–382  
  fractures and, 388  
  glycosuria, 383  
  hyperkalemia and, 389  
  hypothermia, 378  
  infection control, 386  
  inhalation injury, 378, 388  
  local national burn patients, 390–391  
  metabolic considerations, 388  
  patient evaluation, 391  
  patient monitoring, 382  
  pediatric, 381–382, 453  
  point-of-injury care, 377–378  
  primary survey, 378–380  
  radiological injuries, 430–431  
  respiratory care, 388  
  resuscitation, 383–384  
  Rule of Nines, 381  
  Rule of Tens, 380, 391  
  secondary survey, 382–383  
  silver nylon dressings, 385  
  surgical debridement, 389  
  total body surface area, 380–382, 390  
  triage considerations, 390  
  urine output target, 383  
  US Army Institute of Surgical Research Burn Center, 391  
  white phosphorus, 389–390  
  wound care, 384–386
- BURP. *See* Backward Upward Rightward Pressure maneuver
- BZ, 447–448
- C**
- Cabin altitude restriction  
  aeromedical evacuation and, 50
- Calcium, 139–140
- Calif. *See* Lower extremities
- Caloric requirements  
  pediatric, 452
- Cantholysis, 212–213
- CAR. *See* Cabin altitude restriction
- Carbapenem-resistant *Acinetobacter*, 123
- Cardiac disease  
  acute coronary syndrome, 155–159  
  cardiac tamponade, 154–155  
  congestive heart failure, 159–161
- Cardiac injuries. *See* Heart injuries
- Cardiac stroke volume, pediatric, 453
- Cardiac tamponade, 154–155, 243–244
- Cardiogenic shock, 78, 132
- Cardiopulmonary resuscitation  
  hypothermia and, 402
- Cardiopulmonary technicians, 56
- Carotid artery injuries, 197, 369–370
- Case fatality rate, 522
- CASEVAC. *See* Casualty evacuation
- Casts  
  bivalving, 330  
  transportation, 327
- Casualty evacuation. *See also* Patient evacuation  
  description of, 47
- Casualty Receiving and Treatment Ships, 22
- Casualty recorders, 40
- Caveat-Hextend, 80
- CCATs. *See* Critical Care Air Transport Teams
- Cellulitis, 125, 386
- Central nervous system wounds  
  antimicrobial agent selection and duration, 120
- Central venous pressure, 231
- Cerebral edema, high-altitude, 423–425
- Cerebral perfusion pressure, 230–231
- Cerebrovascular accidents, 161–163
- Cervical spine injuries  
  considerations, 184

- instability, 309–310
  - patient transport, 310
- Cervical vascular injury, 369–371
- Cesarean sections, emergency, 300–302
- CFR. *See* Case fatality rate
- CG. *See* Phosgene
- Chemical contamination. *See also* Nuclear, biological, and chemical casualties
  - aeromedical evacuation and, 51
  - burn injuries, 389
  - corneal injuries, 207–208
  - cyanogens, 447
  - hypochlorite solution use, 449
  - incapacitation agents, 447–448
  - initial treatment priorities, 444
  - lung-damaging agents, 446–447
  - nerve agents, 444–445
  - off-gassing, 448
  - personal protection, 443–444
  - postsurgery procedures, 449–450
  - pretreatment of, 445
  - Reactive Skin Decontamination Lo-  
tion use, 446, 449
  - surgical treatment, 448–450
  - symptoms of, 445–448
  - thickened agents, 448
  - treatment of, 445–448
  - triage, 446–447
  - triage considerations, 32
  - vesicants, 445–446
  - wound decontamination, 448
  - wound exploration and debridement,  
449
- Chest injuries. *See* Thoracic injuries
- Chest tubes, 244–246
- Chest well compliance, 141
- Chilblains, 393
- Childbirth, emergency
  - emergency cesarean section, 300–302
  - neonatal resuscitation, 304–305
  - precipitous vaginal delivery, 298
  - uterine atony, 302–303
- Children. *See* Pediatric trauma
- Chlorine, 446–447
- Chloropicrin, 446–447
- Choking agents, 446–447
- Cholera, 440
- Cisatracurium, 92
- Civilian internees. *See* Internees
- CK. *See* Cyanogen chloride
- Clamping vessels, 71
- Clinical Practice Guidelines
  - burns, 392
  - compliance with, 498
- Clostridial myonecrosis, 125
- Coagulopathy
  - blood transfusions and, 476–478
  - dilutional, 476–478
  - heatstroke and, 406, 409–410
  - trauma-induced, 476–478
- COCOM. *See* Combatant Command
- Cold injuries
  - cardiopulmonary resuscitation,  
402–403
  - chilblains, 393
  - field treatment, 397, 400–401
  - frostbite, 396–397
  - frostnip, 396
  - hypothermia, 399–402
  - medical facility treatment, 397–399,  
401–402
  - nonfreezing, 393–397
  - pernio, 394
  - rapid rewarming, 398–399
  - trench foot, 394–395
- Colon injuries, 271–272
- Combat-associated healthcare pneumo-  
nia, 153–154, 172–173
- Combat lifesavers, 18
- Combat stress
  - triage considerations, 33–34
- Combat Support Hospitals
  - role of medical care, 19, 24–25
- Combatant Command, 497–498
- Common femoral artery injuries, 363–364
- Compartment syndrome
  - description of, 110–111, 489
  - early clinical diagnosis of, 111, 489
  - fasciotomy technique, 111–112,  
490–494
  - fasciotomy wound management,  
494–496
  - late clinical diagnosis of, 111, 489
  - lower extremities, 355–356, 491–496
  - measurement of compartment pres-  
sures, 489
  - mechanisms of injuries associated  
with, 111, 489
  - prophylactic fasciotomy, 489–490
  - treatment of, 111, 489
  - upper extremities, 490–491
- Compartment syndrome, abdominal  
burns and, 388
- Compensated shock, 133
- Computed tomographic angiography
  - vascular injuries, 360
- Computed tomography imaging
  - abdominal injuries, 264
  - head injuries, 226–227
- Congestive heart failure, 156, 159–161
- Conjunctival injuries
  - foreign bodies, 210–211

- Consciousness
    - head injuries and, 224
  - Continental United States-based hospitals
    - medical care roles, 28
    - military trauma systems, 497
  - Contractors
    - triage considerations, 33
  - Contrast dye-associated nephropathy, 168
  - Controlled hypotensive resuscitation, 74, 82–84
  - Controlled resuscitation, 74
  - CONUS-based hospitals. *See* Continental United States-based hospitals
  - Corneal injuries
    - abrasions, 208–209, 386
    - burns, 386
    - chemical injuries of, 207–208
    - foreign bodies, 210–211
  - Corneal ulcer, 209–210
  - Coronary syndrome, acute, 155–159
  - Coxiella burnetii*, 440
  - CPP. *See* Cerebral perfusion pressure
  - CPR. *See* Cardiopulmonary resuscitation
  - Craniectomies, 233–238
  - Cricothyrotomy, 67–68
  - Critical care
    - acalculous cholecystitis, 164
    - acute coronary syndrome, 155–159
    - acute respiratory distress syndrome, 143, 146–147
    - acute tubular necrosis, 165–166, 168
    - adrenal insufficiency, 172
    - aspiration pneumonitis, 152–153
    - blunt cardiac injury, 155
    - cardiac disease, 154–161
    - cardiac tamponade, 154–155
    - cardiogenic shock, 132
    - cerebrovascular accidents, 161–163
    - combat-associated healthcare pneumonia, 153–154
    - congestive heart failure, 159–161
    - damage control surgery, 180–181
    - diabetic ketoacidosis, 170–172
    - disseminated intravascular coagulation, 168–169
    - distributive shock, 132
    - endocrine disease, 170–172
    - fluid management, 133–134
    - gastrointestinal disease, 163–165
    - glucose control, 173
    - heparin-induced thrombocytopenia, 169–170
    - hyperglycemic hyperosmolar syndrome, 170–172
    - hyperkalemia, 137–138
    - hypernatremia, 135
    - hypocalcemia, 140
    - hypokalemia, 136–137
    - hypomagnesemia, 139
    - hyponatremia, 135
    - hypovolemic shock, 131–132
    - iatrogenic complications of therapy, 168
    - ICU prophylaxis, 172–174
    - mechanical ventilation, 140–146
    - nephrolithiasis, 167–168
    - neurological disease, 161–163
    - nutrition, 173–174
    - prerenal azotemia, 165–166
    - pulmonary contusion, 147–148
    - pulmonary embolism, 148–152
    - pulmonary medicine, 140–154
    - renal disease, 165–168
    - rhabdomyolysis, 166–167
    - serum calcium levels and, 139–140
    - serum electrolyte management, 134
    - serum magnesium levels and, 138
    - serum potassium levels and, 136
    - shock, 131–133
    - stress gastritis, 163–164
    - strokes, 161–163
    - thrombotic thrombocytopenic purpura, 168–169
    - traumatic brain injury, 161
    - uncompensated shock, 131–133
    - ventilator-associated pneumonia, 172–173
  - Critical Care Air Transport Teams, 47, 55–58
  - Critical care nurses, 56
  - CRTS. *See* Casualty Receiving and Treatment Ships
  - Crush syndrome, 108–110
  - CT. *See* Computed tomography imaging
  - CTA. *See* Computed tomographic angiography
  - CVA. *See* Cerebrovascular accidents
  - CVP. *See* Central venous pressure
  - Cyanogen chloride, 447
  - Cyanogens, 447
  - Cyanosis, 418
  - Cyclohexyl sarin, 444
  - Cyclosarin, 444
- D**
- Damage control surgery
    - ACS monitoring, 180–181
    - considerations, 175–176
    - critical care, 180–181
    - definition of, 175
    - early resuscitation phase, 177
    - general principles of, 177–182

- planned reoperation, 181–182  
 prehospital phase, 177  
 primary operation, 177–179  
 relaparotomy, 181–182  
 temporary abdominal closure, 178–179  
 thoracic injuries, 182  
 unplanned reexploration, 182  
 vacuum pack technique, 179
- Debridement  
 burn care, 389  
 chemical contamination injuries, 449
- Decontamination  
 biological contamination, 436–437  
 chemical injuries, 436–437, 448  
 mechanical, 436  
 physical, 437  
 radiological injuries, 432
- Decubitus ulcers, 315–316
- Deep venous thrombosis  
 diagnosis of, 148–149  
 spinal injuries and, 315  
 treatment of, 149
- Delayed evacuation  
 antimicrobial agent selection and duration, 121
- Deliveries. *See* Childbirth, emergency
- Department of Defense Trauma Registry  
 function of, 521  
 methods, 523–525  
 minimum essential data, 523  
 responsibilities, 498  
 resuscitation records, 524–528  
 situational awareness, 522–523  
 technology, 523–525  
 uses of, 523
- Detainees. *See* Internees
- Diabetic ketoacidosis, 170–172
- Diagnostic peritoneal aspiration, 263–264
- Diaphragm injuries, 255
- Died of wounds, 522
- Dilaudid, 91
- Diphosgene, 446–447
- Dirty bombs. *See* Radiological dispersal devices
- Disseminated intravascular coagulation, 168–169
- Distal femoral artery, 365
- Distributive shock, 78, 132
- DKA. *See* Diabetic ketoacidosis
- DOW. *See* Died of wounds
- DPA. *See* Diagnostic peritoneal aspiration
- Drawover vaporizer, 97–100
- Dressings, 70, 72–73
- Duodenal injuries, 267–268
- DVT. *See* Deep venous thrombosis
- E**
- Ear injuries  
 burns, 386
- Ebola fever, 438–439
- ECFV. *See* Extracellular fluid volume
- Ectopic pregnancies, 293, 295
- Edema  
 burns and, 387  
 high-altitude cerebral, 423–425  
 high-altitude peripheral, 419  
 high-altitude pulmonary, 421–423, 425
- Electrical burn injuries, 388–389
- Electrolyte management, 134, 384, 451
- EMEDS. *See* Expeditionary Medical Support
- Emergency cesarean sections, 300–302
- Emergency childbirth. *See* Childbirth, emergency
- Emergency whole blood collection, 478–483, 503–512
- Empyema, 127
- En route care  
 description of, 48  
 teams, 23
- Encephalopathy  
 heatstroke and, 406, 408
- Endocrine disease  
 adrenal insufficiency, 172  
 diabetic ketoacidosis, 170–172  
 hyperglycemic hyperosmolar syndrome, 170–172
- Endotracheal intubation, 93
- Endotracheal tubes, 66, 94
- Enemy prisoners of war. *See also* Internees  
 triage considerations, 33
- Enteral nutrition, 173
- Enucleation, 217
- Environmental injuries  
 acclimatization, 404–405  
 acute mountain sickness, 416–418  
 altitude illness, 414–425  
 anhidrotic heat exhaustion, 412–413  
 cardiopulmonary resuscitation, 402–403  
 chilblains, 393  
 cold injuries, 393–403  
 field treatment, 397, 400–401  
 frostbite, 396–397  
 frostnip, 396  
 heat cramps, 410–411  
 heat edema, 413–414  
 heat exhaustion, 411–412  
 heat-induced syncope, 413  
 heat injury, 403–414  
 heatstroke, 405–410  
 heat tetany, 414

- high-altitude bronchitis, 419
- high-altitude cerebral edema, 423–425
- high-altitude peripheral edema, 419
- high-altitude pharyngitis, 419
- high-altitude pulmonary edema, 421–423, 425
- high-altitude retinal hemorrhage, 419–420
- hypothermia, 399–402
- medical treatment facility, 397–399, 401–402
- miliaria profunda, 412–413
- miliaria rubra, 412
- minor illnesses, 412–414
- nonfreezing cold injuries, 393–397
- pernio, 394
- pruritus, 412–413
- rapid rewarming, 398–399
- subacute mountain sickness, 420–421
- sunburn, 414
- thromboembolic events, 420
- trench foot, 394–395
- EPWs. *See* Enemy prisoners of war
- Escharotomy, 387
- Eschmann stylet, 65–66
- Esophageal fistulas, 200
- Esophageal injuries
  - diagnosis of, 199–200
  - treatment of, 200, 254–255
- Ethics. *See* Medical ethics
- Etomidate, 92
- ETT. *See* Endotracheal tubes
- Evacuation. *See* Aeromedical evacuation;  
Patient evacuation
- Expeditionary medical facilities, 26–27
- Expeditionary Medical Support, 21–22, 26
- Explosive ordnance disposal, 16
- Explosive-related injuries
  - categories of, 5, 7
  - head injuries, 220–222
- Extracellular fluid volume, 133, 136
- Extraperitoneal injuries, 286
- Extremity fractures
  - bivalving casts, 330
  - external fixation, 330–340
  - femur diaphyseal fracture technique, 331–334
  - patient evacuation, 339–340
  - skeletal traction, 338–339
  - technique to span ankle, 338
  - technique to span knee, 335–338
  - temporary external fixation, 327
  - tibia shaft fracture technique, 334–335
  - transportation casts, 327
  - wound management, 328–330
- Extremity injuries
  - antimicrobial agent selection and duration, 119
  - fractures, 327–340
  - vascular, 361–367
- Eye injuries. *See* Ocular injuries
- Eyelid lacerations, 214–216
- F**
- Facial injuries. *See also* Neck injuries
  - airway management, 183–184
  - auricular injury, 193
  - bone fractures, 186–190
  - cervical spine injuries, 184
  - evaluation of, 185
  - facial lacerations, 191
  - facial nerve injury, 191–192
  - immediate management of, 183–185
  - parotid duct injury, 192–193
  - soft-tissue injuries, 190–193
  - vascular injuries, 184–185
- Fallopian tube injuries, 293
- Fasciotomy
  - arm, 490
  - burn care, 388
  - calf, 492–494
  - compartment syndrome treatment, 111
  - foot, 494
  - forearm, 490–491
  - lower extremities, 491–494
  - technique, 111–112, 490–496
  - thigh, 491–492
  - upper extremities, 490–491
  - wound management, 494–496
- FAST. *See* Focused abdominal sonography for trauma
- Febrile nonhemolytic transfusion reaction, 486
- Femoral artery injuries, 363–364
- Fentanyl, 91
- Fetal heart rate, 298, 300
- Flail chest, 244
- Flash blindness, 431
- Flash burns, 430
- Fleet Surgical Teams, 22
- Fluid therapy
  - burns and, 380–382
  - critical care, 133–134
  - pediatric, 451
  - shock, 80, 83
- Focused abdominal sonography for trauma, 259–263
- Fogarty thrombectomy catheters, 372
- Foot compartment syndrome, 355–356, 494



- Foot injuries  
 evaluation of, 353–354  
 external fixation, 356  
 hindfoot, 354  
 initial management, 353–354  
 midfoot, 354  
 penetrating, 353  
 stabilization, 356  
 toes, 355  
 types of, 349
- Forearm compartment syndrome, 490–491
- Foreign bodies  
 ocular, 210–211
- Forward Resuscitative Surgical System, 23
- Forward Surgical Teams  
 aeromedical evacuation from, 48–49  
 function of, 19–20, 25
- Fractures. *See* Bone fractures
- Francisella tularensis*, 440
- Fresh frozen plasma  
 ABO matching, 470–471  
 role of care, 469
- Fresh whole blood  
 ABO matching, 470–471  
 emergency collection in the field, 478–483, 503–512  
 onsite specimen processing, 511  
 posttransfusion verification, 510–511  
 rapid testing of, 509  
 releasing, 509–510  
 role of care, 469  
 specimen processing, 511
- Frostbite, 396–397
- Frostnip, 396
- FST. *See* Forward Surgical Teams
- G**
- Gardner-Wells tongs, 312–314
- Gas gangrene, 125
- Gastric injuries, 266
- Gastritis, stress, 163–164
- Gastrointestinal disease  
 acalculous cholecystitis, 164  
 pediatric care, 453–454  
 spinal injuries and, 315  
 stress gastritis, 163–164
- GCS. *See* Glasgow Coma Scale
- General anesthesia  
 conclusion of, 95–96  
 induction of, 90  
 maintenance of, 94–95
- Geneva Convention for the Amelioration of the Wounded and Sick in Armed Forces in the Field, 461–462
- Geneva Convention Relative to the Treatment of Prisoners of War, 461–462
- Geneva Conventions, 461–462
- Genitalia injuries, 288–289
- Genitourinary tract injuries  
 bladder, 285–286  
 external genitalia, 288–289  
 renal, 277–282  
 ureteral, 282–285  
 urethral, 286–288
- Glasgow Coma Scale, 219, 224, 228–229, 455, 519
- Glasgow Outcomes Scale, 219
- Glucose control, 173
- Glycosuria, 383
- GOS. *See* Glasgow Outcomes Scale
- GPW. *See* Geneva Convention Relative to the Treatment of Prisoners of War
- Graft material  
 vascular injuries, 373
- Greater saphenous vein cutdowns, 86–87
- Gum Elastic Bougie, 65
- GWS. *See* Geneva Convention for the Amelioration of the Wounded and Sick in Armed Forces in the Field
- Gynecological emergencies. *See also* Childbirth, emergency  
 acute vaginal hemorrhage, 297–298
- Gynecological injuries. *See also* Childbirth, emergency  
 abdominal hysterectomy, 294–296  
 acute vaginal hemorrhage, 297–298  
 adnexal, 293, 295  
 cervical, 293  
 ovarian, 295–296  
 retroperitoneal hematoma, 296–297  
 uterine, 293  
 vaginal, 292–293  
 vulvar, 291–292
- H**
- HACE. *See* High-altitude cerebral edema
- Hand compartment syndrome, 350–351
- Hand injuries  
 dressing, 352–353  
 evaluation of, 350  
 hand compartment syndrome, 350–351  
 initial management, 350  
 splinting, 352–353  
 surgical technique, 351–352  
 tendons, 349  
 tissue management, 352  
 types of, 349
- Hanta fever, 438–439
- HAPE. *See* High-altitude pulmonary edema

- Head injuries. *See also* Traumatic brain injury  
classification of, 222–223  
evacuation of head-injured patients, 238–239  
Glasgow Coma Scale, 219, 224  
intracranial pressure and, 219, 227–232  
mechanisms of injury, 223  
medical management, 227–233  
patient assessment, 224–227  
primary injuries, 223  
pupillary reactivity and, 225–226  
radiographic evaluation, 226–227  
secondary injuries, 223  
surgical management, 233–238  
triage, 224–227  
types of combat head injuries, 220–222
- Health Insurance Portability and Accountability Act, 463
- Health services. *See* Roles of medical care
- Heart disease. *See* Cardiac disease
- Heart injuries  
blunt, 155  
penetrating, 252–253  
treatment of, 252–253
- Heart rate  
fetal, 298, 300  
infant, 304–305
- HEAT. *See* High explosive antitank rounds
- Heat-induced syncope, 413
- Heat cramps, 410–411
- Heat edema, 413–414
- Heat exhaustion, 411–413
- Heat injury  
acclimatization, 404–405  
anhidrotic heat exhaustion, 412–413  
heat cramps, 410–411  
heat edema, 413–414  
heat exhaustion, 411–412  
heat-induced syncope, 413  
heatstroke, 405–410  
heat tetany, 414  
miliaria profunda, 412–413  
miliaria rubra, 412  
minor illnesses, 412–414  
prevention of, 403–405  
pruritus, 412–413  
sunburn, 414
- Heatstroke  
clinical presentation, 406–407  
complications of, 409–410  
core temperature and, 407  
evaluation of, 405  
treatment of, 407–408
- Heat tetany, 414
- Hematology  
pediatric care, 454
- Hematomas  
head injuries and, 236  
intrafascial, 292  
retroperitoneal, 296–297  
vaginal, 292
- Hematuria, 277–278
- Hemorrhage. *See also* Transfusions  
acute vaginal hemorrhage, 297–298  
clamping vessels, 71  
controlled hypotension, 74  
control of, 69  
dressings and bandages, 70, 72–73  
early control of, 467–468  
external, 69  
first responder treatment, 70–72  
hemostatic agents, 73–74  
high-altitude retinal hemorrhage, 419–420  
internal, 70, 72  
limb splints, 72  
orbital, 211–212  
pressure points, 71  
scalp bleeding, 72  
sites of, 69–70  
tourniquets, 71  
uterine atony, 302–303
- Hemorrhagic fevers, 438–439, 441
- Hemorrhagic shock, 81–82
- Hemostatic agents, 73–74
- Hemothorax, 243
- Hemotympanum, 202
- Heparin-induced thrombocytopenia, 169–170
- Hepatic artery injuries, 368
- Hetastarch, 80
- Hextend, 80
- HHS. *See* Hyperglycemic hyperosmolar syndrome
- High-altitude bronchitis, 419
- High-altitude cerebral edema, 423–425
- High-altitude peripheral edema, 419
- High-altitude pharyngitis, 419
- High-altitude pulmonary edema, 421–423, 425
- High-altitude retinal hemorrhage, 419–420
- High explosive antitank rounds, 11–12
- Hindfoot injuries, 354
- HIPAA. *See* Health Insurance Portability and Accountability Act
- HIT. *See* Heparin-induced thrombocytopenia

- Horizontal spray mines, 9
- Hospital augmentation teams, 25
- Hospital ships, 27–28
- HTS. *See* Hypertonic saline
- Humanitarian transport requests, 58
- Humidity
  - aeromedical evacuation and, 51
- Hydrogen cyanide, 447
- Hyperglycemic hyperosmolar syndrome, 170–172
- Hyperkalemia
  - acute, 137
  - blood transfusions and, 475–476
  - burns and, 389
  - chronic, 137
  - heatstroke and, 409
  - pseudohyperkalemia, 137
  - treatment of, 137–138
- Hypermetabolism
  - burns and, 388
- Hypnatremia, 135
- Hypertonic saline, 80, 134
- HypHEMA, 211
- Hypocalcemia, 140, 409
  - blood transfusions and, 475–476
- Hypochlorite solution, 449
- Hypokalemia, 136–137
- Hypomagnesemia, 139
- Hyponatremia, 135
- Hypopharyngeal injuries, 199–200
- Hypotension
  - cerebrovascular accidents, 162–163
  - heatstroke and, 407
  - permissive, 74, 82–84
  - shock and, 78
- Hypothermia
  - blood transfusions and, 473, 476
  - burn care, 378
  - cardiopulmonary resuscitation, 402–403
  - causative factors, 399
  - field treatment, 400–401
  - medical facility treatment, 401–402
  - mild, 400, 402
  - moderate, 400
  - prevention of, 399
  - profound, 400
  - severe, 400, 403
  - shock and, 84
- Hypovolemic shock, 77–82, 131–132
- Hysterectomy, abdominal, 294–296
- I**
- ICFV. *See* Intracellular fluid volume
- ICP. *See* Intracranial pressure
- Ileus
  - spinal injuries and, 315
- Iliac artery injuries, 369
- Immune system, pediatric, 454–455
- Impact Uni-Vent Eagle Model 754 portable ventilator, 99–100
- Improvised explosive devices, 6, 9
- Incapacitation agents, 447–448
- Indoles, 447–448
- Infant heart rate, 304–305
- Infants. *See* Pediatric trauma
- Infections
  - antibiotic coverage, 123
  - antimicrobial agent selection and duration, 119–122
  - battlefield environment and, 113
  - burn care, 386
  - diagnosis of, 113
  - intraabdominal, 126
  - microorganisms causing, 114
  - patterns of, 114–115
  - prevention of, 116–118
  - pulmonary, 126–127
  - soft-tissue infections, 125–126
  - spectrum and dosage of antibiotic agents, 129
  - systemic sepsis, 127–128, 130
  - tetanus, 124–125
  - treatment of, 115–124
- Inferior vena cava filters, 373
- Intrafascial hematoma, 292
- Inhalation injuries, 14, 378, 388
- Initial airway management, 61–62
- Initial triage officers, 38
- Intensivist physicians, 56
- Internal bleeding, 70, 72
- Internal carotid artery injuries, 197
- Internal jugular vein injuries, 197
- Internal jugular venipuncture, 85–86
- Internees
  - advocates for, 465–466
  - care of, 461–466
  - Geneva Conventions, 461–462
  - legal issues, 465
  - medical care of, 462–464
  - medical ethics principles, 515–517
  - medical information, 464
  - medical records, 463
  - medical staffing, 465
  - planning for, 464
  - screening, 464–265
  - security, 466
  - setup up for, 464
  - supplies, 465
  - triage considerations, 33
  - workload, 462

## Emergency War Surgery

Intraabdominal infections, 126

Intracellular fluid volume, 136

Intracranial pressure

head injuries and, 219, 227–232

monitoring, 229–230

Intraocular injuries, 197

Intraosseous infusion, 87–88

Intravascular resuscitation fluids, 83

Intravascular volume, 131, 134, 168

IO. *See* Intraosseous infusion

IVV. *See* Intravascular volume

## J

Joint Theater Trauma System

Burn Resuscitation Flowsheet, 384

“Damage Control Resuscitation,” 80

development of, 1

goals of, 499–500

purpose of, 497–499

triage, 29

Joint Trauma System, 500–502, 521

JTS. *See* Joint Trauma System

JTTS. *See* Joint Theater Trauma System

Jugular vein injuries, 197, 370–371

Jugular venipuncture, 85–86

## K

Ketamine, 92

Kidney disease. *See* Renal disease

Kidney injuries. *See* Renal injuries

Kinetic energy rounds, 12–13

## L

Lacerations

anal, 291

cervix, 293

facial, 191

vaginal, 292

vulvar, 291

Lactated Ringer’s solution, 80, 133, 380

Laparotomy, abdominal, 258, 265

Large vein injuries, 371

Laryngeal injuries, 198

Laryngeal mask airway, 68

Laryngoscopy, 64

Laryngotracheal injuries, 198

Laser eye injuries, 216–217

Lassa fever, 438–439

Lateral canthotomy, 212–213

LD. *See* Lethal dose of radiation

LeFort fracture classification, 189–190

Leg. *See* Lower extremities

Lethal dose of radiation, 429

Lewisite, 445

Limb splints, 72

Liver injuries, 269–270

LMA. *See* Laryngeal mask airway

Local anesthesia, 97

Local national patients

burns, 390–391

Lower extremities

compartment syndrome, 491–494

vascular injuries, 362–367

Lumbar spine injuries, 310–312

Lung-damaging agents, 446–447

Lung injuries, 252–253

## M

M-16A1 rifles, 10–11

MAC. *See* Minimal alveolar concentration

Machine guns. *See* Small arms injuries

Macintosh laryngoscopy blade, 64

Magnesium, 138

Mandible fractures, 186–187

Marine Corps

basic primary care, 23

medical evacuation precedences, 52

point of injury care, 18

Marine Expeditionary Forces, 23

Mask ventilation, 62–63

Mass casualty events. *See also* Triage

response to, 29

Maxillary-mandibular fixation, 186–187

Maxillofacial fractures, 188–190

Maxillofacial injuries

antimicrobial agent selection and

duration, 119

Mechanical ventilation

basics of, 140

compliance of chest wall, 141

initial settings, 142

positive pressure ventilation, 141

pressure control modes, 141

protocol, 144–146

setup and adjustment, 144–145

unassisted breathing definition,  
145–146

ventilator-associated pneumonia,  
153–154, 172–173

volume control modes, 141

volume cycled, 142–143

weaning, 145

MEDEVAC. *See* Medical evacuation

Median sternotomies, 248–249

Medical care roles. *See* Roles of medical  
care

Medical companies, 19

Medical detachments, 25

Medical ethics

principles of, 515–517

Medical evacuation. *See also* Patient  
evacuation

- precedences, 51–52
- Medical treatment facilities
  - aeromedical evacuation from, 48–49
  - case fatality rates, 522
  - triage considerations, 35
- Mesenteric artery injuries, 369
- Methylphosphonothioic acid, 444
- MFSIs. *See* Mobile Field Surgical Teams
- Microvascular bleeding
  - blood transfusions and, 476–478
- Midazolam, 92
- Midfoot injuries, 354
- Miliaria profunda, 412–413
- Miliaria rubra, 412
- Military trauma systems, 497
- Miller laryngoscopy blade, 64–65
- Minimal alveolar concentration, 95
- Mission-Oriented Protective Posture gear, 404, 443, 448
- Mobile Field Surgical Teams, 21
- MOPP. *See* Mission-Oriented Protective Posture gear
- Morphine, 91
- Mountain sickness
  - acute, 416–418
  - subacute, 420–421
- MRSA pneumonia
  - antibiotic coverage, 123, 153–154
- MTFs. *See* Medical treatment facilities
- Muscle relaxants, 91
- Mycotoxins, 439
- Myocardial infarction
  - non-ST elevation, 157–159
  - ST elevation, 155–157
- N**
- Narcotics, 91
- Nasal fractures, 187–188
- NATO. *See* North Atlantic Treaty Organization
- Navy
  - basic primary care, 22
  - expeditionary medical facilities, 26–27
  - hospital ships, 27–28
  - medical evacuation precedences, 52
- Navy Expeditionary Health Service Support, 27
- NBC. *See* Nuclear, biological, and chemical casualties
- Neck injuries. *See also* Facial injuries
  - antimicrobial agent selection and duration, 119
  - esophageal fistulas, 200
  - esophageal injuries, 199–200
  - hypopharyngeal injuries, 199–200
  - immediate management, 194
  - internal carotid artery injuries, 197
  - internal jugular vein injuries, 197
  - intraocular injuries, 197
  - laryngeal injuries, 198
  - laryngotracheal injuries, 198
  - neck anatomy, 193–194
  - operative strategy, 194–196
  - otological injuries, 200–203
  - penetrating wounds, 193–196
  - skull base injuries, 200–203
  - surgical principles, 196–200
  - temporal bone injuries, 200–203
  - tracheal injuries, 199
  - vertebral artery injuries, 196
- Necrotizing infections, 125–126
- Negative pressure wound therapy, 106
- Neonatal resuscitation, 304–305
- Nephrectomies, 280–282
- Nephrolithiasis, 167–168
- Nerve agents, 444–445, 448
- Nerve injuries
  - facial, 191–192
  - hand, 352
- Neuraxial anesthesia, 97
- Neurogenic shock
  - diagnosis of, 78
  - spinal injuries and, 315
  - treatment of, 80
- Neurological disease
  - cerebrovascular accidents, 161–163
  - strokes, 161–163
  - traumatic brain injury, 161
- Neurosurgical patients
  - aeromedical evacuation and, 50
- Nitrogen mustard, 445
- Noise
  - aeromedical evacuation and, 50
- Non-ST elevation myocardial infarction, 157–159
- Noncombatant locals
  - triage considerations, 32–33
- Normal saline, 133–134
- North Atlantic Treaty Organization
  - roles of medical care, 20
  - 7.62 rifle cartridge, 11
- NPWT. *See* Negative pressure wound therapy
- NSTEMI. *See* Non-ST elevation myocardial infarction
- Nuclear, biological, and chemical casualties. *See also* Biological contamination; Chemical contamination
  - aeromedical evacuation and, 51
  - blast injuries, 430
  - casualty yield by type of weapon, 427–428

- conventional nuclear weapons, 427–428
- decontamination, 432
- flash blindness, 431
- flash burns, 430
- lethal dose of radiation, 429
- logistics of casualty management, 432–433
- medical aspects of, 429
- potential injuries, 430–431
- radiation injuries, 430–431
- radiological dispersal devices, 428
- retinal burns, 431
- thermal burns, 430
- treatment of, 430
- treatment of combined injuries, 431–432
- triage, 428–429
- Nutrition
  - critical care, 173–174
  - pediatric requirements, 451–452
- O**
  - Obstetrical emergencies. *See also* Child-birth, emergency
    - acute vaginal hemorrhage, 297–298
  - Obstructive shock, 132
  - Ocular injuries
    - anterior segment injuries, 207–214
    - antimicrobial agent selection and duration, 120
    - bacterial keratitis, 209–210
    - cantholysis, 212–213
    - chemical injuries of the cornea, 207–208
    - corneal abrasions, 208–209
    - corneal ulcer, 209–210
    - enucleation, 217
    - flash blindness, 431
    - foreign bodies, 210–211
    - hyphema, 211
    - identifying severe injuries, 205–206
    - laser eye injuries, 216–217
    - lateral canthotomy, 212–213
    - lid lacerations, 214–216
    - open globe injuries, 206–207
    - orbital floor fractures, 213–214
    - retrobulbar hemorrhage, 211–212
    - subconjunctival hemorrhage, 207
    - triage of, 205
  - Off-gassing, 448
  - Ohmeda Universal Portable Anesthesia Complete, 97–100
  - Open globe injuries, 206–207
  - Open joint injuries, 101–112
  - Open pneumothorax, 244
  - Operation Enduring Freedom/Operation Iraqi Freedom
    - casualties by weapon type, 2
    - cause of injuries, 3
  - Orbital floor fractures, 213–214
  - Orbital hemorrhage, 211–212
  - Orotracheal intubation, 63–66
  - Ostomy patients
    - aeromedical evacuation and, 50
  - Otological injuries, 200–203
  - Ovarian cysts, 296
  - Ovarian injuries, 295–296
  - Oxygenation, 141, 144
- P**
  - Pancreatic injuries, 268–269
  - Pancreaticoduodenectomy, 268–269
  - Pancuronium, 91
  - Parenteral nutrition, 174
  - Parotid duct injuries, 192–193
  - Partial pressure of oxygen
    - aeromedical evacuation and, 50
  - Patient evacuation
    - aeromedical evacuation system, 47–59
    - biological contamination and, 437–438
    - CASEVAC, 47
    - extremity fractures and, 339–340
    - head injuries, 238–239
    - MEDEVAC, 51–52
    - spinal injuries, 310–312
  - Patient Movement Request Center, 59
  - Patient Movement Requirements Center, 49, 53
  - Patient transportation. *See* Patient evacuation
  - Pediatric trauma
    - anatomic considerations, 451–452
    - blood volume, 454
    - body surface area, 453
    - burns, 381–382, 453
    - caloric requirements, 452
    - cardiovascular system, 452–453
    - commonly used drugs and dosages, 458
    - diagnosis of, 455
    - electrolytes, 451
    - evaluation of, 455
    - fluid requirements, 451
    - gastrointestinal system, 453–454
    - hematology, 454
    - immune system, 454–455
    - nutrition, 451–452
    - physiological considerations, 451–452
    - protein requirements, 452
    - pulmonary system, 452

- rapid sequence intubation, 455–456
- renal system, 454
- resuscitation equipment and supplies, 456–457
- surgical management, 458
- thermoregulation, 454
- treatment of, 455–456
- vascular injuries, 373
- vital signs, 453
- PEEP. *See* Positive end-expiratory pressure
- Pelvic injuries
  - blunt, 318–319
  - C-clamp placement, 324–325
  - diagnosis of, 317–318
  - external fixation, 322–323
  - fractures, 292
  - penetrating, 321–325
  - retroperitoneal packing, 323–324
  - treatment of, 319–325
- Penetrating injuries
  - abdominal, 257
  - antimicrobial agent selection and duration, 120
  - feet, 353
  - head, 220–221
  - neck, 193–196
  - pelvic, 321–325
  - renal, 278
  - spinal, 314
- Penile injuries, 288
- Peripheral edema, high-altitude, 419
- Permanent cavity injuries, 3–4, 10–11
- Permissive hypotension, 74, 82–84
- Pernio, 394
- Pharyngitis, high-altitude, 419
- Phlebotomy, 505–508
- Phosgene, 446–447
- Phosgene oxime, 445
- Pistols. *See* Small arms injuries
- Plague, 436, 437, 440
- Plasma
  - ABO matching, 470–471
  - role of care, 468–469
- PMs. *See* Program Managers
- PMRC. *See* Patient Movement Requirements Center
- Pneumonia
  - combat-associated healthcare pneumonia, 153–154, 172–173
  - diagnosis and treatment, 127
  - MRSA and, 123, 153–154
  - ventilator-associated pneumonia, 153–154, 172–173
- Pneumonitis, aspiration, 152–153
- Pneumothorax
  - aeromedical evacuation and, 50
  - open, 244
  - positive pressure ventilation and, 63
- Pneumothorax, tension
  - diagnosis of, 241
  - positive pressure ventilation and, 63
  - treatment of, 243
- Point of injury care, 18, 121
- Polymicrobial infections, 125
- Popliteal artery injuries, 364–366
- Portable ventilators, 99–100
- Portal vein injuries, 368
- Positive end-expiratory pressure, 141–143
- Positive pressure ventilation, 63, 141
- Postoperative wound infections, 125
- Potassium, 136
- Precipitous vaginal delivery, 298
- Pregnancy. *See also* Childbirth, emergency
  - acute vaginal hemorrhage, 297–298
  - ectopic, 293, 295
- Prerenal azotemia, 165–166
- Primary blast injuries
  - description of, 5, 7
  - head injuries, 220–222
- Prisoners of war. *See* Enemy prisoners of war
- Profunda femorus artery injuries, 363–364
- Program Managers, 498
- Projectile injuries, 3–4
- Propofol, 92
- Prosthetics
  - vascular injury treatment, 373
- Protein requirements, pediatric, 452
- Pruritus, 412–413
- Pseudohyperkalemia, 137
- Psoas hitch, 282–283
- Pulmonary contusion, 147–148
- Pulmonary edema, high-altitude, 421–423, 425
- Pulmonary embolism
  - deep venous thrombosis and, 148–149
  - diagnosis of, 149–150
  - hemodynamically significant, 151–152
  - prevention of venous thromboembolism, 152
- Pulmonary infections, 126–127
- Pulmonary medicine
  - acute respiratory distress syndrome, 143, 146–147
  - aspiration pneumonitis, 152–153
  - combat-associated healthcare pneumonia, 153–154
  - mechanical ventilation basics, 140–143
  - pediatric, 452

## Emergency War Surgery

- pulmonary contusion, 147–148
- pulmonary embolism, 148–152
- Pupillary reactivity
  - head injuries and, 225–226
- Q**
- Q fever, 440
- Quaternary blast injuries, 5, 7
- R**
- Radial artery injuries, 362
- Radiation injuries, 430–431
- Radiological dispersal devices, 427–428
- Radiological injuries. *See also* Nuclear, biological, and chemical casualties
  - blast injuries, 430
  - casualty yield by type of weapon, 427–428
  - conventional nuclear weapons, 427–428
  - decontamination, 432
  - flash blindness, 431
  - flash burns, 430
  - lethal dose of radiation, 429
  - logistics of casualty management, 432–433
  - medical aspects of, 429
  - potential injuries, 430–431
  - radiation injuries, 430–431
  - radiological dispersal devices, 428
  - retinal burns, 431
  - thermal burns, 430
  - treatment of, 430
  - treatment of combined injuries, 431–432
  - triage, 428–429
- Rapid sequence intubation, 63, 90–94
- RDDs. *See* Radiological dispersal devices
- Reactive Skin Decontamination Lotion, 446, 449
- Recombinant factor VIIa, 477
- Rectal injuries, 272–273
- Red blood cells
  - ABO matching, 470–471
  - role of care, 468–469
- Reflux, 453
- Regional anesthesia, 96–97
- Relaparotomies, 181–182
- Renal arteries injuries, 369
- Renal disease
  - acute tubular necrosis, 165–166, 168
  - heatstroke and renal failure, 406
  - hemorrhagic fever with renal syndrome, 438–439
  - iatrogenic complications of therapy, 168
  - nephrolithiasis, 167–168
  - prerenal azotemia, 165–166
  - rhabdomyolysis, 166–167
- Renal injuries
  - blunt trauma, 278
  - grading, 278
  - hematuria, 277–278
  - major, 279
  - minor, 278
  - nephrectomies, 280–282
  - operative technique, 279–282
  - penetrating, 278
- Renal system, pediatric, 454
- Respiration, 141
- Respiratory rate, 141
- Resuscitation
  - burn injuries, 383–384
  - endpoints, 84
  - intravascular resuscitation fluids, 83
  - neonatal, 304–305
  - shock, 79–84, 131–132
- Resuscitation records, 524–528
- Resuscitation stations, 43
- Resuscitative thoracotomies, 246–247
- Retained personnel. *See* Internees
- Retinal burns, 431
- Retinal hemorrhage, high-altitude, 419–420
- Retrobulbar hemorrhage, 211–212
- Retrograde urethrography, 286–287
- Retroperitoneal hematoma, 296–297
- Retroperitoneal injuries, 273–274
- Returned to duty, 522
- rFVIIa. *See* Recombinant factor VIIa
- Rh blood matching, 471–472
- Rhabdomyolysis
  - crush injury and, 166–167
  - diagnosis of, 166
  - heatstroke and, 406, 409
  - treatment of, 166–167
- Ricin, 439
- Rifles. *See* Small arms injuries
- Rift Valley fever, 438–439
- Ringer's solution, lactated, 80, 133, 380
- Rocuronium, 91
- Roles of medical care
  - basic primary care, 19–23
  - CONUS-based hospitals, 28
  - function of, 17
  - medical treatment facility care, 23–28
  - point of injury care, 18
- RSDL. *See* Reactive Skin Decontamination Lotion
- RTD. *See* Returned to duty
- Rule of Nines, 381
- Rule of Tens, 380, 391



- S**
- Saphenous vein cutdowns, 86–87
  - Sarin, 444
  - Scalp bleeding, 72
  - Scalp injuries, 222
  - Scopolamine, 93
  - Scrotal injuries, 288
  - SEB. *See* Staphylococcal enterotoxin B
  - Secondary blast injuries, 5, 7
  - Sedatives, 92
  - Seizures
    - heatstroke and, 407
  - Sepsis
    - antibiotic coverage, 123
    - blood transfusions and, 485
    - systemic sepsis, 127–128, 130
  - Septic shock, 78, 81
  - Serum calcium, 139–140
  - Serum electrolyte management, 134
  - Serum magnesium, 138
  - Serum potassium, 136
  - Shaped charges, 11–12
  - Shock
    - cardiogenic, 78, 132
    - classification of, 77–78
    - compensated shock, 133
    - controlled hypotensive resuscitation, 82–84
    - critical care, 131–133
    - distributive, 78, 132
    - greater saphenous vein cutdowns, 86–87
    - hemorrhagic, 81–82
    - hypotension and, 78
    - hypothermia and, 84
    - hypovolemic, 77–82, 131–132
    - internal jugular venipuncture, 85–86
    - intraosseous infusion, 87–88
    - intravascular resuscitation fluids, 83
    - neurogenic, 78, 80, 315
    - obstructive, 132
    - septic, 78, 81
    - subclavian vein access, 85–86
    - treatment of, 79–82
    - uncompensated shock, 131–133
    - vascular access, 84–87
  - Shock trauma platoons, 18
  - SIMV. *See* Synchronized intermittent mandatory ventilation
  - Skeletal traction, 338–339
  - Skull base injuries, 200–203
  - Skull flaps, 235–237
  - Skull fractures, 222–223
  - Small arms injuries, 9–11
  - Small bowel injuries, 271
  - Small Portable Expeditionary Aeromedical Rapid Response team, 21
  - Smallpox, 436, 437–438, 441
  - Sniper rifles, 11
  - Soft-tissue infections, 125–126
  - Soft-tissue injuries
    - compartment syndrome, 110–111
    - crush syndrome, 108–110
    - facial, 190–193
    - fasciotomy technique, 111–112
    - presurgical care, 101
    - surgical wound management priorities, 101–102
    - wound care, 102–107
    - wound management after initial surgery, 107
  - Soman, 444
  - Sonography
    - focused abdominal sonography for trauma, 259–263
  - SPEAR. *See* Small Portable Expeditionary Aeromedical Rapid Response team
  - Spermatic cord injuries, 288
  - Spinal column support, 309
  - Spinal injuries
    - anatomical considerations, 311–312
    - antimicrobial agent selection and duration, 120
    - bladder dysfunction and, 315
    - classification of, 307–308
    - decubitus ulcers and, 315–316
    - deep vein thrombosis and, 315
    - emergent surgery, 314
    - Gardner-Wells tongs, 312–314
    - gastrointestinal tract and, 315
    - halo use, 311
    - instability, 309–310
    - mechanical integrity of the vertebral column, 308–310
    - neurogenic shock, 315
    - pathophysiology of, 308
    - penetrating, 314
    - transport considerations, 310–312
  - Splenic injuries, 271
  - ST elevation myocardial infarction, 155–157
  - Staphylococcal enterotoxin B, 439
  - Static landmines, 8
  - STEMI. *See* ST elevation myocardial infarction
  - Sternotomies, 248–249
  - Stomach injuries, 266
  - Stress gastritis, 163–164
  - Stress ulcers
    - spinal injuries and, 315
  - Strokes, 161–163

## Emergency War Surgery

- Subclavian artery injuries, 361
  - Subclavian vein access, 85–86
  - Subconjunctival hemorrhage, 207
  - Subxiphoid pericardial window, 248
  - Succinylcholine, 91
  - Sulfur mustard, 445
  - Sunburn, 414
  - Superficial femoral artery injuries, 364
  - Supraclavicular thoracotomies, 249–250
  - Surgery. *See* Damage control surgery;  
*specific injury type*
  - Surgery debridement
    - burn care, 389
  - Surgical companies, 23
  - Surgical cricothyrotomy, 67–68
  - Synchronized intermittent mandatory ventilation, 141–142
  - Syncope, heat-induced, 413
  - Systemic sepsis, 127–128, 130
- T**
- T-2 mycotoxins, 439
  - Tabun, 444
  - Tactical combat casualty care, 17
  - TBI. *See* Traumatic brain injury
  - TBSA. *See* Total body surface area
  - TCCC. *See* Tactical combat casualty care
  - Temporal bone injuries, 200–203
  - Temporary cavity injuries, 3–4, 10–11
  - Tendon injuries, 349, 352
  - Tension pneumothorax
    - diagnosis of, 241
    - positive pressure ventilation and, 63
    - treatment of, 243
  - Tertiary blast injuries, 5, 7
  - Testicular injuries, 289
  - Tetanus, 124–125
  - Theater Medical Directors, 498
  - Theater of Operations, 497
  - Thermal burns, 430
  - Thermal injuries, 8
  - Thermal stress
    - aeromedical evacuation and, 50
  - Thermobaric injuries, 8
  - Thermoregulation, pediatric, 454
  - Thickened agents, 448
  - High compartment syndrome, 491–492
  - Third country nationals
    - triage considerations, 32–33
  - Thoracic injuries
    - anatomical considerations, 241–242
    - antimicrobial agent selection and duration, 119
    - cardiac tamponade, 243–244
    - damage control surgery, 182
    - diagnosis of, 242
    - evaluation of, 242
    - flail chest, 244
    - massive hemothorax, 243
    - open pneumothorax, 244
    - surgical management, 244–255
    - tension pneumothorax, 241, 243
    - thoracotomies, 244–255
    - vascular, 251–252
  - Thoracic spine injuries, 310–312
  - Thoracoabdominal thoracotomies, 250–251
  - Thoracotomies
    - damage control surgery, 182
    - median sternotomy, 248–249
    - resuscitative, 246–247
    - subxiphoid pericardial window, 248
    - supraclavicular, 249–250
    - thoracoabdominal, 250–251
    - trap door, 249–250
    - tube thoracotomies, 244–246
  - Thromboembolic events
    - altitude-related, 420
  - Thrombotic thrombocytopenic purpura, 168–169
  - Tibial artery injuries, 366
  - Tidal volume, 141
  - TMD. *See* Theater Medical Directors
  - TNCs. *See* Trauma Nurse Coordinators
  - Toe injuries, 355
  - Torso vascular injuries, 367–369
  - Total body surface area, 380–382, 390
  - Tourniquets, 71, 467
  - TOWs. *See* Tube-launched, optically tracked, wire-guided missiles
  - Tracheal injuries, 199
  - Tracheobronchial tree injuries, 254
  - Traction, skeletal, 338–339
  - Tractotomies, 253
  - TRALI. *See* Transfusion-related acute lung injury
  - Transfusion-related acute lung injury, 486–487
  - Transfusions
    - ABO matching of blood products, 470–471, 480
    - acidosis, 474–476
    - acute hemolytic transfusion reaction, 484–485
    - allergic transfusion reactions, 487–488
    - blood products available by role, 468–469
    - coagulopathy, 476–478
    - contaminated blood products, 485
    - early control of hemorrhage, 467–468
    - emergency collection of fresh whole blood in the field, 478–483, 503–512

- febrile nonhemolytic transfusion reaction, 486
  - hyperkalemia, 475–476
  - hypocalcemia, 475–476
  - hypothermia, 473, 476
  - management of complications, 473–478
  - massive, 472–478
  - microvascular bleeding, 476–478
  - posttransfusion verification, 510–511
  - protocol, 474
  - reactions in the field, 483–488
  - Rh blood matching for female casualties, 471–472
  - sepsis, 485
  - transfusion-related acute lung injury, 486–487
  - treatment plan for transfusion reaction, 483
  - urticarial transfusion reactions, 487
  - Trap door thoracotomies, 249–250
  - Trauma Medical Directors, 498
  - Trauma Nurse Coordinators, 498
  - Trauma Registry, DoD
    - function of, 521
    - methods, 523–525
    - minimum essential data, 523
    - responsibilities, 498
    - resuscitation records, 524–528
    - situational awareness, 522–523
    - technology, 523–525
    - uses of, 523
  - Trauma systems. *See also* Joint Theater Trauma System
    - battlefield trauma system model, 497–499
    - description of, 497
    - Joint Trauma System, 500–502
    - military trauma systems, 497
  - Traumatic brain injury, 161. *See also* Head injuries
  - Trench foot, 394–395
  - Triage
    - anatomical location of injuries and, 40
    - BICEPS mnemonic, 33–34
    - burns, 390
    - categories, 30–31
    - chemical contamination injuries, 446–447
    - decision-making, 37–38
    - delayed category, 30–31
    - emergent treatment area, 41–44
    - expectant area, 44
    - expectant category, 31
    - external factors, 34–35
    - head injuries, 224–227
    - immediate category, 30
    - initial triage area, 38, 40–41
    - internal factors, 35–36
    - management, 31–32
    - mechanism of injuries and, 39
    - minimal category, 31
    - nonemergent treatment area, 44
    - ocular injuries, 205
    - operation tips, 44–45
    - principle of, 29
    - radiological injuries, 428–429
    - resource constraints, 34–37
    - resuscitation stations, 43
    - special considerations, 32–34
    - staffing, 41, 43–44
    - types of injuries and, 38
  - TTP. *See* Thrombotic thrombocytopenic purpura
  - Tube-launched, optically tracked, wire-guided missiles, 12
  - Tube thoracotomies, 244–246
  - Tularemia, 440
  - Two-person mask ventilation, 62–63
- U**
- Ulcers
    - corneal, 209–210
    - decubitus, 315–316
    - stress, 315
  - Ulnar artery injuries, 362
  - Ultrasonography
    - focused abdominal sonography for trauma, 259–263
  - Unassisted breathing, definition of, 145–146
  - Uncompensated shock, 131–133
  - Unexploded ordnances
    - injuries from, 15–16
    - triage considerations, 32
  - UPAC. *See* Ohmeda Universal Portable Anesthesia Complete
  - Upper extremities
    - compartment syndrome, 490–491
    - vascular injuries, 361–362
  - Ureteral injuries, 282–285
  - Ureteroneocystostomy, 284
  - Ureteroureterostomy, 283
  - Urethral injuries, 286–288
  - Urethrography, retrograde, 286–287
  - Urinary tract injuries. *See* Genitourinary tract injuries
  - Urticarial transfusion reactions, 487
  - US Army Institute of Surgical Research Burn Center, 391
  - US Department of Defense. *See* Department of Defense Trauma Registry

## Emergency War Surgery

Uterine atony, 302–303

Uterine injuries, 293

### V

VAC. *See* Vacuum-Assisted Closure Therapy System

Vacuum-Assisted Closure Therapy System, 494

Vaginal hemorrhage, acute, 297–298

Vaginal injuries, 292–293

Vaporizers, 97–100

Vascular access

shock and, 84–87

Vascular injuries

anastomotic disruption, 374

angiography, 360

anticoagulation, 374

aorta, 367–368

autologous vein harvest and use, 373–374

axillary artery, 361–362

brachial artery, 362

carotid artery, 369–370

cervical vascular injury, 369–371

common femoral artery, 363

diagnosis of, 359–360

endovascular capability, 373

epidemiology of, 357–358

evaluation of, 359–360

facial injuries and, 184–185

Fogarty thrombectomy catheters, 372

hepatic artery, 368

history of, 357

iliac arteries, 369

inferior vena cava filters, 373

jugular vein, 370–371

large veins, 371

ligation of vessels, 371–372

lower extremities, 362–367

management of, 358–359

mesenteric arteries, 369

pediatric, 373

popliteal artery, 364–366

portal vein, 368

postoperative care, 374–375

profunda femoris artery, 363–364

prosthetic graft material use, 373

radial artery, 362

renal arteries, 369

roles of care, 358–359

soft-tissue coverage, 374

subclavian artery, 361

superficial femoral artery, 364

temporary vascular shunts, 372

thoracic, 251–252

tibial artery, 366

torso, 367–369

ulnar artery, 362

upper extremities, 361–362

vena cava, 368

venous injury, 367

vertebral artery, 370

Vecuronium, 91

VEE. *See* Venezuelan equine encephalitis

Vena cava filters, 373

Vena cava injuries, 368

Venezuelan equine encephalitis, 441

Venous injuries, 367, 371

Venous thromboembolism, 148–149, 152

Ventilation, 62–63, 141. *See also* Mechanical ventilation

Ventilator-associated pneumonia, 153–154, 172–173

Ventilators, portable, 99–100

Ventricular fibrillation

hypothermia and, 401–402

Vertebral artery injuries, 196, 370

Vertebral column

mechanical integrity of, 308–310

Vesicants, 445–446, 448

VHF. *See* Viral hemorrhagic fever

*Vibrio cholerae*, 440

Vietnam War

casualties by weapon type, 2

Viral agents, 441

Viral hemorrhagic fever, 441

Vital signs

head injuries and, 224

pediatric, 453

Volutrauma, 142

Vulvar injuries, 291–292

### W

Walking Blood Banks, 478–483, 503–512

War wounds. *See also specific type of injury*

anatomical distribution of primary penetrating wounds, 2

antipersonnel landmines, 8–9

armored vehicle crew casualties, 11–14

ballistic injuries, 6

blast injuries, 6, 8

epidemiology of injuries, 1–2

explosive injuries, 5, 7

inhalation injuries, 14

mechanism of injury, 3–16

open joint injuries, 101–112

projectile injuries, 3–4

small arms injuries, 9–11

soft-tissue injuries, 101–112

thermal injuries, 8

thermobaric injuries, 8

unexploded ordnances, 15–16

- Weapons effects
    - antipersonnel landmines, 8–9
    - armored vehicle crew casualties, 11–14
    - ballistic injuries, 6, 8
    - casualties by weapon type, 2
    - epidemiology of injuries, 1–2
    - explosive injuries, 5, 7
    - inhalation injuries, 14
    - mechanism of injury, 3–16
    - projectile injuries, 3–4
    - small arms injuries, 9–11
    - thermal injuries, 8
    - thermobaric injuries, 8
    - unexploded ordnances, 15–16
  - White phosphorus burns, 389–390
  - Whole blood, fresh
    - ABO matching, 470–471
    - emergency collection in the field, 478–483, 503–512
    - posttransfusion verification, 510–511
    - rapid testing of, 509
    - releasing, 509–510
    - role of care, 469
  - WIA. *See* Wounded in action
  - World War II
    - casualties by weapon type in Bougainville Campaign, 2
  - Wound Data and Munitions Effectiveness Team, 1
  - Wounded in action, 522
  - Wounds. *See* War wounds; *specific injury type*
- Y**
- Yersinia pestis*, 440

