Index

Abciximab, 101, 102
Abdominal compressions in CPR, 47, 49
Abdominal thrusts in foreign-body airway obstruction, 28, 29, 162
Abrasions and wounds, first aid in, 198
ACE inhibitors
  in acute coronary syndromes, 102
  angioedema from, 143
Acidosis, bicarbonate therapy in, 81–82
Active compression-decompression CPR, 48
Acute coronary syndromes, 20, 89–103
  β-adrenergic blockers in, 100, 102
  adult basic life support in, 20
  algorithm for, 90
  angiotensin-converting enzyme inhibitors in, 102
  arrhythmias in, 102–103
  aspirin in, 20, 91, 95, 97–98, 100
  calcium channel blockers in, 102
  cardiac biomarkers in, 94
  cardiogenic shock in, 93, 99–100
  clopidogrel in, 100
  drug-induced, 127, 129
    in children, 178
  electrocardiography in, 20, 89, 93–97
    out-of-hospital, 91
    risk stratification in, 209
  emergency medical services in, 20, 89–92
  fibrinolytic therapy in. *See* Fibrinolytic therapy, in acute coronary syndromes
  glucose-insulin-potassium therapy in, 102
  glycoprotein IIb/IIIa inhibitors in, 101–102
  heparin in, 99, 101
  initial therapy in, 97–99
  interfacility transfer in, 92–93
  left ventricular infarction in, 99
  major adverse coronary events (MACE) in, 89, 94, 95
  morphine in, 98
  nitroglycerin in, 20, 80, 91, 98, 129
  non–ST-segment elevation in. *See* Non–ST-segment elevation myocardial infarction and unstable angina
  oxygen therapy in, 91, 97
  percutaneous coronary interventions in. *See* Percutaneous coronary interventions
  postresuscitation care in, 86
  in pregnancy, 151
  primary goals of therapy in, 89
  right ventricular infarction in, 100
  risk stratification in, 93–97, 209
  signs and symptoms in, 20, 89
  ST segment in. *See* ST segment in acute coronary syndromes
  statin therapy in, 102
  T wave in, 93–94
  triage in, 92
Adenosine, 74
  in children, 171, 176–177
  in drug-induced tachycardia, 129
  in supraventricular tachycardia, 72–73, 74
    in children, 176–177
Adrenal insufficiency, postresuscitation, 86
β_2-Adrenergic agonists
  in anaphylaxis, 144
  in asthma, 139, 140
β-Adrenergic blockers, 74–75
  in acute coronary syndromes, 100, 102
  contraindications to, 100
  in postresuscitation care, 86
  in supraventricular tachycardia, 72, 73, 75
  toxicity of, 128
    in children, 179
Adult basic life support, 19–29
Advance directives, 6, 8–9
Advanced cardiovascular life support, 3, 4, 51–87
  in children, 13, 167–181
    algorithms on, 3, 173, 176, 177
  early access to, 19
  in electric shock and lightning strike injuries, 155
  in hypothermia, 137
  initiation decision, 8
  in pregnancy, 150–152
  in pulseless arrest, 59–64
  in submersion and drowning, 134
  in tachycardia, 3
  in trauma, 146, 147–149, 178
Age
  and decision-making capacity, 6
  in definitions of neonate, infant, and child, 13, 14, 157
  and recommendations for resuscitation, 13, 14–15
Air bag–related injuries of children, 156
Airway management, 13, 51–55
  in adult basic life support, 21–22
  advanced, 4, 51, 52–55
    automatic transport ventilators in, 25, 48
    bag-mask ventilation in, 24, 51, 52, 168
    in children, 159, 167–169
    impedance threshold device in, 48
    in pulseless arrest, 60, 61
    rescue breathing and chest compressions in, 13, 14, 23, 24, 25, 26, 52
    in trauma, 147
  in anaphylaxis, 143, 144–145
  in asthma, 139–141
  in drug-induced emergencies, 126
  endotracheal intubation in, 52, 53–55
  esophageal-tracheal Combitube in, 52–53
  in foreign-body airway obstruction, 28–29, 162
  laryngeal mask airway in, 53, 167, 191
  in multiple rescuers, 13, 14
  nasopharyngeal airways in, 52, 167
  in newborns, 190, 209
  oropharyngeal airways in, 51–52, 167
  in pediatric advanced life support, 167–169
  in pediatric basic life support, 157–158, 163
  in pregnancy, 150, 151
  in submersion victims, 133–134, 163, 199
  suction devices in, 55, 169, 190
  in trauma, 146, 147, 163, 178
    in electric shock and lightning strike injuries, 155
Albumin serum levels, 124
Albuterol
  in anaphylaxis, 144
  in asthma, 139
  in hyperkalemia, 121
Algorithms, 2–3
  acute coronary syndromes, 90
  adult basic life support, 22
  bradycardia, 68, 176
  neonatal resuscitation, 189
  pediatric basic life support, 3, 158
  pulseless arrest, 59, 173
  stroke, 112
  tachycardia, 70, 177
Allergic reactions, anaphylaxis in, 143–145, 197
Alteplase, 99. *See also* Fibrinolytic therapy
Amiodarone, 74
  in cardiac arrest, 59, 61, 63, 208
  in children, 171–172, 174, 177, 178
  in tachycardia, 73, 177, 178
Amitriptyline toxicity, 128
Amniotic fluid embolism, 152
Amphetamine toxicity, 128
Amrinone, 80
Anaphylactoid reactions, 143
Anaphylaxis, 143–145, 197
Anesthetics, inhaled, in asthma therapy, 140
Angina. *See also* Non–ST-elevation myocardial infarction and unstable angina
  symptoms in, 89
  unstable, 94–97

clopidogrel in, 100
glycoprotein IIb/IIIa inhibitors in, 101–102
heparin in, 101
Angioedema
in anaphylaxis, 143, 144
drug-induced, 115, 143
hereditary, 143
Angioplasty, coronary, 99
Angiotensin-converting enzyme inhibitors
in acute coronary syndromes, 102
angioedema from, 143
Anistreplase, 99. *See also* Fibrinolytic therapy
Antiarrhythmic drugs, 63–64, 74–76
in children, 171–172
in drug-induced arrhythmias, 129
new recommendations on, 208
postresuscitation, 86
Anticholinergic drugs
in asthma, 140
toxicity of, 127, 128, 129
Antidepressant toxicity, 128, 129, 130
in children, 179
Antihistamines in anaphylaxis, 144, 145
Aortic dissection in pregnancy, 152
Arrhythmias, 67–76
in acute coronary syndromes, 102–103
bradycardia. *See* Bradycardia
in children, 171–179
drug-induced, 127
in children, 178–179
drug therapy in, 63–64, 74–76, 208
in children, 171–172
in hypercalcemia, 124
in hyperkalemia, 121
in hypermagnesemia, 123
in hypokalemia, 122
in hypomagnesemia, 124
in hypothermia, 136, 137
monitoring of, 67
postresuscitation, 86
recognition of, 67
in submersion and drowning, 134
tachycardia. *See* Tachycardia
in trauma, 147, 148
in electric shock and lightning strike injuries, 154, 155, 198
Arterial blood gas values, 78
in acute coronary syndromes, 97
in children, 179–180
postresuscitation, 85–86
Asphyxia, 12, 19, 51
in children, 161
in newborns, 190, 193
Aspiration of meconium, 190
Aspirin
in acute coronary syndromes, 20, 91, 95, 97–98
and clopidogrel therapy, 100
in stroke, 115
Asthma, 139–141
differentiated from anaphylaxis, 143–144
first aid in, 197
Asystole, 19, 59, 61
in anaphylaxis, 145
in children, 175
defibrillation in, 41, 61
drug therapy in, 62–63
false, 41
pacing in, transcutaneous, 42–43, 64
Atenolol, 75
toxicity of, 128
Atrial fibrillation/flutter, 73
cardioversion in, 42, 71, 73
drug therapy in, 72, 73, 74, 75, 76
Atrioventricular blocks, 68, 69
Atrioventricular nodal tachycardia, reentrant, 72, 74, 76
Atropine
adverse effects of, 63, 69, 172
in anaphylaxis, 144
in bradycardia, 68–69, 127
in cardiac arrest, 59, 61, 63
in children, 171, 172
Auto-PEEP, 51, 86
in asthma, 140, 141
Automated external defibrillation, 12, 35–39
in adult basic life support, 19–20, 27
in children, 13, 39, 157, 161–162, 174
early access to, 12, 19–20, 35, 39
in hospital setting, 35, 39
in hypothermia, 137
integration with CPR, 12, 19–20, 27, 35–36
lay rescuer use of, 12, 19–20, 27, 37–38
survival rates in, 206
in 1-rescuer CPR, 12–13, 14
1-shock versus 3-shock protocol in, 36
in public access defibrillation programs, 12, 19–20, 37–38
shock first versus CPR first protocols in, 27, 35, 207
in trauma, 147
Automatic transport ventilators, 25, 47–48
Automobile-related injuries
prevention of, 156
spinal trauma in, 198
Autonomy of patients, 6

Back slaps in foreign-body airway obstruction, 28
Bag-mask ventilation, 24, 51, 52
in advanced airway, 23, 51, 52, 168
in children, 159, 168
compared with endotracheal intubation, 52
in hypothermia, 136
in newborns, 191
Barrier devices in rescue breathing, 24, 159
Basic life support, 3–4
in acute coronary syndromes, 20
in adults, 19–29
airway management in, 21–22, 157–158
algorithms on, 3, 22, 158
benefits of early interventions in, 19, 20–21
breathing and ventilation in, 14, 15, 21, 22–25
in children, 158–160, 161
chest compressions in, 14–15, 25–27
in children, 160–161
without ventilations, 27, 161
in children, 3, 15, 156–163
defibrillation in, 27, 162
emergency medical services in
activation of, 19, 21, 157, 161–162
dispatch component of, 20
in foreign-body airway obstruction, 28–29
in hypothermia, 28, 136–137
initiation of, 8
in pregnancy, 150
pulse check in, 25, 160
quality of, 29
recovery position in, 28
responsiveness assessment in, 21, 157
safety issues in, 21, 157
sequence of actions in, 21–27, 157–162
in stroke, 20–21
in submersion and drowning, 27–28, 133–134
termination of, 9
in trauma, 146–147
in children, 163
in electric shock and lightning strike injuries, 154
Bee stings, anaphylaxis in, 143, 144
Benzodiazepines
in drug-induced emergencies, 129
toxicity of, 126

Bicarbonate therapy, 81–82
in children, 171, 172, 179
in drug-induced emergencies, 130, 179
in hyperkalemia, 121
Bicycle injuries, prevention of, 156
Biomarkers, cardiac, in acute coronary syndromes, 94
Biphasic defibrillation, 36, 37, 40, 207–208
in children, 39
current in, 41
in pulseless arrest, 60
and synchronized cardioversion, 42, 71
Bleeding. *See* Hemorrhage
Blood gases, arterial, 78
in acute coronary syndromes, 97
in children, 179–180
postresuscitation, 85–86
Blood pressure
in acute coronary syndromes, 91
and right ventricular infarction, 100
and stroke risk in fibrinolytic therapy, 99
in chest compressions, 25
drugs affecting, 79–82
in hypertension. *See* Hypertension
in hypotension. *See* Hypotension
monitoring of, 78
postresuscitation, 86
in pregnancy, 151–152
in shock, 167
in stroke, 115, 117, 118
in trauma, 147–148
Bradycardia, 67–69
algorithms on, 68, 176
in children, 160, 175, 176
drug-induced, 127–129
drug therapy in, 68–69, 79
in children, 175
in drug-induced emergencies, 127, 129
in hypothermia, 137
in newborns, 192
pacing in, transcutaneous, 43, 68, 69
in children, 175
in drug-induced emergencies, 129
Brain injury
in hyperthermia, 85, 87
prevention of, 85, 86–87
in children, 181
in newborns, 193
in stroke, 111–118
Braunwald risk stratification in acute coronary syndromes, 95, 96
Breathing and ventilation, 14, 22–25, 51–55
in adult basic life support, 21, 22–25
in advanced airways, 13, 14, 23, 24–25, 26, 52
in anaphylaxis, 143, 144–145
in asthma, 139–141
auto-PEEP effect in, 51, 86
in asthma, 140, 141
automatic transport ventilators in, 25, 47–48
bag-mask devices in. *See* Bag-mask ventilation
barrier devices in, 24, 159
checking for breathing, 14, 22, 158
chest rise in, 23
in children, 14, 158–160, 161
in advanced life support, 167–169, 175
compression-to-ventilation ratio in, 161, 207
compression-to-ventilation ratio in, 13, 26–27
in children, 161, 207
in newborns, 192
new recommendations on, 3, 14, 15–16, 206–207
cricoid pressure in, 25, 160, 168
disease transmission in, 16, 24, 159
face shield in, 24
gastric inflation in, 23, 51, 159–160, 168
in hypothermia, 28, 136
monitoring of, 78–79
in acute coronary syndromes, 97
in asthma, 139, 141
in children, 168
in endotracheal intubation, 54, 191
in newborns, 190–191
postresuscitation, 85–86, 179–180
in stroke, 113
in trauma, 147
mouth-to-mask, 24
mouth-to-mouth, 23–24, 27, 159
mouth-to-nose, 24, 159
in multiple rescuers, 13
in newborns, 15, 190–191
new recommendations on, 3, 12, 13, 14, 23, 206–207
number of breaths per minute in, 14, 23, 25, 26
in bag-mask ventilation, 24, 51, 168
in children, 159, 160, 168, 175
in endotracheal intubation, 55
in newborns, 190, 192
in pulseless arrest, 60, 61
in trauma, 147
in opiate overdose, 126, 179
with oxygen-powered manually triggered devices, 25, 48
postresuscitation, 85–86, 179–180
in pregnancy, 150, 151
in submersion and drowning, 27, 133–134, 199–200
in tracheostomy or stoma, 24, 163, 178
in trauma, 146, 147
ventilation-perfusion match in, 51
without chest compressions, 13, 14, 25
in children, 160
Bundle branch block, left, 95
fibrinolytic therapy in, 91, 98, 99
Burns
chemical, 200
in children, 156
electrical, 154, 155, 198
first aid in, 198, 200

Calcium, 80, 124–125
in children, 171, 172, 179
in drug-induced emergencies, 179
and magnesium serum levels, 123, 124, 125, 151
and potassium serum levels, 121, 124, 125
Calcium channel blockers, 74
in acute coronary syndromes, 102
in supraventricular tachycardia, 72, 74
toxicity of, 128, 130
in children, 179
Calcium chloride, 80
in children, 171, 172
in drug-induced emergencies, 179
in hyperkalemia, 121
in hypermagnesemia, 123
in hypocalcemia, 125
Calcium gluconate
in hypocalcemia, 125
in magnesium overdose, 151
Canadian Neurologic Scale in stroke assessment, 115
Capillary refill time in shock, 167
Capnometry, 78
CAPTIM trial, 92
Car seats for children, 156
Carbon dioxide monitoring
in cardiac arrest, 78–79
in children, 169, 180
in endotracheal intubation, 54, 169
in newborns, 191
postresuscitation, 86, 180
Cardiac arrest, 58–64
in anaphylaxis, 144, 145
in asthma, 141
in children. *See* Children, cardiac arrest in
defibrillation in, 27. *See also* Defibrillation
drug-induced, 130
drug therapy in, 58, 60–61, 62–64

new recommendations on, 208
in pregnancy, 150
sequence of actions in, 60–61, 174, 208
epidemiology of, 12
fluid therapy in, 64, 81
in hypothermia, 136–137
hypothermia as therapy in, 4, 49, 84–85
magnesium therapy in, 59, 63–64
monitoring in, 78–79
pacing in, 64
postresuscitation care in, 84–87
precordial thump in, 64
in pregnancy, 150–153
pulseless, 58–64, 172–175
in trauma, 146, 148
research involving newly dead in, 10
shock first versus CPR first protocols in, 4, 35, 60, 207
survival rates in, 4, 12, 19, 20, 27, 206
in asystole, 61
in drug therapy, 58, 62
in early defibrillation, 35
in endotracheal intubation, 52
in lay rescuer AED, 38, 206
prognostic factors in, 84, 87
in shock first versus CPR first protocols, 35, 207
termination of resuscitation in, 61–62
transport of patients in, 9, 62
in trauma, 146–149
in lightning strike injuries, 154
withholding resuscitation in, 7
Cardiac output, 51
in children, 160, 180–181
drugs for maintenance of, 79–82, 180–181
postresuscitation, 86, 180–181
Cardiogenic shock, 93, 99–100, 130
Cardiopulmonary bypass
in drug-induced emergencies, 130
in hypothermia, 137
Cardiopulmonary resuscitation, 2–3, 12–16
abdominal compressions in, 47, 49
active compression-decompression technique, 48
advanced. *See* Advanced cardiovascular life support
age differences in, 13, 14–15
automatic transport ventilators in, 25, 47–48
basic. *See* Basic life support
bystander reluctance in, 16
in children, 157–163
compression-only, 27
cough technique, 27, 47
early and immediate, 19
ethical issues in, 6–10
extracorporeal, 49, 130, 134, 170
family presence during, 9, 181
first, compared with shock-first protocol, 4, 35, 60, 207
futile, 6–7
hand-held devices in, 48, 49
high-frequency compressions in, 47
impedance threshold device in, 48
for lay rescuers and healthcare providers, comparison of, 12–15
load-distributing band in, 48–49
mechanical piston device in, 48
monitoring of, 78
new recommendations for, 3–4, 12–15, 206–209
open-chest, 47
oxygen-powered manually triggered devices in, 25, 48
postresuscitation care in, 84–87
for children, 179–181
for newborns, 192–193
new recommendations for, 208–209
prognostic factors in, 84, 87
prolonged
in anaphylaxis, 145
in children, 181
in drug-induced emergencies, 130
in hypothermia, 137
prompt devices in, 27
sequence of actions in, 13–14, 21–27, 157–162
drug therapy in, 60–61, 174, 208
survival rates in, 4, 12, 15
termination of, 7, 8, 9, 61–62
in children, 7, 181
in hypothermia, 137
in newborns, 7, 193
in trauma, 146–147
in electric shock and lightning strike injuries, 154, 155
vest device in, 48–49
withholding of, 7–8
in children, 162
in hypothermia, 137
in newborns, 7, 193
in out-of-hospital events, 8–9, 162
Cardioversion, 41–42
in drug-induced arrhythmias, 129, 130
synchronized, 41–42, 71, 72, 73
in children, 177, 178
and unsynchronized shocks, 41, 42, 71
in tachycardia, 71, 72, 73, 74
Cardioverter-defibrillator, implantable
automated external defibrillation in, 39
manual defibrillation in, 40
Carotid sinus massage, 72
in children, 176
Catheters
central venous, 58, 170
intraosseous, 58, 170
nasal, for oxygen therapy in children, 160
peripheral venous, 58, 170
suction, in airway management, 55
transtracheal, for ventilation support in children, 169
Central nervous system
hyperthermia affecting, 85, 87
postresuscitation support of, 86–87
in children, 181
in newborns, 193
Central venous catheterization, 58, 170
Cerebrovascular disorders, 111–118. *See also* Stroke
in hyperthermia, 85
postresuscitation, 86–87, 181, 193
Cesarean delivery in cardiac arrest, 152
Chain of Survival, 19, 20
pediatric, 156, 157
in stroke, 111
Charcoal, activated, as first aid for ingestions, 200
Chelating agents in hypercalcemia, 124
Chemical burns, first aid in, 200
Chest compressions, 14–15
and abdominal compressions, 47, 49
in active compression-decompression technique, 48
in adults, 15, 25–27
in advanced airways, 13, 14, 23, 24–25
in endotracheal intubation, 53, 55
in pulseless arrest, 61
in bag-mask ventilation, 24, 51
in children, 14–15, 157, 159, 160–161, 170
and defibrillation, 174–175
hand position in, 160–161
number per minute, 159, 160, 161, 170, 175
ratio to ventilation in, 161, 207
and defibrillation, 4, 12, 16
in asystole, 41
in children, 174–175
in 1-shock versus 3-shock protocols, 4, 16, 36, 60, 208
in shock first versus CPR first protocols, 4, 35, 60, 207
time between, 40, 208
drug therapy sequence in, 60–61, 174, 208
with hand-held devices, 48, 49
hand position in, 25
for children, 160–161
for newborns, 192
high-frequency, 47

in hypothermia, 28, 136
interruptions in, 3, 16, 26, 27, 51
in asystole, 41
in children, 161, 162, 174
in endotracheal intubation, 53
new recommendations for, 207, 208
in 1-shock versus 3-shock protocols, 4, 16, 36, 60, 208
in pulse checks, 4, 208
in pulseless arrest, 60, 61
in trauma, 147
by lay rescuer and healthcare provider, comparison of, 12, 13, 14, 15
in load-distributing band CPR, 48–49
with mechanical piston device, 48
in multiple rescuers, 13, 14, 24–25, 26
in newborns, 15, 192
in pregnancy, 150
in pulseless cardiac arrest, 60–61
push hard, push fast/often recommendation, 3, 16, 25, 160, 207
rate and depth of, 13, 14, 25, 26, 27
in children, 159, 160, 161, 170, 175
in high-frequency technique, 47
in newborns, 192
recommendations for, 207
in trauma, 147
ratio to ventilation, 3, 13, 26–27
in children, 161
in newborns, 192
recommendations for, 3, 14, 15–16, 206–207
recoil of chest wall in, 26
in submersion victims, 27, 134, 163
techniques in, 25–26
in trauma, 146–147
in vest CPR, 48–49
without ventilations, 25, 27, 161
Chest thrusts in foreign-body airway obstruction, 28, 29
Chest thump (precordial thump), 64
Children. *See also* Infants; Newborns
advanced cardiovascular life support in, 13, 167–181
algorithms for, 3, 173, 176, 177
age range of, 13, 14, 157
asthma in, 139, 140
basic life support in, 3, 15, 156–163
algorithm for, 3, 158
bradycardia in, 160, 175, 176
breathing and ventilation in, 14, 158–160, 161
in advanced life support, 167–169, 175
compression-to-ventilation ratio in, 161, 207
cardiac arrest in, 13, 14, 19
automated external defibrillation in, 39, 157
etiologies of, 19, 156–157
prevention of, 167
pulseless, 172–175
cardioversion in, synchronized, 177, 178
Chain of Survival for, 156, 157
chest compressions in, 14–15, 157, 159, 170
and defibrillation, 174–175
hand position in, 160–161
ratio to ventilation, 161, 207
decision making by, 6
defibrillation in, 13, 39, 162, 173–175
in asystole, 41
automated external, 13, 39, 157, 161–162, 174
electrode size for, 41, 174
energy levels in, 39, 174, 208
drug therapy in, 171–172
in bradycardia, 175
endotracheal administration of, 170
postresuscitation, 180–181
in tachycardia, 176–178
weight estimation for, 170
endotracheal intubation in, 168–169
confirmation of placement in, 54, 169
drug administration by, 170
family presence during resuscitation of, 9, 181
fluid administration in, 170–171, 178
foreign-body airway obstruction in, 28, 162
guidelines for resuscitation in, 3, 13, 209
hypotension in, 167
postresuscitation care of, 179–181
respiratory failure in, 167
sequence of resuscitation in, 14, 157–162
shock in, 167
with special healthcare needs, 162–163, 178
submersion and drowning of, 134, 156–157, 163, 199
tachycardia in, 175–178
termination of resuscitation in, 7, 181
toxicologic emergencies in, 178–179
trauma in, 156, 157–158, 163, 178
Chin-lift maneuver, 21
Choking in foreign-body airway obstruction, 28–29
Cholinergic toxicity, 127, 128
Cimetidine in anaphylaxis, 144
Cincinnati Prehospital Stroke Scale, 111, 113
Circulation, 25–27
drugs affecting, 79–82, 180–181
in pediatric advanced life support, 169–170
in pregnancy, 150, 151
spontaneous, return of, 7, 78, 79
in chest compressions, 26
postresuscitation care in, 84–87
in trauma, 146, 147–149
Classification of recommended interventions, 1–2
Clopidogrel in acute coronary syndromes, 100
Cocaine toxicity, 128, 129, 178–179
Cold applications in musculoskeletal trauma, 199
Coma, postresuscitation care in, 84, 85, 181
Combitube, esophageal-tracheal, 52–53
Compression of chest. *See* Chest compressions
Computed tomography in stroke, 115
Conduction disorders, drug-induced, 127, 130
Conflict of interest issues, 3, 204–205
Contusions
cardiac, 148–149
first aid in, 199
Coronary artery bypass grafting, 97, 100
Coronary artery disease, 20. *See also* Acute coronary syndromes
Coronary perfusion pressure, 78, 81
Corticosteroid therapy
in adrenal insufficiency, postresuscitation, 86
in anaphylaxis, 144, 145
in asthma, 139–140
Cough CPR, 27, 47
Creatine kinase-MB isoenzyme in acute coronary syndromes, 94
Cricoid pressure, 25, 160, 168
Cricothyrotomy in trauma, 147
CURE trial on clopidogrel in angina, 100
Current-based defibrillation, 41
Cyanide levels in nitroprusside therapy, 81
Cyanosis in newborns, 190

Death
emotional support of family in, 9
of infant, sudden, 156
leading causes of, 12
of newborn, 193
pronouncement of, 9
and research involving newly dead, 10
Decision making, 6–10
autonomy of patients in, 6
legal surrogates in, 6
Defibrillation, 35–41
in adult basic life support, 19–20, 27
in asystole, 41
automated external. *See* Automated external defibrillation
biphasic. *See* Biphasic defibrillation
and chest compressions, 4, 12, 16
in asystole, 41
in children, 174–175
in 1-shock versus 3-shock protocols, 4, 36, 60, 208
in shock first versus CPR first protocols, 4, 35, 60, 207

time between, 40, 208
in children. *See* Children, defibrillation in
current-based, 41
in drug-induced arrhythmias, 129, 130
drug therapy sequence in, 60–61, 174, 208
early access to, 12, 19, 27, 35
in hospital, 39
in pulseless arrest, 60
in electric shock and lightning strike injuries, 154, 155
electrode placement in, 38–39, 40, 174
electrode size in, 40–41, 174
energy levels in. *See* Energy levels in defibrillation
equipment maintenance in, 43
fire hazard in, 40, 41
first shock efficacy in, 36, 37
in hairy chest, 39, 40
in hospital setting, 13, 35, 39
in hypothermia, 136, 137
impedance in, 37, 40
implantable cardioverter-defibrillator affecting, 39, 40
integration with CPR, 4, 12, 16, 19–20, 27, 35–36
in children, 174–175
manual techniques in, 39–41
monophasic. *See* Monophasic defibrillation
1-shock versus 3-shock protocols in, 4, 16, 36, 60, 207–208
in pregnancy, 150, 151
public access, 12, 19–20
in pulseless arrest, 60–61, 174–175
recommendations for, 4, 207–208
recurrence of ventricular fibrillation after, 36
and synchronized cardioversion, 41–42, 71
unsuccessful, 9
unsynchronized shocks in, 41, 42, 71, 72
in polymorphic ventricular tachycardia, 73, 74
waveforms in. *See* Waveforms in defibrillation
Delivery
anticipation of neonatal resuscitation in, 188
cesarean, in cardiac arrest, 152
initial assessment and management of newborn in, 188–192
Dental injuries, first aid in, 199
Desipramine toxicity, 128
Diabetes mellitus, hyponatremia in, 123
Dialysis
in hypercalcemia, 124
in hyperkalemia, 121
in hypermagnesemia, 123
Diazepam in drug-induced tachycardia, 129
Digitalis, 80
toxicity of, 80, 128, 129
Digitoxin toxicity, 128
Digoxin toxicity, 128
Diltiazem
in supraventricular tachycardia, 72, 73, 74
toxicity of, 128
Diphenhydramine toxicity, 128
Disease transmission during resuscitation, 16, 24, 159
Disopyramide toxicity, 128
Dispatch system in emergency medical services, 20
Distributive shock, drug-induced, 130
Diuretics, 82
in hypercalcemia, 124
in hyperkalemia, 121
in hypermagnesemia, 123
DNAR (Do Not Attempt Resuscitation) orders, 7–8, 162
Dobutamine, 80
in pediatric postresuscitation care, 180
Donation, organ and tissue, ethical issues in, 9–10
Dopamine, 79–80
in bradycardia, 68, 69
in hypotension, 79–80
in pediatric postresuscitation care, 180
DOPE mnemonic on deterioration in endotracheal intubation, 141, 169
Doxylamine toxicity, 128
Drowning. *See* Submersion and drowning
Drug-induced disorders, 126–131
acute coronary syndromes in, 127, 129, 178
anaphylaxis in, 143
angioedema in, 115, 143
bradycardia in, 127–129
cardiac arrest in, 130
in children, 178–179
conduction disorders in, 127, 130
first aid in, 200
hypertension in, 127, 129
of kidneys, 181
in pregnancy, 152
prolonged CPR in, 130
shock in, 127, 130
tachycardia in, 127, 129, 130
types of drugs causing, 128
ventricular arrhythmias in, 76, 127, 129–130
Drug therapy
in acute coronary syndromes, 97–99, 100–103
in anaphylaxis, 144, 145
antiarrhythmic. *See* Antiarrhythmic drugs
in asthma, 139–140, 141
in bradycardia, 68–69, 79
in children, 175
in drug-induced emergencies, 127, 129
in cardiac arrest, 58, 60–61, 62–64
new recommendations for, 208
in pregnancy, 150
sequence of actions in, 60–61, 174, 208
in children. *See* Children, drug therapy in
endotracheal administration of, 58, 62
in children, 170
in newborns, 192
fibrinolytic. *See* Fibrinolytic therapy
in newborns, 192
new recommendations for, 208
postresuscitation, 86
in children, 180–181
in tachycardia, 72, 73
in children, 176–178
vasoactive, 62–63, 79–82, 86
in children, 180–181
Durable power of attorney for health care, 6

Eclampsia, 151–152
Edema, laryngeal, in anaphylaxis, 143, 144, 145
Education and training, 16
in active compression-decompression CPR, 48
in advanced airways, 52, 53
in compression-ventilation ratio, 207
in first aid, 196
in lay rescuer AED programs, 37–38
in neonatal resuscitation, 16, 190
in rescue breathing volume, 23
simplification of, 16
in stroke assessment, 113
in telephone instructions from emergency medical dispatch, 20
Electric shock injuries, 154, 155, 198
Electrical therapies, 35–43
cardioversion, 41–42. *See also* Cardioversion
defibrillation, 35–41. *See also* Defibrillation
pacing, transcutaneous, 42–43, 64, 68, 69
in children, 175
Electrocardiography, 67
in acute coronary syndromes, 20, 89, 93–97
out-of-hospital, 91
risk stratification in, 209
in bradycardia, 67, 68
in children, 170
in defibrillation
automated external, 38
manual, outcome prediction in, 41
and synchronized cardioversion, 41–42
in hypercalcemia, 124
in hyperkalemia, 121
in hypokalemia, 122, 124
interpretation of, 67
postresuscitation, 86

in stroke, 115
in tachycardia, 71–72, 73
Electrodes in defibrillation
in children, 174
placement of, 38–39, 40, 174
size of, 40–41, 174
Electroencephalography, postresuscitation, 87
Electrolytes, 121–125. *See also specific electrolytes*
calcium, 124–125
magnesium, 63–64, 123–124
potassium, 121–122
sodium, 122–123
Embolism
amniotic fluid, 152
pulmonary, 64
in pregnancy, 152
Emergency cardiovascular care, 2–3
new recommendations for, 206–209
Emergency Cardiovascular Care Committee, conflict of interest issues in, 204–205
Emergency medical services, 3
activation of, 19, 21
in first aid, 196
in pediatric BLS, 157, 160–161
in acute coronary syndromes, 20, 89–92
decision for initiation of CPR, 8, 9
dispatch system in, 20
in foreign-body airway obstruction, 28, 29
in opiate overdose, 126
shock first versus CPR first protocols in, 35, 207
in stroke, 20–21, 111–113
time to arrival, 12, 19, 27, 35
in trauma, 146
Emotional support of family, 9
Endotracheal intubation, 53–55
in asthma, 140–141
bag-mask ventilation compared with, 52
in children, 168–169
confirmation of placement in, 54, 169
drug administration by, 170
complications of, 52, 53
confirmation of placement in, 52, 53–55, 141
in children, 54, 169
clinical assessment in, 53–54, 191
esophageal detector devices in, 54, 169
exhaled carbon dioxide detectors in, 54, 169, 191
in newborns, 191
in pregnancy, 150
in trauma, 147
displacement of tube in, 52, 141
prevention of, 54–55
DOPE mnemonic on causes of deterioration in, 141, 169
drug administration by, 58, 62
in children, 170
in newborns, 192
esophageal-tracheal Combitube compared with, 53
in hypothermia, 137
indications for, 53
interruption of chest compressions for, 53
in newborns, 191
drug administration by, 192
in pregnancy, 54, 150, 151
in trauma, 146, 147
Energy levels in defibrillation, 36, 37, 39–40
with biphasic waveform defibrillators, 37, 40
in children, 39, 174, 208
and current, 41
in fixed or escalating dose, 37, 39
with monophasic waveform defibrillators, 40
in 1-shock protocol, 208
in polymorphic ventricular tachycardia, 73–74
in pulseless arrest, 60
and synchronized cardioversion, 42, 71
Enoxaparin in acute coronary syndromes, 101
Ephedrine toxicity, 128
Epinephrine, 62, 79
adverse effects of, 62, 172, 192
in anaphylaxis, 144, 145, 197
in asthma, 140
in bradycardia, 68, 69, 79
in cardiac arrest, 59, 60, 61, 62–63
new recommendations for, 208
in children, 171, 172, 174, 175, 209
in postresuscitation care, 180
in hypotension, 79
in newborns, 192
routes of administration, 58, 62
Eptifibatide, 101, 102
Esmolol, 75
Esophageal detector devices monitoring tracheal tube placement, 54
in children, 169
in pregnancy, 150
Esophageal-tracheal Combitube, 52–53
ESSENCE trial, 95
Ethical issues, 6–10
in conflicts of interest, 3, 204–205
in futile interventions, 6–7
in neonatal resuscitation, 193
in organ and tissue donation, 9–10
in out-of-hospital resuscitation, 8–9
in patient autonomy, 6
in research involving newly dead, 10
in withholding and withdrawing CPR, 7–8, 181
Evidence-based guidelines, 1–2
conflict of interest policy in, 3, 204–205
Evoked potentials, somatosensory, 87
Exhaled carbon dioxide detectors, 54
in children, 169
in newborns, 191
Extracorporeal membrane oxygenation, 49
in children, 170
in drug-induced emergencies, 130
in submersion and drowning, 134

Face masks, 24. *See also* Masks
Face shields in rescue breathing, 24
Family
in out-of-hospital events, 8–9
present during resuscitative efforts, 9, 181
as surrogate decision makers, 6
Fentanyl toxicity, 128
Fever
postresuscitation management of, 85
in stroke, 118
Fibrinolytic therapy
in acute coronary syndromes, 92–93, 98–99
and clopidogrel therapy, 100
contraindications in, 94
drug-induced, 129
and heparin therapy, 101
with left bundle branch block, 91, 98, 99
out-of-hospital, 91, 92
with right ventricular infarction, 100
with ST-segment elevation, 94, 98–99
time to therapy in, 91, 92, 93, 98–99
in cardiac arrest, 64
in pulmonary embolism, 64
in stroke, 4, 20, 113, 115–117
checklist on, 116
complications of, 115
recommendations for, 209
time to therapy in, 20, 21, 111, 115
FINESSE study, 102
Finger sweep in foreign-body airway obstruction, 29, 162
Fire hazard in defibrillation, 40, 41
Firearm injuries in children, 156
First aid, 4, 196–200, 209
in anaphylaxis, 197
in asthma, 197

definition of, 196
historical aspects of, 196
in poisoning, 200
in seizures, 197
in trauma, 197–200
Flecainide toxicity, 128, 130
Fluid administration, 81, 86
in anaphylaxis, 144, 145
in cardiac arrest, 64, 81
in children, 170–171, 178
in hypercalcemia, 124
in hypernatremia, 122–123
in newborns, 192
in stroke, 118
in trauma, 146, 147–148
in children, 178
in electric shock and lightning strike injuries, 155
Food allergy, anaphylaxis in, 143
Food poisoning, 143
Foreign-body airway obstruction, 28–29
in children, 28, 162
finger sweep in, 29, 162
recognition of, 28, 162
responsiveness of victims in, 28, 29, 162
Foxglove toxicity, 128
Fractures, first aid in, 199
Frostbite, 199
Furosemide, 82
in hypercalcemia, 124
in hyperkalemia, 121
in hypermagnesemia, 123
Futility of medical treatment, 6–7
withholding and withdrawing of CPR in, 7–8

Gases, arterial blood, 78
in acute coronary syndromes, 97
in children, 179–180
postresuscitation, 85–86
Gastric inflation from rescue breathing, 23, 51
in children, 159–160, 168
Gastrointestinal disorders
in anaphylaxis, 143
postresuscitation, 180
in submersion victims, 134
Gestational age
affecting neonatal resuscitation decisions, 193
in emergency hysterotomy, 152
of preterm infants, 188, 190
Glasgow Coma Scale
in children, 157
in spinal injury, 198
Glucagon
in anaphylaxis, 144
in bradycardia, 69
in drug-induced emergencies of children, 179
Glucose
administration of
in acute coronary syndromes, 102
in children, 171, 172, 179
in drug-induced emergencies, 179
in hyperkalemia, 121
blood levels of, 21
in children, 172
in hyponatremia, 123
in newborns, 192–193
postresuscitation, 85, 192–193, 208
in stroke, 117
Glycoprotein IIb/IIIa inhibitors in acute coronary syndromes, 101–102
GREAT trial on fibrinolytic therapy, 91
Guardians as surrogate decision makers, 6
Gunshot wounds in children, 156
GUSTO IV trial, 101, 102

Hand-held devices assisting in chest compressions, 48, 49
Head tilt–chin lift maneuver, 21
in children, 157, 158
in trauma, 146
Health Insurance Portability and Accountability Act (1966), 10
Heart failure, drug therapy in, 80, 81
Heart rate in newborns, 190, 191, 192
Heimlich maneuver in foreign-body airway obstruction, 28, 29, 162
Heliox in asthma, 140, 141
Helium and oxygen mixture in asthma, 140, 141
Hemodynamics, assessment of, 78
postresuscitation, 86
Hemorrhage
first aid in, 197–198
intracranial
in fibrinolytic therapy, 99, 115, 117
in heparin therapy, 101
stroke in, 115
shock in, 167
in trauma, 146, 178, 197–198
Hemothorax in trauma, 146, 147
Heparin in acute coronary syndromes, 100, 101
Heroin overdose, 126, 128
Histamine H_2 blockers in anaphylaxis, 144
HMG coenzyme A reductase inhibitors in acute coronary syndromes, 102
Hospitals
active compression-decompression CPR in, 48
automatic transport ventilators in, 25, 47, 48
defibrillation in
with automated external defibrillators, 35, 39
for children, 13
DNAR orders in, 7–8
extracorporeal CPR in, 49
hypothermia treatment in, 137
and interfacility transport
in acute coronary syndromes, 92–93
of children, 181
interposed abdominal compression CPR technique in, 47
open-chest CPR in, 47
stroke management in, 114–118
Hypercalcemia, 124
Hyperglycemia
hyponatremia in, 123
in newborns, 193
postresuscitation management of, 85, 193
in stroke, 117
Hyperkalemia, 121, 122
Hypermagnesemia, 123–124
in pregnancy, 151
Hypernatremia, 122–123
Hypersensitivity reactions, anaphylaxis in, 143–145, 197
Hypertension
drug-induced, 127, 129
drug therapy in, 80, 81
in pregnancy, 151–152
in stroke, 115, 117
Hyperthermia
brain injury in, 85, 87
in newborns, 188, 189
postresuscitation management of, 85
in children, 181
in stroke, 118
Hyperventilation, 23, 86
in children, 168, 181
Hypocalcemia, 124–125
Hypocapnia, 86
Hypoglycemia, 21
in children, 172
in newborns, 192–193
postresuscitation, 85, 192–193
Hypokalemia, 121–122, 124
Hypomagnesemia, 124, 125
Hyponatremia, 122, 123
Hypotension
in children, 167, 179
drug-induced, 80, 81, 179
drug therapy in, 79–80
in right ventricular infarction, 100
in shock, 167

Hypothermia, 136–137
basic life support in, 28, 136–137
first aid in, 199
induced, 208–209
in cardiac arrest, 4, 49, 84–85
in children, 181
extracorporeal CPR in, 49
in newborns, 193
postresuscitation care in, 84–85
in stroke, 118
in submersion and drowning, 134
in newborns, 188
in submersion and drowning, 133, 134, 137
in trauma, 147
Hypovolemia
drug-induced, 130
fluid administration in, 81, 122–123
hypernatremia in, 122–123
nitroglycerin complications in, 80
shock in, 167
Hypoxemia in stroke, 113, 115
Hypoxia, 51
in submersion victims, 133
Hysterotomy, emergency, in pregnancy and cardiac arrest, 152

Ibutilide, 75
Impedance in defibrillation, 37, 40
Impedance threshold device in CPR, 48
Inamrinone, 80
in pediatric postresuscitation care, 180, 181
Infants, 13
age range of, 13, 14, 157
basic life support in, 15, 156–163
breathing assessment in, 14
chest compressions in, 14, 160–161
defibrillation in, 174
automated external, 39, 162, 174
emergency delivery in cardiac arrest, 152
foreign-body airway obstruction in, 162
glucose requirements of, 172
hypotension in, 167
newborn, 188
oxygen therapy in, 160
preterm, 188, 190, 191
rescue breathing in, 14, 159
sequence of resuscitation actions in, 14
sudden death of, 156
Infection transmission in resuscitation, 20, 24, 159
Informed consent in research, 10
Inotropic drugs, 79, 80
Insect stings, anaphylaxis in, 143, 144
Insulin therapy
in acute coronary syndromes, 102
in drug-induced emergencies of children, 179
in hyperkalemia, 121
in postresuscitation care, 85
in stroke, 117
International Consensus Conference on CPR and ECC Science With Treatment Recommendations, 1, 204–205
International Liaison Committee on Resuscitation (ILCOR), 1, 204, 205
Interventions recommended, classification of, 1–2
Intraosseous catheterization, 58, 170
Ipecac, in first aid for ingestions, 200
Ipratropium
in anaphylaxis, 144
in asthma, 140
ISIS-2 study, 98
Isoniazid toxicity, 128
Isoproterenol in bradycardia, 127

Jaw-thrust maneuver, 21
in children, 157, 163
in trauma, 146, 163
Joint Commission for the Accreditation of Healthcare Organizations, 16

Kayexalate in hyperkalemia, 121
Ketamine in asthma, 140
Kidney disorders, postresuscitation, 87, 181

Labetalol in hypertensive emergencies, 129
Laryngeal edema in anaphylaxis, 143, 144, 145
Laryngeal mask airway, 53
in children, 167
in newborns, 191
Laryngectomy, rescue breathing in, 24
Latex allergy, anaphylaxis in, 143
Lay rescuers, 12–16
in adult basic life support, 19–20, 21
checking breathing, 22
chest compressions by, 14–15, 26, 27
emergency medical dispatch instructions to, 20
pulse check not required, 25
and automated external defibrillation, 12, 19–20, 27, 37–38
survival rates in, 206
and bystander reluctance, 16
decision for initiation of CPR, 8
in pediatric basic life support, 157, 158, 161
chest compressions by, 160, 161
in foreign-body airway obstruction, 162
pulse check not required, 160
recommended guidelines for, 3
compared with healthcare providers, 12–15
sequence of actions for, 14
training on CPR, 16
Legal issues
in advance directives and living wills, 6, 8
in Health Insurance Portability and Accountability Act (1966), 10
in Patient Self-Determination Act (1991), 6
in research involving newly dead, 10
in surrogate decision makers, 6
Leukotriene antagonists in asthma, 140
Levalbuterol in asthma, 139
Lidocaine
in cardiac arrest, 58, 59, 63
in children, 171, 172, 174
toxicity of, 75, 128, 172
in ventricular fibrillation/tachycardia, 75, 102, 129
Lightning strike injuries, 154, 155
Living wills, 6, 8–9
Load-distributing band CPR, 48–49
Lone rescuer CPR. *See* One-rescuer CPR
Lorazepam in drug-induced tachycardia, 129
Los Angeles Prehospital Stroke Screen, 111, 114

Magnesium, 123–124
in acute coronary syndromes, 102–103
in asthma, 140
in atrial fibrillation/flutter, 73
and calcium serum levels, 123, 124, 125
in cardiac arrest, 59, 63–64
in children, 171, 172, 175
in drug-induced arrhythmias, 129
in pregnancy, 151
in torsades de pointes, 63–64, 73, 75, 124, 129, 175
Manual defibrillation, 39–41
Manual resuscitators, oxygen-powered flow-limited, 25, 48
Masks
in bag-mask ventilation, 24, 51, 52, 159. *See also* Bag-mask ventilation
in laryngeal mask airway, 53, 167, 191
in mouth-to-mask breathing, 24
in oxygen therapy for children, 160
Mechanical piston CPR, 48
Meconium aspiration, 190
Median nerve somatosensory evoked potentials, postresuscitation, 87
Methadone toxicity, 128
Methamphetamine toxicity, 128
Methylxanthines in asthma, 140
Metoprolol, 75
Milk, in first aid for ingestions, 200
Milrinone, 80
in pediatric postresuscitation care, 180, 181

Mobitz types of atrioventricular blocks, 68
Monitoring, 78–79
  in arrhythmias, 67
  during CPR, 78, 170
  in endotracheal intubation, 54, 169
  postresuscitation, 84
    in children, 179–180, 181
    respiratory, 85–86, 179–180
Monophasic defibrillation, 36, 37, 40, 207, 208
  in children, 39
  current in, 41
  in pulseless arrest, 60
  and synchronized cardioversion, 42, 71
Morphine in acute coronary syndromes, 98
Motor vehicle injuries
  prevention of, 156
  spinal trauma in, 198
Mouth-to–barrier device breathing, 24, 159
Mouth-to–face shield breathing, 24
Mouth-to-mask breathing, 24
Mouth-to-mouth breathing, 23–24
  in children, 159
  in submersion and near-drowning, 27
Mouth-to-nose breathing, 24, 159
Mouth-to-stoma breathing, 24, 163, 178
Myelinolysis, pontine, 122, 123
Myocardial infarction, acute, 20, 89. *See also* Acute coronary syndromes

Naloxone in opiate overdose, 126–127
  in children, 179
  in newborns, 192
Narrow-complex tachycardia, 71–72, 74, 75
  in children, 175–178
Nasopharyngeal airways, 52, 167
National Institutes of Health Stroke Scale, 115
National Registry of Cardiopulmonary Resuscitation, 16
Neurologic disorders
  in hypercalcemia, 124
  in hypermagnesemia, 123
  in hypernatremia, 122
  in hyponatremia, 122, 123
  in lightning strike injuries, 154
  postresuscitation, 85, 86–87
    in children, 181
    in newborns, 193
  in spinal injury, 198
  in stroke, 117
    assessment of, 115
    prevention of, 118
  in submersion victims, 134
Neuromuscular blocking agents, 86
Newborns, 188–193
  airway management in, 190, 209
  algorithm for resuscitation in, 189
  anticipation of resuscitation need, 188
  assessment of, 188
    periodic, 190
  chest compressions in, 15, 192
    hand position in, 192
  drug therapy in, 192
  endotracheal intubation in, 191, 192
  hypotension in, 167
  oxygen therapy in, 4, 190, 209
  positive-pressure ventilation in, 190–191
  postresuscitation care of, 192–193
  recommendations for resuscitation in, 4, 13, 15, 188, 209
  risk factors in, 188
  temperature management in, 188–189, 193
  termination of resuscitation in, 7, 193
  training on resuscitation in, 16, 190
  use of term *neonate*, 188
  withholding of resuscitation in, 7, 193
Newly born, use of term, 188
Nifedipine toxicity, 128
NINDS trials, 115, 116, 117
Nitroglycerin, 80–81
  in acute coronary syndromes, 20, 80, 91, 98
    drug-induced, 129
  side effects of, 80–81
Nitroprusside, 81
  in hypertensive emergencies, 129
  in pediatric postresuscitation care, 180–181
Non–ST-elevation myocardial infarction and unstable angina, 89–110
    See also Angina
  β-adrenergic receptor blockers in, 100
  clopidogrel in, 100
  early invasive strategies in, 95, 97
  electrocardiographic presentation, 89, 93
  fibrinolytic therapy contraindicated in, 94
  glycoprotein IIb/IIIa inhibitors in, 101–102
  heparin in, 101
  initial general therapy, 97–98
  and major adverse coronary events (MACE), 95
  percutaneous coronary intervention in, 99
  risk stratification in, 93
  TIMI risk score in, 95, 97
Norepinephrine, 79
  in cardiac arrest, 64
  in pediatric postresuscitation care, 180
Nortriptyline toxicity, 128

Obesity
  endotracheal intubation in, 54
  foreign-body airway obstruction in, 28
Oleander toxicity, 128
One-rescuer CPR, 12–13, 21
  automated external defibrillation in, 12–13, 14
  bag-mask ventilation in, 24
  chest compressions in, 14, 51, 161
    and compression-to-ventilation ratio, 207
  in pediatric victims, 157, 160, 161
  sequence of actions for, 13–14
  in submersion victims, 27
Open-chest CPR, 47
Opiates
  overdose of, 126–127, 128
    in children, 179
  in pregnancy, respiratory depression in newborns from, 192
Organ and tissue donation, ethical issues in, 9–10
Oropharyngeal airways, 51–52, 167
Out-of-hospital management
  in acute coronary syndromes, 89–92
  emergency medical services in. *See* Emergency medical services
  ethical issues in, 8–9
  first aid in, 196–200
  in hypothermia, 136–137
  lay rescuers in. *See* Lay rescuers
  pediatric resuscitation in, 13
  pronouncement of death in, 9
  in stroke, 111–113
  survival rates in, 12
  in trauma, 146
Oximetry, 78
  in children, 168, 169, 179
  in newborns, 190
Oxygen-powered flow-limited resuscitators, 25, 48
Oxygen saturation
  in asthma, 139
  in newborns, 190
Oxygen therapy, 51
  in acute coronary syndromes, 91, 97
  in anaphylaxis, 144
  in asthma, 139
    helium mixture in, 140, 141
  in bag-mask ventilation, 24, 159
  in children, 159, 160, 168, 179
  first aid guidelines for, 197

in hypothermia, 136, 137
in newborns, 4, 190, 209
in opiate overdose, 126
in stroke, 113, 115
in trauma, 147

Pacemaker implants affecting defibrillation, 40
Pacing, transcutaneous, 42–43
in asystole, 42–43, 64
in bradycardia, 43, 68, 69
in children, 175
Panic disorder differentiated from anaphylaxis, 144
Patient Self-Determination Act of 1991, 6
Pedestrian injuries in childhood, prevention of, 156
Pediatrics. *See* Children
Percutaneous coronary interventions, 92–93, 99–100
indications for, 97
interfacility transfer for, 93
in ST-segment elevation myocardial infarction, 94
Perfusion pressure, 78
cerebral, 87
coronary, 78, 81
Peripheral venous catheterization, 58, 170
Phencyclidine toxicity, 128
Phentolamine in drug-induced acute coronary syndromes, 129
Phone calls. *See* Telephone calls
Phosphodiesterase inhibitors, 80
Physostigmine in drug-induced tachycardia, 129
Piston device in CPR, 48
Pneumothorax in trauma, 146, 147
Poison control centers, 200
Poisonings, 126–131
in children, 178–179
differentiated from anaphylaxis, 143
first aid in, 200
in pregnancy, 151, 152
Position of rescuer in chest compressions, 25
Position of victim
in airway management, 21–22, 157
in chest compressions, 25
first aid guidelines for, 196–197
in prone position, 27
in recovery position, 28, 159, 197
Positive airway pressure
in asthma, 140
in newborns, 191
Positive end-expiratory pressure (PEEP)
and auto-PEEP, 51, 86
in asthma, 140, 141
in newborns, 191
Positive-pressure ventilation
in asthma, 140
in newborns, 190–191
Postresuscitation care, 84–87
for children, 179–181
for newborns, 192–193
new recommendations for, 208–209
Potassium, 121–122
in acute coronary syndromes, 102
and calcium serum levels, 121, 124, 125
and magnesium serum levels, 123
Pre-eclampsia, 151–152
Precordial (chest) thump, 64
Pregnancy, 150–153
endotracheal intubation in, 54, 150, 151
foreign-body airway obstruction in, 28
opioid addiction in, 192
Presumed consent in research involving newly dead, 10
Preterm infants, 188, 190, 191
Procainamide, 75–76
in cardiac arrest, 64
in children, 171, 172, 177, 178
precautions concerning, 76, 172
toxicity of, 128, 130
Propafenone toxicity, 128
Propranolol, 75
toxicity of, 128
Pseudoanaphylactic reactions, 143
Public access defibrillation, 12, 19–20, 37–38
Pulse checks, 13, 25, 78, 208
in children, 160
interruption of chest compressions for, 4, 208
by lay rescuers, 3, 25, 160
reliability of, 25, 78, 160
in submersion victims, 134
in trauma, 146
Pulse oximetry, 78
in children, 168, 169, 179
in newborns, 190
Pulseless arrest, 3, 4, 58–64
algorithm for, 59
in children, 172–175
in trauma, 146, 148
Pulseless electrical activity, 59, 61
in anaphylaxis, 145
in children, 175
drug therapy in, 62–63
fluid administration in, 81
in trauma, 148
Pulseless ventricular tachycardia/fibrillation, 59, 60–61
in children, 173–175
drug therapy in, 62, 63–64
precordial thump in, 64

QRS complex
in narrow-complex tachycardia, 71–72
in polymorphic ventricular tachycardia, 73
in procainamide therapy, 76
in synchronized cardioversion, 41–42, 71
in wide-complex tachycardia, 72–73
QT interval
in polymorphic ventricular tachycardia, 73
in procainamide therapy, 76
Quality improvement, 16
in adult basic life support, 29
in lay rescuer AED programs, 38
in out-of-hospital fibrinolytic therapy, 91
in pediatric basic life support, 163
in stroke care, 116–117
Quality of life in resuscitation decisions, 6–7, 8

Recommended interventions, classification of, 1–2
Recovery position, 28, 159, 197
Reentry supraventricular tachycardia, 71–72, 74, 75, 76
Reperfusion therapies in acute coronary syndromes, 98–99
fibrinolytic therapy in. *See* Fibrinolytic therapy, in acute coronary syndromes
percutaneous coronary interventions in. *See* Percutaneous coronary interventions
Research
informed consent in, 10
involving newly dead patients, 10
Respiratory arrest
in children, 167
in electrical and lightning strike injuries, 154, 198
Respiratory depression from opiates, 126
in children, 179
in newborns, 192
Respiratory failure in children, 167
Responsiveness of victims
in adult basic life support, 21, 28
in automated external defibrillation, 39
in cough CPR technique, 27, 47
in foreign-body airway obstruction, 28, 29, 162
in hypothermia, 137
in oropharyngeal airways, 51–52
in pediatric basic life support, 157
in submersion, 133, 134

Reteplase, 99. *See also* Fibrinolytic therapy
Rewarming techniques in hypothermia, 28, 85, 136, 137, 199
  in newborns, 188
Risk factors
  in acute coronary syndromes, 93–97, 209
  in newborns, 188

Safety issues
  in adult basic life support, 21
  in defibrillation and fire hazard, 40, 41
  in disease transmission during resuscitation, 16, 24, 159
  in electric shock and lightning strike injuries, 154, 155, 198
  in pediatric basic life support, 157
Seizures, 87
  in children, 181
  first aid in, 197
  in hypomagnesemia, 124
  in stroke, 118
Sepsis, 86
Shock
  cardiogenic, 93, 99–100, 130
  in children, 167, 178
  compensatory mechanisms in, 167
  drug-induced, 127, 130
  vasopressin in, 79
SHOCK trial, 93
Sinus tachycardia, 71
  in children, 175
Slow-code resuscitation, 9
Snakebites, first aid in, 199
Sodium levels, 122–123
Somatosensory evoked potentials, postresuscitation, 87
Sotalol, 76
  toxicity of, 128
Special healthcare needs, children with
  advanced life support for, 178
  basic life support for, 162–163
Spinal injury, 146
  advanced life support for children with, 178
  basic life support in, 21–22, 146
    in children, 157–158, 163
  in electric shock and lightning strike injuries, 154
  first aid in, 197, 198–199
  motion restriction and immobilization in, 21–22, 199
  in submersion victims, 28, 133, 134
Sprains, first aid in, 199
ST segment in acute coronary syndromes. *See also* Non–ST-elevation myocardial infarction and unstable angina
  depression of, 89, 93, 94
  elevation of, 89, 91, 92–93, 95
    cardiogenic shock in, 99–100
    clopidogrel therapy in, 100
    fibrinolytic therapy in, 94, 98–99
    glycoprotein IIb/IIIa inhibitors in, 102
    heparin therapy in, 101
    percutaneous coronary interventions in, 99
  nondiagnostic changes in, 93–94
Statin therapy in acute coronary syndromes, 102
Status asthmaticus, 140
Stoma, ventilation methods in, 24
  for children, 163, 178
Streptokinase, 99. *See also* Fibrinolytic therapy
Stroke, 111–118, 209
  algorithm for, 112
  assessment of, 21
    in hospital, 114–115
    prehospital, 111–113
  basic life support in, 20–21
  Chain of Survival in, 111
  emergency medical services in, 20–21, 111–113
  in fibrinolytic therapy for acute coronary syndromes, 99
  fibrinolytic therapy in. *See* Fibrinolytic therapy, in stroke
  in heparin therapy for acute coronary syndromes, 101
  management goals in, 111
  in pregnancy, 152
  seven D's of management, 111
  signs and symptoms in, 20–21, 111
    time of onset, 20, 21, 113
Submersion and drowning, 12, 133–134
  basic life support in, 27–28, 133–134
  of children, 134, 156–157, 163, 199
  definitions of, 133
  first aid in, 199–200
  hypothermia in, 133, 134, 137
Suction devices in airway management, 55
  in children, 169
  in newborns, 190
Sudden infant death syndrome, 156
Supraventricular tachycardia, 71–72, 73
  with aberrancy, 72, 178
  automatic focus, 75
  in children, 175–178
  irregular, 73
  narrow-complex, 71–72, 74, 75
    in children, 175–178
  paroxysmal, 71
  reentry, 71–72, 74, 75, 76
  synchronized cardioversion in, 42, 71, 177, 178
  wide-complex, 72–73
    in children, 178
Surrogate decision makers, ethical issues in, 6
Synchronized cardioversion, 41–42, 71, 72, 73
  in children, 177, 178

T wave in acute coronary syndromes, 93–94
Tachycardia, 67, 69–74
  algorithm for, 3, 70, 177
  in children, 175–178
  classification of, 69
  drug-induced, 127, 129, 130
  initial evaluation and treatment of, 69–71
  narrow-complex, 71–72, 74, 75
    in children, 175–178
  pre-excited, 72, 73, 76
  in shock, 167
  signs and symptoms in, 67, 71
  sinus, 71
    in children, 175
  supraventricular. *See* Supraventricular tachycardia
  synchronized cardioversion in, 42, 71, 72, 73
    in children, 177, 178
  ventricular. *See* Ventricular fibrillation/tachycardia
  wide-complex, 72–73, 74
    in children, 178
Telephone calls
  instructions from emergency medical dispatchers in, 20
  by lone rescuer, 12, 14, 21
  in multiple rescuers, 13, 21
Temperature
  in hyperthermia. *See* Hyperthermia
  in hypothermia. *See* Hypothermia
  in newborns, 188–189, 193
  postresuscitation management of, 84–85, 208
    in children, 181
  in stroke, 118
Tenecteplase, 99. *See also* Fibrinolytic therapy
Terbutaline in asthma, 140
Termination of resuscitation, 7, 8, 9, 61–62
  in children, 7, 181
  in hypothermia, 137
  in newborns, 7, 193
Thiazide diuretics, 82
Thiocyanate levels in nitroprusside therapy, 81
Thoracotomy in trauma, 148
Tidal volume in rescue breathing, 23, 51
  in bag-mask ventilation, 24, 51, 168
  for children, 159, 168
Time factors
  in acute coronary syndromes, 20, 91, 92, 93
    and fibrinolytic therapy, 91, 92, 93, 98–99

and percutaneous coronary interventions, 99
and benefits of early interventions, 19, 20–21, 35
in interval between chest compression and defibrillation, 40, 208
in pregnancy and cardiac arrest, 152
in stroke, 20–21, 111, 113
and fibrinolytic therapy, 20, 21, 111, 115
TIMI studies of risk factors in acute coronary syndromes, 95, 97
Tiotropium in asthma, 140
Tirofiban, 101, 102
Tissue donation, ethical issues in, 9–10
Tissue plasminogen activators
in acute coronary syndromes, 101
stroke risk in, 99
in cardiac arrest, 64
in stroke, 4, 115–117, 209
Tooth injuries, first aid in, 199
Torsades de pointes, 73
in children, 175
drug-induced, 76, 129
in hypomagnesemia, 124
magnesium therapy in, 63–64, 73, 75, 124, 129, 175
Tourniquet use, 198
Toxic conditions, 126–131
in children, 178–179
differentiated from anaphylaxis, 143
first aid in, 200
in pregnancy, 151, 152
Toxicology in emergency cardiovascular care, 126–132
Tracheal intubation. *See* Endotracheal intubation
Tracheostomy, ventilation methods in, 24
for children, 163, 178
Training. *See* Education and training
Transdermal medications affecting automated external defibrillation, 39
Transport
in acute coronary syndromes
interfacility transfer in, 92–93
time factors in, 91, 92, 93
automatic ventilators in, 25, 47–48
in cardiac arrest, 9, 62
of children
postresuscitation, 181
in trauma, 163
endotracheal tube displacement in, 54–55
in hypothermia, 28
in stroke, 21, 113
of submersion victims, 27–28, 133, 134
in trauma, 146, 148, 149
of children, 163
in electric shock and lightning strike injuries, 155
Trauma, 146–149
advanced cardiovascular life support in, 146, 147–149, 178
basic life support in, 146–147, 154, 163
cardiac arrest in, 146–149, 154
cardiac contusions in, 148–149
in children, 156, 157–158, 163, 178
in electric shock, 154, 155, 198
extrication in, 146
first aid in, 197–200
hemorrhage in, 146, 178, 197–198
initial evaluation in, 146
in lightning strike, 154, 155
in pregnancy, 152
spinal. *See* Spinal injury
in submersion and near-drowning, 27–28, 133–134
wounds and abrasions in, 198
Triage
in acute coronary syndromes, 92
in stroke, 21, 113
Tricyclic antidepressant toxicity, 128, 129, 130
in children, 179
Troponin levels in acute coronary syndromes, 94
Two-rescuer resuscitation, 13, 21
bag-mask ventilation in, 24, 159, 168
chest compressions in, 26, 52
in children, 160–161
and compression-to-ventilation ratio, 207
of children, 157, 159, 160–161, 175
bag-mask ventilation in, 159, 168
in trauma, 147
ventilation with advanced airway in, 13, 24–25, 26, 52
in endotracheal intubation, 55
in pulseless arrest, 60

Vagal maneuvers in supraventricular tachycardia, 72, 176
Valsalva maneuver in supraventricular tachycardia, 72, 176
Vasoactive drugs, 62–63, 79–82, 86
in children, 180–181
Vasopressin, 79
in anaphylaxis, 144
in cardiac arrest, 59, 60, 61, 62–63
recommendations on, 208
in children, 172
in shock, 79
Vasopressors in cardiac arrest, 59, 62–63, 208
Vasovagal reactions differentiated from anaphylaxis, 144
Venom
in bee stings, 144
in snakebites, 199
Ventilation. *See* Breathing and ventilation
Ventricular fibrillation/tachycardia
in acute coronary syndromes, 102–103
cardiac arrest in, 19, 23, 59, 60–61
cardioversion in
synchronized, 41, 42, 71, 72, 73
unsynchronized, 71, 72, 73
characteristics of, 19
in children, 162, 173–175, 178
defibrillation in, 27. *See also* Defibrillation
drug-induced, 129–130
drug therapy in, 62, 63–64, 75–76
fluid administration in, 81
in hypothermia, 136, 137
hypothermia therapy in, 4
monomorphic, 71, 73, 75, 76
1-shock versus 3-shock protocol in, 4, 16, 36, 60, 207–208
polymorphic, 71, 73–74, 75, 76
in children, 175
prolonged, 51
pulseless, 59, 60–61
in children, 173–175
drug therapy in, 62, 63–64
precordial thump in, 64
shock first versus CPR first protocols in, 4, 35, 60, 207
survival rates in, 4, 12, 19, 20, 27
in early defibrillation, 35
in lay rescuer AED, 38
in shock first versus CPR first protocols, 35
in trauma, 147, 148
waveform analysis in, 41
wide-complex, 72, 73
Verapamil
in supraventricular tachycardia, 72, 74
precautions in children, 178
toxicity of, 128
Vest CPR, 48–49
Vital signs
in drug-induced emergencies, 127
in postresuscitation care, 86
Vomiting by submersion victims, 134

Warming techniques in hypothermia, 28, 85, 136, 137, 199
in newborns, 188
Water
affecting automated external defibrillation, 39
as first aid for ingestions, 200

submersion and drowning in, 27–28, 133–134, 199–200
Water rescue, 133
Waveforms in defibrillation, 36–37, 40
biphasic. *See* Biphasic defibrillation
for children, 39, 174
and current, 41
monophasic. *See* Monophasic defibrillation
in pulseless arrest, 60
in synchronized cardioversion, 42, 71
Weight estimation in children, 170
Wide-complex tachycardia, 72–73, 74
in children, 178
Withdrawal of resuscitation. *See* Termination of resuscitation
Withholding resuscitation, 7–8
in children, 162
in hypothermia, 137
in newborns, 7, 193
in out-of-hospital events, 8–9, 162
Wolff-Parkinson-White syndrome, 72, 73
drug therapy in, 74, 75, 76
Wounds and abrasions, first aid in, 198