

INDEX

- ABA (American Burn Association)
 guidelines, 491
- abdomen injuries, 474–475
- Abrahams, M.J., 614
- ACAM2000™, 533
- access needs populations. *See* functional or access needs populations
- accountability, in resilient communities, 78
- acetylcholinesterase inhibition, 508
- ACS (acute coronary syndromes), 674
- acute and chronic pulmonary disease, 655
- acute coronary syndromes (ACS), 674
- acute cutaneous radiation injury, 558
- acute gastrointestinal syndrome, 558
- acute hematopoietic syndrome, 555–557
- acute kidney injury (AKI), 652
- acute medical conditions, stabilization of, 235
- acute neurovascular syndrome, 558
- acute radiation syndrome (ARS)
 latent phase, 555
 manifest (illness) phase, 555
 medical management of, 560–561
 medical countermeasures and treatments for, 561–562, 563–564
 overview, 554–555
 prodromal phase, 555
 recovery or death, 555
- acute respiratory infections (ARIs), 611
- Adalan, A., 616–617
- Adam system, 459
- adult day care centers, 145–146
- adult respiratory distress syndrome (ARDS), 653
- Advanced Health and Disaster Aid Network (AID-N), 457
- Advisory Committee on Immunization Practices, 533
- AEDs (automated external defibrillators), 288
- Afghan Armed Forces Academy of Medical Sciences (AFAMS), 175
- Afghanistan, education and training within, 175
- Africa, flooding in, 608
- African-Americans, 143
- AFRRRI (Armed Forces Radiobiology Research Institute), 552
- age, U.S. demographics for, 138
- aged population. *See* seniors
- Agency for Healthcare Research and Quality, 193, 333, 349, 454
- Agency for Toxic Substances and Disease Registry (ATSDR), 586
- Agent BZ (3-Quinuclidinyl benzilate), 510–511
- Agent Orange, 523
- agents, infectious, 100–101, 102–104, 110–111
- Agnes (tropical storm), 613
- Ahern, M., 620
- AHRMM (Association for Healthcare Resource and Materials Management), 346
- AICHE (American Institute of Chemical Engineers), 581
- AID-N (Advanced Health and Disaster Aid Network), 457
- AIDS epidemic. *See* HIV/AIDS
- air conditioning, 703. *See also* heating, ventilating, and air conditioning (HVAC)
- air disasters
 alcohol consumption by crew, 316–317
 assessment of dead and injured at, 299
 British Comet jet aircrafts, 296
 caused by act of suicide, 298
 caused by aircraft/equipment failure, 296
 caused by debris on runway, 296
 caused by hostile weather, 296–297
 caused by human factors and communication during fog, 295–296
 caused by human-machine interface errors, 295
 caused by shootings and terrorist attacks, 297–298
 caused by socioeconomic environment and failure in organization, 297
 communication at scene of, 299
 equipment in case of, 299
 fatality rates, 295
 further research recommendations, 316–317
 geographical distribution of fatal crashes, 295
 incidence data, 294–295
 Malaysian Airlines Flight MH 370, 298
 planning for, 298–299
 post-crash fires, 316
 scene response, 299
 survival of, 298–299
 training for, 299
 transportation at, 299
 triage process, 299
- air mass monitoring systems, 710
- airborne transmission, defined, 94
- air-purifying respirators (APR), 224
- airway interventions, 326
- airway problems, at mass gatherings, 280
- AKI (acute kidney injury), 652
- Al Salam Boccaccio* (ferry), 301
- Alaska Natives, U.S. demographics for, 138
- alerts, emergency, 151
- Alert/Verbal/Painful/Unresponsive (AVPU) tool, 214
- Alibek, K., 539
- alkalinization, 652
- Allergies, Medications, Past medical history, Last meal, and Events (AMPLE), 593
- all-hazard approach, 66
- All-Hazards Weather Radio, 675
- Allison (tropical storm), 611, 633
- allocation of resources. *See* triage, disaster

738 ■ INDEX

- allogeneic stem cell transplantation, 571
 al-Qaeda, 546
 Amagasaki rail incident
 cause of, 305
 safety of responders to, 308
 training of responders, 305
 treatment of victims at, 310
 amateur radio networks, 428
 ambulances, 324–325
 American Board of Emergency Medicine, 8
 American Burn Association (ABA)
 guidelines, 491
 American College of Healthcare Executives
 policy statement, 348
 American Indians, U.S. demographics for,
 138
 American Institute of Chemical Engineers
 (AICHE), 581
American Journal of Epidemiology, 7, 8
American Journal of Sociology, 9
 American Red Cross (ARC)
 community resilience programs, 171
 “Master of Disaster” curriculum, 158
 training from, 148
 American Red Cross Disaster Mental Health
 System, 129
 American Red Cross Disaster Services, 336
 American Reimbursement and Recovery Act,
 201
 American Samoa Catastrophic Earthquake
 and Tsunami, 129
 American Society for Healthcare
 Engineering, 333, 336
American Sociological Review, 9
 Americans with Disabilities Act, 147
 Amherst, J., 522
 ammonia release, 515–516
 AMPLE (Allergies, Medications, Past medical
 history, Last meal, and Events), 593
 amputations
 of mangled extremities, 653
 rehabilitation after, 378, 383
 Amsterdam, airplane crash in, 295
 Andrew (hurricane), 632
 anesthesia, 481
 angiotensin II receptor antagonists, 572
 angiotensin-converting enzyme inhibitors,
 572
 animals. *See* pets
Annals of Epidemiology, 7, 8
 Antemortem/Postmortem Database, 372
 anthrax, 100, 105, 526–530
 cutaneous anthrax, 527, 529
 diagnosis of, 529
 gastrointestinal anthrax, 527
 inhalational anthrax, 527–529
 oropharyngeal anthrax, 527
 treatment of, 529–530
 vaccination for, 259
 during World War I, 522
 anthrax attacks, 105, 107
 antibiotic shortage during, 397
 changes to decontamination procedure
 following, 234
 preparedness against future strikes, 112
 Anthrax Vaccine Adsorbed (AVA), 530
 antibiotics. *See also* medical countermeasures
 (MCMs), mass dispensing of
 “Anticipate, Plan and Deter” approach,
 132–133
 antidote stockpiling, 590–591
 Antidote Treatment Nerve Agent
 Auto-injector (ATNAA), 510
 Applied Technology Council (ATC), 648
 APR (air-purifying respirators), 224
 Arbon, P., 289–290
 arboviral disease, 611
 ARC. *See* American Red Cross (ARC)
 ARDS (adult respiratory distress syndrome),
 653
*Are You Prepared? Hospital Emergency
 Management Guidebook*, 333
 Area Command, 324
 Area Location of Hazardous Material
 computer system, 588
 Argentina rail incidents, 305, 307
 Argus project, 202
 ARI (acute respiratory infections), 611
 Armed Forces Radiobiology Research
 Institute (AFRRI), 552
 Armenia earthquake, 17, 651–652, 655
 Armstrong, N.J., 77
 ARS. *See* acute radiation syndrome (ARS)
 arterial air embolism, 482
 arthropods
 control programs, 110
 diseases from, 611–612
 ash fall, from volcanic eruptions, 730–731
 Asians, U.S. demographics for, 138
 ASPR (Office of the Assistant Secretary for
 Preparedness and Response), 169
 assessment, community, 75
 asset-based community development, 75
 assisted living dwellers, 145–146
 Association for Healthcare Resource and
 Materials Management (AHRMM),
 346
 asthma, 613
 asynchronous telehealth, 418
 ATC (Applied Technology Council), 648
 Atlanta Metropolitan Area Heat Profile, 701
 ATNAA (Antidote Treatment Nerve Agent
 Auto-injector), 510
 at-risk populations. *See* functional or access
 needs populations
 atropine, 509
 ATSDR (Agency for Toxic Substances and
 Disease Registry), 586
 Attabad, Northern Pakistan, landslide, 721
 auditory injuries, 471
 Aum Shinrikyo cult, 512–514, 536
 Australian Tropical Cyclone Intensity scale,
 626
 Austria, rail incident in, 307
 authorization to provide medical care,
 191–192
 financial and reimbursement issues, 192
 hospital credentialing, 191–192
 licensing, 191
 automated external defibrillators (AEDs),
 288
 automobile collisions, 674. *See also* bus
 disasters
 AVA (Anthrax Vaccine Adsorbed), 530
 avalanches
 access to victims of, 678
 defined, 671
 effects of, 674–675
 mitigation of, 687
 terrain of, 676
 Avery, J., 266
 avian influenza, 110
 AVPU (Alert/Verbal/Painful/Unresponsive)
 tool, 214
 BabyBIG[®], 537
 Bacille Calmette-Guérin (BCG), 442
Bacillus anthracis. *See* anthrax
 BAI (blast auditory injury), 471
 Bam earthquake, 383
 Bangladesh
 cyclones in, 604
 flooding in, 611, 616
 storm occurrence in, 636
 tornadoes in, 636, 638
 Bangladesh Meteorological Department
 (BMD), 638
 Barbisch, D.F., 45
 barcodes, for patient tagging, 455–456
 Basel Convention, 581
 BASICS system, 268
 BAT (Biodosimetry Assessment Tool), 268,
 552
 Baxt, W.G., 215
 BCG (Bacille Calmette-Guérin), 442
 Becker, A.B., 78
 beclomethasone dipropionate, 571
 behavioral health. *See* mental and behavioral
 health
 Beichuan Middle School landslide, 717, 718
 Benin, L., 614
 Bennett, G., 614
Best v. Bellevue Hospital New York, 190
 Bhola, Bangladesh, cyclone, 604
 Bhopal, India methyl isocyanate event,
 516–517, 580–581
 Bickell, W.H., 478
 BII (blast intestinal injury), 473, 475, 482
 Bingham Canyon copper mine landslide,
 718–719
 biodosimetry, 551–554
 Biodosimetry Assessment Tool (BAT), 268,
 552
 bioethical principles, 74–75
 biological contamination
 mass fatality management and, 363–364
 protecting hospitals from, 357
 Biological Dosimetry Team, U.S. Armed
 Forces Radiobiology Research Institute
 (AFRRI), 552
 biological events. *See also* anthrax;
 bioterrorism; smallpox

- biological warfare vs. bioterrorism, 523–524
 botulism, 536–537
 vs. chemical events, 511–512
 defined, 94
 further research recommendations, 540–541
 history of, 522–523
 personal protective equipment (PPE) in, 226–228
 threat list, 523
 tularemia, 539–540
 viral hemorrhagic fever (VHF), 537–539
 Biological Weapons Convention (BWC), 523
 Biopreparedness Act, 112
 BioSense system, 199, 201–202
 BioShield project, 111–112, 193, 199, 261
 biosurveillance, 112
 bioterrorism, 106–107, 111–112, 524–526
 vs. biological warfare, 523–524
 characteristics attractive to terrorist groups, 524–526
 preparedness against, 112
 scientific research on, increase in, 110
 Bioterrorism Training and Curriculum Development Program, 25
 BioWatch project, 199, 202
 Blacks, 138
 blast auditory injury (BAI), 471
 blast intestinal injury (BII), 473, 475, 482
 blast lung injury (BLI), 469, 471–474
 blasts. *See* explosive events
 BLI (blast lung injury), 469, 471–474
 blizzards. *See also* winter storms
 defined, 671
 mortality from, 673
 blood products, 339
 blowing snow, defined, 671
 BMD (Bangladesh Meteorological Department), 638
 boating disasters. *See* sea disasters
 bombings. *See* explosive events
 Boston Marathon bombing, 83–84, 208–209, 265, 467
 botulism, 524, 526, 536–537
 Botulism Immune Globulin Intravenous (Human), 537
 Braden, A., 308
 Bradford City fire disaster, 269
 brain injury. *See* traumatic brain injury (TBI)
 Brazil
 extreme heat events (EHEs) in, 706–707
 landslide risk area in La Paz, 720
 radiation accident in, 568
 Brenner, D.J., 572
 Bristol floods, England, 614
 Brooks, H., 637–638
 Broughton, E., 580–581
Brucellae, 524
 Bruneau, M., 72, 77
 bubonic plague, 438, 439, 522, 534
 Buehler, J.W., 201
 Buenos Aires, Argentina, rail incidents, 305, 307
 Buffalo Creek, West Virginia flooding, 613
Building Resilience in Rural Communities: Toolkit, 76
 Burkle, F.M., 90, 626
 burn disaster management
 burn pathophysiology, 492
 cleaning of burn wounds, 496
 further research recommendations, 497
 outpatients, 492
 overview, 490
 resource needs, 496
 severity of burns, 492–495
 staff augmentation, 492
 supply needs, 496
 surge capacity and, 490–492
 transfer to facilities, 492
 triage and, 491, 492, 493
 bus disasters
 bombings, 317
 caused by environmental factors, 313
 caused by human error, 313
 caused by rescue factors, 313
 caused by vehicle construction errors, 311–313, 317
 common causes of, 311
 compressed natural gas (CNG) and, 310
 equipment for, 314
 further research recommendations, 317
 injury incidents, 310
 overview, 310
 planning for, 314
 scene response, 315–316
 training for, 314
 Butler, D.R., 720
 BWC (Biological Weapons Convention), 523
 Cadet Nurse Corps, U.S., 331–332
 Cairo, Egypt, extreme heat events (EHEs) in, 706–707, 708
 California Emergency Services Act, 191
 call centers, 407, 411
Call for Proposals for Research for Health in Humanitarian Crises Programme, 19
 Callendar, G. S., 52
 CAMEO (Computer-aided Management of Emergency Operations) Chemicals, 586
 Cameroon, carbon dioxide poisoning, 731
 Campania-Irpinia, Italy, earthquake, 647
 Camus, A., 88
 Canada
 airplane crash in, 296–297
 mass dispensing of medical countermeasures, 251
 tornado-related morbidity and mortality in, 638
 cancer, 614
 capabilities. *See* surge capacity
 “Capacité de Médecine de Catastrophe” (certificate), 63
 capacities. *See* surge capacity
 Caracas, Venezuela, extreme heat events (EHEs) in, 706–707
 carbon dioxide poisoning, 731
 carbon emissions, climate change and, 52
 carbon geoengineering, 56
 carbon monoxide (CO) poisoning, 683
 flooding and, 614
 in winter months, 674, 686
 cardiogenic shock without compensatory vasoconstriction, 475
 cardiovascular disease, 613
 CareFlight system, 210–211, 215
 Carley, S.S., 289
 Carrollton bus disaster, 310, 311–313
 CART (Communities Advancing Resilience Toolkit), 75–76
 CAS (Chemical Abstracts Service), 582, 586
 case studies, 13
 case-control studies, 12
 CASPER (Community Assessment for Public Health Emergency Response), 170
 Cast Lead Operation, 405
 casualty collection point (CCP), 476
 Caterson, E.J., 265
 CBR (community-based rehabilitation) programs, 377–378
 CBRN (chemical, biological, radiological, and nuclear) agents, 44, 111–112, 216–217
 CBT (cognitive-behavioral therapy), 131
 CCHF (Congo-Crimean hemorrhagic fever), 537, 538, 539
 CCP (casualty collection point), 476
 CDC. *See* Center for Disease Control and Prevention (CDC)
 CDP (Center for Domestic Preparedness), 175
 cellular telephones, 347
 CEM (Comprehensive Emergency Management), 165
 census, U.S., 148
 Center for Chemical Process Safety, 581
 Center for Disaster and Humanitarian Assistance Medicine, 428–429
 Center for Disease Control and Prevention (CDC)
 Advisory Committee on Immunization Practices, 533
 Community Assessment for Public Health Emergency Response (CASPER), 170
 Disaster Surveillance Workgroup (DSWG), 170
 Division of Global Migration and Quarantine, 245
 Environmental Public Health Leadership Institutes, 113–114
 Health Alert Network (HAN), 115
 Health Studies Branch (HSB), 170
 Incident Command System (ICS) and, 114
 influenza planning tools, 41–42
 Laboratory Response Network, 114
 National Center for Environmental Health, 704
 Pandemic Influenza Plan, 244
 Preparedness and Emergency Response Learning Centers, 113–114
 smallpox guidelines, 533

740 ■ INDEX

- Center for Disease Control (*cont.*)
 Strategic National Stockpile (SNS), 115
- Center for Domestic Preparedness (CDP), 175
- Center for International Rehabilitation Research Information and Exchange database, 386
- Center for Public Health Preparedness and Disaster Response, 333
- Center for Research on the Epidemiology of Disasters, School of Public Health of Louvain University, 7
- Center for Teaching and Research in Disaster Medicine and Traumatology, University of Linköping, 63–64
- Central Emergency Response Fund, 65
- central pulmonary toxicity, 504
- CERC. *See* Crisis and Emergency Risk Communication (CERC)
- CESIRA Protocol, 212
- CFR (Code of Federal Regulations), 260
- Chan, T.C., 288–289
- Chang, S.E., 72
- chaos theory, 396
- Charter of the United Nations, 82
- CHCs (Community Health Centers), 175
- chemical, biological, radiological, and nuclear (CBRN) agents, 44, 111–112, 216–217
- Chemical Abstracts Service (CAS), 582, 586
- chemical accidents. *See* chemical events; hazardous material (hazmat) events
- chemical events
 vs. biological events, 511–512
 chemical warfare and terrorism agents, 501–503
 cyanides, 504–505, 506
 decontamination, 503
 further research recommendations, 518–520
 health effects of chemical agents, 502
 history of chemicals as weapons, 500–501
 incapacitating agents, 510–511
 intentional (non-state-sponsored), 512–515
 mass fatality management and, 363–364
 medical response to, 517–518
 nerve agents, 508–510
 overview, 499
 protecting hospitals from contamination, 357
 pulmonary intoxicants, 502–504
 unintentional, 515–517
 vesicants, 505–508
 websites about, 520
- Chemical Hazards Emergency Medical Management (CHEMM) website, 518, 520
- chemical injury. *See* decontamination
- Chemical Intelligent Syndromes Tool (CHEMM-IST), 518
- chemical protective clothing (CPC), 224, 228.
See also personal protective equipment (PPE)
- Chemical Sampling Information (CSI), 586
- Chemical Surveillance Report, 579
- CHEMM (Chemical Hazards Emergency Medical Management) website, 518, 520
- CHEMM-IST (Chemical Intelligent Syndromes Tool), 518
- chemoprophylaxis, 612
- CHEMPACKs, 511, 517–518
- CHEMTREC® library, 586
- Chen, H., 201
- Chernobyl nuclear power plant accident, 544–545, 550, 553, 558–559
- CHEs. *See* complex humanitarian emergencies (CHEs)
- chest, injury to from explosive events, 471–474
- chest escharotomy, 495
- Chestnut, L.G., 701
- Chicago, Illinois
 airplane crash in, 296
 heat wave of 1995, 705–706
- Chicago Tylenol® contamination event, 512
- Chi-Chi, Taiwan, earthquake, 654
- children
 decontamination of, 238
 disaster-related behavioral health casualties among, 130–131
 distress reactions of, 126
 family reunification and, 451
 functional or access challenges of, 140–142
 mass dispensing of medical countermeasures to, 260
 pediatric triage systems, 214–215
 U.S. demographics for, 138
- Chile
 earthquake in, 13, 647
 tsunami in, 661, 665
- China
 earthquake in, 384, 647, 652, 716
 hemorrhagic fever with renal syndrome (HFRS) in, 204
 rail incident in, 308
 typhoon in 2006, 12
- chloramphenicol, 535, 540
- chlorine gas, 500
- cholera outbreaks, 39, 102, 105, 142
- Christchurch, New Zealand, earthquake, 648
- chronic country complex humanitarian emergencies, 436–438
- chronic diseases, floods and, 613–614
- Chung, S., 450
- Chuuk, Micronesia, landslide, 719
- ciprofloxacin, 530, 536, 540, 656
- cities, extreme heat events (EHEs) and, 706–707
- Cities Readiness Initiative (CRI), 252–253
- Citizen Corps Councils, 174
- citizen involvement in emergencies, 173–174
- civil confinement strategies, 242. *See also* isolation; quarantine
- Civil Defense Emergency Hospital, 332
- civilian, community-based emergency preparedness and awareness, 24
- classifying disasters, 18
- climate change
 adaptation to, 56
 causes of, 52
 communication about, 57
 disasters resulting from, 53–54
 extreme heat events (EHEs) and, 694, 706
 flooding and, 54, 55
 further research recommendations, 56–57
 geoengineering and, 56–57
 groundwater depletion and, 55
 infectious diseases and, 96, 99
 international organizations and, 67
 lack of response to, 56
 mitigation of, 55–56
 in pre-Anthropocene era, 52
 research proving, 52–53
 small effects theory of, 54
 unpredictable effects of, 53
 urbanization and, 54–55
- Clostridium botulinum*, 524, 536. *See also* botulism
- clot-enhancing agents, 478
- clothing. *See* decontamination; personal protective equipment (PPE)
- Club of Mainz, 59
- cluster sampling, modified, 684–685
- cluster-random sampling design, 15
- clusters, in humanitarian assistance, 64
- C-MIST (communication, medical health, functional independence, supervision, and transportation), 147
- CMV (cytomegalovirus), 561
- CNG (compressed natural gas), 310
- CO poisoning. *See* carbon monoxide (CO) poisoning
- coastal flooding, 604, 671
- cocaine overdose, 699
- Code of Federal Regulations (CFR), 260
- CodeBlue project, 457
- cognitive-behavioral therapy (CBT), 131
- cohort studies, 13–14
- cold chain management, 262
- cold environments, 677
- cold exposure, 685–686
- cold injuries, 681–683
- Cold War period, healthcare facility disaster management and, 332
- cold-water immersion, 674
- college degrees in disaster medicine, 63–64
- colloids, 474
- Colombia, volcanoes in, 725, 726, 729–730
- Command, Safety, Communication, Assessment, Triage, Treatment, and Transport (CSCATTT), 294
- commercial off the shelf (COTS) home telehealth devices, 417–418
- commitment, as attribute of resilient communities, 72
- Committee on Disaster Research in the Social Sciences: Future Challenges and Opportunities and National Research Council, 144
- Committee on Disaster Studies, 4

- common factors in disasters, 336–341
 communicable, defined, 94
 communication. *See also* Crisis and Emergency Risk Communication (CERC)
 at air disaster, 299
 failure of communication systems, 336
 with healthcare facilities, 325–326
 in hospitals, 347
 international, 114–115
 at mass gatherings, 288–289
 with public, 115
 at rail disasters, 309
 within resilient communities, 73, 74, 78
 response communications, 114–115
 scene management and, 322, 328
 at sea disasters, 303
 with victims of mass fatalities and their families, 371–372
 communication, medical health, functional independence, supervision, and transportation (C-MIST), 147
 COMMUNICATION mnemonic, 269
 Communities Advancing Resilience Toolkit (CART), 75–76
 community
 involvement in prevention and mitigation plans for extreme heat events, 704
 knowledge about, 148
 support from, behavioral health and, 128
 Community Assessment for Public Health Emergency Response (CASPER), 170
 Community Health Centers (CHCs), 175
 community resilience
 adaptive capacities of, 73–74
 assessment and measurement of, 77
 attributes of, 72–73, 78
 characteristics of, 74
 community-based activities and, 76
 context of, 77–78
 difference from personal resilience, 71–72
 as emergent process, 71
 external assistance to, 78
 international organizational support for, 76
 overview, 71
 principles for enhancing, 74–75
 processes in assessing and building, 75–76
 properties of, 72
 resilience defined, 71
 role of human agency in, 72
 Community Resilience Project, 76
 Community Resilience Strategy (CRS), 75
 community-based emergency preparedness and awareness, 24
 community-based rehabilitation (CBR) programs, 377–378
 community-based risk reduction programs, 171
 compartment syndrome, 495, 652
 competence
 of healthcare workers, 174–175
 of organizations, 393
 within resilient communities, 74
 complex humanitarian emergencies (CHEs)
 communicable diseases in, 440–441
 developed country model, 438–440
 developing country model, 436
 disabling psychiatric illnesses, 446
 epidemiology of, 435–440
 international response to, 446–447
 malnutrition and micronutrient diseases in, 441–443
 measuring the human cost of, 434–435
 overview, 433–434
 psychosocial and mental health problems and, 443–446
 smoldering or chronic country model, 436–438
The Comprehensive Accreditation Manual for Hospitals, 334
 Comprehensive Emergency Management (CEM), 165
 Comprehensive Preparedness Guide 101, 147
 compressed natural gas (CNG), 310
 computed tomography (CT), 471
 Computer-aided Management of Emergency Operations (CAMEO) Chemicals, 586
 conceptual learning, 23
 Concorde crash, 296
 concurrent study design, 14
 Conference on Sustainable Development, 581
 conferences, emergency management, 148
 confusion, 396
 Congo-Crimean hemorrhagic fever (CCHF), 537, 538, 539
 congregate facility dwellers, 145–146
 connectedness, as attribute of resilient communities, 72
 Connolly, M.A., 440
 CONOPS (Mass Casualty Disaster Mental Health Incident Management Concept of Operations), 129
 consent, 191
 conservation medicine, 120
 construal level theory, 56
 consultants, education and training for, 24
 contact transmission, defined, 94
 contamination. *See* decontamination
 context-specific triage, 216–217
 Contingency Hospital System, 45
 continuity of care, 155–157
 ConvEx simulation exercises, 68
Coping with Natural Disasters, 378
 CORE (Incident Management Cadre of On-Call Response/Recovery Employees) Program, 157
 Corley, C.D., 203
 corporate negligence, 186
 Corr, C.A., 372
Costa Concordia (ship), 300–301
 Costa Rica, earthquake in, 646, 650, 652, 656
 COTS (commercial off the shelf) home telehealth devices, 417–418
 Council of the European Society for Emergency Medicine, 265
 Covenant, the Sword, and the Arm of the Lord (CSA) survivalist group, 512
Coxiella burnetii, 524
 CPC (chemical protective clothing), 224, 228.
 See also personal protective equipment (PPE)
 CPT-5 (Current Procedural Terminology) coding, 200
 credibility, organizational, 392
 CRI (Cities Readiness Initiative), 252–253
 criminally-related disasters, 363. *See also* terrorism
 Crisis and Emergency Risk Communication (CERC)
 acknowledgement of people's fears, 397–398
 communication failures, 399–400
 creating initial communication, 401–402
 defined, 391–392
 difference from communication in normal conditions, 395–396
 emotions and, 396
 factual content of messages, 401
 further research recommendations, 404
 identify audiences and their concerns, 400–401
 information released late, 399
 Israel risk communication experience, 405
 judgment of messages, 401
 lifecycle of, 393–395
 messages in multicultural settings, 404
 mixed messages, 399
 organization reputational risk management, 392–393
 organizational credibility and trust, 392
 overview, 390
 ownership of protective public health measures, 403–404
 pandemics and social media experience, 412–413
 paternalistic attitudes, 399
 perception of risk, 398
 public expectations, 391
 public power struggles and, 399–400
 purposes of, 390–391
 rumors and, 399
 speed of communication, 401
 spokesperson, 398–399
 stakeholders, needs of, 402
 town hall meeting, 403
 vicarious rehearsal and, 404
 crisis maintenance phase, of crisis communication lifecycle, 395
 Crisis Standards of Care report, 46–47, 62
 Critical Infrastructure Protection, Homeland Security Presidential Directive (HSPD) #7, 172
 critical ischemic time, 652
 critical reflection, in resilient communities, 73
 criticality accidents, 544
 crop losses, following flooding, 607
 cross-sectional studies, 13–14
 crowdsourcing, 203

742 ■ INDEX

- CRS (Community Resilience Strategy), 75
 Crucco, T.J., 288
 crush and reperfusion injuries
 from earthquakes, 651–653, 658
 from landslides, 719
 CSA (Covenant, the Sword, and the Arm of the Lord) survivalist group, 512
 CSCATTT (Command, Safety, Communication, Assessment, Triage, Treatment, and Transport), 294
 CSF (hematopoietic colony stimulating factor) treatment, 561
 CSI (Chemical Sampling Information), 586
 CT (computed tomography), 471
 Cumbria, UK rail incident, 308
 Current Procedural Terminology (CPT-5) coding, 200
Customary International Humanitarian Law, 82
 cutaneous anthrax, 527, 529
 cutaneous radiation injury, 558
 cyanides, 502–503, 504–505, 506
 antidotes for, 517–518, 519
 Covenant, the Sword, and the Arm of the Lord (CSA) survivalist group and, 512
 cycle, disaster, 10–11
 cyclones. *See* tropical cyclones
 cytogenetic biodosimetry, 551–553
 cytomegalovirus (CMV), 561
- damage control, in hospitals, 346
 damaged hospitals, 339–341
 dams, climate change and, 55
 Dark Winter exercises, 117
 data collection, in disaster research, 14–15
 data storage and security, 189
 De Chano, L.M., 720
 de Ville de Goyet, C., 667
 deaf persons, 145
 DeAngeles, D., 269
 DEARE (delayed effects of acute radiation exposure), 559–560, 563–564
 death. *See* mass fatality management; morbidity and mortality
 debris, 154
 Declaration of the United Nations Conference on the Human Environment, 614
 decontamination, 337–338. *See also* personal protective equipment (PPE)
 of at-risk populations, 238–239
 chemical events and, 501–502, 503–504
 of children, 238
 determining when complete, 236–237
 further research recommendations, 239
 hazardous material (hazmat) events and, 593
 in healthcare facilities, 236
 identification of contaminant, 234–235
 individuals performing, 237
 initial approach, 234
 order of, 237–238
 overview, 232–233
 of personal protective equipment (PPE), 229
 preservation of evidence, 236
 prevention of further contamination, 235
 recognizing necessity for, 234
 removal and disposal of contaminant and runoff, 236
 removal of contaminant from victims, 235–236
 scene management and, 326–327
 stabilization of acute medical conditions, 235
- Defense Against Weapons of Mass Destruction Act, 333
 degradation, from chemicals, 221
 degrees in disaster medicine, 63–64
 dehydration, 437, 438, 442–443
 delayed effects of acute radiation exposure (DEARE), 559–560, 563–564
 deliveries, 339
 Democratic Republic of Congo (formerly Zaire), Ebola outbreak in, 104, 110
 demographics, U.S.
 by age, 138
 Alaska Natives, 138
 American Indians, 138
 Asians, 138
 Blacks, 138
 children, 138
 females, 138
 by gender, 138
 Hispanics, 138
 males, 138
 minorities, 138
 Native Hawaiians, 138
 non-Hispanic white alone, 138
 Pacific Islanders, 138
 seniors, 138
- dengue, 204, 537, 612
 Dennis (hurricane), 151
 deoxyribonucleic acid (DNA), 364, 365, 366, 370
 Department of Health and Human Services Medical Surge Capacity and Capability Handbook, 40, 46
 Department of Homeland Security (DHS), 194
 Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration, 584
 deployable medical teams, 44, 45–46, 47
 depression, among flood-affected populations, 613
 dermatological conditions, 612
 descriptive studies, 13
 developed country complex humanitarian emergencies, 438–440
 developing world
 complex humanitarian emergencies, 436
 extreme heat events (EHEs) in, 706–709, 710
 DEWS (existing disease early warning system), 619
- DHS (Department of Homeland Security), 194
 diabetes, 613
Diagnostic and Statistical Manual of Mental Disorders (DSM-5), 445
 diagnostic assays, 111
 dialysis, 652, 655–656
 diarrheal illness, 610–611
 diazepam, 510
 Dieng Plateau, Java, carbon dioxide poisoning, 731
 diethylenetriaminepentaacetate (DTPA), 566
 Dilger, A., 522, 523
 DiMaio, D.J., 701
 DIORAMA (Dynamic Information Collection and Resource Tracking Architecture), 456–457
 directly related deaths, 18
 direct-threat environment, 476
 dirty bombs, 480
 disabled persons
 educational materials for, 159
 functional or access challenges of, 144
 disaster, defined, 376
 disaster cycle, 10–11
 disaster epidemiology. *See* epidemiology, disaster
 disaster health, defined, 23
 disaster management systems, 25
 Disaster Medical Assistance Teams (DMATs), 44, 45–46, 169, 484–485, 654, 685
 Disaster Mortuary Operational Response Teams (DMORTs), 46, 367, 368, 657
 Disaster Portable Morgue Units (DPMU), 367
 disaster recovery phase, 357
 Disaster Relief Organization, UN, 63
 disaster research. *See* research, disaster
 Disaster Research Center (DRC), 7
 Disaster Research Group, 4
Disaster Risk Reduction, 171
 disaster simulation, 14, 67–68
 disaster stress management, 178
 Disaster Surveillance Workgroup (DSWG), 170
 disaster victim identification (DVI), 361–362, 364
 explanations about to family members, 371
 Interpol DVI teams, 364, 372
 Disaster Victim Identification (DVI) Guide, 362
 Disaster Vulnerability Focal Points (DVFPs), 383
 disasters
 defined, 3
 difference from emergencies and hazards, 3
 discrimination, 143–144. *See also* racial and ethnic groups, challenges of
 dispatch, 322
 dispensing area, of point of dispensing, 256
 dissociation, feelings of, 396
 distress reactions, 126

- District of Columbia Emergency Healthcare Association, 192
 District of Columbia Hospital Association, 192
 diversity, in resilient communities, 78
 Division of Global Migration and Quarantine, CDC, 245
 DMATs (Disaster Medical Assistance Teams), 44, 45–46, 169, 484–485, 654, 685
 DMORTs (Disaster Mortuary Operational Response Teams), 46, 367, 368, 657
 DNA (deoxyribonucleic acid), 364, 365, 366, 370
 DNR (do not resuscitate) order, 86–87
 do not resuscitate (DNR) order, 86–87
 Doctors Without Borders, 171
 Doka, K.J., 372
 domestic violence shelters, 149
 Dominican Republic, assistance given to Haiti, 176–178
Dona Paz (ferry), 300
 donations, international, 60, 65–66
 DOT (Department of Transportation) Pipeline and Hazardous Materials Safety Administration, 584
 Downey, E.L., 633
 doxycycline, 261, 530, 535, 536, 540, 612
 DPMU (Disaster Portable Morgue Units), 367
 DRC (Disaster Research Center), 7
 dread, 396
 drifting ice, defined, 671
 drifting snow, defined, 671
 drills. *See* exercises
 drizzle, defined, 671
 Drnovšek, J., 694
 droplet transmission, defined, 94
 drug development, for infectious diseases, 119–120
 Dryvax[®], 533
DSM-5 (Diagnostic and Statistical Manual of Mental Disorders), 445
 DSWG (Disaster Surveillance Workgroup), 170
 DTPA (diethylenetriaminepentaacetate), 566
 dual-use risk, 112
 Durham Fatal Landslide Database, 717–718
 DVFPs (Disaster Vulnerability Focal Points), 383
 DVI. *See* disaster victim identification (DVI)
 Dynamic Information Collection and Resource Tracking Architecture (DIORAMA), 456–457
- E. coli* outbreaks, 104, 105
 E-911 (enhanced 911) services, 322
 ear injuries, 471
 Early Aberration Reporting System (EARS), 202
 earthquakes. *See also specific earthquakes*
 acute and chronic pulmonary disease and, 655
 characteristics of, 642–646
 crush and reperfusion injuries from, 651–653, 658
 disposal of bodies following, 656–657
 end-stage renal disease (ESRD) and, 655–656
 epicenter of, 643
 fault lines, major, 643
 fluid resuscitation for victims of, 653–654
 further research recommendations, 657–658
 hospital and community response, 648–651
 hypocenter of, 643
 immediate to subacute/ambulatory care, transition from, 654
 Incident Command System (ICS) and, 646
 infection and epidemics following, 656
 intensity of, 644–645
 magnitude of, 644
 mitigation of and preparation for, 657
 mortality from, 642
 myocardial infarction following, 655
 non-trauma-related medical conditions following, 654–657
 overview, 642
 pain management for victims of, 653
 prehospital response, 646–648
 psychological distress from, 656
 respiratory injury and, 655
 seismic waves, 643–644
 surge capacity and, 650–651
 tectonic plate movement, 642–643
 triage and, 658
- East Bengal cyclone, 7
 East Timor, evacuees from, 146
 Ebola virus disease (EVD) outbreaks, 39, 98, 104, 112, 537
 ethical issues, 88
 mistaken diagnosis, 101
 Personnel Protective Equipment (PPE) used with, 333
 quarantine practices during, 244–245, 247
 transmission of disease from diseased, 363
 underdeveloped and under-staffed public health workforce for, 114
- ecchymoses, 471–474
 ECMO (extracorporeal membrane oxygenation), 482
 Economic Commission for Europe's Convention on the Trans-boundary Effects of Industrial Accidents, U.N., 596
 economic development
 infectious diseases and, 96, 99
 in resilient communities, 73–74, 77
 economic vulnerability, 16
 ecosystem, infectious diseases and, 96, 99
 Ecuador, volcanoes in, 726
 eczema vaccinatum, 533
 EDO (emergency decontamination operation), 226
 education and training. *See also* exercises; quality management systems
 about extreme heat events (EHEs), 710
 about functional or access needs populations, 148–150
 within Afghanistan, 175
 for air disasters, 299
 for bus disasters, 314
 Citizen Corps Councils, 174
 citizen involvement in, 173–174
 competency development, 31
 in disaster research, 19
 effectiveness of, 25
 EMS Education Agenda for the Future, 32–33
 establishing core content, 31–32
 evaluation of, 32
 from FEMA Center for Domestic Preparedness (CDP), 175
 foundations for, 23–25
 functional or access needs populations and, 148–149, 150
 further research recommendations, 33
 institutions offering, 63–64
 international standards for, 23, 24
 individual and organizational learning, 23
 of medical staff for mass gathering, 281
 methods for, 32
 at points of dispensing (PODs), 256, 257–260
 preparedness training exercises, 116–118
 of public health workers for epidemic situations, 113–114
 radiological training for hospital employees, 358
 for rail disasters, 305
 in rehabilitation, 379, 380–382, 383
 for sea disasters, 302–303
 sources of, 32
 of staff for mass gathering event, 276–277
 target groups for, 32
 topics frequently included in, 60
 within United States, 174–175
 workforce preparedness, 25–26
- EF (Enhanced Fujita) scale, 636
 Egypt, extreme heat events (EHEs) in, 706–707, 708
 EHEs. *See* extreme heat events (EHEs)
 EHRs (electronic health records), 422–424
 EIDs (emerging infectious diseases), 93. *See also* infectious diseases
 Einav, S., 475–476, 477
 EIS (Epidemic Intelligence Service), 113
 El Chichon, Mexico, volcanic eruption, 726
 elderly. *See* seniors
 electrical systems in hospitals, 345
 electrocutions, 612
 electron paramagnetic resonance (EPR), 554
 electronic health records (EHRs), 422–424
 electronic patient tracking systems (ePTS), 454
 amount of data vs. essential data set, 457–458
 data entry, 457
 data security, 458
 data viewing and presentation, 458
 flags for special conditions, 458

744 ■ INDEX

- electronic patient tracking systems (*cont.*)
 inclusion criteria, 458
 intelligent tags, 457
 localization technologies, 459–460
 organizational issues for, 460
 Radio-Frequency Identification (RFID), 456–457
 system reliability and redundancy, 458
 system usability in hazardous environments, 458
 technical components of, 458–459
 wearable sensors, 457
- Electronic Surveillance System for the Early Notification of Community-Based Epidemics (ESSENCE), 202
- Eleven E's of emergency preparedness, 617–618
- elitism, 707–708
- Elliot, A.J., 199
- Ellison, J., 512
- embolic infarction syndromes, 474
- EMC (Emergency Management Committee), 334
- EMDM (European Master in Disaster Medicine), 64, 281
- emergencies, difference from disasters and hazards, 3
- Emergency Action Codes (Hazchem Codes), 583–584
- emergency assistance registries, for functional or access needs populations, 150
- emergency decontamination operation (EDO), 226
- emergency kits, 158, 436, 687
- Emergency Management Assistance Compact, 28, 191
- Emergency Management Committee (EMC), 334
- emergency management lifecycle, 147–150
- Emergency Management Reform Act of 2006, 188
- Emergency Management Strategic Healthcare Group, Department of Veterans Affairs (VA), 336
- emergency management systems
 challenges confronting, 169
 Comprehensive Emergency Management (CEM), 165
 connections with public health systems, 193–194
 disaster health outcomes from, whether successful, 167
 disaster stress management, 178
 further research recommendations, 178–179
 health security and, 171
 overview, 165–166
 responsible parties, 167–169
 risk reduction, 170–171
 surveillance, 169–170
 U.S. emergency management policies, 171–172
 warning and monitoring, technology's impact on, 169
- Emergency Medical Services and Disaster Medical Sciences Fellowship, University of California at Irvine, 63
- emergency medical services (EMS). *See also* scene management
 Education Agenda for the Future, 32–33
 extreme heat events (EHes) and, 697
 at mass gatherings, 276
- Emergency Medical Treatment and Active Labor Act (EMTALA), 193, 589, 699
- Emergency Operations Center (EOC), 110–114, 341, 482, 646
- Emergency Planning and Community Right-to-Know Act (EPCRA), 582
- Emergency Preparedness Initiative, 158
- Emergency Preparedness, Response and Recovery Checklist*, 333
- Emergency Response Framework, 40, 47
- Emergency Response Guidebook* (ERG 2012), 586
- Emergency Services Extended Care Centers, 568
- Emergency Support Functions (ESFs), 29, 109, 172
- Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) program, 43
- Emergency Use Authorization (EUA), 261
- emerging infectious diseases (EIDs), 93. *See also* infectious diseases
- emotions during disasters, 396–397
 anxiety, 396
 confusion, 396
 dread, 396
 fear, 396, 397–398
 hopelessness and helplessness, 396
- empathy, shown by organizations, 393
- EMS. *See* emergency medical services (EMS)
- EMTALA (Emergency Medical Treatment and Active Labor Act), 193, 589, 699
- encephalitis, 533
- endemic, defined, 94
- end-stage renal disease (ESRD), 655–656
- engagement, community, 74
- enhanced 911 (E-911) services, 322
- Enhanced Fujita (EF) scale, 636
- entrapped victims, 326
- Environment and Behavior*, 9
- environmental damage, 581
- environmental justice, 581–582
- Environmental Outlook to 2050, OECD's, 579
- Environmental Protection Agency (EPA), 109, 512
- Environmental Public Health Leadership Institutes, 113–114
- EOC (Emergency Operations Center), 110–114, 341, 482, 646
- EPA (Environmental Protection Agency), 109, 512
- EPCRA (Emergency Planning and Community Right-to-Know Act), 582
- epidemic, defined, 94
- Epidemic Intelligence Service (EIS), 113
- Epidemiologic Reviews*, 7, 8
- epidemiological triangle, 93, 95
- Epidemiology*, 7, 8
- epidemiology, disaster, 7
- EPR (electron paramagnetic resonance), 554
- ePTS. *See* electronic patient tracking systems (ePTS)
- equipment. *See* medical supplies and equipment
- ERG 2012 (*Emergency Response Guidebook*), 586
- erythema, 506
- ESAR-VHP (Emergency System for Advance Registration of Volunteer Health Professionals) program, 43
- Eschede, Germany, rail incident, 305, 306, 308
- ESFs (Emergency Support Functions), 29, 109, 172
- ESRD (end-stage renal disease), 655–656
- ESSENCE (Electronic Surveillance System for the Early Notification of Community-Based Epidemics), 202
- Estonia* (ferry), 300
- Estonia, radiation accident in, 554, 568–569
- ethical issues. *See also* racial and ethnic groups, challenges of
 Boston Marathon bombing, 83–84
 in disaster research, 16
 ethical codes, 88–90
 further research recommendations, 91
 Haiti earthquake, 84
 humanitarian law, 82
 Hurricane Katrina, 86–88
 infectious diseases and, 106
 mass fatality management, 370–371
 organ transplantation, 85–86
 overview, 81
 plagues, 88
 quarantine, 247
 resource allocation, 85–86
 standard of care, 85
 syndromic surveillance and, 204
 theories of, 81–82
- EUA (Emergency Use Authorization), 261
- European Center for Disaster Medicine, 63
- European Chemical Industry Council, 583
- European Commission Seveso Directives I, II, and III, 588
- European Master in Disaster Medicine (EMDM), 64, 281
- European Syndromic Surveillance Systems (Triple-S) project, 202
- evacuation. *See also* patient identification and tracking
 of animals, 147
 in crisis communication lifecycle, 395
 evacuee tracking, 188
 explosive events and, 478–480
 following winter storms, 679–680
 of functional or access needs populations, 151
 hazardous material (hazmat) events, 593
 mandatory, 187

- procedures for in healthcare facilities, 349–357, 358
 Superstorm Sandy hospital evacuation case study, 355–357
 tropical cyclones and, 627–628
 Evan (cyclone), 627
 EVD outbreaks. *See* Ebola virus disease (EVD) outbreaks
Excessive Heat Events Guidebook, 704, 705
 Executive Order 13347 (Individuals with Disabilities in Emergency Preparedness), 144, 147
 Executive Order 13407, 151
 exercises, 32, 174
 ConvEx simulation exercises, 68
 Dark Winter, 117
 for evaluating points of dispensing, 257–259
 I SEE (Inter-active Simulation Exercise for Emergencies) project, 68
 preparedness training exercises, 116–118
 “Top Officials” simulation exercise, 68, 117
 Turning Point exercises, 173, 174
 existing disease early warning system (DEWS), 619
 exiting area, of point of dispensing, 256
 experimental studies, 12
 Expert Consultation on Outbreak Communication symposium, 115
 expertise, of organizations, 393
 explosive events. *See also specific events*
 auditory and ocular injuries from, 471
 blast physics, 468–470
 brain injury from, 471
 clinical care, 486–487
 dirty bombs, 480
 epidemiology, 467–468
 evacuation, 478–480
 external response to, 484–485
 further research recommendations, 485–487, 709–711
 hazard determination, 485–486
 healthcare systems and, 483–484
 improvised explosive devices (IEDs) as chemical weapons, 513–514
 individual impact of, 467
 injury classification, 469–470
 internal organ injury from, 469
 local medical receivers, 480–483
 local medical responders to, 475–480
 longitudinal studies, 487
 overview, 467
 personal protective equipment (PPE) and, 486
 public information, 485
 rapid needs assessments, 484
 response system preparedness, 485
 societal impact of, 468
 specialized responses to, 480
 surge capacity and, 484
 exposure, disaster, 12–13
 extracorporeal membrane oxygenation (ECMO), 482
 extreme heat events (EHEs)
 air conditioning and, 703
 climate change and, 694, 706
 demographic and individual factors in heat exposure, 699–700
 in developing world, 706–709, 710
 diagnosis and treatment of heat stress illnesses, 695–697
 emergency medical services and, 697
 functional or access needs populations, 704, 709
 geographical factors in heat exposure, 700–701
 heat monitoring methods, 704
 indoor heat exposure, 702–703
 international initiatives, 709–710
 mitigation of, 705
 mortality and morbidity from, 692–694, 699
 notification of, 705
 overview, 692–694
 Philadelphia plan, 705
 planning for, 703–705
 predicting, 704–705
 response actions, 705
 risk assessment of potential health impacts, 705
 surge capacity and, 698–699
 urban heat islands as risk factors, 701–703
 extremely drug resistant (XDR) pathogens, 55
 eye injuries, 471
 Eyjafjallajökull, Iceland, volcanic eruption, 731
 F1-V antigen (fusion protein) vaccine, 535–536
 Facebook, 152, 169, 203–204, 412
 “facilities of opportunity”, 42–43
 fallout shelters, 332
 family reunification, 451
 famine, 97, 100
 fasciotomies, 652
 FAST (focused assessment with sonography for trauma), 475
 fatality management. *See* mass fatality management; morbidity and mortality
 FCCs (Federal Coordinating Centers), 169
 FCDA (Federal Civil Defense Administration), 332
 FDCA (Food Drug and Cosmetic Act), 260
 fear, 396, 397–398
 Federal Bureau of Investigation, 109
 Federal Civil Defense Administration (FCDA), 332
 Federal Coordinating Centers (FCCs), 169
 federal disaster assistance programs, 194
 Federal Emergency Management Agency (FEMA)
 Center for Domestic Preparedness (CDP), 175
 Federal Response Plan (FRP), 45
 FEMA for Kids website, 158
 “Getting Real” conferences, 149–150
 hazard mitigation activities, 15
 HAZUS-MH software program, 15
 Higher Education Project, 148
 Incident Management Cadre of On-Call Response/Recovery Employees (CORE) Program, 157
 Independent Study (IS) website, 148
 Integrated Emergency Management System (IEMS), 165
 Limited English Proficiency (LEP) department, 145
 National Response Framework (NRF), 45
 Office of Disability Integration, 148
 Public Assistance Program, 357
 Stafford Act and, 147, 194
 tips for protecting pets, 158
 training materials from, 158
 Federal Response Plan (FRP), 45
 Federal Select Agent Program, 106
 Federal Volunteer Protection Act of 1997, 185
 Fédération Nationale des Victimes d’Accidents Collectifs (FENVAC), 371
 fellowship examination in immediate medical care (FIMC), 281
 FEMA. *See* Federal Emergency Management Agency (FEMA)
 females, U.S. demographics for, 138
 FENVAC (Fédération Nationale des Victimes d’Accidents Collectifs), 371
 ferry disasters, 300
 caused by human and design shortcomings, 300
 delayed rescue, 301
 field hospitals, 47
 Field Triage Decision Scheme, 216
 “fight or flight” mechanism, 396
 filoviral fevers, 537
 FIMC (fellowship examination in immediate medical care), 281
 Finance/Administration Section, of ICS, 324, 341, 342–343, 357
 financial aid. *See* donations, international
 financial and reimbursement issues, 192
 fire disasters. *See* burn disaster management
 fireworks, 468
 FISH (fluorescence in situ hybridization), 552
 flash floods, 603–604, 610
 Flood Control Act of 1928, 616
 floods
 arthropod-borne diseases and, 611–612
 carbon monoxide poisoning and, 614
 causes of, 603
 chemical emergency response, 619
 chronic diseases and, 613–614
 classification of, 603
 climate change and, 54, 55
 clinical diagnosis and management of morbidity, 618
 coastal floods, 604, 671
 communicable diseases and, 610
 community needs assessment, 618
 crop losses and disruption of food distribution following, 607
 defined, 603, 671
 dermatological conditions and, 612

746 ■ INDEX

- floods (*cont.*)
 diarrheal illness and, 610–611
 disaster relief services following, 618
 disease risk assessment, 618
 disruption of healthcare services following, 608
 disruption of public services following, 608
 environmental health services for flood-affected populations, 618–619
 floodplain management, 614–615
 fluvial floods, 603–604
 further research recommendations, 619–620
 injuries from, 612
 loss of adequate sanitation following, 607
 loss of safe water following, 607
 loss of shelter and population displacement following, 607
 mass care and shelter of flood-displaced populations, 618
 mass vaccination following, 609
 mental and behavioral health and, 612–613
 morbidity related to, 609, 618, 619
 mosquito control, 609
 myths about, 608, 609
 noncommunicable diseases and, 613–614
 poverty and, 610
 public health impact of, 606–608, 616–619
 public health resilience to, strengthening, 616
 respiratory infections and, 611
 rodent-borne diseases and, 612
 scope of problem, 604–606
 social support following, 619
 sustainable flood risk management, 614–615
 toxic chemical exposures following, 607–608
 toxic mold exposures following, 608
 vector-borne diseases and, 611
 vulnerability reduction, 615–616
 wound infections and, 612
- Flora (hurricane), 630
 Floyd (hurricane), 151, 608, 612
 fluorescence in situ hybridization (FISH), 552
 fluvial (riverine) floods, 603–604
 FMT (foreign medical teams), 47, 379, 380
 focus groups, 407
 focused assessment with sonography for trauma (FAST), 475
 Food and Drug Administration, 112
 Food Drug and Cosmetic Act (FDCA), 260
 food shortages, 607. *See also* famine; malnutrition
 football-related mass gathering disasters, 268–269
 forecasting, 204
 foreign medical teams (FMT), 47, 379, 380
 foreigners, 144–145, 146
 Form, W.H., 14
 Forsberg, R., 308
- Fortified Underground Emergency Hospital, Rambam Medical Center, 46
- France
 airplane crash in, 296
 rail incident in, 307
 Francis, L.P., 204
Francisella tularensis, 524, 539–540
 freeze, defined, 671
 freezing rain, defined, 671
 French, J., 619–620
 frequency of disaster events, 19
 Frey, R., 59
From Hospitals to Healthcare Coalitions, 176
 Frontera Verde Project, 178
 frostbite, 672, 681–682
 FRP (Federal Response Plan), 45
 Fujiwhara effect, 625–626
 Fukushima Daiichi Nuclear Power Plant accident, 139, 545
- functional or access needs populations. *See also* demographics, U.S.
 children, 140–142
 Community Health Centers (CHCs) involvement with, 175
 congregate facility dwellers, 145–146
 continuity of care after disasters, 155–157
 deaf persons, 145
 decontamination of, 238–239
 disabled persons, 144
 emergency assistance registries for, 150
 emergency management lifecycle and, 147–150
 emerging policies and practices for, 157
 evacuation of, 151
 examples of effects of disasters on, 139
 extreme heat events (EHEs) and, 704, 709
 foreign-language speakers, 144–145
 further research recommendations, 157–158
 illiterate or poor readers, 145
 immigrants, 146
 legal issues, 147
 low-income households, 142–143
 mental and behavioral health of after disasters, 155
 overlapping conditions, 146
 overview, 137
 preparedness and, 147–150
 racial and ethnic groups, 143
 recognizing/addressing group's vulnerability, 139–140
 recovery planning for, 154
 resilient communities and, 146–147
 seniors, 140
 shelters for, 152–153
 social vulnerability theory, 140–142
 tropical cyclones and, 630
 using social media to connect to, 152
 women, 143–144
- fundamental cause, social epidemiologic theory of, 16
 funding, for disaster research, 19
 fusion protein (F1-V antigen) vaccine, 535–536
- Galeras, Colombia, volcano, 726, 729
 Galveston, Texas, hurricane, 604, 626
 Garner, A., 215
 gastrointestinal anthrax, 527
 gastrointestinal syndrome, 558
 gatherings. *See* mass gatherings
 GCS (Glasgow Coma Scale), 215
- gender
 functional or access challenges related to, 143–144
 U.S. demographics for, 138
- Gender and Disaster Network, 143, 158
 general population shelters, 152–153
 generators, 338, 345
 Geneva Conventions, 82, 362, 446–447
 Geneva Gas Protocol, 523
 gentamicin, 535
 geoengineering, 56–57
 Geographic Information Systems (GIS) technology, 15–16
- Germany
E. coli outbreak in, 105
 rail incident in, 305, 306, 307, 308
 “Getting Real” conferences, 149–150
 Gharbi, M., 204
 GHC (Global Health Cluster), 26, 167–168, 178–179
 GHS (Globally Harmonized System for the Classification and Labeling of Chemicals), 582, 583
- giardia, 526
 Gibson report, 266
 GIS (Geographic Information Systems) technology, 15–16
 Givoni, B., 702
 Gladish, S.L., 473
 Glasgow Coma Scale (GCS), 215
 Global Health Cluster (GHC), 26, 167–168, 178–179
 Global Outbreak Alert and Response Network, WHO, 251
 Global Platform for Disaster Risk Reduction, 76, 171
 global warming. *See* climate change
 globalization, infectious diseases and, 98
 Globally Harmonized System for the Classification and Labeling of Chemicals (GHS), 582, 583
 Goiânia, Brazil radiation accident, 568
 “Good Samaritan” legislation, 185
 Google Loon project, 427
 Google Person Finder, 654
 government agencies
 incentives for measures against infectious diseases, 111–112
 mass fatality management and, 364
 graft-versus-host disease (GVHD), 560, 561
 Graniteville, South Carolina, chlorine event, 581
 granulocyte CSF, 561
 Great Hanshin-Awaji earthquake, 646, 655
 Great Midwestern U.S. floods, 608, 612
 Great Mississippi River flood, 616
 Greek fire, 500

- greenhouse gas. *See* climate change
 grief, 371–372
 groundwater
 contamination of, 363
 depletion of, 55
 Guagua Pichincha volcano, Ecuador, 726
 Guatemala
 earthquakes in, 59, 657
 landslides in, 722
Guidance Note on Disability and Emergency Risk Management for Health, 378
Guidance on Planning for Integration of Functional Needs Support Services in General Population Shelters, 175
The Guide to Health, Safety and Welfare at Pop Concerts and Other Similar Events, 282–283
 Guiding Principles on Internal Displacement, 362
 Gujarat, India, earthquake, 383, 646
 Gupta, J.P., 580–581
 Gustav (hurricane), 139
 GVHD (graft-versus-host disease), 560, 561
- H1N1 influenza, 46, 105, 116
 CDC's discussions on Facebook about, 412
 resource availability during, 116
 travel restriction advisories during, 243
 Twitter discussions about, 412–413
 in U.S. in 2009, 49
 waiving of regulatory requirements during, 187
 H7N9 influenza, 113
 Haddon Matrix, 294
 Haiti
 cholera outbreaks in, 39, 102, 105, 142
 floodwaters in, 437
 landslide morality rate, 718
 Haiti earthquake, 17, 47, 84, 107, 151
 assistance from Dominican Republic following, 176–178
 cholera outbreak following, 656
 effects of, 642
 hospitals destroyed from, 648
 infected wounds following, 656
 mobile field hospital, 654
 non-trauma-related medical conditions following, 654
 oral intake restrictions, 654
 rehabilitation of disaster casualties, 382, 383, 384
 respiratory injury and, 655
 social media use following, 169
 Urban Search and Rescue (USAR) teams at, 647
 Haiyan (hurricane), 65
 Hajj, 265–266, 268
 Hall, E.J., 572
 Hamid, H.F., 468
 HAN (Health Alert Network), 115
Handbook for Local Government Leaders (UNISDR), 75
- Handicap International (HI), 378
 Hansen, H., 614
 hantaviruses, 105, 537
 Harris, L.W., 523
 Harvard Humanitarian Initiative, 386
 Hawaii Department of Health, 348
 Hazard Classification System, 584
 Hazard Identification Number (Kemmler Code), 583–584
 hazard vulnerability assessment (HVA), 336, 587
 Hazard Vulnerability Assessment Tool Events Involving Hazardous Materials, 340
 Hazard Vulnerability Assessment Tool Related to Human Activity, 340
 hazardous material (hazmat) events. *See also* decontamination; *specific hazardous material events*
 decontamination and, 593
 environmental damage caused by, 581
 environmental justice and, 581–582
 epidemiology of, 579–580
 evacuation, 593
 floods and, 619
 further research recommendations, 595–596
 hazardous materials identification and classification, 582–585
 hospital-based response, 593–595
 medical attention, 593–595
 overview, 579
 personal protective equipment (PPE) used with, 229, 593
 preparedness, 589–591
 public health response cycle in industrial hazardous material incident, 585–587
 recovery phase, 595
 response, 591–593, 596
 risk management, prevention, and mitigation, 587–589
 staffing for, 589–590
 toxic chemical exposures following flooding, 607–608
 transportation of victims, 593
 triage systems used with, 592–593
 Hazardous Materials Cooperative Research Program, 595
 Hazardous Substances Emergency Events Surveillance (HSEES) system, 580
 hazards, difference from emergencies and disasters, 3
 Hazchem Codes (Emergency Action Codes), 583–584
 HAZUS-MH software program, 15
 Health Alert Network (HAN), 115
 Health and Human Services (HHS), Department of, 245. *See also* Center for Disease Control and Prevention (CDC)
 Health Disaster Management Guidelines for Evaluation and Research in the Utstein Style, 178
 Health Industry Distribution Association, 346
- Health Industry Group Purchasing Association, 346
 health information, readily available, 170–171
 Health Information Technology for Economic and Clinical Health (HITECH) Act, 189
 Health Insurance Portability and Accountability Act (HIPAA), 187–188. *See also* protected health information (PHI)
 health outcomes, classifying disasters by, 18
 health risk communication, defined, 391–392
Health Services and Special Weapons Defense, 332
Health Services Organization in the Event of Disaster, 45
 Health Studies Branch (HSB), 170
 “Health systems: emergency-care systems” document, 65
 Healthcare and Public Health (HPH) Sector-Specific Plan, 172
 Healthcare Coalitions, 176
 Healthcare Emergency Management Competencies, 174–175
 healthcare facilities. *See also* hospitals
 communication with, 325–326
 decontamination in, 236
 emergency powers over, 194
 legal issues, 192–193
 patient identification and tracking and workload of, 451
 surge capacity strategies, 42–43
 winter storms and, 683–684
 workforce of, 114
 healthcare facility disaster management
 chemical and biological threats, 357
 common factors in disasters, 336–341
 disaster recovery phase, 357
 Emergency Management Committee (EMC), 334
 evacuation procedures, 349–357, 358
 further research recommendations, 357–358
 hazard vulnerability analysis (HVA), 336
 Hazard Vulnerability Assessment Tool Events Involving Hazardous Materials, 340
 Hazard Vulnerability Assessment Tool Related to Human Activity, 340
 history of, 330–333
 hospital physical plant preparedness, 344
 Incident Command System (ICS), 341–344
 National Incident Management System (NIMS) and, 344
 overview, 330
 preparedness, 333–341
 radiological training for hospital employees, 358
 standards, familiarization with, 334–335
 surge capacity, 347–349
 HealthMap project, 202
 hearing loss, 471
 heat cramps, 695

748 ■ INDEX

- heat edema, 695–696
 heat events. *See* extreme heat events (EHes)
 heat exhaustion, 696
 heat stroke, 696–697
 heat syncope, 696
 heating, ventilating, and air conditioning (HVAC), 345–346
 heavy snow, defined, 671
 helicopters, 302
 helplessness, 396
 hematopoietic colony stimulating factor (CSF) treatment, 561
 hematopoietic syndrome, 555–557
 hemorrhagic fever with renal syndrome (HFRS), 204, 538
 Henry, C., 581
 hepatitis, 482, 609
 Herodin, F., 571
 HFRS (hemorrhagic fever with renal syndrome), 204, 538
 HHS (Health and Human Services), Department of, 245. *See also* Center for Disease Control and Prevention (CDC)
 HI (Handicap International), 378
 Hickox, K., 247
 HICS (Hospital Incident Command System), 326, 341–344, 650
 Hidek, M.A., 77
 Higher Education Project, FEMA, 148
 Hill, D., 395
 Hillsborough Disaster (Sheffield, England), 269
 Hindenburg explosion, 294
 HIPAA (Health Insurance Portability and Accountability Act), 187–188. *See also* protected health information (PHI)
 Hiroshima bombing, 558, 560
 Hirschberg, A., 475, 481
 Hispanics
 demographics of, 138
 functional or access challenges of, 143
 HITECH (Health Information Technology for Economic and Clinical Health) Act, 189
 HIV/AIDS, 88, 482
 Holt, K., 619–620
 Home Front Command, Israeli, 173
 home telehealth devices, 417–418
 Homebush Triage Standard methodology, 210
 Homeland Security Exercise Evaluation Program (HSEEP), 30
 Homeland Security Presidential Directives (HSPDs)
 #5, Management of Domestic Incidents, 172, 344
 #7, Critical Infrastructure Protection, 172
 #8, National Preparedness, 165–166, 172
 #21, Public Health and Medical Preparedness, 25, 172–173, 174
 honesty, of organizations, 393
 Hong Kong, landslides in, 721
 hopelessness, 396
 horizontal evacuation, 349
Hospital Accreditation Manual, 192
 Hospital Incident Command System (HICS), 326, 341–344, 650
 hospital physical plant preparedness, 344. *See also* healthcare facility disaster management
 communications systems, 347
 damage control, 346
 electrical systems, 345
 funding for, 357
 heating, ventilating, and air conditioning (HVAC), 345–346
 supplies, 346–347
 supplies, reserve, 357
 water supply, 346
 Hospital Preparedness Program (HPP), 193
 Hospital Reserve Disaster Inventory (HRDI), 332
 Hospital Surge Model, 47
 hospitals. *See also* healthcare facilities;
 hospital physical plant preparedness
 closed, as option for surge capacity, 42
 credentialing of, 191–192
 damaged, 339–341
 decontamination zone, 225
 extreme heat events (EHes) and, 709
 hazardous material (hazmat) events and, 593–595
 post-decontamination zones, 226
 reduction of level of personal protective equipment (PPE) in, 228
 resources of, 116
 “Hospitals Safe from Disasters” campaign, 62
 host-resistant/-susceptible, defined, 94
 HPH (Healthcare and Public Health) Sector-Specific Plan, 172
 HPP (Hospital Preparedness Program), 193
 HRDI (Hospital Reserve Disaster Inventory), 332
 HSB (Health Studies Branch), 170
 HSEEP (Homeland Security Exercise Evaluation Program), 30
 HSEES (Hazardous Substances Emergency Events Surveillance) system, 580
 HSPDs. *See* Homeland Security Presidential Directives (HSPDs)
 Huang, R., 613
 Huang He River, 603
 Hugo (Hurricane), 154
 human agency, role of in community resilience, 72
 human anthrax immune globulin, 530
 human demographics and behavior, infectious diseases and, 96, 98, 99
 human immunodeficiency virus. *See* HIV/AIDS
 human rights law, 82–83
 human susceptibility, infectious diseases and, 96, 99
 humanitarian aid, 446–447
Humanitarian Aid All Inclusive! How to Include People with Disabilities in Humanitarian Action, 378
 Humanitarian Emergency Logistics & Preparedness, 426
 humanitarian law, 82
 Humanitarian Reform process, 379
 Humanitarian Supply Management System, 66
 hurricanes. *See specific hurricanes*; tropical cyclones
 Hutton, A.A., 287, 290
 HVA (hazard vulnerability assessment), 336, 587
 HVAC (heating, ventilating, and air conditioning), 345–346
 hydroxocobalamin, 505
 Hyogo Framework for Action, 23, 169, 708
 hyperbaric oxygen therapy, 683
 hyperkalemia, 652
 hypernatremia, 653
 hypertension, 613
 hypothermia, 303, 672, 674, 675, 682–683
 I SEE (Inter-active Simulation Exercise for Emergencies) project, 68
 IC (Incident Commander), 342, 346
 ICAO (International Civil Aviation Organization), 362
 ICC (Interagency Coordinating Council), 147
 ICCPR (International Covenant on Civil and Political Rights), 82–83
 ICD-10 (International Classification of Diseases) coding, 200, 202
 ice fog, defined, 671
 ice jam, defined, 671
 ice storms
 defined, 671
 injuries from, 674
 Iceland, volcanic eruption in, 10
 ICESCR (International Covenant on Economic, Social, and Cultural Rights), 82
 ICRC (International Committee of the Red Cross), 88–90, 364, 377
 ICRP (International Commission on Radiological Protection) 30 lung model, 562
 ICS. *See* Incident Command System (ICS)
 ICSC (International Chemical Safety Cards), 582
 ICUs (intensive care units), 482
 identifying patients. *See* patient identification and tracking
 IDF (Israeli Defense Force) regional command, 173
 IDF-MC (Israeli Defense Forces Medical Corps), 654
 IDLH (immediately dangerous to life and health) limits, 224–225
 IDNDR (International Decade for Disaster Risk Reduction), 168
 idoxuridine, 533
 IDPs (internally displaced persons/populations), 434
 IDSA (Infectious Diseases Society of America), 119–120

- IDSR (Integrated Disease Surveillance and Response), 170
- IEMS (Integrated Emergency Management System), 165
- IFRC (International Federation of Red Cross and Red Crescent Societies), 88–90
- IHD (intermittent hemodialysis), 652
- IHR. *See* International Health Regulations (IHR)
- IJMED* (*International Journal of Mass Emergencies and Disasters*), 9–10, 734
- Ike (hurricane), 142
- Ilkjær, L.B., 308
- Illinois, airplane crash in, 296
- immediately dangerous to life and health (IDLH) limits, 224–225
- immigrants, functional or access challenges of, 146
- impetigo, 436
- Improved Chemical Agent Monitor, 591–592
- Incident Command System (ICS), 27, 109–110, 114, 172, 254, 341–344, 476
- earthquakes and, 646
- Hospital Incident Command System (HICS), 341–344, 650
- Multiagency Coordination System (MACS), 341
- Incident Commander (IC), 342, 346
- Incident Management Cadre of On-Call Response/Recovery Employees (CORE) Program, 157
- income, resilient communities and, 77–78
- IND (Investigational New Drug) protocol, 261
- indemnity insurance, mass gatherings and, 276, 285–286
- Independent Study (IS) website, FEMA, 148
- India
- earthquake in, 383, 646
- methyl isocyanate event in, 516–517, 580–581
- Indian Ocean (Sumatra-Adanam) Earthquake and Tsunami, 18, 63, 143, 365, 378, 646, 661, 663, 664
- health assessments, 665
- rigid application of standards following, 667
- tetanus and, 612
- warning signs, 665
- indirectly related deaths, 18
- indirect-threat environment, 476
- individual liberty, 189–191
- Individuals with Disabilities in Emergency Preparedness (Executive Order 13347), 144, 147
- Indonesia
- extreme heat events (EHes) in, 706–707, 708, 709
- volcanic eruptions in, 727, 728, 732, 733, 734
- indoor heat exposure, 702–703
- industry, infectious diseases and, 96, 99
- infection, following earthquakes, 656
- infectious diseases. *See also* emerging infectious diseases (EIDs)
- from 1990 to 2013, 98
- biology terminology, 94–95
- causes of, 98–100
- diagnostic assays to identify new cases of, 111
- difference from other types of disasters, 101
- disaster response plans for, 107
- drug and vaccine development for, 119–120
- dual-use risk and, 112
- ethical and legal considerations, 106
- following landslides, 719
- food-borne transmission of, 104
- further research recommendations, 118–120
- government incentives for measures against, 111–112
- healthcare facility workforce, 114
- hospital emergency management systems and, 109–110
- infectious agents, 100–101, 102–104, 110–111
- interacting with public during disease disaster, 105–106
- International Health Regulations (IHR), 107–108
- international workforce and, 114
- management of by U.S. local, state, and national systems, 108–109
- mathematical models as prediction tools, 118
- mechanism of, 101–102
- mechanisms to prevent transmission of, 110
- preparedness programs, evaluation of, 118
- preparedness strategies, 118–119
- preparedness training exercises, 116–118
- public health workforce and, 113–114
- public safety workforce and, 114
- resource management during incidents, 115–116
- resources availability for, 104–105
- response communications and, 114–115
- response personnel for, 104
- scientific and technological advances and, 110–113
- in shelters, 684
- surveillance and, 112, 119, 120
- therapeutics and, 111
- transmission of, 102–104
- tropical cyclones and, 630
- vaccines for, 111
- workforce preparedness and, 113
- Infectious Diseases Society of America (IDSA), 119–120
- influenza pandemic. *See also* infectious diseases
- of 1918, 41–42
- of 1957, healthcare workers and, 104
- duration of, 102
- H1N1, 105
- mass fatality management and, 364
- predicting using models, 118
- social media and, 203, 412–413
- societal disruption and dysfunction potential, 127–128
- surge capacity and, 42
- Influenza Surveillance Network, WHO, 115
- information technology (IT), in disaster research, 15–16
- Ingersoll, A., 380
- inhalational anthrax, 527–529
- initial phase, of crisis communication lifecycle, 394
- initial response, 322–323
- Injured Staff Medical Record (ISMR), 287, 288
- injuries. *See also specific injuries*
- from explosive events, classification of, 469–470
- from floods, 612
- rehabilitation of, 382–384
- Injury Severity Score (ISS), 215
- Innovative Medicine Initiative, 120
- Institute of Medicine (IOM), 46, 124, 245, 608
- Instrumental Intensity Scale, 645
- insurance, mass gatherings and, 276
- intake area, of point of dispensing, 254–256
- Integrated Disease Surveillance and Response (IDSR), 170
- Integrated Disease Surveillance Programme, 113
- Integrated Emergency Management System (IEMS), 165
- intelligent tags, 457
- intensive care units (ICUs), 482
- Inter-active Simulation Exercise for Emergencies (I SEE) project, 68
- inter-agency cooperation, 67
- Interagency Coordinating Council (ICC), 147
- Interagency Emergency Health Kit, 632
- Intergovernmental Panel on Climate Change (IPCC), 52, 604, 706
- intermittent hemodialysis (IHD), 652
- internally deposited radionuclides, 562–566
- internally displaced persons/populations (IDPs), 434
- International Chemical Safety Cards (ICSC), 582
- International Civil Aviation Organization (ICAO), 362
- International Classification of Diseases (ICD-10) coding, 200, 202
- International Climate Change Panel, 694
- International Commission on Radiological Protection (ICRP) 30 lung model, 562
- International Committee of the Red Cross (ICRC), 88–90, 364, 377
- International Covenant on Civil and Political Rights (ICCPR), 82–83
- International Covenant on Economic, Social, and Cultural Rights (ICESCR), 82

750 ■ INDEX

- International Decade for Disaster Risk Reduction (IDNDR), 168
- International Decade for Natural Disaster Reduction, 61
- International Federation of Red Cross and Red Crescent Societies (IFRC), 88–90
- International Health Regulations (IHR), 59, 107–108, 243
- 2005 revisions to, 201
- chemical incidents criteria, 580
- quarantine and, 245
- reporting by, 112–113
- surveillance and, 204
- International Humanitarian Law, 446–447
- international issues. *See also* climate change
- all-hazard approach, 66
- balance between international response and national preparedness, 65
- donations, 60, 65–66
- improvement in approach to preparedness, 59–60
- institutional approach, shift in, 62–63
- inter-agency cooperation, 67
- international communication, 114–115
- international initiatives regarding extreme heat events (EHEs), 709–710
- knowledge base for humanitarian assistance, 63–64
- knowledge discovery, improving, 66
- legislation, 60
- mass dispensing of medical countermeasures, 251
- mitigation approach, 61
- organizational support for community resilience, 76
- organizations outside of healthcare field, 64
- overview, 59
- preparedness, limitations of, 60–61
- reconstruction, 68
- resilience approach, 61–62, 68
- response to complex humanitarian emergencies (CHEs), 446–447
- scientific and professional approach, 67–68
- strengthening emergency medicine, 65
- surveillance, 112–113
- travel, effect on infectious diseases, 96, 99
- International Journal of Mass Emergencies and Disasters (IJMED)*, 9–10, 734
- International Maritime Organization, 301
- International Medical Surgical Response Teams, 46
- International Meteorological Organization, 52
- International Programme on Chemical Safety (IPCS), 580
- International Society of Physical and Rehabilitation Medicine (ISPRM), 378
- International Spinal Cord Society (ISCOs), 378
- International Standards for Neurologic Classification of Spinal Cord Injury (ISNCSCI), 383
- International Strategy for Disaster Reduction (ISDR), 23, 169
- international visitors, functional or access challenges of, 146
- international workforce, 114
- Internet-based information, 428–429
- Internet-based triage methods, 49
- Interpol DVI teams, 364, 372
- Interpretative Guidelines, Medicare, 192
- interviews, antemortem, 370
- intravenous formulation of VIG (IV-VIG), 533–534
- Investigational New Drug (IND) protocol, 261
- investigational new drugs, mass dispensing of, 261
- individual learning, 23
- IOM (Institute of Medicine), 46, 124, 245, 608
- Ione (typhoon), 625
- IPCC (Intergovernmental Panel on Climate Change), 52, 604, 706
- IPCS (International Programme on Chemical Safety), 580
- IPCS InCHEM, 586
- Iran
- airplane crash in, 298
- earthquake in 2003, 17
- Iraq
- refugee camp conditions in, 440
- Second Iraqi War (Operation Iraqi Freedom), 405
- Irish Sea, airplane crash in, 297
- IS (Independent Study) website, FEMA, 148
- ISCOs (International Spinal Cord Society), 378
- ISDR (International Strategy for Disaster Reduction), 23, 169
- ISMR (Injured Staff Medical Record), 287, 288
- ISNCSCI (International Standards for Neurologic Classification of Spinal Cord Injury), 383
- isolation
- compared with quarantine, 241
- defined, 94, 243
- isotopes, 480, 548
- ISPRM (International Society of Physical and Rehabilitation Medicine), 378
- Israel, B.A., 78
- Israel, risk communication and, 405, 411
- Israeli Defense Force (IDF) regional command, 173
- Israeli Defense Forces Medical Corps (IDF-MC), 654
- Israeli triage system, 210
- ISS (Injury Severity Score), 215
- issues management communication, defined, 391
- IT (information technology), in disaster research, 15–16
- Italy
- airplane crash in, 296
- earthquake in, 647
- landslide in, 720
- volcano in, 726
- IV-VIG (intravenous formulation of VIG), 533–534
- Jacobson, H., 189–190
- Jacobson v. Massachusetts*, 189–190
- Jakarta, Indonesia, extreme heat events (EHEs) in, 706–707, 708, 709
- James Zadroga 9/11 Health and Compensation Act, 154
- Janench, U.E., 614
- Janoff-Bulman, R., 372
- Japan
- earthquake in, 12, 652
- Minamata mercury-poisoning event in, 512, 581
- power plant accident in, 139, 545
- sarin attack in, 478, 501, 512–514, 593
- volcanic eruption in, 728
- Jaslow, D., 267, 281, 282
- Jendritzky, G., 702
- Jew Ho v. Williamson*, 243
- Johnstown, Pennsylvania, flood, xvii, 603–604
- The Johnstown Flood* (McCullough), xvii
- Joint Commission, 191–192, 244, 333–335, 348, 349, 358, 657, 698
- Joint Meeting of the FDA Medical Imaging Drugs and Oncologic Drugs Advisory Committees, 571
- Joint Theater Trauma System, 478
- Joola* (ferry), 300
- journals, international disaster medicine, 63
- Judt, T., 447
- JumpSTART triage system, 214–215
- jus ad bellum* (primary prevention of war), 82
- jus in bello* (secondary prevention of war), 82
- Just-in-time inventory control systems, 357
- Kahn, A.Q., 546
- Kahn, C.A., 210, 215
- Kaiser Permanente Foundation Health Plan, 336
- Kalkstein, L.S., 694, 701, 705
- Kaniasty, K., 128
- Kaprun Funicular Railway, 307
- Karnaphuli Estuary, Bangladesh, landslide, 719
- Kashmir earthquake, 171, 377, 383
- Katrina (hurricane), 107, 362–363
- behavioral health casualties related to, 130
- bibliography on, 159
- carbon monoxide poisoning and, 614
- chronic disease increase following, 613
- communicable diseases and, 611
- communications during, 115
- deaths from, 610
- disaster research on, 13, 14, 15
- effects on disabled persons, 144
- effects on functional or access needs populations, 139
- effects on low-income households, 142, 143
- effects on medical facilities, 155

- effects on animals, 147
 effects on children, 142
 ethical issues, 86–88
 evacuation from area of, 151, 423
 family reunification after, 451
 federal government evacuee tracking and family member reunification, 188
 flooding from, 606
 HIPAA laws in aftermath of, 189
 hospital evacuations after, 631
 hospital temperatures, 345–346
 legal issues, 188, 191, 192, 193
 mold after, 608
 outreach by medical personnel during, 148
 patient identification and tracking and, 450
 pharmaceuticals and supplies sent after, 333
 post-traumatic stress disorder (PTSD) from, 126
 state licensure restrictions during, 698–699
 storm surge, 626
 telecommunications networks affected by, 424–425
 telehealth deployed during, 420–421
 wound infections and, 612
- Katz, E., 473
 Keeling, C. D., 53
 Keim, M., 617–618
 Kelen, G.D., 491
 Kemmler Code (Hazard Identification Number), 583–584
 Kerr, G.W., 266
 Khartoum, Sudan, flooding in, 611
 kidney injury. *See* acute kidney injury (AKI)
 Kilbourne, E.M., 700–701
 Kirsten (typhoon), 625
 knowledge base for humanitarian assistance, 63–64
 knowledge discovery, improving, 66
 Knowlton, K., 699
 Kobe, Japan, earthquake in, 12, 652
 Koenig, Kristi L., i, 45
 Kool, J.L., 203
 Kovats, S., 702
 Kuala Lumpur, Malaysia, extreme heat events (EHEs) in, 706–707, 709
 Kulig, J.C., 71, 72
 Kumbh Mela, 265, 266, 267, 268
 Kyasanur Forest disease, 537
 Kyoto Protocol, 56
- La Paz, Brazil, landslide risk area, 720
 labeling regulations, 260–261
 Laboratory Response Network, CDC, 114
 laboratory simulations, 14, 67–68
 laboratory support, 338
 Ladbroke Grove rail incident, 305, 307, 308–309
 lahars, 729–730
 Lake Nyos, Cameroon, carbon dioxide poisoning, 731
- lake-effect snow, defined, 671
 land use, infectious diseases and, 96, 99
 land-based communications, synchronous, 427
 landslides
 characteristics of, 717
 classification of, 717
 defined, 716
 economic costs of, 718–719
 epidemiology of, 717–719
 further research recommendations, 722
 health impacts of, 719–720
 infectious diseases following, 719
 mental and behavioral health and, 716, 719–720
 mortality from, 716
 overview, 716
 response to and recovery from, 721–722
 risk mitigation/reduction measures, 720–721
 risk perception, 720
 types of, 716–717
 languages, foreign, 144–145
 Larrey, D.J., 208
 laryngeal, 471–474
 Lassa fever, 537, 538
 latent phase, acute radiation syndrome (ARS), 555
 lava flows, 729
 Law of The Hague, 362
 laws. *See* legal issues
 leadership, in resilient communities, 78
 Lebanon, Second War of, 405
 Lechat, M., 59
 legal issues
 authorization to provide medical care, 191–192
 comparative research on public health emergency laws, 195–196
 consent, 191
 disabled persons and, 147
 drug labeling regulations, 260–261
 emergency powers over healthcare facilities, 194
 emergency waiver of U.S. state laws, 195
 federal disaster assistance programs, 194
 further research recommendations, 195–196
 Health Insurance Portability and Accountability Act (HIPAA), 187–188
 healthcare facilities, 192–193
 human rights law, 82–83
 humanitarian law, 82
 individual liberty, 189–191
 infectious diseases and, 106
 mandatory public health measures, 189–191
 mass dispensing of medical countermeasures, 260–261
 mass fatality management, 361–362
 mass gatherings, 276, 285–287
 medical malpractice, 184–186
 medical screening exams, 193
 overview, 183–184
 protection of patient rights, 187–189
 public health powers, 186–187
 quarantine, 245–247
- Lenert, L.A., 459
 LEP (Limited English Proficiency) department, FEMA, 145
 leptospirosis, 612
 “lessons learned”, xvii–xviii
 leukemia, 614
 leukopenia, 508
 Levett, J., 266
 levofloxacin, 536
 lewisite, 508
 Li, X., 614
 liability, 85, 184–186, 285–287
 licensing, 191
 LifeCare, 86–88
 lifesaving interventions (LSIs), 212–213
 Lilo, Georgia radiation accident, 554
 Limited English Proficiency (LEP) department, FEMA, 145
 Lind, T., 308
 “Listen, Protect and Connect” program, 131
 literacy levels, 145
 Litvinenko, A., 572
 Lloyd, D.C., 552
 local affiliated volunteer responder teams, 76
 Local Emergency Planning Committee, 512
 Local Winter Storm Scale (LWSS), 675
 localization technologies, 459–460. *See also* electronic patient tracking systems (ePTS); patient identification and tracking
 location of patients, confidentiality of, 188
 Lockerbie, Scotland, airplane crash in, 298
 Logistic Support System (LSS), 66
 Logistics Section, of ICS, 324, 341, 342
 Logue, J.N., 614
 Loma Prieta earthquake, San Francisco, California, 149, 646, 647, 650, 651
 longitudinal studies, 13
 Longstaff, 77
 Los Alamos, New Mexico
 liquid criticality event, 569, 570
 plutonium sphere cases, 569–570
 Los Alfaques, Spain, camping ground explosion, 733
 low-income households, functional or access challenges of, 142–143
 LSIs (lifesaving interventions), 212–213
 LSS (Logistic Support System), 66
 Lumley, J., 467
 Lund, A., 265, 282, 288, 289
 Lurie, N., 18
 LWSS (Local Winter Storm Scale), 675
 lymphoma, 614
- MACE (Military Acute Concussion Evaluation), 471
 Mackway-Jones, K.K., 289
 MACS (Multiagency Coordination System), 341
 Madden, J.F., 152

752 ■ INDEX

- Madrid, Spain terrorist attacks
 command and control at, 308
 evacuation of survivors from, 478
 safety of responders to, 309
 triage process, 309
- Magen David Adom (MDA) Israeli National
 EMS system, 477
- Mahina (tropical cyclone), 626
- Major Incident Medical Management System
 (MIMMS), 281, 294
- Making Cities Resilient: My City is Getting
 Ready! Campaign, 75
- malaria
 floods and, 611–612
 following landslides, 719
 tsunamis and, 664
- Malaysia, Nipah virus in early 2000s, 110
- Malaysian Airlines Flight MH 370, 298
- males, U.S. demographics for, 138
- malnutrition, 441–443
- malpractice claims, 85, 184–186, 276,
 285–287
- Managed Emergency Surge for Healthcare
 Coalition (MESH), 176
- Management of Domestic Incidents,
 Homeland Security Presidential
 Directive (HSPD) #5, 172, 344
- mandatory evacuation, 187
- mandatory public health measures, 189–191
- manifest (illness) phase, acute radiation
 syndrome (ARS), 555
- mannitol, 652
- Manual of Aircraft Accident Investigation,
 ICAO, 362
- Marburg disease, 537
- Marmara, Turkey, earthquake, 648
- Marzuk, P., 699
- MASCAL, 457
- Mass Casualty Disaster Mental Health
 Incident Management Concept of
 Operations (CONOPS), 129
- Mass Casualty Tracking Application (MCTA),
 451
- mass casualty triage
 Boston Marathon bombing example,
 208–209
 history of, 208
- mass dispensing of medical countermeasures.
See medical countermeasures
 (MCMs), mass dispensing of
- Mass Fatalities Workstream, 372
- mass fatality management
 assistance to victims and their families,
 371–372
 biological contamination and, 363–364
 caring for mass fatality workers, 371
 chemical contamination and, 363–364
 criminally-related disasters and, 363
 death documentation and certification,
 361–362
 disaster victim identification (DVI),
 361–362, 364, 371
 disposal of remains, 361–362
 DNA and, 364, 365, 366, 370
 ethical issues, 370–371
 further research recommendations,
 372–373
 influenza pandemic and, 364
 legal issues, 361–362
 morgues, 367–370
 number of fatalities, 365–366
 overview, 361
 policy issues, 370–371
 public health and responder safety
 concerns, 362–363
 response and government agencies, 364
 role of event in, 363–364
 search and recovery operations, 366–367
 social issues, 361–362
- Mass Gathering Medical Care* (Jaslow), 281,
 282
- mass gatherings, 287. *See also* medical
 countermeasures (MCMs), mass
 dispensing of
 ABCDEs of, 280
 airway problems, 280
 audit of the on-site medical care, 289
 checking adequacy of medical facilities,
 277
 classification of, 267–268
 communications at, 288–289
 debriefing, 277–278
 defining the event, 273
 definitions of, 266–267
 dismantling event, 278
 emergency medical services at, 276
 equipment for, 277, 283–284, 285
 event medical plans for, 275–276
 event planning for, 271–278
 financial arrangements, 276
 football-related mass gathering disasters,
 268–269
 further research recommendations,
 289–290
 history of mass gathering medicine,
 268–269
 insurance and, 276, 285–287
 legal issues, 276, 285–287
 level of care provided at, 280–281
 local emergency departments at, 276
 malpractice and, 285–287
 medical and administrative controllers at,
 275
 medical oversight at, 281
 medical protocols for, 277
 medical reconnaissance, 278–279
 medical records maintenance at, 287–288
 medical staff selection, 281
 medical staff training, 281
 negotiations when contracting event,
 279–280
 overview, 265–266
 passes for, 277
 pharmaceuticals at, 284–285, 286
 pre-event briefing, 277
 projected attendance estimates, 276
 resources, estimating, 282–283, 284
 resources, required, 282
 responsibilities at, designating, 273–275
 role assignment for, 277
 rosters for, 277
 safety clothing for, 277
 site emergency plans for, 276
 site plans for, 273
 staff recruitment, training, and
 credentialing, 276–277
 standard operating procedures (SOPs) for,
 277
 transport resources at, 276, 280, 285
 trauma units at, 276
 treatment facilities at, 288
 triage systems, 282
 types and sites of, 269–271
 VIP arrangements, 276, 279, 280
 walking site of, 273
- material safety data sheets (MSDS), 582
- mathematical models as prediction tools, 118
- McCarthy, D.M., 268
- McCarthy, M.L., 491
- McCullough, David, xvii
- McGeehin, M., 709
- MCI (multiple casualty incidents), 450
- MCMs. *See* medical countermeasures
 (MCMs), mass dispensing of
- MCTA (Mass Casualty Tracking Application),
 451
- MDA (Magen David Adom) Israeli National
 EMS system, 477
- MDR (multiple drug resistant) pathogens, 55
- media
 patient rights, protection from, 189
 relations with, 338
- medical countermeasures (MCMs), mass
 dispensing of. *See also* mass gatherings;
 points of dispensing (PODs)
 adverse events, 261–262
 ancillary supplies, 262
 cold chain management, 262
 drug formulations for children and
 seniors, 260
 federal assistance, 251–253
 further research recommendations, 262
 history of, 250
 international efforts, 251
 investigational new drugs, 261
 labeling regulations, 260–261
 legal issues, 260–261
 overview, 250
- Medical Disaster Response program, 650
- Medical Education for National Defense
 (MEND) program, 332
- medical facilities
 effects of damages due to disaster event,
 145–146
 reestablishing after disaster, 155
- Medical Management of Radiological
 Casualties* handbook, 480
- Medical Multi-Agency Coordination Center
 (MedMACC), 176
- medical personnel
 involvement in evacuation activities, 151
 outreach by, 148

- Medical Reserve Corps (MRC), 43, 148
 medical screening exams, legal issues, 193
 medical supplies and equipment, 338–339, 346–347, 348
 medical surge. *See* surge capacity
Medical Surge Capacity and Capability, 698
 medical teams, deployable, 44, 45–46, 47
 Medicare and Medicaid programs, 187, 192, 193
 medication. *See also* medical countermeasures (MCMs), mass dispensing of
 MedMACC (Medical Multi-Agency Coordination Center), 176
 MedWatch, 262
 memoranda of agreements (MOAs), 252
 MEND (Medical Education for National Defense) program, 332
 mental and behavioral health
 adherence to public health measures, 127–128
 assessment by professional mental health professionals, 128–130
 behavioral preparedness for disaster responders, 132–133
 change in behavior, 126
 community and social support factors, 128
 complex humanitarian emergencies (CHEs) and, 443–446
 demand surge management and, 128
 disaster stress management, 178
 disaster-related behavioral health casualties, estimates of, 130–131
 distress reactions, 126
 earthquakes and, 656
 floods and, 612–613
 of functional or access needs populations, 155
 further research recommendations, 133
 health risk behaviors, 126
 intervention, 131
 landslides and, 716, 719–720
 preventing and managing psychological injuries, 130–132
 psychiatric disorders, 126–127
 Psychological First Aid (PFA), 131–132
 psychological impact of uncertainty, 451
 PsySTART model and, 129–130
 radiation events and, 566–568
 range and timeline of typical reactions, 124–127
 surge capacity and, 47
 temporary shelters and, 684
 trauma and, 445–446
 tropical cyclones and, 629–630
 World Health Organization (WHO) guidelines for, 132
 Merapi, Indonesia, volcanic eruption in, 728, 732, 733, 734
 MERS, 109
 communication with public regarding, 115
 healthcare workers and, 104
 as new viral emergence, 111
 mesenchymal stem cells (MSCs), 571
 MESH (Managed Emergency Surge for Healthcare Coalition), 176
 METHANE message pneumatic, 276
 methemoglobin, 505
 methyl isocyanate (MIC) release, Bhopal, India, 516–517, 580–581
 Mettler, F.A., 544
 Mexico
 earthquake in, 654
 landslides in, 720
 volcanic eruption in, 726
 MIC (methyl isocyanate) release, Bhopal, India, 516–517, 580–581
 Michael, J.A., 289
 microbial adaptation, 96, 99
Microbial Threats to Health: Emergence, Detection and Response, 98
 micronutrient diseases, 441–443
 midazolam, 510, 519
 Milan, Italy, airplane crash in, 296
 Military Acute Concussion Evaluation (MACE), 471
 Military triage, 212
 Milsten, A.M., 278, 279, 289
 MIMMS (Major Incident Medical Management System), 281, 294
 Minamata Bay, Japan, hazard waste disposal, 512, 581
 Ministries of Health, 62–63, 64, 251
 minorities, U.S. demographics for, 138
 Minot, North Dakota, ammonia release in, 515–516
 MIPS (multiple idiopathic physical symptoms), 568
 Mirabelli, M., 709
 Mitch (hurricane), 611
 mixed messages, 399
 MMI (Modified Mercalli Intensity) scale, 644–645
MMWR (Morbidity and Mortality Weekly Report), 7–8, 17
 MOAs (memoranda of agreements), 252
 mobile healthcare facilities, 43
 mode of transmission, defined, 94
 Model State Emergency Health Powers Act (MSEHPA), 242–245
 Model Uniform Core Criteria (MUCC), 213
 models as prediction tools, 118
 modified cluster sampling, 684–685
 Modified Mercalli Intensity (MMI) scale, 644–645
 Modular Emergency Medical System, 484
 molecular biology, scientific advances in, 110–113
 Molloy, M.S., 268
 monitoring, technology's impact on, 169
 monkeypox, 532–533
 Mont Pelée volcanic eruption, 732
 Montserrat volcano, 732, 733
 morbidity and mortality. *See also* mass fatality management
 consistency of estimation methods, 18
 from extreme heat events (EHEs), 699
 extreme heat events (EHEs) and, 692–694
 flood-related morbidity, 610, 618
 flood-related mortality, 608–610
 landslides and, 716
 patterns of by disaster type, 17–18
 tornadoes, 638–640
 tropical cyclones, 629–630
 tsunamis, 663–664
 winter storms, 673
Morbidity and Mortality Weekly Report (MMWR), 7–8, 17
 morgues, 338, 367–370
 collection and use of antemortem data, 370
 incident morgue operations, 368–370
 selecting, 367
 Morokot (typhoon), 720
 Moscow, Russia, airplane crash in, 298
 mosquitoes, 611–612
 motor vehicle collisions (MVCs), 674. *See also* bus disasters
 Motyka, T.M., 288
 Mount Carmel forest fire, 405
 Mount Etna, Italy, volcano, 726
 Mount Rainier volcano, 730, 732
 Mount St. Helens volcanic eruption, 468, 725, 730, 733
 Mount Unzen volcanic eruption, 733
 MRC (Medical Reserve Corps), 43, 148
MS Herald of Free Enterprise (ferry), 300
MS Sleipner (catamaran), 302
 MSCs (mesenchymal stem cells), 571
 MSDS (material safety data sheets), 582
 MSDSOnline®, 586
 MSEHPA (Model State Emergency Health Powers Act), 242–245
 Mt. Pinatubo, Philippines, volcanic eruption, 726
 MUCC (Model Uniform Core Criteria), 213
 Multiagency Coordination System (MACS), 341
Multi-Casualty Incident Plan: Mutual Aid Evacuation Annex, 349
 multicultural settings, emergency messages in, 404
 multi-jurisdictional coordination, 327–328
 multiple casualty incidents (MCIs), 450
 multiple drug resistant (MDR) pathogens, 55
 multiple idiopathic physical symptoms (MIPS), 568
 mustard gas. *See* sulfur mustard
 MVCs (motor vehicle collisions), 674. *See also* bus disasters
 myocardial infarction, 655
 myths, disaster, 61
N. meningitidis. *See* *Neisseria meningitidis*
 N-acetyl cysteine, 471
 NAEMSP (National Association of EMS Physicians), 272, 273
 Nagasaki bombing, 558, 560
 Nairobi, Kenya, extreme heat events (EHEs) in, 706–707, 708

754 ■ INDEX

- NASA (National Aeronautics and Space Administration), 419
- Nascimento, A.C., 553
- NASCIS (National Acute Spinal Cord Injury Study), 215–216
- National Action Agenda for Public Health Legal Preparedness, 196
- National Acute Spinal Cord Injury Study (NASCIS), 215–216
- National Aeronautics and Space Administration (NASA), 419
- National Association of EMS Physicians (NAEMSP), 272, 273
- National Association of Medical Examiners, 699
- National Biosurveillance Integration Center (NBIC), 202
- National Biosurveillance Integration System (NBIS), 202–203
- National Center for Disaster Medicine and Public Health (NCDMPH), 25, 174
- National Center for Environmental Health, 704
- National Children's Disaster Mental Health Concept of Operations model, 131
- National Comprehensive Cancer Network, 560
- National Council on Disability, 157, 158
- National Disaster Center in Tokyo, 513–514
- National Disaster Housing Strategy and Plan, 157
- National Disaster Medical System (NDMS), 44, 169, 482
 evolution of, 45–46
 lack of resources for, xvii
 patient treatment and tracking system, 179
- National Emergency Authority (NEA), 173
- National Emergency Child Locator Center, 188
- National Emergency Stockpile System, 251
- National EMS Research Agenda, 688
- National Fire Protection Association (NFPA), 197–198, 224–226, 584–585, 586
- National Foundation for Trauma Care, 698
- National Guidance for Healthcare System Preparedness, 47
- National Health Security Strategy (NHSS), 25, 26, 179
- National Incident Management System (NIMS), 27–28, 172, 194, 254, 323, 344, 485
- National Infrastructure Protection Plan, 172
- National Institute for Occupational Safety and Health (NIOSH), 132
- National Library of Medicine
 Chemical Hazards Emergency Medical Management (CHEMM) website, 518, 520
 Radiation Emergency Medical Management (REMM) website, 552
- National Oceanic and Atmospheric Administration (NOAA), 604, 675, 701–702
- National Opinion Research Center (NORC), 4
- National Pharmaceutical Stockpile. *See* Strategic National Stockpile (SNS)
- National Planning Scenarios, 27, 29
- National Preparedness, Homeland Security Presidential Directive (HSPD) #8, 165–166, 172
- National Preparedness Report of 2013, 147
- national resources, 115
- national response communication, 115
- National Response Framework (NRF), 45, 109, 147, 172, 194
- National Science Advisory Board for Biosecurity (NSABB), 112
- National Strategy for Biosurveillance, 113
- national surveillance, 113
- National Toxic Substance Incidents Program (NTSIP), 579, 595
- National Veterinary Response Teams, 46
- National Weather Service (NWS), 675
- Native Hawaiians, U.S. demographics for, 138
- NATO (North American Treaty Organization) triage classification, 212
- Natural Hazards Center, University of Colorado-Boulder, 148
- Natural Hazards Research and Applications Center (NHRAC), 7
- NBIC (National Biosurveillance Integration Center), 202
- NBIS (National Biosurveillance Integration System), 202–203
- NCDMPH (National Center for Disaster Medicine and Public Health), 25, 174
- ND4BB (New Drugs for Bad Bugs), 120
- NDMS. *See* National Disaster Medical System (NDMS)
- NEA (National Emergency Authority), 173
- needle thoracentesis, 474
- negligence, 184–186
- Neisseria meningitidis*, 101, 104, 105
- Nepal earthquake, 717
- nerve agents, 508–510, 519
- neurovascular syndrome, 558
- Nevedo del Ruiz, Colombia, volcanic eruption, 725, 729–730
- New Drugs for Bad Bugs (ND4BB), 120
- Newtown school shootings, 141
- NFPA (National Fire Protection Association), 197–198, 224–226, 584–585, 586
- NHRAC (Natural Hazards Research and Applications Center), 7
- NHSS (National Health Security Strategy), 25, 26, 179
- Nicaragua, earthquake in, 59
- NIMS (National Incident Management System), 27–28, 172, 194, 254, 323, 344, 485
- NIMS Implementation Activities for Hospitals and Healthcare Systems*, 344
- 99mTc (technetium) scanning, 682
- 911 services, 322
- NIOSH (National Institute for Occupational Safety and Health), 132
- Nipah virus, 110
- Nix, C., 278
- Nixon, R., 523
- “No Pets Left Behind”, 147
- NOAA (National Oceanic and Atmospheric Administration), 604, 675, 701–702
- Noji, E.K., 626–627
- non-Hispanic white alone, U.S. demographics for, 138
- NORC (National Opinion Research Center), 4
- nor'easter
 defined, 671
 example of, 673
- Norris, F.H., 71, 73, 126, 128
- North American Treaty Organization (NATO) triage classification, 212
- North Carolina Domestic Training Exercise, 427
- Northern Ireland Hostile Action Casualty System, 469
- Northridge, California, earthquake, 10, 15, 17, 129, 142, 646, 647, 650, 656
 hospital evacuations after, 349, 648
 hospital staff, 650
 Urban Search and Rescue (USAR) teams at, 647
- Norway
 landslide morality rate, 718
 rail incident in, 305
- Nosow, S., 14
- NRF (National Response Framework), 45, 109, 147, 172, 194
- NSABB (National Science Advisory Board for Biosecurity), 112
- NTSIP (National Toxic Substance Incidents Program), 579, 595
- nuclear detonations, 480
- nuclear power plant accidents, 544–545
- nuclear terrorism, 546
- Nufer, K.E., 632
- Nunn-Lugar Cooperative Threat Reduction Program, 546
- Nuremberg Trials, 82
- Nurse Training Act, 331–332
- nursing homes dwellers, functional or access challenges of, 145–146
- nurturance, in resilient communities, 72–73
- NWS (National Weather Service), 675
- Nyiragongo volcano, 731
- observational studies, 12
- Occupational Safety and Health Administration (OSHA), 192, 225, 334–335, 586, 589
- occupational therapists, 379–380
- OCD (Office of Civilian Defense), U.S., 331–332
- ocean disasters. *See* sea disasters
- OCHA (Office for the Coordination of Humanitarian Affairs), 63
- ocular injuries, 471

- OECD (Organization for Economic Cooperation and Development's Environmental Outlook to 2050, 579
- Office for the Coordination of Humanitarian Affairs (OCHA), 63
- Office of Civilian Defense (OCD), U.S., 331–332
- Office of Disability Integration, FEMA, 148
- Office of the Assistant Secretary for Preparedness and Response (ASPR), 169
- Oklahoma, tornadoes in, 146, 147
- Oklahoma City bombing, 18, 141, 468, 476
- Omsk hemorrhagic fever, 537
- Operation Enduring Freedom, 468
- Operation Iraqi Freedom (Second Iraqi War), 405, 468
- Operation Strong Angel, 427
- operational learning, 23
- Operations Section, of ICS, 324, 341, 342
- organ transplantation, 85–86
- Organization for Economic Cooperation and Development's (OECD) Environmental Outlook to 2050, 579
- organization reputational risk management, 392–393
- organizational credibility and trust, 392
- organizational learning, 23
- organophosphate nerve agents, 501
- oropharyngeal anthrax, 527
- orthotists, 380
- OSHA (Occupational Safety and Health Administration), 192, 225, 334–335, 586, 589
- outbreak, defined, 94
- outcomes. *See* health outcomes, classifying disasters by
- out-of-hospital care
 for explosion victims, 478
 for victims of winter storms, 678–679
- out-of-hospital triage, for explosion victims, 476–478
- overtriage, 476
- oxime therapy, 509–510
- Pacific Islanders, U.S. demographics for, 138
- Pacific Tsunami Warning Center (PTWC), 665
- Packaged Disaster Hospitals (PDHs), 332
- PAHO (Pan American Health Organization), 59, 170, 362, 364, 372
- PAHPA (Pandemic and All-Hazards Preparedness Act), 112, 172, 192
- PAHPRA (Pandemic and All-Hazards Preparedness Reauthorization Act), 112, 261
- pain control, 326
- Pakistan earthquake, 427, 648
- Pan American Health Organization (PAHO), 59, 170, 362, 364, 372
- Pandemic and All-Hazards Preparedness Act (PAHPA), 112, 172, 192
- Pandemic and All-Hazards Preparedness Reauthorization Act (PAHPRA), 112, 261
- Pandemic Influenza Plan, CDC, 244
- pandemics, defined, 94. *See also* infectious diseases; *specific pandemics*
- panel studies. *See* cohort studies
- panic, false beliefs about, 396–397
- paper-based patient tracking systems, 452–454
- PAPR (powered air-purifying respirators), 223–224
- parenteral cidofovir, 533
- Paris, France, airplane crash in, 296
- Parkland formula, 495
- participation, as attribute of resilient communities, 72
- partnerships, 176–178
- Pate, B.L., 454
- paternalistic attitudes, 399
- pathogens, 93
- patient care capacity, 336
- patient identification and tracking. *See also* electronic patient tracking systems (ePTS)
 defining, 451
 family reunification, 451
 further research recommendations, 460
 governmental guidance, 454
 importance of, 450–451
 intelligent tags, 457
 overview, 450
 paper-based tracking systems, 452–454
 patient tagging, 454–457
 proper allocation of resources by common operational picture, 450
 psychological impact of uncertainty and, 451
- Radio-Frequency Identification (RFID), 456–457
- wearable sensors, 457
- workload for healthcare facilities, 451
- Patient Medical Record (PMR), 287–288
- patient rights, protection of, 187–189. *See also* protected health information (PHI)
 Health Insurance Portability and Accountability Act (HIPAA), 187–188
 location and general condition, 188
 privacy, 187
- Patient Transfer Record (PTR), 288
- PBI (primary blast injury), 469
- PCC (premature chromosome condensation) assay, 552
- PDCs (pyroclastic density currents), 726, 727–728, 735
- PDHs (Packaged Disaster Hospitals), 332
- PDM (*Prehospital and Disaster Medicine*), 8–9, 289
- peak ground acceleration (PGA), 644
- peak ground velocity (PGV), 644
- Pearce, F., 56
- pediatric triage systems, 214–215
- Pediatric Triage Tape (PTT), 215
- Peek-Asa, C., 10, 15
- PEEP (positive end-expiratory pressure), 473, 504
- penetration, from chemicals, 221–223
- Pentagon terrorist attack, 12–13
- Pepeng (typhoon), 171
- perception of risk, 398
- peripheral pulmonary agent toxicity, 504
- permeation, from chemicals, 221
- permissive hypercapnia, 481
- permissive hypotension, 481
- Perrin, K., 77
- personal protective equipment (PPE), 105.
See also decontamination
 in biological emergencies, 226–228
 chemical protective clothing (CPC), 221–223
 constraints of wearing in biohazard event, 229
 decontamination of, 229
 Ebola and, 333
 explosive events and, 486
 floods and, 616–617
 further research recommendations, 229–230
 hazardous material (hazmat) events and, 589–590, 593
 hazards associated with using, 228
 history of, 220
 inspection of, 229
 levels of, 224–226
 medical surveillance requirements for wearing, 228–229
 overview, 219–220
 in radiation emergencies, 226
 for receivers of victims for mass-casualty incidents, 227
 reduction of level of in hospital setting, 228
 respiratory protection, 223–224
 routes of exposure and, 220
 storage of, 229
 testing of, 229
 for treating persons with radioactive contamination, 564
 types of, 221
- personal resilience, difference from community resilience, 71–72
- Peru, earthquake in, 59
- Pet Evacuation and Transportation Act (PETS), 147
- Petley, D.N., 717
- pets
 evacuation of, 147
 protecting, 158
- PETS (Pet Evacuation and Transportation Act), 147
- PFA (Psychological First Aid), 131–132, 446
- Pfefferbaum, R.L., 72
- PGA (peak ground acceleration), 644
- PGV (peak ground velocity), 644
- pharmaceuticals. *See* medical countermeasures (MCMs), mass dispensing of
- pharyngeal, 471–474

756 ■ INDEX

- PHEIC (Public Health Emergency of International Concern), 245, 246
 PHI. *See* protected health information (PHI)
 Philadelphia extreme heat event plan, 705
 Philippines
 hurricane in, 65
 landslide in, 721
 typhoon in, 171
 volcanic eruption in, 726
 PHIN (Public Health Information Network), 685
 phones. *See* telemedicine and telehealth
 phosgene, 500, 595
 PHS (Public Health Service), 331, 332–333
 physical medicine and rehabilitation (PM&R). *See* rehabilitation of disaster casualties
 physical therapists, 379–380
 physical vulnerability, 16
 PICE (potential injury/illness-creating event). *See* explosive events
 Pizov, R., 473, 482
 Placentia, California, rail incident, 308
 plague prophylaxis, 535
 plagues, ethical issues, 88
 Planning Section, of ICS, 323–324, 341, 342
Plasmodium falciparum, 630
 PM&R (physical medicine and rehabilitation). *See* rehabilitation of disaster casualties
 PMR (Patient Medical Record), 287–288
 Pneumocystis, 113, 561
 pneumonic plague, 526, 534–535
 pneumonic tularemia, 540
 PODs. *See* points of dispensing (PODs)
 points of dispensing (PODs), 252
 ancillary supplies at, 262
 cold chain management at, 262
 deactivation of, 260
 equipment for, 254
 functional areas, 254–257
 modeling, software and programming for, 259
 non-segmented, 254
 operating procedures, 254
 patient education at, 256
 phases of activation, 260
 physical characteristics of, 253–254
 planning for, 253
 public information delivery related to, 260
 security at, 256
 segmented, 254, 255
 site selection, 253–254
 staffing and training for, 257–260
 Policy on Assistance to Aircraft Accident Victims and Their Families, 362
 political vulnerability, 16
 population displacement, following flooding, 607
 population growth, climate change and, 55
 populations at risk. *See* functional or access needs populations
 portable healthcare facilities, 43
 positive end-expiratory pressure (PEEP), 473, 504
 positive-pressure ventilation (PPV), 472–473
 post-impact period, of disaster cycle, 11
 Post-Katrina Emergency Management Reform Act of 2006, 147
 post-traumatic stress disorder (PTSD), 124–126, 155, 178
 among flood-affected populations, 613, 616
 landslides and, 716, 719–720
 percentage of trauma-survivors experiencing, 445–446
 radiation events and, 566, 568
 tropical cyclones and, 629–630
 potable water systems, 710
 potential injury/illness-creating event (PICE). *See* explosive events
 Potts, J.A., 204
 Pott's disease, 439
 Pou, A., 87–88
 Pourbohloul, B., 244
 poverty
 floods and, 610
 infectious diseases and, 97, 99
 power outages, 608
 powered air-purifying respirators (PAPR), 223–224
 PPD 8 (Presidential Policy Directive 8: National Preparedness), 147, 165–166, 172
 PPD 39 (Presidential Decision Directive 39: U.S. Policy on Terrorism), 333
 PPE. *See* personal protective equipment (PPE)
 PPV (positive-pressure ventilation), 472–473
 pre-crisis phase, of crisis communication lifecycle, 394
 prediction tools, mathematical models as, 118
 predictive analysis, 204
Prehospital and Disaster Medicine (PDM), 8–9, 289
 pre-impact period, of disaster cycle, 10–11
 premature chromosome condensation (PCC) assay, 552
 preparedness
 for effective response and recovery, 175
 evaluation of programs for, 118
 functional or access needs populations and, 147–150
 limitations of, 60–61
 National Guidance for Healthcare System Preparedness, 47
 strategies for, 118–119
 training exercises for, 116–118
 of workforce, 25–26
 Preparedness & Response On Advanced Communications Technology (PROACT) system, 427
 Preparedness and Emergency Response Learning Centers, 113–114
 Presidential Decision Directive 39: U.S. Policy on Terrorism (PPD 39), 333
 Presidential Policy Directive 8: National Preparedness (PPD 8), 147, 165–166, 172
 prevalence studies. *See* cross-sectional studies
 prevention, use of term, 11
 Price, J., 614
 primary blast injury (PBI), 469
 primary prevention of war (*jus ad bellum*), 82
 primary triage, 481
 privacy issues, syndromic surveillance and, 204
 PROACT (Preparedness & Response On Advanced Communications Technology) system, 427
 prodromal phase, acute radiation syndrome (ARS), 555
 professional approach, 67–68
 professionals, education and training for, 24
 Project BioShield, 111–112, 193, 199, 261
 Project REDD (Research and Education on Disability and Disaster), 159
 ProMed project, 202
 property, commandeering of in emergencies, 194
 prophylaxis, 338
 prospective study design, 14
 prosthetists, 380
 protected health information (PHI), 188
 data storage and security, 189
 disclosure of to public health authorities, 188
 disclosure of when in immediate danger, 188
 media and, 189
 Protective Action Criteria, 588
Providing Mass Medical Care with Scarce Resources, 333
 PSAP (public safety answering point), 322
 psychiatric disorders, 126–127
 Psychological First Aid (PFA), 131–132, 446
 psychological issues. *See* mental and behavioral health
 Psychological Simple Triage and Rapid Treatment (PsySTART), 47, 129–130, 131, 656
 psychological vulnerability, 17
 PsySTART (Psychological Simple Triage and Rapid Treatment), 47, 129–130, 131, 656
 PTR (Patient Transfer Record), 288
 PTSD. *See* post-traumatic stress disorder (PTSD)
 PTT (Pediatric Triage Tape), 215
 PTWC (Pacific Tsunami Warning Center), 665
 Public Assistance Program, FEMA, 194, 357
 Public Health and Medical, Emergency Support Functions (ESFs) #8, 172
 Public Health and Medical Preparedness, Homeland Security Presidential Directive (HSPD) #21, 25, 172–173, 174

- Public Health Emergency of International Concern (PHEIC), 245, 246
- Public Health Information Network (PHIN), 685
- Public Health Service Act, 253
- Public Health Service (PHS), 331, 332–333
- public health systems
- challenges confronting, 169
 - connections with emergency management systems, 193–194
 - disaster health outcomes from, whether successful, 167
 - disaster stress management, 178
 - further research recommendations, 178–179
 - health security and, 171
 - overview, 165, 166
 - responsible parties, 167–169
 - risk reduction, 170–171
 - surveillance, 112, 169–170
 - U.S. public health and medical policies, 172–173
 - warning and monitoring, technology's impact on, 169
- Public Readiness and Emergency Preparedness Act, 253
- public safety answering point (PSAP), 322
- public telephone systems, 428
- publications, disaster-related, 63
- Puerto Limon, Costa Rica, earthquake, 646, 650
- Puerto Rico, landslides in, 720
- pulmonary diseases
- acute and chronic, 655
 - hantavirus pulmonary disease epidemic, 105
- pulmonary intoxicants, 501
- Push Packages, 333
- pyroclastic density currents (PDCs), 726, 727–728, 735
- qualitative data, in disaster research, 14
- quality management systems
- Homeland Security Exercise Evaluation Program (HSEEP), 30
 - National Incident Management System (NIMS), 27–28
 - planning frameworks and core capabilities, 27–30
 - for public health and medical services, 28–29
- quantitative data, in disaster research, 14–15
- quarantine, 190–191
- compared with isolation, 241
 - defined, 94, 241–242
 - diseases subject to, 247
 - ethical issues, 247
 - further research recommendations, 247–248
 - history of, 241
 - legal issues, 245–247
 - overview, 241
 - in theory vs. in practice, 243–245
- quasi-experiments, 12
- Qureshi, Imran, 84
- R_0 (reproductive rate), 94, 102
- racial and ethnic groups, challenges of, 143
- Radiation Countermeasures Program, 572
- Radiation Emergency Assistance Center/Training Site (REAC/TS), 562
- Radiation Emergency Medical Management (REMM) website, 552
- radiation events, 558–559. *See also* acute radiation syndrome (ARS)
- acute cutaneous radiation injury from, 558
 - acute gastrointestinal syndrome from, 558
 - acute hematopoietic syndrome from, 555–557
 - acute neurovascular syndrome from, 558
 - biodosimetry and radiological triage, 551–554
 - blast effects, 548
 - criticality accidents, 544, 569–571
 - delayed effects of acute radiation exposure (DEARE), 559–560
 - determinants of biological effects, 550–551
 - doses and dose rates due to, 548–549
 - early phase acute biodosimetry, 553–554
 - fallout from, 548
 - further research recommendations, 571–572
 - internally deposited radionuclides from, 562–566
 - nuclear detonation effects, 547–549
 - nuclear power plant accidents, 544–545
 - overview, 544
 - personal protective equipment (PPE) in, 226
 - prompt effects, 547
 - psychological and behavioral consequences of, 566–568
 - radiation biology basics, 549–550
 - radiation combined injury from, 558–559
 - radiation effects, 547–548
 - radiation medicine case studies, 568–571
 - radiation quality, 550–551
 - radiation-induced malignancy from, 560
 - radionuclide exposures, 545–546
 - radiotherapy and industrial radiography accidents, 546
 - sheltering-in-place during, 549
 - terrorist threat scenarios, 546
 - thermal effects, 548
- Radiation Injury Treatment Network, 561
- radio system, linking hospitals, 347
- radioactive exposure device (RED), 554
- Radio-Frequency Identification (RFID), 456–457
- radiographs, 369
- radiological decontamination, 327
- radiological dispersion devices (RDDs), 480
- radiological exposure devices (REDs), 480
- radiological training for hospital employees, 358
- radionuclides
- exposures, 545–546
 - internally deposited, 562–566
- rail disasters
- ammonia release from, 515–516
 - assessment of dead and injured at, 309
 - caused by terrorist acts, 309
 - causes of, 305–307
 - command and control at, 308
 - communication at scene of, 309
 - company policies and existing safety rule shortcomings, 316–317
 - equipment for, 304–305
 - evacuation following, 308–309
 - fires, 305–307
 - further research recommendations, 317
 - Graniteville, South Carolina chlorine event, 581
 - incidence data, 303–304
 - internal carriage design, 308
 - jack-knifing problem, 307
 - overriding problem, 307
 - passenger protection, 307–308
 - physical environment and, 308
 - planning for, 304
 - post-crash phase, 308
 - safety precautions for responders to, 308–309
 - scene response, 310
 - telescoping problem, 307
 - training for, 305
 - transport resources, 310
 - treatment of victims, 310
 - triage process, 309–310
- rain
- defined, 671
 - freezing, defined, 671
- Ramalho, A.T., 553
- Rambam Medical Center, 46
- Ranse, J.J., 287, 290
- rapid interphase chromosome aberration (RICA) assay, 552
- Rapid Observation of Vulnerability and Estimation of Risk (ROVER), 648
- rapidity, as property of resilience, 72
- raxibacumab, 530
- RBE (relative biological effectiveness), 550–551
- RDDs (radiological dispersion devices), 480
- RDRTF-ISN (Renal Disaster Relief Task Force of the International Society of Nephrologists), 652, 654
- Reactive Skin Decontamination Lotion (RSDL), 501–502
- REAC/TS (Radiation Emergency Assistance Center/Training Site), 562
- Real-Time Outbreak Detection System (RODS), 202
- real-time videoconferencing, 417, 426
- receipt, store, and stage (RSS) locations, 252
- “Recommendations for a National Mass Patient and Evacuee Movement, Regulating, and Tracking System”, 454

758 ■ INDEX

- Recommendations on the Transport of Dangerous Goods – Model Regulations, 582–583
- reconstruction, 68
- recordkeeping requirements, 188–189
- recovery phase, 357
- recovery planning, 154
- RED (radioactive exposure device), 554
- Red Cross Hurricane App, 421
- Red Cross Movement, 447, 448
- Red Cross Safe & Well program, 654
- Red Cross World Disaster Report, 294
- Red River flood (Grand Forks, North Dakota), 608
- REDs (radiological exposure devices), 480
- redundancy, as property of resilience, 72
- refugees. *See also* patient identification and tracking
- Re-greening Haiti-DR project, 178
- regulatory issues. *See* legal issues
- rehabilitation of disaster casualties, 379–382
 - disaster rehabilitation continuum, 377–379
 - education and training in, 380–382
 - further research recommendations, 384–386
 - levels of rehabilitation care, 379
 - non-clinical, operational rehabilitation activities, 382
 - overview, 376–377
 - role of rehabilitation providers, 379–382
 - traumatic disabling injuries, 382–384
- reimbursement for services rendered, 50
- relative biological effectiveness (RBE), 550–551
- relatives, care of, 339
- REMM (Radiation Emergency Medical Management) website, 552
- Renal Disaster Relief Task Force of the International Society of Nephrologists (RDRTF-ISN), 652, 654
- Reno-Washoe County, Nevada, hospital evacuation project, 349
- repeated-measures studies. *See* cohort studies
- reporting requirements, 188–189
- reproductive rate (R_0), 94, 102
- reputational risk management, 392–393
- rescue helicopters, 302
- research, disaster. *See also* epidemiology, disaster
 - benefits of, 3
 - data collection, 14–15
 - early, 4–7
 - education and training in, 24
 - ethics in, 16
 - funding for, 19
 - further research recommendations, 18–19
 - information technology (IT) in, 15–16
 - methods of, 10
 - milestones in, 5–6
 - objectives of, 10
 - settings of, 10–11
 - study designs, 12–14
 - training and capacity building in, 19
 - urban, 18–19
 - variables in, 11–12
- Research and Education on Disability and Disaster (Project REDD), 159
- reservoir, defined, 94
- resilience, 61–62, 68, 396. *See also* community resilience
 - of disaster responders, 132–133
 - in form of health security, 171
- Resilience Strategy program, 171
- resilient communities, 146–147
 - accountability in, 78
 - community-based research of, 78–79
 - critical reflection in, 73
 - diversity in, 78
 - economic development in, 77
 - interventions to enhance, 78
 - leadership in, 78
 - nurturance in, 72–73
 - responsibilities in, 73, 78
 - roles in, 73, 78
 - skill building in, 73, 75
 - structure in, 73
 - support within, 72–73
 - sustaining resilience, 78
- resolution phase, of crisis communication lifecycle, 395
- Resolution X, 59, 60
- resource management, 115–116
 - allocation of resources, 85–86, 116
 - H1N1 pandemic influenza example, 116
 - hospital resources, 116
 - national resources, 115
- resourcefulness, as property of resilience, 72
- respiratory infections. *See* acute respiratory infections (ARIs)
- respiratory injury, 655
- respiratory protection, 223–224
- responsibilities, in resilient communities, 73, 78
- “restrictions of movement”, 190
- retrospective study design, 14
- reverse triage, surge capacity and, 49
- Revised Trauma Score (RTS), 215
- RFID (Radio-Frequency Identification), 456–457
- ribavirin, 538–539
- RICA (rapid interphase chromosome aberration) assay, 552
- Richter scale, 644, 645
- Ridge, T., 344
- Rio de Janeiro, Brazil, extreme heat events (EHEs) in, 706–707
- risk, perception of, 398
- Risk Management Program (RMP), 588
- risk reduction, 61, 170–171
 - community-based risk reduction programs, 171
 - Pan American Health Organization (PAHO) and, 170
 - readily available health information and, 170–171
- Rita (hurricane), 145
- communicable diseases and, 611
 - disaster research on, 13
 - hospital evacuations after, 628
- riverine (fluvial) floods, 603–604
- RMP (Risk Management Program), 588
- road motor vehicle disasters, 674. *See also* bus disasters
- Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 147, 194
- robustness, as property of resilience, 72
- rodent control programs, 110
- rodent-borne diseases, 612
- RODS (Real-Time Outbreak Detection System), 202
- roles, in resilient communities, 73, 78
- Roos, J., 169
- roundworms, 526
- ROVER (Rapid Observation of Vulnerability and Estimation of Risk), 648
- RSDL (Reactive Skin Decontamination Lotion), 501–502
- RSS (receipt, store, and stage) locations, 252
- RTS (Revised Trauma Score), 215
- rumors, 399
- runoff, from contaminants, 236
- Rupp, G., 626
- rural communities, functional or access challenges of, 146
- Russia, airplane crashes in, 297, 298
- Rwanda, disease among refugees from, 440
- Ryan, J., 278, 467
- Rydman, R.J., 699
- Sacco Triage Method, 211–212
- SACHE (Safety and Chemical Engineering) program, 581
- Safar, P., 8–9, 59
- Safe Hospitals – A Collective Responsibility, A Global Measure of Disaster Reduction*, 170
- safe rooms, 157
- Safety and Chemical Engineering (SACHE) program, 581
- safety data sheets (SDS), 582
- Saffir-Simpson scale, 626
- SAICM (Strategic Approach to International Chemicals Management), 581
- Sakhalin, Russia, airplane crash in, 297
- Salmonella* outbreak, 104
- SALT (Sort, Assess, perform Lifesaving interventions, and Treatment and Transportation) triage system, 212–213, 217, 477
- Salud Para La Gente, 149
- Salvation Army Disaster Services, 336
- Samuelson, R.J., 706
- San Francisco, earthquake in, 149, 646, 647, 650, 651
- San Salvador radiation accident, 554
- Sandy (hurricane), 107, 130, 626
 - communication during, 631
 - effect on functional or access needs populations, 139

- evacuation from area of, 627–628
 flooding from, 606
 Fujiwhara effect and, 625–626
 hospital evacuations after, 355–357, 631
 out-patient treatment facilities and, 632
 telehealth deployed during, 421
- Santiago de Compostela, Spain, rail incident, 305
- SAR (supplied-air respirators), 223
- SARA (Superfund Amendments and Reauthorization Act), 589
- sarin attack, Tokyo, 478, 501, 512–514, 593
- Sarno, Italy, landslide, 720
- SARS (Severe Acute Respiratory Syndrome), 100, 101, 347
 communication with public regarding, 115
 disease surveillance and, 113
 ethical issues, 88
 exaggeration of expected high human toll, 110
 first and second wave of, 102–104
 healthcare workers and, 104
 information hotline for, 114
 interaction with public during, 105
 international communication efforts and, 115
 as novel pathogen, 111
 personal protective equipment and, 105, 227–228
 population compliance to instruction and, 127–128
 quarantine practices during, 244
 reproductive rate (R_0), 102
 stigmatization during outbreak, 397
 studies of treatment efficacy, 111
 travel restriction advisories during, 243
- satellite-based communication, 425, 426–427
- SAVE (Secondary Assessment of Victim Endpoint), 213–214, 651
- Scandinavian Star* (ship), 302
- SCBA (self-contained breathing apparatus), 223, 225
- scene management
 command and general staff, 323–324
 communications, 322, 328
 decontamination, 326–327
 dispatch, 322
 extended response, 323
 further research recommendations, 328–329
 incident organization, 323
 initial response, 322–323
 medical management, 326
 multi-jurisdictional coordination, 327–328
 overview, 321
 priorities, 322–323
 search operations, 322
 special hazards, 326–327
 victim tracking, 327, 328–329
 victim triage, 324–326, 328
- Schreiber, M., 656
- Schultz, C. H., i, 43–44, 650–651
- Schulz, A.J., 78
- SCI. *See* spinal cord injury (SCI), rehabilitation after
- scientific approach, 67–68
- Scientific Working Group on Disaster Victim Identification (SWGDIV), 372
- scopolamine, 519
- Scotland, airplane crash in, 298
- Scotland Water Environment and Water Services Act of 2003, 615
- screening area, of point of dispensing, 256
- scurvy, 437
- SDS (safety data sheets), 582
- Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computer program, 626
- sea disasters
 assessment of dead and injured at, 303
 caused by bad weather navigation, 302
 caused by fire on board, 302
 caused by human and design errors, 300
 caused by human factors, 300–301
 chain of command and, 303
 communication at scene of, 303
 delayed rescue, 301
 equipment for, 302
 ferries, 300
 further research recommendations, 317
 hypothermia and, 303
 incidence data, 299–300
 planning for, 302
 safety precautions for responders to, 303
 scene response, 303
 training for, 302–303
 transport resources, 303
 treatment of victims, 303
 types of incidents, 300
 war-related, 299
- Seamless Emergency Medical Logistics Expansion System (SEMLES), 42
- search operations, 322, 366–367
- seasonal floods, 603
- Seattle/Nisqually, Washington, earthquake in, 17
- Second Iraqi War (Operation Iraqi Freedom), 405, 468
- Second Lebanon War, 405
- Secondary Assessment of Victim Endpoint (SAVE), 213–214, 651
- secondary blast injury, 469
- secondary prevention of war (*jus in bello*), 82
- Secure Health Information Card (SHIC), 170–171
- security
 of data, in electronic patient tracking systems (ePTS), 458
 of healthcare facilities, 339
 international organizations and, 67
 at points of dispensing (PODs), 256
- Security Council, UN, 447
- self-contained breathing apparatus (SCBA), 223, 225
- self-transport, 325
- Semenza, J.C., 699, 703
- semi-left-lateral decubitus, 474
- SEMLES (Seamless Emergency Medical Logistics Expansion System), 42
- seniors
 educational materials for, 159
 functional or access challenges of, 140
 mass dispensing of medical countermeasures to, 260
 U.S. demographics for, 138
- September 11, 2001 terrorist attacks, 18. *See also* terrorism
- airplane crashes, 295
 behavioral health casualties related to, 130
 disabled persons and, 144
 effects on international visitors, 146
 environmental challenges produced from, 154
 number of fatalities, 365
 pharmaceuticals and supplies sent after, 333
 post-traumatic stress symptoms after, 126, 129
 psychological and behavioral consequences of, 566
 psychological effects on/needs of children after, 141
 vicarious exposure to, 12–13
- septic plague, 438
- septicemia, 534
- Sequential Organ Failure Assessment (SOFA) score, 482
- service deliveries, 339
- Severe Acute Respiratory Syndrome. *See* SARS (Severe Acute Respiratory Syndrome)
- SFVI (Social Flood Vulnerability Index), 616
- Shadow Bowl, 427
- Shakeout Scenario, 130, 656
- shared values, as attribute of resilient communities, 72
- Sharpe, D., 269
- shelter, 152–153
 following floods, 607, 618
 winter storms and, 684
- SHIC (Secure Health Information Card), 170–171
- Shigella*, 526
- shigellosis outbreak, 611
- ship disasters. *See* sea disasters
- Shirley, F., 380
- Shoaf, K.I., 656
- Sichuan earthquake, 384, 716
- Sierre Tunnel bus crash, 313
- Sievers, L., 243
- sign language, 145
- silicosis, 731
- silver sulfadiazine, 496
- Simple Triage and Rapid Treatment (START), 209–210, 215, 518, 648
- simplification of information, during disaster, 395
- simulation, disaster, 14, 67–68
- Singer, A.J., 476

760 ■ INDEX

- sinuses, injury to from explosive events, 471
- Siracusa Principles, 83
- SIRS (systemic inflammatory response syndrome), 495
- skill building, in resilient communities, 73, 75
- Skotterud, Norway rail incident, 305
- Slane Castle, 271, 272
- sleet, defined, 671
- SLOSH (Sea, Lake, and Overland Surges from Hurricanes) computer program, 626
- Slovenia, landslide in, 720
- slow onset events, 38, 39
- smallpox, 530–534
 diagnosis of, 532
 effects of, 530–532
 interaction with public during, 105–106
 mass dispensing of vaccine for, 261
 mass vaccination campaigns for, 250
 military administration of, 259
 predicting using models, 118
 terrorist use of, 526
 treatment for, 533–534
 vaccine stockpile, 251
- Smallpox Management and Response Teams, 251
- smartphones. *See* telemedicine and telehealth
- SMI (strategic stockpile managed inventory), 44–45
- smoldering country complex humanitarian emergencies, 436–438
- SNAKE Report (Special Needs Assessment of Katrina Evacuees), 144
- snow. *See also* winter storms
 defined, 671
 drifting, defined, 671
 heavy, defined, 671
 lake-effect snow, defined, 671
- snow flurries, defined, 671
- snow showers, defined, 671
- snow squalls, defined, 671
- snow blower injuries, 680
- snowmobiles, 680
- SNS (Strategic National Stockpile), 44, 115, 251–252, 333, 540
- social capital, resilient communities and, 74, 78
- social epidemiologic theory of fundamental cause, 16
- Social Flood Vulnerability Index (SFVI), 616
- Social Forces*, 9
- social inequality, 97, 99
- social media
 impact on warning and monitoring, 169
 influenza pandemic and, 412–413
 using for syndromic surveillance, 203–204
 using to connect to functional or access needs populations, 152
- social norms, 4–7
- Social Problems*, 9
- social science publications, 9–10
- social support, behavioral health and, 128
- social vulnerability theory, 16–17, 140–142.
See also functional or access needs populations
- Society for Academic Emergency Medicine Consensus Conference on the Science of Surge, 46
- sodium thiosulfate, 505
- SOFA (Sequential Organ Failure Assessment) score, 482
- SOGRO (Sofortrettung Großunfall), 457
- solar geoengineering, 56
- Sort, Assess, perform Lifesaving interventions, and Treatment and Transportation (SALT) triage system, 212–213, 217, 477
- Southern California “Shakeout Scenario” Exercise, 656
- Spacebridge project, 419
- Spain
 airplane crash in, 295–296
 camping ground explosion in, 733
 rail incident in, 305
 terrorist attacks in, 308, 309, 478
- SPC (Storm Prediction Center), 636
- Speaker, A., 245–247
- Special Needs Assessment of Katrina Evacuees (SNAKE Report), 144
- special needs populations. *See* functional or access needs populations
- specialists, education and training for, 24
- Sphere Handbook, 667
- Sphere Project, 424
- Sphere Standards, 90
- spinal cord injury (SCI), rehabilitation after, 376, 377, 378, 383, 384
- Spitak, Armenia earthquake, 419
- spokesperson, 398–399
- spontaneous, negative-pressure ventilation, 474
- Sri Lanka rail incident, 305
- St. Louis encephalitis, 110, 611
- staff, stuff, and structure (3-S System), 38, 39, 45, 589
- staffing, 336–337. *See also* surge capacity
 in burn disaster management, 492
 for hazardous material (hazmat) events, 589–590
- Stafford Act (Robert T. Stafford Disaster Relief and Emergency Assistance Act), 147, 194
- stakeholders, needs of, 402
- standard of care, 85
- Standards and Guidelines for Healthcare Surge during Emergencies*, 50
- START (Simple Triage and Rapid Treatment), 209–210, 215, 518, 648
- state laws, emergency waiver of, 195
- Statement on Disaster Medical Ethics, WMA, 88
- Stein, M., 475, 481
- Sternberg, E.L., 349
- Stewart, W.H., 93
- stigmatization, 397–398
- Stimpson, J., 619
- Stockholm, Sweden, airplane crash in, 297
- Stockpile Service Advance Group staff, 115
- store-and-forward telehealth, 418, 428
- Storm Prediction Center (SPC), 636
- storm surge, 626
- Stoze, Slovenia, landslide in, 720
- Strategic Approach to International Chemicals Management (SAICM), 581
- Strategic Framework, of GHC, 26, 178–179
- Strategic National Stockpile (SNS), 44, 115, 251–252, 333, 540
- strategic stockpile managed inventory (SMI), 44–45
- Stratton, S.J., 43–44, 265, 650–651
- streptomycin, 535, 540
- stress. *See also* mental and behavioral health
 disaster stress management, 178
 post-traumatic stress disorder (PTSD), 124–126, 155, 178
- structural mitigation, 157
- structure, in resilient communities, 73
- Stuhmiller, J.H., 469–470
- Subbarao, I., 90
- Sudan, flooding in, 611
- sudden onset events, 38–39
- suicidal behavior, 126, 298
- sulfur mustard, 500–501, 505–508, 519
- Sumatra-Adanam Earthquake and Tsunami. *See* Indian Ocean (Sumatra-Adanam) Earthquake and Tsunami
- Summit on Global Warming, UN, 694
- Superfund Amendments and Reauthorization Act (SARA), 589
- Superstorm Sandy. *See* Sandy (hurricane)
- supplied-air respirators (SAR), 223
- supplies. *See* medical supplies and equipment
- support, within resilient communities, 72–73
- surge capacity
 3-S System, 38, 39
 for burn casualties, 490–492
 categorization of, 45
 clinical development and tools supporting surge plans, 47
 community-based approach, 45
 creation of surge program, 348
 defined, 39–40
 earthquakes and, 650–651
 evolution and historical context of, 45–46
 explosive events and, 484
 extreme heat events (EHEs) and, 698–699, 709
 further research recommendations, 47–50
 guidelines within specialties or practice areas, 40–41
 healthcare facilities and, 42–43, 347–349
 medical supplies and equipment, 44–45
 mental health needs and, 47
 patient care requirements review, 45
 perspectives, 40–42
 recent developments in, 46–47
 reimbursement for services rendered, 50
 reviews of proposed interventions, 49
 Seamless Emergency Medical Logistics Expansion System (SEMLES), 42

- slow onset events and, 38, 39
 staff support options, 43–44
 staffing, 348–349
 sudden onset events and, 38–39
 supplies needed to support, 348
 types of, 348
 U.S. framework for, 40
 validation of assumptions about, 49
 winter storms and, 673
 World Health Organization (WHO) and, 40
- Surge Capacity and Logistics Section of
 Emergency Services Branch, UN Office
 for the Coordination of Humanitarian
 Affairs, 47
- surgery, 481–482
- surveillance, 112, 119, 120, 169–170. *See also*
 syndromic surveillance
 international, 112–113
 national, 113
- Surveillance Resource Center, 112
- surveys, 14, 407
- survival kits. *See* emergency kits
- sustainable flood risk management, 614–615
- Sweden, airplane crash in, 297
- SWGdVI (Scientific Working Group on
 Disaster Victim Identification), 372
- swine flu, mass vaccination campaigns for,
 250
- Swinfen Charitable Trust, 428
- syndrome grouping, 200
- syndromic surveillance
 data analysis, 203
 data integration, 202–203
 distributed system for, 201
 ethical issues, 204
 examples of, 201
 forecasting/predictive analysis, 204
 further research recommendations, 205
 global approach to, 201
 overview, 199–200
 privacy issues, 204
 social media used for, 203–204
 technology used for, 203–204
- systemic arterial air embolism, 474
- systemic inflammatory response syndrome
 (SIRS), 495
- Tōhoku Earthquake and Tsunami, 3, 18, 107,
 142, 159, 169, 646
 effects of, 642
 hospitals destroyed from, 648
 reach of tsunami waves, 661
 release of radioactive material, 665
 respiratory injury and, 655
 Urban Search and Rescue (USAR) teams
 at, 647
- tabletop exercises, 117
- tactical emergency casualty care (TECC)
 recommendations, 478
- Tambora, Indonesia, volcanic eruption in,
 727
- Tammiku, Estonia, radiation accident in, 554,
 568–569
- Tampere Convention, 424
- Tangshan, China, earthquake, 647, 652
- Tapsell, S., 616
- Target Capability List (TCL), 27
- targeting, triage for, 476–477
- TARU (Technical Advisory Response Unit),
 44
- Task Force on Aviation Disaster Family
 Assistance, 371
- Taylor, L.H., 98
- TB (tuberculosis), 245–247, 439
- TBI. *See* traumatic brain injury (TBI)
- TCL (Target Capability List), 27
- TECC (tactical emergency casualty care)
 recommendations, 478
- technetium (99mTc) scanning, 682
- Technical Advisory Response Unit (TARU),
 44
- technology
 impact on warning and monitoring, 169
 infectious diseases and, 96, 99
 for syndromic surveillance, 203–204
- telemedicine and telehealth
 amateur radio networks, 428
 business processes supporting telehealth
 networks, 426
 case studies, 416–417, 419, 424–425
 clinical care networks to support
 response, 425
 complex adaptive system required by,
 430
 dial plans, 425
 electronic health records (EHRs), 422–424
 emergency response scenario, 422–423
 further research recommendations,
 429–430
 health needs as drivers of, 420–422
 home applications, 427–428
 interoperability of, 429–430
 organizational strategic considerations,
 429
 overview, 415–416
 policy considerations, 429
 public telephone systems, 428
 research on clinical effectiveness of, 429
 robustness of, 429–430
 role of in public health emergencies, 416
 satellite-based communication, 425,
 426–427
 standardization of, 424, 429–430
 store-and-forward applications, 428
 surge capacity and, 49
 synchronous, land-based
 communications for, 427
 synchronous, real-time simulations using,
 427
 systems reengineering and, 419–420
 technologies to provide, 417–418
 telecommunications technology support
 of, 424
 videoconferencing, 417, 426, 427
 web-based information, 428–429
- “10 x ’20 Initiative”, 119–120
- Tenerife, Spain, airplane crash in, 295–296
- tension pneumothorax, 474, 478
- tents, 348, 367
- terrorism, 303–304. *See also* bioterrorism;
 bombings; explosive events; medical
 countermeasures (MCMs), mass
 dispensing of; *specific terrorist attacks*
 chemical agent use, 416–417, 501–503
 Institute of Medicine (IOM) Committee
 on Psychological Aspects of Terrorism
 report, 124
 Internet as target of, 428
 in Israel, 405
 mass fatality management and, 363–364
 mental/behavioral health and, 128
 nuclear terrorism, 546
 out-of-hospital responses to, 476
 psychological and behavioral
 consequences of, 566
 radiological terrorism, 546
 on railroads/trains, 303–304, 309
- tertiary blast injury, 469
- tetanus, 439, 612, 681
 tsunamis and, 663
 vaccination for, 609, 656
- tetracycline, 536
- Textbook of Military Medicine*, 469, 520
- Thailand, landslides in, 721
- therapeutics, 111
- Three Mile Island nuclear accident, 127, 545
- 3-Quinuclidinyl benzilate (Agent BZ),
 510–511
- 3rd World Urban Forum, 708
- 3-S System (staff, stuff, and structure), 38, 39,
 45, 589
- throat, injury to from explosive events, 471
- thunderstorms, forecasting, 636
- Tibaijuka, A., 708
- TICs (toxic industrial chemicals), 501
- Tierney, K., 9
- Timorese evacuees, 146
- tinnitus, 471
- Titanic* (ship), 299
- TM (tympanic membrane), ruptured, 471
- Tokai-mura radiation accident, 553
- Tokyo sarin attack, 416–417, 478, 501,
 512–514, 593
- Tools & Techniques for Community Recovery &
 Renewal*, 76
- “Top Officials” simulation exercise, 68, 117
- tornadoes
 in Alabama, 152
 deadliest, list of, 636
 forecasting, 636
 forecasting thunderstorms preceding, 636
 further research recommendations, 640
 mitigation of, 636
 morbidity and mortality, 638–640
 in Oklahoma, 146, 147
 overview, 635–636
 preparedness of, 636
 rating scales, 636
 recovery from, 636
 response to, 636
 warnings about, 637–638

762 ■ INDEX

- Toronto, Canada, airplane crash in, 296–297
 tourniquets, 478
 town hall meeting, 403
 toxic chemicals. *See* hazardous material (hazmat) events
 toxic industrial chemicals (TICs), 501
 Toxicology Data Network (TOXNET), 586
 toxidromes, 593, 594
 TOXNET (Toxicology Data Network), 586
 TPTS (Trauma Patient Tracking System), 457, 647
 tracheal petechiae, 471–474
 tracking patients. *See* patient identification and tracking
 tracking victims, 327, 328–329
 train disasters. *See* rail disasters
 training. *See* education and training
 trans-impact period, of disaster cycle, 11
 transport emergency cards (TREM-CARDS), 583
 transport resources
 at air disasters, 299
 at hazardous material (hazmat) events, 593
 at mass gatherings, 276, 280, 285
 at rail disasters, 310
 at sea disasters, 303
 self-transport, 325
 transportation disasters, 294, 317–318. *See also* air disasters; bus disasters; motor vehicle collisions (MVCs); rail disasters; sea disasters
 Trauma Patient Tracking System (TPTS), 457, 647
 trauma units, at mass gatherings, 276
 traumatic brain injury (TBI)
 from explosive events, 471
 rehabilitation of, 378
 travel, infectious diseases and, 96, 99
 TREM-CARDS (transport emergency cards), 583
 trend analysis, 203
 triage, disaster
 air disasters and, 299
 Boston Marathon bombing example, 208–209
 burn disaster management and, 491, 492, 493
 CareFlight system, 210–211, 215
 CESIRA Protocol, 212
 context-specific, 216–217
 difference from other triage modalities, 216
 earthquakes, 658
 further research recommendations, 217
 hazardous material (hazmat) events, 592–593
 history of mass casualty triage, 208
 Homebush Triage Standard methodology, 210
 JumpSTART triage system, 214–215
 mass gatherings and, 282
 Military/NATO triage, 212
 outcome measures for research on, 215–216
 out-of-hospital triage, 476–478
 overview, 208
 pediatric triage systems, 214–215
 Pediatric Triage Tape (PTT), 215
 primary triage, 481
 rail disasters and, 309–310
 Sacco Triage Method, 211–212
 SALT Triage system, 212–213, 217
 SAVE Triage, 213–214
 scene management and, 324–326, 328
 secondary triage systems, 213–214
 standardizing structure for, 213
 START (Simple Triage and Rapid Treatment) system, 209–210, 215
 for targeting, 476–477
 for transportation, 477
 for treatment, 477
 Triage Sieve, 211
 Triage Sort, 214
 use of common scales for, 215
 volcanic eruptions and, 733
 winter storms and, 680, 683
 trichothecene mycotoxins (Yellow Rain), 523
 trifluridine, 533
 Triple-S (European Syndromic Surveillance Systems) project, 202
 tropical cyclones. *See also specific tropical cyclones*
 evacuations from areas of, 627–628
 functional or access needs populations and, 630
 further research recommendations, 632–633
 health consequences of, 626–628
 hospital mitigation, preparedness, response, and recovery, 630–632
 impact phase and immediate aftermath, 631–632
 infectious and environmental disease and, 630
 morbidity and mortality, 629–630
 overview, 624–626
 pharmaceutical needs, 632
 post-impact phase, 632
 pre-event planning for, 630–631
 wind speed of, 626
 trust, in organizations, 392
 tsunamis, 604. *See also specific tsunamis*
 defined, 661
 further research recommendations, 667–668
 immediate risks from, 663–664
 mitigating effects of, 665–667
 morbidity and mortality, 663–664
 on-shore effects of, 662–663
 overview, 661–662
 public health aspects of, 664–665
 warning systems for, 665
 WHO recommendations for development of evaluation and research of, 668
 tuberculosis (TB), 245–247, 439
 tularemia, 539–540
 Tungurahua, Ecuador, volcano, 726
 Turkey, earthquake in, 12, 648, 652
 Turning Point exercises, 173, 174
 Turning Point Model State Public Health Act, 242–245
 Turriss, S.A., 282
 12-hour Push Packages, 115, 251
 Twitter, 152, 169, 203–204, 412–413
 tympanic membrane (TM), ruptured, 471
 typhoid, 609
 typhoons. *See* tropical cyclones
 UDHR (Universal Declaration of Human Rights), 82, 193
 Ufa gas explosion, Soviet Union, 733
 UK Event Safety Guide, 283
 ulceroglandular tularemia, 539–540
 ultrasonography, 651
 UN. *See* United Nations (UN)
 uncertainty in disasters, 336, 397
 undertriage, 476
 Unified Victim Identification System, 372
 Uniform Emergency Volunteer Health Professionals Act, 185
 Uniform Volunteer Emergency Health Practitioners Act, 191, 196
 Uniformed Services University of the Health Sciences, 459
 United Kingdom
 healthcare facility disaster management history, 330–331
 Smallpox Management and Response Teams, 251
 United Nations (UN), 82
 Central Emergency Response Fund, 65
 Charter of the United Nations, 82
 Chernobyl Forum, 568
 Commission on Human Rights, 362
 Conference on Sustainable Development, 581
 Disaster Relief Organization, 63. *See also* Office for the Coordination of Humanitarian Affairs (OCHA)
 Economic Commission for Europe's Convention on the Trans-boundary Effects of Industrial Accidents, 596
 “Hospitals Safe from Disasters” campaign, 62
 International Civil Aviation Organization (ICAO), 362
 International Strategy for Disaster Reduction (UNISDR), 62, 76
 Recommendations on the Transport of Dangerous Goods – Model Regulations, 582–583
 Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space, 426–427
 Security Council, 447
 Substance Identification Number (UN SIN or UN Number), 582
 Summit on Global Warming, 694
 United States
 airplane crash in, 296

- anthrax attacks, 105
 education and training within, 174–175
 emergency management policies, 171–172
 emergency powers over healthcare facilities, 194
 emergency waiver of state laws, 195
 federal disaster assistance programs, 194
 healthcare facility disaster management history, 331–332
 management of infectious diseases by local, state, and national systems, 108–109
 national surveillance by, 113
 public health and medical policies, 172–173
 public health powers, 186–187
 tornado-related morbidity and mortality in, 638–640
 West Nile virus in, 105, 110
 United States Strategic Bombing Surveys, 4
 Universal Declaration of Human Rights (UDHR), 82, 193
 university degress in disaster medicine, 63–64
 Unzen, Japan, volcanic eruption, 728
 urban areas, extreme heat events (EHEs) and, 701–703, 706–707
 urban disaster research, 18–19
 Urban Search and Rescue (USAR) teams, 476, 480, 647–648, 658
 Urbani, C., 105
 urbanization, climate change and, 54–55
 US Airways Airbus A320 crash, 298
 U.S. census, 148
 U.S. Department of Health and Human Services (HHS)
 advisory committee to, on research response, 19
 Strategic National Stockpile (SNS), 115
 U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA), 586
 U.S. Institute of Medicine within the National Academies, 62
 U.S. National Disaster Medical System, 26
 U.S. National Preparedness System, 26–27
 USAR (Urban Search and Rescue) teams, 476, 480, 647–648, 658
 utilities, 338
- vaccinations, 111, 244. *See also* medical countermeasures (MCMs), mass dispensing of
 development of, 119–120
 following flooding, 609
 Vaccine Adverse Event Reporting System, 262
 Vaccinia Immune Globulin (VIG), 533–534
 Valesky, W., 288
 values, of resilient communities, 72
Variola major, 530. *See also* smallpox
 vasoconstriction, 681
 vector, defined, 95
 vector-borne diseases, 611
 vehicle collisions, 674. *See also* bus disasters
- VEI (volcanic explosive index), 727
 vendor-managed inventory (VMI), 44–45, 115, 333
 Venezuela, extreme heat events (EHEs) in, 706–707
 ventilation systems. *See* heating, ventilating, and air conditioning (HVAC)
 vertical evacuation, 349
 vesicants, 505–508
 Vesuvius volcano, 731–732
 Veterans Health Administration (VHA), 179
 clinical practice guidelines for management of concussion and PTSD, 384–386
 National Post Traumatic Stress Disorder (PTSD) Center, 178
 quality management system to support comprehensive emergency management program, 26
 VHF (viral hemorrhagic fever), 537–539
Vibrio cholerae, 719
 vicarious exposure, 12–13
 vicarious liability, 186
 Victim Identification Profile, 372
 victim tracking, 327, 328–329
 videoconferencing, 417, 426, 427
 VIG (Vaccinia Immune Globulin), 533–534
 viral hemorrhagic fever (VHF), 537–539
 virtual reality programs, 49
 VMI (vendor-managed inventory), 44–45, 115, 333
 volcanic eruptions. *See also* explosive events; *specific eruptions*
 ash fall from, 730–731
 emergency planning for, 731–732
 evaluating hazards and risks in, 727–731
 further research recommendations, 733–734
 hazards to scientists and tourists, 728–729
 lahars from, 729–730
 lava flows from, 729
 locations of volcanoes, 727
 main injury agents in, 724
 medical planning for, 732–733
 overview, 724–725
 pyroclastic density currents (PDCs), 726, 727–728, 735
 recent historical record of, 725
 scale of, 727
 triage and treatment of burns in surge eruptions, 733
 types of, 726
 volcanic gases from, 731
 vulnerability to, 725–726
 volcanic explosive index (VEI), 727
 Volovic, V., 298
 Voluntary Organizations Active in Disaster, 336
 volunteers, at points of dispensing (PODs), 257
 vulnerability, 16–17
 vulnerable populations. *See* functional or access needs populations
- WADEM (World Association for Disaster and Emergency Medicine), 8, 26, 59, 67
 Wallis, L.A., 215
 warfare. *See also* humanitarian law; terrorism
 infectious diseases and, 97, 100
 sea disasters related to, 299
 warning, technology's impact on, 169
 wastewater, produced during water decontamination, 236
 water supply
 extreme heat events (EHEs) and, 710
 in hospitals, 346
 WC/ATWC (West Coast and Alaska Tsunami Warning Center), 665
 wealth inequalities, within resilient communities, 77–78
 wearable sensors, 457
 web-based information, 428–429
 Wenchuan (Sichuan) earthquake, 384, 716
 West Coast and Alaska Tsunami Warning Center (WC/ATWC), 665
 West Nile virus, 110
 in North America in 1999, 113
 in United States in 1993, 105
 Weyman, A., 308
 WFOT (World Federation of Occupational Therapists), 378
 Whites, U.S. demographics for, 138
 WHO. *See* World Health Organization (WHO)
 “Whole Community” concept, 148, 174
 WHO/PAHO Hospital Safety Index, 62
 Wightman, J.M., 473
 WIISARD (Wireless Internet Information System for Medical Response in Disasters), 457, 647
 wildfires, in Southern California, 146
Wilhelm Gustloff (ship), 299
 Wilson-Ramirez, G., 632
 wind chill, defined, 671
 “window of opportunity”, 157
 winter cyclones, defined, 671
 winter hazards. *See also* winter storms
 avalanches, 671, 674–675, 676, 678, 687, 683, 686
 cold environments, 677
 cold injuries, 681–683
 fall prevention, 687
 further research recommendations, 688–689
 hypothermia, 303, 672, 674, 675, 682–683
 scope of, 674–675
 wound treatment, 680–681
 winter storms. *See also* winter hazards
 access to victims of, 678
 acute coronary syndromes (ACS) and, 674
 categorization of, 671–672
 cold exposure during, 685–686
 driving during, 676
 emergency care for victims of, 680–683
 emergency services, 688–689
 evacuation following, 679–680

764 ■ INDEX

- winter storms (*cont.*)
 external response, 685
 further research recommendations, 688–689
 healthcare facilities and, 683–684
 infrastructure recovery following, 689
 local medical receivers, 680–684
 local medical responders, 677–680
 mechanisms of injury, 673
 mortality from, 673
 motor vehicle collisions (MVCs) caused by, 674
 out-of-hospital care for victims of, 678–679
 overview, 670
 preventive medicine measures to control injuries and illnesses, 689
 public information during, 685
 rapid needs assessments, 684–685, 689
 responding to emergency scenes during, 675–676
 risk mitigation, 688
 scope of, 670–674
 severity categories, 675
 surge capacity and, 673
 survival kits for, 687
 system preparedness, 688
 temporary shelters and, 684
 triage for victims of, 680, 683
 vehicle incapacitation during, 686–687
 warnings about, 675
- wireless communications, at mass gatherings, 288–289
- Wireless Information System for Emergency Responders (WISER), 586
- Wireless Internet Information System for Medical Response in Disasters (WIISARD), 457, 647
- wireless transmission system for disaster patient care (WISTA), 647
- WISER (Wireless Information System for Emergency Responders), 586
- WISTA (wireless transmission system for disaster patient care), 647
- WMA (World Medical Association), Statement on Disaster Medical Ethics, 88
- women, functional or access challenges of, 143–144
- Wood River Junction criticality event, 569, 570–571
- workforce preparedness, 25–26, 113
- World Association for Disaster and Emergency Medicine (WADEM), 8, 26, 59, 67
- World Bank, 62
- World Confederation for Physical Therapy, 378
- World Federation of Occupational Therapists (WFOT), 378
- World Health Organization (WHO)
 communications network established by, 115
 Emergency Response Framework, 40, 47
 Expert Consultation on Outbreak Communication symposium, 115
 Global Health Cluster (GHC), 26, 167–168, 178–179
 Global Outbreak Alert and Response Network, 251
 guidelines for stress management, 132
 Humanitarian Reform process, 379
 Influenza Surveillance Network, 115
 Integrated Disease Surveillance and Response (IDSR), 170
 Integrated Disease Surveillance Programme, 113
- International Health Regulations (IHR)
 revisions, 201
 mass dispensing of medical countermeasures and, 251
 Pan American Health Organization (PAHO), 59
 pandemic alert system of, 116
 surge capacity and, 40
- World Medical Association (WMA), Statement on Disaster Medical Ethics, 88
- World Summit on Sustainable Development, 614
- World Trade Center (WTC) attacks. *See also* September 11, 2001 terrorist attacks; terrorism
 environmental challenges produced from, 154
 health effects of, 142
 vicarious exposure to, 12–13
- wound infections, floods and, 612
- Wynia, M.K., 90
- XDR (extremely drug resistant) pathogens, 55
- Yang, M., 203
- Yangtze River, 603
- Yellow Rain (trichothecene mycotoxins), 523
- Yellowstone volcano, 727
- Yersinia pestis*, 522–523, 524, 534
- Yokohama Strategy and Plan of Action for a Safer World, 23, 168–169, 708
- YouTube, 152
- Zaire (now Democratic Republic of Congo), Ebola outbreak in, 104
- Zeit, K.M., 289
- zoonoses, 95, 101