

# INDEX

*Note:* Page numbers of article titles are in **boldface** type.

- Abscess, cerebral, in head trauma, 58-59  
 Abuse, child, head trauma in, 58-59  
 Achille Lauro hijacking, murder in, 109  
 Age determination, from dental examination, 121  
   from skeletal examination, 124  
 Aging, of face, computer graphics programs for, 74  
 Air-blast injuries, 100  
 Aircraft, bombings of, 103-108  
   crash of, terrorist bomb ruled out in, 110-111  
 Airport, shootings at, 111  
 Alcohol ingestion, brain injury in, 46  
   hypothermia in, 86, 88  
 American Academy of Forensic Examiners news-group, 94  
 Amplified fragment length polymorphism analysis, in forensic pathology, 72  
   in postmortem identification, 129-130  
 Animations, computer, in forensic pathology, 176-177  
 Anthropology, in postmortem identification, 123-125  
 Archiving, image processing for, 157-158  
 Arrest, death during. *See Death, in custody.*  
 Asphyxia, in neck compression, 12  
   restraint, death in, 13-15  
 Automated fingerprint identification system, 66-68, 120  
 Autopsies, alternatives to, 24  
   declining rate of, 23-25  
   identification in. *See Postmortem identification.*  
   in cold-related deaths, 87-88  
   in death in custody, 2-3  
   in neck compression, 10-11  
   in epidemiologic research, 23-25  
   in heat-related deaths, 83-84  
   in terroristic attacks. *See Terrorism.*  
   litigation involving. *See Litigation, against medical examiners.*  
 Autoradiography, in forensic pathology, 71  
 Axonal injury, diffuse, in head trauma, 50-54  
 Basilar fractures, of skull, 41  
 Beirut, retaliation murders in, 111-112  
 Blast injuries. *See Bombings.*  
 Blast lung, in bombing, 100  
 Blind deconvolution, in image processing, 174-176  
 Bombings, in terrorism, 100-108  
   air-blast injuries in, 100  
   airplane (TWA Flight 840), 103-108  
   car (Rhein Main Air Force Base, 8/8/85), 102  
   fragment injuries in, 101  
   hand examination in, 101-102  
   injuries while standing on solid surface, 101  
   nightclub (La Belle Disco, 4/86), 108  
   primary effects of, 101  
   secondary effects of, 101  
   water-blast injuries in, 100  
 Brain, cold exposure effects on, 86  
   hypoxia of, in head trauma, 55  
   in neck compression, 12  
   swelling of, in head trauma, 56  
   trauma to. *See Head trauma.*  
 Brain stem, injury of, 54  
 Bullet identification information systems, 68-71  
 BULLETPROOF firearms identification system, 69  
 Burns, in bombings, 101  
 Capsaicin spray, death from, 19-20  
 Car bombing, 102  
 Cardiovascular function, in cold exposure, 86-87  
 Carotid arteries, compression of, in restraint, 9-10

- Carotid sinus stimulation, in neck hold,  
death in, 12-13
- Catatonia, lethal, in restraint, 16
- Catecholamine rush, in restraint, death in,  
15-16
- Census of Fatal Occupational Injuries, 33
- Cerebral abscess, in head trauma, 58-59
- Channels, in image processing, 158, 160
- Children. *See Pediatric patients.*
- Choke hold, in restraint, 9
- Circumstantial evidence, in postmortem  
identification, 119
- Clothing, for postmortem identification,  
116-117
- Clothing insulation units, calculation of,  
for cold environment, 85
- Cocaine, death from, in custody, 16-18
- Cold-related injuries, 84-88  
cold stress, 84-85  
death in, 87-88  
illnesses, 85-87
- Collaboratory, in forensic pathology, 75
- Color image processing, in forensic  
pathology, 170-171
- Combined DNA Index System, in forensic  
pathology, 73
- Comminuted fractures, of skull, 40-41
- Communication, electronic. *See Internet  
use.*
- Compound fractures, of skull, 40
- Compressive strain, skull fracture in, 40
- Computer-Assisted Postmortem  
Identification software, for dental  
records, 122
- Computers, in forensic pathology. *See also  
Image processing.*  
dental record comparisons, 122  
DNA data base, 71-73  
firearms identification systems, 68-71  
graphics techniques in, 73-74  
in postmortem identification, 118, 122  
informatics, 74-75
- Conduction, in heat transfer, 78-79
- Contrast enhancement, in image  
processing, 166-171
- Contrecoup contusions, of brain, 43-45
- Contrecoup fractures, of skull, 41
- Contusions, of brain, 42-47, 54  
in child abuse, 59
- Convection, in heat transfer, 79
- Coroners, litigation against. *See Litigation,  
against medical examiners.*
- Corpus callosum injury, 51
- Coup contusions, of brain, 43-44
- Courtroom illustrations, image processing  
for, 154
- Cramps, heat, 82
- Crime, pathology studies in. *See Forensic  
pathology.*
- Custody, death in. *See Death, in custody.*
- Death, in cold exposure, 87-88  
in custody, 1-22  
autopsy in, 2-3  
certification of, 18-19  
circumstances of, 2  
community concern about, 1  
epidemiology of, 4  
from pepper spray, 19-20  
in institutions, 3-9  
in physical restraint, 9-19  
information release in, 8  
natural causes of, 3, 6  
on street, 8-9  
resuscitation injuries in, 4-5  
scene information in, 2  
toxicologic studies in, 3  
in heat exposure, 83-84  
severe hypothermia simulating, 87
- Death certificates, for death in custody,  
18-19  
in epidemiologic research, 25  
person identification for, 115
- Deblurring, in image processing, 171,  
173-175
- Deconvolution, in image processing,  
173-175
- Delirium, excited, death in, 16-17
- Dental comparisons, computer graphics  
programs for, 74  
in postmortem identification, 120-122
- Dentures, in postmortem identification,  
117-118
- Depressed fractures, of skull, 40
- Diastatic fractures, of skull, 41
- Diffuse axonal injury, in head trauma,  
50-54
- Diffuse vascular injury, in head trauma, 55
- Digital image processing. *See Image  
processing.*
- Disasters, mass fatalities in, postmortem  
identification in, 132-134
- DNA technology, in forensic pathology,  
data base for, 71-73  
in postmortem identification, 127-131  
in mass fatalities, 133
- Documents, on body, in postmortem  
identification, 116
- Drug(s), death from, in restraint, 17-18  
lethal levels of, forensic pathology infor-  
mation on, 29-30
- Drug Abuse Warning Network, reporting  
to, 32
- DRUGFIRE firearms identification system,  
69-71
- Duret hemorrhage, in head trauma, 54
- Edema, cerebral, in head trauma, 56
- Egypt Air Flight 848 hijacking, murders in,  
110

- E-mail, in forensic pathology, 92-93
- Embolism, fat, in head trauma, 57
- Empyema, subdural, in head trauma, 57
- Environmental pathology, forensic pathologist participation in, 31
- Epidemiologic research, forensic pathology in, 23-37
  - contributions by, 29-32
  - current trends in, 23-25
  - death certificates for, 25
  - examples of, 26-29
  - funding of, 35
  - future suggestions for, 34-35
  - literature concerning, 29
  - problems in, 33-34
  - risks of, 35
  - surveillance system reports in, 32-33
- Epidural hemorrhage, in head trauma, 41-42
- Ethnicity, determination of, from dental examination, 121
  - from hair characteristics, 127
  - from skeletal examination, 125
- Evaporation, in heat transfer, 79-80
- Excess mortality, in heat-related epidemics, 27, 83-84
- Excited delirium, death in, 16-17
- Exercise, heat stroke in, 82-83
- Exhaustion, heat, 82
- Explosions, in terrorism. *See Bombings.*
- Face, aging of, computer graphics in, 74
  - reconstruction of, computer graphics in, 74
    - in postmortem identification, 124-126
- Fat embolism, in head trauma, 57
- Fatal Accident Reporting System, 33
- File Transfer Protocol, for document transfer, 96-97
- Fingerprints, automated identification system for, 66-68, 120
  - in postmortem identification, 119-120
- Firearms identification information systems, 68-71
- Food and Drug Administration, medical products reporting system, reporting to, 32-33
- Footprints, in postmortem identification, 120
- Forensic pathology, epidemiologic aspects of, 23-37
  - image processing in, 151-180
  - Internet information on, 91-97
  - litigation related to, 139-150
  - of death in custody, 1-22
  - of head trauma, 39-64
  - of postmortem identification, 115-137
  - of terrorism, 99-114
    - of thermal injuries, 77-90
      - technology for, 65-76
      - web sites for, 95-96
- Fracture(s), in blast injuries, while standing on solid surface, 101
  - skull, 40-41
    - in child abuse, 59
- Fracture contusions, of brain, 45-46
- Fragment injuries, in bombings, 101
- Gender determination, in anthropology, 124-125
- Gliding contusions, of brain, 54
- Graphics, computer, for forensic pathology, 73-74. *See also Image processing.*
- Greyscale images, 158
- Growing fractures, of skull, 40
- Gun identification information systems, 68-71
- Hair characteristics, in postmortem identification, 126-127
- Hand, examination of, in blast injury, 101-102
- Hanging, investigation of, 5-8
- Hantavirus pulmonary syndrome, epidemiologic investigation of, 26
- Head trauma, 39-64
  - brain swelling in, 56
  - classification of, 39-40
  - contusions in, 42-47
  - diffuse axonal injury in, 50-54
  - diffuse vascular injury in, 55
  - epidural hemorrhage in, 41-42
  - fat embolism in, 57
  - hypoxia in, 55
  - in pediatric patients, contusions in, 47
    - in child abuse, 58-59
  - infection after, 57-58
  - intracerebral hemorrhage in, 47
  - intracranial pressure increase in, 56-57
  - ischemia in, 55
  - lacerations in, 42-43
  - pontomedullary avulsion in, 47
  - primary impact, 40-47
  - primary inertial, 47-55
  - secondary, 55-58
  - skull fracture in, 40-41
    - subarachnoid hemorrhage in, 42
    - subdural hematoma in, 47-50, 59
- Heat balance analysis, in cold environment, 85
- Heat gain, thermoregulation and, 78-80
- Heat loss, thermoregulation and, 78-80
- Heat-related injuries, 81-84

- Heat-related injuries (*Continued*)  
 death in, 83–84  
 epidemiologic investigation of, 27, 83–84  
 heat cramps, 82  
 heat exhaustion, 82  
 heat stress, 81–82  
 heat stroke, 82–83
- Hematoma, subdural, in trauma, 47–50, 59
- Hemorrhage, in head trauma, dating of, 46, 49  
 Duret, 54  
 epidural, 41–42  
 in diffuse axonal injury, 51–52, 54  
 in shaken baby syndrome, 58–59  
 intracerebral, 47  
 retinal, in shaken baby syndrome, 58  
 subarachnoid, 42  
 subdural, 47–50
- Herniation contusions, of brain, 46
- Hijacking, murders during, 109–110
- Histogram(s), in image processing, 160, 162
- Histogram equalization, in image processing, 169
- Histogram stretch, in image processing, 167, 169
- Home pages, for forensic pathology, 95–96
- Hot weather. *See Heat-related injuries.*
- Human immunodeficiency virus infection, testing for, in forensic pathology, 31–32
- Humidity, heat transfer and, 79–80
- Hypertext Mark Up Language, for Internet, 92
- Hyperthermia, in heat stroke, 82–83
- Hypothalamus, in thermoregulation, 80
- Hypothermia, in cold exposure, 85–87  
 death from, 87–88
- Hypoxia, brain, in head trauma, 55  
 in neck compression, 12
- Identification, of remains. *See Postmortem identification.*
- Image processing, in forensic pathology, 151–180  
 animations in, 176–177  
 applications of, 154–158  
 cleaning up image in, 163–166  
 concepts of, 158–162  
 contrast enhancement in, 166–171  
 deblurring in, 171 173–175  
 description of, 151–152  
 feature emphasis in, 153–154  
 in archiving, 157–158  
 in courtroom illustration, 154  
 in interrogation illustrations, 154, 156  
 measurements in, 175  
 pitfalls of, 177–179  
 three-dimensional visualization in, 175–176
- Infants. *See Pediatric patients.*
- Infections, in head trauma, 57–58
- Informatics, for forensic pathology, 74–75  
 Internet in, 74–75, 91–97
- Information systems, for data transfer, 74–75  
 for DNA data base, 71–73  
 for firearms identification, 68–71  
 for imaging archiving, 157–158
- Institutions, death in. *See Death, in custody.*
- Instrument control tool, in forensic pathology, 75
- Instrumentation. *See Technology.*
- Integrated automated fingerprint identification system, 66–68, 120
- Internet use, in forensic pathology, 74–75, 91–97  
 connecting software, 92  
 e-mail, 92–93  
 file transfer, 96–97  
 literature searching, 95  
 news-groups, 93–94  
 web sites, 95–96
- Interviewing, illustrations for, image processing for, 154, 156
- Intracerebral hemorrhage, in trauma, 47
- Intracranial pressure, increase of, in head trauma, 56–57
- Ischemia, brain, in head trauma, 55
- Jail, death in. *See Death, in custody.*
- Lacerations, brain, 42–43
- Larynx, examination of, in neck compression, 10–11
- Latent fingerprint services, 67
- Law enforcement, pathology studies in. *See Forensic pathology.*
- Le Belle Disco bombing, 108
- Legal issues, in medical examiner suits. *See Litigation, against medical examiners.*
- Lethal catatonia, in restraint, 16
- Lighting correction, in image processing, 163–165
- Linear fractures, of skull, 40
- Literature searching, on Internet, 95
- Litigation, against medical examiners, sovereign immunity defense in, 139–150  
 in negligence, 142–144  
 in unauthorized autopsy, 144–147  
 in unauthorized organ harvesting, 148–149

- public official status in, 140-142
- Supreme Court ruling on, 140
- Lividity, in cold-related death, 88
- Lung, blast injury of, in bombing, 100
- examination of, in head trauma, 55
- Malignant edema/hyperemia, in head trauma, 56
- Mass fatalities, postmortem identification in, 132-134
- Medical examiners, litigation against. *See Litigation, against medical examiners.*
- Medical Examiners and Coroners Alert Project, 32
- Medical records, comparison of, in postmortem identification, 122
- Medline literature searches, 95
- Meningitis, hemogenic, in subarachnoid hemorrhage, 42
- in head trauma, 57
- Metabolism, heat production in, 78
- Methadone poisoning, epidemiologic investigation of, forensic pathology in, 26
- Missing persons registries, in postmortem identification, 130-131
- Mitochondrial DNA testing, in postmortem identification, 130
- Multiplexing, in DNA analysis, in forensic pathology, 72
- Multiresolution, in image processing, 171
- Murders, in terrorism. *See Terrorism.*
- National Association of Medical Examiners Inspection and Accreditation Checklist, for postmortem identification, 137
- National Crime Information Center, in postmortem identification, 130
- National Fingerprint File, 68
- National Traumatic Occupational Fatalities surveillance system, 33
- Neck, examination of, in compression, 10-11
- Neck holds, death in, 9-12
- Negligence, lawsuits for, 142-144
- Neuropathology, traumatic. *See Head trauma.*
- News-groups, in forensic pathology, 93-94
- Noise reduction, in image processing, 165-166
- Occupational injuries, reporting of, 33
- Oleoresin capsicum spray, death from, 19-20
- Organ harvesting, unauthorized, lawsuits for, 148-149
- Paradoxical undressing, in hypothermia, 87
- Pediatric patients, head trauma in, brain contusions in, 47
- from abuse, 58-59
- malignant edema/hyperemia in, 56
- Penetrating fractures, of skull, 40
- Pepper spray, death from, 19-20
- Personal effects, in postmortem identification, 116-117
- Petechiae, in neck compression, 10
- Photogrammetry, in forensic pathology, 176
- Photographs, comparison with, in postmortem identification, 118
- digital, processing of. *See Image processing.*
- superimposition of, in postmortem identification, 126
- Pixels, in image processing, 158
- Police investigations, pathology studies in. *See Forensic pathology.*
- Polymerase chain reaction, in forensic pathology, 72
- in postmortem identification, 128-130
- Pontomedullary avulsion, 47
- Postmortem identification, 115-137
- anthropology in, 123-125
- checklist for, 137
- circumstantial evidence in, 119
- dentition in, 120-122
- DNA tests in, 127-131
- documents on body in, 116
- facial reconstruction in, 125-126
- fingerprints in, 119-120
- footprints in, 120
- hair characteristics in, 126-127
- importance of, 115-116
- in mass fatality incidents, 132-133
- laboratory tissue tests in, 127-131
- legal significance of, 115-116
- medical records comparison in, 122
- missing persons registries in, 131-132
- of ancient remains, 124
- personal effects in, 116-117
- photograph comparisons in, 118
- photograph superimposition in, 126
- radiology in, 122-123
- scars in, 118
- tattoos in, 118
- visual recognition in, 117-118
- Prison, death in. *See Death, in custody.*
- Public health surveillance systems, forensic pathologist participation in, 30-31
- Pulmonary hemorrhage, in infants, epidemiologic investigation of, 26-27

- Radiation, in heat transfer, 79  
 Radiography, in postmortem identification, 122-123  
 Rape, DNA analysis in, 72-73  
 Religious beliefs, autopsies and, 144-147  
 Remains, identification of. *See Postmortem identification.*  
 Restraint, death in, certification of, 18-19  
   in catecholamine rush, 15-16  
   in drug use, 17-18  
   in excited delirium, 16-17  
   in lethal catatonia, 16  
   in natural disease, 17-18  
   in neck holds, 9-12  
   in restraint asphyxia, 13-15  
 Restriction fragment length polymorphism analysis, in forensic pathology, 71-73  
   in postmortem identification, 128-130  
 Resuscitation, in death in custody, injuries from, 4-5  
 Retinal hemorrhage, in shaken baby syndrome, 58  
 Retraction balls, axonal, in head trauma, 51-52  
 Rhein Main Air Force Base car bombing, 102  
 Ring fractures, of skull, 41
- Scale-space representations, in image processing, 171  
 Serologic tests, in postmortem identification, 127  
 Sexual activity, evaluation for, in jail death, 8  
 Shaken baby syndrome, 58-59  
 Shaken impact syndrome, in child abuse, 59  
 Shivering, in thermoregulation, 78, 86  
 Short tandem repeat measurement, in forensic pathology, 72  
 Simulation, computer, in forensic pathology, 176-177  
 Sinuses, radiography of, in postmortem identification, 123  
 Skin, appearance of, in cold exposure, 87  
 Skull, facial reconstruction from, computer graphics in, 74  
   in postmortem identification, 124-126  
   fractures of, 40-41  
   in child abuse, 59  
 Sovereign immunity defense, in litigation. *See Litigation, against medical examiners.*  
 Stature, determination of, from skeletal examination, 125  
 Stress, cold, 84-85  
   heat, 81-82  
 Stroke, heat, 82-83  
 Subarachnoid hemorrhage, in head trauma, 42  
 Subdural empyema, in head trauma, 57  
 Subdural hematoma, in trauma, 47-50, 59  
 Sudden infant death syndrome, epidemiologic investigation of, 27  
 Suicide, by hanging, 5-8  
   in jail, 5-7  
 Surveillance systems, public health, forensic pathologist participation in, 30-31  
 Sweating, in thermoregulation, 80  
 Swelling, cerebral, in head trauma, 56
- Tattoos, in postmortem identification, 118  
 Technology, for forensic science, 65-76  
   automated fingerprint identification system, 66-68  
   computer graphics, 73-74  
   DNA data base, 71-73  
   firearms identification information systems, 68-71  
   informatics, 74-75  
 Temperature, extreme, injuries from. *See Thermal injuries.*  
 Ten-print-based fingerprint identification systems, 67  
 Tensile strain, skull fracture in, 40  
 Terrorism, pathology of, 99-114  
   airport shootings, 111  
   bombings, 100-108  
   hijacking murders, 109-110  
   retaliation murders in Beirut, 111-112  
 Thermal injuries, 77-90  
   in cold exposure, 84-88  
     cold stress, 84-85  
     death in, 87-88  
     illnesses, 85-87  
   in heat exposure, 81-84  
     death in, 83-84  
     epidemiologic investigation of, 27, 83-84  
     heat stress, 81-82  
     illnesses in, 82-83  
     thermoregulation physiology and, 77-81  
 Three-dimensional visualization, in image processing, 175-176  
 Toxicologic studies, in death in custody, 3, 17-18  
 Trauma, forensic pathology studies in, for treatment, 30  
   head. *See Head trauma.*  
 TWA Flight 840 bombing, 103-108  
 TWA Flight 847 hijacking, murder in, 109
- Vagal reflex, in carotid sinus stimulation, death in, 12-13  
 Variable number of tandem repeat measurement, in forensic pathology, 71-72

- Vascular injury, diffuse, in head trauma, 55
- Vertebral arteries, injury of, subarachnoid hemorrhage in, 42
- Violence, catecholamine rush in, 15-16
- Visual recognition, in postmortem identification, 117-118
- Water, cold, hypothermia in, 86
- Water-blast injuries, 100
- Web sites, for forensic pathology, 95-96
- Wet bulb-globe temperature index, 81
- Whiplash shaken baby syndrome, 58-59
- Whole body cooling, 86-87
- Zeno's Forensic Page news-group, 94