

Index

Note: Page numbers in *italics* refer to Figures; those in **bold** refer to Tables and Boxes

- Abbreviated Injury Scale (AIS) 105–6, 108
ABCS acronym 60–1
abdomen
 anatomy 67
 radiography 99–100
abdominal trauma 67–70
 assessment 11, 68
 ballistic injury 176, **177**
 children 129–30
 complications 4
 CT scan 68–9, 70, 99
 diagnostic peritoneal lavage 68, 69, 70
 elderly patients 137
 haemorrhage 67
 history taking 69
 intra-abdominal bleeding 7
 intra-abdominal injury 11
 intraperitoneal 67
 investigations 68–9
 laparotomy
 damage control 176, **177**
 need for immediate 69, **70**
 mechanism of injury 67–8
 nasogastric tube 68, 129
 organ damage with pelvic injury 81
 primary survey 68
 retroperitoneal 67
 spinal injury 56
 treatment 68–70
 ultrasonography 68, 69, 81, 99–100
accidents, major incident 191
activated protein C 96
acute stress disorder 187, 188
adrenal suppression 95
adult respiratory distress syndrome (ARDS) 90, 92, 93
 inflammatory cascade 96
 pulmonary contusion 26
 transfer 154
Advanced Paediatric Life Support (ATLS) training 195
Advanced Trauma Life Support (ATLS) 1, 2
 airway problems 44
 AMPLE mnemonic 8, 69
 developing countries 204
 shock classification in children **124**
 training 195
 see also airway; breathing; circulation
affective disorder, co-morbidity with
 post-traumatic stress disorder 187, 188
air ambulance 150, 156
airbags 8–9, 142
airway
 abdominal trauma 68
 ballistic injury **175**
 burns 158–9
 reassessment 160–1
 cervical spine protection 55
 children
 establishment 126
 maintenance 121, *122*
 management with cervical spine control 120–2
 elderly patients 134–5
 examination 14
 management 3–4
 maxillofacial trauma 44
 obstruction 20, **21**, 121
 foreign body 15
 upper 13
 pregnancy 116
 prehospital care 142–4
 responsive reflex 16
 spinal injury 53, 55
 surgical 103
 unconscious patient 53
 upper 13–17
airway doctor 3
airway nurse 3
alcohol ingestion
 anaesthesia complications 16
 complications 4
 head injuries 35
 trauma relationship 92
 withdrawal 95
Alder Hey triage pain scoring system 131
altitude 182–3
ambulance 155–6
 mass casualty equipment vehicles 193, **194**
 modular build 143
 patient position 153
 see also air ambulance
ambulance crew, tasking 141
ambulance incident commanders 192, *193*, 196–7
ambulance service
 chemical incident response 168
 clinical performance indicators 150
 emergency medical equipment/drugs 193, **194**
 HART teams 195, *196*
 hazardous environments 151
 major incident 193, **194**, 195
 mass casualty equipment vehicles 194, 199
 organisation 150
 roles/responsibilities **141**
 triage 197–8
Ambulance Service National Capabilities Programme 193, *194*
American Association for the Surgery of Trauma (AAST)
 renal trauma classification 72
 ureteral injury classification 75
ammunition 171–2
amnesia, medical problems in trauma patients 92
AMPLE mnemonic 8, 69, 91
amputation, primary 83
amputation, traumatic
 limb injuries 78, 83
 tourniquet use 146
amyl nitrite 161
anaesthesia 15–16
 alcohol interactions 16
 altitude 182–3
 heat illness 184
 induction agents 15, 17
 inhalation 182
 intubation 16
 major incident 199
 prehospital emergency 143
 rapid sequence induction 142, 143
 road traffic crash entrapment 149
anal sensation/tone/voluntary contraction 56, 57
analgesia 9, 102
 altitude 182–3
 burns 160

- analgesia (*continued*)
 chest injury 28
 children 131
 elderly patients 136, 139
 flail chest 22
 hypovolaemic shock 33
 intubation 17
 maxillofacial trauma 50
 trauma at depth 183
 angiography, penetrating injury of maxillofacial region 50
 ankylosing spondylitis 54, 64
 anterior cord syndrome 58
 antibiotics
 bladder injury 75
 bulbar injuries 76
 head injuries 42
 limb injuries 79–80
 maxillofacial trauma 51
 anti-D 117
 antidepressants 189
 antiemetic drugs 102
 aortic disruption 25, 27
 aortic rupture 27
 aortic transection 129
 aortocaval compression 116, 153
 apnoeic patients, ventilation 4
 arterial blood gas 20, 160
 arterial blood pressure, elderly people 136
 arterial lines 7
 arteriography, limb injuries 79
 arthritis, elderly patients 134, 135
 ASCOT system 108
 Asherman chest seal 22
 atlantoaxial subluxation 61
 atlas fracture 61–2
 AVPU scale 6, 198
 children 125
- bag-valve-mask device 4, 13
 children 122
 Bair Hugger 6, 93, 184
 ballistic environment 181
 ballistic individual protective equipment 181
 ballistic injury 171–8
 abdominal trauma 176, 177
 airway 175
 assessment 174
 breathing 175
 bullets 171–2
 <c>-ABC paradigm 175
 catastrophic haemorrhage 175
 cavitation 172
 cervical spine 175
 circulation 175
 civilian 176
 command and control 174
 communication 174
 confirm/clear/cordon/control 173–4
 environment 175
 explosive 172–3
 firearms 171–2
 four C's 173–4
 hypothermia management 175
 improvised explosive devices 173
 infection 176
 injury map 175, 176
 management 173–6
- online resources 178
 safety of healthcare workers 174
 scene management 173–4
 surgical treatment 176–8
 transport 176
 treatment 175
 triage 174–5
 velocity 172
 wound closure 178
see also combat injuries
 barotrauma 183
 Battlefield Advanced Trauma Life Support (BATLS) programme 180
 Battle's sign 10
 Beck's triad 23
 Beevor's sign 58
 benzodiazepines 95, 189
 intubation 17
 bladder injury 75–6
 children 130
 diagnostic peritoneal lavage 75
 investigations 75, 99
 treatment 75–6
 blast injuries 172–3
 classification 173
 thoracic 18
 blood
 replacement in hypovolaemic shock 30–3
 sampling 5
 blood gas tensions, measurement 14, 17
 blood pressure
 elderly people 136
 measurement 5
 monitoring during transfer 155
 blood tests, pregnancy 116
 blood transfusion
 burns 160
 hypovolaemic shock 32, 33
 massive 92
 resuscitation for volume loss 32
 blunt trauma 1
 abdominal injury 67, 69
 chest injuries 18–19, 128
 children 128
 haemorrhage control 95
 head and face 14
 myocardial injury 19, 25, 26–7
 oesophageal injury 27–8
 pregnancy 118
 renal injury 71, 72
 surgery requirement 18
 tension pneumothorax 21
 tracheobronchial 25–6
 body mass index (BMI) 94
 body surface area 130, 131
 Boerhaave syndrome 28
 bowel
 exposed 11
 perforation 129
 bradycardic shock 55
 brain damage
 children 126
 cumulative 43
 brain injury
 assessment 9–10
 brain shift 38
 cerebral ischaemia 37
 cerebral swelling 37
 cortical tissue contusions/lacerations 36
 diffuse axonal injury 36
 function assessment 6
 herniation 45
 high-energy penetrating 175
 imaging 50
 infection 38
 intracerebral haematoma 36–7
 intubation 16
 primary 36
 secondary 36–8
 brain shift 38
 breaking bad news 109, 110
 advice for doctor 110–11
 breathing 4–5
 abdominal trauma 68
 ballistic injury 175
 children 122–3
 diaphragmatic 58
 elderly patients 135
 paradoxical 4
 pregnancy 116
 prehospital care 144–6
 spinal injury 55
 bronchial tears 26
 Broselow/Sandell tape 120
 Brown-Sequard syndrome 58
 building collapse 180, 199
 bulbar injuries 76
 bullets 171–2
 burns 158–65
 airway
 management 158–9
 reassessment 160–1
 analgesia 160
 blood transfusion 160
 chemical 163
 children 130–1
 cold water application 158
 communication with receiving hospital 158
 co-morbid conditions 161–2
 dressings 131
 elderly patients 162
 electrical 163–4
 epiglottis swelling 159
 evacuation from scene 158
 fetal outcome 118
 fluid resuscitation 159–60, 161
 hypovolaemic shock 130
 information about incident 158, 162
 intravenous access 159
 intravenous fluids 159–60, 161
 ischaemic heart disease 162
 lethal 161
 management 161
 non-accidental injury 162
 oxygen supplementation 159
 pregnancy 118
 reassessment 160–2, 163
 reception 158–60
 respiratory obstruction 159
 respiratory tract thermal injury 158–9
 resuscitation 158–60
 'rule of nine' 159, 160, 161
 smoke inhalation 158–9, 160
 urine output monitoring 160
 burr holes 103
 burst fractures 63

- <c>-ABC paradigm 175, 180
caesarean section 117, 118
cannulation 5
canthotomy, lateral 87
capnography 17
carbolic acid 163
carbon monoxide poisoning 160
carboxyhaemoglobin 160, 161
carboxyhaemoglobinaemia 160–1
cardiac arrest, pregnancy 118
cardiac failure, hypovolaemic shock 33
cardiac output, chest injury 19
cardiac rupture, blunt myocardial injury 27
cardiac tamponade 20, 21, 23
 management 23
 penetrating injury 4
 pericardiocentesis 24
 tension pneumothorax differential
 diagnosis 23
cardiac valve damage, blunt myocardial injury 27
cardiogenic shock, blunt myocardial injury 19, 27
cardiopulmonary resuscitation (CPR), pregnancy 118
cardiovascular decompensation, limb injuries 30
cartridge ammunition 171, 172
Casualty Bureau, police 201
casualty clearing station (CCC) 199
cavity, permanent/temporary 172
Celox Gauze 146
central capillary refill, children 123
central cord syndrome 58
central lines 5, 7
 heart failure 94
 iatrogenic tension pneumothorax 21
central nervous system (CNS) dysfunction 6
 elderly people 136
central venous pressure 5
 hypovolaemic shock 31, 33
Centre for Radiation, Chemical and Environmental Hazards (CRCE) 166, 169–70
cerebral blood flow (CBF) 14, 37, 38
 head injuries 41
cerebral hypoxia 153
cerebral injury 90
cerebral ischaemia 37
cerebral perfusion, maintenance in head injury 31
cerebral perfusion pressure (CPP) 37
cerebral swelling 37
cerebrospinal fluid
 draining from ears/nose 10
 leak 43, 46, 47, 51
cervical collar 148
 ballistic injury 175
 removal from children 127
 road traffic crash entrapment 149
cervical spine
 ABCS acronym 60–1
 alignment 60, 61
 bones 60
 cartilages 60
 control in children 120–2
 CT scan 62, 97–8
 MRI 98
 prevertebral haematoma 61
 protection 3, 4, 13
 airway management 55
 elderly patients 134–5
 radiography 39, 40, 59–63
 children 127, 128
 soft tissues 61
cervical spine injury 11, 13
 abdominal trauma 56
 ballistic injury 175
 blunt trauma of head and face 14
 children 121–2, 127
 radiography 127, 128
 elderly patients 134–5, 137
 facet dislocation 61
 head injuries 39
 maxillofacial trauma 44
 teardrop fracture 61, 62
 traction 64–5
 treatment 64–5
 vertebral displacement 61
Chance fracture 63, 64
chemical, biological, radiological or nuclear (CBRN) incident 168
chemical burns 163
chemical environment 184
chemical hazards, local 167
chemical incidents 166–70
 actions 167–8
 ambulance service response 168
 antidotes 169
 decontamination 167, 168–9
 discharge of patients 169
 emergency department 166, 167, 169
 emergency facilities 167
 equipment 167
 fire and rescue service 169
 health effects 167
 irrigation of contaminated area 169
 large-scale 167
 on-site support 168–9
 patient management 168, 169
 personal protective equipment 167, 168
 response planning by emergency departments 166–7
 smoke inhalation 167
 toxic hazard
 assessment 167–8
 exposure risk 169
 susceptible groups 167, 169
 triage 169
chest compression, pregnancy 118
chest drains 14
 percutaneous kits 145–6
chest injury 18–28
 analgesia 28
 arterial blood gas 20
 assessment 11
 auscultation 5, 16
 blunt trauma 18–19, 128
 cardiac output 19
 chest X-ray 19, 20, 28, 98
 children 128–9
 complications 4
 consequences 19
 CT scan 28
 elderly patients 137, 138
 escharotomy 161, 163
 FAST ultrasonography 20
 gas exchange impairment 19
 hypovolaemia 19
 hypoxia 19
 intrathoracic bleeding 7
 lateral decompression 144
 life threatening injuries
 immediate 20–3
 potential 25–8
 mechanisms 18–19
 open defects 146
 patterns 18–19
 penetrating injury 18, 19, 146
 percussion 5
 pneumothorax 14
 predictors 18
 primary survey 19–20, 23–5
 resuscitation 19
 secondary survey 25–8
 treatment goals 19
chest seal 145
chest X-ray 5, 11
 chest injury 19, 20, 28, 98
 upper airway management 17
child restraints 8
children
 abdominal trauma 129–30
 airway management with cervical spine control 120–2
 analgesia 131
 AVPU scale 125
 bladder injury 130
 body surface 130, 131
 brain damage 126
 breathing 122–3
 burns 130–1, 162
 causes of trauma 119
 central capillary refill 123
 cervical spine injury 121–2, 127, 128
 circulation 123–5
 circulatory access 123–4
 compartment syndrome 124
 deaths 114
 developing countries 203
 deceleration injuries 129
 diagnostic peritoneal lavage 130
 diaphragmatic rupture 129
 drug dose estimation 120
 equipment sizes 120, 121
 exposure 125
 eye injuries 88
 flail chest 129
 fluid administration 124–5
 fluid resuscitation 126, 130
 fractures 130
 Glasgow Coma Scale 125
 haemorrhage control 123–5
 head injuries 42, 125, 126–7
 heat loss 125
 hospital choice 119
 hypotension 123
 hypovolaemic shock 30, 31, 123, 127, 130
 maxillofacial trauma 46
 myocardial contusion 129
 neurological dysfunction 125
 non-accidental injury 130, 131, 132, 162
 orbital blow-out fractures 88
 penetrating eye injury 85
 pneumothorax 122, 128

- primary survey 120–5, 126
 pulmonary contusion 129
 radiography 125, 126, 127, **128**
 relatives 111
 renal trauma 129, 130
 resuscitation 120–5
 secondary survey 126–30
 seizures 127
 shock 123, **124**
 skeletal injuries 130
 soft tissue injuries 130
 spinal boards 54
 spinal injury/spinal cord injury 127–8
 tension pneumothorax 122, 128
 thoracic trauma 128–9
 toxic exposure susceptibility 167, **169**
 tracheal intubation 122–3
 transfer to paediatric centres 131, 132–3
 trauma 119–33
 trauma team activation 119, **120**
 venous access 123–4
 vital signs 120, **121**, 123
 volume replacement estimation 120
 vomiting 127
 chin lift/jaw thrust 4, 53
 chronic illness, toxic hazard susceptibility 167, **169**
 chronic obstructive pulmonary disease (COPD) 95, 167
 circulation 5–6
 abdominal trauma 68
 ballistic injury **175**
 children 123–5
 elderly patients 135–6
 pregnancy 116
 prehospital care 146–7
 spinal injury 55–6
 circulation doctor 3, 5
 circulation nurse 3, 5
 Civil Contingencies Act (2004) 166–7
 Clapham rail disaster, London 191
 clonidine 189
 clotting cascade 93
 coagulopathy 90
 aggressive management in combat injuries 147
 hypovolaemic shock 33
 lethal triad with hypothermia/acidosis 183
 massive transfusion 92
 risk with hypothermia 148
 trauma-associated 92–3, 124–5
 cognitive behavioural therapy (CBT), acute stress disorder 187, 188
 cold environments 183–4
 collapse 91–2
 colloid fluids 5
 hypovolaemic shock 31–2
 combat injuries 146
 <c>-ABC paradigm 180
 field hospital 181
 hostile environments 180–4
 levels of care 180
 military triage 197–9
 volume expansion 147
 see also ballistic injury
 communication
 ballistic injury 174
 deafness 136
 major incidents 197
 with relatives 109
 transfer 157
 transfer team 155
 trauma nurse with patient 102
 trauma team 2
 co-morbid conditions 8, 90
 burns 161–2
 post-traumatic stress disorder 187, 188, 189
 compartment syndrome 12, 82–3
 children 124
 orbital 87
 computed tomography (CT) 97, 102–3
 abdominal trauma 68–9, 70, 99
 bladder injury 75, 99
 blunt thoracic injuries 19
 cervical spine 62, 97–8
 children 127, **128**
 chest injury 28
 children 125, 126, 127, **128**
 contrast-enhanced spiral for aortic injuries 27
 craniomaxillofacial injuries 45–6
 cystogram 99
 elderly patients 137
 eye injuries 87
 head injuries 39, **40**, 41, 97
 intra-abdominal injury 11
 limb injuries 81
 maxillofacial trauma 50, 51
 post processing 81
 pulmonary embolism 93
 renal trauma 73
 simple pneumothorax 26
 spiral 82
 contrast-enhanced 27
 transfer of patient 102–3
 concussional injury 40
 postconcussional symptoms **43**
 confusion 153
 conscious level assessment 198
 see also AVPU scale; Glasgow Coma Scale (GCS)
 consciousness loss, medical problems in trauma patients 92
 cord compression 64
 cornea donation 113
 counselling of relatives 113
 craniectomy, decompressive 126
 craniomaxillofacial injuries 45–6
 cricothyroidotomy 14, 15
 children 123
 emergency 144
 respiratory obstruction 159
 criminal activity, injuries 9
 critical incident stress debriefing 114, 188
 crush injuries, thoracic **18**
 cryoprecipitate, hypovolaemic shock 33
 crystalloid fluids 5
 abdominal trauma 68
 children 124–5, 130
 hypertonic 32
 hypovolaemic shock 31, 32
 cyanide poisoning 161
 cyproheptadine 189
 cystography, bladder injury 75, 76
 deafness, elderly patients 136
 deaths, trauma-related 90
 children 114
 confirmation 198
 relatives
 information for 113–14
 seeing body after 112–13
 staff actions during interview with bereaved 111, **112**
 telling of 109, 111
 debriefing 188–9
 staff 114
 trauma nurses 103
 deceleration injuries
 children 129
 renal trauma 71, 72
 thoracic **18**
 decompression illness 183
 decontamination, chemical incidents 167, 168–9
 decontamination units 168
 deep vein thrombosis 93
 defibrillation, pregnancy 118
 defusing, staff 114
 dentition 49, **50**
 dermatomes 57
 developing countries 203–4, 205–206, 207
 Advanced Trauma Life Support 204
 financial sustainability 203–4
 healthcare budget 203, 204
 mortality/morbidity 203, 204
 Primary Trauma Care management system 204, 205–206, 207
 remote area problems 203
 requirements for trauma systems 203–4
 diabetes 93–4
 diagnostic peritoneal lavage (DPL) 102
 abdominal trauma 68, 69, 70, 81
 bladder injury 75
 children 130
 diaphragmatic breathing 58
 diaphragmatic injury 25, 27
 rupture in children 129
 diaspirin cross-linked haemoglobin solution (DCLHb) 32
 dicobalt edentate 161
 diffuse axonal injury 36
 Diploma in Immediate Medical Care 194
 diplopia 48, 50, 88
 disability after injury
 measurement 108
 telling relatives 111
 disseminated intravascular coagulation (DIC) 118
 diving, trauma at depth 183
 documentation
 major incidents 201
 prehospital care 150
 during transfer 155
 domestic violence, pregnancy 118
 drug abuse
 anaesthesia complications 16
 trauma relationship 92
 withdrawal 95
 drugs, contraindicated in trauma 15
 dural tear 38
 ears
 assessment 10
 injuries 47
 elderly patients 134–9
 abdominal trauma 137

- airway 134–5
 analgesia 136, 139
 arterial blood pressure 136
 arthritis 134, 135
 bradycardic shock 55
 breathing 135
 burns 162
 care outcomes 134
 cervical spine
 injury 134–5, 137
 protection 134–5
 chest injury 137, 138
 circulation 135–6
 CNS dysfunction 136
 deafness 136
 exposure 136
 fluid resuscitation 136
 fractures 136–7, 138–9
 haemorrhage control 135–6
 head injuries 137
 heart disease 135, 136
 hip fractures 138–9
 history taking 136
 hypothermia 136
 hypovolaemic shock 30
 ischaemic heart disease 135, 162
 local anaesthesia 136
 mortality/morbidity 134, 139
 pneumothorax 135
 pressure ulcers 137
 primary survey 134–6
 radiography 137
 rehabilitation 139
 renal function 136
 resuscitation 134–6
 rib fractures 137, 138
 secondary survey 136–7
 thoracic kyphosis 54
 toxic exposure susceptibility 167, 169
 urine output monitoring 136
 ventilation 135
 electrical burns 163–4
 electrocardiogram (ECG) 5, 155
 chest injuries 11
 prehospital care 149
 emergency department (ED) 1
 chemical incidents 166–7, 169
 effective care 1
 identification of key staff 201
 major incidents 192
 medical co-ordinator role 200, 201
 pre-arrival alert 149, 150
 thoracotomy 24–5
 warning of impending arrival of patient 2, 149, 150
 emergency dressing packs 193, 194
 emergency medical system
 hostile environments 181–2
 see also medical emergency response incident team (MERIT)
 EMERGO training 195
 emphysema, subcutaneous, tracheobronchial injury 26
 endotracheal intubation 13, 14, 16, 122–3
 children 122–3
 head injuries 41
 hypovolaemic shock 30
 pulmonary contusion 26
 unconscious patient 53
 end-tidal carbon dioxide concentration (ETCO₂) 135, 155
 enflurane 15
 enophthalmos, orbital blow-out fracture 88
 Entonox 160, 183
 environment 6
 altitude 182–3
 chemical 184
 cold 183–4
 external 182–4
 hot 184
 wilderness 183
 see also hostile environments
 epiglottis swelling 159
 epilepsy
 collapse 91, 92
 head injuries 42, 43
 escharotomy of chest 161, 163
 EuroTARN 108
 explosive injury 172–3
 at depth 183
 velocity 173
 explosively formed projectile/penetrator (EFP) 173
 exposure 6
 elderly patients 136
 extradural haematoma, children 126
 extrication devices 54, 149
 extrication long board 149
 eye(s) 50
 anatomy 85
 eye injury 48–9, 85–9
 acuity 86
 approach 87–9
 assessment 10, 85–7, 88
 bright light examination 86
 chemical trauma 89
 children 88
 conjunctiva 86
 cornea 86
 disc examination 86
 examination 87
 eye movements 86
 fields 87
 foreign body 88, 89
 management 88
 mechanism of injury 85
 penetrating 87, 88
 pupils 10, 49
 reversible visual loss 87
 eye movement desensitisation and reprocessing (EMDR) 189
 eyelids 85
 laceration 88–9
 face injury
 assessment 10
 blunt trauma 14
 bone injuries 46, 48
 soft tissue injury 47–8
 facet joint
 dislocation 61
 fractures 63
 facial fractures 46, 48
 CSF leaks 51
 CT scan 9
 Le Fort levels 48
 factor VII, recombinant 33
 faint 92
 falls
 cervical spine injury in elderly patients 134–5
 childhood trauma 119
 fasciotomy, compartment syndrome 82
 FAST (focused assessment with sonography in trauma) 5, 11, 100
 abdominal trauma 68, 69, 81
 chest injury 20
 fat embolism 93
 femoral shaft fractures 82
 splinting 148
 fetal distress 116
 fetomaternal haemorrhage 117
 fetoplacental unit 116
 fetus
 assessment 117
 toxic exposure susceptibility 167
 field hospital 181
 finger thoracostomy 144–5
 fire and rescue service
 chemical incidents 169
 evacuation of burns patient from scene 158
 major incident 195
 road traffic crashes 149
 roles/responsibilities 141
 firearms 171–2
 flaccid paralysis 58
 flail chest 4–5, 20, 21, 22–3
 children 129
 diagnosis 22
 fluid management 22
 pain relief 22
 pulmonary contusion 23
 treatment 22
 ventilation 22–3
 fluid administration/resuscitation 5, 6
 burns 159–60, 161
 children 124–5, 126, 130
 elderly patients 136
 heat illness 184
 hypovolaemia 11
 hypovolaemic shock 31–2, 33
 intraosseous infusion 31
 massive haemothorax 22
 rapid infusion 103
 warming 32, 33
 fluid balance, heart failure 94
 fluid challenge, abdominal trauma 68
 foreign body
 airway obstruction 15
 eye injury 88, 89
 soft tissues of face and neck 48
 fractures 78, 79, 103
 children 130
 closed 83
 elderly patients 136–7, 138–9
 extrication of patients 149
 fix and flap approach 84
 limb injuries 78, 79
 management 83–4
 open 83–4
 renal failure 94–5

- fractures (*continued*)
 risk 12
 Salter–Harris classification 130
 skin grafts 83–4
 spine 99
 splinting 12, 78, 148
 stabilisation 84
 wound debridement 83
see also fractures of named bones and regions
 fresh frozen plasma (FFP) 101
 hypovolaemic shock 33
 volume expansion 147
 frontal sinus injury 46, 47
- gag reflex, absent 13
 Gardner–Wells skull callipers 64, 65
 gas exchange impairment, chest injuries 19
 gastric drainage, children 123
 genitalia, external 77
 Glasgow Coma Scale (GCS) 6, 9, 106–7
 assessment by trauma nurse 102
 children 125
 components 39
 head injury classification 35, 36, 38–9
 spinal injury 58
 globe
 injury 85, 87–8
 muscle attachments 85
 rupture 47
 goal-directed therapy 95
 grief reactions 111
 Guedel airway 4, 44
 gum elastic bougie 15, 16
 gunshot wounds *see* penetrating injury
- haematocele, scrotal 77
 haematuria 72
 haemoglobin, optimal concentration in acute
 trauma patient 32
 haemoglobin-based oxygen carriers 32
 haemoglobinuria 160
 haemoptysis, tracheobronchial injury 26
 haemorrhage
 abdominal trauma 67
 catastrophic 146, 175, 180
 control 5
 blunt trauma 95
 children 123–5
 elderly patients 135–6
 hypovolaemic shock 30–3
 limb injuries 30, 78, 79
 postpartum 118
 prehospital care 146
 shock 29, 55
 haemothorax 25
 infected 26
 massive 5, 20, 21, 22
 mediastinal shift 19
 tracheobronchial injury 26
 transfer 155
 halo traction 64, 65
 handicap 108
 Hazardous Area Response Team (HART) 151,
 168, 195, 196
 head injury 35–42, 43
 admission to hospital 40, 41
 antibiotics 42
 artificial ventilation 14
 assessment 9–10
 blunt trauma 14
 causes 35, 36
 cerebral blood flow maintenance 41
 cerebral perfusion maintenance 31
 cervical spine injury 39
 children 125, 126–7
 classification 35, 36
 concussional 40
 CT scan 39, 40, 41, 97
 delayed effects 42, 43
 discharge advice 40, 41
 elderly patients 137
 endotracheal intubation 41
 epidemiology 35, 36
 epilepsy 42, 43
 history taking 38, 39
 hypoxia 41
 incidence 35
 initial assessment 38–9
 inpatient management 40–2
 intracranial pressure control 41–2
 intubation 15, 16
 paediatric 42
 pathophysiology 36–8
 prehospital care 147
 radiography 97
 radiological assessment 39, 40
 seizures 42, 43
 social criteria for discharge 40
 transfer
 to hospital 153
 inter-hospital 147
 to neurosurgical unit 42
see also brain injury; face injury; scalp; skull
 head-to-toe assessment 9–12
 Health Protection Agency (HPA) 169
 hearing assessment 10
 heart disease
 elderly patients 135, 136
see also cardiac entries
 heart failure 94
 blunt myocardial injury 19
 collapse 91, 92
 heart valves
 donation 113
 traumatic injury 19
 heat illness 184
 helicopters *see* air ambulance
 high energy transfer 172
 hip dislocation 81
 hip fractures, elderly patients 138–9
 HIV/AIDS 94
 hospital(s)
 major incident response 200–1
 management 14–15
 resource-limited 181
 hospital co-ordination team (HCT) 200, 201
 hospital major incident medical management and
 support (HIMMS) course 195
 hostile environments 180–4
 altitude 182–3
 ballistic environment 181
 building collapse 180
 chemical environment 184
 clinical interventions in ‘hot zone’ 184
 cold environments 183–4
 depth 183
 emergency medical system 181–2
 external environment 182–4
 hot environment 184
 isolation 181–2
 medical assessment 181–2
 triage 181, 198
see also combat injuries; road traffic crashes
 hot environment 184
 Hudson reservoir mask 120
 humidification during transfer 154
 hydrofluoric acid 163
 hydrogen chloride 161
 hydrogen cyanide 161
 hydrogen sulphide 161
 hyoid bone fracture 45, 46
 hyperbaric oxygen 160–1
 hypercapnia 14
 hypercapnic ventilatory response (HCVR) 182
 hypertonic saline solution, hypovolaemic
 shock 32
 hypoadrenalism 95
 hypoglycaemia 153
 hypotension
 children 123
 orthostatic 92
 reflex 183
 tolerance 147
 hypothermia 32, 93
 ballistic injury 175
 coagulopathy risk 148
 definition 183
 elderly patients 136
 lethal triad with acidosis/coagulopathy 183
 management 183
 massive transfusion 92
 profound 184
 rewarming 183–4
 transfer 155
 trauma
 at depth 183
 hot environment 184
 hypovolaemia 6
 chest injury 19
 fluid administration 11
 maternal 116
 spinal injury 56
 symptoms 30
 hypovolaemic shock 29–34
 abdominal trauma 68
 analgesia 33
 blood loss replacement 30–3
 blood transfusion 32, 33
 burns 130
 cardiac failure 33
 central venous pressure monitoring 31
 children 30, 31, 123, 127, 130
 classification 30
 coagulopathy 33
 elderly patients 30
 fluid administration 31–2, 33
 fluid warming 32, 33
 haemorrhage control 30–3
 intravenous cannulation 31
 lactic acidosis 31
 monitoring of progress/treatment 33

- optimal haemoglobin concentration 32
 pulmonary oxygenation 30
 response to blood loss 29–30
 symptoms/signs 29
 hypoxaemia 13, 14
 lung injury 19
 hypoxia
 chest injuries 19
 head injuries 41
 hypoxic ventilatory response (HVR) 182
- I-Gel 142–3
 impairment 108
 improvised explosive devices (IEDs) 173
 incident commanders 192, 193
 infection
 ballistic injury 176
 brain injury 38
 inflammatory cascade 96
 injury patterns 8–9
 injury prevention 203, 204
 Injury Severity Score (ISS) 106, 134, 148
 in-line manual immobilisation device 149
 Intercollegiate Training Board for Prehospital
 Emergency Medicine (IBTPHEM) 151
 intercostal drain
 complications 23, 24
 insertion 23, 23–4
 massive haemothorax 22
 positive pressure ventilation 21
 risk with diaphragmatic rupture 27
 intermittent insufflation 15
 intra-abdominal injury *see* abdominal trauma
 intracerebral haematoma 36–7
 intracranial haemorrhage 7
 intracranial pressure 37, 38
 control in head injuries 41–2
 raised in children 126
 intraosseous infusion, fluid administration 31,
 147
 intrapulmonary shunt 19
 intrathoracic bleeding 7
 intravenous cannulae, securing for transfer 148,
 153
 intravenous fluids
 burn patients 159–60, 161
 see also fluid administration/resuscitation
 intravenous urethrogram 75
 intravenous urography 73, 75
 intubation 13
 anaesthetic agents 16
 elderly patients 134–5
 head injury 15
 rapid-sequence 15–16, 16
 spinal injury 55
 technique 16–17
 during transfer 153
 see also endotracheal intubation
 ischaemic heart disease 94
 burns 162
 elderly patients 135, 162
- Jefferson fracture 61–2
 jet insufflation 15
 joint dislocation 61, 79, 81, 148
 Joint Royal Colleges Clinical Liaison
 Committee 150
- Kendrick extrication device 54, 149
 ketamine 15, 149, 182
 kidney *see renal entries*
 kinetic energy of projectile 171
 Kleihauer test 117
 knee dislocation 81
 Kussmaul's sign 23
- lactic acidosis 29, 31
 laparotomy
 damage control 176, 177
 need for immediate 69, 70
 laryngeal fracture 25
 laryngeal mask airway 13, 142–3
 children 122
 laryngeal reflex 13
 laryngeal trauma 45, 46
 laryngoscopes, paediatric 122
 laryngoscopy 14, 15, 16, 17
 lateral canthotomy 87
 Le Fort fractures 48
 lethal triad,
 hypothermia/acidosis/coagulopathy 183
- limb injuries 78–84, 103
 antibiotics 79–80
 assessment 78–9
 ballistic injury 176
 cardiovascular decompensation 30
 clinical signs 79
 communication 83
 compartment syndrome 12, 82–3
 deformity reduction 12, 79
 escharotomy for burns 161, 163
 haemorrhage control 30, 78, 79
 hospital care 78–83
 inspection 12
 joint dislocation 79, 81
 major deformity reduction 79
 mechanism of injury 79
 neurological state 79
 oedema development 30
 palpation 12
 prehospital care 78
 primary amputation 83
 radiology 81–2
 road traffic accidents 79
 splints 78, 79, 82, 153
 tetanus immunisation 80
 tissue perfusion 79
 traumatic amputation 83
 ultrasound 79
 vascular state 79
 wound management 79–80
 see also fractures; pelvic fractures
- link nurse 110
 local anaesthesia, elderly patients 136
 log roll 9, 54, 56, 102
 elderly patients 137
 London bombings, July 7th 2005 191, 193
 long board 149, 153
 see also spinal boards
 low energy transfer 172
 Lund and Browder chart 161, 162
 lung(s), age-related changes 135
 lung disease, chronic 95
 lung injury
 gas exchange impairment 19
- transfer 154
 underwater explosion 183
see also pulmonary contusion
- magnetic resonance imaging (MRI)
 cervical spine 98
 limb injuries 81
 renal trauma 73
 spinal injury 64
 major haemorrhage protocol 101
 major incident 191–202
 administrative co-ordinator duties 201
 all-hazard approach 192
 ambulance service 195
 assessment 197
 cancelling 192
 casualty clearing station 199
 command 195, 196–7
 communication 197
 definition 191
 documentation 201
 emergency dressing packs 193, 194
 equipment 192–3, 201
 fire and rescue service 195
 HART teams 195, 196
 hospital co-ordination team 200, 201
 hospital response 200–1
 identification of key staff 193, 194, 201
 incident commanders 192, 193
 incident scene organisation 195, 196
 information 192
 initial response 192
 initial situation report 195, 196
 labelling of patients 198
 management principles 195–200
 mass casualty equipment vehicles 194, 199
 medical supplies 193
 medical support 195–200
 METHANE mnemonic 195, 196
 oxygen delivery systems 193, 194
 patient identification 198, 201
 phases 192
 planning 192
 psychological response to trauma 190
 review 202
 police 195
 preparation 192–200
 protective clothing 192–3, 197
 recovery phase 201–2
 response initiation 192
 safety 197
 staff demobilisation after 114, 202
 standard phrases 192
 training 194–5
 transport 199, 200
 treatment 199
 triage 197–9
 major incident commander (MIC) 192
 management protocols 1
 mandible, assessment 10
 mandibular fractures 45
 mass casualty equipment vehicles 194, 199
 mattress, vacuum 65, 66, 154
 maxilla
 assessment 10
 examination 45, 48
 fractures 48

- maxillofacial trauma 44–51
 airway problems 44
 analgesia 50
 antibiotics 51
 cervical spine injury 44
 children 46
 CT scan 50, 51
 dentition 49, 50
 ears 47
 eyes 48–9, 50
 facial bones 48
 facial skeleton repair 46
 fractures 44–5
 globe rupture 47
 haemorrhage 44, 45
 imaging 50, 51
 medication 50–1
 nose 46–7
 penetrating injury 50
 primary survey 44–5
 retrobulbar haemorrhage 47
 secondary survey 45–50
 soft tissues 47–8
 steroids 51
 mean arterial pressure (MAP) 37, 38
 mechanism of injury 8, 9
 mediastinal shift 19
 mediastinum, widening 19, 20
 medical emergency response incident team (MERIT) 192, 193, 194–5
 composition 197
 hospital-based 199
 role 196, 197
 medical incident commander (MIC) 192, 196
 protective clothing/equipment 193
 medical incident officer, training 195
 medical management of a major incident (MIMMS) course 194
 medical problems in trauma patients 90–6, 92
 caused by trauma 90, 92–3
 causing trauma 90, 91–2
 collapse 91–2
 complicating trauma 90, 93–5
 consciousness loss 92
 Medic-Alert bracelet 91
 metabolic acidosis 124–5
 cyanide poisoning 161
 lethal triad with
 hypothermia/coagulopathy 183
 METHANE mnemonic 195, 196
 midazolam 149
 midfacial fractures 48, 49
 military triage 197–8, 199
 mobile medical care team, training 195
 monoamine oxidase inhibitors (MAOIs) 189
 morphine 9, 136
 mortality/morbidity
 avoidable 90, 91
 burns 161
 cold environment 183
 developing countries 203, 204
 elderly patients 134, 139
 mouth, assessment 10
 mouth-to-mouth mask 13, 14
 multidisciplinary trauma teams 1
 multiple organ dysfunction syndrome (MODS) 90, 93, 96
 muscle relaxants 15, 16
 musculoskeletal system assessment 11–12
 myocardial injury
 blunt 19, 25, 26–7
 contusion in children 129
 myoglobinuria 160
 myotomes 57
 nasal fractures 45, 48
 nasoethmoid complex 46–7
 nasogastric tube in abdominal trauma 68
 children 129
 nasopharyngeal airway 4, 13
 children 121
 nasotracheal intubation, contraindications 16
 National Confidential Enquiry into Patient Outcome and Death after Trauma 140, 150
 National Institute for Clinical Excellence (NICE)
 CT scan of head in children criteria 127
 head injury guidelines 97
 prehospital management guidance 31
 volume expansion in prehospital care guidelines 147
 National Poisons Information Service 170
 natural disasters 191
 neck 11
 dynamic X-ray screening 82
 lacerations 45, 46
 soft tissue injury 47–8
 needle thoracocentesis 144
 nefazadone 189
 neurogenic shock 55, 58
 neurological examination
 conscious patient 57–8
 spinal injury 56–9
 neurological system assessment 11
 neuromuscular blocking agents 17
 neuropathy, diabetes 94
 neurosurgical unit, transfer of head-injured patient 42
 New Dimension programme 168
 NHS emergency planning guidance 166
 night vision goggles 181
 non-accidental injury 130, 131, 132
 burns 162
 nose injuries 46–7
 fractures 45, 48
 Oakley Paediatric Resuscitation Chart 120, 121
 obstetric notes 116, 117
 ocular injury *see* eye injury
 odontoid fracture 61–2
 oedema development in limb injuries 30
 oesophageal injury 25, 27–8
 oesophageal rupture 28
 ophthalmic trauma 48–9, 85–9
 approach 87–9
 assessment 85–7
 opiates
 analgesia 17, 102
 chest injury 28
 intravenous 15
 withdrawal 95
 opioids
 burn analgesia 160
 hypovolaemic shock 33
 optic canal decompression 87
 optic nerve 85, 86
 compression/injury 87
 optic neuropathy, traumatic 87
 orbit
 fractures 49, 88
 blow-out 85, 88
 injury 88
 orbital compartment syndrome 87
 organ donation 113
 orotracheal intubation 4
 osteoarthritis, elderly patients 134, 135
 oxygen delivery systems, major incidents 193, 194
 oxygen saturation, monitoring during transfer 155
 oxygen supplementation 13
 burns 159
 flow rate 4
 head injuries 41
 hyperbaric 160–1
 indications 14
 pregnancy 116
 prehospital care 148
 spinal cord injury 56
 transfer 154
 oxygen/nitrous oxide gas *see* Entonox
 pain
 assessment by trauma nurse 102
 control during transfer 155
 relatives' questions 111
 scoring 9
 sensory response 58
see also analgesia
 pancreatic injury 129
 paradoxical breathing 4
 paralytic ileus 72
 paramedics 141
 prehospital clinicians 1
 paraplegia
 respiratory insufficiency 55
 spinal injury 65–6
 urinary retention 56
 paravertebral haematoma 63–4
 Parkland formula 159
 patient slider 54
 patient-controlled analgesia (PCA), chest injury 28
 patients' property 103
 pelvic binder 148
 pelvic compression device 30
 pelvic fixator 30, 31
 pelvic fractures 11, 80, 81
 abdominal organ damage 81
 bladder injury 75
 open 80
 stabilisation 153
 urethral injuries 76–7
 volume loss 30, 31
 pelvic organ damage 81
 pelvis
 assessment 11, 148
 external fixator 80, 81
 stabilisation 80, 81
 pelviureteric junction disruption 72
 penetrating injury
 abdominal trauma 67–8, 69, 70
 brain injury 175

- cardiac tamponade 4
catastrophic haemorrhage 146
chest injuries 18, 19, 146
diaphragmatic 27
eye injuries 87, 88
maxillofacial trauma 50
oesophageal injury 27
orbital injury 88
pregnancy 118
rates 90
renal trauma 71, 72
surgery requirement 18
tension pneumothorax 21
tracheobronchial 25
penile injury 77
pericardiocentesis 24
 cardiac tamponade 23, 24
periocular region injury 85
peripheral lines 5
peripheral nervous system injury 11, 79
peritoneal lavage *see* diagnostic peritoneal lavage (DPL)
personal protective equipment (PPE) 141
 ballistic 181
 chemical incidents 167, 168
 major incidents **193**, 197
pharyngeal reflex 13
phenol 163
phosphorus, white 163
placental abruption 118
plantar response, delayed 58
plastic surgery, high energy transfer wounds 178
platelets
 hypovolaemic shock 33
 volume expansion 147
pneumatic anti-shock garment (PASG) 153
pneumomediastinum 98
pneumothorax
 chest injury 14
 chest X-ray 19, 20, 98
 children 122, 128
 elderly patients 135
 management 14
 mediastinal shift 19
 open 20, 21–2, 146
 children 128
 clinical signs 22
 management 22
 prehospital care 144–6
 simple 25, 26
 tracheobronchial injury 26
 transfer 154–5
 see also tension pneumothorax
police
 Casualty Bureau 201
 major incident 195
 roles/responsibilities **141**
positive pressure ventilation 21, 30
postpartum haemorrhage (PPH) 118
post-traumatic stress disorder (PTSD) 186,
 187–8
 biology 188
 cognitive techniques 189
 co-morbid psychopathology 187, 188, 189
 drug treatment 189
 predisposing factors 187, **188**
 prevention 188
 psychological therapies 189
 secondary victims 189
 treatment 189
 vulnerability 187
postural reduction 65
pregnancy 116–18
 aortocaval compression 116
 blood tests 116
 blunt trauma 118
 burns 118
 caesarean section **117**, 118
 cardiac arrest 118
 fetomaternal haemorrhage 117
 hypovolaemia 116
 management 116
 obstetric notes 116, **117**
 oxygen supplementation 116
 penetrating injury 118
 physiological changes **117**
 primary survey 116–17
 Rhesus-negative women 117
 secondary survey 117
 tilting of patient 116
 toxic exposure susceptibility 167
 transfer of patient 153
prehospital care 140–51
 airway 142–4
 breathing 144–6
 circulation 146–7
 clinical documentation 150
 clinical management 142–9
 core temperature maintenance 148
 despatch 141
 emergency cricothyroidotomy 144
 future developments 150–1
 haemorrhage 146
 handover 150
 head injuries 147
 information 3
 injury mechanism establishment 142
 mode of transport 149–50
 monitoring 148–9
 oxygen supplementation 148
 photographs of scene 142
 pneumothorax 144–6
 respiratory management 144–6
 road traffic crash 140
 command and control 141–2
 entrapment 149
 hazards to personnel 141
 injury mechanism establishment 142
 scene management 141–2
 spinal injury 147–8
 tasking 141
 tension pneumothorax 144
 transfer 152–4
 volume expansion 146–7
prehospital clinicians 1, 141
 accreditation 151
 road traffic crash trapped patient 149
 safety briefing 141–2
 training 151
Prehospital Emergency Care Certificate 194
pressure ulcers, elderly patients 137
priapism 58
primary survey 3–6
Primary Trauma Care (PTC) management
 system 204, 205–206, 207
projectile
 cavities produced by 172
 kinetic energy 171
prostate 76
protective clothing 2, 102, 141
 major incidents 192–3, 197
 transfer team 155
 see also personal protective equipment (PPE)
Ps (probability of survival) 107, 108
psychological debriefing 188
psychological response to trauma 186–90
 acute stress disorder 187
 adjustment disorders 186–7
 debriefing 188–9
 immediate emotional reactions 186
 major incident planning 190
 management 188–9
 normal distress 187
 post-traumatic stress disorder 186, 187–8
 primary prevention/prophylaxis 188
 public attitudes 189
 secondary prevention 188–9
 stress management 189
 support 188
 treatment 190
pulmonary artery tears 27
pulmonary contusion 25, 26
 chest X-ray 20
 children 129
 flail chest 23
pulmonary embolism 93
pulmonary oxygenation, hypovolaemic shock 30
pulse, recordings 5
pulse oximetry 17
 elderly patients 135
pulsus paradoxus 23
pupils 10
 reflexes 49
raccoon eyes 10
radiographer 3, 102
radiography
 abdomen 99–100
 chest 98
 children 125, 126, 127
 cervical spine injury 127, **128**
 elderly patients 137
 head 97
 radiation risk 102
radiological assessment 97–100
railway incidents 142
rapid infusion 103
rapid sequence induction of anaesthesia
 (RSI) 142, 143
 major incident 199
receiving clinicians 1
reception 3
recombinant factor VII 33
rectal examination, spinal injury 56, 57
referring doctor 155
reflexes
 nerve supply 57
 pupils 49
 spinal cord injury 57–8
regional trauma network 119, 140, 150

- regurgitation risk 4
 relatives 102
 actions by staff 113
 arrival at hospital 109–10
 children 111, 131–2
 communication with 109
 counselling 113
 death of patient
 information after 113–14
 seeing body after 112–13
 staff actions during interview with
 bereaved 111, 112
 telling of 109, 111
 distressed 109–10
 follow-up 113
 information for 113–14
 initial contact 110
 management 112–14
 organ donation 113
 privacy for 110
 questions 111
 resuscitation room 112, 131–2
 seeing the patient 112
 tissue donation 113
 relatives' nurse 3, 6
 relatives' room 110
 renal arteriography 73
 renal bone disease 94–5
 renal failure 94–5
 renal function, elderly patients 136
 renal pedicle injuries 72
 renal trauma 71–4
 children 129, 130
 classification 72
 clinical evaluation 72
 complications 74
 follow-up management 74
 imaging 73
 investigations 73
 management 73
 mechanism of injury 71
 primary survey 72
 surgical intervention 73, 74
 respiratory effort 4
 respiratory insufficiency, spinal injury 55
 respiratory management, prehospital care 144–6
 respiratory rate 4
 respiratory symmetry 4
 respiratory tract
 thermal injury 158–9
 see also airway; lung(s)
 resuscitation 3–6
 chemical incidents 167
 chest injury 19
 children 120–5
 elderly patients 134–6
 heat illness 184
 vital signs 5, 6
 resuscitation room, relatives in 112
 child patient 131–2
 retina, detachment/haemorrhage 10
 retrobulbar haemorrhage 47
 retropharyngeal haematoma 55
 Revised Trauma Score (RTS) 106
 Rhesus-negative women 117
 rheumatoid arthritis
 elderly patients 134
 spinal pathological changes 64
 rib fractures 19, 20
 elderly patients 137, 138
 road traffic crashes 8–9
 abdominal trauma 69
 access to patient 149
 alcohol and drug blood sampling 92
 childhood trauma 119
 command and control 141–2
 developing countries 203
 entrapment 149
 hazards to personnel 141
 head injuries 35
 injury mechanism establishment 142
 limb injuries 79
 prehospital care 140
 psychological sequelae 186
 renal trauma 71, 72
 ‘rule of nine’ 159, 160, 161
 Russell extrication device 54
 sacral reflexes 58
 safety of staff
 ballistic injury 174
 chemical incidents 168, 169
 major incidents 197
 see also personal protective equipment (PPE);
 protective clothing
 Salter–Harris classification of fractures 130
 scalp
 assessment 10
 lacerations 45, 46
 children 127
 scoop stretcher 54, 55, 148
 scoring systems 105–8
 anatomical 105–6
 physiological 106–7
 Scottish Intercollegiate Guidelines Network
 (SIGN) 138–9
 scrotal injury 77
 seatbelts 8
 injury mechanism establishment 142
 pregnancy 118
 secondary survey 8–12
 head-to-toe assessment 9–12
 history 8–9
 objectives 8
 sedation 16
 extrication of patients with fractures 149
 sedatives, alcohol interactions 16
 seizures
 cervical spine injury from falls in elderly
 patients 135
 children 127
 collapse 91, 92
 head injuries 42, 43
 recurrent with artificial ventilation 14
 Seldinger percutaneous chest drain kit 145–6
 selective serotonin reuptake inhibitors
 (SSRIs) 189
 sepsis 90, 93
 activated protein C 96
 goal-directed therapy 95
 shaped charge 173
 shock 7
 bradycardic 55
 children 123, 124
 haemorrhagic 29, 55
 neurogenic 55, 58
 see also cardiogenic shock; hypovolaemic
 shock
 shotguns 172
 skin grafts, fractures 83–4
 skull, radiography 39
 skull fractures 36
 antibiotics 42
 children 126
 skull traction 64, 65
 SMART label system 198
 smoke inhalation 158–9, 160
 chemical fire 167
 sodium thiosulphate 161
 Special Operations Response Team (SORT) 167,
 168
 spinal boards 149, 153
 paediatric 54
 removal of patient 102
 spinal columns 63
 spinal cord
 function assessment 6
 neurological level of lesion 57
 spinal cord injury 11, 52–66
 children 127–8
 clinical features 57
 diagnosis 57
 incomplete lesions 57
 ischaemic lesions 59
 MRI 64
 neurological classification 59
 oxygenation 56
 primary survey 54–6
 reflexes 57–8
 secondary damage 52
 secondary survey 56–9
 thoracic 52
 tissue perfusion 56
 treatment 64–6
 zones of partial preservation 57
 spinal cord injury without radiological
 abnormality (SCIWORA) 59
 spinal immobilisation
 at altitude 183
 devices 128
 see also spinal boards
 spinal injury 6, 52–66
 abdominal trauma 56
 airway 55
 anal sensation/tone/voluntary contraction 56,
 57
 breathing 55
 burst fractures 63
 children 53, 127–8
 circulation 55–6
 conscious patient neurological
 examination 57–8
 fracture 99
 hypovolaemia 56
 instability 63
 intubation 55
 management at scene of accident 52–4
 movement of patient 52–3
 MRI 64
 neurological examination 56–9
 prehospital care 147–8

- primary survey 54–6
 radiology 59–64, 63
 rectal examination 56, 57
 respiratory insufficiency 55
 secondary survey 56–9
 spinal examination 56
 splints 54
 thoracolumbar 54
 transfer 65, 66
 to hospital 54, 152–3, 154
 to spinal centre 65, 66
 treatment 64–6
 unconscious patient 53, 58–9
 urinary retention 56
see also cervical spine injury; paraplegia;
 tetraplegia; thoracic cord injury;
 thoracolumbar spine injury
 spinal protection 6
 cervical spine 3, 4
 spinal shock 11, 57–8
 spine, deformed 54
 spleen rupture 7
 splenectomy 68
 splinting
 conforming vacuum 153
 fractures 12, 78, 148
 femoral shaft 148
 limb injuries 78, 79, 82, 153
 spinal injury 54
 traction splints 148
 whole-body 153
 stab wounds *see* penetrating injury
 staff support 114
 after major incident 202
 Starling mechanism 135
 steroids, maxillofacial trauma 51
 stretcher *see* scoop stretcher
 stridor 121
 subdural haematoma 36–7
 children 126
 chronic 43
 substance misuse, co-morbidity with
 post-traumatic stress disorder 187, 188
 suffering, relatives' questions 111
 supine hypertension syndrome 116, 153
 supracondylar fractures, children 130
 supraglottic devices 142–3
 suprapubic catheter
 bladder injury 75
 bulbar injury 76
 open catheterisation 77
 urethral injury 76–7
 surgery
 damage control 146
 urgent 103
 systemic inflammatory response syndrome
 (SIRS) 31, 93
 systems of care 107

 team leader 2, 3
 coordination 6–7
 teeth, injuries 49, 50
 temperature, body
 monitoring during transfer 155
 see also hypothermia
 temporomandibular joint (TMJ) 10
 arthritis 134

 tension pneumothorax 5, 14, 20, 21, 21
 cardiac tamponade differential diagnosis 23
 children 122, 128
 clinical presentation 21
 iatrogenic 21
 prehospital care 144
 tracheobronchial injury 26
 treatment 21
 terrorist incidents 191
 testicular trauma 77
 tetanus immunisation 51, 80
 tetraplegia
 abdominal trauma 56
 bradycardic shock 55
 respiratory insufficiency 55
 spinal injury 65–6
 urinary retention 56
 thiamine deficiency 95
 thoracic cord injury, abdominal trauma 56
 thoracic spine 52
 thoracic trauma 18–28
 children 128–9
 management 18
 thoracocentesis, needle 144
 thoracolumbar spine injury 63–4
 children 127
 treatment 65
 Thoracoport 145, 146
 thoracostomy 122, 144
 finger 144–5
 thoracostomy tube 145–6
 thoracotomy 103
 emergency department 24–5
 massive haemothorax 22
 thromboembolism 90, 93
 tissue donation 113
 tissue perfusion
 limb injuries 79
 spinal cord injury 56
 tourniquets
 immediate use 146
 limb injury haemorrhage control 30
 TOXBASE 170
 tracheal intubation *see* endotracheal intubation
 tracheal trauma 45
 tracheobronchial injury 25–6
 tracheostomy 14
 traction, cervical spine injury 64–5
 traction splints 148, 153
 tranexamic acid 33, 147
 transfer 3, 7, 152–7
 acceleration forces 154
 children to paediatric centres 131, 132–3
 communication 155, 157
 deceleration forces 153
 documentation during 155
 haemothorax 155
 handover 157
 head injuries 153
 inter-hospital 147
 to neurosurgical unit 42
 humidification 154
 hypothermia 155
 information relay to hospital 154
 intravenous cannulae securing 148, 153
 intubation during 153
 monitoring during 153–4, 155

 movement risk 152
 oxygen supplementation 154
 packaging 152–3
 pain control 155
 patient position 153, 154
 personnel 155
 pneumothorax 154–5
 pregnant patients 153
 prehospital care 152–4
 primary 152–4
 secondary 154–7
 securing of lines/tubes for transport to
 hospital 148, 153
 spinal injury patients 54, 65, 66, 152–3, 154
 stabilisation 152–3
 standard of care 154
 supplies 155
 team 154, 155
 to theatre 103
 trauma nurse role 102–3
 ventilation 154, 155
 to X-ray department 102–3
 transport 153–4
 ballistic injury 176
 major incident 199, 200
 trauma
 contraindicated drugs 15
 deaths 18
 input measures 105–7
 management systems errors 90, 91
 outcomes 105, 107, 110
 systems of care 107
 worldwide response to incidence
 reduction 203
 Trauma Audit and Research Network (TARN) 1,
 107, 108
 trauma care pathways 100
 trauma centres 1
 feeder units 1–2
 trauma incident management (TRIM) 189
 trauma networks 119, 140, 150
 trauma nurse 101–4
 arrival of patient 102
 communication with patient 102
 debriefing 103
 investigations 102
 pain assessment 102
 patients' property documentation 103
 preparation for trauma patient 101–2
 transfer of patient 102–3
 wound management 103
 trauma team 1, 2, 101
 activation for childhood trauma 119, 120
 briefing 2
 communication 2
 handover from prehospital care 150
 medical staff 2–3
 nursing staff 3
 personnel 2
 preparation 2
 roles 2–3
 structure 101
 team leader 2, 3, 6–7
 trauma-associated coagulopathy (TAC) 124–5
 triage
 accuracy 2
 Alder Hey triage pain scoring system 131

- triage (*continued*)
ambulance service 197–8
AVPU scale 198
ballistic injury 174–5
chemical incidents 167, 169
conscious level assessment 198
hostile environments 181, 198
major incident 197–9
military 197–8
primary 197, 198–9
secondary 198
therapeutic 198
two-person teams 198–9
Triage Sieve 197
tricyclic antidepressants 189
trigeminal nerve, maxillofacial injuries 48
TRISS outcome prediction methodology 107, 108
troponin, cardiac 27
tympanic membrane assessment 10
- UK Defence Medical Services 180
ultrasonography 81, 100
abdominal trauma 68, 69, 81, 99–100
Doppler for deep vein thrombosis 93
eye injuries 87
limb injuries 79
renal trauma 73
see also FAST (focused assessment with sonography in trauma)
University of Virginia skull callipers 65
upper airway 13–17
obstruction 13
ureteral injuries 74–5
- ureteric colic 72
urethral bleeding 11
urethral catheter
abdominal trauma 68
pelvic organ damage 81
urethral injuries, pelvic fractures 76–7
urethrogram, retrograde 11
urethrography 76
urinary retention, spinal injury 56
urinary tract injury 71–7
bladder injury 75–6
lower tract 75–7
upper tract 71–4
see also renal trauma; ureteral injuries
urine, output monitoring 11
burns 160
elderly people 136
urography, urethral injury 76
uterine rupture 118
- vacuum mattress 65, 66, 154
vascular access, intraosseous 31, 147
vasovagal episode 92
venous access 5
children 123–4
ventilation 13–14
apnoeic patients 4
artificial 14
elderly patients 135
flail chest 22–3
inadequate 5
indications 14
oxygen-enriched 16–17
- positive pressure 21, 30
symmetry assessment 5
transfer 154, 155
ventilation–perfusion mismatch 19
ventricular fibrillation 184
ventricular septal rupture, blunt myocardial injury 27
visual loss 87
vital signs
children 120, 121, 123
monitoring 6, 148–9
re-evaluation 11
resuscitation 5, 6
volume expansion, prehospital care 146–7
vomiting, children 127
- white phosphorus 163
wilderness environment 183
World Health Organization (WHO) 204
wound(s)
chemical contamination 184
closure of ballistic injuries 178
high energy transfer 172, 176, 178
low energy transfer 172, 176
wound management 103
debridement for fractures 83
limb injuries 79–80
Ws (standardised W statistic) 107
- zones of partial preservation (ZPP), spinal cord injury 57
Zs (standardised Z statistic) 107
zygomatic complex fractures 48