### Index

Page numbers in *italics* refer to Figures; those in **bold** to Tables.

**ABCDE assessment**, 28, 31–9, 32
  - on admission, 53, 56–9
  - see also airway; breathing; circulation; disability; environment and ‘everything else’

**absent-mindedness**, 492

**absorption**, 279

**Academic Health Science Networks**, 6

**acidaemia**, 67

**actigraphy**, 423

**activated partial thromboplastin time**, 320

**acute kidney injury (AKI)**, 311–13
  - causes, 311–13
  - classification, 313
  - definition, 37
  - staging system, 313, 313

**acute lung injury (ALI)**, 98

**acute quadriplegic myopathy syndrome**, 342

**acute respiratory distress syndrome** see ARDS

**adjunct airways** see airway adjuncts

**admission to critical care unit**, 50–61
  - assessments, 53–4
  - definition, 50
  - emergency, 53
  - establishing rapport
    - with family and carers, 54–5
    - with patient, 54
  - indications, 50
  - planned, 52–3
  - preparation of ICU and bed space, 55–6
  - recording status on, 53–4, 56–9
  - SPCs, 59–61

**adrenal corticotrophin hormone (ACTH)**, 473

**adrenaline**
  - actions, 251, 252
  - during CPR, 540

**advanced haemodynamic monitoring**, 192–3
  - aims, 192
  - anatomy and physiology, 192–3
  - definition, 192
  - indications, 192

**Advanced Life Support (ALS)**, 535

**advanced life support algorithm**, 537, 538

**after-death care**, 510–12
  - procedure guideline, 520–2

**afterload**, 35, 193
  - definition, 250

**air spaces, expansion**, 473

**airway**
  - anatomy and physiology, 71–2, 71
  - assessment, 31–3, 32
  - maintaining safe, 38–9
  - management and care with airway adjuncts, 71–6
    - in critical care, 72–6
  - airway adjuncts, 33, 71–8
  - aims, 71
  - definition, 71
  - indications, 71
  - monitoring, 76–8
  - airway obstruction, 33, 71–2
    - complete, 72
    - partial, 71–2
  - treatment, 32, 33
  - airway suction, 33

**AKI** see acute kidney injury

**albumin**, 285, 286

**alimentary canal** see gastrointestinal (GI) tract

**alkalaemia**, 67

**Allen test**, 66

**α-receptors, activation**, 251, 252

**altitude, physiological effects**, 471–3, 472

**alveolar air equation**, 472

**alveoli**, 79

**ambulation**, 443–4

**amiodarone**, during CPR, 540

**anaesthetics**, 342–4

**analgesia**, 345
  - definition, 334

**angina**, 532

**anticoagulation**, 319–20

**antipsychotics**, 346

**arachnoid mater**, 361, 361

**ARDS**, 98
  - cognitive impairment with, 491–2
  - HFOV in, 85
  - as hypoxaemia cause, 98
  - long term functional status, 437
  - respiratory failure in, 80

**arterial blood gas (ABG) sampling**, 34, 66–8, 107–11, 147–8
  - anatomy and physiology, 66
  - in critical care, 67
  - definition, 66
  - indications, 66
  - normal values, 34
  - procedure guideline, 109–10
  - SPCs, 147
  - via arterial cannula, 66, 67, 68

**arterial cannula**
  - insertion, 184
    - procedure guideline, 207–8
  - problem solving, 184–5

**arterial oxygen saturation** see SaO₂

**arterial pressure waveform**, 187

**arterial puncture**
  - radial artery, 66
    - procedure guideline, 107–8
    - sampling via, 66, 67, 68

**assisted spontaneous breathing (ASB)**, 88

---

Edited by Jane Mallett, John W. Albarran, and Annette Richardson.
© 2013 John Wiley & Sons, Ltd. Published 2013 by John Wiley & Sons, Ltd.
central venous catheter (CVC; central line), 187, 251
inotrope/vasopressor administration via, 251
insertion, 189
problem solving, 190–2
procedure guideline, 209–10
SPCSs, 226
central venous pressure (CVP)
monitoring, 187–90
aims, 187
anatomy, 187–8
definition, 187
efficacy, 189
indications, 187
infection risk, 190
normal values, 250
physiology, 188
problem solving, 186–7
procedure guideline, 209–10
waveform, 189, 189
cerebellum, 358, 359
cerebral blood flow, increased, 371
cerebral circulation, 362, 364
infection control, 321
cerebral perfusion pressure (CPP), 364, 365
cerebrospinal fluid (CSF), 362
cerebrum, 358, 359
Chain of Survival, 534, 535
chest auscultation, 34, 64–6
anatomy and physiology, 64, 65
complications, 66
in critical care, 64
definition, 64
indications, 64
procedure guideline, 106
SPCSs, 147
chest compression, 537–8
chest (intrapleural) drains, 100–3
anatomy and physiology, 100
definition, 100
indications, 100
insertion, 101
problem solving, 104
procedure guideline, 143–5
SPCSs, 165–6
management, 101–3
removal, 103
problem solving, 104
procedure guideline, 145–7
SPCSs, 166–7
types, 101
chest X-ray
positioning patient for, procedure guideline, 454–5
SPCSs, 464–5
cholesterol, 532
chronic obstructive pulmonary disease (COPD), respiratory failure in, 80
chyle, 100
circulation
assessment, 32, 35–7
treating problems with, 32, 37–8
circulatory failure, 250
citrate, regional, 320
clinical apprenticeships, reduction in time for, 14–15
clinical audit, 7
Clinical Governance framework, 7
clotting cascade, 319
CO₂, transportation, 76
coarse crackles, 64, 65
CoBaThCE project, 16–17
Cognitive Behavioural therapy (CBT), 534

cognitive deficits, 491–2
colloids, 285
COMFORT scale, 336
communication
improving clarity of, 39
in patient transfer, 475
procedure guideline, 479
SPCSs, 485
compassion, 512
compassion fatigue, 512
compétence
acquisition, 12–13
assessment, 16–17
definition, 12
competency-based practice, 12–24
curriculum, 13–15
defining specialty, 13
integrated governance and, 15–16
linking technical with humanistic care, 17–18
competency frameworks, integrated governance and, 15–16
competency statements see specific procedure competency statements
congestive heart failure, 250
coronary artery disease, 532
coronary circulation, 532, 533, 534
coronary perfusion pressure (CPP), 534
coroner referral, 521
cough reflex, 92, 360
counselling, 493
Court of Protection, 506
CPAP, 80, 85
coronary intervention, 532
contraindications, 80
indications, 80
problem solving, 81–2
procedure guideline, 125–6
CPR see cardiopulmonary resuscitation
crackles, 64, 65
cranial nerves, 358, 360
critical care
defining specialty, 13
definition, 2
critical care assistants (CCAs), 14
critical care networks, 474
critical care outreach (CCO) teams, 2, 29–30, 52

critical care unit admission to see admission to critical care unit
aims, 50
critical illness, definition, 28
critical illness polyneuromyopathy (CIPNM), 436
critically ill patients, classification, 2
problem solving, 90
procedure, 89
procedure guideline, 132–3
SPCSs, 159–60
eye care, 400–3
aims, 400
anatomy and physiology, 400–1, 402
assessment, 403
procedure guideline, 408–9
cleansing, procedure guideline, 409–10
definition, 400
instillation of eye drops, 410
problems, 401–2
SPCSs, 414–15
eye movement desensitization and reprocessing (EMDR), 493
falls assessment, on admission, 54, 59
families
bereavement care, 512
breaking bad news to, 507–8
effect of critical illness on, 490–1
websites, 490
end of life consultation with, 506–7
effect of critical illness on, 490–1
breaking bad news to, 507–8
websites, 490
end of life consultation with, 506–7

friction, 386
flow time corrected (FTc), 205
'flow' phase, 281, 282
flow time corrected (FTc), 205
fluids, giving intravenously, 37–8
flush bag, heparin use in, 183
fractional inspired oxygen see FiO₂
Frank–Starling curve, 188, 188
Frank–Starling Law of the Heart/mechanism, 250, 287
friction, 386
Full Outline of UnResponsiveness (FOUR) score, 366–7
functional residual capacity (FRC), 440
fundamental competencies, challenges of meeting, 18, 18–19
fundamental competency statements (FCSs), 18, 20–1
use, 21, 24
gag reflex, 360
gas exchange, measurement, 67
gastrointestinal (GI) tract, 278–9
layers, 278–9, 280
gelatin, 285
gingivitis, 398
Glasgow Coma Score (GCS), 366–7, 366

Global Ejection Fraction (GEF), 201
Global End-Diastolic Volume (GEDV), 201
Glomerulus, 310
Glutamin, 292
Glycaemic control, 67, 292
Glyceryl Nitrate (GTN), dosages, 253
Grasp reflex, 367
Gravitational forces, 471, 471
guidelines, definition, 4
HADS, 492, 493
Haemodynamic monitoring, 193–205
see also advanced haemodynamic
monitoring
Haemodynamics, 192
Haemofilter, 318, 319
types, 318
Haemotherax, 100
Halogril, 346
 Hartmann's solution, 285
Hepatic failure, 320
Hepatic necrosis, 320
Hepatic transplantation, 320
Hepatic vein, 183

Heart rate (HR), 193
Heart blocks, 179
Heart cycle see cardiac cycle
Heart rate (HR), 193
calculation, 178
definition, 250
measurement, 36
normal, 36

Heat and Moisture Exchanger (HME), 94, 95
with bacterial filter (HMEF), 94
Heel, pressure damage risks, 388
Hemichl-type flutter valve, 101, 102
Heparin, 320
use in flush bag, 183
heparin-induced thrombocytopenia, 320
Herniation syndromes, 367, 368
high-frequency oscillation ventilation
(HFOV), 85
High side lying posture
procedure guideline, 448–9
SPCSs, 460
High sitting posture, 440, 441
procedure guideline, 447–8
SPCSs, 459
hoist
overhead, 446
standing, 446
hoist transfer
procedure guideline, 456–8
SPCSs, 465–6
Hospital Anxiety and Depression Scale
(HADS), 492, 493
Humidi fi cation, 35, 94–6
aims, 94
anatomy and physiology, 94
definition, 94

Humidifi cation, 35, 94–6
aims, 94
anatomy and physiology, 94
definition, 94
hydration
anatomy and physiology, 278–81
definition, 278
effect of critical illness on, 281–3
enhanced recovery programmes, 290
ethical considerations, 296
fluid deficit indications, 284–5
fluid input and output sources, 283

Hypercarbia, 286
Hyperglycaemia, 292
Hyperinflation, manual see manual
hyperinflation
Hyperosmolarity, 281
Hyperoxigenation, 97
Hyperpyrexia, 37
Hyperthermia, 37, 366
Hyperventilation, 473
Hypoalbuminaemia, 292
Hypocapnia, with NIV, 81
Hypocapnia, with NIV, 81
Hypoglycaemia, 38, 292
treatment, 39
Hypokalaemia, 322
Hypothermia, 37, 322
treatment, 542
Hypovolaemia, 37, 532
treatment, 37–8, 542
hypoxia, 33, 34
altitude and potential for, 471–3
with NIV, 81
treatment during CPR, 542
hypoxic pulmonary vasoconstriction
hypoxia, 33, 34
hypoxaemia, 79, 532

inspiration, anatomy and physiology, 250–5
administration via syringe pump, 251, 252
procedure guideline, 262–4
SPCSs, 272–3
aims, 250, 253
anatomy and physiology, 250
changeover of infusions, 254–5, 256
procedure guideline, 265–70
SPCSs, 274
choice, 251
dosages, 253, 254
procedure guideline, 271–2
SPCSs, 271–2
indications, 250
monitoring, 254
preparation
procedure guideline, 259–61
SPCSs, 270–1
side effects, 253–4
titration to meet patient
requirements, 253–4
procedure guideline, 264–5
SPCSs, 273–4
troubleshooting, 255, 257, 258
withdrawing, 254
inspiration, anatomy and physiology, 83
inspiratory positive airway pressure see IPAP
insulin titration, 292, 292
integrated governance, 7–8, 15–16
competency frameworks and, 15–16
intermittent positive pressure breathing see IPPB
intermittent renal replacement therapy
(IRRT), 314, 321
characteristics, 315
internal jugular vein, 187, 188
interstitial compartment, 281, 281, 282
composition, 282
intracellular fluid compartment, 281, 282
composition, 282
intracranial pressure (ICP), 362–3, 365
aspects of care impacting on, 371–2
monitor with external ventricular
drain recalibrating procedure guideline, 376–7
recalibrating SPCSs, 378–9
recording procedure guideline, 374–5
recording SPCSs, 377–8
monitoring, 368–71
devices, 368, 369, 371
problem solving, 370
positioning patient with raised
procedure guideline, 451–2
SPCs, 462–3
signs and symptoms of raised, 367
waveforms, 370–1, 371
intraparenchymal catheter, 368, 369
intrathoracic blood volume (ITBV), 201
intravascular compartment, 281, 281, 282
composition, 282
intravenous access, 37
intravenous fluids
choice, 283
composition, 285
distribution, 285
theoretical effects of administration, 286
intraventricular catheter, 368, 369
intrinsic AKI uraemia, 312–13
invasive arterial blood pressure
monitoring, 181–7
aims, 181
anatomy and physiology, 181–3
indications, 181
problem solving, 186–7
procedure guideline, 207–8
SPCSs, 225
invasive ventilation, 78, 82–5, 86–7
anatomy and physiology, 83
contraindications, 82–3
in critical care, 83
definition, 82
hybrid modes, 84–5
indications, 82
novel modes, 85
pressure modes, 83–4
problem solving, 86–7
procedure guideline, 128–30
SPCSs, 158
spontaneous, 85
volume modes, 84
IPAL-ICU, 502
IPAP, 80
IPPP, 90–1
complications, 90
contraindications, 90
controls (Bird), 91
in critical care, 90–1
definition, 90
indications, 90
problem solving (Bird), 91
procedure guideline (Bird), 131–2
SPCs (Bird), 159–60
IRRT see intermittent renal replacement
therapy
ischaemia-reperfusion injury, 534, 542
jugular venous oxygen saturation
(SjVO2), 372
kappa receptors, 345
keratitis, 401–2, 403
keratopathy, 403
kidney
anatomy and physiology, 310–11, 311
functions, 311
Korotkoff sounds, 181
lactate, 67
normal values, 67, 250
as substitute for bicarbonate, 319
lamina propria, 278
landmark technique, 189
laryngeal mask airway (LMA), 33, 74, 74
last offices (care of body after death), 510–11
left bundle branch block, 179
levels of care, 50–2, 50–1
care activities and, 50–1
LiDCO system, 194, 204
benefits, 195
complications, 195
limitations, 195
normal limits of haemodynamic
status, 201–2
LiDCOplus system, 194
device insertion
procedure guideline, 216–7
SPCSs, 235–6
monitoring
procedure guideline, 217–8
SPCSs, 237–8
problem solving, 205
lips, 397
Liverpool Care Pathway for Intensive Care Units (LCP-ICU), 502, 508, 512
log roll, 442
procedure guideline, 452–4
SPCS, 463–4
loop of Henle, 310
lorazepam, 344
lower respiratory tract, 92
lungs, anatomy and physiology, 64, 65, 100
lymphatic nodules see mucosa–associated lymphatic tissue
lymphatic system, 280
malnutrition, 283, 289
Malnutrition Universal Screening Tool (MUST), 289
MALT see mucosa–associated lymphatic tissue
Manual Cervical Spine Immobilization Technique, 452
manual handling
moving and handling equipment, 446
risk measurement, 444–5, 445
manual hyperinflation, 96–7
aims, 96–7
anatomy and physiology, 97
contraindications, 97
in critical care, 97
definition, 96
indications, 97
problem solving, 97
procedure guideline, 139–40
SPCs, 163
Mapleson C bagging system, 96, 97, 139
mask, non-rebreathable, 35
mattresses, 388, 389
mean acceleration, 205
mean arterial pressure (MAP), 36, 181, 182–3, 193
normal values, 250
mechanical hoist see hoist
mechanical slack, 253
medical emergency teams (METs), 30, 52
medulla oblongata, 358, 359, 360
meninges, 360–2, 361
mesentry dressing, 101, 101
metabolic acidosis, 67, 322
metabolic alkalosis, 67
metabolic measures, 67
midazolam, 342–3, 344
midbrain, 359, 360
Mini Nutritional Assessment (MNA), 289
mixed venous oxygen saturation (SvO2), 198, 199
mobility and exercise see physical mobility and exercise
Mobitz type 1 heart block, 179
Mobitz type 2 heart block, 179
modified Allen’s test, 184
moisture lesions, 386, 387
Monro–Kellie hypothesis, 362
motor neurones, 341
mouth care, 390, 397–400
anatomy and physiology, 397
definition, 390
orals cavity assessment, 399–400
procedure guideline, 405
oral pathophysiology, 398
problems in critical illness, 398
procedure guideline, 405–7
SPCs, 413–14
see also dentures
mouth hygiene
aims, 397
definition, 390, 397
mu receptors, 345
muco
intestinal tract, 278
respiratory tract, 92, 94
mucosa–associated lymphatic tissue (MALT), 278, 280
muscle wasting, 436, 491, 491
muscular, 278–9
muscularis mucosae, 278
myocardial contractility, 36, 184, 193
definition, 250
myocardial infarction, assessment, 177
myocardial ischaemia assessment, 177
transfer and, 470, 473
nasogastric bridle, 294, 294
nasogastric (NG) tube
checking position, 294–5
complications, 294
contraindications, 293
insertion, 293
procedure guideline, 298–300
SPCs, 303–4
nasopharyngeal airway (NPA), 33, 72, 72
contraindications, 72
indications, 72
insertion procedure, 111–2
removal procedure, 112
SPCs, 149–50
National Cardiac Arrest Audit (NCAA), 534
National End of Life Care Programme, 500, 502
National Gold Standard Framework, 500, 502
national guidance, 3
National Institute of Clinical Excellence (NICE), establishment, 8
National Patient Safety Agency (NPSA), establishment, 8
NAVA, 85
NDNMDBs, 341, 343, 346
nebulizers, 35, 95
nephrons, 310, 312
Nernst equation, 204
neurally adjusted ventilatory assist (NAVA), 85
neurological assessment, 358–71
advanced neuromonitoring, 372
aims, 358
anatomy and physiology, 358–64
clinical methods, 365–8
definition, 358
invasive monitoring, 368–71
procedure guideline, 371–3
neurological deterioration, 437
neuromuscular blockade, 340–2,
345–6
aims, 340–1
anatomy and physiology, 341, 341
assessment, 342
procedure guideline, 350–1
SPCs, 354–5
definition, 340
neurotransmitters, 341
Newcastle Sleep Assessment Tool, 424–5, 427
NEX measurement, 298, 299
NIV see non-invasive ventilation
NMBDs, 341, 342, 343
nociceptors, 334
non-invasive arterial blood pressure monitoring, 180–1
aims, 180
definition, 180
indications, 180
oscillations, 181
non-invasive ventilation (NIV), 78, 80–1, 81–2
in critical care, 80
definition, 80
SPCs, 157
see also BiPAP; CPAP
non-maleficence, 504
non-REM sleep, 422
non-shockable rhythms, 532
non-steroidal anti-inflammatory drugs (NSAIDs), 345
noradrenaline, actions, 252
nutrition
adjustments pre and post CRRT, 319
anatomy and physiology, 278–81
assessment for nutrition route choice, 289–90
of status, 278, 288–9
definition, 278
effect of critical illness on, 281–3
enhanced recovery programmes, 290
ethical considerations, 296
feeding critically ill patients, 291–2
glycaemic control, 67, 292
importance, 283
maintaining, 288–90
optimizing, 388
problems with providing, 292–3
screening, 288
components, 289
support
aims, 278
indications, 278
see also enteral feeding; parenteral nutrition
nutritional assessment, 54, 58
Nutritional Risk Screening (NRS-2002), 289
Objective Structured Clinical Evaluation (OSCE), 17
observations see vital signs
oesophageal Doppler monitoring (ODM), 194, 204–5 benefits, 195 complications, 195
insertion
procedure guideline, 222 SPCs, 243–4 limitations, 195 monitoring
procedure guideline, 223 SPCs, 245–6 normal limits of haemodynamic status, 201–2 problem solving, 206 waveform interpretation, 205
oral cavity assessment, 399–400, 399
procedure guideline, 405 see also mouth care
oral intubation, trauma from, 398–9, 400
oral pathophysiology, 398
organ donation, 510, 521–2 orogastric tube, 293 oropharyngeal airway (OPA), 33, 72, 73 indications, 72 insertion procedure, 113 problem solving, 73 removal procedure, 113 SPCs, 149–50
oscillometry, 181 accuracy, 183 overfeeding, 292–3 overhead hoist, 446 oxygen high-concentration, 35 transportation, 77, 532, 534 oxygen delivery (DO₂), 199, 203, 204, 532, 534 oxygen delivery index (DO₂I), 199, 203, 204 oxygen dissociation curve, 69, 70 oxygen haemoglobin dissociation curve, 472, 472 oxygen saturation, 34, 69, 536 target, 536 oxygen therapy, 536–7 oxygenation, optimizing, 388 oxyhaemoglobin, 69
PA catheter (line) see pulmonary artery (PA) catheter (line)
PA introducer, 196–7 PaCO₂, 67, 76 normal range, 67 pain acute, 334 anatomy and physiology, 334
assessment, 334–6 on admission, 54, 59 procedure guideline, 346–7 specific procedure competency statements, 351–2 chronic, 334 definition, 334 management, 336 aims, 334 numeric rating scales (NRSs), 335–6 pathway, 334, 335 prevention aims, 334 referred, 334 scales, 335–6, 336, 517 see also analgesia; neuromuscular blockade; sedation palliative care, 500 teams, 506 see also end of life care palpation, 64 PaO₂, 67, 472–3 normal range, 67 paracetamol, 345 paracol, 345
parenteral nutrition, 295–6
percutaneous endoscopic gastrostomy (PEG) tube, 293 percussion, 64 polyuria, 287 pons, 359, 360 positioning, 35, 388, 390, 391–2, 440–2 for chest X-ray procedure guideline, 454–5 SPCs, 464–5 and diagnostic tests, 442 types, 441 see also specific positions
post-cardiac arrest syndrome, 541
post-dilution, 321
post-mortem, 511, 521 post-pyloric tube, 293
post-renal (obstructive) uraemia, 313
post-traumatic stress disorder (PTSD), 492
post-traumatic Syndrome 14 Question Inventory (PTSS-14), 492
Post Traumatic Syndrome 14 Question
Inventory
Pocke et al. 2017
potassium, 67
potential hydrogen see pH practice-competence gap, 17
pre-dilution, 320–1
pre-renal uraemia (azotaemia), 312 preload, 35 definition, 250
pressure, 386
interventions, 438–45
benefits and precautions, 439
during acute phase of illness, 438
parameters for decision making, 438
safety considerations, 443–4 see also rehabilitation
physical morbidity
anatomy and physiology, 436–7
definition, 436
physiological stability, 443
pia mater, 361, 362
PiCCO system, 194, 201–3
benefits, 195
complications, 195
device insertion
procedure guideline, 219–20
SPCs, 239–40
limitations, 195
monitoring
procedure guideline, 220–1
SPCs, 22–3, 241–3
normal limits of haemodynamic status, 201–2
problem solving, 203–4
piggybacking technique, 255, 256, 273, 267–70
‘pink eye’, 402
plaque, 398
pleural effusion, 100
pleural fluid, 100
pneumonia, respiratory failure in, 79–80
pneumothorax, 87, 100, 102–3
signs and symptoms, 100
polysomnography, 423
polyuria, 287
ports, 359, 360
positioning, 35, 388, 390, 391–2, 440–2
for chest X-ray
procedure guideline, 454–5
SPCs, 464–5
and diagnostic tests, 442
types, 441
see also specific positions
post-cardiac arrest syndrome, 541
post-dilution, 321
post-mortem, 511, 521
post-pyloric tube, 293
post-renal (obstructive) uraemia, 313
post-traumatic stress disorder (PTSD), 337, 338, 341, 492, 493
Post Traumatic Syndrome 14 Question Inventory (PTSS-14), 492
postoperative patients, critical care facilities for, 53
potassium, 67
potential hydrogen see pH
practice-competence gap, 17
pre-dilution, 320–1
pre-renal uraemia (azotaemia), 312
preload, 35 definition, 250
pressure, 386
Index 561

pressure control ventilation (PCV), 83–4
pressure control ventilation-volume guarantee (PCV-VG), 84–5
pressure escalation plan, 127
pressure support redistributing equipment, 388, 389
pressure support (PS), 85
pressure support ventilation (PSV), reduction in, 88
pressure ulcers, 384–90
assessment, 386
SPCSs, 412–13
classification, 385, 388
definition, 384
dressings, 390, 395–6
extrinsic factors, 386
healing, 390
identifying, 387
incidence, 384–5
indications, 384
management, SPCSs, 412–13
prevention, 387–90
SPCSs, 411
reporting, 390
skin inspection, 386–7
websites, 390
wound assessment, 393–4
procedures, definition, 4
prognosis, 501–2
prognostication, 502, 505
‘Programme of Enhanced Physiotherapy & Structured Exercise’ (PEPSE), 492
prone ventilation, 98–9
aims, 98
anatomy and physiology, 98
contraindications, 99
definition, 98
indications, 98
problem solving, 99
procedure guideline, 140–2
risks, 98–9
SPCSs, 164
propofol, 342–4
withdrawal, 337
propofol infusion syndrome (PRIS), 343–4
propulsion, 279
prostacycline, 320
protocols, definition, 4
psychological problems, 492
PTSD, 337, 338, 341, 492, 493
public expectation, 14
pulmonary artery (PA)
measurement parameters, 197–9, 198
waveforms, 197, 197
pulmonary artery (PA) catheter (line), 194, 196–9, 196
CO studies with, SPCSs, 234
complications, 199
indications, 195
insertion
procedure guideline, 211–12
SPCSs, 227–9
lumens, 196
monitoring procedure guideline, 213–4
problem solving, 199–200
SPCSs, 230–2
pulmonary artery pressure (PAP), 198, 198
pulmonary artery wedge pressure (PAWP), 197–8, 198
procedure guideline, 215
SPCSs for recording, 233
pulmonary oedema, respiratory failure in, 79–80
pulmonary thermodilution method, 193, 194–9
see also pulmonary artery (PA) catheter (line)
pulmonary vascular permeability index (PVPI), 201, 203
pulmonary vascular resistance (PVR), 198, 199
pulse oximetry, 69–70
anatomy and physiology, 69
in critical care, 69
definition, 69
indications, 69
problem solving, 70
procedure guideline, 110–11
SPCSs, 149
pulse pressure, 36, 182
pulse pressure variation (PPV%), 203, 204
pulp rate, measurement, 44, 365
pupil reaction, assessment, 38
pupillary responses, assessment, 367, 367
Purkinje system, 175, 175
qualitative studies, 6
Quality of Death and Dying (QODD), 502
quick change technique, 255, 256, 265–70
radial artery, 181, 182
randomized controlled trials (RCTs), 5–6
rapid eye movement (REM) sleep, 422
rapid response systems, 29–31
Rapid Shallow Breathing Index (RSBI), 194, 196–9, 198
randomized controlled trials, 29–31
Rapid Shallow Breathing Index (RSBI), 88
RASS, 338, 339, 367
receptionist, role in waiting room, 54
recliner chairs, 446
refeeding syndrome, 393–4
indications, 490
interventions, 490
patient-centred strategies, 492
for patients ready to sit on edge of bed, 442–4, 443
angulation, 443–4
for patients unable to sit on edge of bed, 438–42
active exercise, 438–40
electrical muscle stimulation (EMS), 440
passive movements, 438–40
positioning, 440–2, 441
post-critical care, 444
procedure guideline, 494–5
SPCSs, 495–6
see also manual handling; physical mobility and exercise
REM sleep, 422
remifentanil, 345
renal replacement therapy
CRRT versus IRRT, 314, 315
principles, 314
see also continuous renal replacement therapy; intermittent renal replacement therapy
renin, 311
reperfusion, 534
rescue sedation, 338, 346
respiratory arrest, 532
respiratory failure
type I, 79–80
type II, 80
respiratory function, 33–4
critical illness and, 436
see also breathing
respiratory rate, 34
respiratory system
anatomy and physiology, 92, 92, 94
clinical assessment, 64–76, 365
interventions for, 78–105
physiological effects of transfer, 471
respiratory zone, 92, 94
restoration of a spontaneous circulation (ROSC), 534, 537
resuscitation team, 535
number to summon, 537
recticular activating system (RAS), 360
Richmond Agitation and Sedation Scale (RASS), 338, 339, 367
RIFLE, 313
right atrial (RA) pressure, 198, 198
right bundle branch block, 179
right ventricular (RV) pressure, 198
risk management, 8
rub, 64, 65
saline, ‘normal’ (sodium chloride), 285, 286
saliva, 397, 398
SaO₂, 69
SAS, 338
SBAR communication tool, 39, 39, 52
second degree heart block, 179
secretion, 279
sedation, 336–9
aims, 336
assessment, 338
definition, 336
management
procedure guideline, 348–9
SPCSs, 352–3
monitoring of sedated patients, 338–9
rescue, 338, 346
risks, 337
treatment, 342–5
withdrawal, 337, 438
sedation hold, 337
sedation scoring scales, 338
Seldinger technique, 101
sensitivity, 512
sedation scoring scales, 338
Seldinger technique, 101
sensitivity, 512
sedation, 336–9
procedure guideline, 450
SPCSs, 461–2
Simplified Motor Score (SMS), 366–7
SIMV-PC, 85
SIMV-VC, 84
sinoatrial (SA) node, 174, 175
sinus brachycardia, 178
sinus rhythm, 178
sinus tachycardia, 178
‘skill fade’, 15
skins
challenges to health, 384
cross-section, 383
functions, 383–4
inspection, 386–7
layers, 382–3
maceration avoidance, 387
sleep, 422–8
definition, 422
factors that disrupt and promote, 425, 426–8
importance, 422
indications, 422
stages, 422
sleep assessment, 423–5
on admission, 54, 59
non-physiological methods/tools, 423–5, 425
physiological methods, 423
procedure guideline, 429–30
SPCSs, 430
sleep cycle, 422
sleep deprivation, effects, 422–3
sleep promotion, 425, 426–8
procedure guideline, 429–30
SPCSs, 431
sliding sheets, 446
slow continuous ultrafiltration (SCUF), 314, 316, 317
slow extended daily dialysis (SLEDD), 315
sneeze reflex, 360
sodium chloride, 285, 286
specific procedure competency statements (SPCSs), 18
admission to ICU, 59–61
arterial blood sampling, 148
blood glucose monitoring, 302
cardiac arrest recognition, 548
cardiac output studies with pulmonary artery catheter, 234
central venous catheter (central line) insertion, 226
chest auscultation, 106
chest drain insertion, 165–6
chest drain removal, 166–7
continuous ECG monitoring, 215
continuous renal replacement therapy (CRRT), 329–30
CPR
airway assessment and ventilation, 550
starting, 548
defibrillation, 549
delirium assessment, 353–4
delirium assessment, 353–4
end of life care, 522–3
endotracheal tube extubation, 159–60
insertion, 119–20
enteral feed administration, 304–5
ETCO 2 monitoring, 155
eye care, 414–15
hoist transfer, 465–6
humidification, 162
inotropes
administration via syringe pumps, 272–3
changeover of infusions, 274
dosages calculation, 271–2
preparation, 270–1
titrination to meet patient requirements, 273–4
intermittent positive pressure breathing (IPPB) (Bird), 159
intracranial pressure monitor
recalibrating, 378–9
intracranial pressure recording, 377–8
invasive arterial blood pressure monitoring, 225
invasive ventilator therapy care, 158
log rolling, 463–4
manual hyperinflation, 163
mouth care, 413–14
nasogastric tube insertion, 303–4
nasopharyngeal airway (NPA), 149–50
neuromuscular blockade assessment, 354–5
non-invasive ventilator (NIV) therapy, 157
oesophageal Doppler monitor
insertion, 243–4
monitoring, 245–6
oropharyngeal airway (OPA), 149–50
pain assessment, 351–2
positioning
for chest X-ray, 464–5
high side lying, 460
high sitting, 459
patient with raised ICP, 462
side lying, 461–2
pressure ulcer assessment and management, 412–13
pressure ulcer prevention, 411
prone positioning, 164
pulmonary artery catheter (line) insertion, 227–9
monitoring, 230–2
pulmonary artery wedge pressure recording, 233
pulse oximetry, 149
recognizing and managing deteriorating patient, 46
rehabilitation of critically ill patients, 495–6
sedation management, 352–3
sleep assessment, 430
sleep promotion, 431
suctioning, 161
tracheal cuff pressure measurement, 156
tracheostomy formation and tube insertion auscultation, 152–3
tracheostomy removal/decannulation, 153–4
transfer
assessment and stabilization prior to, 485
communication, 485
decision to, 479
handover, 484, 487
preparation for, 486
safe, 486–7
transpulmonary cardiac output monitoring
using lithium dilution, 235–6, 237–8
using thermodilution, 22–3, 239–40, 241–3
vasopressors
administration via syringe pumps, 272–3
changeover of infusions, 274
dosages calculation, 271–2
preparation, 270–1
titrination to meet patient requirements, 273–4
SPIKES, 507–8
spinal reflexes, 367, 510
SpO 2, 69
spontaneous breathing trial (SBT), 88, 337
St Mary’s Hospital Sleep Questionnaire, 424
standing hoist, 446
starch solutions, 285, 287
Stewart–Hamilton equation, 196, 201
stretcher chairs, 446
stridor, 33, 64, 65
stroke distance (SD), 205
stroke volume (SV), 181, 193, 198
definition, 250
stroke volume variation (SVV%), 203, 204
subarachnoid bolt/screw, 369
subclavian vein, 187, 188
subcutaneous layer, 383
subdural catheter, 369
submucosa, 278
suctioning, 91–3
aim, 91
anatomy and physiology, 92, 93
closed endotracheal, procedure guideline, 136–7
indications, 91–2
open endotracheal, procedure guideline, 134–7
problem solving, 93
risks, 93
SPCSs, 161
subglottic, 93
through tracheal tubes, 93
sugammadex, 346
suxamethonium, 345–6
swallow reflex, 360, 397
swallowing, assessment, 289–90
Swedish nose, 120, 120
synchronized intermittent mandatory ventilation (SIMV-VC), 84
synchronized intermittent mandatory ventilation – pressure controlled (SIMV-PC), 85
syringe pumps, 251, 253
problem solving, 257
procedure guideline, 262–4
systemic vascular resistance (SVR), 198, 199, 204
definition, 250
systemic vascular resistance index (SVRI), 204
systolic pressure, 181
normal values, 250
systolic pressure variation (SPV), 204
T-piecing, 515
tamponade, treatment, 542
tears, 401
telemetry, 177
temperature
measurement, 36–7, 45
monitoring, 366
normal, 36
tension pneumothorax, treatment, 542
terminal weaning, 508–9
thermometer devices, 36–7
thermoregulation, 383
thiopental, 344–5
third degree heart block, 179
third space losses, 282
thrombin inhibitors, 320
thrombosis, treatment during CPR, 542
TILE assessment, 444, 445
tilt table, 446
tissue viability, 36–7
normal values, 36
monitoring, 366
definition, 36
procedure guideline, 366
problem solving, 36
risk, 37
SPCSs, 161
traecheal cuff
pressure measurement, 77–8
anatomy and physiology, 77–8
complications, 78
indications, 77
procedure guideline, 124
SPCSs, 156
tracheostomy tube (TT), 75–6, 75
complications, 75
contraindications, 75
in critical care, 78
definition, 75
displacement, 86
dressing change procedure, 118–9
indications, 75
inner cannula care procedure, 119–10
insertion procedure, 120–2
insertion SPCSs, 152–3
removal see decannulation stoma care procedure, 118–9
suctioning through, 93
see also tracheal cuff
track and trigger systems, 52
“Train-of-Four” (TOF) monitoring, 341, 342, 342, 343
transfer, 470–8
aims, 470
assessment and stabilization prior to, 475
procedure guideline, 480–1
SPCSs, 485
communication, 475
procedure guideline, 479
SPCSs, 485
components of process, 474–8
critical care networks role, 474
decision to, 475
decision to, 475
decision to, 475
decision to, 475
decision to, 475
end of life care and, 505
procedure guideline, 479
SPCSs, 484
definitions, 470
equipment guidelines, 478
evidence, 473–4
handover, 478
procedure guideline, 484
SPCSs, 487
indications, 470
organization, 474
physiological effects, 470–3
of altitude, 471–3, 472, 472
cardiovascular system, 470–1
of movement/gravitational forces, 471, 471
respiratory system, 471
stress response, 473
temperature control, 473
preparation for, 476
procedure guideline, 482–3
SPCSs, 486
primary, 470
quality, 473–4
safe, 476–8
procedure guideline, 483
SPCSs, 486–7
secondary, 470
selection of transport mode, 475–6, 475, 476
specialist transfer teams, 474
timing, 474
transfer trolley, 477, 477, 478
transpulmonary dilution method, 193–4, 201–4
transpulmonary thermodilution, 193–4, 201–3
device insertion
procedure guideline, 219–20
SPCSs, 239–40
monitoring
procedure guideline, 220–1
SPCSs, 22–3, 241–3
problem solving, 203–4, 205
see also PiCCO system
using dye or chemical, 194, 204
device insertion
procedure guideline, 216–7
SPCSs, 235–6
monitoring
procedure guideline, 217–8
SPCSs, 237–8
see also LiDCO system;
LiDCOplus system
truth-telling, 508
two-bottle drainage system, 102, 103
ultrafiltration, 310, 314, 314, 319
underwater seal system, 102, 102
upper respiratory tract, 92
urine output
levels, 313, 313
maintaining optimal, 37
normal values, 37, 250
vacuum-assisted closure (VAC), 390
vasomotor paresis, 287
vasopressin
actions, 252
dosages, 253
vasopressin receptors, activation, 252
vasopressors, 250–5
  actions, 251, 252
  administration via syringe pump, 251, 253
  procedure guideline, 262–4
  SPCs, 272–3
  aims, 250, 253
  anatomy and physiology, 250
  changeover of infusions, 254–5, 256
  procedure guideline, 265–70
  SPCs, 274
  choice, 251
  definition, 250
  dosages, 253, 254
  procedure guideline, 271–2
  SPCs, 271–2
  indications, 250
  monitoring, 254
  preparation
  procedure guideline, 259–61
  SPCs, 270–1
  side effects, 253–4
  titration to meet patient
  requirements, 253–4
  procedure guideline, 264–5
  SPCs, 273–4
  troubleshooting, 255, 257, 258
  withdrawing, 254
  venous outflow obstruction, 371
  venous thromboembolism (VTE), 440
  ventilation, anatomy and physiology, 79–80
  ventilation perfusion (V/Q) ratio, 79
ventilator-associated pneumonias
  (VAPs), 79, 390
  incidence reduction, 83, 93
  ‘ventilator eye’, 401
  ventilatory support, 78–80
  indications, 78–9
  types, 79
  withdrawing at end of life, 509
  see also invasive ventilation; non-
  invasive ventilation; weaning from mechanical ventilation
ventricular pathways, 362, 363
Venturi effect, 95, 95
vesicular breath sounds, 64
visceral pleura, 87, 100
vision, 400
see also eye care
vital signs (observations), assessment, 365
VitalPac Early Warning Score (ViEWS), 30, 31
vitamin D synthesis, 384
volume control ventilation (VCV), 84
VTE risk assessment, 54, 58
waiting, 54
ward patients
  critically ill or ‘at risk’, 28–46
  see also, deteriorating patients
Waters’ circuit see Mapleson C bagging system
weaning from mechanical ventilation,
  87–9, 89–90
  aim, 87
anatomy and physiology, 87–8
  definition, 87
  procedure guideline, 130
  reduction of mechanical support, 88–9
  testing patient readiness, 88–9
see also decannulation; extubation
Wenckebach phenomenon, 179
Wesseling algorithm, 203
wheeze, 64, 65
WHO analgesic ladder, 336, 347
withdrawal of treatment, 501
  assessment of need for discussion of, 504
  avoiding prolongation of dying, 504–5
  cultural issues, 508
diagnosing dying, 505
extubation, 508–9
  procedure guideline, 516
  how and when, 508
  incidence, 504
  legal and ethical issues, 504
  procedure guideline, 514–15
see also end of life care
withholding treatment, 501
cultural issues, 508
  incidence, 504
  legal and ethical issues, 504
wound assessment, 393–4
wound management dressings, 390, 395–6
xerostomia (dry mouth), 398
  with non-invasive ventilation, 82